



# **Predator™ Variable Air Volume / Constant Volume Controller**



## **Description**

The LONMARK® certified Predator™ Variable Air Volume/Constant Volume (VAV/CV) Controller provides direct digital control of pressure independent, variable air volume, single duct VAV/CV, and constant volume zone boxes. The Predator VAV/CV Controller is designed to reside on a LONWORKS® network, providing seamless interaction with all LONMARK products. The Predator VAV/CV Controller offers cost-effective flexibility by providing various input/output configurations; each designed to meet individual VAV/CV application requirements..

## **Features**

- Conforms and is certified to the LONMARK interoperability guidelines, enabling information sharing with other LONMARK products.
- LONMARK compliant with space comfort functional profile number 8502.
- Downloadable applications for flexibility to meet ever-changing needs.
- Field-selectable parameters allow entry and updating of setpoint and control parameters via the TALON™ Interface.
- Unique, two-piece design, consisting of an Enclosure Cover with Embedded Controller Board and a separate Wiring Base, to protect electronic parts from potential damage during installation.
- Two I/O platform configurations for application flexibility.
- Advanced PID control minimizes offset and maintains tighter setpoint control.

- Return to service from power failure without operator intervention.
- Separate minimum and maximum air-volume settings for heating and cooling modes.

## **Applications**

The Predator VAV/CV Controller can be configured to control a variety of VAV and CV pressure independent zone applications, including:

- VAV/CV cooling only
- VAV/CV heating only
- VAV/CV with hot water reheat
- VAV/CV with electric reheat (up to three stages)
- VAV cooling/heating switchover
- VAV series or parallel fan-powered with hot water reheat
- VAV series or parallel fan-powered with electric reheat (up to three stages)

The Predator VAV/CV Controller can control perimeter heat in addition to any of the above configurations.

Additionally, based upon availability of input and output capacity, occupancy and outdoor air temperature sensors and lighting can be controlled via these applications.

## **Hardware**

The unique design of the Predator VAV/CV controller consists of two components:

- Enclosure Cover with Embedded Controller Board
- Wiring Base

This design reduces threat of damage to the controller board during installation and reduces service time. The wiring connections are made to the wiring base, allowing this component to be installed early in the project cycle. Additionally, if the board needs repair, the controller board can easily be removed without disrupting the wiring connections.

### **Enclosure Cover with Embedded Controller Board**

To further enhance the protection of the controller board, it is embedded into the enclosure cover. Installation consists of snapping the enclosure cover onto the wiring base.

The Enclosure Cover with Embedded Controller Board is available in the following configurations:

- 4 Inputs, 6 Digital Outputs, 1 Room Sensor port, 1 Airflow Sensor
- 5 Inputs, 8 Digital Outputs, 2 Analog Outputs, 1 Room Sensor port, 1 Airflow Sensor

The Controller Board communicates to all LONMARK devices via a Neuron<sup>®</sup>-chip. The controllers are shipped with pre-loaded applications, reducing engineering start-up time. Additionally, if facility zone requirements change, a new application can be quickly downloaded by a Staefa dealer.

The control application is stored in Flash memory. Flash memory allows an application to be changed without removing and replacing the existing controller or memory chip.

### **Differential Pressure Sensor**

The Differential Pressure Sensor connects to the air terminal box air-velocity sensing elements to provide measurement of the differential pressure. The measured value is converted to actual airflow in CFM (l/s) by the Predator VAV/CV controller.

## Spare Input/Output Points

The Predator controller, depending upon the application, may have up to 2 input and 2 output spare points available. These points can be used for control of devices located in close proximity to the Predator controller, reducing installation costs.

## Wiring Base

The Wiring Base is available in the following configurations:

- Full Point
- Reduced Point

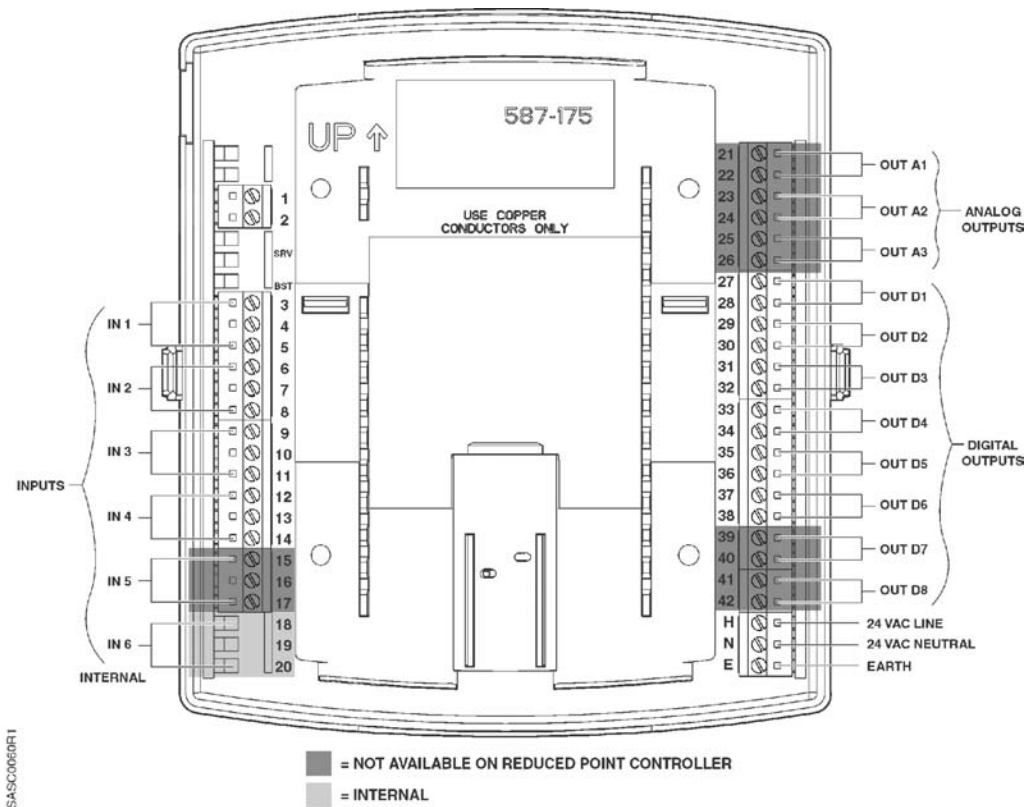
The Full Point base is designed to handle either Full Point 5IN/8DO/2AO controller or Reduced Point 4IN/6DO controller. This base provides the flexibility of interchanging a Reduced Point I/O-style controller with a Full Point I/O-style controller if needs change.

The Reduced Point base matches the Reduced Point 4IN/6DO controller board style providing a cost effective solution for lower point count applications.

## Specifications

Specification	
Processor Type	Neuron 3150
Processor Clock Speed	10 MHz - Neuron
Network Communication	TP/XF-10 (78.8K bps)
Memory Size	49 K Flash Memory 10K SRAM
Voltage Requirements	24 Vac @ 50/60 Hz
Power Consumption	5 VA plus loads
Ambient Operating Environment	+32°F to +122°F (0°C to +50°C) 5 to 95% RH (Non-condensing)
Agency Listings	UL/CUL 916 PAZX/PAZX7 (Enclosed Energy Management) LONMARK 3.2
Regulatory Compliance	FCC Part 15, Class B CISPR 22 Class B CE Mark Australian EMC Framework
Predator Dimensions:	6.75" H × 7" W × 2.45" D (171 mm × 178 mm × 62 mm)
Weight	2 lbs. (.9 kg)

# Wiring Diagram



NOTE: Input 6 (described as "internal" in diagram) is only used on the VAV version of the Predator for the Differential Pressure Sensor. It is not available on the UV, HP or FCU styles.

## Wiring Recommendations:

Input/AO	20 to 22 AWG
DO	18 to 22 AWG
Power	16 to 18 AWG
LONWORKS Network	22 AWG Level 4

## Transformer Requirements and Recommended Voltages

Type	Class 2, 24 Vac, 50/60 Hz
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## Optional Accessories

### Predator Room Temperature Sensors

The Predator Room Temperature Sensors offer a wide range of features and functions. These sensors work with the Staefa TALON building automation system to deliver exceptional occupant comfort in even the most demanding application environments. The product family range includes temperature-sensing-only variants up to types that include LCD display, setpoint, and override. All sensors incorporate precision temperature sensing elements to accurately and reliably measure room temperature. Their compact design results in an attractive, inconspicuous installation. A styled ventilation ring optimizes airflow through the cover for fast measurement response.

## Predator Room Sensor Specifications

Dimensions	3-11/32" H × 2-1/2" W × 1-1/2" D (85 mm × 63 mm × 38 mm)
Temperature Monitoring Range	55° to 95°F (13° to 35°C)
Thermistor Resistance Value	10,000 Ohms @ 77°F (25°C)
Setpoint Range	55-95°F
Calibration Adjustments	None Required
Standard Colors	White

## Ordering Information

### Controllers

Description	Product Number
Predator Single Duct VAV/CV Full Point Controller 5IN 8DO 2AO 1DPS 5 INI (2) 100 K $\Omega$ Thermistor / (3) 0-10 Vdc or Dry Contact 8 DO 24 Vac, 12VA, Triac 2 AO 0-10 Vdc 1 DPS 0 to 2 inch Differential Pressure Sensor 1 RS 10K $\Omega$ Thermistor Room Sensor	587-130
Predator Single Duct VAV/CV Reduced Point Controller 4IN 6DO 1DPS 4 IN (2) 100 K $\Omega$ Thermistor / (2) 0-10 Vdc or Dry Contact 6 DO 24 Vac, 12VA, Triac 1 DPS 0 to 2 inch Differential Pressure Sensor 1 RS 10K $\Omega$ Thermistor Room Sensor	587-110
Predator Full Point Wiring Base Termination support up to 5IN, 8DO and 2AO	587-175
Predator Reduced Point Wiring Base Termination support for the 4IN and 6DO	587-170

### Accessories

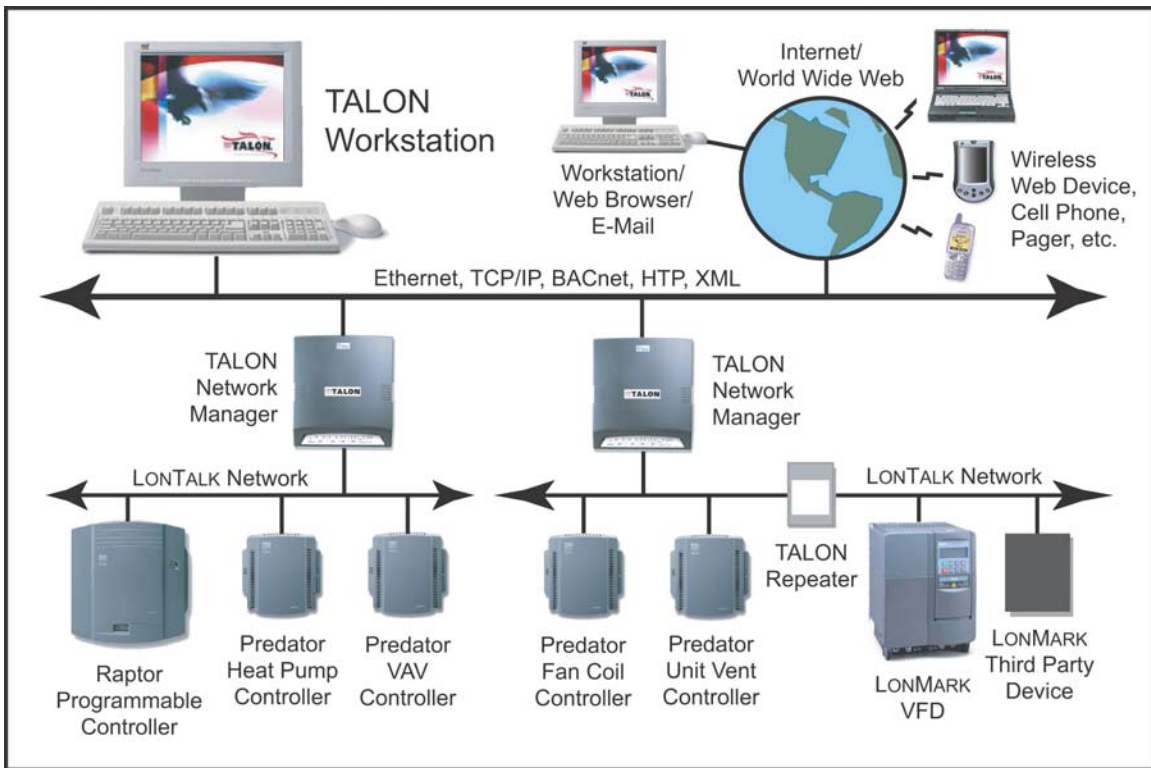
Description	Product Number
Predator Room Sensors	
Sensing Only	587-180
Bypass	587-181
Setpoint	587-182
Temperature Display	587-183 <sup>1</sup>
Setpoint and Bypass	587-184
Bypass and Temperature Display	587-185 <sup>1</sup>
Setpoint and Temperature Display	587-186 <sup>1</sup>
Setpoint, Bypass and Temperature Display	587-187 <sup>1</sup>
Predator Termination Connector Kit	587-171

### Documentation

Description	Product Number
TALON Information Library CD	587-980

Notes: 1. Sensor will display Fahrenheit or Celsius temperature.

# TALON Architecture



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