FX-PCX Expansion Input/Output Modules Catalog Page

The FX-PCXs are expansion I/O modules with integral RS-485 MS/TP communications.

Note: At FX-PCT Release 10.1, FX-PCVs, FX-PCGs, and FX-PCAs can communicate by using either the BACnet® or the N2 field bus networking protocol. The operation of the FX-PCX is not affected by the selection of the BACnet or the N2 protocol in the host controller.

FX-PCXs can serve in one of two capacities, depending on where they are installed in the control system. When installed on the Sensor/Actuator (SA) Bus of an FX-PCV, FX-PCG, or FX-PCA controller, the FX-PCXs expand the I/O interfaces of these controllers. When installed on the Field Controller (FC) Bus, FX-PCXs can be used as I/O point multiplexors to support monitoring and control from a supervisory controller. The point multiplexor can also be useful for sharing points between other FX-PC controllers on the FC Bus using peer-to-peer connectivity.

Refer to the *FX-PC Series Programmable Controllers and Related Products Product Bulletin (LIT-12011657)* or *FX-PC Series Programmable Controllers and Related Products for Building Control Management (BCM) System Product Bulletin (LIT-12011915)* for product application details.

Features

- Standard BACnet® Protocol with BTL Listing - 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.

- ZigBee® Wireless FC/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.

- Universal Inputs and Configurable Outputs - Allow multiple signal options per channel to provide input/output flexibility.

- Complete Product Family with Modular Components - Meets any HVAC equipment or building system control requirement using only the needed components.

- BACnet MS/TP Protocol supports seamless integration into Johnson Controls and third-party BACnet devices.

- Integral end-of-line (EOL) switch enables FX-PC controller as a terminating device on the communications bus.

- Wireless capabilities (where available) via an FX-ZFR Series Wireless Field Bus System enable wireless mesh connectivity between FX-PC controllers to FX-WRZ Series Wireless Room Temperature Sensors and to supervisory controllers, facilitating easy initial location and relocation.

- Ability to reside on the FC Bus or SA Bus provides application flexibility

If the product fails to operate within its specifications, replace the product. For a replacement product, contact the nearest Johnson Controls® representative.
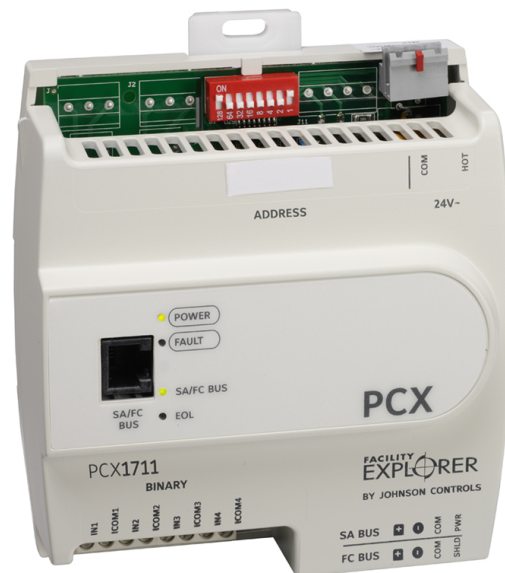
Figure 1: FX-PCX1711

Table 1: FX-PCX Series Point Type Counts Per Model

Point Types	Signals Accepted	FX-PCX 1711	FX-PCX 2711	FX-PCX 2721	FX-PCX 3711	FX-PCX 3721	FX-PCX 3731	FX-PCX 4711
Universal Input (UI)	Analog Input, Voltage Mode, 0–10 VDC Analog Input, Current Mode, 4–20 mA 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		2	8	4			6
Binary Input (BI)	Dry Contact Maintained Mode Pulse Counter/Accumulator Mode (High Speed), 100 Hz	4				16	8	2
Analog Output (AO)	Analog Output, Voltage Mode, 0–10 VDC Analog Output, Current Mode, 4–20 mA			2				2
Binary Output (BO)	24 VAC Triac						8	3

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Table 1: FX-PCX Series Point Type Counts Per Model

Point Types	Signals Accepted	FX-PCX 1711	FX-PCX 2711	FX-PCX 2721	FX-PCX 3711	FX-PCX 3721	FX-PCX 3731	FX-PCX 4711
Universal Output (UO)	Analog Output, Voltage Mode, 0–10 VDC Binary Output Mode, 24 VAC/DC FET Analog Output, Current Mode, 4–20 mA		2		4			
Configurable Output (CO)	Analog Output, Voltage Mode, 0–10 VDC Binary Output Mode, 24 VAC Triac							4
Relay Output (RO) (-0 Models Only)	120/240 VAC		2		4			
Relay Output (RO) (-1 Models Only)	24 VAC, SELV		2		4			
Relay Output (RO) (-2 Models Only)	24 VAC		2		4			

Table 2: FX-PCX Series Ordering Information

Product Code Number	Description
FX-PCX1711-0	4-Point Expansion I/O Module with 4 BI, FC and SA Bus Support
FX-PCX2711-0[2]	6-Point Expansion I/O Module with 2 UI, 2 UO, 2 RO, FC and SA Bus Support. Relays are rated for 120/240 VAC.
FX-PCX2711-2[3]	6-Point Expansion I/O Module with 2 UI, 2 UO, 2 BO, FC and SA Bus Support. Relays are rated for 240 VAC.
FX-PCX2721-0	10-Point Expansion I/O Module with 8 UI, 2 AO, FC and SA Bus Support
FX-PCX3711-0[2]	12-Point Expansion I/O Module with 4 UI, 4 RO, 4 BO, FC and SA Bus Support. Relays are rated for 120/240 VAC.
FX-PCX3711-2[3]	12-Point Expansion I/O Module with 4 UI, 4 UO, 4 BO, FC and SA Bus Support. Relays are rated for 240 VAC.
FX-PCX3721-0	16-Point Expansion I/O Module with 16 BI, FC and SA Bus Support
FX-PCX3731-0	16-Point Expansion I/O Module with 8 BI, 8 BO, FC and SA Bus Support
FX-PCX3731-0A[1]	16-Point Expansion I/O Module with 8 BI, 8 BO, FC and SA Bus Support **Note:** BOs on the FX-PCX3731-0A controller do not supply power for the outputs; the BOs require external low-voltage (<30 VAC) power sources.
FX-PCX4711-0	17-Point Expansion I/O Module with 6 UI, 2 BI, 3 BO, 2 AO, 4 CO, 24 VAC, FC and SA Bus Support

1   This model is currently available only in the Asian market; contact your local Johnson Controls representative for more information.
2   UL Listed
3   CE Marked

Accessories

Table 3: FX-PCX Accessories

Product Code Number	Description
FX-BTCVT-1	Bluetooth® Commissioning Converter
TL-BRTRP-0	Portable BACnet/IP to MS/TP Router
FX-BTCVTCBL-700	Cable Replacement Set for the FX-BTCVT-1 or the FX-ATV7003-0; Includes One 5 ft (1.5 m) Retractable Cable
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-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	AP-TBK3PW-0

FX-PCX Series Technical Specifications

Table 4: FX-PCX Series Technical Specifications

Product Code Numbers	**FX-PCX1711-0** - 4-Point Expansion Input/Output Module with 4 BI, FC and SA Bus Support.
	FX-PCX2711-0 - 6-Point Expansion Input/Output Module with 2 UI, 2 UO, 2 BO, FC and SA Bus Support. Relays are rated for 120/240 VAC.
	FX-PCX2711-2 - 6-Point Expansion Input/Output Module with 2 UI, 2 UO, 2 BO, FC and SA Bus Support. Relays are rated for 240 VAC.
	FX-PCX2721-0 - 10-Point Expansion Input/Output Module with 8 UI, 2 AO, FC and SA Bus Support
	FX-PCX3711-0 - 12-Point Expansion Input/Output Module with 4 UI, 4 UO, 4 BO, FC and SA Bus Support. Relays are rated for 120/240 VAC.
	FX-PCX3711-2 - 12-Point Expansion Input/Output Module with 4 UI, 4 UO, 4 BO, FC and SA Bus Support. Relays are rated for 240 VAC.
	FX-PCX3721-0 - 16-Point Expansion Input/Output Module with 16 BI, FC and SA Bus Support
	FX-PCX3731-0 - 16-Point Expansion Input/Output Module with 8 BI, 8 BO, FC and SA Bus Support
	FX-PCX3731-0A - 16-Point Expansion Input/Output Module with 8 BI, 8 BO, FC and SA Bus Support (Asia only)
	FX-PCX4711-0 - 17-Point Expansion Input/Output Module with 6 UI, 2 BI, 3 BO, 2 AO, 4 CO, FC and SA Bus Support
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	14 VA maximum
	Note: VA ratings do 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 84 VA (maximum), depending on the FX-PCX model.
Ambient Conditions	**Operating:** 0 to 50°C (32 to 122°F); 10 to 90% RH noncondensing
	Storage: -40 to 80°C (-40 to 176°F); 5 to 95% RH noncondensing
BACnet/MS/TP Addressing	DIP switch set; valid controller device addresses 4–127
	(Device addresses 0–3 and 128–255 are reserved and not valid FX-PCX addresses).
Communications Bus[1]	BACnet MS/TP, RS-485
	3-wire FC Bus between the supervisory controllers and FX-PC controllers
	4-wire SA Bus between FX-PC controller, NS Series Network Sensors, and other sensor/actuator devices. includes a lead source 15 VDC supply power (from FX-PC controller) to bus devices.
Processor	H8SX/166xR Renesas® 32-bit microcontroller
Memory	512 KB Flash Memory and 128 KB Random Access Memory (RAM)

Table 4: FX-PCX Series Technical Specifications

Input and Output Capabilities	**FX-PCX1711:**
	4 - Binary Inputs: Defined as Dry Contact Maintained or Pulse Counter/ Accumulator Mode
	FX-PCX2711:
	2 - Universal Inputs: Defined as 0–10 VDC, 4–20 mA, 0–600k ohm, or Binary Dry Contact
	2 - Universal Outputs: Analog Output: Voltage Mode, 0-10 VDC; Binary Output Mode: 24 VAC/DC FET; Analog Output: Current Mode, 4–20 mA
	2 - Relay Outputs (Single-Pole, Double-Throw):
	UL Listing (-0 model only): 1/4 hp 120 VAC, 1/2 hp 240 VAC; 360 VA Pilot Duty at 120/240 VAC (B300); 3 A Non-inductive 24-240 VAC;
	CE Marking (-1 model only): 6 (4) A N.O. or N.C. only, 24 VAC, SELV
	CE Marking (-1 model Only): 6 (4) A N.O. or N.C. only, 240 VAC
	FX-PCX2721:
	8 - Universal Inputs: Defined as 0–10 VDC, 4–20 mA, 0–600k ohm, or Binary Dry Contact
	2 - Analog Outputs: Defined as 0–10 VDC or 4–20 mA
	FX-PCX3711:
	4 - Universal Inputs: Defined as 0–10 VDC, 4–20 mA, 0–600k ohm, or Binary Dry Contact
	4 - Universal Outputs: Analog Output: Voltage Mode, 0-10 VDC; Binary Output Mode: 24 VAC/DC FET; Analog Output: Current Mode, 4–20 mA
	4 - Relay Outputs (Single-Pole, Double-Throw):
	UL Listing (-0 model only): 1/4 hp 120 VAC, 1/2 hp 240 VAC; 360 VA Pilot Duty at 120/240 VAC (B300); 3 A Non-inductive 24-240 VAC;
	CE Marking (-1 model only): 6 (4) A N.O. or N.C. only, 24 VAC, SELV
	CE Marking (-2 Model Only): 6 (4) A N.O. or N.C. only, 240 VAC
	FX-PCX3721:
	16 - Binary Inputs: Defined as Dry Contact Maintained or Pulse Counter/Accumulator Mode
	FX-PCX3731:
	8 - Binary Inputs: Defined as Dry Contact Maintained or Pulse Counter/Accumulator Mode
	8 - Binary Outputs: Defined as 24 VAC Triac (Require external low-voltage power source.)
	FX-PCX4711:
	6 - Universal Inputs: Defined as 0–10 VDC, 4–20 mA, 0–600k ohm, or Binary Dry Contact
	2 - Binary Inputs: Defined as Dry Contact Maintained or Pulse/Counter Accumulator Mode
	3 - Binary Outputs: Defined as 24 VAC Triac (selectable internal or external source power)
	4 - Configurable Outputs: Defined as 0–10 VDC or 24 VAC Triac BO
	2 - Analog Outputs: Defined as 0–10 VDC or 4–20 mA
Analog Input/Analog Output Resolution and Accuracy	**Analog Input:** 16-bit resolution
	Analog Output: 16-bit resolution and ±200 mV in 0–10 VDC applications
Terminations	Input/Output: Fixed Screw Terminal Blocks
	SA/FC Bus and Supply Power: 4-wire and 3-wire Pluggable Screw Terminal Blocks
	SA/FC Bus Port: RJ-12 6-Pin Modular Jacks
Mounting	Horizontal on single 35 mm DIN rail mount (preferred), or screw mount on flat surface with three integral mounting clips on controller
Housing	Enclosure material: ABS and polycarbonate UL94 5VB; self-extinguishing, Plenum-rated protection class: IP20 (IEC529)

Table 4: FX-PCX Series Technical Specifications

Dimensions (Height x Width x Depth)	**FX-PCX171x-x and FX-PCX271x-x Models:** 150 x 120 x 53 mm (5-7/8 x 4-3/4 x 2-1/8 in.) including terminals and mounting clips **FX-PCX2721-x, FX-PCX3721-x, FX-PCX3731-0, and FX-PCX3731-0A Models:** 150 x 164 x 53 mm (5-7/8 x 6-7/16 x 2-1/8 in.) including terminals and mounting clips **FX-PCX371x-x and FX-PCX471x-x Models:** 150 x 190 x 53 mm (5-7/8 x 7-1/2 x 2-1/8 in.) including terminals and mounting clips **Note:** Mounting space for all controllers requires an additional 50 mm (2 in.) space on top, bottom, and front face of controller for easy cover removal, ventilation, and wire terminations.
Weight	0.5 kg (1.1 lb) maximum
Compliance	**United States:** UL Listed, File E107041, CCN PAZX, UL 916, Energy Management Equipment; FCC Compliant to CFR47, Part 15, Subpart B, Class A **Note:** Except FX-PCX2711-2 and FX-PCX3711-2
	Canada: UL Listed, File E107041, CCN PAZX7, CAN/CSA C22.2 No. 205, Signal Equipment; Industry Canada Compliant, ICES-003 **Note:** Except FX-PCX2711-2 and FX-PCX3711-2
	Europe: CE Mark –Johnson Controls, Inc. declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC. **Note:** Except FX-PCX2711-0 and FX-PCX3711-0
	Australia and New Zealand: C-Tick Mark, Australia/NZ Emissions Compliant **Note:** Except FX-PCX2711-0 and FX-PCX3711-0
	BACnet International: BACnet Testing Laboratories (BTL) Protocol Revision 4 Listed BACnet Application Specific Controller (B-ASC)

1   For more information, refer to the *FX-PC Series Controllers MS/TP Communications Bus Technical Bulletin (LIT-12011670)*.

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