Code No. LIT-1900672
Issued April 12, 2011

FX-PCV Programmable VAV Box Controllers

Description

FX-PCVs are designed specifically for Variable Air Volume (VAV) Box control applications. The FX-PCV controllers have a pressure sensor and actuator in a pre-wired unit. The FX-PCV controllers connect easily to the NS Series Network Sensors for zone and discharge air temperature sensing.

The FX-PCV controllers can be configured for both single-duct and dual-duct VAV box control applications. The FX-PCV controllers require an additional damper actuator and Differential Pressure Transducer (DPT) sensor for dual duct or supply/exhaust applications.

Refer to the *FX-PC Series Programmable Controllers and Related Products Product Bulletin (LIT-12011657)* for important product application information.

Features

- BACnet® Master-Slave/Token-Passing (MS/TP) protocol communication — provides open system compatibility
- writable flash memory — allows standard or customized applications to be downloaded from the Facility Explorer Programmable Controller Tool (FX-PCT)
- integrated pressure sensor and actuator — reduces installation time
- wireless capability via FX-ZFR Series Wireless Field Bus System — enables wireless mesh connectivity between FX-PCVs to FX-WRZ Series Wireless Room Temperature Sensors, and to FX Supervisory Controllers, facilitating easy initial location and relocation
- fast response actuator — reduces commissioning time by driving the damper from fully open to fully closed (90°) in 60 seconds
- point capacity that can be expanded by adding FX-PCX Expansion Input/Output Modules to the Sensor Actuator (SA) bus — provides further application flexibility
- patented Proportional Adaptive control (P-Adaptive) and Pattern Recognition Adaptive Control (PRAC) technologies — provide continuous loop tuning

FX-PCV Controller

Repair Information

If the FX-PCV controller fails to operate within its specifications, replace the unit. For a replacement FX-PCV controller, contact the nearest Johnson Controls® representative.

Selection Charts

FX-PCV Series Point Type Counts per Model

Point Types	Signals Accepted	FX-PCV1610	FX-PCV1620
Universal Input (UI)	Analog Input, Voltage Mode, 0–10 VDC Analog Input, Resistive Mode, 0–2k ohm, RTD (1k NI [Johnson Controls], 1k PT, A99B SI), NTC (10k Type L, 2.252k Type 2) Binary Input, Dry Contact Maintained Mode	1	1
Binary Output (BO)	24 VAC Triac	0	3
Configurable Output (CO)	Analog Output, Voltage Mode, 0–10 VDC Binary Output Mode, 24 VAC Triac	0	2
Integrated Actuator	Internal	1	1
Integrated Flow Sensor	Internal	1	1
Zone Sensor Input	On SA Bus	Up to 4 NS Series Network Zone Sensors	
		Up to 9 FX-WRZ Wireless Zone Sensors	
Discharge Air Sensor Input	On SA Bus	Up to 5 NS Series Network Discharge Air Sensors	

Ordering Information

Product Code Number	Description
FX-PCV1610-0	Programmable VAV Box Controller with Integrated Actuator and Pressure Sensors (Cooling only)
FX-PCV1620-0	Programmable VAV Box Controller with Integrated Actuator and Pressure Sensor (with Reheat and Fan Control)

FX-PCV Programmable VAV Box Controllers (Continued)

Accessories (Order Separately)

Product Code Number	Description
Y64T15-0[1]	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[1]	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[1]	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[1]	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 PCV Output Point Spade Lugs
AP-TBK1003-0	3-Position Screw Terminal that Plugs onto PCV Output Point Spade Lugs
AP-TBK4SA-0	Replacement MS/TP SA Bus Terminal, 4-Position Connector, Brown, Bulk Pack
AP-TBK4FC-0	Replacement MS/TP FC Bus Terminal, 4-Position Connector, Blue, Bulk Pack
AP-TBK3PW-0	Replacement Power Terminal, 3-Position Connector, Gray, Bulk Pack
FX-BTCVT-1	Bluetooth® Commissioning Converter
FX-BTCVTCBL-700	Cable Replacement Set for the FX-BTCVT-1 or the FX-ATV7003-0; includes one 1.5 m (5 ft) retractable cable.
FX-ZFR1810-0	Wireless Field Bus Coordinator, 10 mW Transmission Power; functions with FX Supervisory Controllers.
FX-ZFR1811-0	Wireless Field Bus Router, 10 mW Transmission Power; functions with FX-PC Programmable Controllers and FX-WRZ Wireless Room Sensors.
FX-ZFRCBL-0	Wire Harness which allows an FX-PCV to be connected to an SA Bus device (FX-BTCVT, FX-DIS Display, NS Sensor) when its SA Bus RJ-12 jack is occupied by an FX-ZFR1811 router.

1. Additional Y6x Series Transformers are available from Johnson Controls. Refer to the *Series Y63, Y64, Y65, Y66, and Y69 Transformer Catalog Page (LIT-1922175)* for more information regarding transformers.

Technical Specifications

FX-PCV Series (Part 1 of 2)	
Product Code Numbers	**FX-PCV1610-0:** Programmable VAV Box Controller, Cooling Only **FX-PCV1620-0:** Programmable VAV Box Controller, Cooling with Reheat and Fan Control
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 to 50°C (32 to 122°F) **Storage:** -40 to 70°C (-40 to 158°F)
Terminations	**Inputs/Outputs:** 6.3 mm (1/4 in.) Spade Lugs FC Bus, SA Bus, and Supply Power: 4-Wire and 3-Wire Pluggable Screw Terminal Blocks Sensor Port: RJ-12 6-Pin Modular Jacks
Controller Addressing	DIP Switch Set; Valid FX-PC Controller Device Addresses 4–127 (Device addresses 0–3 and 125–255 are reserved and not valid FX-PC controller addresses.)
Communications Bus	**BACnet MS/TP, RS-485:** 3-Wire FC Bus Between the FX Supervisory Controller and the FX-PC Programmable Controllers 4-wire SA Bus between the FX-PCV Controller, Network Sensors, and other Sensor/Actuator devices, includes a terminal to source 15 VDC supply power from FX-PCV to SA Bus devices.
Analog Input/Analog Output Resolution and Accuracy	**Analog Input:** 15-bit Resolution **Analog Output:** 16-bit Resolution and ±200 mV in 0–10 VDC Applications
Air Pressure Differential Sensor	Setra Transducer, Differential Pressure to Electrical, 0 to 38.1 mm (0 to 1.5 in.) W.C., 0.5 to 4.5 VDC, 5 VDC Supply, Aluminum Plated **Performance Characteristics:** Combined Repeatability and Hysteresis Error: ±0.05% of Full Span Maximum Non-linearity Errors (Best Fit Method): ±1.0% of Full Span Maximum Response Time (to within 63% of Full Scale Pressure with Step Change on Input): 15 ms Temperature Error from 15.6 to 48.9°C (60 to 120°F) Null: ±0.06% of Full Span per °F Maximum Span: ±1.5% of Full Span Maximum Stability, Null: ±0.5% of Full Scale Maximum, 1 Year Minimum Stability, Span: ±2.0% of Full Scale Maximum, 1 Year Minimum
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):** 182 x 182 x 64 mm (7-3/16 x 7-3/16 x 2-1/2 in.) **Center of Output Hub to Center of Anti-rotation Slot:** 160 mm (6-5/16 in.)
Weight	0.86 kg (1.9 lb)

FX-PCV Programmable VAV Box Controllers (Continued)

FX-PCV Series (Part 2 of 2)		
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
	Australia and New Zealand	C-Tick Mark, Australia/NZ Emissions Compliant

