SKE4 Steam Humidifier

LonWorks Integration Manual

Introduction

The Neptronic Echelon module for the SKE4 series of humidifiers utilizes Field Server / Sierra Monitor Corporation FFP-LON ProtoCessor (FPC-ED4) as a backbone. As such the ProtoCessor node acts as a protocol gateway between the native BACnet IP module of the humidifier and converts the BACnet data into standard Echelon snivets through an RJ45 Ethernet connection.

It is important to follow the installation procedure properly, before beginning the integration process.

Installation Steps

All installation work must be carried out by suitably qualified personnel and must conform to local codes and regulations.

CAUTION: Risk of electric shock. The electric supply of the humidifier must be shut down. Disconnect the power at the External Breaker/Fused Disconnect before commencing installation work.

The following describes the procedure to follow in order to install the Neptronic LonWorks FTT Module for the SKE4 humidifier. The steps and guidelines outlined must be followed in order to avoid any anomaly resulting from inaccurate installation.

List of Accessories Supplied

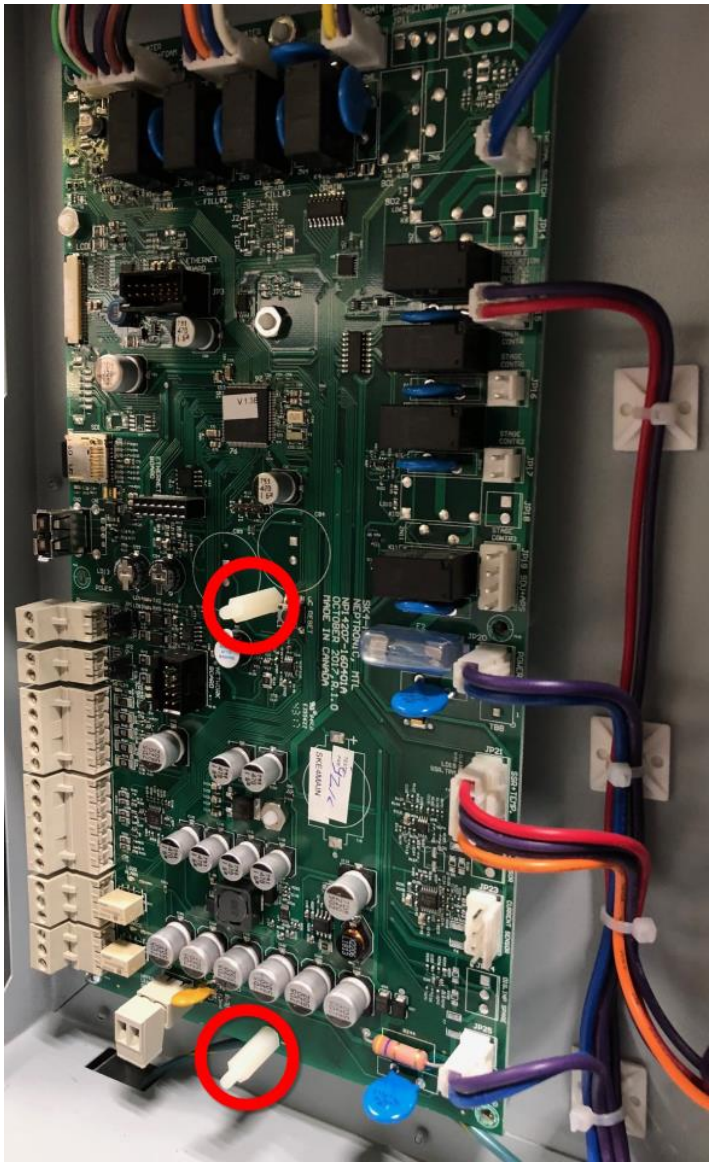
- 1x Neptronic LonWorks FTT Module (SF SK4LON)
- 2x Nylon standoffs
- 1x Ethernet IP Board
- 1x USB Cable
- 1x Ethernet Cable

LonWorks FTT Module Installation

1. Before beginning installation, remove the power supply to the humidifier at the disconnect switch or the breaker.

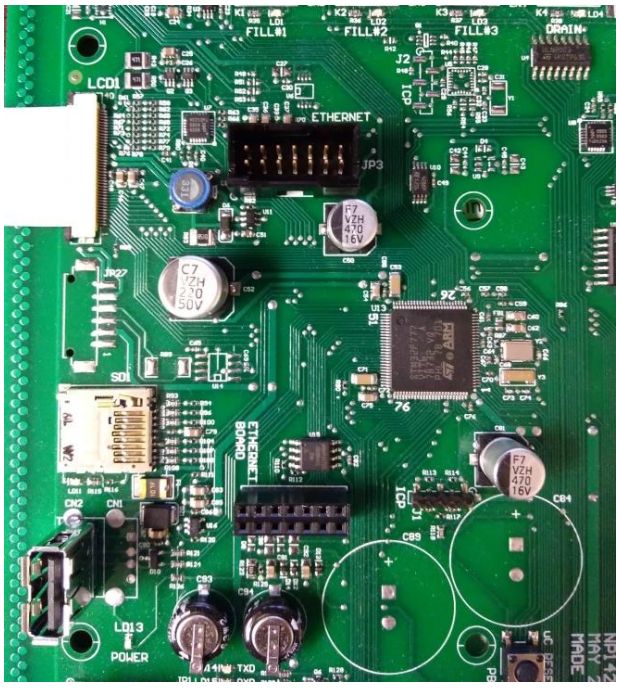
2. Open the access door to the low voltage compartment, located on the top right side of the cabinet, by using the humidifier access key.

3. In the low voltage compartment, remove the nuts that are attached to the printed circuit board at the two locations indicated below, and set them aside. Add the two nylon standoffs (supplied) onto these two locations.



4. Place the bracket of the LonWorks FTT Module (supplied) onto the newly added nylon standoffs and secure the module firmly in place by using the nuts set aside in the previous step.

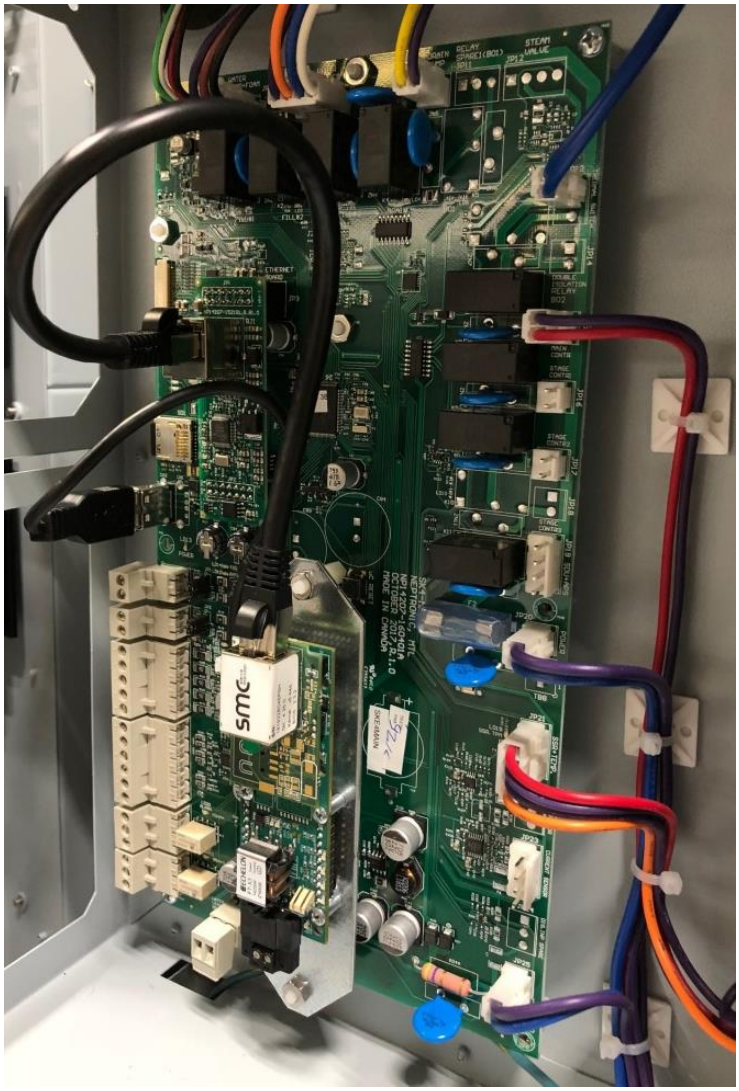
5. Install the Ethernet IP board (supplied) onto the humidifier printed circuit board, by connecting it to the two Ethernet designated terminals.



Before

After

6. Connect the USB cable (supplied) between the LonWorks FTT Module and the printed circuit board, using the USB port located on the left side of the humidifier PCB. Connect the Ethernet cable (supplied) between the LonWorks FTT module and the Ethernet IP board, using the Ethernet connection located on the Ethernet board.



Configuration

For the BACnet IP module of the humidifier, ensure that the following settings inside of the *Integration* menu are properly set:

- Select the *IPSettings* option, then select the *DHCP* setting and modify the value of its parameter to *Inactive*.
- Select the *StaticAddress* setting and modify the value of its parameter to *192.168.00.001.*
- Select the *StaticSubnetMask* setting and modify the value of its parameter to *255.255.255.0.*
- Select the *StaticDefaultGateway* setting and modify the value of its parameter to *192.168.0.000.*
- Select the *RstIPSetting* setting and modify the value of its parameter to *Yes*, in order to enable the new IP configurations.

The ProtoCessor node already arrives with the APB file preloaded and the Config table file for the Snivet to BACnet data conversion.

If diagnostic data is required, the ProtoCessor node has a built-in web server and, if an Ethernet switch is installed, can be accessed at the following address: *192.168.00.00*.

Software Files

XIF: This is the device template of the humidifier for the integrator. When binding a node onto the network, a XIF file is needed. The XIF file has information that is used by the network management tool to help ease the installation and maintenance process of a node. It can also be used for offline configuration of the node.

- File name: *SKE4lon.xif*
- File created: *November 24, 2017, 14:01:39*
- File PID: *90:00:95:47:1E:02:04:66*

APB: When running an application program associated with a XIF file, an APB file is needed. Please note that the ProtoCessor Node has the APB file already flashed from the factory with the proper settings.

Device Resource File (DRF): There is no DRF format files associated with this device. All objects are fully declared as standard Echelon snivets.

LnmL (Niagara Tridium Integration File): This is the device template of the humidifier for the Tridium / Niagara AX integrator.

- File name: *SKE4lon.lnml*
- File created: *November 24, 2017, 14:03*
- File PID: *90:00:95:47:1E:02:04:66*

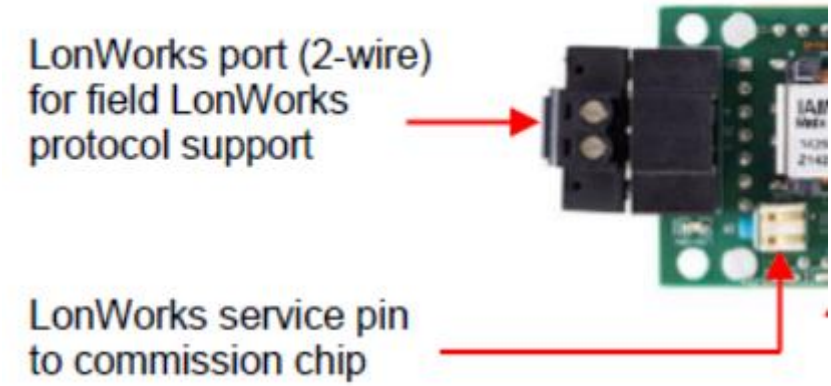
Device Identification

An Echelon device has a unique mechanism to identify itself, the Neuron ID, which is obtained during the commissioning process.

There are two ways of getting the Neuron ID: with a Service Pin or manually.

Service PIN

The service pin is used to identify the device at commissioning. By pressing the service pin button located on the ProtoCessor node, the program ID and the Neuron ID (LonWorks Unique ID) contained in the device are transmitted to the commissioning or service tool. The Status LED will blink when the device accepts the Service Pin command.



Manual Identification

The Neuron ID of a device can also be entered manually through a commissioning or service tool. The Neuron ID is located on the ProtoCessor device itself.

Standard Network Variables Types (SNVT) Table

No.	Snivet Name	Full Name	Snivet Type	Notes
0	nvoMCULoad	MCU Load	SNVT_count_inc_f	Value of the current microcontroller load. 0% to 100%, Resolution 0.1%
1	nvoMemLoad	Memory Load	SNVT_count_inc_f	Value of the current memory load. 0% to 100%, Resolution 0.1%
2	nvoAirFlow	Air Flow	SNVT_switch	Status of the airflow switch. If the switch is Open, it indicates that the airflow is not detected by the air pressure switch. 0 = Closed, 1 = Open
3	nvoSupHiLim	Supply High Limit	SNVT_switch	Status of the high limit contact. If the switch is Open, it indicates that the humidity level has exceeded the setpoint on the high limit humidistat. 0 = Closed, 1 = Open
4	nvoInterlock	Interlock	SNVT_switch	Status of the interlock. If the switch is Open, it indicates that the humidifier is stopped as a result of the interlock safety being open. 0 = Closed, 1 = Open
5	nvoBiExtDem	Binary External Demand	SNVT_switch	Displays whether there is currently a humidity demand, when an On/Off humidifier is used. 0 = 0%, 1 = 100% **Only used if configured for ON/Off control mode.**
6	nvoCtrlInput	Control Input	SNVT_count_inc_f	Value of the current control input reading. 0% to 100%, Resolution 0.01% **Only used if configured for analog external demand.**
7	nvoRmRH	Room RH	SNVT_count_inc_f	Value of the room humidity reading. 0% RH to 100% RH, Resolution 0.01% RH **Only used if configured for analog internal demand.**
8	nvoSupHiLimRH	Supply High Limit RH	SNVT_count_inc_f	Value of the supply high limit humidity reading. 0% RH to 100% RH, Resolution 0.01% RH **Only used if a modulating high limit is used.**
9	nvoWtrLeakDet	Water Leak Detection	SNVT_switch	Displays whether there is a water leak detection. 0 = OK, 1 = Leak

No.	Snivet Name	Full Name	Snivet Type	Notes
10	nvoWtrLvlLow	Water Level Low	SNVT_switch	Status value of the resistive low water level sensor. 0 = Inactive, 1 = Active
11	nvoWtrLvlHi	Water Level High	SNVT_switch	Status value of the resistive high water level sensor. 0 = Inactive, 1 = Active
12	nvoWtrTmp	Water Temperature	SNVT_count_inc_f	Value of temperature of water in the evaporation chamber. 32°F to 257°F or 0°C to 125°C Resolution 0.18°F or 0.10°C
13	nvoFoamCutout	Foam Cutout	SNVT_switch	Displays the status of the foaming sensor input. If the switch is Open, it indicates that a normal state of operation without foam. 0 = No Foam 1 = Foam Present
14	nvoThermalCutout	Thermal Cutout	SNVT_switch	Displays the status of the high temperature switch. If the switch is Open, it indicates that an abnormal temperature has been detected. 0 = Closed, 1 = Open
15	nvoContsPCBFuse	Contactors PCB Fuse	SNVT_switch	Displays the current status of the contactors PCB fuse. If Blown Fuse is displayed, the fuse must be replaced. 0 = Normal, 1 = Blown Fuse
16	nvoCtrlPCBFuse	Control PCB Fuse	SNVT_switch	Displays the current status of the control PCB fuse. If Blown Fuse is displayed, the fuse must be replaced. 0 = Normal, 1 = Open Fuse
17	nvoWtrLvlVlv	Water Level Valve	SNVT_switch	Displays the status of the water level sensor supply valve. 0 = Off, 1 = On
18	nvoTnkWtrVlv	Tank Water Valve	SNVT_switch	Displays the status of the evaporation chamber water supply valve. 0 = Off, 1 = On
19	nvoDrnCoolerVlv	Drain Cooler Valve	SNVT_switch	Displays the status of the internal drain cooler valve. 0 = Off, 1 = On
20	nvoDrnPump	Drain Pump	SNVT_switch	Displays the status of the drain pump. 0 = Off, 1 = On
21	nvoMainCont	Main Contactor	SNVT_switch	Displays the status of the main contactor. 0 = Off, 1 = On
22	nvoHtrStg1	Heater Stage 1	SNVT_switch	Displays the status of the first stage contactor. 0 = Off, 1 = On
23	nvoHtrStg2	Heater Stage 2	SNVT_switch	Displays the status of the second stage contactor. 0 = Off, 1 = On
24	nvoHtrStg3	Heater Stage 3	SNVT_switch	Displays the status of the third stage contactor. 0 = Off, 1 = On
25	nvoHtrSSRStg	Heater SSR Stage	SNVT_switch	Displays the heater SSR stage output value. 0% to 100%, Resolution 0.01%

No.	Snivet Name	Full Name	Snivet Type	Notes
26	nvoWtrLvl	Water Level	SNVT_count_inc_f	Value of the percentage of water remaining in the evaporation chamber. 0% to 120%, Resolution 0.1%
27	nvoRmRHNetwkRd	Room RH Network Reading	SNVT_count_inc_f	Value of room's relative humidity reading received from the network. 0% RH to 100% RH, Resolution 0.1% RH **Only used if configured for network internal demand.**
28	nvoRmRHSP	Room RH Setpoint	SNVT_count_inc_f	Value of room's relative humidity setpoint received from the network. 0% RH to 100% RH, Resolution 0.1% RH **Only used if configured for internal demand.**
29	nvoRmRHUnoccSP	Room RH Unoccupied Setpoint	SNVT_count_inc_f	Value of room's relative humidity reading during no occupancy, received from the network. 0% RH to 100% RH, Resolution 0.1% RH **Only used if the local schedule is activated.**
30	nvoRmRHVacantSP	Room RH Vacant Setpoint	SNVT_count_inc_f	Value of room's relative humidity reading during vacancy, received from the network. 0% RH to 100% RH, Resolution 0.1% RH **Only used if the local schedule is activated.**
31	nvoRmDem	Room Demand	SNVT_count_inc_f	Humidity demand value of the room. 0% to 100%, Resolution 0.1% **Only used if configured for network external demand.**
32	nvoSupHiLimNetRd	Supply High Limit Network Reading	SNVT_count_inc_f	Value of supply high limit reading received from the network. **Only used if modulating high limit is used with a networked value**.
33	nvoSupHiLimSP	Supply High Limit Setpoint	SNVT_count_inc_f	Value of supply high limit setpoint received from the network. 0% RH to 100% RH, Resolution 0.5% RH **Only used if a modulating high limit is used.**
34	nvoSupHiLimDem	Supply High Limit Demand	SNVT_count_inc_f	Supply high limit humidity demand value. 0% to 100%, Resolution 0.01% **Only used if a modulating high limit is used.**
35	nvoHumCtrlNetDem	Humidity Control Network Demand	SNVT_count_inc_f	Value of humidity control demand received from the network. 0% to 100%, Resolution 0.01% **Only used if configured for network external demand.**
36	nvoHmCtrNetHiLim	Humidity Control Network High Limit	SNVT_count_inc_f	Value of humidity control high limit received from the network. 0% to 100%, Resolution 0.01% **Only used if a modulating high limit is used.**
37	nvoHumDem	Humidity Demand	SNVT_count_inc_f	Value of the current humidity demand. 0% to 100%, Resolution 0.01%
38	nvoSysStmOutput	System Steam Output	SNVT_count_inc_f	Value of actual humidity production after the system starts boiling 0% to 100%, Resolution 0.01%

No.	Snivet Name	Full Name	Snivet Type	Notes
39	nvoBlrDem	Boiler Demand	SNVT_count_inc_f	Value of the measured humidity demand of the humidifier. 0% to 100%, Resolution 0.01%
40	nvoBlrRequest	Boiler Request	SNVT_count	Select whether to perform one of the following actions: 0 = None 1 = Reset Alarms 2 = Drain 3 = Reset Counters 4 = Filling 5 = WaterCalib
41	nvoBlrState	Boiler State	SNVT_count	Displays the current state of operation of the humidifier. 0 = Off 1 = Idle 2 = LineRinse 3 = TankRinse 4 = Filling 5 = Draining 6 = Heating 7 = Boiling 8 = Alarm
42	nvoBlrAlarm	Boiler Alarm	SNVT_count	Displays the current status of the humidifier alarm. 0 = Normal 1 = FailedPump 2 = FillTimeout 3 = BlockedPiping 4 = HeatTimeout 5 = Overheat 6 = WaterLeak 7 = Service 8 = Foaming
43	nviMCULoad	MCU Load	SNVT_count_inc_f	Value of the current microcontroller load. 0% to 100%, Resolution 0.1%
44	nviMemLoad	Memory Load	SNVT_count_inc_f	Value of the current memory load. 0% to 100%, Resolution 0.1%
45	nviCtrlInput	Control Input	SNVT_count_inc_f	Value of the current control input reading. 0% to 100%, Resolution 0.01% **Only used if configured for analog external demand**
46	nviRmRH	Room RH	SNVT_count_inc_f	Value of the room humidity reading. 0% RH to 100% RH, Resolution 0.01% RH **Only used if configured for analog internal demand**

No.	Snivet Name	Full Name	Snivet Type	Notes
47	nviSupHiLimRH	Supply High Limit RH	SNVT_count_inc_f	Value of the supply high limit humidity reading. 0% RH to 100% RH, Resolution 0.01% RH **Only used if modulating high limit is used**
48	nviWtrLvlLow	Water Level Low	SNVT_switch	Status value of the resistive low water level sensor. 0 = Inactive, 1 = Active
49	nviWtrLvlHi	Water Level High	SNVT_switch	Status value of the resistive high water level sensor. 0 = Inactive, 1 = Active
50	nviWtrTmp	Water Temperature	SNVT_count_inc_f	Value of temperature of water in the evaporation chamber. 32°F to 257°F or 0°C to 125°C Resolution 0.02°F or 0.01°C
51	nviFoamCutout	Foam Cutout	SNVT_switch	Displays whether foam has been detected within the evaporation chamber. If Foam is displayed, it indicates that the Anti-Foaming Energy Conservation (AFEC) system has detected foam. The humidifier will drain for a few minutes and return to normal operation. 0 = No Foam, 1 = Foam
52	nviWtrLvlVlv	Water Level Valve	SNVT_switch	Displays the status of the water level sensor supply valve. 0 = Off, 1 = On
53	nviTnkWtrVlv	Tank Water Valve	SNVT_switch	Displays the status of the evaporation chamber water supply valve. 0 = Off, 1 = On
54	nviDrnCoolerVlv	Drain Cooler Valve	SNVT_switch	Displays the status of the internal drain cooler valve. 0 = Off, 1 = On
55	nviDrnPump	Drain Pump	SNVT_switch	Displays the status of the drain pump. 0 = Off, 1 = On
56	nviMainCont	Main Contactor	SNVT_switch	Displays the status of the main contactor. 0 = Off, 1 = On
57	nviHtrStg1	Heater Stage 1	SNVT_switch	Displays the status of the first stage contactor. 0 = Off, 1 = On
58	nviHtrStg2	Heater Stage2	SNVT_switch	Displays the status of the second stage contactor. 0 = Off, 1 = On
59	nviHtrStg3	Heater Stage 3	SNVT_switch	Displays the status of the third stage contactor. 0 = Off, 1 = On

No.	Snivet Name	Full Name	Snivet Type	Notes
60	nviHtrSSRStg	Heater SSR Stage	SNVT_count_inc_f	Displays the heater SSR stage output value. 0% to 100%, Resolution 0.01%
61	nviWtrLvl	Water Level	SNVT_count_inc_f	Value of the percentage of water remaining in the evaporation chamber. 0% to 120%, Resolution 0.1%
62	nviRmRHNetwkRd	Room RH Network Reading	SNVT_count_inc_f	Value of room's relative humidity reading received from the network. 0% RH to 100% RH, Resolution 0.01% RH **Only used if configured for network internal demand.**
63	nviRmRHSP	Room RH Setpoint	SNVT_count_inc_f	Value of room's relative humidity setpoint received from the network. 0% RH to 100% RH, Resolution 0.01% RH **Only used if configured for network internal demand.**
64	nviRmRHUnoccSP	Room RH Unoccupied Setpoint	SNVT_count_inc_f	Value of room's relative humidity reading during no occupancy, received from the network. 0% RH to 100% RH, Resolution 0.01% RH **Only used if the local schedule is activated.**
65	nviRmRHVacantSP	Room RH Vacant Setpoint	SNVT_count_inc_f	Value of room's relative humidity reading during vacancy, received from the network. 0% RH to 100% RH, Resolution 0.01% RH **Only used if the local schedule is activated.**
66	nviRmDem	Room Demand	SNVT_count_inc_f	Humidity demand value of the room. 0% to 100%, Resolution 0.01% **Only used if configured for network internal demand.**
67	nviSupHiLimNetRd	Supply High Limit Network Reading	SNVT_count_inc_f	Value of supply high limit reading received from the network. 0% RH to 100% RH, Resolution 0.01% RH **Only used if a modulating high limit is used.**
68	nviSupHiLimSP	Supply High Limit Setpoint	SNVT_count_inc_f	Value of supply high limit setpoint received from the network. 0% RH to 100% RH, Resolution 0.01% RH **Only used if a modulating high limit is used.**
69	nviSupHiLimDem	Supply High Limit Demand	SNVT_count_inc_f	Supply high limit humidity demand value. 0% to 100%, Resolution 0.01% **Only used if a modulating high limit is used.**
70	nviHumCtrlNetDem	Humidity Control Network Demand	SNVT_count_inc_f	Value of humidity control demand received from the network. 0% to 100%, Resolution 0.01% **Only used if configured for network external demand.**
71	nviHmCtrNetHiLim	Humidity Control Network High Limit	SNVT_count_inc_f	Value of humidity control high limit received from the network. 0% to 100%, Resolution 0.01% **Only used if a modulating high limit is used.**

No.	Snivet Name	Full Name	Snivet Type	Notes
72	nviHumDem	Humidity Demand	SNVT_count_inc_f	Value of the current humidity demand. 0% to 100%, Resolution 0.01% **Only used if configured for network external demand.**
73	nviSysStmOutput	System Steam Output	SNVT_count_inc_f	Value of the measured steam output of the humidifier. 0% to 100%, Resolution 0.01%
74	nviBlrDem	Boiler Demand	SNVT_count_inc_f	Value of the measured humidity demand of the humidifier. 0% to 100%, Resolution 0.01%
75	nviBlrRequest	Boiler Request	SNVT_count	Select whether to perform one of the following actions: 0 = None 1 = Reset Alarms 2 = Drain 3 = Reset Counters 4 = Filling 5 = WaterCalib
76	nviBlrState	Boiler State	SNVT_count	Displays the current state of operation of the humidifier. 0 = Off 1 = Idle 2 = LineRinse 3 = TankRinse 4 = Filling 5 = Draining 6 = Heating 7 = Boiling 8 = Alarm
77	nviBlrAlarm	Boiler Alarm	SNVT_count	Displays the current status of the humidifier alarm. 0 = Normal 1 = FailedPump 2 = FillTimeout 3 = BlockedPiping 4 = HeatTimeout 5 = Overheat 6 = WaterLeak 7 = Service 8 = Foaming
78	nviBlrCommand	Boiler Command	SNVT_count	Displays whether the system is powered on or off. 0 = Off 1 = On

Notes

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