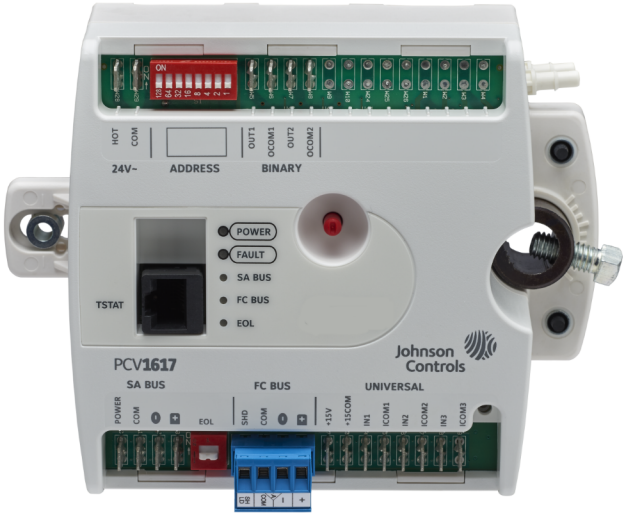
PCV Programmable VAV Box Controllers Catalog Page



CH-PCV1617-0, CH-PCV1632-0, CH-PCV1930-0

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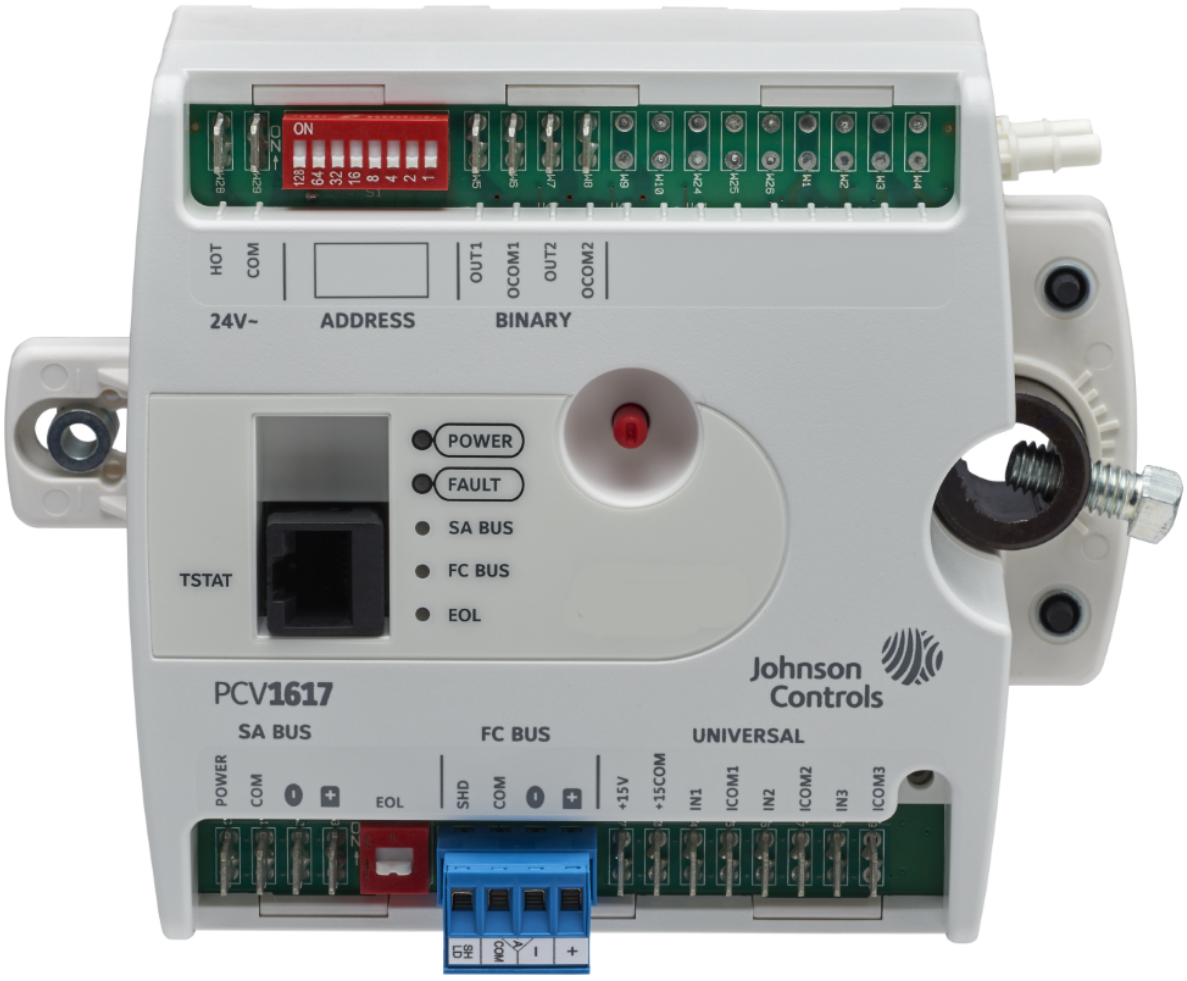
Johnson Controls

PCV Programmable VAV Box Controller Series

The PCV1632 and PCV1617 controllers feature an integral digital differential pressure transducer (DPT), an integral damper actuator, and a 32-bit microprocessor. The controllers' small package size facilitates quick field installation and efficient use of space, while not compromising high-tech control performance. These controllers easily adapt NS Series Network Sensors for zone and discharge air temperature sensing.

The PCV1930 programmable controller uses BACnet/IP networking for higher speed communication with the Controller Configuration Tool (CCT) and improved bandwidth. This gives you more flexibility in choosing controllers for your site's specific needs.

Figure 1: PCV1617 Controller



In addition to the features and benefits listed in PC Series Controller features, PCVs provide the following:

- Three universal inputs that allow an increased number of low cost sensor options.
- A state-of-the-art, digital non-flow pressure sensor to provide 14-bit resolution with bidirectional flow operation that supports automatic correction for polarity on high- and low-pressure DP tube connections. This pressure sensor eliminates high- and low-pressure connection mistakes.

- A fast response actuator that drives the damper from full open to full closed (90°) in 60 seconds to reduce commissioning time.

Repair information

If the product fails to operate within its specifications, replace the product. For a replacement product, contact the nearest Johnson Controls® representative.

Features and benefits

Standard BACnet Protocol

Provides interoperability with Johnson Controls and third-party Building Automation System (BAS) products that use the widely accepted BACnet standard.

Standard Hardware and Software Platform

Uses a common hardware design throughout the family line to support standardized wiring practices and installation workflows. Also uses a common software design to support use of a single tool for control applications, commissioning, and troubleshooting to minimize technical training.

State-Based Application Control Logic with Adaptive, Automatically Tuned Control Loops

Prevents simultaneous heating and cooling, reduces commissioning time, eliminates change-of-season re-commissioning, and reduces wear and tear on mechanical devices.

Universal Inputs

Allow multiple signal options per channel to provide input flexibility.

Complete Product Family with Modular Components

Meets any HVAC equipment or building system control requirement using only the needed components.

Three Universal Inputs

Allow an increased number of low cost sensor options.

A State-of-the-Art, Digital Non-Flow Pressure Sensor

Provides 14-bit resolution with bi-directional flow operation that supports automatic correction for polarity on high- and low-pressure DP tubeconnections. This pressure sensor eliminates high- and low-pressure connection mistakes.

A fast response actuator

Drives the damper from full open to full closed (90°) in 60 seconds to reduce commissioning time.

FX-ZFR Wireless Field Controller (FC) or Sensor/Actuator (SA) Bus Interface

Both the FX-ZFR1800 Series Wireless and WNC1800/FX-ZFR182x Pro Series Wireless Field Bus (FX-ZFR Pro) provide a wireless alternative to hard-wired system counterparts, offering application flexibility and mobility with minimal disruption to building occupants.

Wireless Field Controller (FC)/Sensor/Actuator (SA) Bus Interface (where available)

Provides a wireless alternative to hard-wired field bus networking and sensor connections, providing application flexibility, mobility, and minimal disruption to building occupants.

Bluetooth® Wireless Commissioning Interface

Provides an easy-to-use connection to the configuration and commissioning tool.

Auto-Tuned Control Loops

Reduce commissioning time, eliminate change-of-season re-commissioning, and reduce wear and tear on mechanical devices.

Universal Inputs and Configurable Outputs

Allow multiple signal options per channel to provide input/output flexibility.

Optional Local User Interface Display

Allows convenient monitoring and adjusting capabilities at the local device.

BACnet Testing Laboratories™ (BTL) Listing

Ensures interoperability with other BTL-listed devices. BTL is a third-party agency which validates that BAS vendor products meet the BACnet industry-standard protocol.

32-bit Microprocessor

Ensures optimum performance and meets industry specification.

BACnet Automatic Discovery support

Enables easy controller integration

Integral end-of-line (EOL) switch

MS/TP Field Controllers have an integral end-of-line (EOL) switch that enables field controllers to be terminating devices on the communications bus

Troubleshooting

Pluggable communications bus and supply power terminal blocks expedite installation and troubleshooting.

Writable Flash Memory

Allows standard or customized applications to be downloaded from the CCT and enables persistent application data.

DPT Feature

Models that include a DPT feature a state-of-the-art digital non-flow DPT to provide 14-bit resolution with bidirectional flow operation that supports automatic correction for polarity on high- and low-pressure DP tube connections; this pressure sensor eliminates high- and low-pressure connection mistakes.

A Phone Jack-Style Connector on the FC Bus and SA Bus of the FX-PCV16

Supports quick connection to the Wireless Commissioning Converter, FX-ZFR or FX-ZFR Pro Series Wireless Field Bus System wireless routers, MAP Gateway, and network sensors.

Fast Response Actuator

Models that include actuators feature a fast response actuator that drives the damper from full open to full closed (90°) in 60 seconds to reduce commissioning time.

PCV Series point type counts per model

Table 1: PCV series point type counts per model

Point types	Signals accepted	PCV1617	PCV1632	PCV1930
Modular Jacks		8-pin SA Bus supports analog non-communicating sensor		6-pin SA Bus with four communicating sensors and 6-pin FC Bus for tool supportr
Universal Input (UI)	Analog Input, Voltage Mode, 0–10 VDC Analog Input, Resistive Mode, 0–2k ohm, RTD (1k NI [Johnson Controls], 1k PT, A998 SI), NTC (10k Type L, 2.252k Type 2) Binary Input, Dry Contact Maintained Mode	3	3	3
Binary Output (BO)	24 VAC Triac	2	3	3
Configurable Output (CO)	Analog Output, Voltage Mode, 0–10 VDC Binary Output Mode, 24 VAC Triac		2	2
Integrated Actuator	Internal	1	1	1
Integrated Flow Sensor	Internal	1	1	1
Zone Sensor Input	On SA Bus	Up to 4 NS Series Network Zone Sensors		

PCV Series ordering information

Table 2: PCV Series ordering information

Product code number	Description
CH-PCV1617-0	32-bit, integrated VAV controller/Actuator/DPT, 3 UI and 2 BO; 24 VAC; FC Bus, and SA Bus, includes 8-pin TSTAT Port for use with TE-7xx Series Non-Communicating Sensors.
CH-PCV1632-0	32-bit, Integrated VAV Controller/Actuator/DPT, 3 UI, 3 BO, and 2 CO; 24 VAC; FC Bus, and SA Bus, Includes 8-pin TSTAT Port for use with TE-7xx Series Non-Communicating Sensors.
CH-PCV1930-0	32-bit, Integrated VAV Controller/Actuator/DPT, 3 UI, 3 BO, and 2 CO; 24 VAC; and SA Sensor Port; Integral Real-time Clock; 2 Ethernet Ports for BACnet/IP Network Communications

Accessories

Table 3: CH-PC family accessories (order separately)

Product code number	Description
FX-ATV7003-0	Handheld VAV Box Balancing Tool
NS Series Sensors	NS Series Network Sensors: Refer to the *NS Series Network Sensors Product Bulletin (LIT-12011574)* for specific sensor model descriptions.
Y64T15-0	Transformer, 120/208/240 VAC Primary to 24 VAC Secondary, 92 VA, Foot Mount, 30 in. Primary Leads and 30 in. Secondary Leads, Class 2
Y65A13-0	Transformer, 120 VAC Primary to 24 VAC Secondary, 40 VA, Foot Mount (Y65AS), 8 in. Primary Leads and 30 in. Secondary Leads, Class 2
Y65T42-0	Transformer, 120/208/240 VAC Primary to 24 VAC Secondary, 40 VA, Hub Mount (Y65SP+), 8 in. Primary Leads and Secondary Screw Terminals, Class 2
Y65T31-0	Transformer, 120/208/240 VAC Primary to 24 VAC Secondary, 40 VA, Foot Mount (Y65AR+), 8 in. Primary Leads and Secondary Screw Terminals, Class 2
AP-TBK1002-0	2-Position Screw Terminal that Plugs onto CH-PCV Output Point Spade Lug
AP-TBK1003-0	3-Position Screw Terminal that Plugs onto CH-PCV Output Point Spade Lugs
AP-TBK4SA-0	Replacement MS/TP SA Bus Terminal, 4-Position Connector, Brown (Bulk Pack of 10)
AP-TBK4FC-0	Replacement MS/TP FC Bus Terminal, 4-Position Connector, Blue (Bulk Pack of 10)
AP-TBK3PW-0	Replacement Power Terminal, 3-Position Connector, Gray (Bulk Pack of 10)
AS-CBLVMA-1	Cable Adapter, 8-Pin Female Socket to 6-Pin Male Jack (Bulk Pack of 10)
AS-CBLVMA-2	Cable Adapter, 8-Pin Female Socket to 8-Pin Male Jack with 6-Pin Female Socket for Wireless Commissioning Converter (Bulk Pack of 10)
MS-TBKLV03-0	Terminal Block Kit - CH-PCA Line Voltage AC Power - 3 Pieces
MS-TBKRO02-0	Terminal Block Kit -CH-PCA 2-Position Relay Output - 9 Pieces
MS-TBKRO03-0	Terminal Block Kit - CH-PCA 3-Position Relay Output - 6 Pieces

Table 3: CH-PC family accessories (order separately)

Product code number	Description
MS-TBKCO04-0	Terminal Block Kit - CH-PCA 4-Position Configurable Output - 6 Pieces
MS-TBKUI04-0	Terminal Block Kit - CH-PCA 4-Position Universal Input - 3 Pieces
MS-TBKUI05-0	Terminal Block Kit - CH-PCA 5-Position Universal Input - 3 Pieces
FX-PCVACT-701	Actuator Assembly Gearbox Replacement Kit
NS-WALLPLATE-0	Network Sensor Wall Plate

PCV Series technical specifications

Table 4: PCV series technical specifications

Product Code Numbers	**CH-PCV1617-0:** 32-bit, Integrated VAV Controller, Actuator, Pressure Sensor, 3 UI and 2 BO, 24 VAC; FC and SA Bus; also includes 8-pin TSTAT Port for use with TE-7xx Series Non-Communicating Sensors **CH-PCV1632-0:** 32-bit, Integrated VAV Controller, Actuator, DPT, 3 UI, 3 BO, 2 CO, 24 VAC; FC and SA Bus; also includes 8-pin TSTAT Port for use with TE-7xx Series Non-Communicating Sensors **CH-PCV1930-0**: 32-bit, Integrated VAV Controller/Actuator/DPT, 3 UI, 3 BO, and 2 CO; 24 VAC; and SA Sensor Port; Integral Real-Time Clock; 2 Ethernet Ports for BACnet/IP Network Communications
Supply Voltage	24 VAC (nominal, 20 VAC minimum/30 VAC maximum), 50/60 Hz, Power Supply Class 2 (North America), Safety Extra-Low Voltage (SELV) (Europe)
Power Consumption	10 VA typical, 14 VA maximum ⓘ **Note:** VA rating does not include any power supplied to the peripheral devices connected to Binary Outputs (BOs) or Configurable Outputs (COs), which can consume up to 12 VA for each BO or CO, for a possible total consumption of an additional 60 VA (maximum).
Ambient Conditions	**Operating:** 0°C to 50°C (32°F to 122°F) **Storage:** -40°C to 70°C (-40°F to 158°F)
Terminations	**CH-PCV1617 and CH-PCV1632:** Inputs/Outputs, SA Bus, and Supply Power: 6.3 mm (1/4 in.) Spade Lugs FC Bus Pluggable Screw Terminal Block TSTAT Modular Port: RJ-45 8-Pin Modular Jack **CH-PCV1930:** Inputs/Outputs: 6.3 mm (1/4 in.) Spade Lugs SA Bus and Supply Power: 4-Wire and 2-Wire Pluggable Screw Terminal Blocks SA Bus Modular Ports: RJ-12 6-Pin Modular Jacks

Table 4: PCV series technical specifications

Controller Addressing	**BACnet/MS/TP** DIP switch set; valid controller device addresses 4–127 (Device addresses 0–3 and 128–255 are reserved and not valid controller addresses.)
Communications Bus	**CH-PCV1617 and CH-PCV1632:** **RS-485**- 3-wire FC Bus between the supervisory controller and CH-PC 4-wire SA Bus from the CH-PCV controller, NS Series Network Sensors, and other sensor/actuator devices, includes a terminal to source 15 VDC supply power from CH-PCV to SA Bus devices. **CH-PCV1930:BACnet/IP**- Two Ethernet ports; 10/100 Mbps; 8-pin RJ-45 connector
Processor	**CH-PCV1617 and CH-PCV1632**: RX630 32-bit Renesas microcontroller **CH-PCV1930**: RX63N 32-bit Renesas microcontroller
Memory	**CH-PCV1617 and CH-PCV1632**:1 MB Flash Memory and 512 KB RAM **CH-PCV1930**: 16 MB serial flash memory and 8 MB of SDRAM
Analog Input/ Analog Output Accuracy	**Analog Input:** 15-bit resolution on UIs **Analog Output:** 0–10 VDC ± 200 mV
Air Pressure Differential Sensor	Range: -1.5 in. to 1.5 in. W.C. **Performance Characteristics:** Accuracy: ±0.75% Full Span Maximum (±0.0225 in. W.C.) Typical accuracy at zero (null) pressure is ±0.003 in. W.C.
Mounting	Mounts to damper shaft using single set screw and to duct with single mounting screw.
Actuator Rating	4 N•m (35 lb•in.) minimum shaft length = 44 mm (1-3/4 in.)
Dimensions	**(Height x Width x Depth):** 165 mm x 125 mm x 73 mm (6.5 in. x 4.92in. x 2.9 in.) **Center of Output Hub to Center of Captive Spacer:** 135 mm (5-5/16 in.)
Weight	0.65 kg (1.45 lb)
Compliance	**United States:** UL Listed, File E107041, CCN PAZX, UL 916, Energy Management Equipment; FCC Compliant to CFR47, Part 15, Subpart B, Class A
	Canada: UL Listed, File E107041, CCN PAZX7, CAN/CSA C22.2 No. 205, Signal Equipment; Industry Canada Compliant, ICES-003
CE	**Europe:** CE Mark – Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive.
	Australia and New Zealand: RCM Mark, Australia/NZ Emissions Compliant

Table 4: PCV series technical specifications

	BACnet International: **CH-PCV1617 and CH-PCV1632**: BACnet Testing Laboratories (BTL) Protocol Revision 7 Listed BACnet Application Specific Controller (B-ASC) **CH-PCV1930**: BACnet Testing Laboratories (BTL) Protocol Revision 15 Listed BACnet Advanced Application Controller (B-AAC)