AURORA

Aurora Universal Protocol Converter (UPC)

LON Points List For Variable Speed WSHP

Software Version 1.03 Utilizing the Aurora UPC Controller

LON Points for Variable Speed WSHP

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WaterFurnace® Smarter from the Ground Up™

NV #	Object Type	SNVT Type	NV Name	Reference Name	Direction	Default Value	Units	Description	State Text	
0	AV	105	nvoActiSetpt	active_setpt	Output (active)		°F	Displays the set point that is controlling the call for the compressor.		
1	AV	81	nviOccDehumSetpt	occ_dehum_setpt	Input (passive)	53	%rh	Allows for the network to adjust the occupied dehumidify set point.		
2	AV	105	nvoLwt	lwt_st	Output (active)		°F	Displays the leaving water temperature.		
3	AV	105	nvoLat	lat_st	Output (active)		°F	Displays the leaving air temperature.		
4	AV	105	nvoCoaxTemp	coax_temp_st	Output (active)		°F	Displays the coax temperature read by the FP1 sensor.		
5	AV	105	nvoFp1Setpt	fp1_setpt	Output (active)		°F	Displays the FP1 freeze detection limit temperature (coax temp).		
6	AV	81	nvoEcmPwm	ecm_pwm_pct	Output (active)		%	Displays the current ECM blower operating percentage.		
7	AV	9	nvoBlowerSpeed	actual_blower_speed_st	Output (active)		no units	Displays a value from 0-12 that is directly related to the ECM blower speed.		
8	AV	9	nvoLockoutEnum	lockout_enum	Output (active)		no units	Displays the current lock-out alarm value, refer to the alarms table for a description.		
9	AV	105	nvoEwt	ewt_st	Output (active)		°F	Displays the entering water temperature.		
10	AV	105	nvoAirCoilTemp	air_coil_temp_st	Output (active)		°F	Displays the air coil temperature read by the FP2 sensor.		
11	AV	9	nvoCompSpeed	actual_comp_speed_st	Output (active)		no units	Displays the current compressor operating speed (0 - 12).		
12	AV	9	nvoModValve	mod_valve_pwm	Output (active)		%	Displays the current modulating valve posiion.		
13	AV	81	nviOccHumSetpt	occ_hum_setpt	Input (passive)	30	%rh	Allows for the network to adjust the occupied humidification set point.		
14	AV	9	nvoEEV	eev2_st	Output (active)		no units	Displays the current EEV position.		
15	AV	9	nvoVsPumpSpeed	vs_pump_spd_st	Output (active)		no units	Displays the current variable speed pump speed.		
16	BV	95	nvoAcc1	acc1_st	Output (active)			Displays the status of the ACC-1 output, this output is configured using the ABC dipswitches.	Off	On
17	BV	95	nvoAlarmCmdSt	alarm_reset_st	Output (active)			Displays the commanded status of the alarm reset command.	Off	On
18	BV	95	nviAlarmReset	alarm_reset_cmd	Input (passive)	0		Allows for the network to command the alarm reset, to clear the alarm command to "ON" then Back to "OFF".	Off	On

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NV #	Object Type	SNVT Type	NV Name	Reference Name	Direction	Default Value	Units	Description	State Text	
19	BV	95	nviAuxHeatEna	aux_heat_enable	Input (passive)	0		Allows for the network to select how the electric heat output 1 is controlled, if set to Aux heat the P.I.D. loop will enable and disable the output.	Network EH	Aux Heat
20	BV	95	nvoDehumHdw	dehum_hdw	Output (active)			Displays the status of the DH hardware input.	Off	On
21	BV	95	nvoEh1	eh_1_st	Output (active)			Displays the status of the electric heat 1 output.	Off	On
22	BV	95	nvoEh2	eh_2_st	Output (active)			Displays the status of the electric heat 2 output.	Off	On
23	BV	95	nviEStop	e_stop_cmd	Input (passive)	0		Allows for the network to issue a emergency shutdown command to the unit.	Normal Operation	Shutdown
24	BV	95	nvoEsHdw	es_hdw	Output (active)			Displays the status of the emergency shutdown hardware input.	Normal	Shutdown
25	BV	95	nviFanCmd	fan_operation	Input (passive)	1		Allows for the network to select either cycled or continuous operation of the fan.	Cycled	Continuous
26	BV	95	nvoFanSt	fan_st	Output (active)			Displays the current status of the fan output.	Off	On
27	BV	95	nviEh1Ovrd	eh1_ovrd_cmd	Input (passive)	0		Allows for network control of electric heat 1 output relay if BV-6 is set to "network".	Off	On
28	BV	95	nvoFanProvin	g_hdw_fan_prove	Output (active)			Displays the status of the "G" hardware input, this is used as a fan proving input.	Off	On

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NV #	Object Type	SNVT Type	NV Name	Reference Name	Direction	Default Value	Units	Description	State Text	
29	BV	95	nviLoadShed	load_shed_cmd	Input (passive)	0		Allows for the network to enable/disable load shed.	Off	On
30	BV	95	nvoOccSnsr	o_hdw_occ_sensor	Output (active)			Displays the status of the "O" hardware input, also used as an occupancy sensor input.	Off	On
31	BV	95	nvoRevVlv	rev_vlv_st	Output (active)			Displays the status of the reversing valve output.	Heat	Cool
32	BV	95	nvoDtyFilter	w_hdw_dirty_filter	Output (active)			Displays the status of the "W" hardware input, can also used as a dirty filter input.	Off	On
33	BV	95	nvoCompProv	y1_hdw_comp_prove	Output (active)			Displays the status of the "Y1" hardware input, used as a compressor proving input, may require additional hardware.	Off	On
34	BV	95	nvoVlvEndSw	y2_hdw_vlv_end_sw	Output (active)			Displays the status of the "Y2" hardware input, used as a valve end switch input, may require additional hardware.	Off	On
35	BV	95	nviEh2Ovrd	eh2_ovrd_cmd	Input (passive)	0		Allows for network control of the electric heat 2 output relay.	Off	On

LON Points for Variable Speed WSHP cont.

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NV #	Object Type	SNVT Type	NV Name	Reference Name	Direction	Default Value	Units	Description	State Text	
36	MSV	9	nvoMode	mode_st_msv	Output (active)			Displays the current operating mode of the unit.	[1 = Standby] [2 = Fan Only] [3 = Cool Speed 1-6] [4 = Cool Speed 7-12] [5 = Not Used] [6 = Heat Speed 1-6] [7 = Heat Speed 7-12] [8 = Emergency Heat] [9 = Auxiliary Heat] [10 = Emergency Shutdown] [11 = Load Shed] [12 = Unit In Lock Out] [13 = Test Mode]	
37	AV	105	nvoZoneTemp	zone_temp_st	Output (active)		°F	Displays the zone temperature if sensor is present or if overridden by the BAS.		
38	AV	105	nviZoneTempAdj	zone_temp_adj	Input (passive)	0	°F	Displays the zone temp adjust value, this is used to calibrate the zone sensor.		
39	AV	105	nviZoneTempOvrd	zone_temp_ovrd	Input (passive)	0	°F	Allows for the network to override the zone temp sensor reading if SNVT 52 is set to Active or (BAS).		
40	AV	105	nviOccClgSetpt	occ_clg_setpt	Input (passive)		°F	Displays and sets the occupied cooling set point.		
41	AV	105	nviOccHtgSetpt	occ_htg_setpt	Input (passive)		°F	Displays and sets the occupied heating set point.		
42	AV	105	nviUnoccClgSetpt	unocc_clg_setpt	Input (passive)		°F	Displays and sets the unoccupied cooling set point.		
43	AV	105	nviUnoccHtgSetpt	unocc_htg_setpt	Input (passive)		°F	Displays and sets the unoccupied heating set point.		
44	AV	105	nviStnbyClgSetpt	standby_cool_setpt	Input (passive)	76	°F	Displays and sets the standby cooling set point.		
45	AV	105	nviStnbyHtgSetpt	standby_heat_c	Input (passive)	68	°F	Displays and sets the standby heating set point.		
46	AV	105	nvoEffClgSetpt	eff_clg_setpt	Output (active)		°F	Displays the effective cooling set point.		
47	AV	105	nvoEffHtgSetpt	eff_htg_setpt	Output (active)		°F	Displays the effective heating set point.		
48	AV	105	nviRemSetptSpan	rem_setpt_span	Input (passive)	5	°F	Allows for the network to set the warm/cool adjust control value.		
49	AV	81	nvoHumidity	humidity_st	Output (active)		%rh	Displays the humidity sensor reading if sensor is present.		
50	AV	81	nviHumidity	humidity_cmd	Input (passive)	0	%rh	Allows for the network to override the humidity input if no sensor is connected.		
51	AV	29	nvoCo2	co2_st	Output (active)		ppm	Displays the space CO_2 reading if sensor is present.		
52	AV	29	nvoVoc	voc_st	Output (active)		ppm	Displays the space voc (volatile organic compounds) if sensor is present.		
53	AV	105	nviOat	oat_cmd	Input (passive)	0	°F	Allows for network override of the outside side air temperature.		
54	BV	95	nvoInternalExter	int_ext_scheduling	Output (active)			Displays the selected schedule that the UPC is operating on.	Internal	External

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NV #	Object Type	SNVT Type	NV Name	Reference Name	Direction	Default Value	Units	Description	State Text	
55	BV	95	nviScheduleSelec	schedule_select_cmd	Input (passive)	1		Allows for network selection of the internal schedule or external schedule.	Internal	External
56	BV	95	nviZoneTempSelec	zone_temp_selector	Input (passive)	0		Allows for network selection of the zone sensor input.	Sensor	BAS
57	BV	95	nviTempOccDis	temp_occ_dis	Input (passive)	1		Allows for network control to disable temporary occupancy.	Disabled	Enabled
58	BV	95	nvoTempOcc	temp_occ_st	Output (active)			Displays the status of the temporary occupancy input.	Normal	Temp Occ
59	MSV	9	nviOccManCmd	occ_man_cmd_msv	Input (passive)	1		Use this point to command unit occupancy, verify that BV-50 is set to inactive (MSV).	[1 = Occupied] [2 = Unoccupied] [3 = Temp Occ] [4 = Standby]	
60	MSV	9	nvoEffectOccup	effective_occ_st	Output (active)			Displays the effective occupancy status.	[1 = Occupied] [2 = Unoccupied] [3 = Temp Occ] [4 = Standby] [5 = Occ Sensor]	
61	AV	9	nviAcc1Dly	acc1_delay	Input (passive)	90	seconds	Allows for the network to adjust the time delay of the ACC-1 output when the output is set for slow opening water valve.		

Modes of Operation for Variable Speed WSHP

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Dual Compressor W2A Modes Of Operation Displayed
1 = Standby
2 = Fan Only
3 = Cooling Stage 1
4 = Cooling Stage 2
5 = Hot Gas Reheat
6 = Heating Stage 1
7 = Heating Stage 2
8 = Emergency Heat
9 = Auxiliary Heat
10 = Emergency Shutdown
11 = Load Shed
12 = ABC A Lock-Out
13 = Test Mode
14 = Economizer Mode
15 = ABC B Lout-Out
16 = Full Cool W/Economizer
17 = Dehumidification Mode
18 = 1/2 Capacity W/Lock-Out
19 = Full Lockout Condition
20 = Clg 1 W/Economizer

Dipswitch Overrides for Variable Speed WSHP

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Dual Compressor Aurora Base Controller A & B Dip Switch Override Read Only Points					
Switch #	**Point Address**	**Point Name**	**Brief Descriptions**	**Current Switch Setting**	**UPC Default Value**
1	BV-69	FP1_lim_st_a	Displays the current freeze detection set point for the coax on ABC A & B, (FP1) 15° or 30°		Active (30°F)
	BV-70	FP1_lim_st_b			
2	N/A	N/A	This switch is not used in the Dual Compressor Software.	N/A	N/A
3	BV-114	rv_setup_st_a	Displays the default position of the reversing valve. This switch is set at the factory, and should not require a change.		Active (heating)
	BV-115	rv_setup_st_b			
4	BV-119	sw_2_4_st_a	Displays the current position of the SW-4 switch on ABC A and on ABC B.		Active (On)
	BV-120	sw_2_4_st_b			
5	BV-121	sw_2_5_st_a	Displays the current position of the SW-5 switch on ABC A and on ABC B.		Inactive (Off)
	BV-122	sw_2_5_st_b			
6	BV-15	cc_op_cfg_st_a	Units built with two compressors will not support this feature.This switch is set at the factory, do not change.		Inactive (Dual Stage)
	BV-16	cc_op_cfg_st_b			
7	BV-84	Lockout_cfg_st_a	Displays the action of the alarm relay output. {Pulsed or Continuous} Must stay incontinuous position on reheat models.		Active (Continuous)
	BV-85	Lockout_cfg_st_b			
8	BV-110	reheat_cfg_st_a	Displays either reheat or normal. This switch is set at the factory, do not change.		Active (Normal)
	BV-111	reheat_cfg_st_b			

ABC Dip Switch Commandable Override Points

We understand the hassles associated with configuring each unit's controller in a commercial building so we have provided a way to accomplish this thru the Building Automation System or through the ATU interface. The BAS method allows for the control technician to send commands to UPC Controller and set the freeze detection set point or the accessory 1 relay operation through a BAS. The physical dip switch bank that is normally used to configure the unit settings can still be used if desired, but one must make sure that the switches have not already been overridden. A technician can determine if the dip switches have been overridden by the BAS by looking at the yellow LED located on the Aurora Base Controller, if the yellow LED is constantly flashing slow then at least one switch has been overridden. The following procedure must be followed carefully to ensure proper unit configuration. Since we are able to use the BAS to select these settings special care must be taken when doing start-up on the units. The physical switch position can differ from what is set as defaults in the UPC program, so verify and record the actual switch settings before trying to command the points.

First thing that needs to be done is to determine what settings are present and what settings need changed. To locate the current switch settings refer to these points for their read only values. Remember that these points represent the current configuration and not necessarily the actual position of the switches, there is a column below that can be used to record the current switch settings.

Dipswitch Overrides for Variable Speed WSHP

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WaterFurnace Smarter from the Ground Up™

Dual Compressor Aurora Base Controller A & B's Dip Switch Override										
Dip Switch		**Point Address**	**Point Name**	**Brief Descriptions**						
1		BV-24	sw2_1_c_a	Selects FP1 freeze detection set point for ABC A and ABC B. {Inactive=15°, Active=30°}						
		BV-25	sw2_1_c_b							
2		BV-26	sw2_2_c_a	Not used for configuration on dual compressor water to air units.						
		BV-27	sw2_2_c_b							
3		BV-28	sw2_3_c_a	Changes the default position of the reversing valve, Do not change.						
		BV-29	sw2_3_c_b							
ABC A	4	BV-30	sw2_4_c_a	Dip Switch Position	ON	ACC 1 On w/Fan	Off	Acc 1 On w/Compr	On	Compressor Call Energizes Acc 1 For Slow Opening Water Valve with 90 Second Delay.
	5	BV-32	sw2_5_c_a		ON		Off		Off	
ABC B	4	BV-31	sw2_4_c_b	Dip Switch Position	ON	?	Off	?	On	?
	5	BV-33	sw2_5_c_b		ON		Off		Off	
6		BV-34	sw2_6_c_a	Not used for configuration on dual compressor water to air units.						
		BV-35	sw2_6_c_b							
7		BV-36	sw2_7_c_a	Selects continuous or pulsed alarm relay action. {Inactive=Pulsed, Active=Continuous}						
		BV-37	sw2_7_c_b							
8		BV-38	sw2_8_c_a	Selects reheat or non-reheat operation. {Inactive=Reheat, Active=Non-reheat}						
		BV-39	sw2_8_c_b							

Dip Switch Override Method

Since there are two methods for overriding the Aurora dip switches and they are similar in procedure we will discuss how to set them thru the BAS first. The dip switch override points have to be enabled, this is done by setting BV-44(ABC A) and BV-45(ABC B) to Active, this allows for the commands you send to ABC A and ABC B to pass down into each of the ABC's. Once those are set, locate the points that you want to change the values on and command them to the proper value. Command-able points are listed below for each ABC. Once the switch values have been verified in the dip switch status points, remove the enable from BV-44 and BV-45.

Alarms for Variable Speed WSHP

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Commercial Alarms Table for the Dual Compressor Aurora with UPC						
	Aurora Base Controller with UPC Alarms Table	ABC Red LED Flash Code	Alarm Values Enumerated on AV-80 & AV-81 to the BAS	Alarm Values Enumerated on MSV-6 & MSV-7 to the BAS	Lockout	Reset
ABC & AXB Basic Faults	Normal - No Faults	Off	0	1	-	-
	E1 - Fault-Input	1	1	2	No	Auto
	E2 - Fault-High Pressure	2	2	3	Yes	Hard or Soft
	E3 - Fault-Low Pressure	3	3	4	Yes	Hard or Soft
	E4 - Fault-Freeze Detection FP2	4	4	5	Yes	Hard or Soft
	E5 - Fault-Freeze Detection FP1	5	5	6	Yes	Hard or Soft
	E6 - Fault-Loss Of Charge	6	6	7	Yes	Hard or Soft
	E7 - Fault-Condensate Overflow	7	7	8	Yes	Hard or Soft
	E8 - Fault-Over/Under Voltage	8	8	9	No**	Auto
	E9 - Airflow Monitoring	9	9	10	Future	Future
	E10 - Fault-Compressor Monitoring	10	10	11	Yes	Hard or Soft
	E11 - Fault-FP1 Snsr Error	11	11	12	Yes	Hard or Soft
	E12 - Refrigeration Monitoring	12	12	13	Future	Future
	E13 - Non Critical AXB Sensor Error	13	13	14	Future	Future
	E14 - Critical AXB Sensor Error	14	14	15	Future	Future
	E15 - Hot Water Limit	15	15	16	No	Auto
	E16 - Fault-VarSpdPump	16	16	17	No	Auto
	E30 - Zone Sensor Loss of Comm	N/A	30	18	Yes	Auto
	E18 - Non-CritComErr	18	19	19	No	Auto
	E19 - CritComErr	19	20	20	Yes	Auto