

VPU-1

The VPU-1 is a microprocessor-based controller for Variable Air Volume (VAV) package units. Applications include VAV package units with up to four stages of cooling, two stages of heating, an economizer, and a variable speed fan. The VPU-1 is designed for integrated networked operation with the iWorX Local Control Interface (LCI) and up to 60 VAV-1 terminal unit controllers.

Overview

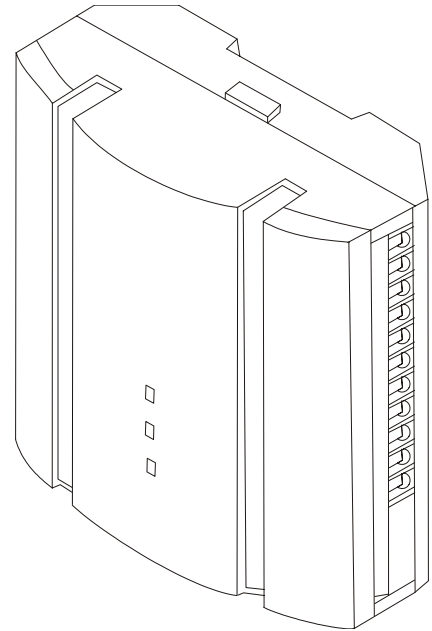
Digital inputs are provided for fan status, mixed air low limit indication, smoke detector, filter status and indoor air quality (IAQ). Analog inputs are provided for mixed air temperature, return air humidity, supply air temperature and supply duct static pressure.

The VPU-1 incorporates digital outputs in the form of triacs for fan start/stop, four cooling stages, two heating stages and a two-position economizer. In addition, two analog outputs are provided to control a modulated economizer and variable speed drive.

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

Features

- Four stages of cooling
- Two stages of heating, or floating-point valve control
- Modulated fan speed
- Digital or modulated economizer
- Economizer enabled based on enthalpy calculations or dry bulb
- Minimum cycle timers for stages
- Runtime accumulation for heating, cooling and fan
- Local backup schedule
- Maximum of 60 zones (VAV boxes)
- Supply air temperature safety limits
- Time proportioned control of the staged outputs to reduce cycling
- Proportional + Integral control of the modulated economizer
- Proportional + Integral control of static pressure
- LONWORKS interface to building automation systems
- Mixed air low limit protection
- Filter status input
- Smoke detection input
- IAQ compensation based on IAQ alarm input or zone controller alarm
- Automatic morning warm-up sequence
- Automatic configuration with the LCI
- Alarm/Event reporting



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Specifications

Electrical

Inputs

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

Freeze Indication, Filter Status, Smoke Detect, Local IAQ Alarm

- Dry Contact
- Normally Open
- 5 Volts DC Max

Fan Status

- Dry Contact
- Normally Closed
- 5 Volts DC Max

Return Air Humidity, Static Pressure

- 0 - 10 Volts DC

Mixed Air Temp., Supply Air Temp.

- Precon Type III 10K thermistor

Outputs

Cooling Stages 1, 2, 3, & 4; Heating Stages 1 & 2; Fan Start/Stop; Two-position Economizer

- 24 Volts AC
- 1 Amp at 50 °C, 0.5 Amps at 85 °C

Modulated Economizer, Fan Speed

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

FTT-10A Network

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

Table 1: Network Wire Specifications

Cable Type	Pairs	Details	Connect Air Catalog No.
Level 4 22AWG (0.65mm)	1	Unshielded, Plenum, U.L. Type CMP	W221P-2001
Level 4 22AWG (0.65mm)	1	Unshielded, Non-Plenum, U.L. Type CM	W221P-1002

For detailed specifications, refer to the FTT-10A Free-Topology Transceiver User's Guide published by Echelon Corporation. For information on ordering Connect Air items, contact Connect Air International; 4240 B Street; Auburn, WA 98001 <www.connect-air.com>.

Power

Power Requirements

- 24VAC (requires an external supply)

Power Consumption

- With no external loads: 15 VA

Mechanical

Housing

- Dimensions: 4 3/8" high, 4 5/16" wide, 2" deep (111 mm high, 110 mm wide, 51 mm deep)
- ABS Polycarbonate

Weight

- Controller Weight: 0.45 pounds (0.22 kilograms)
- Shipping Weight: 0.60 pounds (0.28 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: -40 °F to 185 °F (-40 °C to 85 °C)
- Humidity: 0 to 95%, non-condensing

Agency Listings

- UL916

Agency Compliances

- FCC Part 15 Class A
- CE