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Suntrek ST Residential Pool Heating Owner's Package

Dear Swimming Pool Owner,

Thank you for choosing Suntrek, we are thrilled to have you as our customer! Enclosed, you will find your customer care package and warranty information for your records.

Please take the time to complete the attached warranty registration card and mail back to Suntrek.

Thank you for giving Suntrek the opportunity to earn your business!

Suntrek Industries, Inc.

SUNTREK ST™ WARRANTY

SUNTREK INDUSTRIES, INC. (SI) warrants its Suntek ST™ collectors against manufacturing defects for a period of ten (10) years from the date of purchase by the original owner at the original installation site, provided that said collectors have been installed and operated in full accordance with SI's printed instructions. (See "Suntek Installation Procedures" and/or "Owner's Manual")

In the event of any failure of the Suntek ST™ Solar Collectors, SI will, at its option, provide repair materials or replace the failed component. SI may require that an SI representative examine the failed component before its repair or removal from the system.

This warranty does not cover:

- A. Conditions resulting from a defect or malfunction in a component or part which is not part of the Suntek ST™ Solar System or was not installed as part of the Suntek ST™ Solar System.
- B. Conditions resulting from a departure from SI's installation or operation instructions, as described in the Installation Procedures or Owner's Guide.
- C. Conditions resulting from any misuse, abuse, negligence, Acts of God, accidents, alteration, or non-winterization in climates that experience freezing weather conditions. See Owner's Guide.
- D. Consequential damage, including but not limited to damage to the home or contents, loss of time, inconvenience, or loss of use of the solar system.
- E. Component parts, such as controls, valves and other piping or plumbing materials that carry their own manufacturer's warranties.
- F. Labor expenses for repairs or replacements, with the exception of work that was performed by authorized Suntek installers who provide their own independent labor warranty.
- G. Shipping charges.

Unless otherwise explicitly agreed in writing, it is understood that these are the only written warranties given by SI, and SI neither assumes nor authorizes anyone to assume for it any other obligation, or liability in connection with the Suntek ST™ Solar System. This warranty provides specific legal rights. Other legal rights, which vary from State to State, may exist.

SUNTREK INDUSTRIES, INC.

5 Holland Building #215
Irvine, CA 92618
(949) 348-9276

SUNTREK ST™ WARRANTY REGISTRATION CARD - RETURN WITHIN 30 DAYS

Name _____ Date of purchase _____

Address _____

City _____ State _____ Zip _____

Email address (We will not sell your personal information) _____

How did you learn about your Suntek solar system _____

Are you completely satisfied with your system? () YES () NO - (Please tell us why, if not)

Would you recommend Suntek system to a friend or neighbor? () YES () NO

Please add any comments on the back of this card and mail to Suntek OR scan and email to warranty@suntreksolar.com



Suntrek Solar Pool Heating System Owners Guide

Thank you for choosing Suntrek Industries as your solar heating company. Your Suntrek system will provide you with years of warm, comfortable pool temperatures.

Startup

Your new system will go through a conditioning process over the course of the next two weeks. Your time clock, solar valve and control system have been set to operate the solar system during the daytime hours. Please do not change your time dock or solar control settings during this start up period. It is important that you do not shut your solar system off during the daytime hours. Depending on your pool chemistry or lack of chlorine, it is possible to see the water discolor. Do not be alarmed. During the curing process of the solar collectors, a salt is sometimes discharged into the pool. If this condition exists, please make sure you have proper levels of conditioner and chlorine in your pool and the discoloration will disappear.

General Operating and Maintenance

- If you have automatic control, check that the power light is on and the thermostat is set in a "high" position. (You will need to find your ideal setting after the pool warms up.)
- Set your filter-pump time dock to turn on at the time that the sun directly hits the collectors in the morning (10:00 AM), and to turn off when the sun stops hitting the collectors (5:00 PM). Make day light saving adjustments accordingly.
- Your automatic controller will come with an owner's manual for operation settings.

If the solar collectors are operated when the sun is not shining directly on them (at night or a rainy day), it will cool off the pool. If you have automatic controls, a solar sensor will keep this from happening.

- Turn solar system OFF before back washing the filter. (Do not turn solar back on until filter system has run for at least 20 minutes after back washing has been completed.)
- Turn solar system off while manually vacuuming pool
- Do not walk on collector unit when possible.
- For swimming during long-night/cooler weather months. It is recommended that a pool blanket be floated on the surface of the pool to help prevent overnight heat loss.
- In areas that are subject to freezing conditions, the solar system MUST be shut off and drained during freezing periods to protect all component parts of the solar system. See: "To freeze-protect system".
- Never let water remain stagnant in the collectors (be certain system is gravity-drained when off).



- In general, your Suntrek system will require little maintenance. However, to obtain the best possible performance, it is recommended that the collectors be kept free of dust and debris by simply turning a hose on them occasionally. It is advised that the system be inspected once a year and that the attachments between the collectors and the roof be examined on a regular basis to avoid damage from severe winds. Depending on the area, the recommended winterizing procedures may have to be performed.
-

Winterizing

(In Areas Subject To Freezing)

- Position automatic control switch to "OFF" (if automatic control system), OR turn solar valve to by-pass position (if manual system).
- Wait 10-15 minutes to be sure the system has drained completely.
- Open hose bib on roof to drain any remaining water from collectors. You can hook up an air compressor to the hose bib to blow collectors empty if there is any doubt that they are not completely drained.
- Leave system like this until after freeze conditions are over.

Troubleshooting

If the pool is not getting warm enough in sunny conditions:

- The filter may be dirty or clogged-check flow strength at pool outlets.
- The time clock may not be set for best sunshine times of the day.
- The thermostat may be set too low (if automatic system).
- Valve may be turned off. Check water routing.
- Pump may be weak and not be pumping a sufficient volume of water.
- Off-season months may require floating cover on pool to prevent night-time heat loss. Additional collectors may be necessary.

In general, it takes three days of consistent sunny weather in order for the pool to reach up to seasonal solar heated temperature.

Constant bubbles in the pool when the solar on:

Every time the solar system turns on, the pump purges all the air from the system producing a large amount of bubbles in the pool, which should completely subside within two minutes. However, if you see a constant stream of bubbles throughout the day, this indicates a problem not necessarily related to the solar.

Insufficient flow through the solar collectors will draw air into the system through the vacuum breaker, as the water falls from the collectors quicker than the water is being pumped to the roof.



- Check the filter pressure with the solar off, then check the pressure with the solar on. It is common for the filter pressure to raise 8-10 pounds when pumping water to the collectors.
- If the pressure is high (30 pounds or more) and does not increase with the solar on, this indicates the filter needs cleaning.
- If the filter pressure is abnormally low (10 pounds or less) and does not rise when the solar is activated, check the pool skimmer and pump basket for debris. If there are not restrictions your pump may be too weak and may need to be replaced.
- If the filter pressure is normal with the solar off and increases 15 pounds or more with the solar activated, this indicates that the solar collectors may be clogged with debris due to a break in a filter grid. If this is the case, first have your filter dismantled and repaired then contact your installer or Suntrek Industries for servicing a clogged system.

How your Suntlet solar pool heating system operates:

While your filtration system is operating, pool water is diverted through the solar system by the solar booster pump. The sun's energy is absorbed as the water passes through the solar array and returns to the pool. The SolarTouch thermostatic differential control system is a programmable automatic solar heating control system designed especially for swimming pools. Whenever solar energy is available, the SolarTouch will automatically activate the solar booster pump and circulate pool water through the solar collectors. This process continues as long as solar energy is available or until the set desired pool temperature is reached.

1. Existing filtration pump

2. Existing Pool Filter

3. Solar Booster Pump

Controlled by the SolarTouch Solar Control. Circulates pool water through the solar system.

4. SolarTouch Solar Control

See above for description.

5. Water temperature sensor

Informs the Suntlet as to the temperature of the pool water.

6. Solar temperature sensor

Informs the Suntlet as to whether or not there is any solar heat to be gained. Installed directly to the roof, next to the solar collectors, in a place where there is limited wind and no shading.

7. Solar check valve

Prevents system back flow when the filtration pump is turned off.

8. Solar return check valve

Prevents system back flow when the solar is turned off.

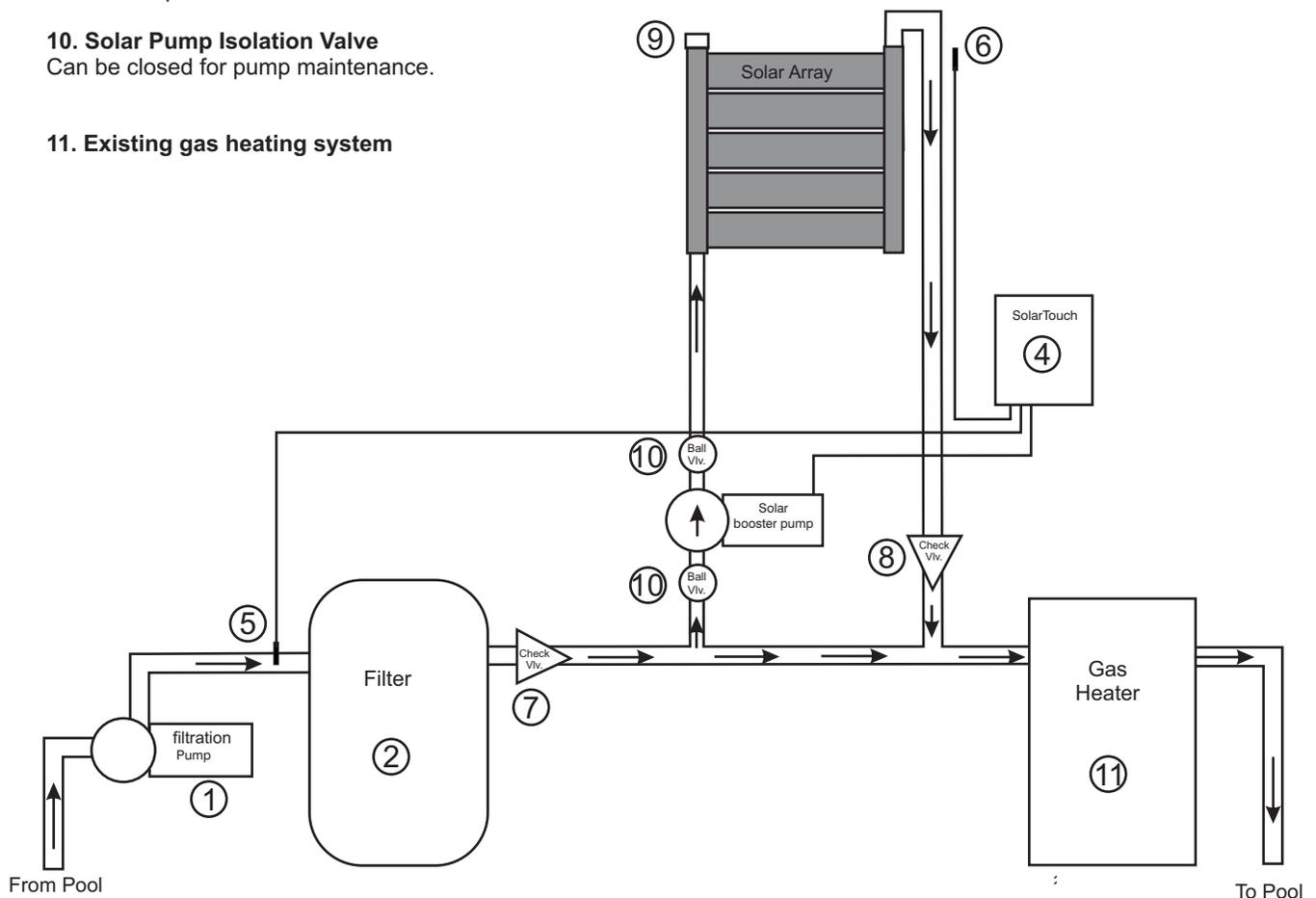
9. Vacuum relief valve

Automatically lets air into the system, whenever the filtration pump shuts off, allowing the water to automatically drain back to the pool.

10. Solar Pump Isolation Valve

Can be closed for pump maintenance.

11. Existing gas heating system



SOLAR OPERATIONS

View Current Water and Solar Temperature: In normal operating mode the main screen displays the current WATER temperature and TARGET temperature. The display also indicates if Solar Heat is ON or OFF. Press the **Enter button** to view the current Water and Solar temperatures.

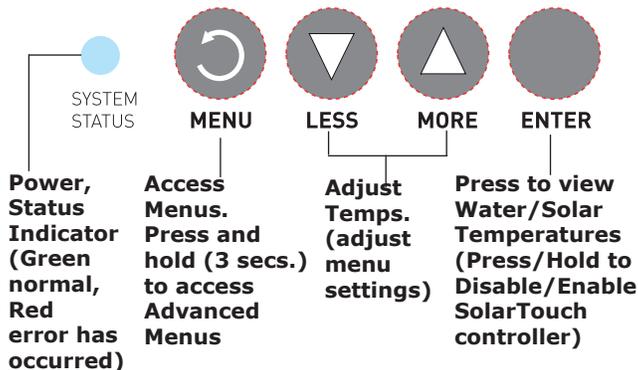
Adjusting the Water/Solar Temperatures: To adjust the water target temperature, press the Less (Down arrow) button or More (Up arrow) button to lower or raise the set temperature to the desired level. The water temperature can be adjusted from 40° F to 104° F (4° C to 40° C). This sets the solar system to heat the water up to the target temperature.

Optimum Water Temperature: To achieve optimum water temperature, the solar roof sensor must be 6° higher than the water temperature. The pump must be ON for a few minutes for operation. When the roof sensor and the water temperature are within for example 3° (default), solar heat will switch off. This differential setting is adjustable in the "Diff to Stop" setting and is factory set at 3°. This setting sets how close to the temperature to switch off solar heat. Adjust the start and stop temperature differential settings to start and stop solar water heating. Adjusting the differential will effect the performance of your solar system. Refer to your solar service professional for the optimum setting.

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 "Cleaner Interrupt" terminal on the SolarTouch® Controller circuit board which will be always set to on.

Solar (Filter) Pump Timer: The solar (filter) pump timer must be set so that the filter pump operates during the time of the day when solar energy is available.

SolarTouch® Controller Control Buttons



Main Screen: In normal operating mode the main screen displays the current WATER temperature, TARGET Temperature and if SOLAR HEAT, NOCTURNAL COOLING or FREEZE is ON or OFF. Press the Enter button to view the current Water and Solar temperatures. If no menu activity is detected after two minutes, the main screen is displayed.

Enter button: This button has the following functions:

- During normal operation, when the display shows Water Temp, Target Temp and Solar Heat ON/OFF setting. Press and release the Enter button to view current Water and Solar Temperature.
- While in Main Menu or Advanced Menu, press the Enter button to view menu item settings and scroll through menu options.
- Press this button to select a menu item.
- Press this button to save a menu setting.

MAIN SCREEN DISPLAY

Normal Operating Mode

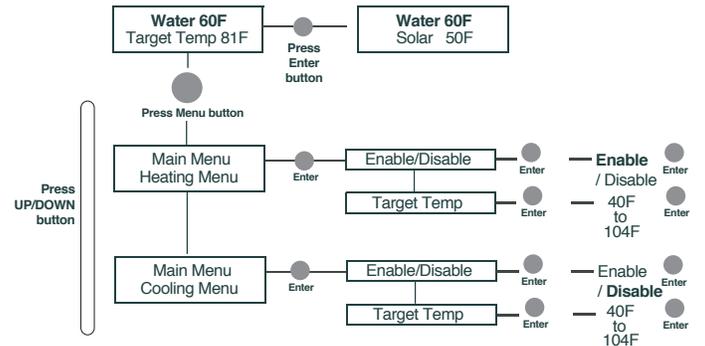
In normal operating mode the main screen displays the current WATER temperature, TARGET Temperature and if SOLAR HEAT, NOCTURNAL COOLING or FREEZE is ON or OFF. Press the Enter button to view the current water and solar temperatures. Degree units are displayed in either Fahrenheit or Celsius (Advanced menu). Effective solar heat depends on the solar and water temperature and the start and stop differentials, then SolarTouch® Controller will rotate the positive 3-way valve and turn on the solar booster pump or increase the RPM's if an IntelliFlo® or IntelliPro® Pump is present. This allows the water to flow to the solar collectors. The solar roof sensor must be 6° higher than the water temperature. The pump must be ON for a few minutes for operation. When the roof sensor and the water temperature are within 3° of each other, solar heat will switch off. The solar temperature start and stop differential settings are factory set at 6° and 3°. These differential settings are adjustable in the **Advanced Menu** settings. Refer to your solar service professional for the optimum setting.

Nocturnal Cooling: Provides automatic nocturnal cooling for pools in hot climates that overheat. Water circulates through the system when the collector temperature and the pool temperature is hotter than the target temperature setting. Circulation will stop when the collector temperature is 3° (Default) less than the pool temperature or when the pool temperature is cooler than the target temperature setting.

MAIN MENU

Use the Main Menu for everyday solar operating features and the Advanced Menu for solar utility settings.

To access the Main Menu, press the **MENU button**. The Main Menu items are as follows:



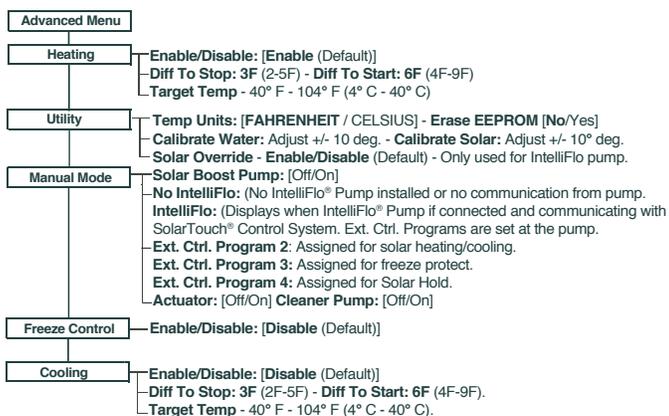
DISABLE/ENABLE SOLARTOUCH CONTROLLER

Using the Enter Button to Disable/Enable SolarTouch Controller

For service purposes, the SolarTouch controller can disable Heating, Cooling and Freeze Protect. Press and hold the Enter button (3 secs.) to disable the system. The display shows "SolarTouch Disabled" - Press and Hold Enter To Re-Enable". **Press and hold the Enter button** again to enable the SolarTouch controller.

Advanced Menu

To access the Advanced Menu, press hold (3 seconds) and release the MENU button. The Advanced Menu items are as follows:



HEATING

The SolarTouch® Controller can heat the pool or spa by circulating water through the solar collectors. Heating must be ENABLED in the Heating Menu. The initial factory default setting is "Enabled." The Start and Stop temperature differentials for solar water heating are adjustable. Factory temperature differential settings are: Start (default 6°) and Stop (default 3°). The Heating Menu settings are accessed from the **Advanced menu** (see Advanced menu item above).

Heating will start when the Start differential conditions are met and the water temperature is below the Target Temp. When these conditions are satisfied heating is turned ON. Example: Water Temperature is 75°F; Target Temperature is 82°F. When the roof solar collectors temperature exceeds the water temperature by 6° (76°F), the solar valve rotates. If a solar booster pump is required, this pump will turn on. When using an energy efficient IntelliFlo®/IntelliPro® 4x160/VS-3050 Pump (current model); the pump will ramp up to the RPM's assigned to **Ext Ctrl* Program 4 (Speed 4)**. If pool is plumbed with a pressure cleaner pump (i.e. pool cleaning system), this pressure pump will turn off for five (5) minutes. This allows the air in the solar collectors to be evacuated from the system without damage to the pump. When Heating turns ON; the solar booster pump will turn ON and valve actuator will rotate. After five (5) minutes the Cleaner Pump Relay will turn on.

Note: Also see "Solar Hold" feature for heating or Cooling.

IntelliFlo® and IntelliPro® Pump Installed and communicating with SolarTouch Controller: Ext Ctrl Program 2 default speed (1500 RPM) is assigned for solar heating or cooling.

Heating will turn OFF under the following conditions:

Pool or spa has met the target temperature. • Cloud cover appeared and the stop differentials turn the system off. • No more thermal energy available. • External time clock turned system off. **When Heating turns OFF:** • The valve actuator will rotate. • Solar booster pump will turn off. • If IntelliFlo/IntelliPro pump is being used as either a filtration pump or a solar booster pump, RPM will change and resume to the timed program set speed (RPM). This could take up to one (1) minute. • **IntelliFlo/IntelliPro pump connected and communicating with SolarTouch controller:** The pump is not being controlled by SolarTouch controller at this time. • Pressure Cleaner pump will remain on only if the external time clock cycle is still on. The default pump speeds are as follow: Ext. Ctrl. Program 2 (1500 RPM), Program 3 (2350), and Program 4 (3110).

(* Note: Older IntelliFlo/IntelliPro 4x160/VS-3050 pumps do not have a control panel display) and do not display "Ext Ctrl."

SOLAR HOLD & SOLAR OVERRIDE

Solar Hold Feature: When SolarTouch controller calls for heat and solar heat is available, the IntelliFlo Variable Speed Pump will ramp up to the RPM's assigned to **Ext Ctrl* Program 4 (Speed 4)**. The solar valve will maintain the closed position for the first five (5) minutes, the solar valve will move to the "open" position and the pump will continue to run an additional five (5) minutes. After 10 minutes, the pump reverts to the assigned speed for **Ext. Ctrl Program 2 (Speed 2)**.

Cancel Solar Hold: To cancel the Solar Hold feature, press either the UP or DOWN arrow button for about 3 sec. on the SolarTouch controller. Note: If pool is plumbed with a pressure cleaner pump (i.e. pool cleaning system), this pressure pump will turn off for five (5) minutes when the valve actuator turns on. This allows the air in the solar collectors to be evacuated.

Solar Override: This menu option is accessed from the Utilities/Advanced menu. The default setting is Disabled. When disabled the system only runs during the variable speed pumps programmed run schedule. When Enabled the system overrides the pumps schedule and runs anytime solar heat is available.

Important Note: For the IntelliFlo 4x160/VS-3050 Pump, when the SolarTouch controller releases control of the pump, the pump will then in standalone mode and the pump will save the last manual speed setting. The last manual speed setting is the last speed 1-4 button pressed on the pump. Be sure the last manual speed setting is one you want the pump to run

COOLING

The SolarTouch controller can cool the pool/spa by circulating water through the solar panels when the solar collectors are at a lower temperature than the pool/spa water (typically at night). Cooling must be enabled in the Cooling Menu. The default setting is "Disabled." To start and stop cooling, adjust the start (default 6°) and stop (default 3°) temperature differential settings (see Advanced Menu).

Note: Also see "Solar Hold" feature for Heating or Cooling.

Cooling turns ON; when the water temperature is above the target temperature then cooling will be turned on and the Solar Pump Relay and Valve Actuator are activated (ON). After five minutes the Cleaner Pump will turn on.

Cooling will turn OFF under the following conditions:

Cooling turns OFF; when the water temperature is below the target temperature the Solar Pump Relay and Valve Actuator are turned OFF. The Cleaner Relay remains on. When no more thermal cooling energy available or when the External time clock turned system off.

When Cooling turns OFF: The valve actuator will rotate.

- Solar booster pump will turn off.
- If IntelliFlo pump is being used as either a filtration pump or a solar booster pump, RPM will change and resume to the timed program set speed (RPM). This could take up to one (1) minute.
- IntelliFlo/IntelliPro pump connected and communicating with SolarTouch controller: The pump is not being controlled by SolarTouch controller at this time.
- Pressure Cleaner pump will remain on only if the external time clock cycle is present.

IntelliFlo/IntelliPro Pump Installed: Speed #2 is the set default speed (1500 RPM) except for IntelliFlo VF (Press Manual button on pump to set RPM and GPM speeds. See the IntelliFlo VF Pump Manual (P/N 350075).

IntelliFlo pump installed (standalone mode): If an IntelliFlo pump is detected, it will go to stand-alone mode (may take up to two minutes). The pump is not being controlled by SolarTouch controller at this time.

FREEZE PROTECT

When the solar sensor temperature falls to 40°F (4°C) or below, the pool/spa water is automatically circulated through the system to prevent freezing. If the solar sensor is placed at the solar collectors and when the temperature in the solar collector reaches 42° F (6° C) and above, freeze protection will stop. The initial default setting is "Disabled". Note: Sensors have a +/- 1° variance.

When Freeze Protect is turned ON; the filter pump, solar booster pump or IntelliFlo®/IntelliPro® Pump (**Ext Ctrl Program 3**) will turn ON and valve actuator will rotate. After five (5) minutes the Cleaner Pump Relay will turn on. The filter pump, solar booster pump or IntelliFlo/IntelliPro pump (**Ext Ctrl Program 3**) will turn ON and valve actuator will rotate. After five (5) minutes the Cleaner Pump Relay will turn on.

When Freeze Protect is turned OFF; the filter pump, solar booster pump or IntelliFlo/IntelliPro pump and Valve Actuators are turned off. If an IntelliFlo pump is connected and communicating with SolarTouch controller, RPM will change and resume to the scheduled program speed (RPM). This could take up to one minute. The pump is not being controlled by SolarTouch controller at this time.

MANUAL MODE

The "MANUAL MODE" To access the Manual mode menu from the Advanced menu, press and hold the MENU button for three (3) seconds. Manual mode is useful for system setup or service purposes. Manual mode settings will override existing SolarTouch controller settings. After you exit the Manual mode menu all previous system settings will resume. **Note: While in the Manual mode menu, the system will stay in Manual Mode until you manually exit back to the Advanced Menu.** In Manual Mode the SolarTouch controller relays actuators, single speed pump and IntelliFlo pump can be manually controlled. Manual Mode is only available in the Advanced Menu. Any changes made to settings while in Manual Mode will not affect previously saved settings. The Manual Mode Menu settings are as follows:

Menu Item	Action
Solar Booster Pump (single speed)	On / Off
IntelliFlo* Pump Off/Ext. Ctrl. Program 2 and Ext. Ctrl. Program 3 (set at pump).	
Pressure Cleaner Pump	On / Off
Actuator	On / Off
(*) "IntelliFlo" will only be displayed if an IntelliFlo or IntelliPro pump is connected and communicating with the SolarTouch controller.	

Manual Mode Overview

Each relay remains in the state it was in when entering Manual Mode until it is manually changed. While in manual mode, each relay will stay in any state set by the user as long as they stay in Manual Mode.

SolarTouch Controller Relays: When exiting Manual Mode, all relays are turned off, and then set to the previously save settings.

Cleaning your pool: Turn SolarTouch controller OFF while manually vacuuming your pool/spa. Press and hold the Enter button for three (3) seconds to disable and re-enable the SolarTouch controller.

RESET SYSTEM TO DEFAULT SETTINGS

Factory Default Settings (ERASE EEPROM)

The SolarTouch® Controller factory default setting can be reset from the Erase EEPROM menu. To access the Erase EEPROM menu: **Press and hold the Menu button > Advanced Menu > Utility Menu > Erase EEPROM > Erase EEPROM? (No/Yes)**

Function	Setting
Heating	Enabled
Cooling	Disabled
Freeze	Disabled
Start Diff.	6° F (-15.5 C°)
Stop Diff.	3° F (-16.6° C)
Target Heating	80° F (26° C)
Target Cooling	90° F (32° C)
Solar Override	Disabled

CLEANERS

USING CLEANERS WITH SOLARTOUCH CONTROLLER:

Recommended for use in pool systems which utilize a "booster pump" pool cleaner. This feature automatically delays, turns off the pool cleaner pump for five (5) minutes whenever solar is initiated. This will protect the pump from damage caused by air in the solar panels at system start-up.

Solar Hold Feature: (Only Using IntelliFlo and IntelliPro 4x160/VS-3050 Pumps) - When SolarTouch controller calls for heat and solar heat is available, the IntelliFlo variable speed pump will ramp up to the RPM's assigned to **Ext Ctrl Program 4**. The solar valve will maintain the closed position for the first five (5) minutes, then the solar valve will move to the "open" position and the pump will continue to run an additional five (5) minutes. After these 10 minutes, the pump reverts to the assigned speed for **Ext Ctrl Program 2 (Speed 2)**.

Cancel Solar Hold: To cancel the Solar Hold feature, press either the UP or DOWN arrow button for approximately 3 seconds on the SolarTouch controller. Note: If pool is plumbed with a pressure cleaner pump (i.e. pool cleaning system), this pressure pump five (5) minute delay will be cancelled.

Solar Booster Pump: To increase water flow through the collector array, a high voltage relay for the solar booster pump can be used in addition to the main filter pump.

- Solar Booster Pump relay output on the SolarTouch® Controller circuit board is on whenever solar heat is available and off whenever solar heat is not available.
- Pressure Cleaner Booster pump is on whenever solar heat is unavailable.
- Pressure Cleaner Booster Pump: The cleaner is delayed for five minutes whenever solar heat, cooling or freeze turns on.

Pool Cleaner Protection: Recommended for use in pool systems which utilize a "booster pump" pool cleaner. This feature automatically delays, turns off the pool cleaner pump for five (5) minutes whenever solar is initiated. This will protect the pump from damage caused by air in the solar panels at system start-up.

GENERAL INFORMATION

SolarTouch Controller Auxiliary Outputs (pool filter pump, booster pump, cleaner and time clock)

Pool Filter pump (Single Speed): The pool filter pump is controlled externally by the time clock, which ensures the filter pump is running before the booster pump switches on.

Time clock pool daily filtering override: When using a single speed pump, or an IntelliFlo or IntelliPro VS 3050 / 4x160 pump, for daily pool filtering schedules SolarTouch controller requires the pump to be connected to an external 24 hour time clock. In order to override the daily pool filtering schedules, a two-pole timer or two-pole relay for switching the pump on or off is required.

CAUTION! All of the electrical wiring methods and materials used to complete the electrical installation of the pool/spa system must be in accordance with the current National Electrical Code (NEC) or the Canadian Electric Code, as well as any local electrical codes in effect at the time of installation.

INTELLIFLO®/INTELLIPRO® PUMP SETUP

IntelliFlo/IntelliPro Pumps recommended for use with SolarTouch® Controller: IntelliFlo/IntelliPro 4x160, VS-3050, Variable Speed - Sta-Rite® Variable Speed

IntelliFlo Pumps not recommended for use with SolarTouch® Controller: IntelliFlo/IntelliPro VF 3.2 Kilowatts, Sta-Rite® VS+SVRS, IntelliFlo VS+SVRS pump

Using IntelliFlo & IntelliPro Pumps with SolarTouch

Controller: Note: SolarTouch controller supports one IntelliFlo or IntelliPro pump assigned to ADDRESS 1.

The SolarTouch Controller communicates with the IntelliFlo/IntelliPro "Variable Speed" pumps via a two conductor RS-485 communication cable (P/N 350122) which is connected to the COM PORT on the SolarTouch controller circuit board. When using a Variable Speed pump with SolarTouch controller, set the desired speed at the pump from the Ext. Control Program 1-4 menu options. **Ext Ctrl* Program 2 is assign for solar heating and cooling, Ext Ctrl Program 3 is assign for freeze control and Ext Ctrl Program 4 is assigned for Solar Hold.** IntelliFlo and IntelliPro pumps also support 8 internal programmed schedules (time clocks) for daily filtering schedules.

IntelliFlo and IntelliPro 4x160/VS-3050 Pump

(Speed 2, 3 & 4) Overview - Also see "Solar Hold Feature for Heating and Cooling" page 2

The IntelliFlo and IntelliPro 4x160/VS-3050 pumps do not have a built in programmable scheduler (time clock) function, External Controls or LCD display on the pump. The SolarTouch controller assigns and controls the pump's **Ext Ctrl Program 2 (Speed 2 button) for solar heat/cooling, Ext Ctrl Program 3 (Speed 3 button) for freeze protection, and Ext Ctrl Program 4 (Speed 4 button) for Solar Hold** (see page 2). When the pump is used as the pool filter pump, the pump must be wired to an external time clock. When the time clock turns on the pump, **Ext Ctrl Program 1 (Speed 1 button)** is used for daily filtration. The LED indicator above the **Ext Ctrl Program 1 (Speed 1 button)** must be illuminated before the time clock turns off. For the external time clock and the 4x160 pump to operate **Ext Ctrl Program 1 (Speed 1 button)** for daily filtration, please take note of the following:

- Time clock turns the pump on and off for daily use.
- Set Speed 1 button (RPM) for everyday use and turn ON.
- Speed 1 must be running when time clock turns off to ensure operation.

Setting Speed 1 for Daily Filtration (IntelliFlo and IntelliPro 4x160/VS-3050): Set the speed (RPM) on the IntelliFlo 4x160/VS-3050 pump for the daily filtration speed (RPM). Speed 1 must be running when the external time clock turns off. This will ensure when the next program start time on the time clock activates the pump, will turn on Speed 1.

Setting Pump Speeds (IntelliFlo/IntelliPro VS Pumps)

Setting the IntelliFlo Variable Speed (VS) pump speed for solar/cooling and freeze protect mode is setup in the pump's "Ext. Ctrl" menu. Note: The IntelliFlo pump must be in "Running Schedule" mode to communicate with the SolarTouch controller.

Changing default pump speeds in Ext. Ctrl.* Program 2 (1500 RPM default speed) or Program 3 (2350 default speed) and Program 4 (3110 default speed):

To change the default pump speeds for Program 2,3, or 4:

1. From the pump's control panel, press the MENU button.
2. Press Up or Down arrow button until "EXT. CTRL." is displayed.
3. Press Select button.
4. Press the Up/Down arrow button to select Program 2 (cooling only). Enter the desired RPM for solar heat/cooling. Note: If Nocturnal cooling is required select Program 3 (freeze protect mode only). Select Program 4 (3110 RPM) for Solar Hold.
5. Press the Select button to change the current value.
6. To change the value, press the Left and Right arrow buttons to select which digit to modify, then use the Up and Down arrow buttons to change the selected digit.
7. When you are done, press the Enter button to save the changes. To cancel any changes, press the Escape button to exit edit mode without saving.

Note: Set freeze protection RPM's the same as solar heating to ensure proper flow.

(* Note: Older IntelliFlo/IntelliPro 4x160/VS-3050 pumps do not have a control panel display, and do not display "Ext Ctrl."

TROUBLESHOOTING

Pool/Spa is not warm during sunny conditions

- Check Solar Heating Target temperature, it may be set too low?
- Check external time clock settings are set to the best sunshine hours of the day.
- Solar Actuator Valve may be turned OFF or in the wrong position?
- The pool filter may be dirty or clogged. Check the filter PSI and flow strength at pool return outlets. No bubbles should be seen at the pool return line.
- Pump RPM's/Flow with IntelliFlo pump may need to be increased.
- Possible pool/spa water heat loss during nighttime. Install a pool cover to prevent heat loss.
- Not enough solar collectors. Add an additional solar collector.

Bubbles in your pool/spa. Increase RPM's/Flow

- Check 3 way valve for positioning.
- Clean filter. Check filter pressure with solar off then on. If the pressure is high (30 pounds or more) and does not increase with solar on, the filter needs cleaning.
- Check pool skimmer and pump basket for debris.

SolarTouch controller valve actuator is not switching positions

- Check toggle switch at rear of actuator. Actuator should be in position 1 or 2.
- Check or replace fuse 1A5 (1.5 A) on SolarTouch controller circuit board if necessary.

ERROR MESSAGES

When the control panel LED indicator is solid red, a sensor error has occurred; a blinking LED indicates an IntelliFlo pump communication problem or the IntelliFlo pump has been manually stopped. If the water or solar temperature sensor is shorted or open, heating and cooling will stop and not restart until the condition is corrected.

Note: The SolarTouch controller control panel menus can be accessed but will not affect the error condition. If one or both of the sensors is shorted or open and Freeze Protect is enabled, Freeze Protect will turn on.

The displayed sensor(*) error messages are as follows:

Freeze Mode Disabled Freeze Mode Enabled

Water Sensor Shorted	Water S Shorted Freeze Protect
Solar Sensor Shorted	Solar S Shorted Freeze Protect
Both Sensors Shorted	Sensors Shorted Freeze Protect
Water Sensor Open	Water S Open Freeze Protect
Solar Sensor Open	Solar S Open Freeze Protect
Both Sensors Open	Sensors Open Freeze Protect

Note: (*) The pump will continue to operate until the problem is resolved.

The Displayed IntelliFlo pump error messages are as follows:

Error Message Displayed)	Description
(**) Pump Alarm Solar Paused	IntelliFlo pump has been manually stopped.
(**) IntelliFlo Pump COM Lost	IntelliFlo pump communication cable is not properly connected to SolarTouch Controller or no AC power to IntelliFlo pump.

(**) *Blinking control panel LED*

IntelliFlo and IntelliPro Pump manuals

For more information about IntelliFlo and IntelliPro pump operations, refer to: www.pentairpool.com and www.staritepool.com.

Note: For complete SolarTouch Controller installation instructions please see the SolarTouch Controller User's Guide (P/N 521591).

Customer Support: (800) 831- 7133

1620 Hawkins Avenue, Sanford, NC 27330 • (919) 566-8000
10951 W. Los Angeles Avenue, Moorpark, CA 93021 • (805) 553-5000

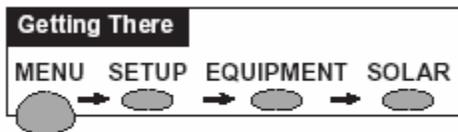
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IntelliTouch



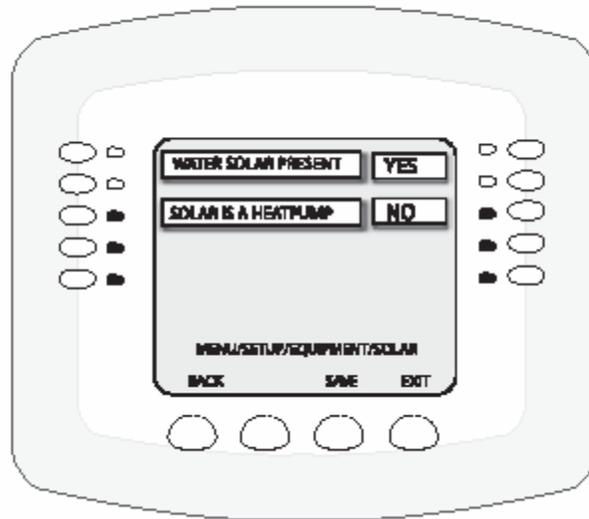
1. ENABLE SOLAR FUNCTION.

To set up the solar equipment

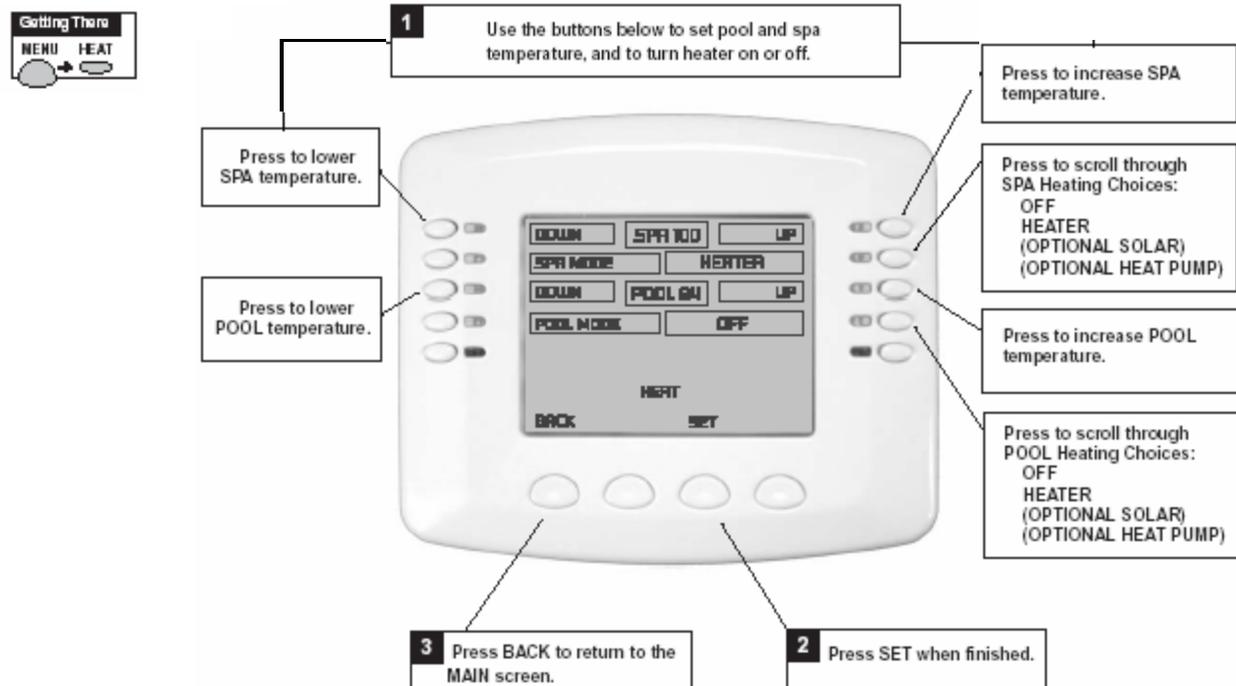


Go to the Solar screen.

1. Press the button next to the **Water Solar Present** label to change it to Yes.
2. If a heat pump is being used instead of a solar heating system, press the second button to change it to Yes.
3. When you are done, press the **Save** button.



2. ACCESS THE "HEAT" MENU TO SET TEMP. AND ACTIVATE SOLAR.



- 3. PROGRAM FILTER TO RUN FROM 10AM TO 5PM
- 4. SET POOL TEMP. TO 85° OR HIGHER.

Programming your Equipment

Getting There

MENU → PROGRAM → POOL (or any other equipment)

Program Indicator-
In this example the pool filtration is being programmed.

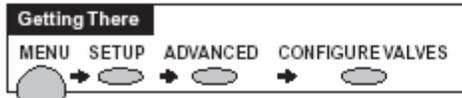
Multiple Programs-
After putting in the first program, pressing this button again takes you to a possible second program (2/1). In this example 2/1, the 2 indicates the number of the new program which is about to be created. The 1 indicates the current number of actual programs.

Up to 99 total programs may be entered.

- 1** Set START Time with HOURS and MINUTES buttons.
- 2** Set STOP Time with HOURS and MINUTES buttons.
- 3** If desired, you can set the program to operate on selected days. To do this, press the DAY key, and all the days of the week appear.
- 4** Press SAVE when finished.
- 5** Press BACK to choose another piece of equipment to program.

* YOU MAY HAVE TO CONFIGURE A VALVE ACTUATOR FOR SOLAR.

Configuring Valve Actuators to be controlled by AUX or FEATURE Circuit



About Configuring Auxiliary Valve Actuators.

The IntelliTouch system can drive two auxiliary valve actuators for applications such as solar heating and water features. With the addition of the Valve Module circuit board (P/N 520285), installed in the load center, the system will accommodate up to three additional actuators.

It is always best to first assign names to the AUX or FEATURE circuits before configuring the valve actuators. That way, when you arrive at step 2 of this process, you can easily find the control circuit you wish to match up to each particular valve actuator.

Auxiliary valve actuators can be controlled by any AUX circuit or FEATURE circuit. Please note that the i5 models do not include FEATURE circuits and must thus use the AUX circuits for controlling valve actuators.

By using FEATURE circuits to control valve actuators, you can conserve your AUX circuits for high voltage relays for controlling pumps and lights.

1 Select the button beside the valve actuator you wish to configure.

2 Keep pressing the button until you find the circuit name which you would like to use to control that particular valve actuator. As you scroll through the possibilities, you will find all the circuits which you have assigned names to, whether they are AUX circuits, or FEATURE circuits.

3 Press SAVE when finished.

VALVE A: Resides on personality board. Used for solar heating or auxiliary valve actuator control. If solar heating has been set up and is NOT configured as a heat pump, Valve A is automatically configured as solar valve actuator.

VALVE B: Resides on personality board. Can be configured to be controlled by any circuit.

VALVES C, D, E: Reside on optional Valve Module board, which plugs into personality board. Can be configured to be controlled by any circuit.

VALVE A	USED BY SOLAR
VALVE B	FOUNTAIN
VALVE C	(UNUSED)
VALVE D	(UNUSED)
VALVE E	(UNUSED)
MENU/SETUP/ADV/VALVES/PC #1	
BACK	SAVE EXIT

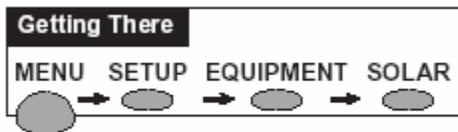
* A COMMON 10K SENSOR WILL WORK FINE

IntelliTouch



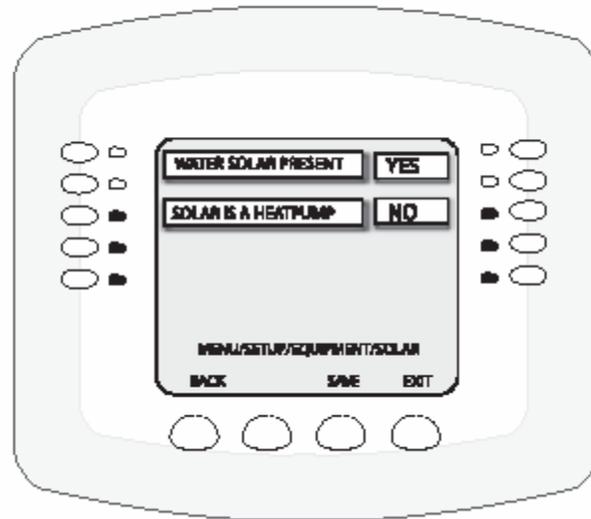
1. ENABLE SOLAR FUNCTION.

To set up the solar equipment

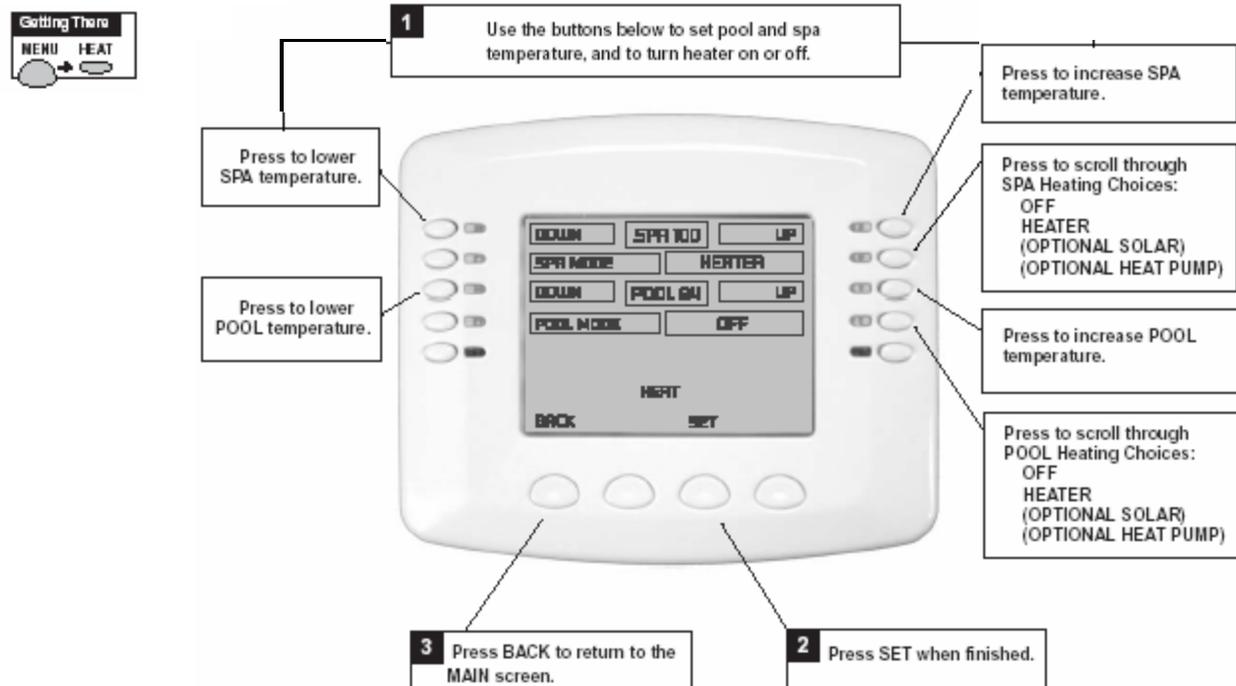


Go to the Solar screen.

1. Press the button next to the **Water Solar Present** label to change it to Yes.
2. If a heat pump is being used instead of a solar heating system, press the second button to change it to Yes.
3. When you are done, press the **Save** button.



2. ACCESS THE "HEAT" MENU TO SET TEMP. AND ACTIVATE SOLAR.



- 3. PROGRAM FILTER TO RUN FROM 10AM TO 5PM
- 4. SET POOL TEMP. TO 85° OR HIGHER.

Programming your Equipment

Getting There

MENU → PROGRAM → POOL (or any other equipment)

Program Indicator-
In this example the pool filtration is being programmed.

Multiple Programs-
After putting in the first program, pressing this button again takes you to a possible second program (2/1). In this example 2/1, the 2 indicates the number of the new program which is about to be created. The 1 indicates the current number of actual programs.

Up to 99 total programs may be entered.

- 1** Set START Time with HOURS and MINUTES buttons.
- 2** Set STOP Time with HOURS and MINUTES buttons.
- 3** If desired, you can set the program to operate on selected days. To do this, press the DAY key, and all the days of the week appear.
- 4** Press SAVE when finished.
- 5** Press BACK to choose another piece of equipment to program.

AquaLink All Button



1. REVIEW PUMP PROGRAM AND TEMP SETTINGS

How to review items:

1. Press the MENU button. Use the FORWARD and BACK buttons to move to the REVIEW Menu and press ENTER. The AquaLink RS display will read PROGRAMS <- ->* .
2. Advance through the list of items to review. Choose PROGRAMS if you want to review programming, TEMP SET if you want to review the temperature settings for the pool and spa,

2. CANCEL FILTER PUMP PROGRAM (IF NOT FROM 10AM TO 5PM).

How to cancel a program:

1. Press the CANCEL button. Use the FORWARD and BACK buttons to advance to PROGRAMS <->* and press ENTER. The AquaLink RS display will read SELECT DEVICE TO BE CANCELED.
2. Press the equipment button for which you want a program to be canceled, and press ENTER.
3. *If there is only one program*, press ENTER. The program will be canceled.
4. If there is more than one program, the AquaLink RS display will tell you how many programs there are (for example, if there are three programs, the AquaLink RS display will read 3 PROGRAMS EXIST).
5. The AquaLink RS display will read CANCEL ALL <->* . Use the FORWARD and BACK arrow buttons to toggle between CANCEL ALL, and CANCEL SOME. Press ENTER when the selection you want is displayed.

3. SET PUMP PROGRAM (10AM TO 5PM)AND TEMP SETTINGS (85°+)

How to set automatic on and off times:

1. Press the MENU button. Use the FORWARD and BACK buttons to advance to the PROGRAM Menu and press ENTER. The AquaLink RS display will read SELECT EQUIPMENT TO PROGRAM.
2. Press the button of the equipment you want to program (e.g., FILTER PUMP).
3. You are now in a menu of choices. You may choose ON ALL DAYS, ON WEEKDAYS, ON WEEKENDS, or you may choose a specific day of the week. Use the FORWARD and BACK arrow keys to move to the choice you want, then press ENTER.
4. The display now reads ON HR 1 PM <- ->*. Use the FORWARD and BACK arrow keys to move to the hour that you want the equipment to turn on, and press ENTER when that hour is displayed.
5. Repeat this process to set the ON MINUTE, OFF HOUR, and OFF MINUTE. When you are finished, the AquaLink RS Display will review a summary of your program(s).

4. PUSH SOLAR BUTTON

* A COMMON 10K SENSOR WILL WORK FINE

AquaLink RS One Touch



1. ENABLE SOLAR

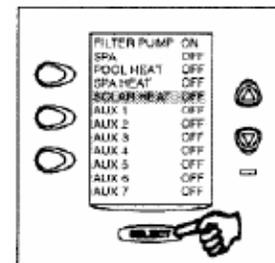
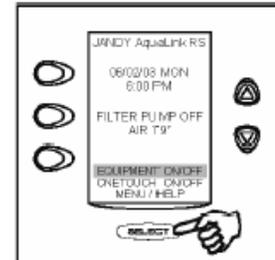
How to use Equipment On/Off:

Highlight EQUIPMENT ON/OFF and press SELECT. To highlight an item, use the UP/DOWN arrow keys. Use the SELECT button to turn the equipment on or off. Return to the main menu by using the BACK button, or use the UP/DOWN arrow keys to highlight another device.

How to use Solar Heat:

Highlight SOLAR HEAT and press SELECT. Use the SELECT button to turn SOLAR HEAT on or off.

If a solar sensor is not installed, EXTRA AUX replaces SOLAR HEAT and may be used to control an auxiliary (see "Auxiliary Equipment" to turn on or off EXTRAUX).



2. SET POOL TEMP. TO 85° OR HIGHER

How to set pool/spa temperatures:

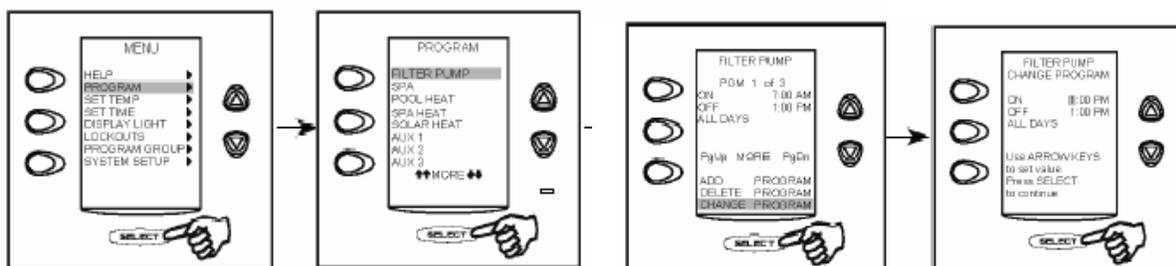
Highlight MENU/HELP and press SELECT, highlight SET TEMP and press SELECT. Inside the SET TEMP menu, use the UP/DOWN arrow keys to highlight either POOL (TEMP1) or SPA (TEMP2) and press SELECT. Use the UP/DOWN arrow keys to increase or decrease the temperature and press SELECT to apply.

3. PROGRAM FILTER PUMP FROM 10AM TO 5PM

How to set automatic on and off times:

Highlight MENU/HELP and press SELECT, highlight PROGRAM and press SELECT. While in the PROGRAM menu, highlight the piece of equipment and press SELECT, highlight ADD PROGRAM and press SELECT, enter the ON/OFF times and the day(s) by using the UP/DOWN arrow buttons to set values and the SELECT button to continue. When the days have been selected, the screen will change to show the piece of equipment selected, number of programs, on/off times, day(s) selected, a prompt to PAGE UP and PAGE DOWN to scroll between programs (if more than one), and the chance to add, delete, or change any of the settings to a program. Use the BACK button to go to the previous screen.

*** A COMMON 10K SENSOR WILL WORK FINE**



SOLAR OPERATIONS

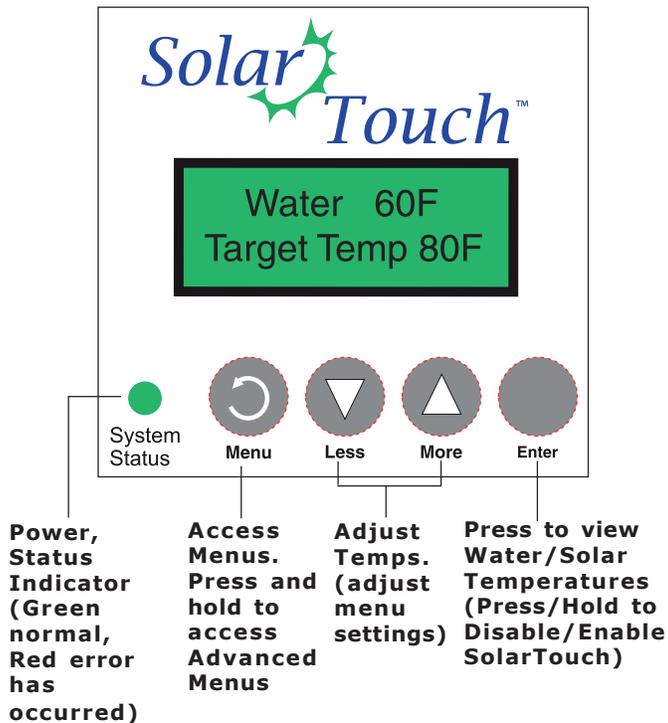
View Current Water and Solar Temperature: In normal operating mode the main screen displays the current WATER temperature and TARGET temperature. The display also indicates if Solar Heat is on or off. Press the **Enter button** to view the current Water and Solar temperatures.

Adjusting the Water/Solar Temperatures: To adjust the water target temperature, press the Less (Down arrow) button or More (Up arrow) 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). This sets the solar system to heat the water up to the target temperature.

Optimum Water Temperature: To achieve optimum water temperature, the solar roof sensor must be 6° higher than the water temperature. The pump must be ON for a few minutes for operation. When the roof sensor and the water temperature are within for example 2° (default), solar heat will switch off. This differential setting is adjustable in the "Diff to Stop" setting and is factory set at 2°. This setting sets how close to the temperature to switch off solar heat. Adjust the start and stop temperature differential settings to start and stop solar water heating. Adjusting the differential will effect the performance of your solar system. Refer to your solar service professional for the optimum setting.

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 "Cleaner Interrupt" terminal on the SolarTouch circuit board which will be always set to on.

SolarTouch Control Buttons



MAIN SCREEN DISPLAY

Normal Operating Mode

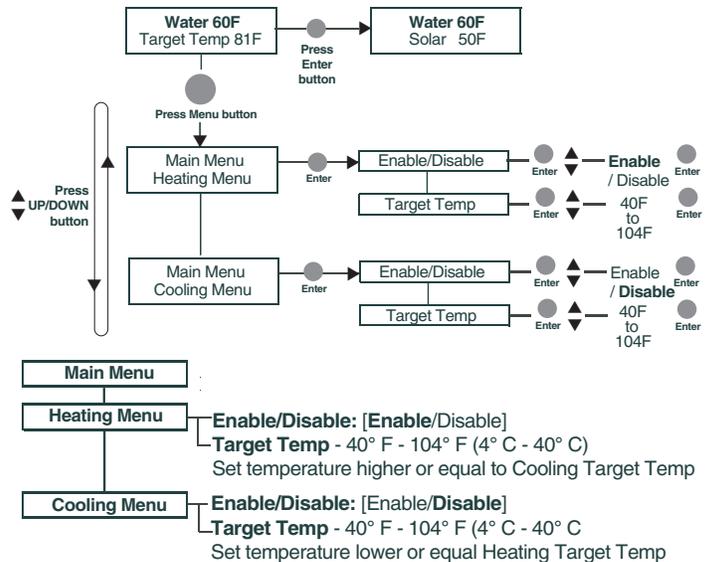
In normal operating mode the main screen displays the current WATER temperature, TARGET Temperature and if SOLAR HEAT, NOCTURNAL COOLING or FREEZE is ON or OFF. Press the Enter button to view the current water and solar temperatures. Degree units are displayed in either Fahrenheit or Celsius (see Advanced menu). Effective solar heat depends on the solar and water temperature and the start and stop differentials, then SolarTouch will rotate the positive 3-way valve and turn on the solar booster pump or increase the RPM's if an IntelliFlo® or IntelliPro® pump is present. This allows the water to flow to the solar collectors. The solar roof sensor must be 6° higher than the water temperature. The pump must be ON for a few minutes for operation. When the roof sensor and the water temperature are within 2° of each other, solar heat will switch off. The solar temperature start and stop differential settings are factory set at 6° and 2°. These differential settings are adjustable in the Advanced Menu settings. Refer to your solar service professional for the optimum setting.

Nocturnal Cooling: The SolarTouch solar controller provides automatic nocturnal (nighttime) cooling during night time hours for pools that overheat in hot climates. When enabled, SolarTouch circulates relatively warmer pool water to the collector panels when the collector temperature and the pool temperature is hotter than the high limit setting. This process cools the pool water over time. Circulation will stop when the collector temperature is 2° (default) less than the pool temperature or the pool temperature is cooler than the high limit setting. For more information.

Main Menu

Use the Main Menu for everyday solar operating features and the Advanced Menu for solar utility settings.

To access the Main Menu, press the **MENU button**. The Main Menu items are as follows:

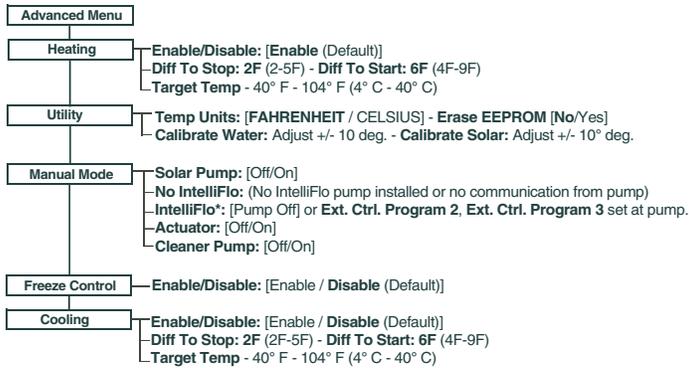


Using the Enter Button to Disable/Enable SolarTouch System

For service purposes, the SolarTouch solar system can disable Heating, Cooling and Freeze Protect. Press and hold the Enter button to disable the system. The display shows "SolarTouch Disabled". Press and hold the Enter button again to enable the SolarTouch system.

Advanced Menu

To access the Advanced Menu, press hold (3 seconds) and release the MENU button. The Advanced Menu items are as follows:



Note: (*) Only displays if IntelliFlo pump if connected and communicating with SolarTouch controller.

Note: (**) Program 2 is assigned for solar heating/cooling.

Program 3 is assigned for freeze protect.

HEATING

The SolarTouch system can heat the pool or spa by circulating water through the solar panels. Heating must be ENABLED in the Heating Menu. The initial factory default setting is "Enabled." The Start and Stop temperature differentials for solar water heating are adjustable. Factory temperature differential settings are: Start (default 6°) and Stop (default 2°). The Heating Menu settings are as follows:

Menu Item	Action
Enable/Disable	Enables or disables Heating.
Target Temp	The desired pool/spa temperature.
Diff To Start *	(4°F - 9°F) The minimum temperature difference to start Heating.
Diff To Stop *	(2°F - 5°F) The temperature difference at which Heating will stop.

(*) available in Advanced Menu

Heating will start when both Start and Stop differential conditions are met and the water temperature is below the Target Temp. When these conditions are satisfied heating is turned ON. Example: Water Temperature is 75°F; Target Temperature is 82°F. When the roof solar collectors temperature exceeds the water temperature by 6° (76°F), the solar valve rotates. If a solar booster pump is required, this pump will turn on. When using an energy efficient IntelliFlo/IntelliPro pump; the pump will ramp up to the RPM's assigned to Ext Ctrl Program 2. If pool is plumbed with a pressure cleaner pump (i.e. pool cleaning system), this pressure pump will turn off for five (5) minutes. This allows the air in the solar collectors to be evacuated from the system without damage to the pump. When Heating turns ON; the solar booster pump will turn ON and valve actuator will rotate. After five (5) minutes the Cleaner Pump Relay will turn on.

• IntelliFlo/IntelliPro pump connected and communicating with SolarTouch: Ext Ctrl Program 2 default speed is assigned for solar heating or cooling. For more about setting Ext Ctrl Program 2.

Heating will turn OFF under the following conditions:

• Pool or spa has met the target temperature. • Cloud cover appeared and the stop differentials turn the system off. • No more thermal energy available. • External time clock turned system off. **When Heating turns OFF:** • The valve actuator will rotate. • Solar booster pump will turn off. • If IntelliFlo pump is being used as either a filtration pump or a solar booster pump, RPM will change and resume to the timed program set speed (RPM). This could take up to one (1) minute. • IntelliFlo/IntelliPro pump connected and communicating with SolarTouch: The pump is not being controlled by SolarTouch at this time. • Pressure Cleaner pump will remain on only if the external time clock cycle is still on.

COOLING

The SolarTouch system can cool the pool/spa by circulating water through the solar panels when the solar controller is at a lower temperature than the pool/spa water (typically at night). Cooling must be enabled in the Cooling Menu. The default setting is "Disabled." To start and stop cooling, adjust the start (default 6°) and stop (default 2°) temperature differential settings.

Menu Item	Action
Enable/Disable	Enables or disables Cooling.
Target Temp	The desired pool/spa temperature.
Diff To Start *	(4°F - 9°F) The minimum temperature difference to start Cooling.
Diff To Stop *	(2°F - 5°F) The temperature difference at which Cooling will stop.

(*) available in Advanced Menu

Cooling turns ON; when the water temperature is above the target temperature then cooling will start and the valve actuator will rotate. After five minutes the Cleaner Pump Relay will turn on.

• **IntelliFlo/IntelliPro pump connected and communicating with SolarTouch:** Ext Ctrl Program 2 default speed is assigned for solar cooling (solar booster pump). For more about setting Ext Ctrl Program 3.

Cooling will turn OFF under the following conditions:

- Pool or spa has met the target temperature.
- No more thermal cooling energy available.
- External time clock turned system off.

When Cooling turns OFF:

- The valve actuator will rotate.
- Solar booster pump will turn off.
- If IntelliFlo pump is being used as either a filtration pump or a solar booster pump, RPM will change and resume to the timed program set speed (RPM). This could take up to one (1) minute.
- IntelliFlo/IntelliPro pump connected and communicating with SolarTouch: The pump is not being controlled by SolarTouch at this time.
- Pressure Cleaner pump will remain on only if the external time clock cycle is still on.

FREEZE CONTROL

When the water or solar sensor temperature falls to 40°F (4°C) or below, the pool/spa water is automatically circulated through the system to prevent freezing. If the solar sensor is placed at the solar collectors and when the temperature in the solar collector reaches 42°F (6°C) and above, freeze protection will stop. The initial default setting is "Disabled". Freeze Protect will continue until both temperatures reach at least 42°F (6°C). Note: Sensors have a +/- 1° variance. The Freeze Menu settings are as follows:

Menu Item	Action
Enabled/Disabled Protection.	Enables or disables Freeze
(Default is Disabled)	Enable/Disable Freeze Protect will start when either the water or solar temperature reaches 40°F (4°C) or below. Freeze Protect will continue until both temperatures reach at least 42°F (6°C).

When Freeze Protect is turned ON; the filter pump, solar booster pump or IntelliFlo/IntelliPro (Ext Ctrl Program 3) pump will turn ON and valve actuator will rotate. After five (5) minutes the Cleaner Pump Relay will turn on.

When Freeze Protect is turned OFF; the filter pump, solar booster pump or IntelliFlo/IntelliPro and Valve Actuator are turned off. If an IntelliFlo pump is connected and communicating with SolarTouch, RPM will change and resume to the timed program set speed (RPM). This could take up to one minute. The pump is not being controlled by SolarTouch at this time.

MANUAL MODE

The "MANUAL MODE" menu setting is accessed from the Advanced menu. Manual mode is useful for setup or service purposes. Manual mode menu settings will override existing SolarTouch system settings. After you exit the Manual mode menu all previous system settings will resume. **Note: While in the Manual mode menu, the system will stay in Manual Mode until you manually exit back to the Advanced Menu.** In Manual Mode the SolarTouch relays can be manually controlled. Manual Mode is only available in the Advanced Menu. Any changes made to settings while in Manual Mode will not affect previously save settings.

The Manual Mode Menu settings are as follows:

Menu Item	Action
Solar Booster Pump (single speed) IntelliFlo*	On / Off Pump Off/ Ext. Ctrl. Program 2 and Ext. Ctrl. Program 3 (set at pump).
Pressure Cleaner Pump Actuator	On / Off On / Off

(*) IntelliFlo will only be displayed if an IntelliFlo or IntelliPro is connected and communicating with the SolarTouch controller.

Manual Mode Overview

Each relay remains in the state it was in when entering Manual Mode until it is manually changed. While in manual mode, each relay will stay in any state set by the user as long as they stay in Manual Mode.

SolarTouch Relays: When exiting Manual Mode, all relays are turned off, and then set to the previously save settings.

Cleaning your pool: Turn SolarTouch OFF while manually vacuuming your pool/spa. Press and hold the Enter button for three (3) seconds to disable and re-enable the SolarTouch system.

RESET SYSTEM TO DEFAULT SETTINGS

Factory Default Settings (ERASE EEPROM)

The SolarTouch factory default setting can be reset from the Erase EEPROM menu. To access the Erase EEPROM menu: Press and hold the Menu button > Advanced Menu > Utility Menu > Erase EEPROM > Erase EEPROM? (No/Yes)

Function	Setting
Heating	Enabled
Cooling	Disabled
Freeze	Disabled
Start Diff.	6°F (-15.5 C°)
Stop Diff.	2°F (-16.6° C)
Target Heating	80°F (26° C)
Target Cooling	90°F (32° C)

DISABLE/ENABLE SYSTEM

Using the Enter Button to Disable/Enable SolarTouch System

For service purposes, the SolarTouch system can disable Heating, Cooling and Freeze Protect. Press and hold the Enter button to disable the system. The display shows "SolarTouch Disabled". Press and hold the **Enter button** again to enable the SolarTouch system.

GENERAL INFORMATION

SolarTouch Auxiliary Outputs (pool filter pump, booster pump, cleaner and time clock)

Pool Filter pump (Single Speed): The pool filter pump is controlled externally by the time clock, which ensures the filter pump is running before the booster pump switches on.

Solar Booster Pump: To increase water flow through the collector array, a high voltage relay for the solar booster pump can be used in addition to the main filter pump.

- Solar Booster Pump relay output on the SolarTouch controller circuit board is on whenever solar heat is available and off whenever solar heat is not available.
- Pressure Cleaner Booster pump is on whenever solar heat is unavailable.
- Pressure Cleaner Booster Pump: The cleaner is delayed for five minutes whenever solar heat, cooling or freeze turns on.

Pool Cleaner Protection: Recommended for use in pool systems which utilize a "booster pump" pool cleaner. This feature automatically delays, turns off the pool cleaner pump for five (5) minutes whenever solar is initiated. This will protect the pump from damage caused by air in the solar panels at system start-up.

High voltage relay output, as a solar booster pump control: The SolarTouch solar controller control panel can control a high voltage booster pump for solar in addition to the valve actuator. The high voltage relay (Single Pole Single Throw) contacts will turn on when solar, freeze or cooling is turned on.

High voltage relay output, as a time clock override: The SolarTouch solar controller can be used to override a single speed filter pump timer. This feature is important if re-circulate freeze protection or nocturnal cooling functions are being used. Also, this function can be used on systems that should operate whenever solar heat is available, regardless of the timer settings.

Low voltage output: Solar Valve Connector: The SolarTouch solar controller can control a single solar valve, which diverts the water, depending on the temperature differentials of the water and solar. There are two three pin valve actuator connectors provided on the SolarTouch circuit board. Select either connector to be used for the desired direction of the valve.

Time clock pool daily filtering override: When using a single speed pump, or an IntelliFlo or IntelliPro VS 3050 / 4x160 pump, for daily pool filtering schedules SolarTouch requires the pump to be connected to an external 24 hour time clock. In order to override the daily pool filtering schedules, a two-pole timer or two-pole relay for switching the pump on or off is required.

CAUTION! All of the electrical wiring methods and materials used to complete the electrical installation of the pool/spa 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.

INTELLIFLO/INTELLIPRO PUMP SETUP

IntelliFlo®/IntelliPro® Pumps recommended for use with SolarTouch Controller

- IntelliFlo/IntelliPro 4x160, VS-3050, Variable Speed
- Sta-Rite® Variable Speed

IntelliFlo Pumps not recommended for use with SolarTouch Controller

- IntelliFlo/IntelliPro VF 3.2 Kilowatts, Sta-Rite VS+SVRS, IntelliFlo VS+SVRS

Using IntelliFlo & IntelliPro Pumps with SolarTouch Solar Controller

The SolarTouch Controller communicates with the IntelliFlo/IntelliPro "Variable Speed" pumps via a two conductor RS-485 communication cable (P/N 350122) which is connected to the COM PORT on the SolarTouch controller circuit board. When using a Variable Speed pump with SolarTouch, set the desired speed at the pump from the Ext. Control Program 1-4 menu options. Ext. Control Program 2 is assign for solar heating and cooling. Ext. Control Program 3 is assign for freeze control. IntelliFlo and IntelliPro pumps also support 8 internal programmed schedules (time clocks) for daily filtering schedules.

IntelliFlo/IntelliPro 4x160/VS-3050 (Speed 2 and Speed 3) Overview

The IntelliFlo/IntelliPro 4x160/VS-3050 pumps do not have a built in programmable scheduler (time clock) function, External Controls or LCD display on the pump. SolarTouch assigns and controls the pump's Speed 2 button for solar heat/cooling and Speed 3 button for freeze protection. When the pump is used as the pool filter pump, the pump must be wired to an external time clock. When the time clock turns on the pump, Speed 1 is used for daily filtration. The LED indicator above the Speed 1 button must be illuminated before the time clock turns off. For the external time clock and the 4x160 pump to operate Speed 1 for daily filtration, please take note of the following:

- Time clock turns the pump on and off for daily use.
- Set Speed 1 (RPM) for everyday use and turn ON.
- Speed 1 must be running when time clock turns off to ensure operation.

Setting Pump Speeds (IntelliFlo/IntelliPro VS Pumps)

Setting the IntelliFlo Variable Speed (VS) pump speed for solar/cooling and freeze protect mode is setup in the pump's "Ext. Ctrl" menu. Note: The IntelliFlo pump must be in "Running Schedule" mode to communicate with the SolarTouch controller. Note: SolarTouch supports one IntelliFlo or IntelliPro pump assigned to pump ADDRESS 1.

Changing default speeds in Ext. Ctrl. Program 2 (1500 RPM) and Program 3 (2350) default speed:

1. From the pump's control panel, press the MENU button.
2. Press Up or Down arrow button until "EXTERNAL CONTROL" is displayed.
3. Press Select button.
4. Press the Up/Down arrow button to select Program 2*.
5. Enter the desired RPM for solar heat/cooling.
5. Press the Select button to change the current value.
6. To change the value, press the Left and Right arrows to select which digit to modify, then use the Up and Down arrows to change the selected digit.
7. When you are done, press the Enter button to save the changes. To cancel any changes, press the Escape button to exit edit mode without saving. Note: If Nocturnal cooling is required select Program 2* and follow step 4 -7.

(*) Program 2 (Assigned for solar heating or cooling only).

(**) Program 3 (Assigned for freeze protect mode only).

Note: Set freeze protection RPM's the same as solar heating to ensure proper flow.

Using IntelliFlo or IntelliPro pumps for daily filtering

When using an IntelliFlo or IntelliPro Variable Speed or IntelliFlo VF pump connected to SolarTouch, an external 24 hour time clock for daily pool filtering is not required. These pumps have built-in programs to schedule daily pool filtering.

TROUBLESHOOTING

Pool/Spa is not warm during sunny conditions

- Check Solar Heating Target temperature, it may be set too low?
- Check external time clock settings are set to the best sunshine hours of the day.
- Solar Actuator Valve may be turned OFF or in the wrong position?
- The pool filter may be dirty or clogged. Check the filter PSI and flow strength at pool return outlets. No bubbles should be seen at the pool return line.
- Pump RPM's/Flow with IntelliFlo pump may need to be increased.
- Possible pool/spa water heat loss during nighttime. Install a pool cover to prevent heat loss.
- Not enough solar collectors. Add an additional solar collector.

Bubbles in your pool/spa. Increase RPM's/Flow

- Check 3 way valve for positioning.
- Clean filter. Check filter pressure with solar off then on. If the pressure is high (30 pounds or more) and does not increase with solar on, the filter needs cleaning.
- Check pool skimmer and pump basket for debris.

SolarTouch valve actuator is not switching positions

- Check toggle switch at rear of actuator. Actuator should be in position 1 or 2.
- Check or replace fuse 1A5 (1.5 A) on SolarTouch controller circuit board if necessary.

ERROR MESSAGES

When the control panel LED indicator is red, a sensor error has occurred. The control panel LCD will display the error message if either or both of the sensors are shorted or an open circuit occurred. For sensor resistance data. If the water or solar temperature sensor is shorted or open, heating and cooling will stop and not restart until the condition is corrected. Note: The control panel menus can be accessed but will not affect the error condition. If one or both of the sensors is shorted or open and Freeze Protect is enabled, Freeze Protect will turn on.

The sensor error messages are as follows:

IF FREEZE MODE IS DISABLED	System Status	IF FREEZE MODE IS ENABLED
Water Sensor Shorted		Water S Shorted Freeze Protect
Solar Sensor Shorted		Solar S Shorted Freeze Protect
Both Sensors Shorted		Sensors Shorted Freeze Protect
Water Sensor Open		Water S Open Freeze Protect
Solar Sensor Open		Solar S Open Freeze Protect
Both Sensors Open		Sensors Open Freeze Protect

Note: For complete SolarTouch installation instructions please see the SolarTouch User's Guide (P/N 521591).

IntelliFlo & IntelliPro Pump manuals

For more information about IntelliFlo and IntelliPro pump operations, refer to:

www.pentairpool.com and www.staritepool.com

Customer Support: (800) 831- 7133 – Fax (800) 284-4151

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AQUA LOGIC



1. USE THE CONFIGURATION MENU TO ASSIGN SOLAR FUNCTION TO VALVE 3

Configuration Menu

The Aqua Logic MUST BE CONFIGURED before attempting to operate. Configuration information is entered at the keypad and “tells” the Aqua Logic what equipment is connected and how each should be controlled.

Accessing the Configuration Menu

Configuring the Aqua Logic requires that you navigate through the Configuration Menu and input various information.

To access the Configuration Menu

Configuration Menu-Locked	 Press repeatedly until “Configuration Menu” is displayed
	 Press BOTH buttons SIMULTANEOUSLY for 5 seconds to unlock
Configuration Menu-Unlocked	 Move to configuration menu items
Valve3 Config. + to view/change	 Push to access Valve3 options
	 Move to previous/next configuration menu item
Valve3 Name Waterfall	 Rotates between all available names
	 Move to next menu item
Valve3 Function Solar	 Rotates between Timeclock, Manual On/Off, Solar (default), Countdown and In-Floor Cleaner
	 Move to next menu item

Valve3 Name

The Aqua Logic allows you to assign any one of a number of names (eg “Cleaner Valve, Waterfall valve, Solar Valve, etc) to each of the valve output control function. This will make the Aqua Logic much more user friendly to the homeowner when they want to turn various valves on or off or program the timeclocks. A sheet of small name labels is included with the Aqua Logic main unit and each remote display/keypad so that the “Valve3” (and “Valve4”) pushbutton can be labeled the same as the name that you have assigned.

Solar Config. + to view/change	 Push to access solar options
	 Move to previous/next configuration menu
Solar Disabled	 Toggle between Enabled and Disabled (default) Solar
	 Move to next menu item
<i>if “Solar” is enabled</i> Solar-Extend Disabled	 Toggle between Enabled and Disabled (default) Solar Extend
	 Move to next menu item
<i>if “Solar” is enabled</i> Solar Priority Disabled	 Toggle between Enabled and Disabled (default) Solar Extend
	 Move to next menu item

Solar

If the solar control logic is “Enabled”, several additional steps must be taken to ensure proper operation of the solar system. If the solar is operated by a valve, then either the Valve3 or Valve4 output must be setup for solar logic (page 19). If the solar is operated by a pump, then either the AUX1 or AUX2 relay must be set up for solar logic (page 18). Also, the “solar” temperature sensor must be installed. This sensor is typically mounted near the collector array and is used to sense whether sufficient solar heat is available.

If solar is “Enabled”, the valve or solar pump relay will turn on when the water temperature is less than the desired temperature setting AND the solar sensor is hotter than the water. The desired temperature is in the “Settings Menu”. If applicable, the homeowner will be prompted to enter separate pool and spa desired temperature settings. Depending on the position of the pool/spa suction valve, the proper temperature setting will be used.

Solar Extend

If “Enabled”, the filter extend logic keeps the filter pump running beyond the normal turn-off time if solar heat is still available. When solar heat is no longer available, both the solar valve/pump and filter pump will turn off simultaneously. Solar extend will NOT cause the filter pump to turn on, it will only delay the turn off time when solar is operating.

Solar Priority

If both “Solar Control” and “Heater Control” are enabled, the Solar Priority feature will keep the conventional heater off whenever solar heat is available. This provides the most cost effective way of heating the pool. When solar heat is not available, the conventional heater will operate normally.

2. SET FILTER PUMP TO RUN FROM 10AM TO 5PM.

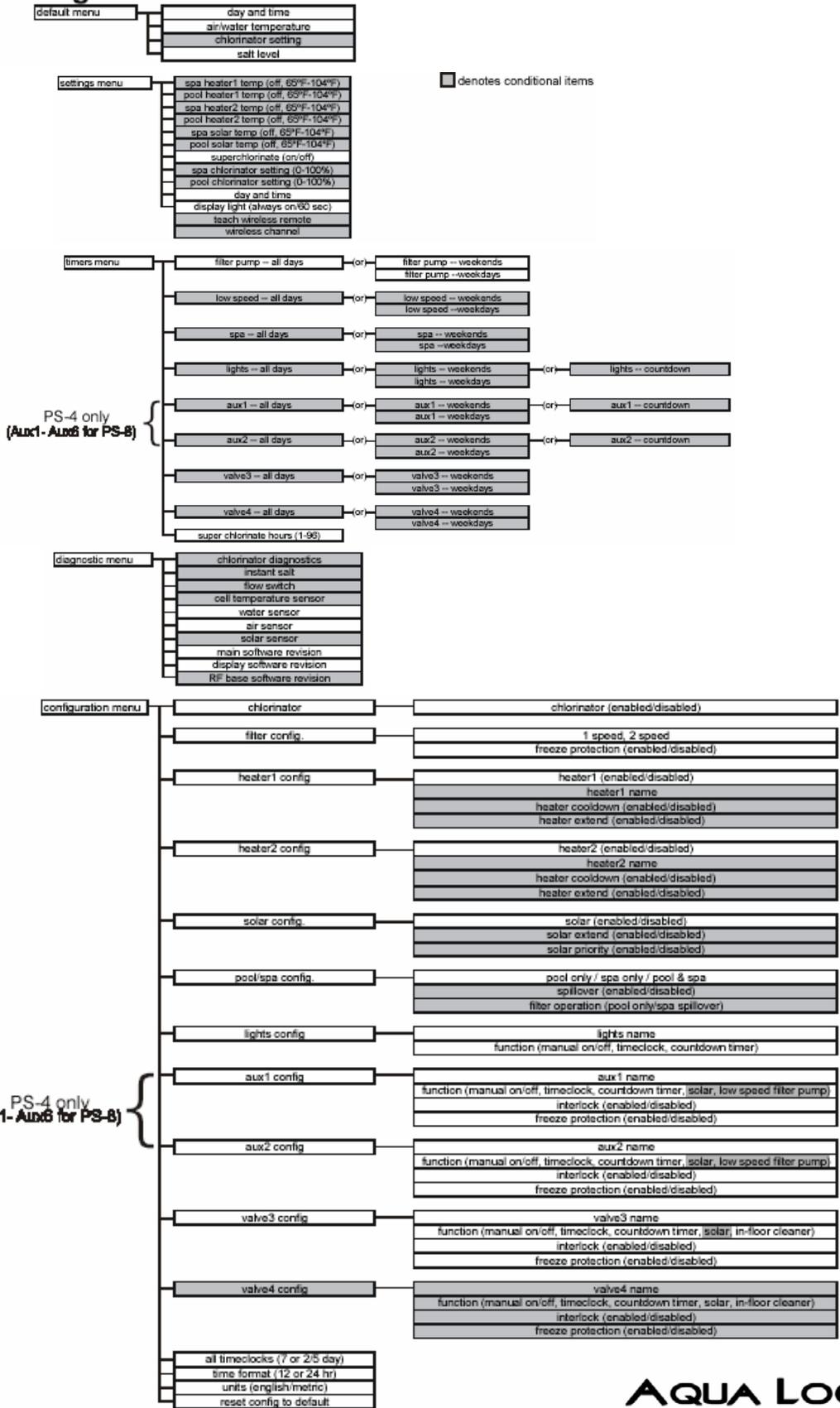
3. SET SOLAR TEMP TO 85° OR HIGHER.

There are 4 steps to programming any function:

1.  Press the “MENU” button to get to the desired menu. Multiple pushes of the button will rotate through all 5 menus and return to the starting point.
2.  Press either key to scroll through the various items in the selected menu. Multiple pushes of the button will rotate through all menu items and return to the starting point. Only menu items that are applicable to your pool will appear. (Example: if you don't have a spa, then no spa related menu items will appear).
3.  Once a menu item has been selected above, the current setting/selection will appear (flashing) on the display. Use the “+” and/or “-” keys to change this selection. Sometimes “+” and “-” will adjust a value up or down (example: heater temperature setting or timeclock on/off time) or, in other cases the “+” and “-” may toggle between 2 options (example: turning superchlorination ON or OFF).
4.   After you have adjusted the item to the desired value, simply move on to the next menu item to “lock in” your new setting. The Aqua Logic memory will maintain the setting, even if power is removed for an extended period.

* A COMMON 10K SENSOR WILL WORK FINE

Programming Menu Flowchart



OG-100 ICC-SRCC™ CERTIFIED SOLAR COLLECTOR # 10002066



**SOLAR RATING
& CERTIFICATION
CORPORATION™**

Supplier:
Suntrek Industries, Inc.
5 Holland, Building 215
Irvine, CA 92618 USA
www.suntreksolar.com

Reference Standard:
ICC 901/SRCC Standard 100-2015

Brand: Suntrek ST
Model: Suntrek ST
Collector Type: Unglazed Flat Plate
Certification #: 10002066
Original Certification: April 19, 2018
Renewal Expiration Date:
Certifications must be renewed annually.

This solar collector has been evaluated and certified by the Solar Rating & Certification Corporation™ (ICC-SRCC™), an ISO/IEC 17065 accredited and EPA recognized Certification Body, in accordance with the SRCC OG-100 Certification Program, as defined in SRCC OG-100, Operating Guidelines and Minimum Standards for Certifying Solar Collectors. This award of certification is subject to all terms and conditions of the current OG-100 Program Agreement and the documents incorporated therein by reference. This document must be reproduced in its entirety.

COLLECTOR THERMAL PERFORMANCE RATINGS (Collector Tested per ISO 9806:2013)							
Kilowatt-hours (thermal) Per m ² Per Day				Thousands of Btu Per ft ² Per Day			
Climate -> Category (Ti-Ta)	High Radiation (6.3 kWh/m ² .day)	Medium Radiation (4.7 kWh/m ² .day)	Low Radiation (3.1 kWh/m ² .day)	Climate -> Category (Ti-Ta)	High Radiation (2000 Btu/ft ² .day)	Medium Radiation (1500 Btu/ft ² .day)	Low Radiation (1000 Btu/ft ² .day)
A (-5 °C)	6.3	5.0	3.6	A (-9 °F)	2.0	1.6	1.2
B (5 °C)	3.2	1.9	0.7	B (9 °F)	1.0	0.6	0.2
C (20 °C)	0.2	0.0	0.0	C (36 °F)	0.1	0.0	0.0
D (50 °C)	0.0	0.0	0.0	D (90 °F)	0.0	0.0	0.0

A- Pool Heating (Warm Climate) B- Pool Heating (Cool Climate) C- Water Heating (Warm Climate) D- Space & Water Heating (Cool Climate) E- Commercial Hot Water & Cooling

TECHNICAL RESULTS				Tested in accordance with: ISO 9806:2013			
ISO Efficiency Equation [NOTE: Based on gross area and (P)=Ti-Ta]							
SI UNITS:		Wind speed (u) in m/s, Temperature (Ti – Ta) in °C, Radiation (G") in W/m ² $\eta = (0.909)(1 - 0.0460u) - (11.9716 + 14.2950u)(P/G")$					
IP UNITS:		Wind speed (u) in mph, Temperature (Ti – Ta) in °F, Radiation (G") in Btu/hr-ft ² $\eta = (0.909)(1 - 0.0206u) - (2.1084 + 1.1254u)(P/G")$					
Incident Angle Modifier							
θ	10 ⁰	20 ⁰	30 ⁰	40 ⁰	50 ⁰	60 ⁰	70 ⁰
K_r	1.00	1.02	1.04	1.07	1.08	1.03	0.57
Impact Safety Rating: 10							

COLLECTOR SPECIFICATIONS					
Gross Area:	2.310 m ²	24.86 ft ²	Dry Weight:	4.0 kg	8.8 lb
Net Aperture Area:	2.310 m ²	24.86 ft ²	Fluid Capacity:	7.8 liter	2.1 gal
REMARKS: All sizes of this collector model are certified					

Shawn Martin

Technical Director

Print Date: April 19, 2018 Page 1 of 2

Please verify certification is active on the SRCC website www.solar-rating.org.
© Solar Rating & Certification Corporation™ (ICC-SRCC) 3060 Saturn Street, Suite 100, Brea, CA 92821





SOLAR RATING
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CORPORATION

ICC-SRCC OG-100 Certification Label

The collectors listed in this certification must display the label below.
The certification label must be permanently affixed to each collector in accordance with SRCC OG-100 program requirements.

	This product certified by the Solar Rating & Certification Corporation™ www.Solar-Rating.org
	ICC-SRCC Certification Number: 10002066
	High Solar Radiation Climate Rating in Category A
	14.54 kWh/day 49.61 kBtu/day

