



SSIC2-0119
45W30-WG0720

**SPACEPAK SYSTEM
INTERFACE CONTROL**

**INSTALLATION,
OPERATION &
MAINTENANCE MANUAL**

FIRMWARE VERSION 1.6



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Section 1: Introduction

Unit Description

The SpacePak System Interface Control (SSIC) takes inputs from up to five Air Handlers and sends control signals to the chiller, chiller reversing valve, boiler, and system pump based on installed options. Air Handlers receive their calls from their respective thermostats and output a heating or cooling call to the SSIC. Based on these demands the SSIC determines how to operate the system.

Standard Equipment

- SSIC Control Box
- Outdoor Air Temperature Sensor (OAT)
- Buffer Tank Temperature Sensor

Optional Equipment

- Buffer Tank
- Bypass Valves

Operation

The base system has two modes of operation; Auto and Master.

- **Auto:** The first zone to call is treated as the master zone and the system mode will reflect the type of call (heat/cool) coming from that zone. Any calls from other zones of the opposing type will be ignored until all calls of the original type are satisfied.
- **Master:** The user can define a master zone that will always determine the system mode if it is calling. When the master zone is not calling, calls are treated as in Auto mode.

Any zone that is calling will be shown on the controller's LCD, showing the corresponding zone number and call type. If the call matches the current system mode there will be a capital H or C next to the zone number. If not, the letter will be lowercase.

S	y	s	t	e	m		M	O	D	E	:	H	E	A	T								
Z	O	N	E	:	1	H		2	c			5	H										
O	U	T	P	U	T	S	:	B															
O	A	:		4	6		°	F				T	A	N	K	:	1	0	5		°	F	

Table 1: Example screen shot

Buffer Tank

An available option to the SpacePak Control is buffer tank control that can provide hot or cold water to the zones faster than a system without the buffer tank. Depending on the outside air temperature, the controller maintains a water temperature in the tank that can provide fast cooling or heating to any of the system's zones. An available bypass valve option can also be installed for even more control on days when zone demands do not match the predicted temperature demands based on the outside temperatures.

Buffer Tank Operation

If the buffer tank is installed and enabled in the firmware, it is treated as the master zone for the system. Any calls for hot or cold water by the buffer tank are serviced before opposite calls from the zones. Buffer tank demand is determined by:

Outside Air Temperature	System Mode
$\leq 50^{\circ}\text{F}$	Heating
5	Cooling
$50^{\circ}\text{F} > \text{OAT} > 65^{\circ}\text{F}$	Idle

Table 2: Temperatures shown are default values and are adjustable

If the system mode is IDLE, any calls from zones are serviced on a first come first served basis.

When in either BUFFER HEATING or BUFFER COOLING mode, the control will continue to call until the water temperature in the tank reaches the setpoint for that mode. Once the temperature in the buffer tank has reached its setpoint, the buffer mode switches to SATISFIED and the temperature is allowed to change by an amount determined by the DIFF (Differential) settings (default 10° for heating, 6° for cooling), after which point the heating/cooling will again work to satisfy the buffer demand.

There are 2 potential sources for heating depending on how each system is set up (boiler or chiller) so there are 2 different set points for heating (160°F and 120°F). Because chillers generally cannot get water as hot as a boiler that setpoint is lower. Either setpoint can be adjusted in the buffer tank setpoints menu as shown later on in this document.

System Mode	Buffer Tank Temperature	Buffer Mode
Heating	≤160°F	Heating
	>160°F	Satisfied
Cooling	≥48°F	Cooling
	<48°F	Satisfied

Table 3: Temperatures shown are default boiler values and are adjustable

Buffer Bypass

The buffer tank may be bypassed with the installation of two bypass valves. If conditions allow the buffer tank demand to remain IDLE there is no need to maintain a temperature in the tank. Calls would be serviced directly from the chiller or boiler instead, saving energy by not having to heat up the water in the tank.

Buffer Override

Buffer override allows the buffer tank demand to be overridden if the right conditions are met. If the buffer tank's temperature demand has been satisfied and there is a call for the opposite mode from the system and there are no other zone calls, the buffer tank can be overridden so the zone may be satisfied directly from the sources. For the buffer override feature to work the system must have 2 bypass valves installed (shown in plumbing diagram) and the Buffer Bypass and Buffer Override must be enabled on the controller.

Note: If bypass valves are not installed and enabled the system will never service calls from zones that oppose the buffer tank's calls even if the buffer tank is satisfied. For example, if the OAT is below 50°F (default) any cool calls from zones will not be serviced.

ThinWall Control

If a SpacePak ThinWall unit is installed in a zone, the control needs to be configured to accommodate it. The ThinWall fan coil unit has one control output and uses the OAT to predict if the zone needs heating or cooling. Each zone with a ThinWall unit must have ThinWall control enabled from the ThinWall menu on the SSIC to properly set the heating or cooling mode as necessary. In addition to an enable for each zone, the user can set the OAT switchover, hysteresis, and a control timeout for systems with a mix of ThinWall and non-ThinWall units.

ThinWall inputs must be connected to the W terminal of the appropriate zone to operate. The control will not recognize anything connected to Y if ThinWall is enabled for that zone.

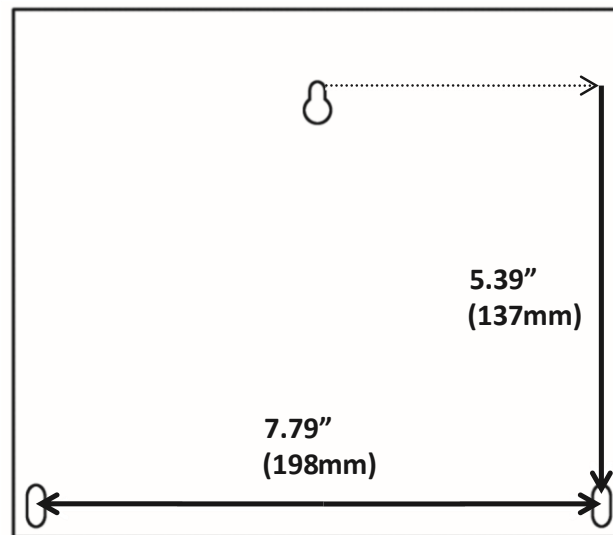
Section 2: Installation

Mounting

SSIC Mount the control box in a dry indoor location that has easy wiring access from the air handler(s), and the outside chiller.

There are three hole locations for mounting the SSIC (see below).

1. Use a #8 wood screw and corresponding wall anchor to mount the SSIC. Secure wood screw into anchor leaving 3/16" (5mm) between screw head and the wall. Hook the unit and slide into place.
2. Remove lower front panel. Use two #5 wood screws in the bottom hole locations to secure the unit to the wall.



Wiring



Electrical shock hazard - Disconnect all electrical power before wiring the unit.

1. Remove the lower access panel to gain access to the wire terminals.
2. Pass the wires from the Air Handlers, Pump, Chiller, etc. through the grommets at the bottom of the unit and plug into their corresponding connector (see below or for more detailed information see the wire diagram on page 6)
3. When all wiring between the air handlers, pumps, and chillers is completed, connect the power.
4. When connecting 115V, connect the line (hot) wire to L; connect the neutral wire to N, and connect the ground wire (bare copper or green) to G.

Outdoor Air Temperature Sensor

- Avoid areas subject to excessive vibration, electrical noise, direct sunlight, or the effects of radiant heat.
- Keep electrical wiring as short as possible to minimize temperature error.

Buffer Tank Temperature Sensor

1. Coat sensing bulb liberally with heat transfer paste.
2. Insert sensor into well of the buffer tank.
3. Slide plastic locknut over the lead and hand tighten only onto the threads of the bulb well.
4. Route lead back to the chiller and connect to terminals X+Y (as indicated in the chiller IOM).

SSIC Terminal Blocks

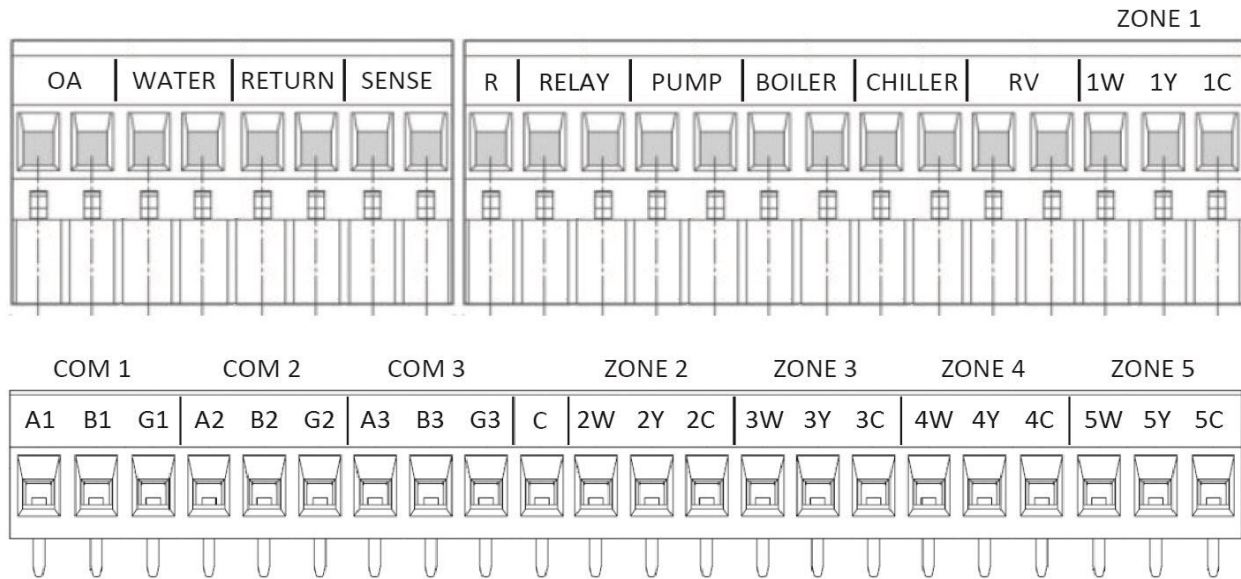


Figure 1: Wiring Connectors

OA	Outdoor Air Temperature Sensor (included)	ZONE X	Connection from Zone X (1-5) Air Handler
WATER	Buffer Tank Temperature Sensor (included)	XW	24VAC Heating Signal from Air Handler
RETURN	Return Temperature Sensor (N/A*)	XY	24VAC Cooling Signal from Air Handler
SENSE	Connections for Future Models (N/A*)	XC	Ground from Air Handler
R	24VAC	COM X	Connections for Future Models (N/A*)
RELAY	Dry Contact Relay to activate Bypass Valves	C	24VAC Return
PUMP	Dry Contact Relay to activate the Pump		
BOILER	Dry Contact Relay to activate the Boiler		
CHILLER	Dry Contact Relay to activate the Chiller's enable		
RV	Dry Contact Relay to activate Chiller's Reversing Valve		

* For future models, non-applicable at this time.

Wiring diagram

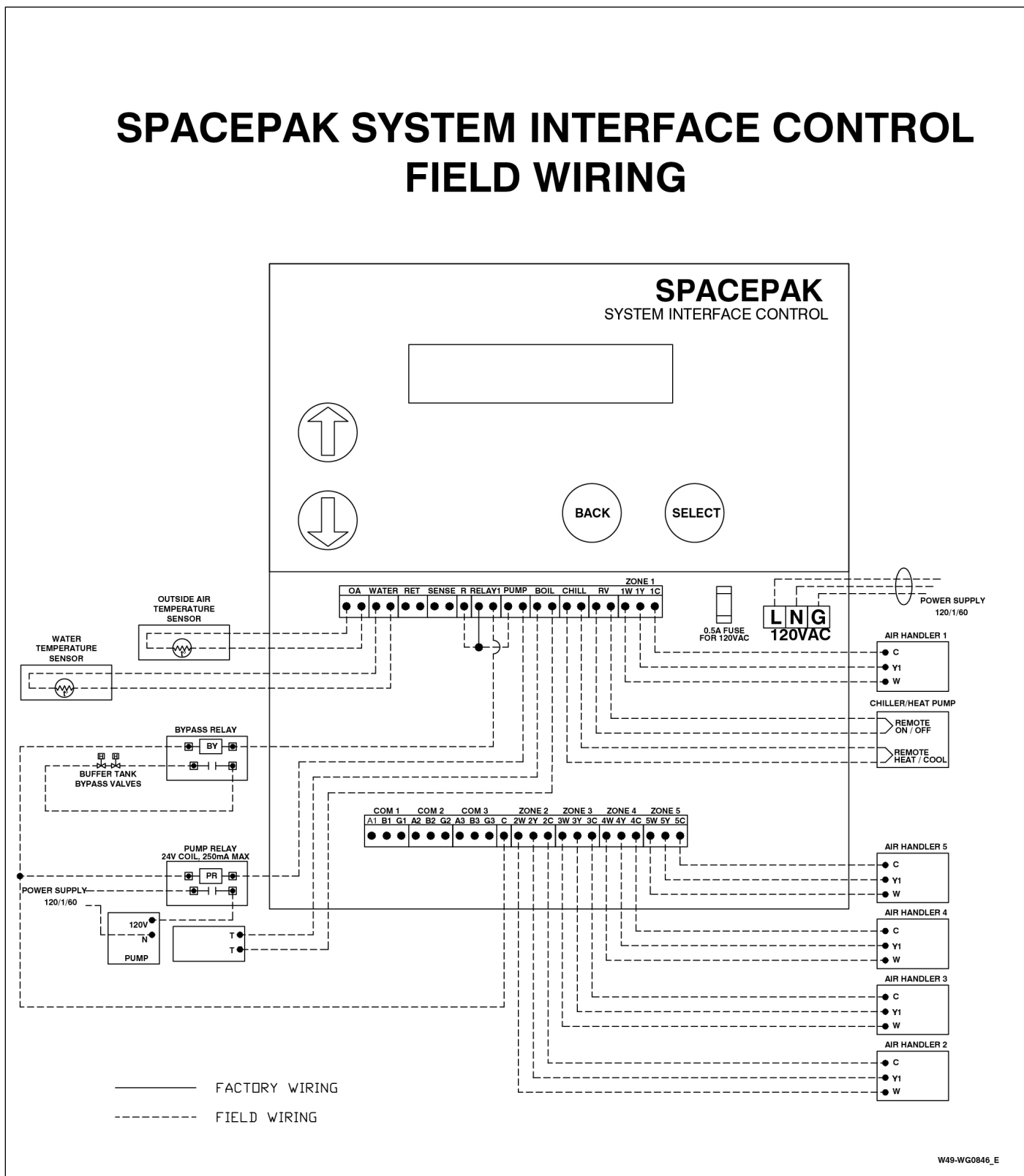


Figure 2: Example system wiring diagram

Buffer Tank Bypass

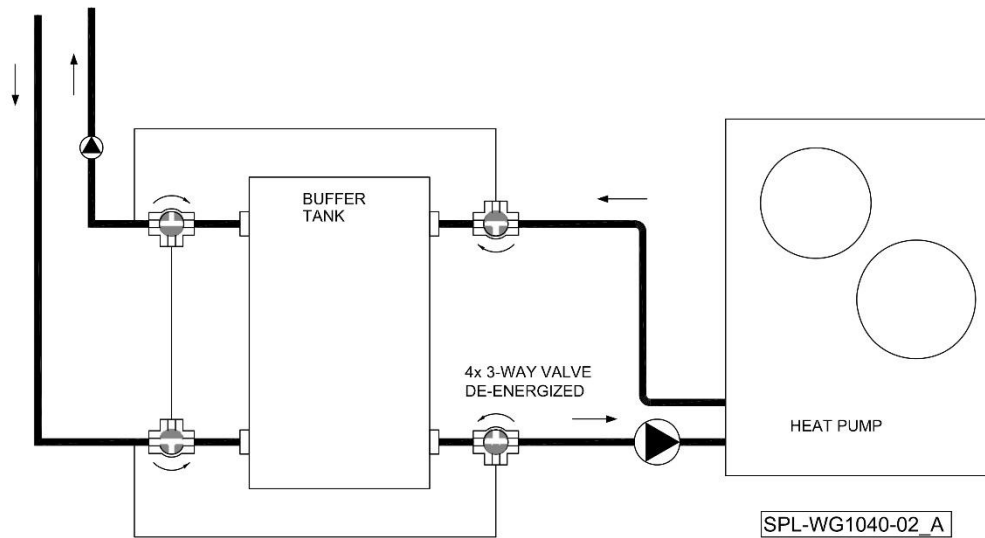
Buffer Tank Bypass is a function available within the SSIC that allows a hydronic system to store thermal energy in the form of heated or chilled water. The Heat Pump simultaneously reverses cycle to satisfy a temporary demand that is the opposite of the prevailing operating mode (i.e., a cooling call when the system is operating in heating mode, or a heating call when the system is operating in cooling mode)

There three basic configurations, each with its own advantages. The installer is free to employ any configuration that best fits the installation.

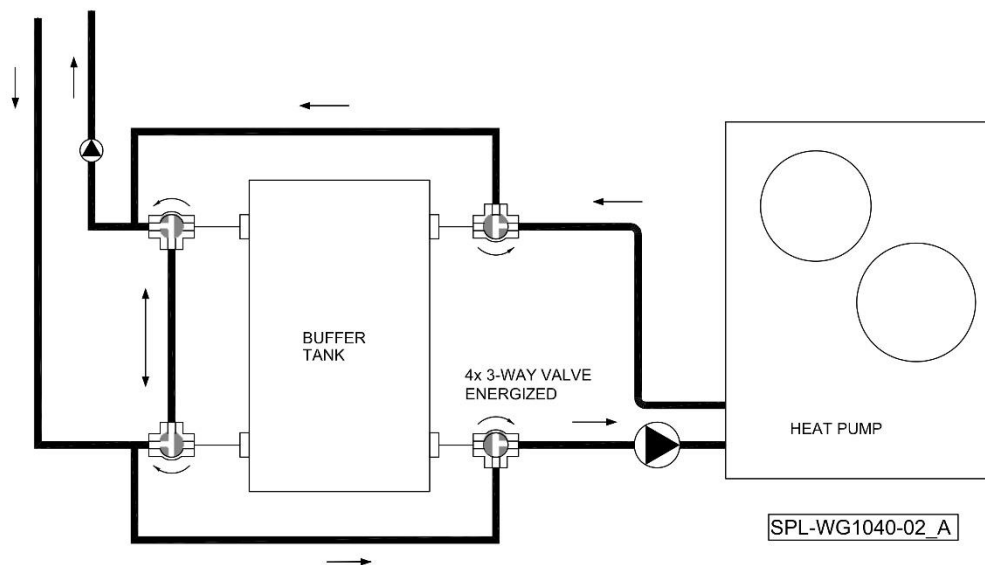
Four Pipe Buffer Tank

This is the most common buffer tank installation. The primary loop is routed through one side of the buffer tank, the secondary loop through the other. When the Bypass feature is engage, each of the four three-way valves transfers, isolating the buffer tank and creating two runaround paths linking the Heat Pump directly to the emitters.

BUFFER TANK BYPASS PIPING, FOUR PIPE CONFIGURATION



CHARGING



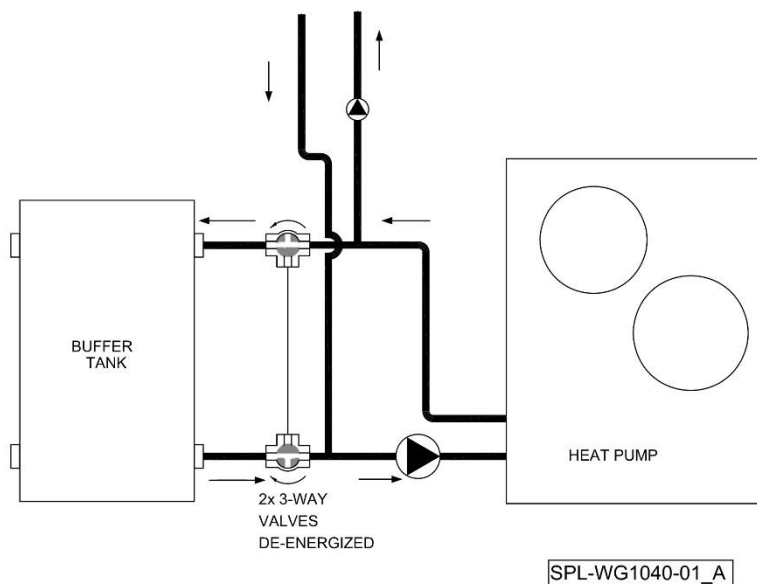
BYPASS

Figure 3: Four Pipe Buffer Tank

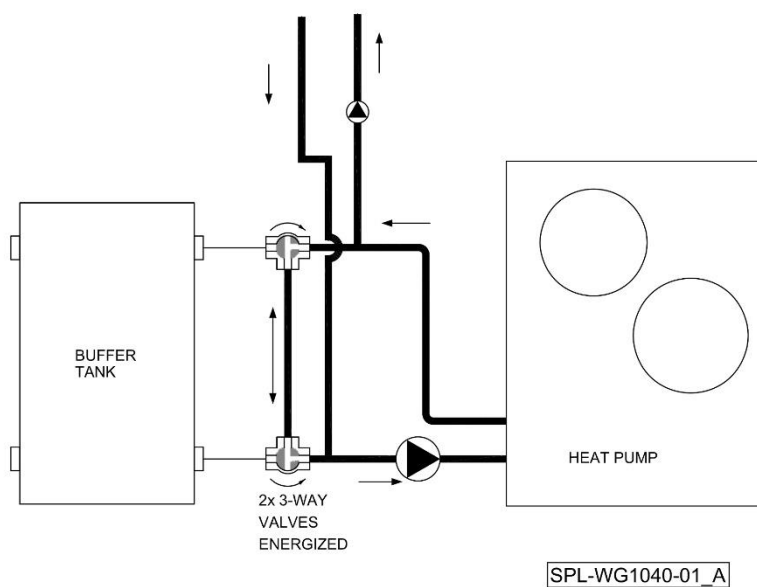
Two Pipe Buffer Tank

The choice between a two-pipe or four-pipe plumbing configuration is based upon operation during normal conditions. Once the bypass is engaged, they operate essentially the same. The advantage of two-pipe in bypass application is that it requires only two, rather than four valves.

BUFFER TANK BYPASS PIPING, TWO PIPE CONFIGURATION



CHARGING



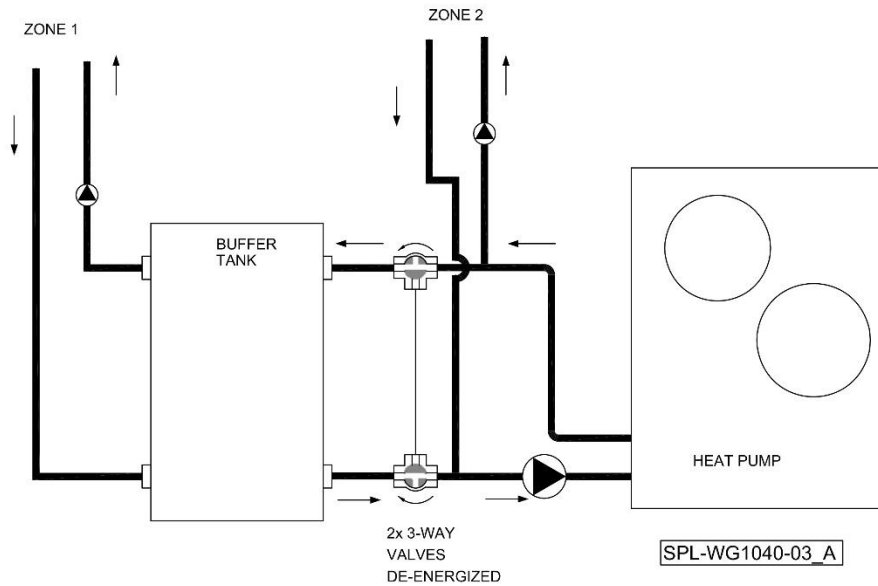
BYPASS

Figure 4: Two Pipe Buffer Tank

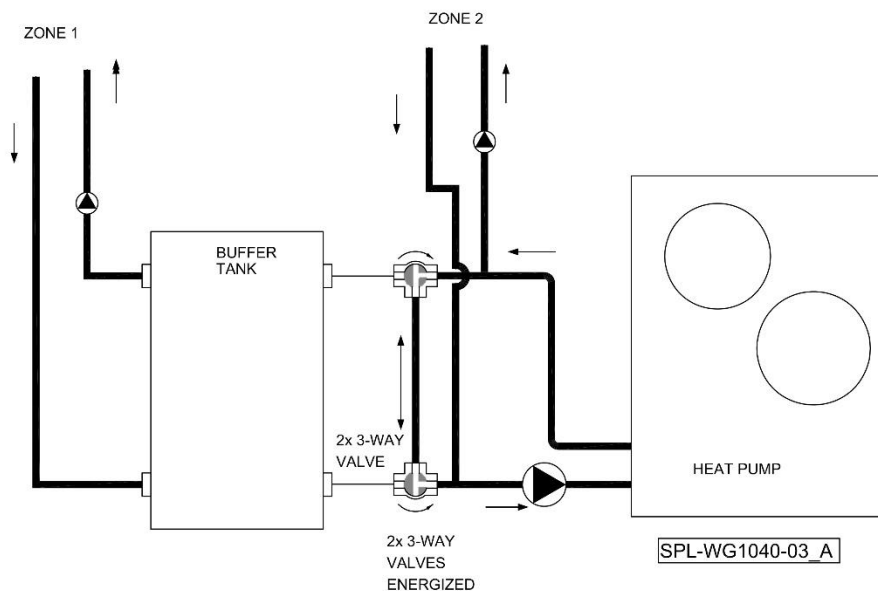
Hybrid Piped Buffer Tank

This configuration is unique in that it is the only arrangement that can deliver heating and cooling simultaneously (for a limited duration). The zone (Zone 1 as shown) that is plumbed directly to the Buffer Tank will always provide conditioning consistent with the prevailing mode (heating or cooling). The capacity of this zone during bypass operation is limited to the amount of energy stored within the buffer tank, as it is isolated from the heat pump and not replenished. Zone 2 is isolated from the buffer tank, and Zone 1, so it can deliver heating or cooling operation whenever called for. The bypass is accomplished by two three-way valves.

BUFFER TANK BYPASS PIPING, HYBRID CONFIGURATION



CHARGING



BYPASS

Figure 5: Hybrid Piped Buffer Tank

Section 3: Operation

Control Logic (Firmware V1.5)

The following sections outline how the SSIC can be configured using the menus that appear on its display. Menus are navigated using the UP, DOWN, BACK, and SELECT keys on the keypad.

The user navigates to the setting they want to change by using the UP and DOWN keys. Pressing SELECT will move the cursor in front of the selectable options. Pressing the UP and DOWN keys will change the state from disabled to enabled or vice versa. Pressing the SELECT key saves the setting and pressing BACK will revert to its original setting.

Main Screen – No Buffer Tank

This is the display screen that shows the status of the system.

S	Y	S	T	E	M		M	O	D	E	:	H	E	A	T				
Z	O	N	E	:	1	H		2	c		5	H							
O	U	T	P	U	T	S	:	B											
O	A	:		4	6	°	F			T	A	N	K	:	N	/	A		

Figure 6: Main screen when the buffer tank option is disabled. Zone 2's call is being ignored by the system.

SYSTEM MODE: The general operation of the entire system. If the system is sending no outputs, then the system mode will display 'IDLE'. If the system is cooling then the system mode will display 'COOL', and if it is heating, then 'HEAT' will be displayed.

ZONE CALLS: All zone calls are displayed here with their corresponding call type. Calls that match the current system mode show as a capital letter, conflicting calls show a lower case letter.

OUTPUTS: The systems outputs to the boiler, chiller, and pump are here. Each output is represented by the following:

- B:** Boiler
- C:** Chiller
- RV:** Chiller Reversing Valve
- P:** Pump
- BY:** Bypass valves

TEMPERATURES: Shows the outside air and water temperatures. The forth line will also show if there is a sensor error detected.

Main Screen – Buffer Tank

When the buffer tank is enabled, the main screen also shows the buffer mode and the tank's temperature.

S	Y	S	:	H	E	A	T			T	A	N	K	:	H	E	A	T	
Z	O	N	E	:	1	H		2	c		5	H							
O	U	T	P	U	T	S	:	B											
O	A	:		4	6	°	F			T	A	N	K	:	1	0	5	°	F

Figure 7: Main screen when the buffer tank is enabled

Settings Menu

The following sections will explain in detail each of the configuration settings.

→	M	a	s	t	e	r		Z	o	n	e								
	B	o	i	l	e	r	/	C	h	i	l	l	e	r		O	P		
	B	u	f	f	e	r		T	a	n	k								
	T	h	i	n		W	a	l	l										

Figure 8: Settings Page 1

→	S	y	s	t	e	m		S	e	t	t	i	n	g	s				
	T	e	m	p	e	r	a	t	u	r	e		U	n	i	t	s		
	R	e	s	t	o	r	e		D	e	f	a	u	l	t	s			
	L	o	a	d		F	i	r	m	w	a	r	e						

Figure 9: Settings Page 2

Master Zone

Setting the master zone determines what zone call takes priority.

Auto: First zone to call governs the mode of the system (heating or cooling). It stays in this mode until all zones making the same call have been satisfied.

Zones 1 – 5: The chosen zone acts as the master and governs the mode of the system. If the master zone is not calling then the other zones can have their calls satisfied.

The master zone is only settable by the user if the buffer tank is disabled. See the description in the introduction for more details.

M	a	s	t	e	r		Z	o	n	e	:		Z	o	n	e		1	

Figure 10: Master Zone

Boiler/Chiller OP

This menu allows the user to configure the system's heating operation.

```

→Chiller Heat Mode:
   Chiller Only
Chiller RV: 0 (Cool)

```

Figure 11: Boiler/Chiller OP Menu

Chiller Only Mode

The boiler is not used and only the chiller is used to supply heating and cooling. The chiller's heating and cooling operation is governed by how the RV is energized which is user configured.

Required Sensors: None

Boiler Only Mode

The chiller is never used for heating, and only the boiler supplies the heat. The chiller's cooling outputs are based on the RV configuration.

Required Sensors: None

Boiler Help

Boiler Help uses both the Boiler and the Chiller to provide heat. When heat is called for the chiller kicks in to provide the hot water. If the water temperature has not risen to the low temperature setpoint (80°F default) within the defined time period (2 minutes default), the boiler is turned on to assist and remains on until the heat call is satisfied.

Adjust Mode Settings									
Low Temp :					80 ° F				
Time :					2 mins				

Figure 12: Boiler Help settings

Required Sensors: Buffer

Outdoor Air (OA) Switch Over

OA switchover will change the heat source between the chiller and boiler depending on the outside air temperature. If the OAT is below or equal to the setpoint (40°F default) the boiler will provide the hot water, above the setpoint the chiller will provide the heat.

Required Sensors: OA

Set	OA	Switchover			
Temperature					
			→ 40 ° F		

Figure 13: OA Switchover Settings

Separate Boiler

If the system has a boiler feeding directly into the serviced loop and bypassing a buffer tank the Separate Boiler option can be enabled. The system will maintain a buffer tank as explained in the buffer tank sections of this document using the chiller as the source until the OAT drops to or below the setpoint (40°F default). Once below that SP the boiler services any calls for heat, while the chiller would still service any calls for cool. Zones are serviced on a first come first served basis. Buffer override and buffer bypass are disabled until the OAT rises above the SP. When the OAT is below the setpoint and there is a call for heat, the system pump is disabled regardless of the pump setting.

[illegible]

Figure 14: Separate Boiler Settings

Required Sensors: OA

Chiller RV

The user can change the chiller's reversing valve to be energized in either Cooling (O) or Heating (B) operation depending on system requirements.

Buffer Tank

All buffer tank options can be found here, including enables, disables, and temperature settings.

When the buffer tank option is disabled, no other menu options appear on the buffer tank menu.

[illegible]

Figure 15: Buffer disabled

Once the buffer option has been enabled, the Bypass option is shown. Default is enabled. In this case the buffer tank can be used but there are no bypass or override functions available. The buffer tank is always treated as the master and conflicting calls are never serviced.

→	B	u	f	f	e	r	:	E	n	a	b	l	e	d						
	B	y	p	a	s	s	:	D	i	s	a	b	l	e	d					
	O	v	e	r	r	i	d	e	:	D	i	s	a	b	l	e	d			
	T	a	n	k	S	e	t	p	o	i	n	t	s							

Figure 16: Buffer enabled, bypass disabled (Default)

If the bypass is enabled but override is disabled, the energy saving features of the buffer tank bypass will function but

the buffer tank is always treated as the master and conflicting calls are never serviced.

→	B	u	f	f	e	r	:	E	n	a	b	l	e	d			
	B	y	p	a	s	s	:	E	n	a	b	l	e	d			
	O	v	e	r	r	i	d	e	:	D	i	s	a	b	l	e	d
	T	a	n	k	S	e	t	p	o	i	n	t	s				

Figure 17: Buffer and bypass enabled, override disabled

Enabling the bypass and the override opens all options for the buffer tank.

→	B	u	f	f	e	r	:	E	n	a	b	l	e	d			
	B	y	p	a	s	s	:	E	n	a	b	l	e	d			
	O	v	e	r	r	i	d	e	:	E	n	a	b	l	e	d	
	T	a	n	k	S	e	t	p	o	i	n	t	s				

Figure 18: All buffer tank options enabled

Using a buffer tank requires the use of a buffer tank sensor and OA sensor at all times regardless of Boiler/Chiller OP settings.

Tank Setpoints

Temperature setpoints for the buffer tank can be found here. Pressing the UP or DOWN arrow off the page will scroll to the next page.

→	H	e	a	t	O	A	S	P	:					5	0	°	F	
	H	e	a	t	(	B	)	S	P	:				1	6	0	°	F
	H	e	a	t	(	C	)	S	P	:				1	2	0	°	F
	H	e	a	t	D	i	f	f	:					1	0	°	F	

Figure 19: Tank setpoints page 1. Default values shown.

→	C	o	o	l	O	A	S	P	:					6	5	°	F
	C	o	o	l	T	a	n	k	S	P	:			4	8	°	F
	C	o	o	l	D	i	f	f	:					6		°	F

Figure 20: Tank setpoints page 2. Default values shown.

ThinWall

ThinWall unit settings can be found here. Enable any zone that has a ThinWall fan coil unit. Set the desired OAT switchover temperature and the hysteresis. Then set the timer.

→	Z	o	n	e	1	:	D	i	s	a	b	l	e	d			
	Z	o	n	e	2	:	D	i	s	a	b	l	e	d			
	Z	o	n	e	3	:	D	i	s	a	b	l	e	d			
	Z	o	n	e	4	:	D	i	s	a	b	l	e	d			

→	Z	o	n	e	5	:	D	i	s	a	b	l	e	d			
	T	W	S	e	t	p	o	i	n	t	:				5	0	° F
	T	W	+	/	-									5	° F		
	T	W	T	i	m	e	r							1	5	m i n	

When the ThinWall unit's internal thermostat sends a call to the SSIC, the SSIC checks the OAT. If the OAT is above the setpoint, the system will call for cool; below the setpoint, it will call for heat. Once the OAT reaches the setpoint +/- the hysteresis setpoint, the call will switch to the opposite type.

Example using default settings: OAT is 40° when the zone calls. Heat is provided. OAT rises to 55°, system switches to cooling.

The timer is provided for installations that have 1 or more zones with a ThinWall unit and 1 or more standard fan control units. If all zones are idle and a TW zone calls first, the TW zone will set the system mode. If a standard zone calls for the opposite mode while the TW zone is actively calling, the timer will start. The TW mode will continue to be serviced until the timer expires. The system then switches over to service the standard zone. Normal operation resumes from this point.

The timer can be disabled by setting the value to 0 minutes. If all zones are TW zones, this setting can be ignored.

System Settings

The user can enable or disable any of the following settings outlined below.

→	P	u	m	p	:	D	i	s	a	b	l	e	d				
	H	e	a	t	:	E	n	a	b	l	e	d					
	C	o	o	l	:	E	n	a	b	l	e	d					

Figure 21: System settings. Defaults shown.

Pump: Disable or enable the system pump. If enabled, the system pump will activate alongside any chiller or boiler outputs.

Heat: Disable or enable heating operations. When disabled, all heating calls are ignored and no heating outputs are generated. When enabled, all heating operations function as normal.

Cool: Disable or enable cooling operations. When disabled, all cooling calls are ignored and no cooling outputs are generated. When enabled, all cooling operations function as normal.

Temperature Units

Select the units in which the temperature is displayed. Pressing the SELECT key will move the cursor in front the units. The user can use the UP or DOWN keys to select either Fahrenheit or Celsius. Pressing SELECT will save the setting, and pressing BACK will restore it to its previous value.

→	T	e	m	p	U	n	i	t	s	:	°	F				
---	---	---	---	---	---	---	---	---	---	---	---	---	--	--	--	--

Figure 22: Temperature unit selection

Restore Defaults

This setting allows the user to restore all settings to the factory defaults.

R	E	S	T	O	R	E		D	E	F	A	U	L	T	S	?	N	O	

Figure 23: Restore defaults menu

Load Firmware

This setting walks the user through the process of updating new firmware into the control via a USB drive. USB drives must contain a directory called “firmware” and have the .hex file in this directory.

1. The user will be prompted to insert their USB into the USB terminal.

I	N	S	E	R	T		U	S	B		D	R	I	V	E				
S	E	L	E	C	T		T	O		C	O	N	T	I	N	U	E		

Figure 24: Update firmware first screen.

2. Once the USB drive is in place and the user hits the SELECT key, a brief “PLEASE WAIT...” response will be displayed. After a brief wait, the user will be prompted to select the firmware .hex file they wish to load. Use the UP and DOWN keys to navigate to the file, the SELECT key to select the file, and the BACK key to abort.

F	I	L	E	N	A	M	E		.	H	E	X							
B	A	C	K		S	E	L		U	P	/	D	O	W	N				

Figure 25: Update firmware second screen.

If no USB drive is inserted the following will be displayed:

N	O		D	R	I	V	E												
B	A	C	K		S	E	L		U	P	/	D	O	W	N				

Figure 26: Update firmware no drive.

If no firmware is found or there is no “firmware” directory, the following will be displayed:

N	O		F	I	R	M	W	A	R	E									
B	A	C	K		S	E	L		U	P	/	D	O	W	N				

Figure 27: Update firmware no firmware.

3. After selecting the file, the user may be asked to select the storage location. If prompted, select storage location 1. This screen is skipped when updating from version 1.2 or later.

S	T	O	R	A	G	E		L	O	C	A	T	I	O	N	→	1		

4. A loading screen will appear with a number that increases quickly, indicating the process of the file data transfer. After it is complete, a “SAVING FILE” message will appear.

L	O	A	D	I	N	G	:	0	1	2	3	4	5	6					

Figure 28: Loading screen

5. The “UPDATE ON REBOOT” screen asks the user if they would like to commit to the firmware they just loaded. Pressing the UP or DOWN keys will cycle between the ‘Yes’ and ‘No’ options. If ‘YES’ is selected then the firmware will be loaded into flash and the control will reboot with the new firmware. If ‘NO’ is selected then the new firmware will not be loaded and the user will be returned to the menu screen. This screen is skipped when updating from version 1.2 or later.

U	P	D	A	T	E		O	N		R	E	B	O	O	T	?	N	O	

Figure 29: Reboot option

6. A flash screen will appear with a loading bar indicating the progress of the flash process.

F	L	A	S	H	:	F	I	L	E	N	A	M	E	.	H	E	X		
■	■	■	■	■															

Figure 30: Flashing

7. After the flash process completes a message will appear indicating that the new firmware has been loaded. The control will then reboot itself with the new firmware. All the settings will return to their defaults.

N	E	W		F	I	R	M	W	A	R	E		L	O	A	D	E	D	
L	O	A	D	I	N	G		D	E	F	A	U	L	T	S				

Figure 31: Firmware loaded

Section 4: Variable Descriptions and Defaults

Section	Name	Description	Default Value	Max Value	Min Value
Boiler Help	Low Temp	Boiler will help the chiller provide heat if the chiller has not been able to raise the temperature above this value	80°F	140°F	40°F
	Time	Time limit for the boiler to start assisting the chiller provide heat	2 min	100 min	0 min
OA Switchover	Temp	Outside air temperature value where the system will switch the heat source	40°F	200°F	-10°F
OA Switchover – Separate Boiler	Temp	Outside air temperature value where the system will switch the heat source	40°F	200°F	-10°F
Buffer Tank	Buffer Enable	Enables/disables the buffer tank option	Enabled	N/A	N/A
	Bypass Enable	Enables/disables the bypass valves	Disabled	N/A	N/A
	Override Enable	Enables/disables the override function	Disabled	N/A	N/A
	Heat OA SP	Buffer tank starts calling for heat if the outside air is below this value	50°F	60°F	20°F
	Heat (B) SP	Water temperature target for the buffer tank when the boiler is the heat source	160°F	180°F	50°F
	Heat (C) SP	Water temperature target for the buffer tank when the chiller is the heat source	120°F	140°F	50°F
	Heat Diff	After reaching the SP the system will allow the temperature to drop by this value before heating begins again	10°	20°	0°
	Cool OA SP	Buffer tank starts calling for cool if the outside air is above this value	65°F	80°F	-20°F
	Cool Tank SP	Water temperature target for the buffer tank in cooling mode.	48°F	65°F	35°F
	Cool Diff	After reaching the SP the system will allow the temperature to rise by this value before cooling begins again	6°F	20°F	0°F
Thin Wall	Zone 1-5 Enables	Enables Thin Wall control for each zone	Disabled	N/A	N/A
	TW Setpoint	OAT setting that determines if the system will be heating or cooling when a Thin Wall enabled zone calls	50°F	100°F	0°F

	TW +/-	Hysteresis setting. System will not switch heating/cooling modes until an OAT of SP+/- is reached	5°F	10°F	1°F
	TW Timer	Timer for preventing the system from potentially getting stuck in one mode based on TW calls and OAT	15min	30min	1min (0min to disable timer)
System Settings	Pump Enable	Enables/disables the system pump output	Disabled	N/A	N/A
	Heat Enable	Enables/disables the heat output	Enabled	N/A	N/A
	Cool Enable	Enables/disables the cool output	Enabled	N/A	N/A
Temperature Units	Temp Units	Switch between F and C	F	N/A	N/A

Condition	Possible cause	Solution
Chiller, Boiler or Pump does not respond to call for conditioning.	Disconnected or broken wire.	Physically inspect the condition of the wires between the thermostat, air handler and the interface module, and between the interface module and the chiller, boiler, or pump.
Chiller gives a call for cooling when called upon for heating, or heating when called upon for cooling.	Reversing Valve Mode is set to the wrong mode.	Check the Chiller RV and make sure it is set to the right mode Cooling (O) or Heating (B).
Unit is not working correctly	Settings or wiring could have been installed incorrectly.	Review all system settings and make sure module is wired properly.
Sensor error is showing on the LCD	Sensor input is either shorted or open.	Check sensor wiring and connections
N/A is showing for a temperature	Sensor input is either shorted or open but the sensor is not required for the current mode.	Check wiring if the sensor is supposed to be connected, or disregard otherwise.



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