iWorx by Taco Electronic Solutions

Submittal Data Information

501-010

VPU2 Air Control – Pressure Independent Multi-Zone

Self-Contained Interoperable Controller Model UCP-1

SUPERSEDES: November 12, 2010 EFFECTIVE: June 11, 2012

Job: _____ Engineer: _____

Contractor: _____ Rep: _____

Date: _____ Tag/Item #: _____

VPU2

The VPU2 is a self-contained microprocessor-based controller for one Variable Air Volume (VAV) package unit. Applications include VAV package units with up to four stages of cooling, or a floating point control valve or a modulated output (valve or variable speed circulator) two stages of heating, or a floating point control valve or a modulated output (valve or variable speed circulator) an economizer, and a variable speed fan. The VPU2 is designed for integrated networked operation with the iWorx® Local Control Interface (LCI) and up to 56 VAV terminal unit controllers.

Overview

Digital inputs are provided for fan status, mixed air low limit indication, smoke detector, and filter status. Analog inputs are provided for mixed air temperature, return air humidity, supply air temperature and supply duct static pressure. An indoor air quality (IAQ) input can be configured for analog or digital operation.

The VPU2 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 fan 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, or floating point valve control or a modulated output (valve or variable speed circulator)
- Two stages of heating, or floating-point valve control or a modulated output (valve or variable speed circulator)
- Dehumidification
- 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 56 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, modulated heating, modulated cooling, and static pressure
- Mixed air low limit protection, filter status, fan proof, freeze stat, and smoke detection inputs
- IAQ compensation based on IAQ alarm input or zone controller alarm
- Outside Air Temperature cutoffs
- Automatic morning warm-up sequence
- LONWORKS interface to building automation systems

- Automatic configuration with the LCI
- Alarm/Event reporting

Specifications

Electrical

Inputs

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

Mixed Low Limit, Filter Status, Smoke Detect, Local IAQ Alarm

- Dry Contact
- Normally Open
- 5 Volts DC Max

Fan Proof

- Dry Contact
- Normally Closed
- 5 Volts DC Max

Return Air Humidity, Static Pressure

- 0 - 10 Volts DC

Mixed Air Temperature, Supply Air Temperature, Return Air Temperature

- 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
- 1A @ 50C, 0.5A @ 60C, limited by the Class 2 supply rating

Modulated Economizer, Modulated Static Pressure Fan

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

Power

Power Requirements

- 24VAC (20VAC to 28VAC), requires an external Class 2 supply

Power Consumption

- 7.2W 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
- Cabling: Maximum node-to-node distance: 1312 feet (400 meters)

501-010, Effective: June 11, 2012

- 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: 5.55" (141mm) high, 6.54" (166 mm) wide, 1.75" deep (44 mm)
- ABS

Weight

- Controller Weight: 0.70 pounds (0.32 kilograms)
- Shipping Weight: 1.0 pounds (0.46 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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