

### Applications

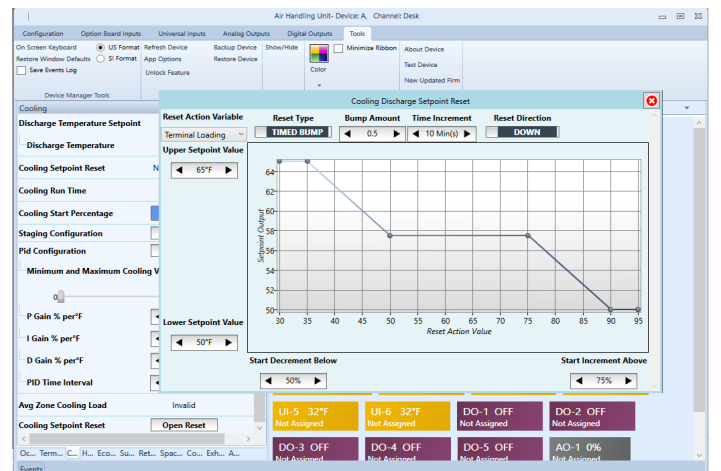
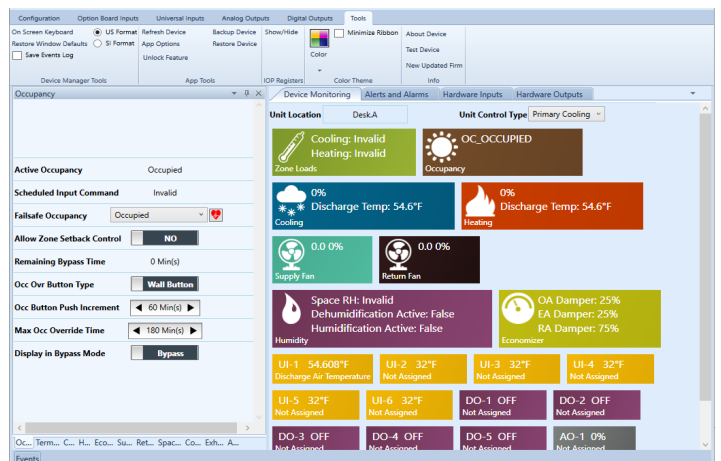
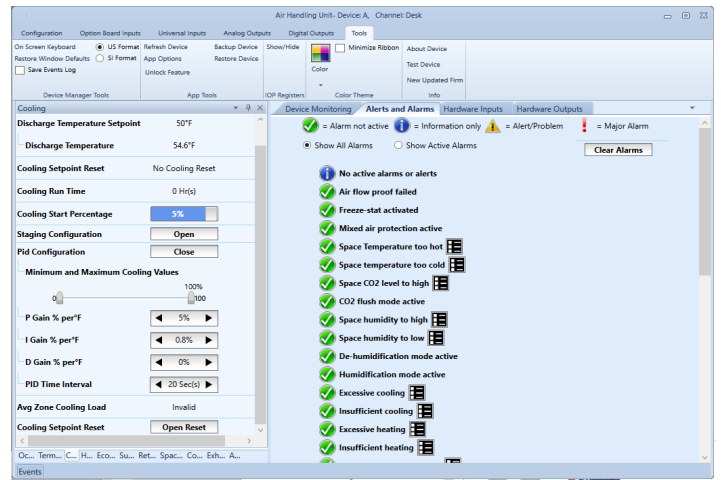
Application is compatible with Q1 Hardware. Compatible with Air Handling Unit equipment up to 6 stages of cooling or heating, analog or floating point valves or digital stages, discharge pressure/variable speed fan control, economizer, humidification and de-humidification, IAQ (CO2) control. Accepts fan in bindings from terminal equipment controllers to communicate zone information.

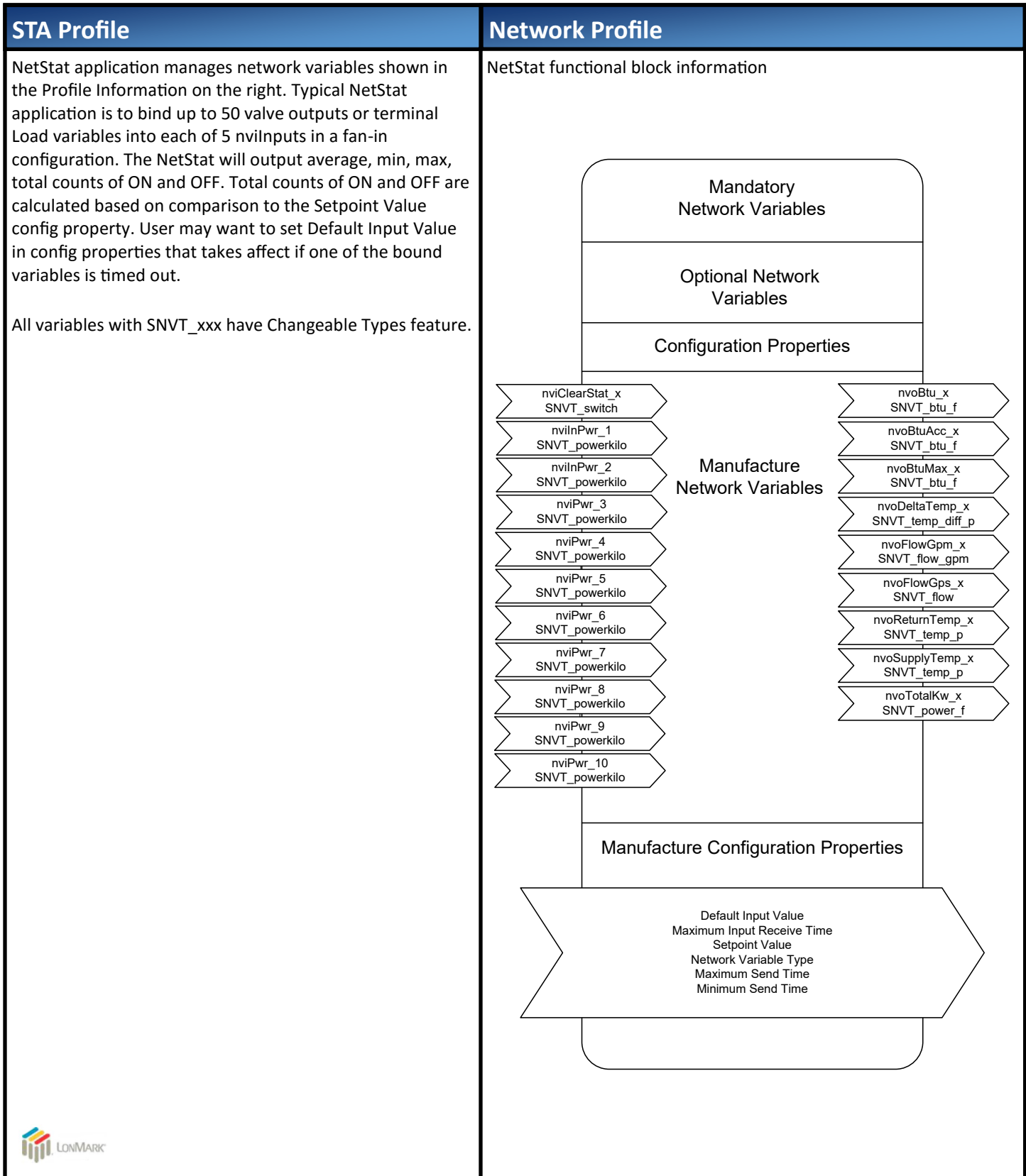
### Software

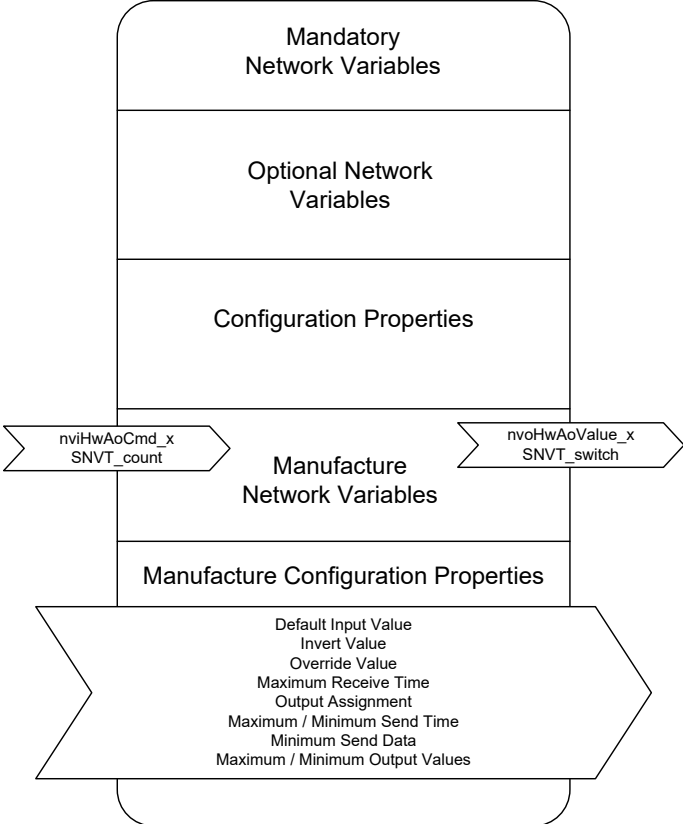
Software features include:

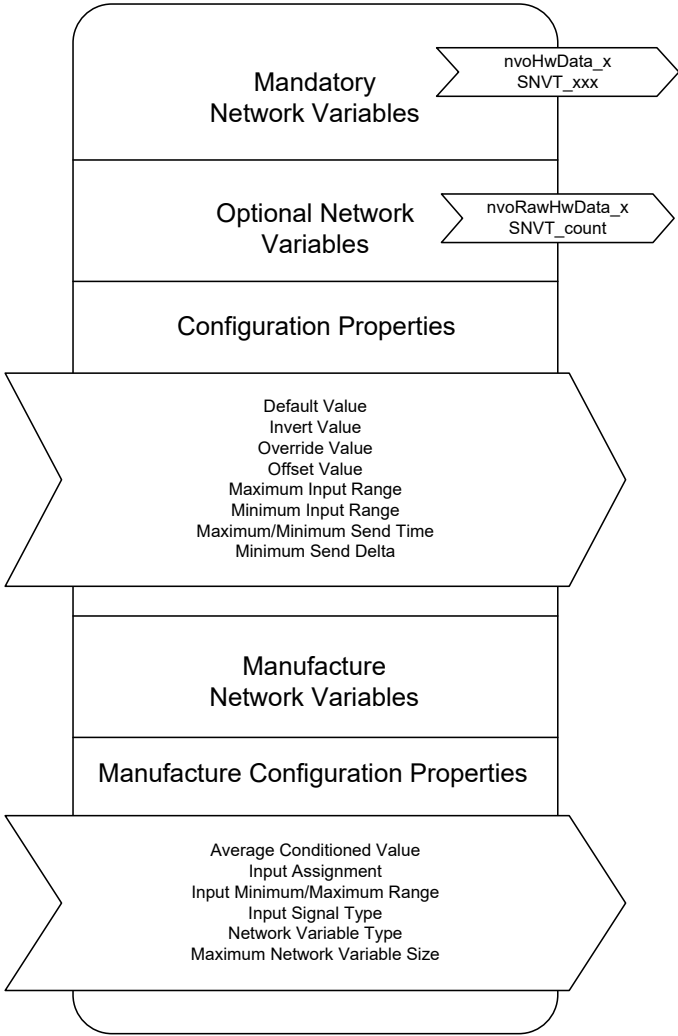
- Single Zone or Terminal Unit based AHU control options
- Full PID control of up to 6 Independent stages of cooling, both digital and analog or a mixture of both
- Full PID control of up to 6 Independent stages of heating, both digital and analog or a mixture of both
- Multiple Supply Fan control options. On/Off, Duct Pressure Control, Temperature based Variable Speed
- Multiple Return Fan control options. Building Pressure control, Volumetric Tracking, Speed Tracking
- Multiple styles of built in Discharge Temperature and Fan Pressure Reset algorithms
- Dry-bulb and Enthalpy based Economizer with CO2 and freeze protection control
- Space Humidity Control
- Built in Energy Shedding control
- Built in Alarming
  - Air Filter Alarms
  - Fan Failure and Belt Loss Alarms
  - Sensor Alarms
  - Temperature Control Alarms
  - Pressure Control Alarms
  - CO2 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, and control sequences. Plug-in can be executed from within network management tool such as LonMaker for Windows or similar.



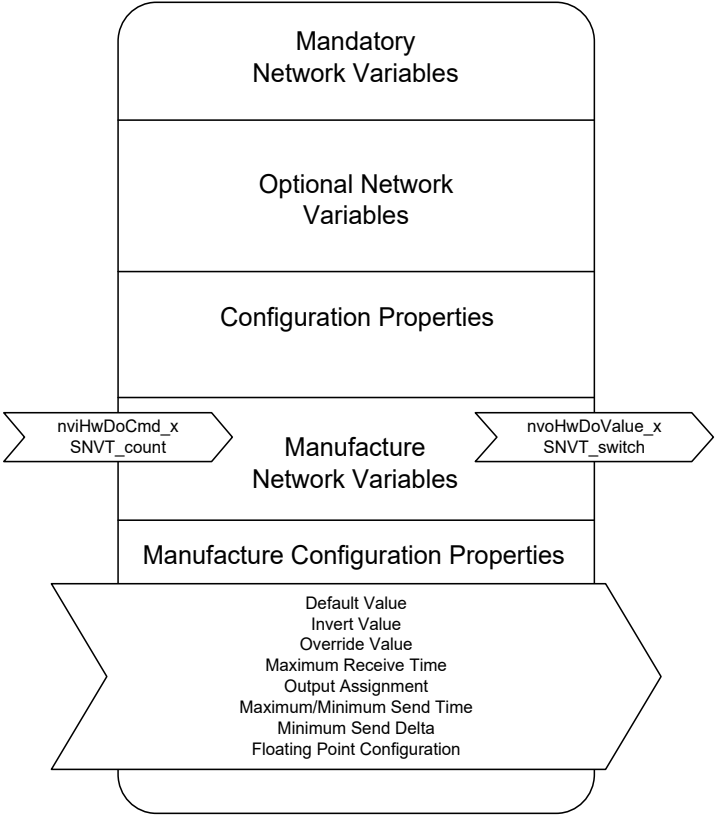


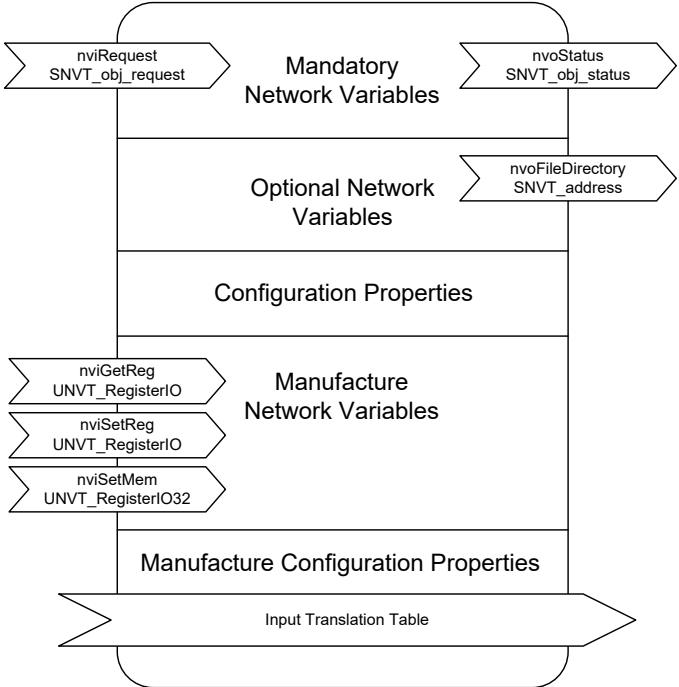
Node Object Profile	Network Profile
<p>Analog Output profile is used by all physical analog outputs. This allows the outputs to be used as slave I/O or as part of the main application.</p> <p>All variables with SNVT_xxx have Changeable Types feature.</p>	<p>Analog Output functional block information.</p>  <p>The diagram illustrates the structure of the Analog Output functional block. It is composed of several layers:</p> <ul style="list-style-type: none"> <li><b>Mandatory Network Variables</b>: The top layer, represented by a rounded rectangle.</li> <li><b>Optional Network Variables</b>: The second layer, represented by a rectangle.</li> <li><b>Configuration Properties</b>: The third layer, represented by a rectangle.</li> <li><b>Manufacture Network Variables</b>: The fourth layer, represented by a rectangle. It includes two specific variables: <code>nviHwAoCmd_x SNVT_count</code> and <code>nvoHwAoValue_x SNVT_switch</code>.</li> <li><b>Manufacture Configuration Properties</b>: The fifth layer, represented by a rectangle.</li> <li><b>Default Input Value, Invert Value, Override Value, Maximum Receive Time, Output Assignment, Maximum / Minimum Send Time, Minimum Send Data, Maximum / Minimum Output Values</b>: The bottom layer, represented by a large arrow pointing to the right.</li> </ul>

Open Loop Sensor Profile	Network Profile
<p>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.</p> <p>All variables with SNVT_xxx have Changeable Types feature.</p>	<p>Open Loop Sensor functional block information.</p> <p>(Physical inputs)</p>  <p>The diagram illustrates the functional block information for physical inputs, organized into several layers:</p> <ul style="list-style-type: none"> <li><b>Mandatory Network Variables:</b> Includes variables like <code>nvoHwData_x</code> and <code>SNVT_xxx</code>.</li> <li><b>Optional Network Variables:</b> Includes variables like <code>nvoRawHwData_x</code> and <code>SNVT_count</code>.</li> <li><b>Configuration Properties:</b> A large block containing: Default Value, Invert Value, Override Value, Offset Value, Maximum Input Range, Minimum Input Range, Maximum/Minimum Send Time, and Minimum Send Delta.</li> <li><b>Manufacture Network Variables:</b> A block for manufacturer-specific variables.</li> <li><b>Manufacture Configuration Properties:</b> A block for manufacturer-specific configuration, including: Average Conditioned Value, Input Assignment, Input Minimum/Maximum Range, Input Signal Type, Network Variable Type, and Maximum Network Variable Size.</li> </ul>



Open Loop Actuator Profile	Network Profile
<p>Analog Output profile is used by all analog outputs. Outputs can be used as slave I/O or as part of the main application.</p> <p>All variables with SNVT_xxx have Changeable Types feature.</p>	<p>Analog Outputs functional block information.</p> <div style="text-align: center; border: 1px solid black; padding: 10px; margin: 20px auto; width: 80%;"> <p>The diagram shows a vertical stack of components for an Analog Output functional block:</p> <ul style="list-style-type: none"> <li><b>Mandatory Network Variables</b> (top rounded rectangle)</li> <li><b>Optional Network Variables</b> (middle rounded rectangle)</li> <li><b>Configuration Properties</b> (rectangle)</li> <li><b>Manufacture Network Variables</b> (rectangle, flanked by two arrow-shaped boxes:             <ul style="list-style-type: none"> <li>Left: nviHwAoCmd_x SNVT_count</li> <li>Right: nvoHwAoValue_x SNVT_switch</li> </ul> </li> <li><b>Manufacture Configuration Properties</b> (rectangle)</li> <li><b>Default Value, Invert Value, Override Value, Maximum Receive Time, Output Assignment, Maximum/Minimum Send Time, Minimum Send Delta, Maximum/Minimum Output Values</b> (bottom arrow-shaped box)</li> </ul> </div>

Open Loop Sensor Profile	Network Profile
<p>Digital Output profile is used by all digital outputs. Outputs can be used as slave I/O or as part of the main application.</p> <p>All variables with SNVT_xxx have Changeable Types feature.</p>	<p>Digital Outputs functional block information.</p> 

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>  <pre> graph TD     subgraph Mandatory_Network_Variables [Mandatory Network Variables]         direction LR         M1[nviRequest SNVT_obj_request] --&gt; M2[nvoStatus SNVT_obj_status]     end     subgraph Optional_Network_Variables [Optional Network Variables]         direction LR         O1[nvoFileDirectory SNVT_address]     end     subgraph Configuration_Properties [Configuration Properties]     end     subgraph Manufacture_Network_Variables [Manufacture Network Variables]         direction LR         M3[nviGetReg UNVT_RegisterIO]         M4[nviSetReg UNVT_RegisterIO]         M5[nviSetMem UNVT_RegisterIO32]     end     subgraph Manufacture_Configuration_Properties [Manufacture Configuration Properties]     end     subgraph Input_Translation_Table [Input Translation Table]     end     M2 --- O1     O1 --- Configuration_Properties     Configuration_Properties --- Manufacture_Network_Variables     Manufacture_Network_Variables --- Manufacture_Configuration_Properties     Manufacture_Configuration_Properties --- Input_Translation_Table     </pre>