VAV Series Terminal Unit Controller
Self-Contained Interoperable Controller Model UCP-1

SUPERSEDES: New   EFFECTIVE: April 15, 2013

Job: _____   Engineer: _____

Contractor: _____   Rep: _____

Date: _____   Tag/Item #: _____

VAV Series

The VAV Series is comprised of two stand-alone microprocessor-based controllers for either pressure independent Variable Air Volume terminal units (VAVI-2) or pressure dependent Variable Volume and Temperature terminal units (VAVD-2). This document contains information for both the VAVI-2 and VAVD-2 controllers. Information that is specific to one controller is marked as either VAVI-2 or VAVD-2.

The VAV Series controls commercial unitary heating, ventilating, and air conditioning (HVAC) equipment. It performs a wide range of terminal box applications with various combinations of sensors and actuators.

Overview

Digital inputs are provided for indoor air quality (IAQ) sensing and occupancy (OCC) sensing. Analog inputs are provided for a primary air temperature sensor and a discharge air temperature sensor. A two-wire serial interface is provided for a thermostat. The controller incorporates digital outputs (triacs) for fan start/stop and two-stage heating or heating valve open/close.

An analog output is provided for modulated reheat control. An integrated actuator is included for damper positioning. Two analog outputs are provided for modulated reheat control and a 0-10VDC fan.

The controller is based on LONWORKS® networking technology. It can be networked to a higher-level control system for monitoring and control applications.

Features

- On-board air-flow sensor (VAVI-2)
- Integral damper actuator
- Automatic Flow Constant calculation (VAVI-2)
- Optional indoor air quality (IAQ) alarm input (contact closure) with optional air quality compensation
- Optional discharge air temperature (DAT) monitoring
- Two stages of electric reheat or floating point or modulating 0-10V setpoint hot water reheat valves
- Option to use auxiliary local heat sources for first stage of heating
- Parallel or series fan
- Analog or digital fan
- Pressure independent flow control (VAVI-2)
- Pressure dependent flow control (VAVD-2)
- Individual temperature setpoints for occupied/unoccupied heating
- Thermostat with space temperature, setpoint adjust, occupancy override
- Integrates with Chilled Beam controllers (CHB1, CHB2), pressure independent Multiplex Package Unit controller (MPU), and pressure dependent Variable Air Volume Package Unit Controller (VPU).
- "Stand Alone Mode" for independent operation
- Selection between thermostat types: TS30x or 10K Precon type III thermistor

- Optional normally open dry contact occupancy sensor input
- Optional Primary Air Temperature sensor for use in "Stand Alone Mode"
- Automatic configuration with the Local Control Interface (LCI)
- Alarm/Event reporting
- Networked operation using LONWORKS Technology

Specifications
Electrical
Inputs

- Cabling: twisted shielded pair, 18 AWG recommended—500 feet max. (152 meters)
- Resolution: 10 bit

Thermostat Network

- 12 Volt nominal, internally limited to 0.04 A

Primary Air Temperature, Discharge Air Temperature Sensors

- Precon Type III 10K thermistor

Indoor Air Quality

- Dry Contact
- Normally open
- 5 Volts DC max

Outputs

Digital Fan Start/Stop, Heating Stages 1 & 2 or Heating Valve Open & Close

- 20 to 28 Volts AC
- 0.7A maximum each

Analog Fan, Modulated Heating Valve

- 0 to 10 Volts DC
- 2K Ohm minimum load
- 8 bit resolution

Power

Power Requirements

- 24 VAC nominal, 100VA max (requires an external class 2 supply)

Power Consumption

- 15VA with no external loads, maximum limited by the class 2 supply rating

Recommended Sensor Wire

Cable Type	Pairs	Details	Taco Catalog No.
18AWG	1	Stranded Twisted Shielded Pair, Plenum	WIR-018

FTT-10A Network

- Speed: 78KBPS
- 42.4 Volts DC max
- Cabling: Maximum node-to-node distance: 1312 feet (400 meters)
- Maximum total distance: 1640 feet (500 meters)

Cable Type	Pairs	Details	Taco Catalog No.
Level 4 22AWG (0.65mm)	1	Unshielded, Plenum, U.L. Type CMP	WIR-022

For detailed specifications, refer to the *FTT-10A Free-Topology Transceiver User's Guide* published by Echelon Corporation (www.echelon.com/support/documentation/manuals/transceivers).

Mechanical

Housing
- Dimensions: 5.0" (12.7 cm) high, 9.0" (22.9 cm) wide, 2.5" (6.4 cm) deep
- ABS Polycarbonate

Weight
- Controller weight: 29 ounces (0.82 kilograms)
- Shipping weight: 40 ounces (1.1 kilograms)

Electronics
- Processor: 3150 Neuron 10 MHz
- Flash: 48 Kilobytes
- SRAM: 8 Kilobytes
- Termination: 0.197" (5.0 mm) Pluggable Terminal Blocks, 14-22 AWG

Environmental
- Temperature: 32 °F to 140 °F (0 °C to 60 °C)
- Humidity: 0 to 90%, non-condensing

Agency Listings
- UL Listed for US and Canada, Energy Management Equipment PAZX and PAZX7.

Agency Compliances
- FCC Part 15 Class A

CONTROLS MADE EASY®

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