

FX-PCG General Purpose Programmable Controllers Catalog Page

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The FX-PCGs are programmable controllers with integral MS/TP communications. FX-PCG models include the 10-point FX-PCG16 Series and the 17-point FX-PCG26 Series.

FX-PCGs feature 32-bit microprocessor architecture, patented continuous tuning adaptive control, peer-to-peer communications, and are available with an optional built-in LCD screen local UI.

A full range of FX-PCG models combined with the FX-PCX Expansion I/O Modules can be applied to a wide variety of HVAC equipment control applications ranging from simple fan coil or heat pump control to air handlers to advanced central plant management.

All FX-PCG Series Controllers support wireless communications using the ZigBee™ Field Router (FX-ZFR) Series accessories.

Refer to the *FX-PC Series Programmable Controllers and Related Products Product Bulletin (LIT-12011657)* 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 Field Controller (FC)/Sensor/Actuator (SA) Bus Interface - Provides a wireless alternative to hard-wired system counterparts, providing application flexibility, mobility, and minimal disruption to building occupants.
- 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 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 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 Facility Explorer (FX) Supervisory Controllers, facilitating easy initial location and relocation.
- Patented proportional adaptive control (P-Adaptive) and Pattern Recognition Adaptive Control (PRAC) technologies provide continuous loop tuning.
- Writable flash memory allows standard or customized applications to be downloaded from the FX-PCT and enables persistent application data.
- Large product family provides a wide range of point mix to meet application requirements and allows for the addition of one or more FX-PCs or NS Series Network Sensors to provide even more I/O capacity.

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-PCG2621 General Purpose Programmable Controller with Integral Local Display

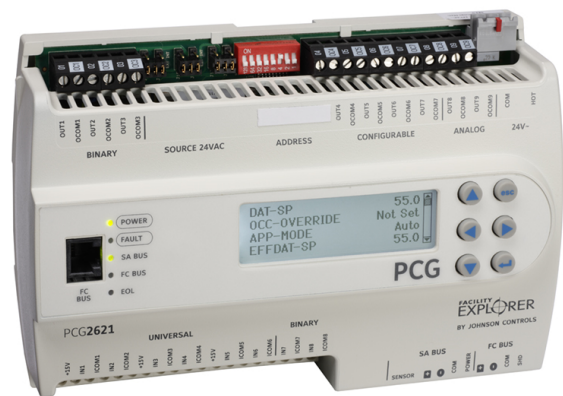


Table 1: FX-PCG Series Point Type Counts per Model

Point Types	Signals Accepted	FX-PCG16	FX-PCG26
Universal Input (UI)	Analog Input, Voltage Mode, 0–10 VDC Analog Input, Current Mode, 4–20 mA ¹ Analog Input, Resistive Mode, 0–2k ohm, resistance temperature detector (RTD) (1k NI [Johnson Controls], 1k PT, A99B SI), negative temperature coefficient (NTC) (10k Type L, 2.252k Type 2) Binary Input, Dry Contact Maintained Mode	2	6
Binary Input (BI)	Dry Contact Maintained Mode Pulse Counter/Accumulator Mode (High Speed), 100 Hz	1	2

Table 1: FX-PCG Series Point Type Counts per Model

Point Types	Signals Accepted	FX-PCG16	FX-PCG26
Analog Output (AO)	Analog Output, Voltage Mode, 0–10 VDC Analog Output, Current Mode, 4–20 mA		2
Binary Output (BO)	24 VAC Triac	3	3
Configurable Output (CO)	Analog Output, Voltage Mode, 0–10 VDC Binary Output Mode, 24 VAC Triac	4	4

1 Analog Input, Current Mode is set by hardware for the FX-PCG26, and by software for the FX-PCG16.

Table 2: FX-PCG Series Ordering Information

Product Code Number	Description
FX-PCG1611-0	10-Point General Purpose Programmable Controller with 2 UI, 1 BI, 3 BO, and 4 CO; 24 VAC; FC and SA Bus Support
FX-PCG1611-0ET	FX-PCG1611 Extended Temperature Controller for Rooftop Applications. Supports Operational Temperature Range of -40 to 70°C.
FX-PCG1621-0	10-Point General Purpose Programmable Controller with 2 UI, 1 BI, 3 BO, and 4 CO; 24 VAC; FC and SA Bus Support; Integral Display and 6-Button Navigation Touch Pad
FX-PCG2611-0	17-Point General Purpose Programmable Controller with 6 UI, 2 BI, 3 BO, 2 AO, and 4 CO; 24 VAC; FC and SA Bus Support
FX-PCG2611-0ET	FX-PCG2611 Extended Temperature controller for rooftop applications. Supports Operational Temperature Range of -40 to 70°C.
FX-PCG2621-0	17-Point General Purpose Programmable Controller with 6 UI, 2 BI, 3 BO, 2 AO, and 4 CO; 24 VAC; FC and SA Bus Support; Integral Display and 6-Button Navigation Touch Pad

Accessories

Table 3: FX-PCG Accessories


Product Code Number	Description
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	Replacement Power Terminal, 3-Position Connector, Gray, Bulk Pack
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
FX-DIS1710-0	Local Controller Display
FX-ZFR1810-0	Wireless Field Bus Coordinator, 10 mW Transmission Power. Functions with FX Supervisory Controllers Enabled with BACnet MS/TP
FX-ZFR1811-0	Wireless Field Bus Router, 10 mW Transmission Power. Functions with FX-PC controllers and FX-WRZTx Series Wireless Sensors
ZFR-USBHA-0	USB dongle with ZigBee™ driver to provide a wireless connection through FX-PCT to allow wireless commissioning of the wirelessly enabled FX-PCA, FX-PCG, FX-PCV, and FX-PCX programmable controllers. Also allows use of the FX-ZFR Checkout Tool (FX-ZCT) in FX-PCT. Note: The ZFR-USBHA-0 replaces the IA OEM DAUBI_2400 ZigBee USB dongle. For additional information on the ZFR-USBHA-0 ZigBee dongle, refer to the <i>FX-ZFR Series Wireless Field Bus System Technical Bulletin (LIT-12011660)</i> or <i>FX-ZFR Series Wireless Field Bus System Quick Reference Guide (LIT-12011696)</i> .

FX-PCG Series Technical Specifications

Table 4: FX-PCG Series Technical Specifications

Product Code Numbers	<p>FX-PCG1611-0 – 10-Point General Purpose Programmable Controller</p> <p>FX-PCG2611-0 – 17-Point General Purpose Programmable Controller</p> <p>FX-PCG1621-0 – 10-Point General Purpose Programmable Controller with Integral Display and Push Button User Interface</p> <p>FX-PCG2621-0 – 17-Point General Purpose Programmable Controller with Integral Display and Push Button User Interface</p>
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	<p>14 VA maximum for FX-PCG1611 and FX-PCG2611 (no integral display)</p> <p>20 VA maximum for FX-PCG1621 and FX-PCG2621 (with integral display)</p> <p>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).</p>
Ambient Conditions	<p>Operating: 0 to 50°C (32 to 122°F); 10 to 90% RH noncondensing</p> <p>Storage: -40 to 80°C (-40 to 176°F); 5 to 95% RH noncondensing</p> <p>Note: FX-PCG models with an -0ET suffix have an operating temperature range of -40 to 70°C (-40 to 158°F).</p>
Controller Addressing	<p>DIP switch set; valid controller device addresses 4–127</p> <p>(Device addresses 0–3 and 128–255 are reserved and not valid controller addresses.)</p>
Communications Bus¹	<p>BACnet MS/TP, RS-485:</p> <p>3-wire FC Bus between the supervisory controller and FX-PC controllers</p> <p>4-wire SA Bus between FX-PC controller, NS Series Network Sensors, and other sensor/actuator devices, includes a lead to source 15 VDC supply power (from FX-PC controller) to bus devices</p>
Processor	H8SX/166xR Renesas® microcontroller
Memory	1 MB Flash Memory and 512 KB Random Access Memory (RAM)
Input and Output Capabilities	<p>FX-PCG16 Models:</p> <p>2 - Universal Inputs: Defined as 0–10 VDC, 4–20 mA, 0–600k ohm, or Binary Dry Contact</p> <p>1 - Binary Inputs: Defined as Dry Contact Maintained or Pulse Counter/Accumulator Mode</p> <p>3 - Binary Outputs: Defined as 24 VAC Triac (selectable internal or external source power)</p> <p>4 - Configurable Outputs: Defined as 0–10 VDC or 24 VAC Triac BO</p> <p>FX-PCG26 Models:</p> <p>6 - Universal Inputs: Defined as 0–10 VDC, 4–20 mA, 0–600k ohm, or Binary Dry Contact</p> <p>2 - Binary Inputs: Defined as Dry Contact Maintained or Pulse Counter/Accumulator Mode</p> <p>3 - Binary Outputs: Defined as 24 VAC Triac (selectable internal or external source power)</p> <p>4 - Configurable Outputs: Defined as 0–10 VDC or 24 VAC Triac BO</p> <p>2 - Analog Outputs: Defined as 0–10 VDC or 4–20 mA</p>
Analog Input/Analog Output Resolution and Accuracy	<p>Analog Input: 16-bit resolution</p> <p>Analog Output: 16-bit resolution and ±200 mV in 0–10 VDC applications</p>
Terminations	<p>Input/Output: Fixed Screw Terminal Blocks</p> <p>FC Bus, SA Bus, and Supply Power: 3-wire and 4-wire Pluggable Screw Terminal Blocks</p> <p>FC Bus Port and Sensor Port: RJ-12 6-pin Modular Jacks</p>
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)
Dimensions (Height x Width x Depth)	<p>FX-PCG16 Models: 150 x 164 x 53 mm (5-7/8 x 6-7/16 x 2-1/8 in.) including terminals and mounting clips</p> <p>FX-PCG26 Models: 150 x 190 x 53 mm (5-7/8 x 7-1/2 x 2-1/8 in.) including terminals and mounting clips</p> <p>Note: Mounting space for all FX-PC 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.</p>
Weight	<p>FX-PCG16 Models: 0.4 kg (0.9 lb)</p> <p>FX-PCG26 Models: 0.5 kg (1.1 lb)</p>

Table 4: FX-PCG Series Technical Specifications

	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
	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: For FX-PCG26 models, conducted RF Immunity within EN 61000-6-2 meets performance criteria B.
	Australia and New Zealand: C-Tick Mark, Australia/NZ Emissions Compliant
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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