DISTECH CONTROLS™

Datasheet

ECL-VAV Series

LONMARK® Certified Single Duct VAV/VVT Controllers

Applications

- Meets the requirements of VAV zone applications, including:
  - Cooling Only VAV Boxes
  - Cooling with Reheat VAV Boxes
  - Parallel Fan VAV Boxes
  - Series Fan VAV Boxes
  - Dual-Duct VAV Systems
- Improves energy efficiency when combined with:
  - Motion detectors to automatically adjust a zone's occupancy mode from standby to occupied when presence is detected
  - CO_2 sensors as part of a demand-controlled ventilation strategy that adjusts the amount of fresh air intake according to the number of building occupants
  - Light switches to control both lighting and a room's HVAC occupancy / standby mode setting
- Works with a wide range of wireless battery-less sensors
- The ECL-VAV model is expandable with ECx-Light and ECx-Blind series control modules to create an end-to-end integrated room control solution for HVAC, light, and shades/sunblinds

Overview

The ECL-VAV series are microprocessor-based programmable variable air volume (VAV) controllers designed to control any variable air volume box. Each controller uses the LonTalk® communication protocol and is LONMARK certified as an SCC VAV.

This series contains five models as follows: ECL-VAVS-O, ECL-VAVS, ECL-VAV, ECL-VVTS, and ECL-VAV-N. Models with inputs support various measurement types including resistance, voltage, and digital-based ones. All models provide digital, floating, pulse width modulation, and proportional control outputs for valves, heating elements, fans, and lighting applications. In particular, the ECL-VAVS-O, ECL-VAVS, ECL-VAV, and ECL-VAV-N models have an on-board air flow sensor with a range of 0-2 inches of water column (500 Pascal) and the ECL-VAVS-O, ECL-VAVS, ECL-VAV, and ECL-VVTS models have a built-in brushless actuator for precise damper positioning for loads requiring up to 35 inch-pounds (4 Newton-meters) of torque.

All controller models work with the Allure™ EC-Smart-Vue sensor series of communicating sensors that feature a backlit-display and graphical menus. These sensors are used for indoor temperature measurement, setpoint adjustment, and occupancy state override. An Allure EC-Smart-Vue sensor can be used to perform system air balancing without requiring an onsite controls engineer and to commission and troubleshoot the system. In addition, all controller models are Open-to-Wireless™ ready, and when paired with the Wireless Receiver, they work with a variety of wireless battery-less sensors and switches.

The ECL-VAV model supports a range of Integrated Room Control (IRC) modules that expand the controller's range of control to include lighting and shades/sunblinds. This controller also supports the EC-Multi-Sensor ceiling-mounted sensor and its associated EC-Remote remote control.

Factory preloaded applications allow these controllers, straight out of the box, to operate standard VAV equipment with a proven energy-efficient sequence of operation thereby eliminating the need for programming. The preloaded application can be selected using an Allure EC-Smart-Vue sensor even before the network has been installed for rapid deployment or through the EC-Net^{AX}™ solution using Distech Controls' *dcgfx*Applications. Or use EC-*gfx*Program through either EC-Net^{AX} Pro, which is powered by the Niagara^{AX} Framework® or through any LNS®-based software such as Distech Controls' Lonwatcher 3. These same controllers are fully programmable to allow you to easily create your own control sequences capable of meeting the most demanding requirements of any engineering specification.

Features & Benefits

- Preloaded VAV box applications save setup time: one technician can locally configure and troubleshoot the VAV with an Allure EC-Smart-Vue sensor without any need for a programming interface.
- Integrated VAV Performance Assessment Control Charts (VPACC) control sequences, provides a means of automatically detecting when the VAV is operating outside of its design parameters including: persistent High / Low Space Temperature, Persistent High / Low Discharge Temperature, Persistent High / Low Air Flow, and Unstable Air Flow.
- LONMARK SCC VAV certified, guaranteeing interoperability with other manufacturers' LONMARK certified controllers.
- Accurate on-board air flow sensor for precise air flow monitoring and control at low and high air flow rates, permitting you to design for maximum energy efficiency while maintaining an optimal comfort level (except ECL-VVTS models).

Features & Benefits (continued)

- Built-in actuator with a brushless motor and integrated position feedback system eliminates periodic damper re-initialization and ensures worry-free operation, providing increased occupant comfort and extended service life (except ECL-VAV-N models).
- Optimized air balancing process saves time during commissioning: the flow sensor requires no zero flow calibration, and its variable-speed motor goes to minimum and maximum flow settings in half the time of typical VAV actuators.
- Available with an optional Wireless Receiver that supports up to 18 wireless inputs, letting you create wire-free installations and use various wireless battery-less sensors and switches. With up to 4 software configurable universal inputs and up to 6 software configurable outputs, this controller series covers all industry-standard VAV applications.
- Highly accurate universal inputs support thermistors and resistance temperature detectors (RTDs) that range from 0 Ohms to 350 000 Ohms, giving you the freedom to use your preferred or engineer-specified sensors, in addition to any existing ones.
- Rugged hardware Inputs and Outputs eliminate need for external protection components, such as diodes for 12V DC relays.

ECL-VAV Series Controllers

Model	ECL-VAVS-O	ECL-VAVS	ECL-VAV	ECL-VVTS	ECL-VAV-N
Points	5-Point VAV	7-Point VAV	12-Point VAV	6-Point VVT	11-Point VAV
Universal hardware inputs	0	2	4	2	4
Built-in flow sensor	■	■	■		■
Wireless inputs[1]	18	18	18	18	18
15 Vdc Power Supply			■		■
Universal output	1	1	2	1	2
Digital (triac) outputs	2	2	4	2	4
Built-in Actuator	■	■	■	■	
Compatibility for optional subnet devices:			■		
- Allure EC-Smart-Vue sensor	4[2]	4[2]		4[2]	4[2]
- Allure EC-Smart-Vue sensor and EC-Multi-Sensor series			Up to 4[3]		
- ECx-Light-4 / ECx-Light-4D			Up to 2[3]		
- ECx-Blind-4 / ECx-Blind-4LV			Up to 2[3]		

1. All controllers are Open-to-Wireless ready. Available when an optional Wireless Receiver is connected to the controller. Some wireless sensors may use more than one wireless input from the controller.
2. A controller can support a maximum of two Allure EC-Smart-Vue sensor models equipped with a CO_2 sensor. The remaining connected Allure EC-Smart-Vue sensor models must be without a CO_2 sensor.
3. For supported quantities, see the *VAV-IRC Room Device Calculator.xlsm* spreadsheet file available for download from SmartSource.

Recommended Applications

Model	ECL-VAVS-O	ECL-VAVS	ECL-VAV	ECL-VVTS	ECL-VAV-N
Cooling Only VAV Box	■	■		■	
Cooling w/ Reheat VAV Box	■	■		■	
Cooling w/ Reheat VAV Box & Perimeter Heating			■		
Parallel Fan VAV Box			■		
Series Fan VAV Box			■		
Dual Duct VAV Box[1 3]	■	■			
Large Damper VAV Box[2]					■
Existing Damper Actuator					■
Room Pressurization			■		
Integrated room control support for HVAC, light, and shades/sunblinds			■		

1. Two controllers are required or one controller with an external flow sensor and actuator.
2. Requiring More Than 35 in-lb (4 Nm) Actuator Torque.
3. This configuration is not supported by factory preloaded applications. Programming is required.

Open-to-Wireless Series – Wireless Receiver Add-on

Open-to-Wireless™

To reduce the cost of installation, and minimize the impact on pre-existing partition walls, the Wireless Receiver enables these controllers to communicate with a line of wireless battery-less room sensors and switches. These Wireless Receivers are available in EnOcean 315MHz and 868.3MHz versions.

Note that controllers have one wireless port to support a single Wireless Receiver.
For more information about the EnOcean and Open-to-Wireless technologies, refer to the Open-to-Wireless Solution Guide. For more information about the Wireless Receiver module, refer to the Wireless Receiver Datasheet. These documents can be found on our web site.

Supported Platforms

EC-Net^{AX} Solution

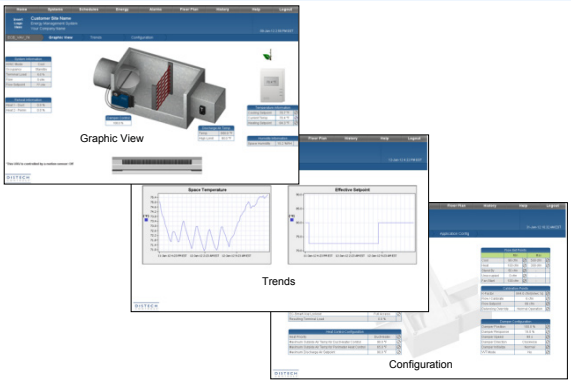
The EC-Net^{AX} multi-protocol integration solution is web-enabled and powered by the Niagara^{AX} Framework, establishing a fully Internet-enabled, distributed architecture for real-time access, automation and control of devices. The EC-Net^{AX} open framework solution creates a common development and management environment for integration of LONWORKS®, BACnet® and other protocols. Regardless of manufacturer and protocol, the EC-Net^{AX} system provides a unified modeling of diverse systems and data, providing one common platform for development, management and enterprise applications.

LONWORKS Network Services (LNS)

The LNS® client-server platform allows multiple users, running different LNS-compatible applications, to access a common source for directory, installation, management, monitoring and control services for the network system being managed. Distech Controls' Lonwatcher is an example of a LNS-based network management tool that can use Plug-Ins to configure and monitor controllers and devices in the control system.

EC-Net^{AX} Wizards and LNS Plug-Ins

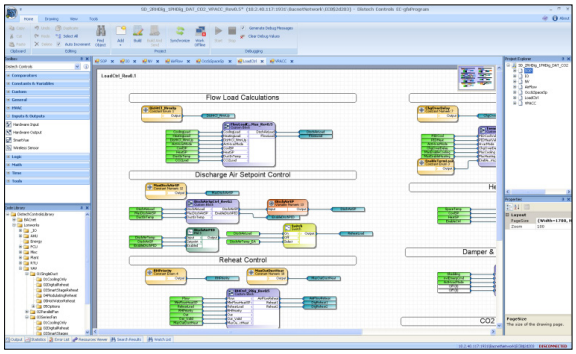
EC-Net^{AX} Px Graphics Page Support for Preloaded Applications with EC-Net^{AX} dc *gfx*Applications



In the EC-Net^{AX} solution, dc *gfx*Applications provide ready-to-use Px graphics pages for the ECL-VAV series of factory preloaded controllers. Once the controller is online, select any one of the standard VAV pre-configured controller applications to use. This provides a proven energy-efficient sequence of operation without any need for programming.

The graphics on the Px graphics page automatically update to show the currently selected controller application, the current VAV box's operational parameters with the ability to configure and override operation.

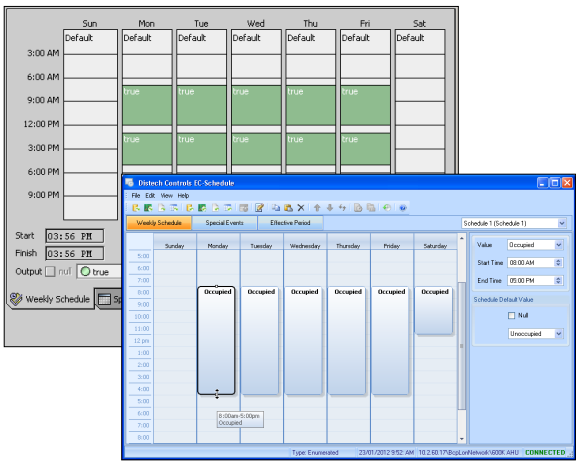
EC-*gfx*Program Graphical Programming Interface (GPI)



Distech Controls' EC-*gfx*Program is a programming tool that allows you to quickly create control sequences by "dragging and dropping" block objects and then linking the objects with a simple "click, select and release". Select objects from an extensive library of over 100 commonly used functions as well as create your own custom blocks. With a user-friendly interface and intuitive programming environment, HVAC programming could not be easier. Refer to the EC-*gfx*Program datasheet for more information.

- Program both ECP and ECL Series LONWORKS and ECB Series BACnet controllers with the same tool.
- Supplied as freeware – there are no associated licensing costs.
- Live debugging allows user to view code execution, input/output values and to detect errors in real-time.
- A code library for managing your favorite or most commonly used code or code sections or use *gfx*Applications which allows you to fine-tune the code to meet engineering-specific requirements, while providing full integration of ready-to-use Px graphics pages from dc *gfx*Applications.

EC-Net^{AX} Scheduling / EC-Schedule LNS Plugin / EC-gfxProgram EC-Schedule



Configure the controller's built-in schedules and holidays from EC-Net^{AX} solution (ECB and ECL series controllers), LNS (ECL series controllers), or directly from within EC-*gfx*Program (ECB and ECL series controllers) with an easy-to-use point, drag, and click interface. It features a weekly schedule for regular, repeating, events by "time-of-day" and "day-of-week", while a holiday schedule is available to define events for specific days.

- Easily configure schedules using a graphical slider.
- Allows you to easily copy and paste entries. Duplicate a schedule entry for Monday to Friday.
- Special events allow you to set exceptions such as holidays to a schedule.
- Holidays can be set for recurring events such as the 9th day, or the 3rd Thursday of a given month.
- A schedule has an effective period during which it is active.
- Schedule provides Next State and Time to Next State that are ideal for use with programming functions such as Optimum Start or Morning Warm Up.

Complementary Products

ECx-Light/Blind Series

Line of lighting and shades/sunblinds expansion modules: On/Off lights, dimmable lights, mains-powered shades/sunblinds, 24 VDC shades/sunblinds, and more.
Compatible with the ECL-VAV model only.

Allure EC-Smart-Vue Sensor Series

Line of communicating room temperature sensors with communication jack, a backlit-display and configurable graphic menus that allow occupants to set occupancy, setpoint adjustment, fan speed, or any other system parameters. Models are available with any combination of the following options: humidity sensor, motion sensor, and CO_2 sensor. The ECO-Vue™ icon ( ) shows how environmentally-friendly the zone's energy consumption is in real time.

Allure EC-Sensor Series

Line of discrete temperature sensors. Models are available with the following options: communication jack, occupancy override button, setpoint adjustment, and fan speed selection.

Allure Wireless Battery-less ECW-Sensor Series

Line of wireless, battery-less room temperature sensors. Models are available with the following options: occupancy override button, setpoint adjustment, and fan speed selection.
These sensors are available in EnOcean 315MHz and 868.3MHz versions. The controller must be equipped with a Wireless Receiver.

EC-Multi-Sensor Series and EC-Remote Series

Line of ceiling-mounted infrared multi-sensors. Models are available with occupancy detection, light sensor, and temperature sensor.
Line of remote controls allows users to remotely manage all comfort parameters of a room: lighting, shades/sunblinds, temperature, fan speed and occupancy.
Compatible with the ECL-VAV model only.

Wireless Sensors and Switches

A wide range of self-powered wireless sensors and switches, including the following: motion detector and light sensor, 2-/4-channel wireless light switches (North American and European models), outdoor temperature sensor, surface temperature contact sensor, duct temperature sensor, and more.
These sensors are available in EnOcean 315MHz and 868.3MHz versions. The controller must be equipped with a Wireless Receiver.

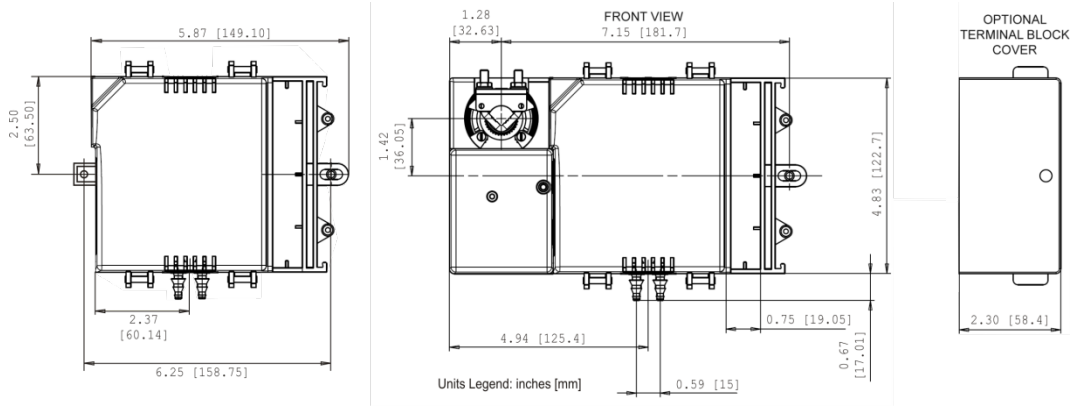
For more information about the available wireless sensors and switches, refer to the Open-to-Wireless Solution Guide which can be found on our web site.

Other

VAV Terminal Block Cover	A cover designed to conceal the wire terminals. Required to meet local safety regulations in certain jurisdictions.

For more information on these or other Distech Controls products, refer to our web site.

Controller Dimensions



Product Specifications

Power

Voltage	24VAC; ±15%; 50/60Hz; Class 2
Protection	2.0A user-replaceable fuse 3.0A user-replaceable fuse for triacs when using the internal power supply
Power Consumption	10 VA typical plus all external loads[1] 85 VA maximum (including powered triac outputs)

Interoperability

Communication	LonTalk protocol
Transceiver	FT 5000 Free Topology Smart Transceiver
Channel	TP/FT-10; 78Kbps
LONMARK Interoperability Guidelines	Version 3.4
Device Class	SCC VAV
LONMARK Functional Profile	
- Input objects	Open-Loop Sensor #1
- Output objects	Open-Loop Actuator #3
- Node object	Node object #0
- Real Time Clock	Real Time Keeper #3300
- Scheduler	Scheduler #20020
- Calendar	Calendar #20030
- Programmable Device	Static Programmable Device #410
- SCC Object	SCC VAV #8502

Hardware

Processor	STM32 (ARM Cortex™ M3) MCU, 32 bit
CPU Speed	68 MHz
Memory	384 kB Non-volatile Flash (applications) 1 MB Non-volatile Flash (storage) 64 kB RAM
Real Time Clock (RTC)	Built-in Real Time Clock without battery: Network time synchronization is required at each power-up cycle before the RTC becomes available
Status Indicator	Green LEDs: power status & LAN Tx Orange LEDs: controller status & LAN Rx

Environmental

Operating Temperature	32°F to 122°F; 0°C to 50°C
Storage Temperature	-4°F to 122°F; -20°C to 50°C
Relative Humidity	0 to 90% Non-condensing

Inputs

Input Types	Universal; software configurable
-Voltage	- 0 to 10VDC (40kΩ input impedance) - 0 to 5VDC (high input impedance)
-Current	0 to 20mA with 249Ω external resistor (wired in parallel)
-Digital	Dry contact
-Pulse	Dry contact; 500ms minimum ON/OFF
-Resistor	0 to 350 KΩ. All thermistor types that operate in this range are supported. The following temperature sensors are pre-configured:
Thermistor	10KΩ Type 2, 3 (10KΩ @ 77°F; 25°C)
Platinum	Pt1000 (1KΩ @ 32°F; 0°C)
Nickel	RTD Ni1000 (1KΩ @ 32°F; 0°C) RTD Ni1000 (1KΩ @ 69.8°F; 21°C)
Input Resolution	16-bit analog / digital converter
Differential Pressure	0 to 2.0 in. W.C. (0 to 500 Pa)
-Input Resolution	0.00007 in. W.C. (0.0167 Pa)
-Air Flow Accuracy	±4.0% @ > 0.05 in. W.C. (12.5 Pa) ±1.5% once calibrated through air flow balancing @ > 0.05 in. W.C. (12.5 Pa)
Power Supply Output	15VDC; maximum 80mA (4 inputs × 20mA each)[2]

Outputs

Digital	24 VAC Triac, digital (on/off), PWM, or floating; software configurable - 0.5A continuous - 1A @ 15% duty cycle for a 10-minute period - PWM control: adjustable period from 2 to 65sec. - Floating control: - Min pulse on/off: 500msec. - Adjustable drive time period External or internal power supply (jumper selectable)
Universal	Linear (0 to 10VDC) Digital (on/off), PWM, or floating (0 - 12VDC); software configurable. Built-in snubbing diode to protect against back EMF, for example when used with a 12VDC relay. - PWM control: Adjustable period from 2 to 65sec. - Floating control: - Min pulse on/off: 500msec. - Adjustable drive time period - 20mA maximum @ 12VDC[2] - Minimum load resistance 600Ω
Output Resolution	10-bit digital / analog converter

Product Specifications (continued)

Enclosure

Material	FR/ABS
Color	Black & blue casing & grey connectors
Dimensions (with Screws)	
- ECL-VAV-N	4.8 W × 5.9 H × 2.5" D (122.7 × 149.1 × 63.0mm)
- Other models	4.8 W × 8.4 H × 2.5" D (122.7 × 214.3 × 63.0mm)
Shipping Weight	ECL-VAV-N: 0.92lbs (0.42kg) Other models: 2.30lbs (1.05kg)

Integrated Damper Actuator

Motor	Belimo LMZS-H brushless DC motor
Torque	35 in-lb, 4 Nm
Degrees of Rotation	95º adjustable
Fits Shaft Diameter	5/16 to 3/4"; 8.5 to 18.2mm
Acoustic Noise Level	< 35 dB (A) @ 95º rotation in 95 seconds

Wireless Receiver[3]

Communication	EnOcean wireless standard
Number of wireless inputs[4]	18
Supported Wireless Receivers	Wireless Receiver (315) Wireless Receiver (868)
Cable	Telephone cord
- Connector	4P4C modular jack
- Length (maximum)	6.5ft; 2m

Standards and Regulation

CE -Emission	EN61000-6-3: 2007; Generic standards for residential, commercial and light-industrial environments
-Immunity	EN61000-6-1: 2007; Generic standards for residential, commercial and light-industrial environments
FCC	This device complies with FCC rules part 15, subpart B, class B
UL Listed (CDN & US)	UL916 Energy management equipment
Material[7]	Plastic housing, UL94-5VB flammability rating Plenum rating per UL1995
CEC Appliance Database	Appliance Efficiency Program[8]

Subnetwork

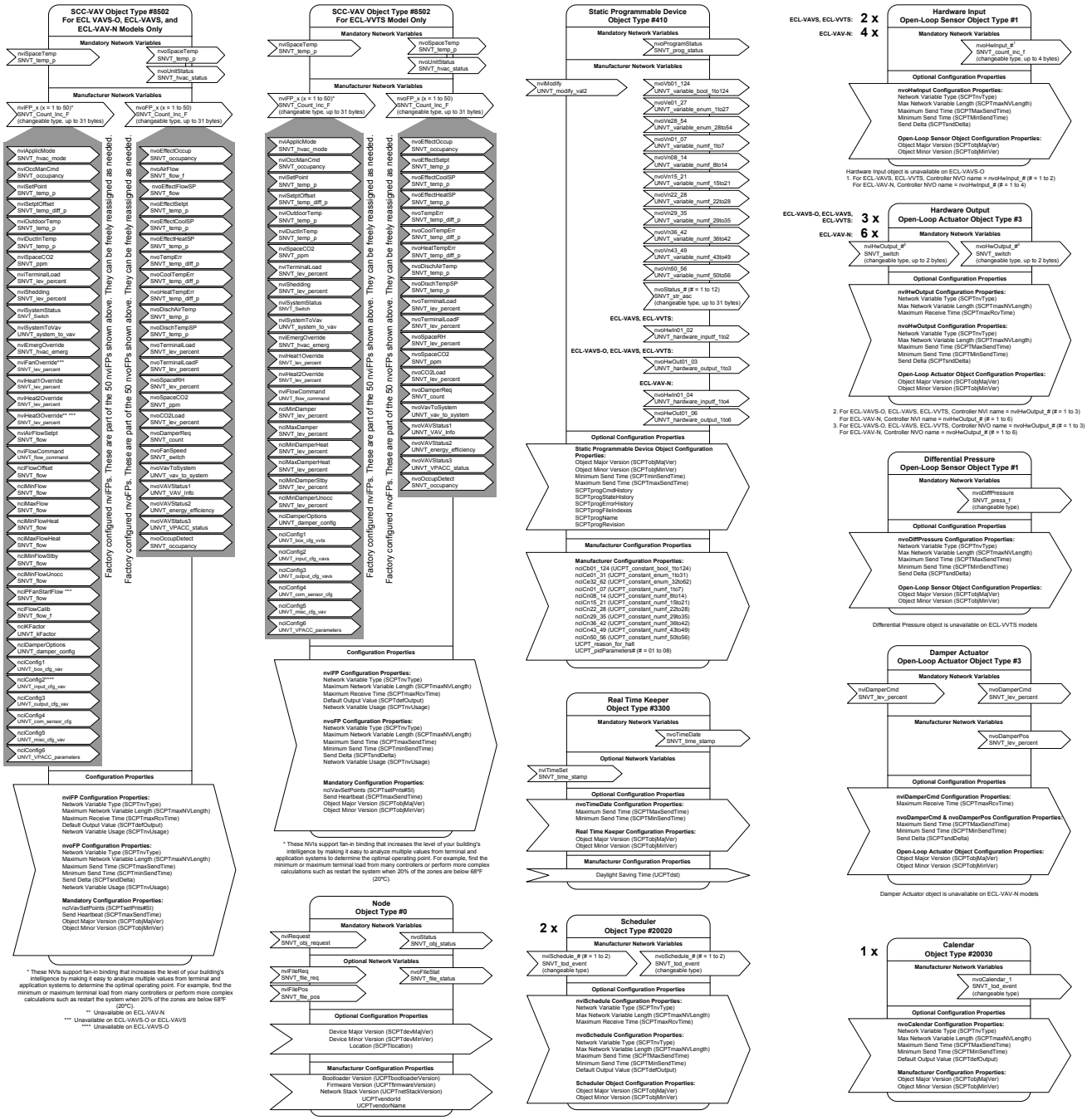
Communication	RS-485
Number of sensors per controller	
- Non ECL-VAV model	Allure EC-Smart-Vue sensor: 4[5]
- ECL-VAV model	Allure EC-Smart-Vue sensor and EC-Multi-Sensor series: Up to 4[6] ECx-Light-4 / ECx-Light-4D: Up to 2[6] ECx-Blind-4 / ECx-Blind-4LV: Up to 2[6]
Cable	Cat 5e, 8 conductor twisted pair
Connector	RJ-45
Connection Topology	Daisy-chain configuration

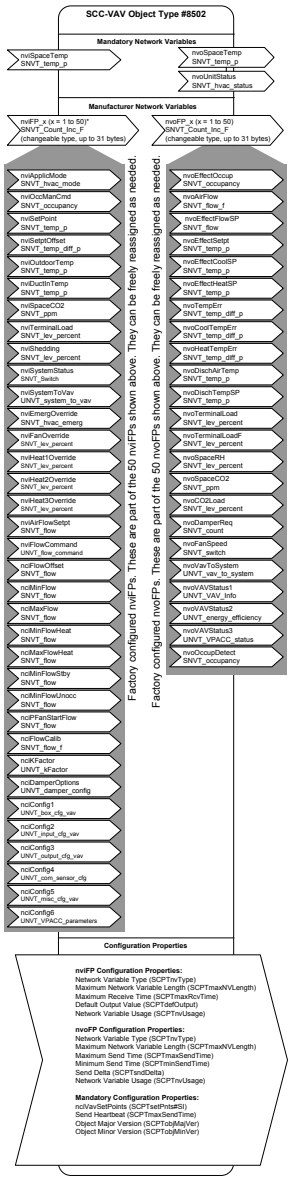
Communication Protocols

enocean®

LONMARK®

1. External loads must include the power consumption of any connected modules such as an Allure EC-Smart-Vue sensor. Refer to the respective module's datasheet for related power consumption information. For the ECL-VAV model, see the ***VAV-IRC Room Device Calculator.xlsm*** spreadsheet file available for download from SmartSource.
2. Relays equipped with coil that consume between 20 and 35mA can be used with up to 2 Universal Outputs when the 15V Power Supply Output is de-rated to supply 50mA maximum current.
3. Available when an optional external Wireless Receiver module is connected to the controller. Refer to the Open-to-Wireless Solution Guide for a list of supported EnOcean wireless modules.
4. Some wireless modules may use more than one wireless input from the controller.
5. A controller can support a maximum of two Allure EC-Smart-Vue sensor models equipped with a CO_2 sensor. The remaining connected Allure EC-Smart-Vue sensor models must be without a CO_2 sensor.
6. For supported quantities, see the ***VAV-IRC Room Device Calculator.xlsm*** spreadsheet file available for download from SmartSource.
7. All materials and manufacturing processes comply with the RoHS directive and are marked according to the Waste Electrical and Electronic Equipment (WEEE) directive.
8. California Energy Commission's Appliance Efficiency Program: The manufacturer has certified this product to the California Energy Commission in accordance with California law.


SCC-VAV Object Type #8502
For ECL VAVS-O, ECL-VAVS, and ECL-VAV-N Models Only
Mandatory Network Variables
nviSpaceTemp SNVT_temp_p
nvoSpaceTemp SNVT_temp_p
nvoUnitStatus SNVT_hvac_status
Manufacturer Network Variables
nviFP_x (x = 1 to 50)* SNVT_Count_Inc_F (changeable type, up to 31 bytes)
nvoFP_x (x = 1 to 50) SNVT_Count_Inc_F (changeable type, up to 31 bytes)
nviApplicMode SNVT_hvac_mode
nviOccManCmd SNVT_occupancy
nviSetPoint SNVT_temp_p
nviSetptOffset SNVT_temp_diff_p
nviOutdoorTemp SNVT_temp_p
nviDuctInTemp SNVT_temp_p
nviSpaceCO2 SNVT_ppm
nviTerminalLoad SNVT_lev_percent
nviShedding SNVT_lev_percent
nviSystemStatus SNVT_Switch
nviSystemToVav UNVT_system_to_vav
nviEmergOverride SNVT_hvac_emerg
nviFanOverride*** SNVT_lev_percent
nviHeat1Override SNVT_lev_percent
nviHeat2Override SNVT_lev_percent
nviHeat3Override* *** SNVT_lev_percent
nviAirFlowSetpt SNVT_flow
nviFlowCommand UNVT_flow_command
nciFlowOffset SNVT_flow
nciMinFlow SNVT_flow
nciMaxFlow SNVT_flow
nciMinFlowHeat SNVT_flow
nciMaxFlowHeat SNVT_flow
nciMinFlowStby SNVT_flow
nciMinFlowUnocc SNVT_flow
nciPFanStartFlow *** SNVT_flow
nciFlowCalib SNVT_flow_f
nciKFactor UNVT_kFactor
nciDamperOptions UNVT_damper_config
nciConfig1 UNVT_box_cfg_vav
nciConfig2**** UNVT_input_cfg_vav
nciConfig3 UNVT_output_cfg_vav
nciConfig4 UNVT_com_sensor_cfg
nciConfig5 UNVT_misc_cfg_vav
nciConfig6 UNVT_VPACC_parameters
nvoEffectOccup SNVT_occupancy
nvoAirFlow SNVT_flow_f
nvoEffectFlowSP SNVT_flow
nvoEffectSetpt SNVT_temp_p
nvoEffectCoolSP SNVT_temp_p
nvoEffectHeatSP SNVT_temp_p
nvoTempErr SNVT_temp_diff_p
nvoCoolTempErr SNVT_temp_diff_p
nvoHeatTempErr SNVT_temp_diff_p
nvoDischAirTemp SNVT_temp_p
nvoDischTempSP SNVT_temp_p
nvoTerminalLoad SNVT_lev_percent
nvoTerminalLoadF SNVT_lev_percent
nvoSpaceRH SNVT_lev_percent
nvoSpaceCO2 SNVT_ppm
nvoCO2Load SNVT_lev_percent
nvoDamperReq SNVT_count
nvoFanSpeed SNVT_switch
nvoVavToSystem UNVT_vav_to_system
nvoVAVStatus1 UNVT_VAV_Info
nvoVAVStatus2 UNVT_energy_efficiency
nvoVAVStatus3 UNVT_VPACC_status
nvoOccupDetect SNVT_occupancy
Factory configured nviFPs. These are part of the 50 nviFPs shown above. They can be freely reassigned as needed.
Configuration Properties
nviFP Configuration Properties:
Network Variable Type (SCPTnvType)
Maximum Network Variable Length (SCPTmaxNVLength)
Maximum Receive Time (SCPTmaxRcvTime)
Default Output Value (SCPTdefOutput)
Network Variable Usage (SCPTnvUsage)
nvoFP Configuration Properties:
Network Variable Type (SCPTnvType)
Maximum Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTmaxSendTime)
Minimum Send Time (SCPTminSendTime)
Send Delta (SCPTsndDelta)
Network Variable Usage (SCPTnvUsage)
Mandatory Configuration Properties:
nciVavSetPoints (SCPTsetPnts#SI)
Send Heartbeat (SCPTmaxSendTime)
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)
* These NVs support fan-in binding that increases the level of your building's intelligence by making it easy to analyze multiple values from terminal and application systems to determine the optimal operating point. For example, find the minimum or maximum terminal load from many controllers or perform more complex calculations such as restart the system when 20% of the zones are below 68°F (20°C).
** Unavailable on ECL-VAV-N
*** Unavailable on ECL-VAVS-O or ECL-VAVS
**** Unavailable on ECL-VAVS-O
SCC-VAV Object Type #8502
For ECL-VVTS Model Only
Mandatory Network Variables
nviSpaceTemp SNVT_temp_p
nvoSpaceTemp SNVT_temp_p
nvoUnitStatus SNVT_hvac_status
Manufacturer Network Variables
nviFP_x (x = 1 to 50)* SNVT_Count_Inc_F (changeable type, up to 31 bytes)
nvoFP_x (x = 1 to 50) SNVT_Count_Inc_F (changeable type, up to 31 bytes)
nviApplicMode SNVT_hvac_mode
nviOccManCmd SNVT_occupancy
nviSetPoint SNVT_temp_p
nviSetptOffset SNVT_temp_diff_p
nviOutdoorTemp SNVT_temp_p
nviDuctInTemp SNVT_temp_p
nviSpaceCO2 SNVT_ppm
nviTerminalLoad SNVT_lev_percent
nviShedding SNVT_lev_percent
nviSystemStatus SNVT_Switch
nviSystemToVav UNVT_system_to_vav
nviEmergOverride SNVT_hvac_emerg
nviHeat1Override SNVT_lev_percent
nviHeat2Override SNVT_lev_percent
nviFlowCommand UNVT_flow_command
nciMinDamper SNVT_lev_percent
nciMaxDamper SNVT_lev_percent
nciMinDamperHeat SNVT_lev_percent
nciMaxDamperHeat SNVT_lev_percent
nciMinDamperStby SNVT_lev_percent
nciMinDamperUnocc SNVT_lev_percent
nciDamperOptions UNVT_damper_config
nciConfig1 UNVT_box_cfg_vvts
nciConfig2 UNVT_input_cfg_vava
nciConfig3 UNVT_output_cfg_vava
nciConfig4 UNVT_com_sensor_cfg
nciConfig5 UNVT_misc_cfg_vav
nciConfig6 UNVT_VPACC_parameters
nvoEffectOccup SNVT_occupancy
nvoEffectSetpt SNVT_temp_p
nvoEffectCoolSP SNVT_temp_p
nvoEffectHeatSP SNVT_temp_p
nvoTempErr SNVT_temp_diff_p
nvoCoolTempErr SNVT_temp_diff_p
nvoHeatTempErr SNVT_temp_diff_p
nvoDischAirTemp SNVT_temp_p
nvoDischTempSP SNVT_temp_p
nvoTerminalLoad SNVT_lev_percent
nvoTerminalLoadF SNVT_lev_percent
nvoSpaceRH SNVT_lev_percent
nvoSpaceCO2 SNVT_ppm
nvoCO2Load SNVT_lev_percent
nvoDamperReq SNVT_count
nvoVavToSystem SNVT_vav_to_system
nvoVAVStatus1 UNVT_VAV_Info
nvoVAVStatus2 UNVT_energy_efficiency
nvoVAVStatus3 UNVT_VPACC_status
nvoOccupDetect SNVT_occupancy
Factory configured nviFPs. These are part of the 50 nviFPs shown above. They can be freely reassigned as needed.
Configuration Properties
nviFP Configuration Properties:
Network Variable Type (SCPTnvType)
Maximum Network Variable Length (SCPTmaxNVLength)
Maximum Receive Time (SCPTmaxRcvTime)
Default Output Value (SCPTdefOutput)
Network Variable Usage (SCPTnvUsage)
nvoFP Configuration Properties:
Network Variable Type (SCPTnvType)
Maximum Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTmaxSendTime)
Minimum Send Time (SCPTminSendTime)
Send Delta (SCPTsndDelta)
Network Variable Usage (SCPTnvUsage)
Mandatory Configuration Properties:
nciVavSetPoints (SCPTsetPnts#SI)
Send Heartbeat (SCPTmaxSendTime)
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)
* These NVs support fan-in binding that increases the level of your building's intelligence by making it easy to analyze multiple values from terminal and application systems to determine the optimal operating point. For example, find the minimum or maximum terminal load from many controllers or perform more complex calculations such as restart the system when 20% of the zones are below 68°F (20°C).
Node
Object Type #0
Mandatory Network Variables
nviRequest SNVT_obj_request
nvoStatus SNVT_obj_status
Optional Network Variables
nviFileReq SNVT_file_req
nvoFileStat SNVT_file_status
nviFilePos SNVT_file_pos
Optional Configuration Properties
Device Major Version (SCPTdevMajVer)
Device Minor Version (SCPTdevMinVer)
Location (SCPTlocation)
Manufacturer Configuration Properties
Bootloader Version (UCPTbootloaderVersion)
Firmware Version (UCPTfirmwareVersion)
Network Stack Version (UCPTnetStackVersion)
UCPTvendorId
UCPTvendorName
Static Programmable Device
Object Type #410
Mandatory Network Variables
nvoProgramStatus SNVT_prog_status
Manufacturer Network Variables
nviModify UNVT_modify_val2
nvoVb01_124 UNVT_variable_bool_1to124
nvoVa01_27 UNVT_variable_enum_1to27
nvoVe28_54 UNVT_variable_enum_28to54
nvoVn01_07 UNVT_variable_numf_1to7
nvoVn08_14 UNVT_variable_numf_8to14
nvoVn15_21 UNVT_variable_numf_15to21
nvoVn22_28 UNVT_variable_numf_22to28
nvoVn29_35 UNVT_variable_numf_29to35
nvoVn36_42 UNVT_variable_numf_36to42
nvoVn43_49 UNVT_variable_numf_43to49
nvoVn50_56 UNVT_variable_numf_50to56
nvoStatus_# (# = 1 to 12) SNVT_str_asc (changeable type, up to 31 bytes)
ECL-VAVS, ECL-VVTS:
nvoHwIn01_02 UNVT_hardware_inputf_1to2
ECL-VAVS-O, ECL-VAVS, ECL-VVTS:
nvoHwOut01_03 UNVT_hardware_output_1to3
ECL-VAV-N:
nvoHwIn01_04 UNVT_hardware_inputf_1to4
nvoHwOut01_06 UNVT_hardware_output_1to6
Optional Configuration Properties
Static Programmable Device Object Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)
Minimum Send Time (SCPTminSendTime)
Maximum Send Time (SCPTmaxSendTime)
SCPTprogCmdHistory
SCPTprogStateHistory
SCPTprogErrorHistory
SCPTprogFileIndexes
SCPTprogName
SCPTprogRevision
Manufacturer Configuration Properties
Manufacturer Configuration Properties:
nciCb01_124 (UCPT_constant_bool_1to124)
nciCe01_31 (UCPT_constant_enum_1to31)
nciCe32_62 (UCPT_constant_enum_32to62)
nciCn01_07 (UCPT_constant_numf_1to7)
nciCn08_14 (UCPT_constant_numf_8to14)
nciCn15_21 (UCPT_constant_numf_15to21)
nciCn22_28 (UCPT_constant_numf_22to28)
nciCn29_35 (UCPT_constant_numf_29to35)
nciCn36_42 (UCPT_constant_numf_36to42)
nciCn43_49 (UCPT_constant_numf_43to49)
nciCn50_56 (UCPT_constant_numf_50to56)
UCPT_reason_for_halt
UCPT_pidParameters# (# = 01 to 08)
Real Time Keeper
Object Type #3300
Mandatory Network Variables
nvoTimeDate SNVT_time_stamp
Optional Network Variables
nviTimeSet SNVT_time_stamp
Optional Configuration Properties
nvoTimeDate Configuration Properties:
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Real Time Keeper Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)
Manufacturer Configuration Properties
Daylight Saving Time (UCPTdst)
2 x
Scheduler
Object Type #20020
Manufacturer Network Variables
nviSchedule_# (# = 1 to 2) SNVT_tod_event (changeable type)
nvoSchedule_# (# = 1 to 2) SNVT_tod_event (changeable type)
Optional Configuration Properties
nviSchedule Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Receive Time (SCPTmaxRcvTime)
nvoSchedule Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Default Output Value (SCPTdefOutput)
Scheduler Object Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)
ECL-VAVS, ECL-VVTS: 2 x
ECL-VAV-N: 4 x
Hardware Input
Open-Loop Sensor Object Type #1
Mandatory Network Variables
nvoHwInput_#* SNVT_count_inc_f (changeable type, up to 4 types)
Optional Configuration Properties
nvoHwInput Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Send Delta (SCPTsndDelta)
Open-Loop Sensor Object Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)
Hardware Input object is unavailable on ECL-VAVS-O
1. For ECL-VAVS, ECL-VVTS, Controller NVO name = nvoHwInput_# (# = 1 to 2)
For ECL-VAV-N, Controller NVO name = nvoHwInput_# (# = 1 to 4)
ECL-VAVS-O, ECL-VAVS, ECL-VVTS: 3 x
ECL-VAV-N: 6 x
Hardware Output
Open-Loop Actuator Object Type #3
Mandatory Network Variables
nviHwOutput_#* SNVT_switch (changeable type, up to 2 bytes)
nvoHwOutput_#* SNVT_switch (changeable type, up to 2 bytes)
Optional Configuration Properties
nviHwOutput Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Receive Time (SCPTmaxRcvTime)
nvoHwOutput Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Send Delta (SCPTsndDelta)
Open-Loop Actuator Object Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)
2. For ECL-VAVS-O, ECL-VAVS, ECL-VVTS, Controller NVI name = nviHwOutput_# (# = 1 to 3)
For ECL-VAV-N, Controller NVI name = nviHwOutput_# (# = 1 to 6)
3. For ECL-VAVS-O, ECL-VAVS, ECL-VVTS, Controller NVO name = nvoHwOutput_# (# = 1 to 3)
For ECL-VAV-N, Controller NVO name = nvoHwOutput_# (# = 1 to 6)
Differential Pressure
Open-Loop Sensor Object Type #1
Mandatory Network Variables
nvoDiffPressure SNVT_press_f (changeable type)
Optional Configuration Properties
nvoDiffPressure Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Send Delta (SCPTsndDelta)
Open-Loop Sensor Object Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)
Differential Pressure object is unavailable on ECL-VVTS models
Damper Actuator
Open-Loop Actuator Object Type #3
Mandatory Network Variables
nviDamperCmd SNVT_lev_percent
nvoDamperCmd SNVT_lev_percent
Manufacturer Network Variables
nvoDamperPos SNVT_lev_percent
Optional Configuration Properties
nviDamperCmd Configuration Properties:
Maximum Receive Time (SCPTmaxRcvTime)
nvoDamperCmd & nvoDamperPos Configuration Properties:
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Send Delta (SCPTsndDelta)
Open-Loop Actuator Object Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)
Damper Actuator object is unavailable on ECL-VAV-N models
1 x
Calendar
Object Type #20030
Manufacturer Network Variables
nvoCalendar_1 SNVT_tod_event (changeable type)
Optional Configuration Properties
nvoCalendar Configuration Properties:
Network Variable Type (SCPTnvType)
Max Network Variable Length (SCPTmaxNVLength)
Maximum Send Time (SCPTMaxSendTime)
Minimum Send Time (SCPTMinSendTime)
Default Output Value (SCPTdefOutput)
Manufacturer Configuration Properties:
Object Major Version (SCPTobjMajVer)
Object Minor Version (SCPTobjMinVer)



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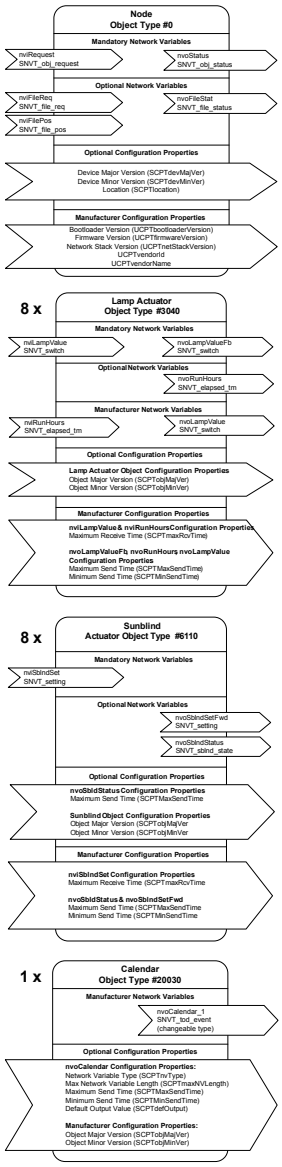

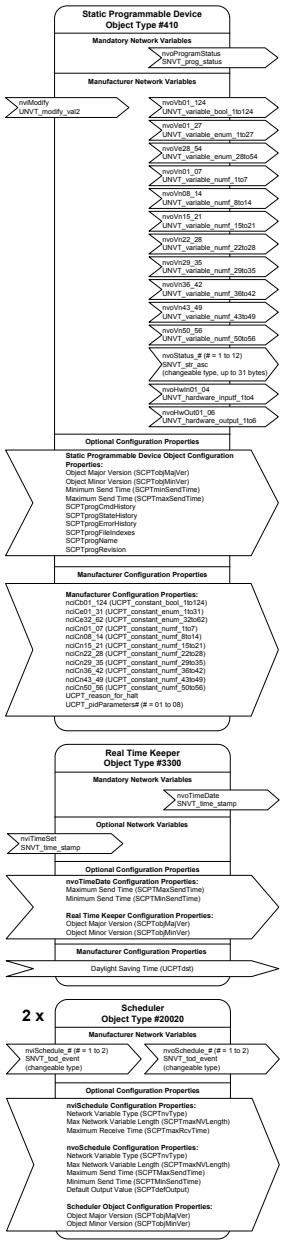

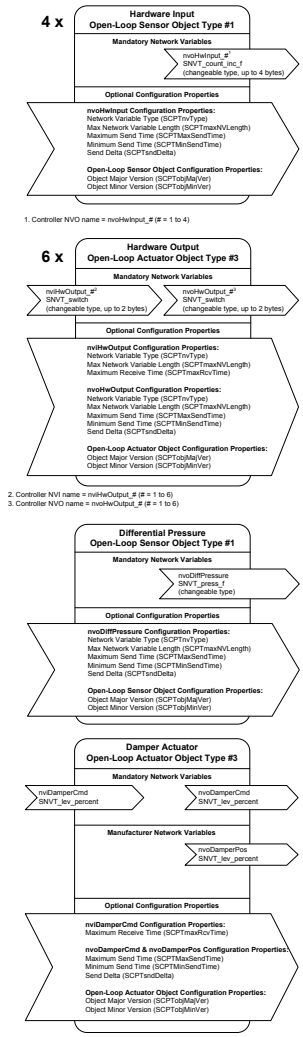

Total Quality Commitment

All Distech Controls product lines are built to meet rigorous quality standards. Distech Controls is an ISO 9001 registered company.