InetSupervisor™

Q1-VAV

InetSupervisor open-system LonWorks controllers

up to 12 inputs - 12 outputs; LonMark VAV-8010 v3.4

Made in USA RoHS LONMARK UL916 Intertek GSA Advantage!

Application

Compatible with Variable Air Volume ("VAV"), Constant Air Volume ("CAV") and Variable Volume Temperature ("VVT") equipment. Applications including fan powered boxes and boxes with local reheat, cooling or humidity control.

Network

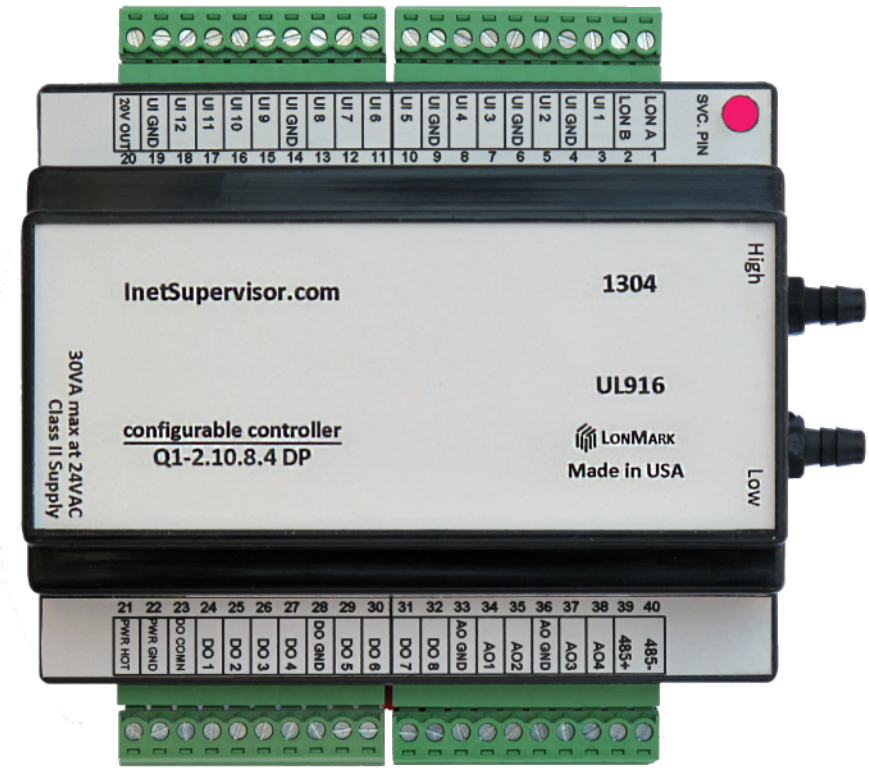
Q1 is built to operate on LonWorks FT-10 channels connected with twisted-pair wire. Network update throttling is incorporated and can be adjusted via the plug-in. Very large networks of devices can be built using IP backbones and routers available from many vendors.
Neuron 5000, no cost LNS commissioning, no credits required.

Software

LNS Plug-in provides graphical user interface for configuration and monitoring. Plug-in simplifies hardware I/O customization, communication parameters, control sequences. Plug-in is to be executed from-within network management tool such as LonMaker for Window or similar, or stand-alone when management application is not available
Software features include:
- Changeable network variable types
- 5 PID loops
- Input , output properties and network update throttling
- Slave mode for any unused I/O, which can be bound to another controller

Hardware

- 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.
- 8 Digital outputs are triac digital on/off or floating point.
-4 Universal analog outputs are capable of 0-10 volts and adjustable within that range, or digital (0-12V DC)
-16V DC on-board power supply provides power for loop-powered 4-20mA sensors.
-Analog outputs are fused.
-RJ11 jack provides quick access to network and 16V DC power for handheld.
DIN rail mounting is integrated into enclosure for rapid installation.



Q1 is based on the Neuron FT-5000 microprocessor and designed to control variety of HVAC applications. It features rich network interface with up to 250 variables. All controller features are adjustable by LNS Plug-in or a hand-held device. Q1 devices can operate stand-alone or as a networked solution. In a networked environment Q1 can share information with other controllers peer to peer on a flat line of communication. Networks of thousands of devices can easily be created. When monitored by InetSupervisor software, web-based control and monitoring is enabled, large trend, schedule, and alarm storage is available. Q1 hardware can optionally be expanded with a variety of feature add-on boards that enhance the Q1 with features like differential pressure sensing, etc.
LonWorks guidelines are strictly observed and Q1 is interoperable with other like controllers for best network integration experience and promotes the use of industries best products in a network.
The Q1 hardware is build to high quality standards and is backed by two-year warranty. All hardware is build in the USA using eco-friendly, lead-free technology and is **RoHS** compliant.

Features:

- Industry leading flow sensor with 20bit resolution; Floating point or proportinal external damper actuator control. Four air flow setpoints; Up to four stages of fan. Discharge temperature control, External occupancy input, Cooling / Heating up to 4 stages digital , analog or mixed; IAQ control; Humidity control; Network traffic management; Fully decoupled I/Os from sequence can be used for control of external equipment with a PID loop; Optimum start.

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Hardware Specifications

Made in USA RoHS LonMark UL916 Intertek GSA Advantage!

Environmental

Operating temperature:	0°-70°C (32°-158°F)
Operating humidity:	0-90% non-condensing
Storage temperature:	-20°- 70°C (-4° - 158°F)

Power

Typical power consumption:	6VA plus peripherals.
Max power consumption:	30VA
Supply voltage:	24VAC; 50/60Hz; Class II
Fuse:	1.85A auto-resetable fuse

Enclosure

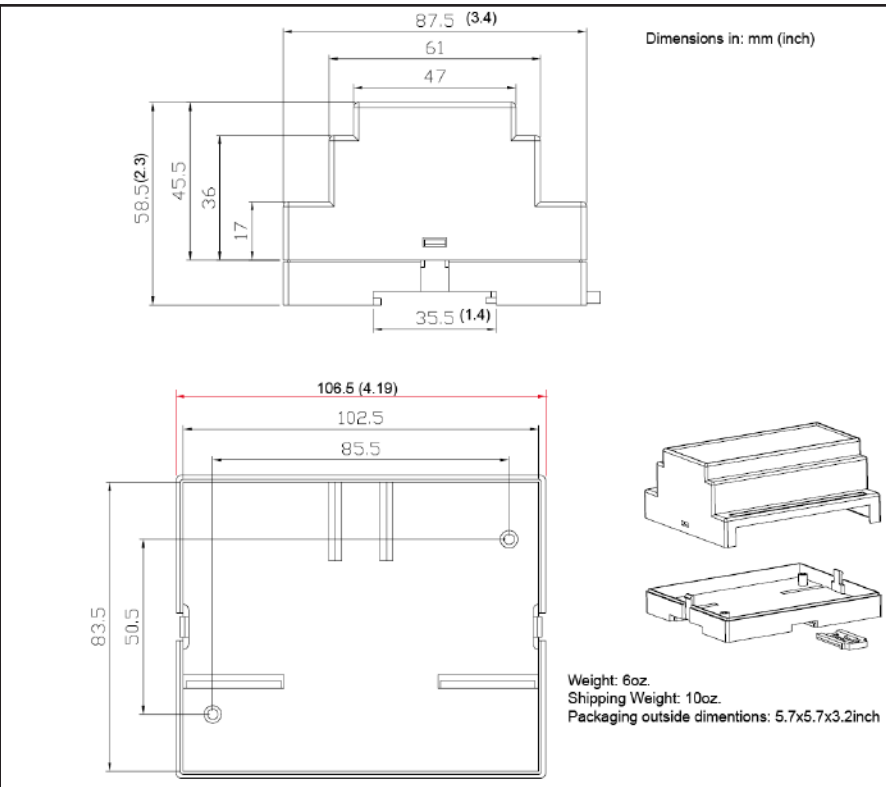
Installation:	Mounts on 35mm Din-Rail.
Color:	Off-white
Material:	ABS
Connectors:	Connectors: Green, pluggable, 10 position

Hardware

Processor:	FT-5000, 8bits, 80MHz
Memory:	48k application memory
Transceiver:	FTT-10; 78kbps free topology, polarity free
Indicator light:	Multicolor LED, power, status, service
Comm jack:	RJ11; power, LON, hand-held comm.

Agency Approvals

Q1 line of hardware has been certified to the UL916 Energy Management Equipment standard and CSA C22.2#205 Issue 1983/06/01 (R2009) Signal Equipment standard.



Inputs:
Q1 hardware platform always has 2 resistive sensor inputs. In addition there are up to 10 Universal Inputs. Number of UIs depends on the part number. Input resolution is 12 bits. UIs are software configurable.

- Voltage 0-10VDC
- Current 0-20mA
- Digital Dry contact
- Resistive sensors
  - Thermistor 10kΩ Type 2 (recommended), Type 3
  - Thermistor custom translation table on each UI
  - Potentiometer with custom translation table on each UI

Outputs:
Q1 hardware has up to 8 triac digital outputs and 4 analog outputs. Number of outputs depends on the part number. Triac outputs can source 24AC or route external AC power depending on power jumper (P6) setting.

- Digital Triac
  - Triacs rated for 1A at 24VAC with external power supply.
- Analog Universal
  - 0-10VDC adjustable, linear
  - 0 or 12VDC digital
  - 20mA max at 30°C.
  - Resolution 8 bit

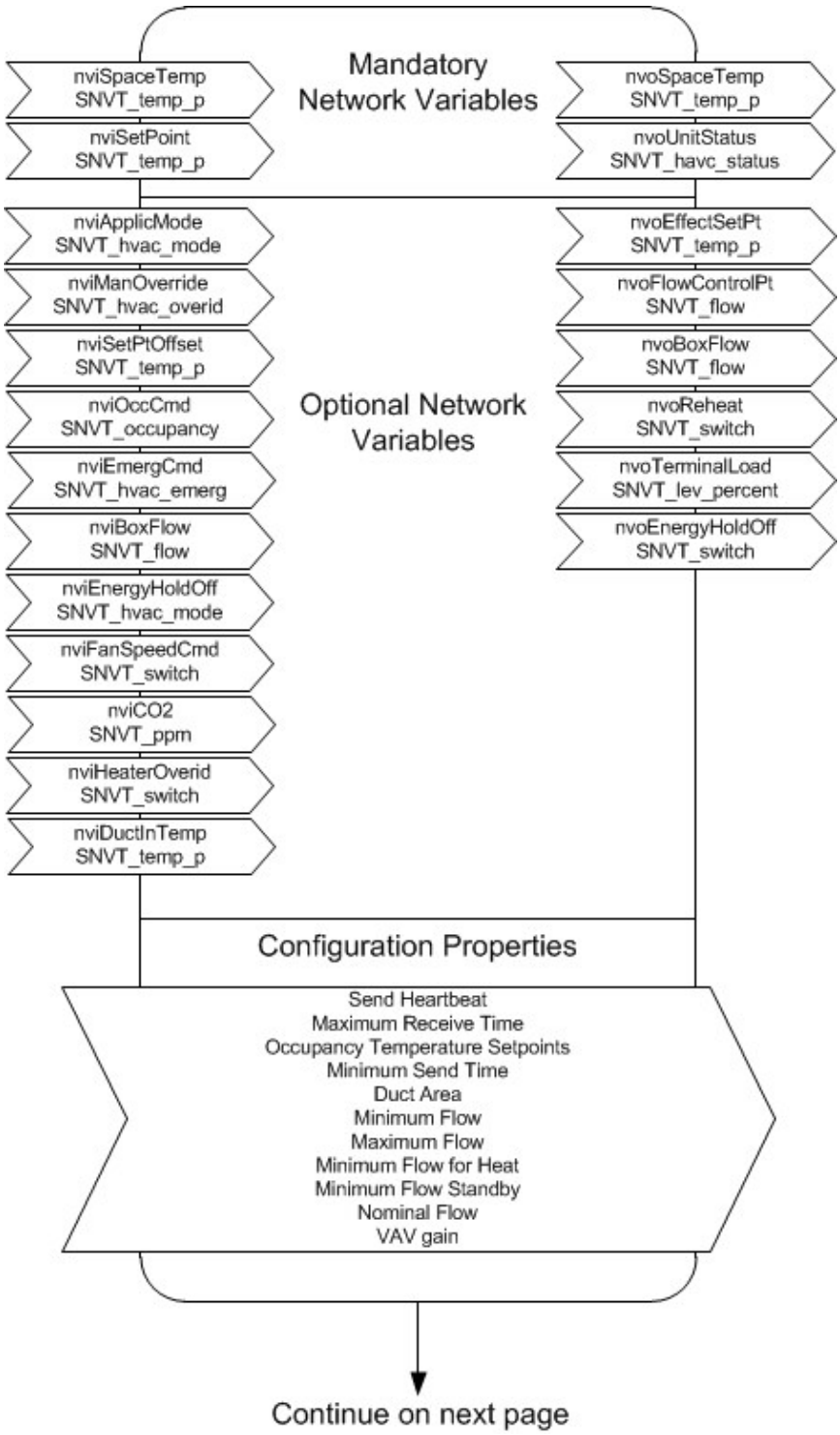
LED color codes:

Red/Green alternating = Powered on and application less
Green = Powered on and configured
Red = Powered on and Neuron chip fault
OFF, no color = No power

VAV Profile

All variables with SNVT_xxx have Changeable Types feature.

FCU 8010 functional block information.



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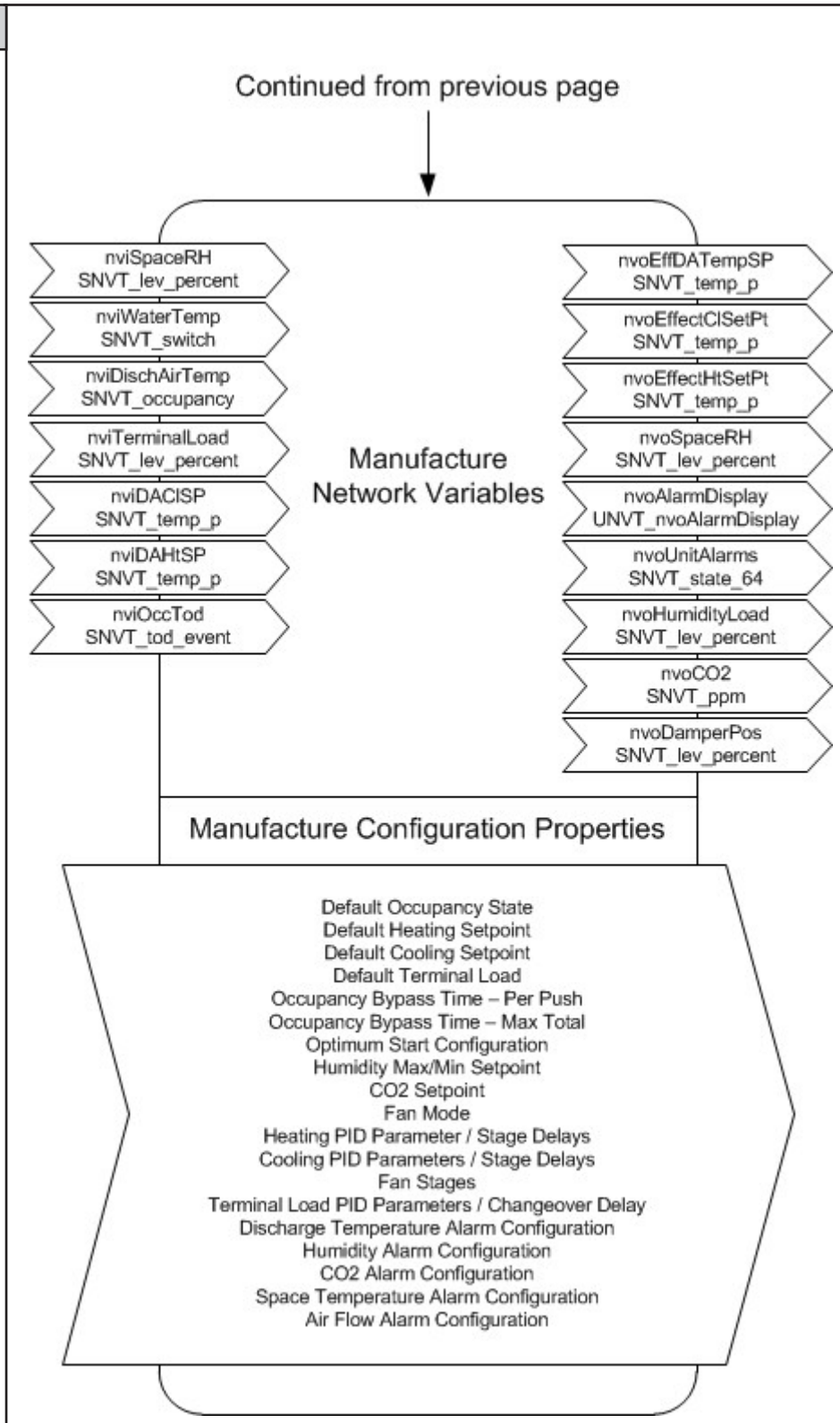
VAV Profile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nviSpaceRH
SNVT_lev_percent
nviWaterTemp
SNVT_switch
nviDischAirTemp
SNVT_occupancy
nviTerminalLoad
SNVT_lev_percent
nviDACISP
SNVT_temp_p
nviDAHtSP
SNVT_temp_p
nviOccTod
SNVT_tod_event
Manufacture
Network Variables
nvoEffDATempSP
SNVT_temp_p
nvoEffectClSetPt
SNVT_temp_p
nvoEffectHtSetPt
SNVT_temp_p
nvoSpaceRH
SNVT_lev_percent
nvoAlarmDisplay
UNVT_nvoAlarmDisplay
nvoUnitAlarms
SNVT_state_64
nvoHumidityLoad
SNVT_lev_percent
nvoCO2
SNVT_ppm
nvoDamperPos
SNVT_lev_percent
Manufacture Configuration Properties
Default Occupancy State
Default Heating Setpoint
Default Cooling Setpoint
Default Terminal Load
Occupancy Bypass Time – Per Push
Occupancy Bypass Time – Max Total
Optimum Start Configuration
Humidity Max/Min Setpoint
CO2 Setpoint
Fan Mode
Heating PID Parameter / Stage Delays
Cooling PID Parameters / Stage Delays
Fan Stages
Terminal Load PID Parameters / Changeover Delay
Discharge Temperature Alarm Configuration
Humidity Alarm Configuration
CO2 Alarm Configuration
Space Temperature Alarm Configuration
Air Flow Alarm Configuration

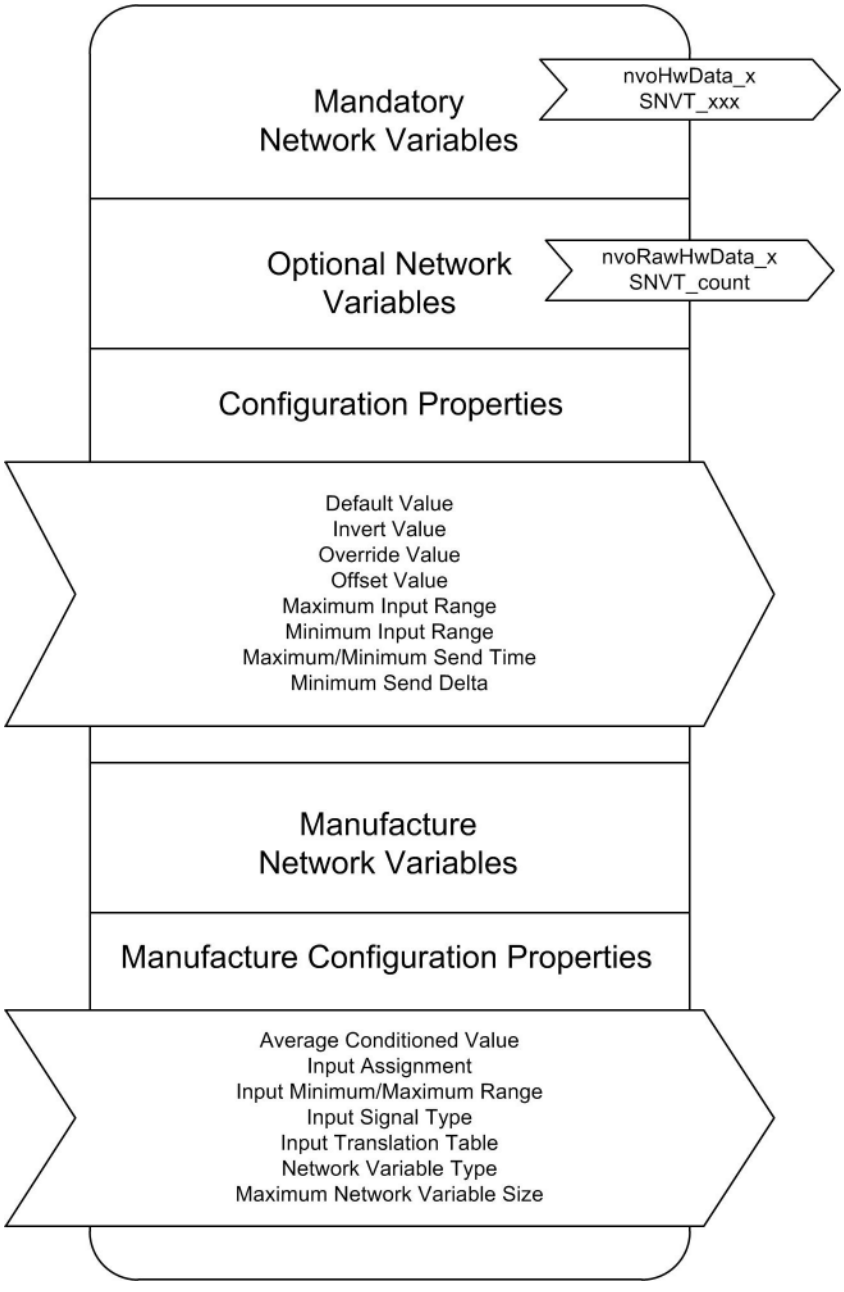
Open Loop Sensor Profile

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.

Open Loop Sensor functional block information.

(Physical inputs)

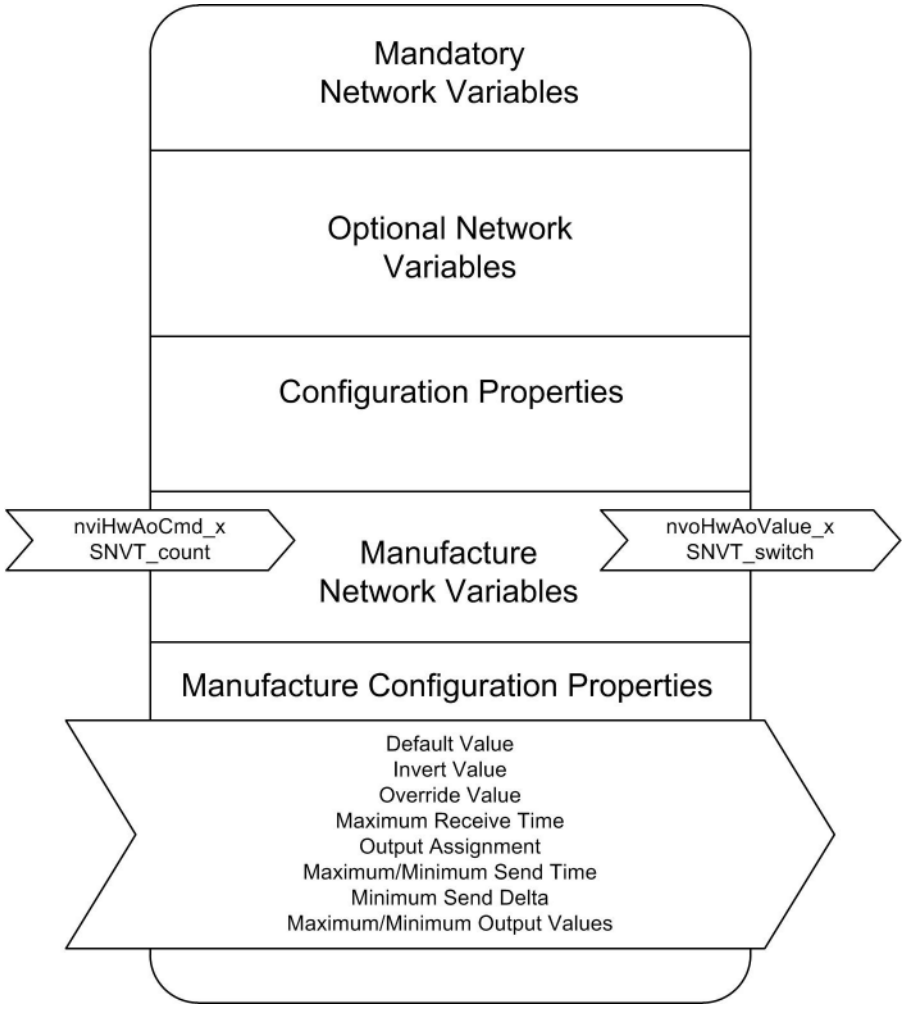


Open Loop Actuator Profile

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.

Analog Outputs functional block information.

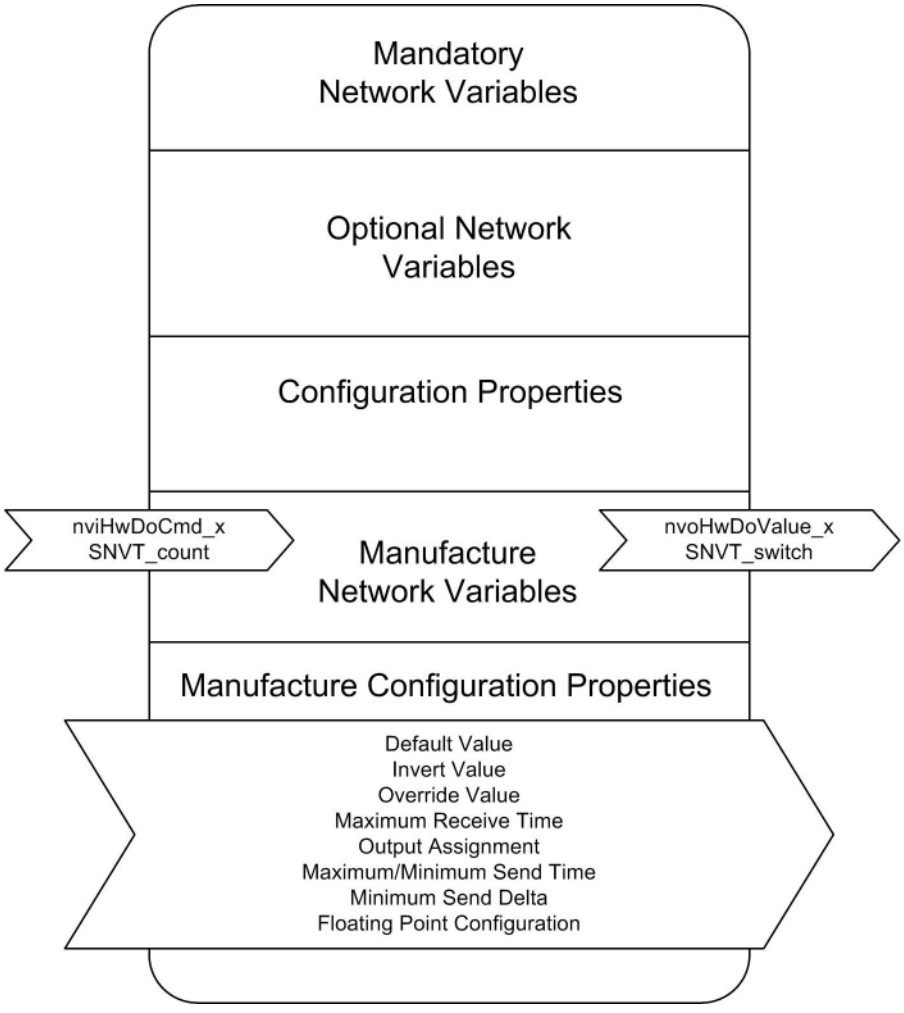


Open Loop Sensor Profile

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

All variables with SNVT_xxx have Changeable Types feature.

Digital Outputs functional block information.



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Node Object Profile

Node Object profile includes hardware specific network variables. The variables are for internal and use by the plugin only.

Part Numbers

Q1-2.x.x.x

Q1 indicates hardware platform and is always present.

2.x.x.x - I/O configuration

-2.0.2.0 = 2-IN, 0-UI, 2-Triac, 0-AO
-2.2.4.0 = 2-IN, 2-UI, 4-Triac, 0-AO
-2.4.5.2 = 2-IN, 4-UI, 5-Triac, 2-AO
-2.8.6.4 = 2-IN, 8-UI, 6-Triac, 4-AO
-2.10.8.4 = 2-IN, 10-UI, 8-Triac, 4-AO

Optional suffix:

-DP = On-board Differential Pressure Sensor for applications such as VAV air flow or AHU static pressure control, building pressure control, etc.

Example part number:
Q1-2.2.4.0-DP is a typical part number for a VAV "Variable Air Volume" controller with build-in differencial pressure sensor for air flow monitoring.

Node Object functional block information.