

SV SERIES SPA CONTROLS

SV2-VH, SV3-VH, SV4-VH



This document highlights many of the advanced and beneficial features the SV Series Spa Controls offer as standard on all models. To the best of our knowledge the vast majority of the features we have listed below would be exclusive to our range of controls.

POWERSMART FEATURES

- Smart Variable Heater
- Multi-Phase Terminal Block
- Dynamic Thermal Tuning
- Current Limit Function
- Load Limit Function
- Smart Filtration
- PowerSAVE Software
- Heater Operating Modes
- Integrated Heat Pump with Automatic Heating or Cooling
 - o Heat Pump with Element Boost
 - o Self-Diagnostics & Auto Defrost

ADVANCED FEATURES

- One Touch Sanitise
- Automatic Daily Sanitise
- Colorshadz Advanced LED Lighting
- ComfortSET Air Blower Control
- Optical Water Sensing
- Bi-directional Water Flow
- Dedicated 230V Power Outlets
- Over Temp/Freeze Protection
- Programmable Sleep Timers
- Adjustable Load Time Outs
- EEPROM Settings Memory
- Real Time Clock Capacitor Backup
- Self-Diagnostics
- SmartLink WiFi Remote Access
- SmartStream Bluetooth Stereo & WiFi
- SV-Link Diagnostic Application



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POWERSMART FEATURES



SMART VARIABLE HEATER

Utilising the latest in smart technology every SV controller features a true variable heater. The SV variable heater automatically adjusts its output power level (kW) to suit the available power supply whilst considering the operating current of ancillary devices. Sophisticated on board current sensing provides real time measurement of ancillary (pumps/blower) currents, allowing the SV heater to automatically increase or decrease its heating output (kW) to take advantage of the remaining available current. There is no longer any need for traditional load shedding or low capacity element sizes. The SV variable heater technology allows us to take advantage of a high output element (5.25kW) for fast heat recovery when spa is not in use, and provides maximum heating input while spa is being used by utilising the remaining current available when pumps/blowers are operating, rather than load shedding where the heater is forced off as competitor spa controllers do. As the SpaNET variable heater is automatic there is no confusing or time consuming installation or setup required. Every controller automatically adjusts the heater size depending on how many pumps/blower are operating and how much residual current is available. This feature enables the spa to maintain heat while being used and offers faster heat recovery times after use.



MULTI PHASE READY

Every SV controller is supplied with a multi-phase terminal block capable of connecting to a single, dual or three phase power supply. When shipped the controller is configured for a single phase power connection, however by simply removing one or two linking wires at the terminal block the controller is ready for connection to two or three phase power supplies. This prevents the need to stock differing models of controllers to suit different power supplies, rather the one model covers every possible wiring configuration. This Multi-Phase ability is particularly relevant for many European countries which only offer low current per phase.



DYNAMIC THERMAL TUNING

The SV series feature a dynamic thermostat point which will adapt and tune (change) itself to match the thermal properties of the spa pool in its environment, day to day and season to season. This reduces demand heat cycling and therefore significantly lowers operating costs whilst maintaining a consistent water temperature. Competitor spa controls have fixed thermostat points, which depending on temperature sensor location and environment, will lead to unnecessary cycling of the filter pump and heater when regulating water temperature. Dynamic thermal tuning also reduces the unnecessary wear of filtration pumps and relays by minimising the number of times per day the filtration pump and heater are switched on and off to regulate the water temperature. This feature results in substantial energy savings while maintaining the spa water to the desired set temperature.

POWERSMART FEATURES



CURRENT LIMIT FUNCTION

As part of the SV Variable Heater technology the SV controller software offers a programmable setting which defines the maximum current the SV controller can draw when operating the heater. The SV controller will automatically ensure the heater does not exceed the current limit setting. This feature is particularly helpful where the available power supply is limited. OEM spa manufacturers and spa resellers can be confident the one control system will work on various power supplies. There is no need to worry about changing spa packs to one with a smaller heater. If when a new spa is installed the available power is less than expected the user simply needs to adjust the current limit setting within the software and the heater will automatically govern its power draw to be within the selected current limit.



LOAD LIMIT FUNCTION

Extending from the current limit feature SV controllers also host a load limit function. Load limit allows the spa user to limit the number of loads (pumps and blower) that can be operated at one time. Whilst the variable heater current draw can be automatically adjusted and governed, the current draw of a standard jet pump or blower when operating cannot be controlled. So if a new spa is installed and the available power supply is less than the sum total current draw of all pumps and blower when running, the spa user can use the load limit function to restrict the number of loads that are allowed to operate at the same time. This feature is particularly useful with single or dual zone swim spas that are fitted with a large number of pumps whose sum total current draw may often exceed the available power at a residential property.



SMART FILTRATION

Unlike traditional spa controls that treat filtration and heating separately, the SV series recognises that the spa is actually filtering whilst it is heating. The total daily runtime (in hours) for filtration can be programmed as well as how often filtration blocks occur. Each time the filtration pump runs for a filtration block, heating or for manual spa use the SV control keeps a log of the filter pump's runtime for that day. If the spa comes on to heat during the day, the future filtration blocks will be automatically reduced so that the spa control at least achieves the daily filtration runtime that has been programmed but ideally no more. Competitor spa controls run fixed amounts of filtration and do not consider pump runtime whilst heating, so if the spa comes on to heat the runtime of the filtration pump is increased therefore increasing energy consumption and daily operating cost. This is avoided with the SV Series smart filtration. This feature results in significant energy savings while still maintaining the required filtration period.

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POWERSAVE MODE

Every SV controller features PowerSAVE software to take advantage of smart energy meters and off peak energy tariffs. There are two setting choices, LOW (off peak filtration only), and HIGH (off peak filtration and heating). The spa owner selects the desired level of power save (LOW or HIGH) and then programs in the start and end time of the peak power period. This way the SV series spa control knows not to consume power during that peak period, and carries out its filtration and/or heating during the off peak periods. In addition, if the HIGH setting is used the spa control will compensate for temperature lost during the peak power period. This feature allows the user to set the spa to run only during the lowest cost (off peak) times provided by your energy provider. The price for electricity can vary from between 8 cents (off peak) to 40 cents (peak) per kWh. Setting your spa to only run during off peak results in huge energy savings. Of course any time you wish to use your spa, simply use as normal and upon exiting your spa it will revert back to only operating during the off peak time.



OPERATING MODES

SV controllers feature different operating modes (NORMAL, AWAY and WEEK) that effect demand heating and filtration behaviour. Via a simple user menu, the spa owner can quickly and easily change the heating mode to which ever mode suits them best. NORMAL mode is the factory default and allows the SV controller to heat on demand. AWAY mode disables heating (regardless of set temperature) and reduces filtration to minimal levels for periods when the spa owner is away. WEEK mode is intended for when the spa is only used on weekends. During the week days (Monday – Thursday) heating is disabled and filtration is minimised, however on Friday morning the spa will wake and return the water to set temperature and operate under normal demand heating and filtration behaviour Friday thru Sunday so that the spa is ready and available for weekend use. For those who only use the spa on a weekend or those that have spas in holiday homes this feature is an easy way to dramatically reduce the operating cost.



HEAT PUMP INTERFACE



SpaNET SV series heat pumps are the world's first to feature a dedicated interface for seamless integration to a SpaNET SV series spa control. The heat pump and spa control have been designed to work in synergy resulting in a single spa control system that operates smoothly, reliably and efficiently. The SV heat pump interface revolutionises the way spas operate in that we can now offer both heating and cooling, to heat or cool the spa water (from 10°C to 40°C) and maintain that selected temperature, all conveniently controlled via the SV controller spa-side keypad.

POWERSMART FEATURES



HEAT PUMP INTERFACE continued

Air sourced heat pumps are the most energy efficient method of heating and maintaining water temperature in a spa pool. They consume up to 75% less energy than a conventional immersion heating element, and are around 50% more efficient compared to gas, resulting in an eco-friendly and amazingly cost efficient appliance. With ever increasing regulation and restriction on power consuming appliances such as spa pools the need for integrated heat pumps to spas has never been more important. With a heat pump, by utilising refrigeration, only a compressor needs to be powered to generate the heating (or cooling). Therefore, only a small amount of input power is consumed to generate a large amount of heating output.

Not only are heat pumps energy efficient they also allow high heating output on low amperage power supplies. For example, a 5.5kw heat pump will provide around 5.5kw of heating power yet only consume about 1.1kW of electrical power (that relates to 4.8A @ 230V), compared to a 5.5kw electrical element which would draw 5.5kw of electrical power (23.9A @ 230V).

The Spa Net range of heat pumps are powered (plug-in) and controlled by the SV series control system. The SV series control system ensures SV series heat pumps perform the necessary shut down sequence as well as performing defrost cycles (if required) which is vital to protecting the heat pump components. The addition of a heat pump to your spa ensures a further saving of up to 75% of your spa heating cost. If a spa is not fitted with a heat pump the added cost to maintain heat with a normal immersion element over 2-3 years will outweigh the cost of the heat pump. If you don't fit a heat pump you will, over 2-3 years, have spent the heat pump cost on electricity anyway, so the heat pump is essentially free! Add the heat pump option to the many exclusive PowerSMART features of the SpaNET SV series control system and you have a spa that will operate for a small fraction of the cost of competitor controlled spas.



HEAT PUMP WITH ELEMENT BOOST

Another advantage of the SV series integrated heat pump is the benefit of the electric element boost function for rapid heat recovery. Whilst this feature is automatically defaulted OFF when a SV heat pump is connected to a SV series spa control, the spa owner has the ability to alter a user adjustable menu option to run both the heat pump and the spa control's internal electric element for rapid heat recovery if desired. This feature is particularly helpful if a spa has been emptied and refilled and needs to be reheated in a very short space of time.

Competitor spa controls are not designed to integrate with a heat pump and only understand heating. Therefore, if a generic heat pump is installed to a spa with a non SpaNET spa control, the heating element must be physically disconnected from the heater terminals inside the control itself, potentially voiding warranty and product approvals. This also means that non SpaNET spa controls cannot provide the necessary shut down sequence and component protection required by a heat pump, and cannot offer an element boost function.

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POWERSMART FEATURES



HEAT PUMP SELF DIAGNOSTICS & AUTO DEFROST

The SV heat pump interface also enables the SV spa controller to completely control all heat pump functions and components. Its real time monitoring ensures the fan, valves, defrost elements and compressor are all switched on and off in the correct sequence required for reliable heat pump operation and long term life expectancy. Low ambient temperatures and defrost needs are taken into account and dealt with appropriately, unlike other generic heat pump installs where the heat pump will be operating and the spa controller will simply cut power to it - the result is that the heat pump components are not switched in the correct sequence resulting in dramatic degradation of the components through temperature and pressure spikes, leading to short expected life. Defrost cycles are cut short or missed completely and any accumulated run data that the heat pump has recorded is lost when the power is cut off unexpectedly.

ADVANCED FEATURES



ONE-TOUCH SANITISE

The One-Touch Sanitise button activates a 20 minute water sanitisation cycle that immediately engages the ozone/uv and filtration pump and operates all pumps and the blower in sequence to purge plumbing lines and refresh water quality after spa use. Upon exiting the spa a simple button press activates this sanitiser cycle, refreshing the water when needed most. Competitor spa manufacturers and resellers often suggest that simply pressing a pump button upon exiting the spa will achieve the same benefit but that is entirely incorrect.

Pressing a pump button places a spa control into a manual use mode where the ozone/uv will be turned off. In fact this action will actually delay the ozone from turning back on because the manual use time out period will need to expire before the ozone and filtration will re-engage. Additionally the accessory pumps and blower lines will not be sequentially purged. Whereas the One-Touch Sanitise button advises the spa control that manual spa use has finished, it immediately engages the ozone and filtration (when needed the most to clean and refresh the water quality) and sequentially purges the accessory jet pumps and blower lines to refresh the water quality to ensure the water is clean, crisp and ready for the next spa use. This feature is particularly helpful when adding chemicals to the spa ensuring the chemicals are dissolved and dispersed through the entire body of spa water properly.

ADVANCED FEATURES



AUTO DAILY SANITISE

A ten minute automatic daily sanitising cycle that operates all pumps and the blower in sequence to purge plumbing lines while filtering and running the ozone/uv. This feature ensures no stagnant water becomes trapped in accessory pumps and blower lines during days when the spa is not being used.



COLORSHADZ LED LIGHTING

Advanced Colourshadz lighting software provides the user complete flexibility and user friendly control over the choice of colour mixing mode, effect transition speed and brightness adjustment. A single dedicated topside panel button switches the light on/off in the last mode of operation. Additionally, an easy to navigate menu allows selection of five different colour modes to provide complete lighting control. Light modes include:

- White: fixed white light
- User colour: manual selection from 30 possible colours
- Step: step change between colours
- Fade: smooth fade between colours
- Party: disco light pattern

In addition, there are five light effect speed & brightness adjustments to truly enable lighting control perfection. Once mode, speed and brightness are selected they are remembered for future on/off use.



COMFORT SET AIR BLOWER

SV controllers have the ability to turn a single speed blower into a variable speed. All of the required hardware is included within the spa control. This ComfortSET air system allows the user to manually adjust the air massage to their desired level of comfort with complete control from the topside panel, or enjoy a mix of all speeds in ramping mode. The selected speed setting is remembered in non-volatile memory for future on/off use.

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ADVANCED FEATURES



OPTICAL WATER SENSING

Non-contact optical water sensing is used by all SV control models providing a robust and trouble free water detection system. Optical water sensing eliminates the common problems associated with pressure or flow switches. No adjustments are required for different pump configurations and water flow rates. No problems with start-up surges and no adjustments needed as filters wear.



BI-DIRECTIONAL WATER FLOW

The SV can be plumbed for water flow through the heater tube in either direction on either the suction or discharge line, with or without an optional heat pump. The intelligent software adapts to the water flow direction to ensure optimum performance and therefore removes any plumbing headaches associated with single direction flow heaters.



DEDICATED 230V POWER SOCKETS

Up to two dedicated 230V AMP power outlets are provided to facilitate quick and easy power connection of accessory products such as AV equipment, stereos or heat pumps.



OVERTEMP PROTECTION

Comprehensive over temperature protection incorporates both software monitoring and fail safe electromechanical thermal cut outs to provide superior temperature management and protection from excessive over temperature conditions.



FREEZE PROTECTION

SV controllers automatically activate a comprehensive warming cycle including the multiple purging of all plumbing lines if the water temperature falls to 4°C. The inbuilt freeze protection will override any programmed sleep timers or power save timers to prevent the spa from freezing in extreme cold environments.

ADVANCED FEATURES



PROGRAMMABLE SLEEP TIMERS

Sleep timers are a very handy feature that enables the user to stop all spa activity during certain times of the day or night. While the controller is sleeping NO automatic heating or filtration maintenance will occur, however the spa can still be operated by manual use without the need to adjust sleep time settings. There are two individual sleep timers that can be programmed, each of which can operate on one or more specified days. This enables the user to program different sleep times for different days (ie. weekdays vs weekends), as well as custom settings on a particular day/time where the user may want the spa silenced or to prevent heating during certain times.



ADJUSTABLE LOAD TIME OUTS

All accessory loads (ie. jet pumps and/or air blower) automatically turn off after a time out period has elapsed. Fifteen (15) minutes later the lights will switch off and the pool will return to automatic mode. This setting allows the length of the time out period to be adjusted from 10 to 60 minutes.



EEPROM SETTINGS MEMORY

All controller settings (i.e. filtration, sleep timers, power save timers etc) are stored in non-volatile memory (EEPROM) so that they are remembered in times of power outages or when the power is turned off. This feature ensures there is no reprogramming of settings required when mains power is restored.



REAL TIME CLOCK CAPACITOR BACKUP

All SV controllers incorporate capacitor power back up for the real time clock allowing the time to be kept for at least 36 hours when mains power is disrupted or switched off to the spa pool. There are no batteries to worry about and there will be no time of day loss or clock adjustments required due to mains power cuts or disruptions.

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ADVANCED FEATURES



SELF DIAGNOSTICS AND DESCRIPTIVE ERROR CODES

Extensive self-diagnostics enable easy fault finding if problems are experienced. Error codes and descriptive text are scrolled across the topside panel for easy identification of faults. In addition, fault codes are flashed on the controller's heart beat LED. To make diagnostics even easier all SV controllers feature an extensive diagnostic menu which enables the user to view onboard diagnostics and historical details about the spa controller. Information such as the highest and lowest mains voltage recorded, real time current draw or voltage readings, software version number, heater and internal controller temperatures, start date, pump configuration and many other settings can be easily accessed and read in the diagnostics menu.

ACCESSORIES



smartlink Wifi Controller

The SV SmartLINK WiFi module and SpaLINK app allow you to connect to and take control of your spa remotely from any location at any time. The SmartLINK module connects to any model SV controller and then uses your home WiFi network to facilitate communication between the app server and the spa. The SpaLINK app becomes a wireless remote for your spa enabling complete control of all settings and accessories including pumps, blowers and LED Lights.



smartstream Sound System

The SV SmartSTREAM module is an all in one, purpose built, high definition sound system for your spa with Bluetooth® connectivity that also includes a WiFi module for remote access control of your spa via the SpaLINK smart device app.



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ACCESSORIES



The innovative SmartTouch touch panel advances spa operation into the touch screen era and eliminates the need for mechanical buttons and switches. The SmartTouch is very simple to use, replicating smart phone style icons and menu operation. Settings have never been easier to access and adjust and scrolling activity status advises the spa owner what the spa is doing at all times.



GLOBAL REMOTE TECHNICAL SUPPORT

If a SV Series controller is fitted with the SmartLINK or SmartSTREAM WiFi module and the end user activates the support pin within the SpaLINK app, SpaNET or the spa reseller can securely login to the spa to access or adjust every possible software setting, see historical and real-time data including mains voltages, check a vast array of diagnostic information and even data log the spa. This allows us to provide remote technical support and assistance across the globe without the need for a technician to visit the spa.



SV-LINK DIAGNOSTICS

A Windows based application for connection of a PC to a SV controller either via direct cable or wifi. The feature is extremely useful for system configuration, testing, diagnostics and demonstration. At spa exhibitions or shows or throughout your reseller's showrooms a PC can be easily connected to a SV controller to demonstrate real time power usage and estimated running costs. This system has proven to be a very effective way to show the customer firsthand the benefits of purchasing an optional heat pump.

Additional features include:

- Saving a spa software configuration to a file that can be downloaded to subsequent spas during repeat production
- Saving a snap shot of all data to a file that can be sent to the call centre for assistance or diagnosis
- Real time display of all operating variables (power, current, voltage, variables, EEPROM contents etc)
- Automated production line testing
- Data logging
- Firmware updating

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SPECIFICATIONS

POWER

	SV2-VH (10A-20A)	SV3-VH (15A-45A)	SV4-VH (32A-60A)
Input Voltage (1 Phase)	230-240V AC	230-240V AC	230-240V AC
Input Voltage (3 Phase)	400-415V AC	400-415V AC	400-415V AC
Hertz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
Max Total Current	20A	45A	60A
Max Current Per Phase	16A	25A	25A

HEATER

Element Size	3kW Variable	5.5kW Variable	5.5kW Variable
Water Sensor	Optical	Optical	Optical
In-heater Temp Sensor	Yes	Yes	Yes
In-pool Temp Sensor	Optional	Optional	Optional
Maximum Temperature	41°C	41°C	41°C

CONTROLLER

Dimensions (with Couplings)	544x309x90mm	544x309x90mm	544x309x90mm
Weight (without mains lead)	5KG	5KG	5KG
Enclosure Rating	IPx4	IPx4	IPx4
Operating Temperature	0°C - 45°C	0°C - 45°C	0°C - 45°C
Storage Temperature	-25°C to 85°C	-25°C to 85°C	-25°C to 85°C

LOW VOLTAGE CONNECTIONS

Touch Pad Support	1 Keypad	2 Keypads	2 Keypads
In-Pool Temperature Sensor Port	Yes	Yes	Yes
WiFi Expansion Port	Yes	Yes	Yes
Heat Pump Expansion Port	Yes	Yes	Yes
Light Sockets	1	2	2

OUTPUT SOCKETS

Circulation Pump	Adj (1-24hrs)	Adj (1-24hrs)	Adj (1-24hrs)
Sanitiser (ozone/uv)	Yes	Yes	Yes
Air Blower	Vari Spd / Ramp	Vari Spd / Ramp	Vari Spd / Ramp
Pump 1	1 spd / 2 spd	1 spd / 2 spd	1 spd / 2 spd
Pump 2	-	1spd*	1spd*
Pump 3	-	1spd	1 spd / 2 spd
Pump 4	-	-	1spd^
Mains power outlet 1 (230V)	Yes	Yes	Yes
Mains power outlet 2 (230V)	-	Yes	Yes

* Outlet only available if Pump 1 = 1 spd

^ Outlet only available if Pump 3 = 1 spd