InetSupervisor™

Q1-i.CAS App

Industrial Compressed air Automation System

Applications

i.CAS typical application is control of compressed air systems. It eliminates energy waste, provides state of the art compressor sequencing, load matching, independent user zones with isolation valves, pressure monitoring. i.CAS communicates to compressors with built-in ModBus protocol, or direct digital control with physical I/O.

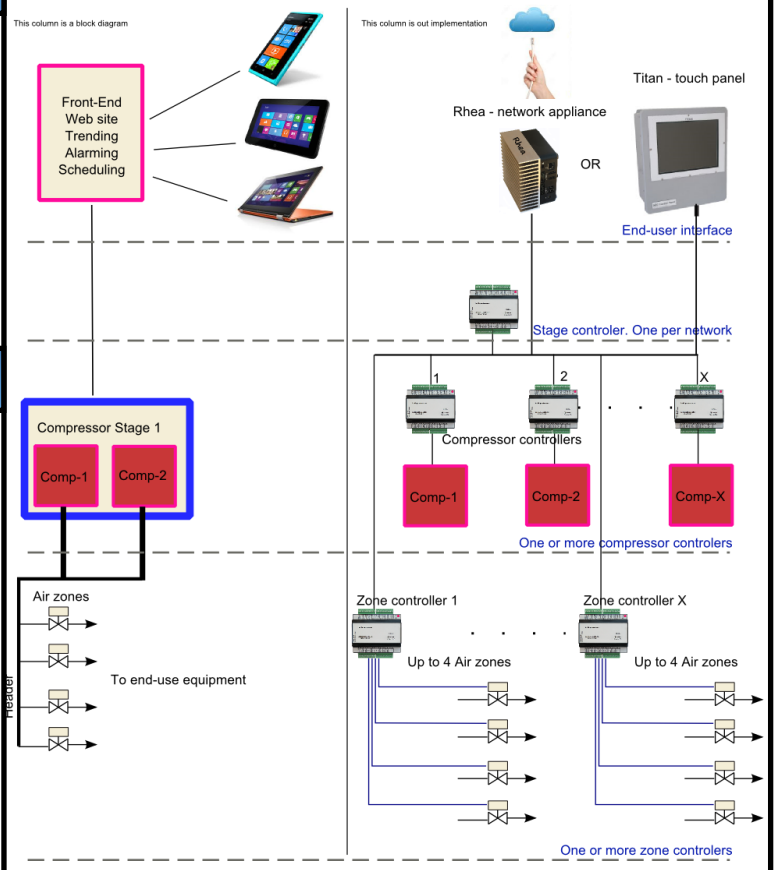
Benefits

- Remove energy waste
- Save on electric bill
- Extend equipment life
- Save maintenance expenses
- Title 24 compliance
- Upgrade old compressor
- Convenience of controlling entire system from single location
- Easy scheduling
- On-demand zone control
- Lower pressure setpoint
- Reports, charts
- Integration with other systems

Solution

Q1 logic controllers are used for: physical I/O, application logic, ModBus communications. Q1 is a member of a complete family of logic controllers ranging from 2-in and 2-out, to 12-in and 12-out. 12 inputs include: 2 resistive-sensor-only inputs and up to 10 universal inputs. Universal inputs can accept 0-10V, 0-20mA, resistive and dry-contact signals. UI type is adjustable by plug-in, no jumpers. Up to 8 Digital outputs are triac digital on/off or floatingpoint. Up to 4 fused Universal analog outputs are capable of 0-10volts and adjustable within that range, or digital (0-12V DC), 20V DC on-board power supply provides power for loop-powered 4-20mA sensors and is fused. DIN rail mounting is integrated into enclosure for rapid installation. With addition of Rhea network appliance the i.CAS system provides graphical interface, scheduling, trending, alarm delivery, detailed system control, monitoring, and optionally remote access with a browser. Installer can graphically configure the system including data entry of critical compressor specific information. Compressor data is used in our proprietary algorithm to continuously calculate optimal system operating parameters. This feature allows for large energy savings in comparison to standard sequencers or local PLC applications. i.CAS is capable of large installation up to 12 compressors with no limit on the number of controlled zones, filters, drains, pressure sensing locations, air dryers, etc. i.CAS energy and alarm monitoring is enriched by constant communication with the native compressor controller by buit-in ModBus. This information is used in smart control, and is stored as trend and alarm information in SQL Databases. Trend and alarm information is available for local or remote retrieval by simple download using a browser. i.CAS is part of a large family of InetSupervisor Automation System catering to a vision of fully integrated facilities including Building Automation, Irrigation, Lighting, Industrial Automation.

Industrial Compressed air Automation System - Diagram



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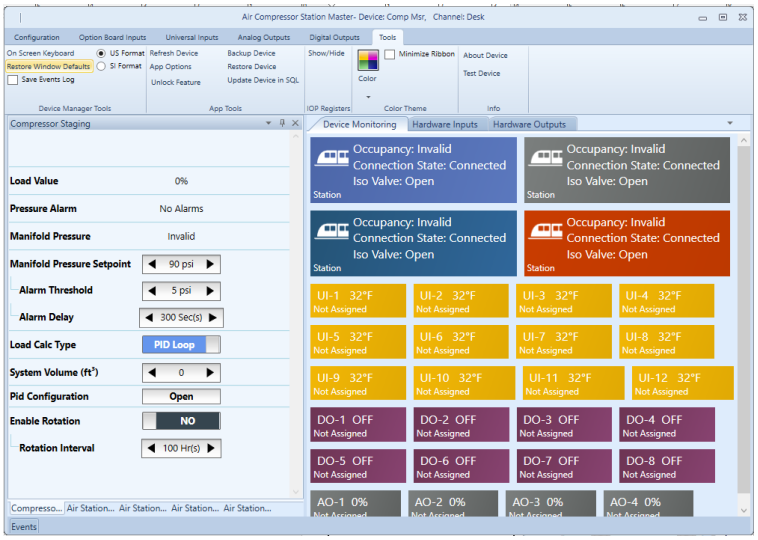
Master Controller Application

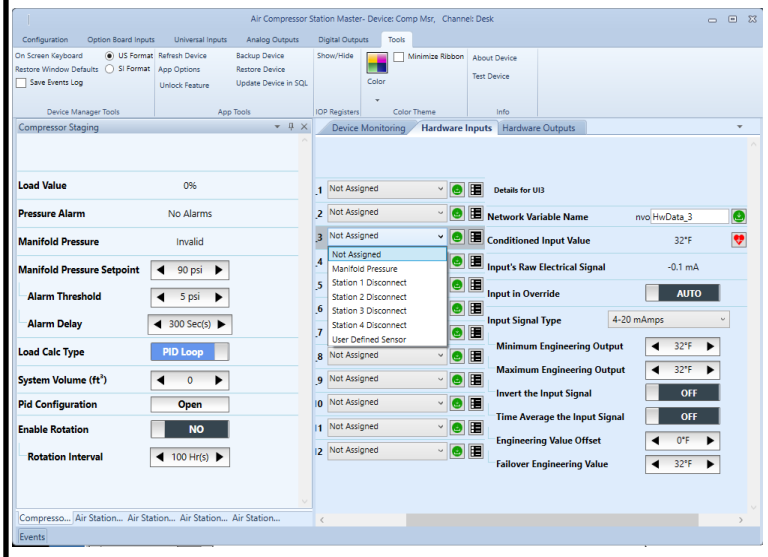
The i.CAS master controller is used to monitor and select the appropriate compressors for stable and efficient control of the air system pressures. The master controller can run up-to 4 air compressor rooms, individually to control separate pressure headers or in combination for more efficient use of the of the available compressors.

Software

- Up to 4 separate air compressor rooms.
- 2 types of control algorithms provided, standard PID control or pressure degradation control.
- System occupancy can come from time of day or machine use signals (on demand).
- User configurable pressure control alarms.
- Will make use of multiple manifold pressure sensors for redundancy and to insure stable pressures across the entire facility.
- Configurable compressor rotation to equalize compressor use times. Will rotate based on individual compressors groups of similar size.
- Isolation valve control for connecting room manifolds together.
- Compressor room disconnection via software and hardware commands.
- Slave mode for any unused /0, 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, communications parameters, control sequences. Plug-in can be executed from within network management tools such as LonMaker for Windows or similar





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Industrial Compressed air Automation System

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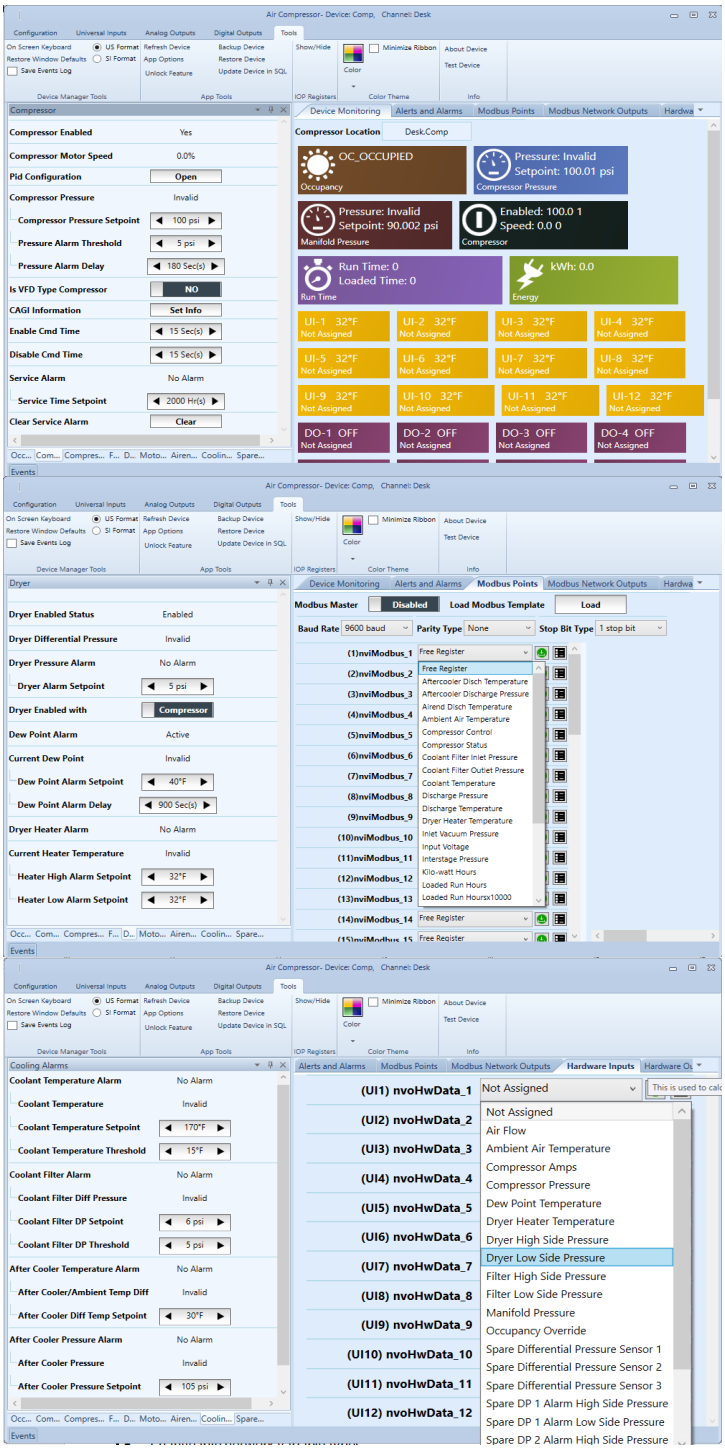
Compressor Controller Application

The i.CAS compressor controller is a highly configurable industrial compressor controller. Capable of controlling and monitoring various functions of an air compressor via the use of on-board Modbus communication or hardware I/O or a combination of both.

Software

- Variable speed, loaded-unloaded, and standard on/off all supported.
- System occupancy can come from time of day or machine use signals (on demand).
- Ability to monitor and control dryer systems.
- 4 differential pressure inputs for monitoring and alarming. Can use differential pressure or separate high/low pressure sensors.
- Monitoring of runtimes and kilo-watt hours
- Built in Alarming
    - Local pressure control Alarms
    - Service Alerts
    - Inlet Filter/Vacum Alarms
    - Motor and AC/DC Voltage Alarms
    - Airend Temperature Alarms
    - Interstage Alarms
    - Coolant Temperature/Pressure Alarms
    - Aftercooler Alarms
    - Dryer Alarms
    - Dew Point Alarm
    - Many more
- Up to 50 Modbus points per controller. Unassigned Modbus points can be used for monitoring, alarming, or slave command.
- 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, communications parameters, control sequences. Plug-in can be executed from within network management tools such as LonMaker for Windows or similar



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Zone Valve Application

The i.CAS compressed air valve controller is used to schedule, monitor and control branch or even single machine valving. Each controller is capable of handing up to 4 separate valves for lower cost job installations, enabling the use of more valving and providing additional savings from reduced air leakage and lowered compressor needs.

Software

- User configurable isolation mode or pressure control mode available. Configurable on a per valve bases.
- Full pid branch pressure control with adjustable setpoints, per valve.
- System occupancy can come from time of day or machine use signals (on demand).
- Software and hardware options for timed occupancy override.
- Signal light output control for with adjustable flash mode timing to indicate to the local user when air is scheduled to shutoff.
- Ability for forward multiple attached manifold pressure sensors to the master controller for easy installation.
- Pressure Control Alarms
- Pressure Sensor Alarms
- Up to 50 Modbus points per controller. Unassigned Modbus points can be used for monitoring, alarming, or slave command.
- Slave mode for any unused I/O, which can be bound to another controller.

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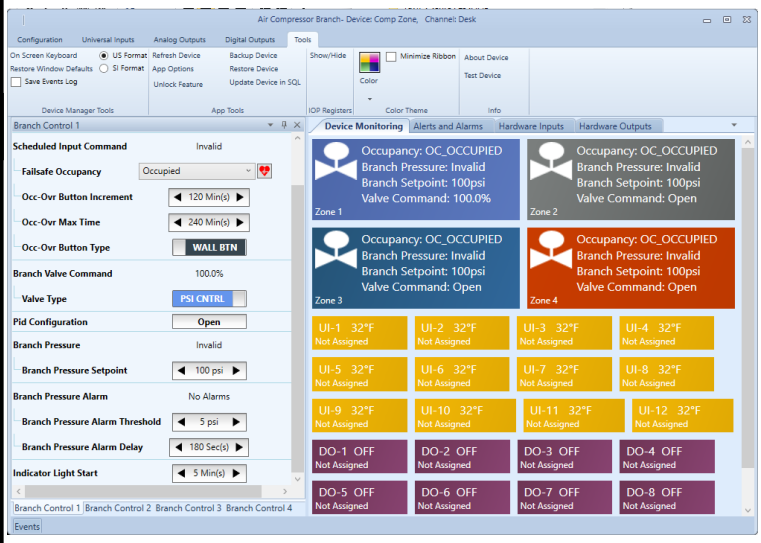
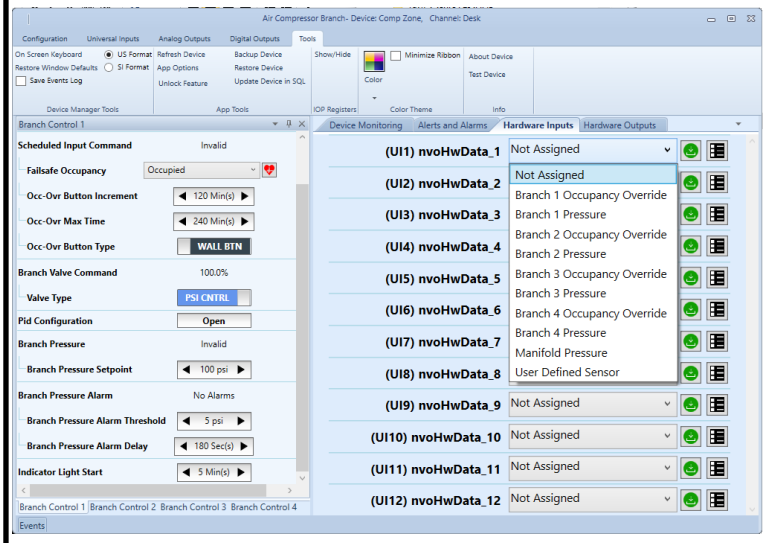
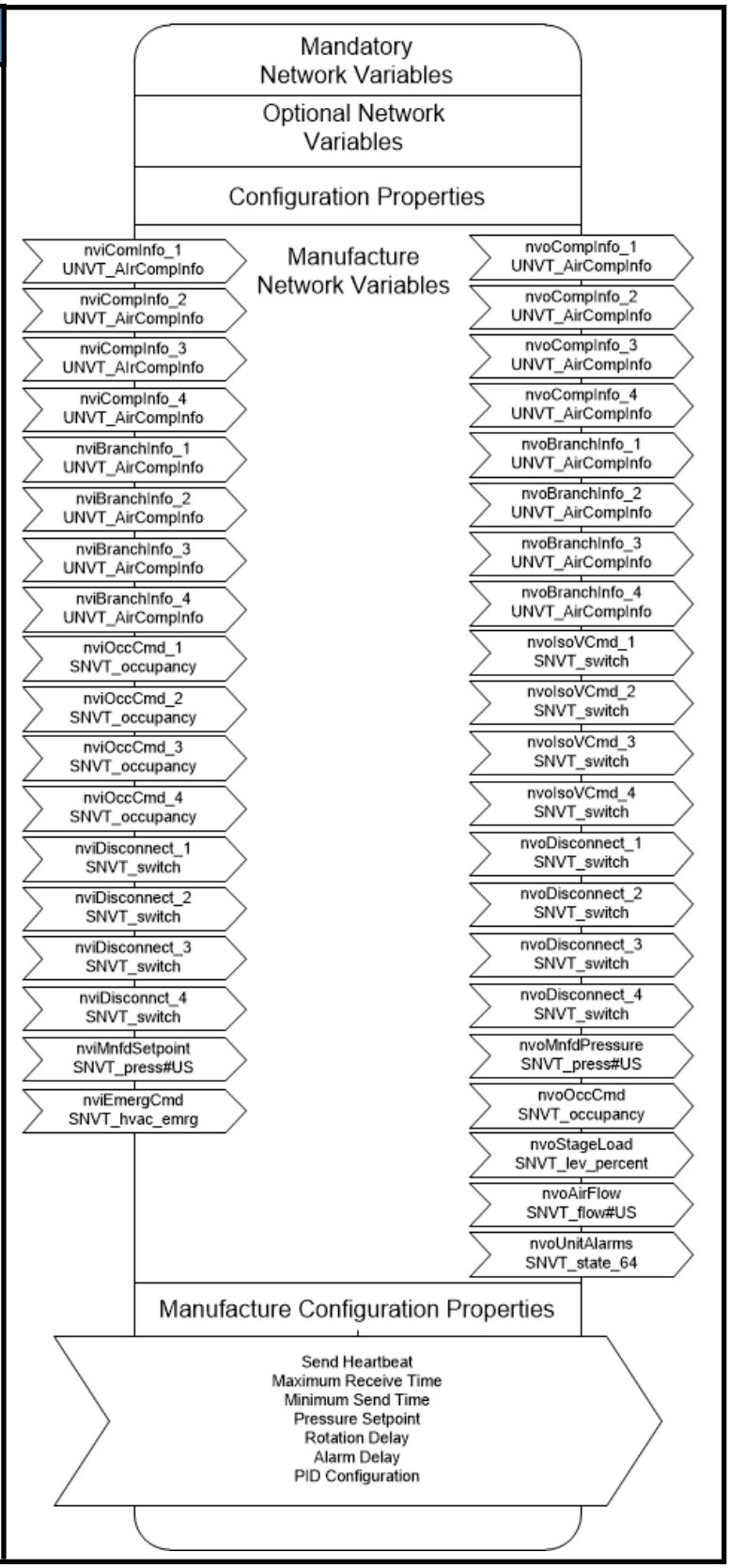




Master Controller Profile

All variables with SNVT_xxx have Changeable Types feature



Compressor Controller Profile

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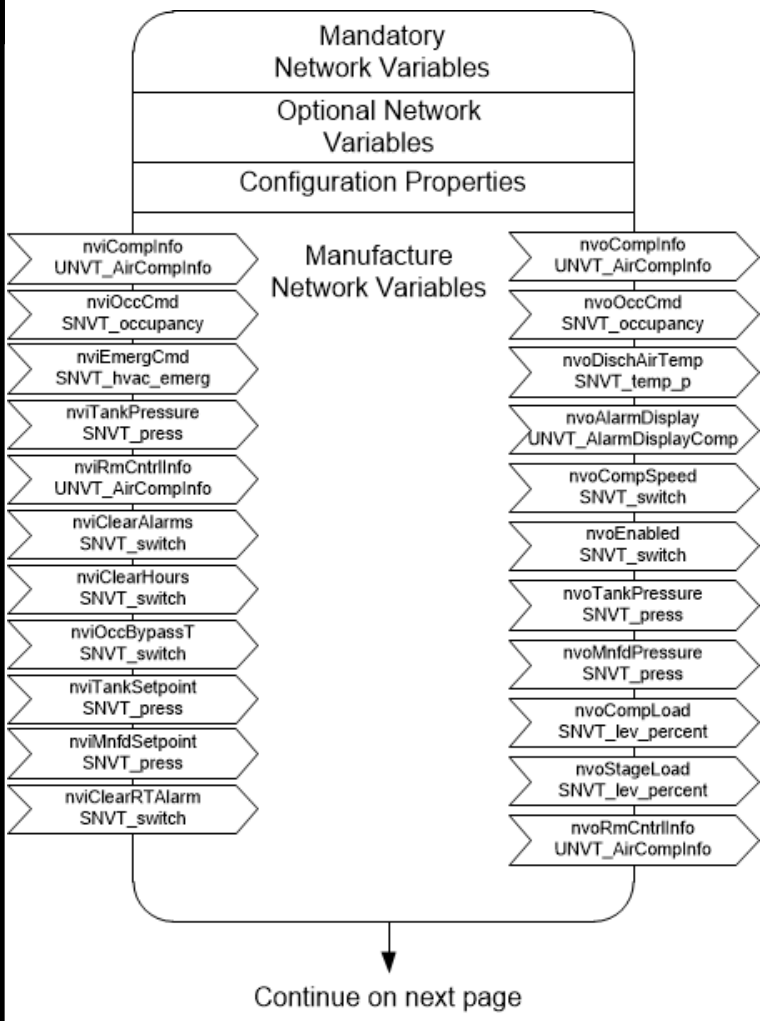

Compressor Controller Profile

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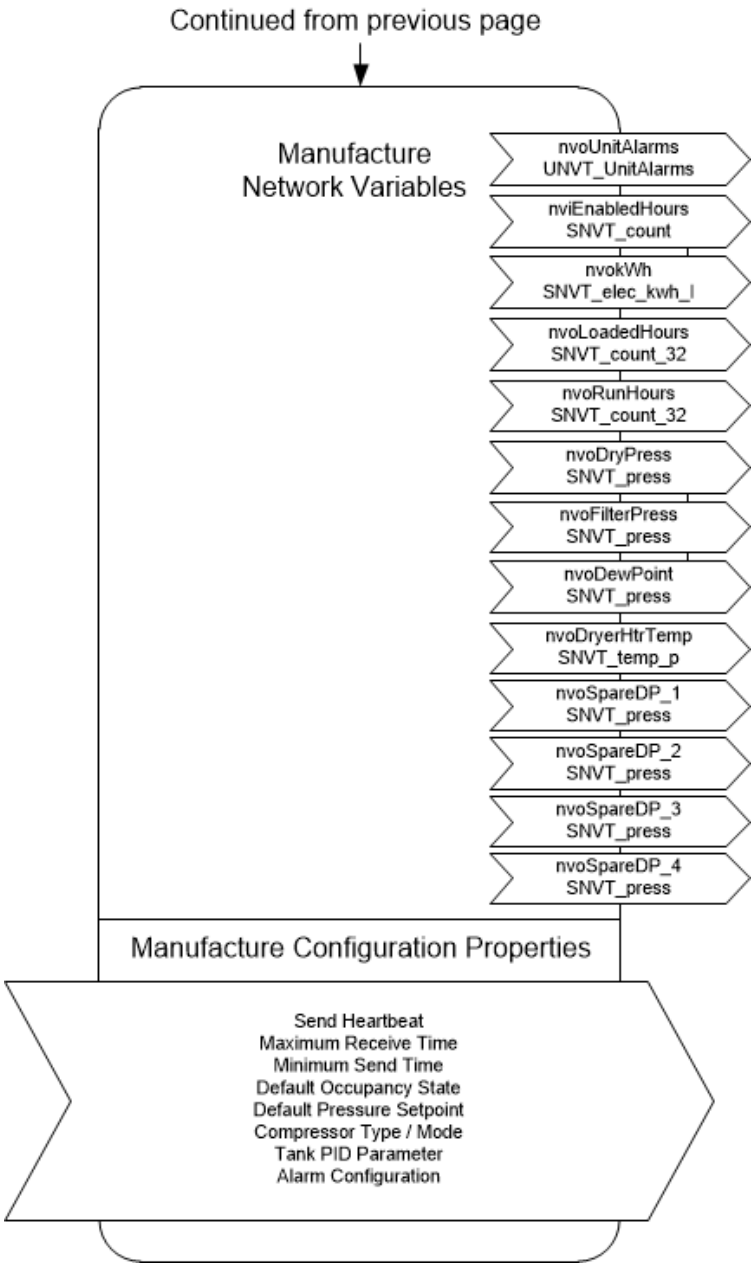

Compressor Zone Controller Profile

All variables with SNVT_xxx have Changeable Types feature