

Input/Output Variables (Read/Write)

Name	Data Type/Units	Description	Valid Values/Range									
HeatDemand	binary variable no-units	Heat Demand/Request. Setting the state member of this variable will put the boiler in heating mode.	<table border="1"> <thead> <tr> <th>value</th> <th>state</th> <th>Interpretation</th> </tr> </thead> <tbody> <tr> <td>any</td> <td>0</td> <td>no heat demand</td> </tr> <tr> <td>any</td> <td>1</td> <td>heat demand</td> </tr> </tbody> </table>	value	state	Interpretation	any	0	no heat demand	any	1	heat demand
value	state	Interpretation										
any	0	no heat demand										
any	1	heat demand										
SetpointTimer	analog variable seconds	<p>System Setpoint Timer</p> <p>The system setpoint timer and system setpoint work in tandem to externally control (i.e. a BMS - building management system) the operating setpoint. The setpoint (countdown) timer should be loaded with a timeout value (in seconds) prior to writing the system setpoint. When the timer reaches zero, the control assumes that the BMS is no longer operating and the local setpoint (saved on the control) is reloaded. This is a failsafe feature used to help safeguard the system in case of BMS failure. If the setpoint timer is not written, a default timeout value of 60 seconds is assumed.</p>	0 – 65535 seconds									
Setpoint	analog variable degrees-Fahrenheit	System Setpoint (see <i>nviSetpointTimer</i>)	40 - 220 °F (4.5 – 104.4 °C)									
OARResetEnable	binary variable no-units	Enables/Disables outdoor air reset mode.	<table border="1"> <thead> <tr> <th>value</th> <th>state</th> <th>interpretation</th> </tr> </thead> <tbody> <tr> <td>any</td> <td>0</td> <td>disabled</td> </tr> <tr> <td>any</td> <td>1</td> <td>enabled</td> </tr> </tbody> </table>	value	state	interpretation	any	0	disabled	any	1	enabled
value	state	interpretation										
any	0	disabled										
any	1	enabled										
OARSetpoint	analog variable degrees-Fahrenheit	Outdoor air reset setpoint. Temperature at which boiler shuts down.	40 – 100 °F (4.5 – 37.8 °C)									
OARHighWaterTemp	analog variable degrees-Fahrenheit	Boiler water temperature setpoint when outdoor air temperature is at the high outdoor air temperature setpoint (<i>nviOARHiAirTemp</i>).	60 – 150 °F (15.6 – 65.6 °C)									
OARHighAirTemp	analog variable degrees-Fahrenheit	High outdoor air temperature setpoint.	50 – 90 °F (10 – 32.2 °C)									
OARLowWaterTemp	analog variable degrees-Fahrenheit	Header/Supply temperature setpoint when outdoor air temperature is at the low outdoor air temperature setpoint (<i>nviOARLoAirTemp</i>).	70 – 220 °F (21.1 – 104.4 °C)									
OARLowAirTemp	analog variable degrees-Fahrenheit	Low outdoor air temperature setpoint.	-35 – 40 °F (-37.2 – 4.4 °C)									

Name	Data Type/Units	Description	Valid Values/Range									
SetMonth	analog variable months	Set real time clock – month (<i>see nviSetClock</i>)	0 (January) – 11 (December)									
SetDay	analog variable days	Set real time clock – day (<i>see nviSetClock</i>)	1 – 31									
SetYear	analog variable years	Set real time clock – year (<i>see nviSetClock</i>)	0 – 99									
SetHour	analog variable hours	Set real time clock – hour (<i>see nviSetClock</i>)	0 – 23									
SetMinute	analog variable minutes	Set real time clock – minute (<i>see nviSetClock</i>)	0 – 59									
SetSecond	analog variable seconds	Set real time clock – second (<i>see nviSetClock</i>)	0 – 59									
SetWeekday	analog variable no-units	Set real time clock – weekday (<i>see nviSetClock</i>)	1 (Monday) – 7 (Sunday)									
SetClock	binary variable no-units	<p>Set (write) the real time clock.</p> <p>To write the real time clock, the system variables (<i>nviSetMonth</i>, <i>nviSetMonth</i>, <i>nviSetDay</i>, <i>nviSetYear</i>, <i>nviSetHour</i>, <i>nviSetMinute</i>, <i>nviSetSecond</i>, <i>nviSetWeekday</i>) must first be loaded with the correct date and time. Then, a 1 must be written to the state portion of this system variable to write the new date and time to the system clock.</p>	<table border="1"> <thead> <tr> <th>value</th> <th>state</th> <th>interpretation</th> </tr> </thead> <tbody> <tr> <td>any</td> <td>0</td> <td>---</td> </tr> <tr> <td>any</td> <td>1</td> <td>set the clock</td> </tr> </tbody> </table>	value	state	interpretation	any	0	---	any	1	set the clock
value	state	interpretation										
any	0	---										
any	1	set the clock										

Input Variables (Read Only)

Name	Data Type/Units	Description	Valid Values/Range
BoilersOn	analog input	The number of boilers currently running.	0 – 16
Modulation	analog input	Current system modulation level.	0 – 100 %
HeaderTemp	analog input degrees-Fahrenheit	Header / System temperature.	32 – 250 °F (0 – 121.1 °C)
SupplyTemp	analog input degrees-Fahrenheit	Supply temperature.	32 – 250 °F (0 – 121.1 °C)
ReturnTemp	analog input degrees-Fahrenheit	Return temperature.	32 – 250 °F (0 – 121.1 °C)
OutsideTemp	analog input degrees-Fahrenheit	Outside air temperature.	-40 – 250 °F (-40 – 121.1 °C)
Spare1	analog input	Raw A/D value from spare 1 input.	-32768 to 32767
Spare2	analog input	Raw A/D value from spare 2 input.	-32768 to 32767
Month	analog input months	Real time clock month.	0 – 11
Day	analog input days	Real time clock day.	1 – 31
Year	analog input years	Real time clock year.	0 – 99
Hour	analog input hours	Real time clock hour.	0 – 23
Minute	analog input minutes	Real time clock minute.	0 – 59
Second	analog input seconds	Real time clock second.	0 – 59
Weekday	analog input no-units	Real time clock weekday.	1 – Monday 7 – Sunday

Name	Data Type/Units	Description	Valid Values/Range																																																																
Boiler01Status1 ... Boiler16Status1	analog input no-units	Boiler status flags #1 (boilers 1 – 16). These bits indicate the state of the 24VAC interlocks, ignition circuit, and various other conditions. See the values column for a list of conditions.	<p>0 = off, disabled, or not present 1 = on, enabled, or present</p> <table border="1" data-bbox="1440 363 1902 1188"> <thead> <tr> <th>Bit</th> <th>Description</th> </tr> </thead> <tbody> <tr><td>0</td><td>Disabled</td></tr> <tr><td>1</td><td>Local Override</td></tr> <tr><td>2</td><td>Alarm</td></tr> <tr><td>3</td><td>Failed</td></tr> <tr><td>4</td><td>Member Error</td></tr> <tr><td>5</td><td>Boiler Running</td></tr> <tr><td>6</td><td>Pump Running</td></tr> <tr><td>7</td><td>Spare 3 Interlock</td></tr> <tr><td>8</td><td>LWCO Interlock</td></tr> <tr><td>9</td><td>VFD Interlock</td></tr> <tr><td>10</td><td>Gas Prove</td></tr> <tr><td>11</td><td>Spare 4</td></tr> <tr><td>12</td><td>Operator Interlock</td></tr> <tr><td>13</td><td>Water Prove (Flow) Interlock</td></tr> <tr><td>14</td><td>Air Prove UV Sensor Interlock</td></tr> <tr><td>15</td><td>Main Valve</td></tr> <tr><td>16</td><td>Pilot Valve</td></tr> <tr><td>17</td><td>Blower</td></tr> <tr><td>18</td><td>Ignition Alarm</td></tr> <tr><td>19</td><td>Valve Alarm</td></tr> <tr><td>20</td><td>High Limit</td></tr> <tr><td>21</td><td>Air Prove Switch</td></tr> <tr><td>22</td><td>XS Factory</td></tr> <tr><td>23</td><td>Software Operator</td></tr> <tr><td>24</td><td>Header Sensor not Present</td></tr> <tr><td>25</td><td>Supply Sensor not Present</td></tr> <tr><td>26</td><td>Return Sensor not Present</td></tr> <tr><td>27</td><td>Outside Sensor not Present</td></tr> <tr><td>28-29</td><td>---</td></tr> <tr><td>30</td><td>Master Boiler</td></tr> <tr><td>31</td><td>Present (Boiler Detected)</td></tr> </tbody> </table>	Bit	Description	0	Disabled	1	Local Override	2	Alarm	3	Failed	4	Member Error	5	Boiler Running	6	Pump Running	7	Spare 3 Interlock	8	LWCO Interlock	9	VFD Interlock	10	Gas Prove	11	Spare 4	12	Operator Interlock	13	Water Prove (Flow) Interlock	14	Air Prove UV Sensor Interlock	15	Main Valve	16	Pilot Valve	17	Blower	18	Ignition Alarm	19	Valve Alarm	20	High Limit	21	Air Prove Switch	22	XS Factory	23	Software Operator	24	Header Sensor not Present	25	Supply Sensor not Present	26	Return Sensor not Present	27	Outside Sensor not Present	28-29	---	30	Master Boiler	31	Present (Boiler Detected)
Bit	Description																																																																		
0	Disabled																																																																		
1	Local Override																																																																		
2	Alarm																																																																		
3	Failed																																																																		
4	Member Error																																																																		
5	Boiler Running																																																																		
6	Pump Running																																																																		
7	Spare 3 Interlock																																																																		
8	LWCO Interlock																																																																		
9	VFD Interlock																																																																		
10	Gas Prove																																																																		
11	Spare 4																																																																		
12	Operator Interlock																																																																		
13	Water Prove (Flow) Interlock																																																																		
14	Air Prove UV Sensor Interlock																																																																		
15	Main Valve																																																																		
16	Pilot Valve																																																																		
17	Blower																																																																		
18	Ignition Alarm																																																																		
19	Valve Alarm																																																																		
20	High Limit																																																																		
21	Air Prove Switch																																																																		
22	XS Factory																																																																		
23	Software Operator																																																																		
24	Header Sensor not Present																																																																		
25	Supply Sensor not Present																																																																		
26	Return Sensor not Present																																																																		
27	Outside Sensor not Present																																																																		
28-29	---																																																																		
30	Master Boiler																																																																		
31	Present (Boiler Detected)																																																																		

Name	Data Type/Units	Description	Valid Values/Range																				
Boiler01Status2 ... Boiler16Status2	analog input no-units	Boiler stage control input flags. These bits indicate the state of the stage control inputs. See the values column for a list of conditions.	0 = off or not present 1 = on or present <table border="1"> <thead> <tr> <th>Bit</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>AA High Fire</td> </tr> <tr> <td>1</td> <td>Heat Demand</td> </tr> <tr> <td>2</td> <td>4-20ma Remote Enable</td> </tr> <tr> <td>3</td> <td>Outdoor Air Reset Override</td> </tr> <tr> <td>4</td> <td>T1</td> </tr> <tr> <td>5</td> <td>T2</td> </tr> <tr> <td>6</td> <td>T3</td> </tr> <tr> <td>7</td> <td>T4</td> </tr> <tr> <td>8 - 15</td> <td>---</td> </tr> </tbody> </table>	Bit	Description	0	AA High Fire	1	Heat Demand	2	4-20ma Remote Enable	3	Outdoor Air Reset Override	4	T1	5	T2	6	T3	7	T4	8 - 15	---
Bit	Description																						
0	AA High Fire																						
1	Heat Demand																						
2	4-20ma Remote Enable																						
3	Outdoor Air Reset Override																						
4	T1																						
5	T2																						
6	T3																						
7	T4																						
8 - 15	---																						
Boiler01Runtime ... Boiler16Runtime	analog input minutes	The total number of minutes that the boiler has been running (with the current control board).	0 – 35791394 minutes																				