Honeywell

PVB VAV Controller

PRODUCT DATA

Description

PVBxxxxAS-E is provided with more compact size and accurate air flow measurement to meet the control of the increasing demand for VAV terminals. It communicates with BACnet MS/TP, fully compatible with Niagara WEBs AX and WEBs N4 system.

PVBxxxxAS-E is a free programmable VAV controller, assembled with a DP sensor for air-flow measurement and a damper actuator for damper position adjustment.

Features

- Compact design to meet small enclosure
- Low air speed measureable by high accuracy DP sensor
- 5 Nm damper actuator, ease and stable to mount with damper of VAVBox
- BACnet MS/TP communication between controllers, up to 115. 2 kps
- Sylk™ Bus communication with wall module, polarity insensitive wiring for both power supple and communication
- Compatible with Niagara AX or N4
- Colorful and removable terminal blocks to simplify wiring and replacement
- Qualified CE, UL, BTL
- BACnet qualified by BTL

Technical Data

- Electrical
  - Power Supply: 20-30 Vac; 50/60Hz
  - Consumption
    - PVB4022AS-E: Typical 7 VA, max. 43 VA (incl. Aux output and I/O consumption)
    - PVB0000AS-E: Typical 5 VA, max. 8 VA (incl. Aux output)
  - Aux. Output: 20Vdc ± 10% @50mA
  - Real time clock: 72 hours backup after power failure
  - Indicators: Green LED, Status and RS485
  - CPU: 120 MHz, 32 bit
  - RAM: 128 K
  - Flash: 512 K
- Communication
  - BACnet: MS/TP RS-485, 9.6k/19.2k/38.4k/76.8k/115.2k
    - RS-485: 1 km max. length, 63 devices(recommended<30 devices)
    - RS-485 cable: Belden9481 or equalary
  - Sylk: 2 wire, polarity insensitive
    - Sylk Bus: Max. length 30 m
- Actuator
  - Torque: 5 Nm
  - Run time: Floating 108 s @ 50Hz
  - Mounting shaft: 10~13mm square or round length >=40mm
- DP Sensor
  - Range: 0 - 374 Pa
  - Accuracy: ±3% of full range
- I/O
  - PVB0000AS-E: No I/O
  - PVB4022AS-E: 4UI+2AO+2DO
    - UI: 0-10v/20k NTC/pt1000/Dry contact/100 ohm-100 kohm
    - AO: 4-20 mA, max. 550 ohm 0-10V, max.10 mA
    - DO: 24Vac Triac, 25-500 mA
    - A/D resolution: 16 bit
- Compatibility
  - OS: Niagara Ax 3.8, N4 4.3
  - Wall Module: TR42(-x)
- Physics
  - Dimension: 153.3 x 66(78.1 Max.) x97.2mm
  - Weight: 0.6 kg
  - Mount: Fix with bracket and shaft

Technical Data (Cont.)

- Environmental

Storage	-40 °C - +65.5 °C
Operating	0 °C - +50 °C
Humidity	5%RH - 95%RH, non-condensing
Protection	IP20
Polution level	2

- Certification

EU	CE (EN 60730)
USA	UL (UL60730)
BACnet	BTL B-ASC

Communication

BACnet MS/TP

Each controller uses a BACnet MS/TP communication port. The controller's data is presented to other controllers over a twisted-pair MS/TP network, which uses the EIA-485 signaling standard capable of the following baud rates: 9.6, 19.2, 38.4, 76.8, or 115.2 kilobits per second (configured at global controller).

The controllers are master devices on the MS/TP network. Each Spyder BACnet controller uses a high-quality EIA-485 transceiver and exerts 1/4 unit load on the MS/TP network.

Cabling should be selected that meets or exceeds the BACnet Standard which specifies the following: an MS/TP EIA-485 network shall use shielded, twisted-pair cable with characteristic impedance between 100 and 130 ohms. Distributed capacitance between conductors shall be less than 100 pF per meter (30 pF per foot). Distributed capacitance between conductors and shield shall be less than 200 pF per meter (60 pF per foot). Foil or braided shields are acceptable. The Honeywell tested and recommended MS/TP cable is Honeywell Cable 3322 (18 AWG, 1-Pair, Shielded, Low Cap, Plenum cable), alternatively Honeywell Cable 3251 (22 AWG, 1-Pair, Shielded, Plenum cable) is available and meets the BACnet Standard requirements.

Termination Resistors

Matched terminating resistors are required at each end of a segment bus wired across (+) and (-). Use precision resistors rated 1/4W ±1% / 80 - 130 Ohms. Ideally, the value of the terminating resistors should match the rated characteristic impedance of the installed cable. For example, if the installed MS/TP cable has a listed characteristic impedance of 120 Ohm, install 120 Ohm matched precision resistors.

MS/TP MAC Address

The MS/TP MAC address for each device must be set to a unique value in the range of 0-127 on an MS/TP network segment. DIP switches on the controller are used to set the controller's MAC address.

Sylk™ Bus

Sylk is a two wire, polarity insensitive bus that provides both 18 VDC power and communications between a Sylk-enabled sensor and a Sylk-enabled controller.

Using Sylk-enabled sensors saves I/O on the controller and is faster and cheaper to install since only two wires are needed and the bus is polarity insensitive. Sylk sensors are configured using the latest release of the Spyder Tool.

LED Indicator

The LEDs on the front of the controller provides visual indication of the status of the device, PVBxxxxAS-E has 2 LED indicators - STA and 485.

STA indicator – Controller status:

OFF: No power/LED damaged/low voltage to board/1st second of power up/boot loader damaged.

On: No sufficient power supply to start up/Power supply being checked, this takes about 3.5 sec. and occurs on power up/Reset and re-flash.

Blink (1 sec. on, 1 sec. off): Controller operating normally

Blink (0.5 sec. on, 0.5 sec. off): Controller alarm is active/In process of download/Lost its configuration.

Blink (0.25 sec. on, 0.25 sec. off): Controller is boot loader(re-flash) mode.

485 indicator – BACnet Status:

Solid on: CPU not running/CPU dead

Solid on(blinking off once in 2.5 sec): The bootloader

is running in the processor and there is no MS/TP communication.

Solid on (blinking off twice in 2.5 sec): The bootloader is running in the process and there is an MS/TP communication presenting.

Solid on (blinking off triple in 2.5 sec): The bootloader is running in the process and there is an MS/TP communication data transfer in progress.

Solid off: No power/Not running/Dead

Solid off (blinking on once in 2.5 sec): Controller is running, but there is no MS/TP communication.

Solid off (blinking on twice in 2.5 sec): Controller is running, there is MS/TP communication

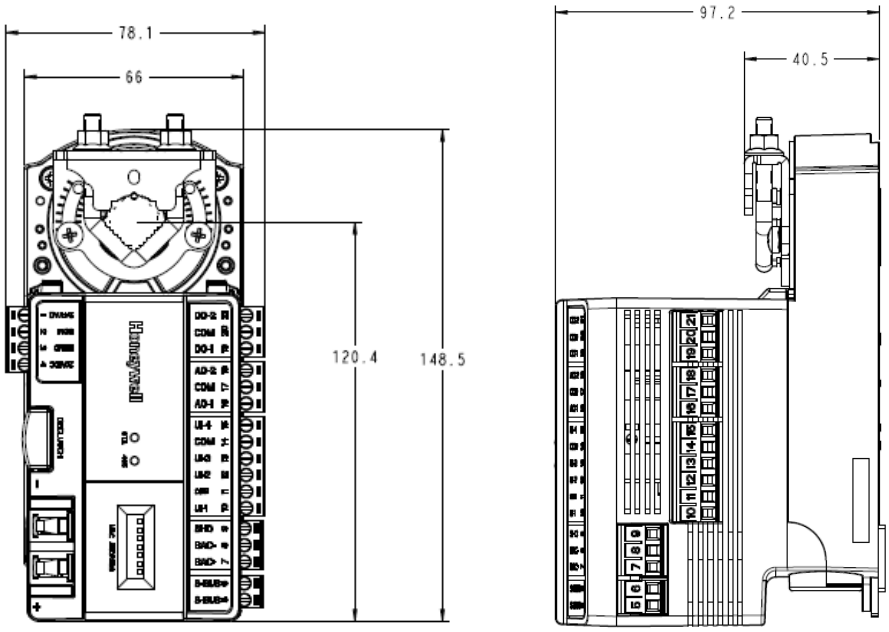
Solid off (blinking on triple in 2.5 sec): Controller is running, and there is an MS/TP communication data transfer in progress.

Quick on/off blink: Not running/dead.

Installation

PVB controllers include the direct-coupled actuator with declutch mechanism, which is shipped hard-wired to the controller. The actuator mounts directly onto the VAV box damper shaft and has up to 5 Nm torque, 90-degree stroke, and 108 second timing at 50 Hz. Please see installation manual for more.

Dimension



Order Numbers

Order Number	Description
PVB0000AS-E	VAV Controller, no I/O
PVB4022AS-E	VAV Controller, 4UI+2AO+2DO