

Applications

Application is compatible with Q1 Hardware. Compatible with Heat Pump Unit equipment up to 4 stages of cooling or heating, analog or floating-point valves or digital stages, discharge pressure/variable speed fan control, economizer, humidification and de-humidification, IAQ (CO2) control.

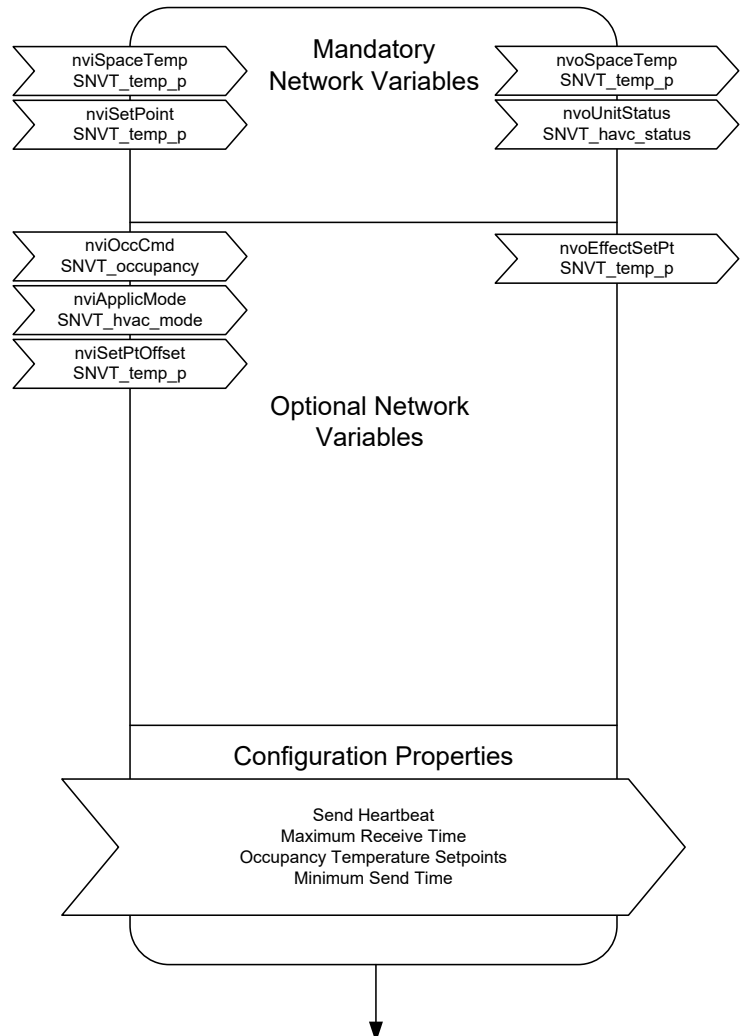
Software

Software features include:

- Single Zone HPU control options
 - Single or Multiple Zone temperature sensors, with the capacity to act upon maximum, minimum, or average temperature.
 - Full PID control of up to 4 Independent stages of cooling, both digital and analog or a mixture of both
 - Full PID control of up to 4 Independent stages of heating, both digital and analog or a mixture of both
 - Electric Re-heat control
 - Multiple Supply Fan control options. On/Off, Duct Pressure Control based variable speed and selector switch based speed control
 - Dry-bulb and Enthalpy based Economizer with CO2 and freeze protection control
 - Space Humidity Control
 - Built in Energy Shedding control
 - Optimum Start Capable
 - Built in Alarming
 - Physical I/O Alarms
 - Fan Failure Alarms
 - Sensor Alarms
 - Temperature Control Alarms
 - Pressure Control Alarms
 - CO2 Alarms
 - Humidity Control Alarms
 - Many more
 - Changeable network variable types.
- Slave mode for any unused I/O, which can be bound to another controller.

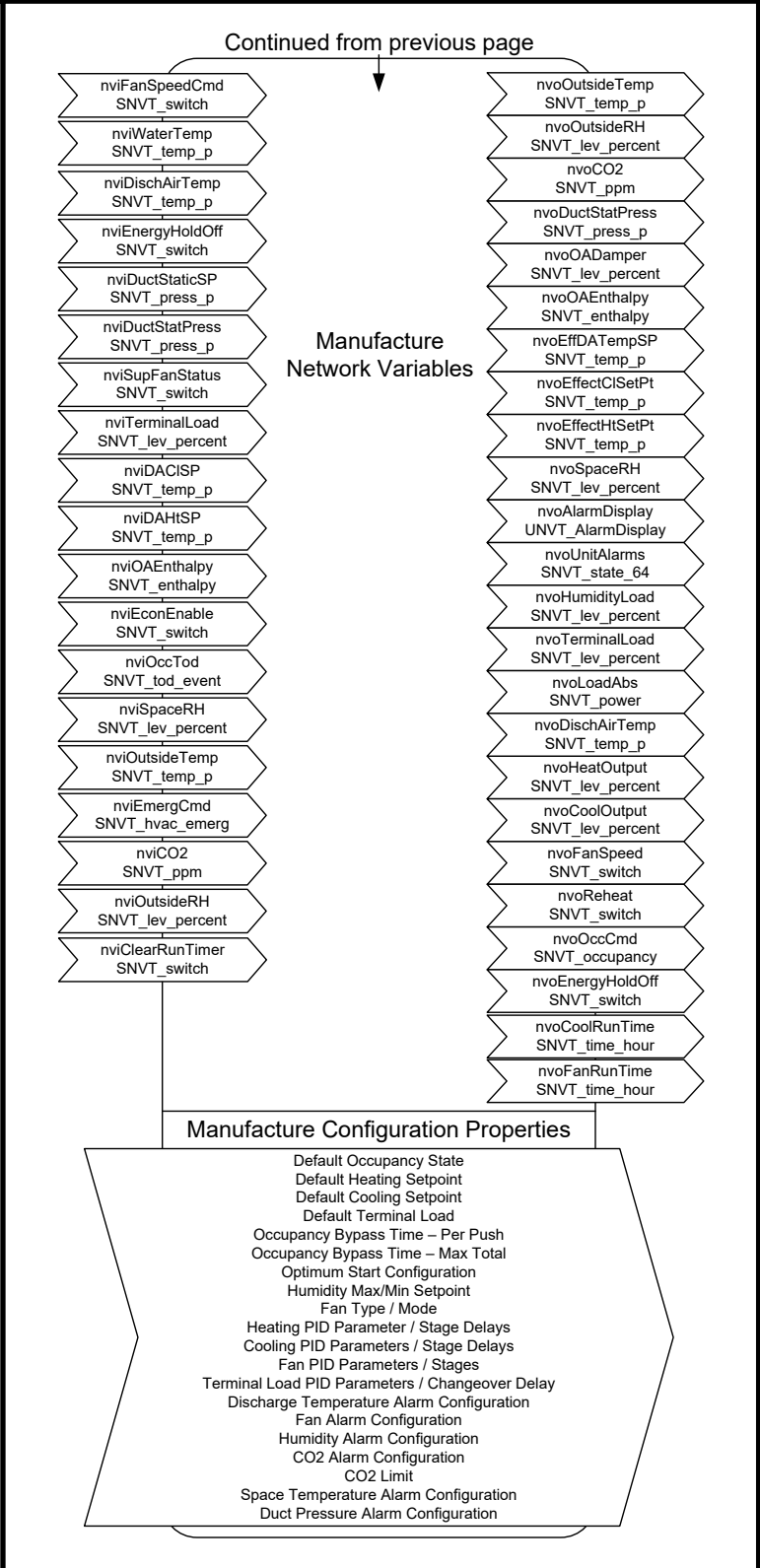
LNS Plug-in provides graphical user interface for configuration and monitoring. Plug-in simplifies hardware I/O customization, communication parameters, control sequences. Plug-in can be executed from within network management tool such as LonMaker for Windows or similar.

The screenshots illustrate the software's graphical user interface for configuring and monitoring a Heat Pump Unit (HPU). The top screenshot shows the 'Terminal Load' configuration screen, which includes fields for Active Terminal Load (0%), Active Space Temp (73.202°F), Space Temp Input (Input 1), Multi Sensor Type (Average), Occupied Space Setpoint Span (63.8°F to 73.4°F), Standby Space Setpoint Span (66.2°F to 77°F), Unoccupied Space Setpoint Span (63.8°F to 82.4°F), Setpoint Input (Not Assigned), Setpoint Bias Input (Not Assigned), Minimum/Maximum Terminal Load (-100% to 100%), PGain Taper 1°F (25), IGain Taper 1°F (1), DGain Taper 1°F (0), Pid Timing (sec.) (10), Change Delay (sec.) (300), and Follower Load (%) (0). The middle screenshot shows the 'Cooling' configuration screen, which includes Cooling Load Cmd (0%), Discharge Setpoint (62.180°F), Disch. Temp Input (44), Follower Setpoint (44), Reversing Valve Control (Enable with Cool), Rev-Valve Output (Not Assigned), Number of Stages (1), Stage 1 Output (Not Assigned), Mix On Time (sec.) (120), Mix Off Time (sec.) (300), Stage 2 Output (Not Assigned), Stage 3 Output (Not Assigned), Stage 4 Output (Not Assigned), Stage 4 Delay (sec.) (5), Minimum/Maximum Cooling Load (100%), PGain Taper 1°F (5), and IGain Taper 1°F (1). The bottom screenshot shows the 'Supply Fan' configuration screen, which includes Fan Speed Cmd (100.0%), Fan Operation (Continuous Use), Fan Control Type (Multi-Speed), Fan Off Delay (sec.) (60), Number of stages (1), Stage 1 Output (Not Assigned), Stage 2 Output (Not Assigned), Stage 3 Output (Not Assigned), Stage 4 Output (Not Assigned), Fan Proof Type (Fan Command), and a list of hardware inputs including (U1) nvoSpace_Temp_1, (U2) nvoHwData_2, (U13) nvoHwData_3, (U14) nvoHwData_4, (U15) nvoHwData_5, and (U16) nvoHwData_6.

HPU 8051 Profile	Network Profile
<p>All variables with SNVT_xxx have Changeable Types feature.</p>	<p>HPU 8051 functional block information.</p>  <p>The diagram illustrates the functional block information for the HPU 8051. It is organized into three main sections:</p> <ul style="list-style-type: none"> Mandatory Network Variables: This section is divided into two columns. The left column contains two variables: <code>nviSpaceTemp</code> (SNVT_temp_p) and <code>nviSetPoint</code> (SNVT_temp_p). The right column contains two variables: <code>nvoSpaceTemp</code> (SNVT_temp_p) and <code>nvoUnitStatus</code> (SNVT_hvac_status). Optional Network Variables: This section is also divided into two columns. The left column contains three variables: <code>nviOccCmd</code> (SNVT_occupancy), <code>nviApplicMode</code> (SNVT_hvac_mode), and <code>nviSetPtOffset</code> (SNVT_temp_p). The right column contains one variable: <code>nvoEffectSetPt</code> (SNVT_temp_p). Configuration Properties: A large arrow-shaped box at the bottom contains the following properties: Send Heartbeat, Maximum Receive Time, Occupancy Temperature Setpoints, and Minimum Send Time. <p>Arrows indicate that the Mandatory and Optional Network Variables sections feed into the Configuration Properties section. A downward arrow from the Configuration Properties section points to the text "Continue on next page".</p>

HPU 8051 Profile	Network Profile
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Open Loop Sensor Profile

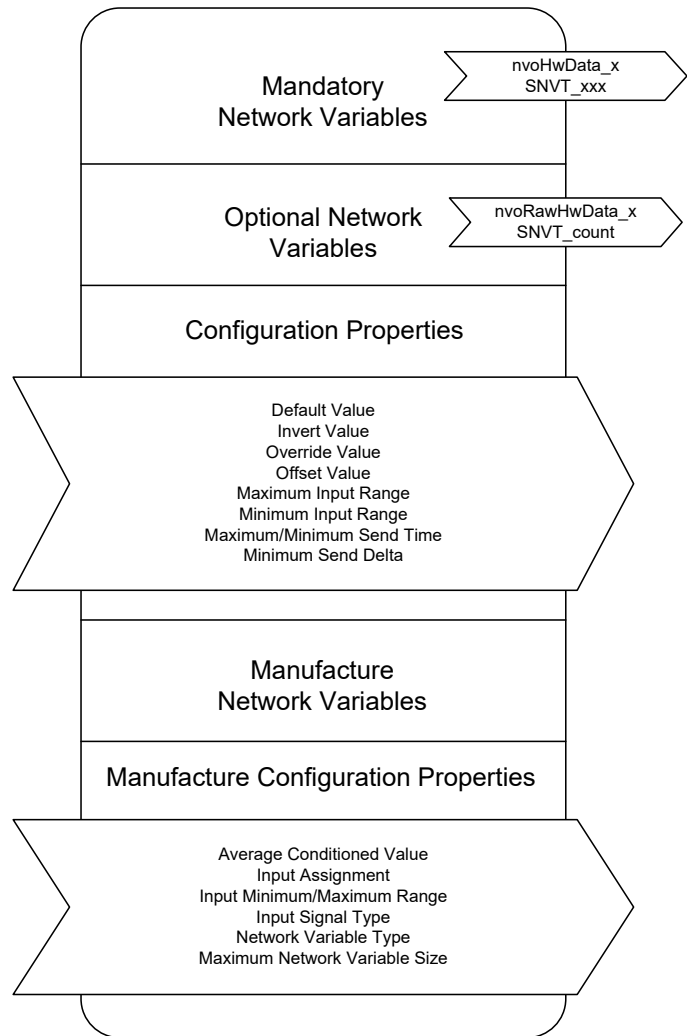
Open Loop Sensor profile is used by all physical inputs. Inputs can be used as slave I/O or as part of the main application.

All variables with SNVT_xxx have Changeable Types feature.

Network Profile

Open Loop Sensor functional block information.

(Physical inputs)



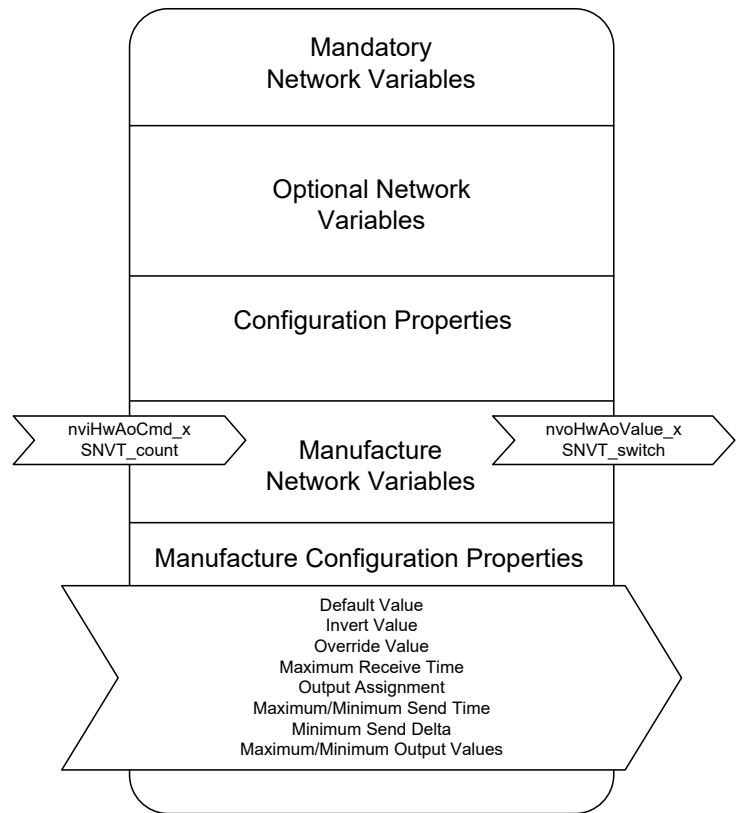
Open Loop Actuator Profile

Analog Output profile is used by all analog outputs. Outputs can be used as slave I/O or as part of the main application.

All variables with SNVT_xxx have Changeable Types feature.

Network Profile

Analog Outputs functional block information.



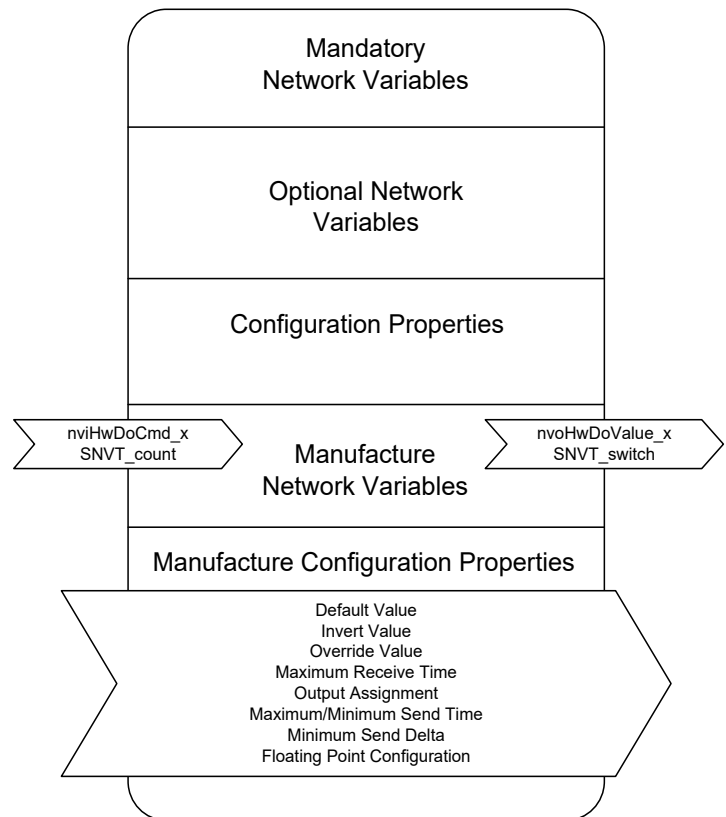
Open Loop Sensor Profile

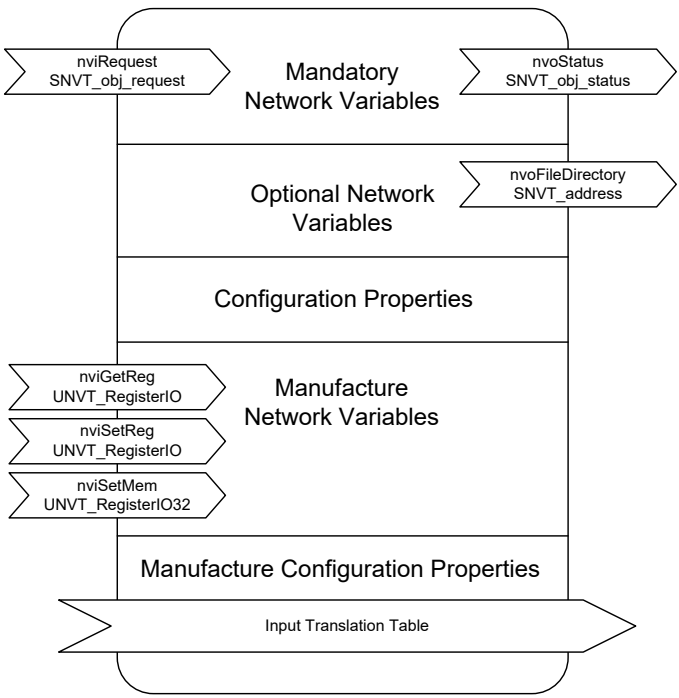
Digital Output profile is used by all digital outputs. Outputs can be used as slave I/O or as part of the main application.

All variables with SNVT_xxx have Changeable Types feature.

Network Profile

Digital Outputs functional block information.



Node Object Profile	Network Profile
<p>Node Object profile includes hardware specific network variables. The variables are for internal and use by the plug-in only.</p>	<p>Node Object functional block information.</p>  <p>The diagram illustrates the functional blocks of the Node Object. It is organized into several sections:</p> <ul style="list-style-type: none"> Mandatory Network Variables: Includes <code>nviRequest</code> (SNVT_obj_request) and <code>nvoStatus</code> (SNVT_obj_status). Optional Network Variables: Includes <code>nvoFileDirectory</code> (SNVT_address). Configuration Properties: A central block for configuration. Manufacture Network Variables: Includes <code>nviGetReg</code> (UNVT_RegisterIO), <code>nviSetReg</code> (UNVT_RegisterIO), and <code>nviSetMem</code> (UNVT_RegisterIO32). Manufacture Configuration Properties: A block for manufacturing-specific configuration. Input Translation Table: A wide arrow-shaped block at the bottom representing the input translation table.