



# New Product Release

**Date:** March 5, 2013  
**Announcing:** FX-PC Series Programmable Controller Family Release 6.0  
**From:** Facility Explorer Product Management  
**Released To:**  Authorized Building Controls Specialists (ABCS)

## Introducing FX-PC Series Programmable Controller Family Release 6.0

Johnson Controls is pleased to announce **Release 6.0** of the FX-PC Series Programmable Controller family. The contents of this release are:

- FX-PCA Series Advanced Application Programmable Controllers
- FX-PCV BACnet® Programmable VAV Box Controllers
- FX-PCV N2 Programmable VAV Box Controller
- Extended temperature range models of FX-PCG General Purpose Programmable Controllers
- Additions to the Wired (NS Series) and Wireless (FX-WRZ Series) Network Room Sensors families
- Enhancements to FX-PCT Programming and Commissioning Tool
- New Control Panels with FX-PCA and FX-PCX Controllers

## FX-PCA Advanced Application Programmable Controllers



Figure 1: FX-PCA Advanced Application Controllers

New to the FX-PC Series Programmable Controller family are the FX-PCA Advanced Application Programmable Controllers. FX-PCA controllers are similar to the FX-PCG General Purpose Programmable Controllers. Both controllers are:

- DIN-rail or surface-mountable controllers
- housed in plastic enclosures with onboard inputs and outputs
- fully programmable with the FX-PCT Programming and Commissioning Tool (Table 1)

However, FX-PCA controllers provide more advanced capabilities. FX-PCA controllers contain embedded real-time clocks to support onboard, time-based control capabilities such as **scheduling, alarming, and trending**. These onboard, time-based control features enable the FX-PCA to cover more application possibilities, including:

- stand-alone control applications (no supervisory controller)
- networked control applications where the scheduling, alarming, or trending is preferred (or specified) to be performed directly at the equipment controller

FX-PCA controllers also contain more onboard application memory than FX-PCG controllers, and you can use this additional memory in the FX-PCA controllers to:

- support the new time-based control capabilities (scheduling, alarming, trending)
- host larger size applications (with larger amounts of control logic) that exceed the memory capacity of the FX-PCG controllers

FX-PCA controllers feature a BACnet MS/TP Field Controller (FC) Bus, which allows them to integrate with FX Supervisory Controllers (for example, FX20/FX60/FX70s). In addition, FX-PCA controllers are BACnet Testing Laboratories (BTL) listed as Advanced Application Controllers (B-AAC), which independently ensures their interoperability with third-party BACnet equipment.

**Note:** We do not plan to phase out the FX-PCG General Purpose Programmable Controllers. Our plan is for the FX-PCGs and FX-PCAs to coexist long-term as key members of the FX-PC Series Programmable Controller family.

**Table 1: FX-PCA Advanced Application Programmable Controller Model Description and Comparison**

| <b>Feature</b>   | <b>FX-PCG16x1-0</b> | <b>FX-PCG26x1-0</b> | <b>New FX-PCA2611-0</b> | <b>New FX-PCA2612-1</b> |
|--|---------------------|---------------------|-------------------------|-------------------------|
| <b>Universal Inputs (UI)</b><br>Analog Input, Voltage Mode, 0-10 VDC<br>Analog Input, Current Mode, 4-20 mA <sup>1</sup><br>Analog Input, Resistive Mode, 0-2k ohm, RTD (1k NI [Johnson Controls], 1k PT, A99B SI), NTC (10k Type L, 2.252k Type 2)<br>Binary Input, Dry Contact Maintained Mode | 2                   | 6                   | 6                       | 5                       |
| <b>Binary Inputs (BI)</b><br>Dry Contact Maintained Mode<br>Pulse Counter/Accumulator Mode (High Speed), 100 Hz  | 1                   | 2                   | 2                       | 4                       |
| <b>Analog Outputs (AO)</b><br>Analog Output, Voltage Mode, 0-10 VDC<br>Analog Output, Current Mode, 4-20 mA  | 0                   | 2                   | 2                       | 0                       |
| <b>Binary Outputs (BO)</b><br>24 VAC Triac   | 3                   | 3                   | 3                       | 0                       |
| <b>Binary Outputs (BO)</b><br>240 VAC at 3 A Relay   | 0                   | 0                   | 0                       | 2 SPDT<br>3 SPST        |
| <b>Configurable Outputs (CO)</b><br>Analog Output, Voltage Mode, 0-10 VDC<br>Binary Output Mode, 24 VAC Triac  | 4                   | 4                   | 4                       | 4                       |
| <b>Total Inputs/Output</b>   | 10                  | 17                  | 17                      | 18                      |
| <b>I/O Wiring Terminal Plugs</b>   | Fixed               | Fixed               | Fixed                   | Removable               |
| <b>Field Controller (FC) Bus</b>   | BACnet MS/TP        | BACnet MS/TP        | BACnet MS/TP            | BACnet MS/TP            |
| <b>FX-ZFR Wireless Field Bus Compatibility</b>   | Yes                 | Yes                 | Yes                     | Yes                     |
| <b>One-to-One Wireless Sensing System Compatible</b>   | Yes                 | Yes                 | Yes                     | Yes                     |
| <b>Continued on next page . . .</b>  |                     |                     |                         |                         |

| <b>Feature (Cont.)</b>                                | <b>FX-PCG16x1-0</b>                                   | <b>FX-PCG26x1-0</b>                                  | <b>New<br/>FX-PCA2611-0</b>                         | <b>New<br/>FX-PCA2612-1</b>                           |
|---|---|--|---|---|
| <b>Sensor Actuator (SA) Bus</b>                       | Yes   | Yes  | Yes   | Yes   |
| <b>Onboard Scheduling,<br/>Alarming, and Trending</b> | No  | No   | Yes   | Yes   |
| <b>Integral LCD<br/>Display/Keypad</b>                | Model option  | Model option   | Not available                                       | Not available   |
| <b>Remote LCD<br/>Display/Keypad</b>                  | FX-DIS1710-0  | FX-DIS1710-0   | FX-DIS1710-0 <sup>2</sup>                           | FX-DIS1710-0 <sup>2</sup>                             |
| <b>Dimensions</b>                                     | 150 x 164 x 53<br>mm (5-7/8 x 6-<br>7/16 x 2-1/8 in.) | 150 x 190 x 53<br>mm (5-7/8 x 7-<br>1/2 x 2-1/8 in.) | 150 x 190 x 53<br>mm (5-7/8 x 7-1/2<br>x 2-1/8 in.) | 150 x 164 x 53<br>mm (5-7/8 x 6-<br>7/16 x 2-1/8 in.) |
| <b>Cover</b>  | Removable   | Removable  | Removable   | Non -removable  |
| <b>Memory</b>   | 1 MB Flash<br>512 KB RAM                              | 1 MB Flash<br>512 KB RAM                             | 4 MB Flash<br>1 MB RAM                              | 4 MB Flash<br>1 MB RAM                                |

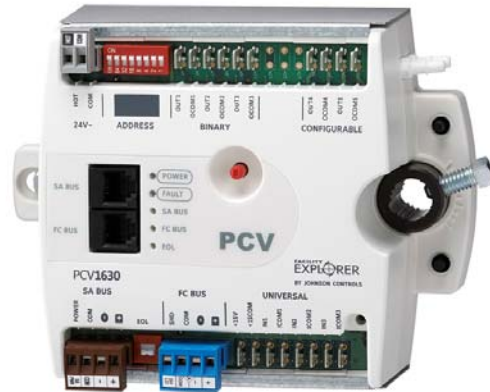
1. Analog Input, Current Mode is set by hardware for the FX-PCG26, FX-PCA26, and by software for the FX-PCG16.
2. Allows access to inputs, outputs, and application parameters, but does not allow access to the schedules, calendars, trends, or event logs.

## Ordering Codes for FX-PCA Advanced Application Controllers

**Table 2: Ordering Codes for the New FX-PCA Advanced Application Programmable Controllers**

| <b>Product Code Number</b> | <b>Description</b>  | <b>List Price (USD)</b> |
|----------------------------|---|-------------------------|
| <b>FX-PCA2611-0</b>        | 17-Point Advanced Application Programmable Controller with 6 UI, 2 BI, 4 CO, 3 triac type BO, and 2 AO; 24 VAC, FC Bus; SA Bus; Integral Real-Time Clock with Time-Based Control Functionality                      | \$1,017.36              |
| <b>FX-PCA2612-1</b>        | 18-Point Advanced Application Programmable Controller with 5 UI, 4 BI, 4 CO, 2 SPDT relay type BO, and 3 SPST relay type BO; 24 VAC, FC Bus; SA Bus; Integral Real-Time Clock with Time-Based Control Functionality | \$1,077.19              |
| <b>Accessories</b>         |   |                         |
| <b>AP-TBK4FC-0</b>         | Replacement MS/TP FC Bus Terminal, 4-Position Connector, Blue; 10 pieces  | \$74.57                 |
| <b>AP-TBK4SA-0</b>         | Replacement MS/TP SA Bus Terminal, 4-Position Connector, Brown; 10 pieces   | \$75.21                 |
| <b>AP-TBK3PW-0</b>         | Replacement Power Terminal, 3-Position Connector, Gray, Bulk; 10 pieces   | \$55.10                 |
| <b>MS-TBKRO02-0</b>        | Replacement 2-Position Relay Output Terminal Block Kit for-FX-PCA2612; 9 Pieces   | \$39.25                 |
| <b>MS-TBKRO03-0</b>        | Replacement 3-Position Relay Output Terminal Block Kit for-FX-PCA2612; 6 Pieces   | \$26.84                 |
| <b>MS-TBKCO04-0</b>        | Replacement 4-Position Configurable Output Terminal Block Kit for FX-PCA2612; 6 Pieces  | \$45.29                 |
| <b>MS-TBKUI04-0</b>        | Replacement 4-Position Universal Input Terminal Block Kit for FX-PCA2612; 3 Pieces  | \$23.92                 |
| <b>MS-TBKUI05-0</b>        | Replacement 5-Position Universal Input Terminal Block Kit for FX-PCA2612; 3 Pieces  | \$23.74                 |

## FX-PCV BACnet Programmable VAV Box Controllers



**Figure 2: FX-PCV BACnet Programmable VAV Box Controller**

With this release, we introduce two new models of FX-PCV BACnet Programmable VAV Box controllers, which are smaller and more capable than the current FX-PCV controllers. The new FX-PCV controllers are 33% smaller than the existing FX-PCVs, allowing them to be mounted in tighter fitting locations. Additionally, the new FX-PCVs feature two additional universal inputs (a total of three). These additional inputs help reduce your installation costs by allowing you to use non-network sensors connected directly to the new FX-PCV controllers (instead of using network sensors or non-network sensors connected through FX-PCX Expansion I/O Modules).

The new FX-PCV controllers also feature a new, state-of-the-art, digital pressure sensor. This sensor provides better accuracy than the existing FX-PCV sensor, especially in low-flow applications. This new sensor also supports bi-directional flow operation with automatic pressure polarity correction, which eliminates high- and low-pressure tube connection mistakes. The remaining features of the new FX-PCV models are nearly identical to the existing FX-PCVs. Features include:

- A BACnet MS/TP Field Controller (FC) and Sensor Actuator (SA) Bus
- BACnet Testing Laboratories (BTL) listed status as an Application Specific Controller (B-ASC), ensuring interoperability with FX Supervisory Controllers and other third-party BACnet devices
- Compatibility with the FX-ZFR Wireless Field Bus System and One-to-One Wireless Sensing System
- Full programmability with the FX-PCT Programming and Commissioning Tool
- Adaptive control with automatic tuning, which reduces initial commissioning and change-of-season re-commissioning
- Compatibility with the FX-PCT Box Flow Test. The Box Blow Test is a utility that helps identify any mechanical issues with the VAV Box installation.
- An integrated actuator and pressure sensor for ease of mounting

See Table 4 for a model feature comparison.

**Note:** The new FX-PCV models (FX-PCV1615 and FX-PCV1630) replace the existing FX-PCV models (FX-PCV1610 and FX-PCV1620). The existing FX-PCV models will eventually phase out. However, we plan to continue making the existing FX-PCV models for a limited period, allowing time for customers to transition their purchases over to the new FX-PCVs. We plan to provide communication when the official phase-out occurs of the FX-PCV1610 and FX-PCV1620 models.



## FX-PCV Series N2 Programmable VAV Box Controller



**Figure 3: FX-PCV N2 Programmable VAV Box Controller**

Many legacy N2-based direct digital controllers (DDC) are in the process of a phased discontinuation. As a result, we plan to release new N2-based versions of our FX-PC Series Programmable Controllers for use as field service replacements for the legacy N2-based controllers.

For Release 6.0, we introduce a new FX-PCV1832 N2 Programmable VAV Box Controller, which replaces the legacy AP-VMA1400 Series VAV Modular Assemblies and the legacy LP-FXVMA11 VAV Box Controller.

The new FX-PCV1832 is very similar to the new FX-PCV1630. The key difference is that the FX-PCV1832 features the N2 Open device networking protocol, whereas the FX-PCV1630 features BACnet MS/TP. Also, the new FX-PCV1832 includes other subtle feature differences and some wiring accessories intended to ease the field replacement of the AP-VMA1400. See Table 4 for more details on the models and their features.

**Table 4: New FX-PCV Programmable Controller Model Description**

| <b>Feature</b>   | <b>FX-PCV1615</b>                        | <b>FX-PCV1630</b> | <b>FX-PCV1832</b> |
|--|--|-------------------|-------------------|
| <b>Universal Inputs (UI)</b><br>Analog Input, Voltage Mode, 0-10 VDC<br>Analog Input, Current Mode, 4-20 mA <sup>1</sup><br>Analog Input, Resistive Mode, 0-2k ohm, RTD (1k NI [Johnson Controls], 1k PT, A99B SI), NTC (10k Type L, 2.252k Type 2)<br>Binary Input, Dry Contact Maintained Mode | 3  | 3                 | 3                 |
| <b>Binary Outputs (BO)</b><br>24 VAC Triac   | 2  | 3                 | 3                 |
| <b>Configurable Outputs (CO)</b><br>Analog Output, Voltage Mode, 0-10 VDC<br>Binary Output Mode, 24 VAC Triac  | 0  | 2                 | 2                 |
| <b>Total Inputs/Output</b>   | 5  | 8                 | 8                 |
| <b>Field Controller (FC) Bus</b>   | BACnet MS/TP                             | BACnet MS/TP      | N2 Open           |
| <b>FX-ZFR Wireless Field Bus Compatible</b>  | Yes                                      | Yes               | No                |
| <b>Integrated Actuator</b>   | Yes                                      |                   |                   |
| <b>Integrated Flow Sensor</b>  | Yes-digital                              |                   |                   |
| <b>One-to-One Wireless Sensing System Compatible</b>   | Yes                                      |                   |                   |
| <b>Sensor Actuator (SA) Bus</b>  | Yes <sup>1</sup>                         |                   |                   |
| <b>Dimensions</b>  | 165 x 125 x 73 mm (6.5 x 4.92 x 2.9 in.) |                   |                   |
| <b>Microprocessor</b>  | 32-bit                                   |                   |                   |
| <b>Memory</b>  | 1 MB Flash, 512 KB RAM                   |                   |                   |

1. FX-PCV1832-0 does not support FX-PCX Expansion I/O Modules on its SA Bus at this release.

**Table 5: Ordering Codes for the New FX-PCV Programmable VAV Box Controllers**

| <b>Product Code Number</b> | <b>Description</b>  | <b>List Price (USD)</b> |
|----------------------------|---|-------------------------|
| <b>FX-PCV1615-0</b>        | 5-Point BACnet Programmable VAV Box Controller with Integrated Actuator and Pressure Sensor; 3 UI and 2 BO; 24 VAC        | \$560.98                |
| <b>FX-PCV1630-0</b>        | 8-Point BACnet Programmable VAV Box Controller with Integrated Actuator and Pressure Sensor; 3 UI, 3 BO, and 2 CO; 24 VAC | \$614.39                |
| <b>FX-PCV1832-0</b>        | 8-Point N2 Programmable VAV Box Controller with Integrated Actuator and Pressure Sensor, 3 UI, 3 BO, and 2 CO; 24 VAC     | \$852.83                |
| <b>Accessories</b>         |   |                         |
| <b>AP-TBK1002-0</b>        | 2-Position Screw Terminal that Plugs onto FX-PCV I/O Spade Lugs. Minimum order quantity = 100                             | \$5.14                  |
| <b>AP-TBK1003-0</b>        | 3-Position Screw Terminal that Plugs onto FX-PCV I/O Spade Lugs. Minimum order quantity = 100                             | \$7.67                  |
| <b>AP-TBK4FC-0</b>         | Replacement MS/TP FC Bus Terminal, 4-Position Connector, Blue, Bulk Pack  | \$74.57                 |
| <b>AP-TBK4SA-0</b>         | Replacement MS/TP SA Bus Terminal, 4-Position Connector, Brown, Bulk Pack   | \$75.21                 |
| <b>AP-TBK3PW-0</b>         | Replacement Power Terminal, 3-Position Connector, Gray, Bulk Pack   | \$55.10                 |
| <b>FX-PCVACT-701</b>       | Replacement Actuator Assembly Gearbox Kit for FX-PCV1615/1630/1832  | \$117.59                |

## FX-PCG General Purpose Programmable Controllers with Extended Temperature Range Support



**Figure 4: FX-PCG1611 and FX-PCG2611 with Extended Temperature Range Support**

With this release, we introduce two new models of FX-PCG General Purpose Programmable Controllers, which support operating at ambient temperatures between  $-40^{\circ}$  and  $70^{\circ}\text{C}$  ( $-40^{\circ}$  and  $158^{\circ}\text{F}$ ). These ambient temperature features allow you to mount the controllers inside outdoor HVAC equipment in colder climates (for example, mounted inside packaged rooftop units located on buildings in Canada).

These two new models are identical in features and functionality to their FX-PCG1611 and FX-PCG2611 counterparts, with the following differences:

- the ambient operating temperature range
- extended temperature models are not available with onboard LCD display or keypad
- extended temperature model numbers contain an **ET** suffix to distinguish them from their standard temperature counterparts

**Note:** We do not plan to phase out the existing standard operating temperature range models of the FX-PCG General Purpose Programmable Controllers. Our plan is for the standard and extended operating temperature range models of FX-PCGs to coexist long term as key members of the FX-PC Series Programmable Controller family.

**Table 6: New FX-PCG General Purpose Programmable Controller with Extended Temperature Range Support**

| <b>Feature</b>   | <b>FX-PCG1611-0ET</b>                                   | <b>FX-PCG2611-0ET</b>                            |
|--|---|--|
| <b>Universal Inputs (UI)</b><br>Analog Input, Voltage Mode, 0-10 VDC<br>Analog Input, Current Mode, 4-20 mA<br>Analog Input, Resistive Mode, 0-2k ohm, RTD<br>(1k NI [Johnson Controls], 1k PT, A99B SI), NTC (10k Type L, 2.252k Type 2)<br>Binary Input, Dry Contact Maintained Mode | 2   | 6  |
| <b>Binary Inputs (BI)</b><br>Dry Contact Maintained Mode<br>Pulse Counter/Accumulator Mode (High Speed , 100 Hz)   | 1   | 2  |
| <b>Analog Outputs (AO)</b><br>Analog Output, Voltage Mode, 0-10 VDC<br>Analog Output, Current Mode, 4-20 mA  | 0   | 2  |
| <b>Binary Outputs (BO)</b><br>24 VAC Triac   | 3   | 3  |
| <b>Configurable Outputs (CO)</b><br>Analog Output, Voltage Mode, 0-10 VDC<br>Binary Output Mode, 24 VAC Triac  | 4   | 4  |
| <b>Total Inputs/Output</b>   | 10  | 17   |
| <b>Dimensions</b>  | 150 x 164 x 53 mm<br>(5-7/8 x 6-7/16 x 2-1/8 in.)       | 150 x 190 x 53 mm<br>(5-7/8 x 7-1/2 x 2-1/8 in.) |
| <b>Integrated LCD Display/Keypad</b>   | No  |  |
| <b>Remote LCD Display/Keypad</b>   | FX-DIS1710-0  |  |
| <b>Field Controller (FC) Bus</b>   | BACnet MS/TP  |  |
| <b>FX-ZFR Wireless Field Bus Compatible</b>  | Yes   |  |
| <b>One-to-One Wireless Sensing System Compatible</b>   | Yes   |  |
| <b>Sensor Actuator (SA) Bus</b>  | Yes   |  |
| <b>Ambient Operating Conditions</b>  | -40° to 70°C (-40° to 158°F)<br>10-90% RH noncondensing |  |
| <b>Ambient Storage Conditions</b>  | -40° to 80°C (-40° to 176° F)<br>5-95% RH noncondensing |  |
| <b>Microprocessor</b>  | 32-bit  |  |
| <b>Memory</b>  | 1 MB Flash, 512 KB RAM                                  |  |

**Table 7: Ordering Codes for the New FX-PCG Extended Temperature Range General Purpose Programmable Controllers**

| Product Code Number | Description  | List Price (USD) |
|---------------------|--|------------------|
| FX-PCG1611-0ET      | 10-Point General Purpose Programmable Controller: 2 UI, 1 BI, 3 BO, and 4 CO; 24 VAC; Extended Operating Temperature Range       | \$601.32         |
| FX-PCG2611-0ET      | 17-Point General Purpose Programmable Controller: 6 UI, 2 BI, 3 BO, 2 AO, and 4 CO; 24 VAC; Extended Operating Temperature Range | \$865.94         |

### Network Sensors with Occupancy Detection



**Figure 5: Network Sensors with Occupancy Detection**

A good occupancy control strategy saves energy by automatically turning off lights and HVAC equipment when a space is not in use, and then back on again when someone returns. Occupancy detection is a highly effective way to identify **actual** occupancy. In spaces such as classrooms, conference rooms, private offices, restrooms, and storage areas where occupancy varies frequently throughout the day, occupancy detection is more effective than using a timed occupancy schedule.

To better support this kind of occupancy control strategy, we offer new network sensors that use Passive Infrared (PIR) technology to detect motion and sense actual occupancy.

This occupancy detection functionality is an optional feature in both our **wired and wireless** sensor families, providing maximum installation flexibility. You can hardwire-connect the new sensors with occupancy detection to the SA Bus of an FX-PC Series controller, or you can wirelessly connect the sensors via the FX-ZFR Wireless Field Bus System or the One-to-One Wireless Sensing System.

By packaging the occupancy detection functionality into the same device with other sensing capabilities (such as temperature and humidity sensing), installation costs are kept to a minimum. See Table 9 for model numbers and detailed descriptions.

To support the FX-WRZ Wireless Room sensors with the new occupancy detection feature, we are releasing updated versions of our One-to-One Wireless Sensing System Receiver (FX-WRZ7860-0) and our Wireless Site Survey Tool (FX-WRZSST-120).

**Table 8: Ordering Codes for New Network Sensors with Occupancy Detection**

| <b>Product Code Number</b>  | <b>Description</b>  | <b>List Price (USD)</b> |
|---|---|-------------------------|
| <b>Wired Room Sensors With Occupancy Detection</b>                      |   |                         |
| <b>NS-MNN7001-0</b>   | Network Room Sensor: 120 x 80 mm, occupancy (PIR) sensing only; wall box or surface mount, modular jack   | \$340.00                |
| <b>NS-MNN7003-0</b>   | Network Room Sensor: 120 x 80 mm, occupancy (PIR) sensing only; wall box or surface mount, screw terminals, addressable   | \$340.00                |
| <b>NS-MTL7001-0</b>   | Network Room Sensor: 120 x 80 mm, temperature and occupancy (PIR) sensing, occupancy override button, wall box or surface mount, modular jack                           | \$560.00                |
| <b>NS-MTL7002-0</b>   | Network Room Sensor: 120 x 80 mm, temperature and occupancy (PIR) sensing, occupancy override button, wall box or surface mount, screw terminals                        | \$560.00                |
| <b>NS-MTB7001-0</b>   | Network Room Sensor: 120 x 80 mm, temperature and occupancy (PIR) sensing, LCD, setpoint dial, F/C button, wall box or surface mount, modular jack                      | \$560.00                |
| <b>NS-MTB7002-0</b>   | Network Room Sensor: 120 x 80 mm, temperature and occupancy (PIR) sensing, LCD, setpoint dial, F/C button, wall box or surface mount, screw terminals                   | \$560.00                |
| <b>NS-MHL7001-0</b>   | Network Room Sensor: 120 x 80 mm, temperature, humidity, and occupancy (PIR) sensing, occupancy override button, wall box or surface mount, modular jack                | \$760.00                |
| <b>NS-MHL7002-0</b>   | Network Room Sensor: 120 x 80 mm, temperature, humidity, and occupancy (PIR) sensing, occupancy override button, wall box or surface mount, screw terminals             | \$760.00                |
| <b>Wireless Room Sensors With Occupancy Detection (and Accessories)</b> |   |                         |
| <b>FX-WRZMNN01-0</b>  | Wireless Room Sensor: occupancy (PIR) sensing only, occupancy override button, battery level/signal strength LED  | \$376.00                |
| <b>FX-WRZMTN01-0</b>  | Wireless Room Sensor: temperature and occupancy (PIR) sensing, occupancy override button, battery level/signal strength LED   | \$620.00                |
| <b>FX-WRZMTB01-0</b>  | Wireless Room Sensor: temperature and occupancy (PIR) sensing, LCD, setpoint dial, F/C button, occupancy override button  | \$636.00                |
| <b>FX-WRZMHN01-0</b>  | Wireless Room Sensor: temperature, humidity, and occupancy (PIR) sensing, occupancy override button, battery level/signal strength LED                                  | \$840.00                |
| <b>Wireless Room Sensor Accessories</b>                                 |   |                         |
| <b>FX-WRZ7860-0</b>   | One-to-One Wireless Sensing System Receiver: supports FX-WRZ Wireless Room Sensors with temperature, humidity, and/or occupancy sensing. Directly replaces FX-WRZ7850-0 | \$197.22                |
| <b>FX-WRZSST-120</b>  | Wireless System Site Survey Tool: Includes FX-WRZ7860-0 plus battery pack. Directly replaces FX-WRZSST-110.   | \$290.65                |

## Wireless Temperature Transmitter



**Figure 6: FX-WRZRMT10K-0 Wireless Temperature Transmitter**

We are also adding to the wireless sensor family a new FX-WRZRMT10K-0 Wireless Temperature Transmitter. The FX-WRZRMT10K-0 provides only transmitter functionality, and it is decoupled from the actual temperature sensor, allowing you to select the desired temperature sensor separately. The FX-WRZRMT10K-0 transmitter supports 10K ohm Type II thermistors, including the Johnson Controls TE-6300 Series as well as third-party sensors.

The FX-WRZRMT10K-0 uses ZigBee™ wireless technology to transmit the temperature data to an FX-PC series controller, either as part of the FX-ZFR Wireless Field Bus System or as part of the One-to-One Wireless Sensing System.

Decoupling the temperature sensor from the wireless transmitter provides the modularity needed to better support the wide range of available temperature sensors. Type II thermistors are typically offered in the wide variety of temperature ranges, housing styles, and mounting methods needed to support the sensing of the various kinds of media (air, water, and other fluids) found in building control systems and mechanical HVAC equipment. For example, Type II thermistors typically have a temperature sensing range of 0° to 70°C (32° to 158°F), making them ideal for applications such as data center servers, warm food storage units, and water baths.

Decoupling also provides more options and flexibility for the mounting of each component, which is especially important for wireless installations. With the FX-WRZRMT10K-0, you can mount the thermistor as close to the sensed medium as possible (for example, in the air stream, strapped to the pipe, or inserted into the well) and then mount the transmitter in a location that is better suited for wireless transmissions.

Mounting the FX-WRZRMT10K-0 transmitter is very easy. The FX-WRZRMT10K-0 comes with double-sided adhesive foam tape, or you can use our new magnetic backplate to mount the transmitter on a metal surface.



**Table 9: Ordering Codes for the New Wireless Remote Temperature Transmitter**

| <b>Product Code Number</b> | <b>Description</b>   | <b>List Price (USD)</b> |
|----------------------------|--|-------------------------|
| <b>FX-WRZRMT10K-0</b>      | Wireless Remote Temperature Transmitter: Includes: <ul style="list-style-type: none"><li>• One temperature transmitter assembly (consisting of one temperature transmitter, one mounting base, and strips of double-sided adhesive foam tape all factory assembled)</li><li>• One strain relief bushing</li><li>• One DIP switch overlay for a Mesh Network Application Using an FX-ZFR1811 Router</li><li>• One DIP switch overlay for a One-to-One Wireless Sensing System</li><li>• Two AA alkaline batteries</li></ul> | \$712.80                |
| <b>MAGNET-BASE-PLW</b>     | Magnetic backplate for mounting the wireless transmitter on metal surfaces. Includes five magnetic backplates.   | \$64.80                 |

## **FX-PCT Programming & Commissioning Tool Enhancements**

Release 6.0 of the FX-PCT Tool provides programming, simulation, and commissioning support for all of the new FX-PC Series Programmable Controllers in this 6.0 release, including:

- FX-PCA Advanced Application Programmable Controllers
- FX-PCV BACnet Programmable VAV Controllers
- The FX-PCV N2 Programmable VAV Controller
- Extended temperature versions of FX-PCG General Purpose Programmable Controllers
- Wired and Wireless Network Sensors with Occupancy Detection
- The Wireless Temperature Transmitter

In addition, FX-PCT Release 6.0 includes the following improvements to its user interface:

- The System Selection Wizard now includes a new Simple Central Plant application well suited for controlling a single chiller and boiler.
- During a simulation or commissioning session, the State Tables now dynamically update so that users can quickly identify at a glance which states are currently active, simplifying the troubleshooting of the application control logic. See Figure 7.
- The Trunk Utilities feature now supports adding the Present Value and Hardware attributes of inputs and outputs to a template column, improving its usefulness. Also, the Trunk Utilities' Select Attribute window now contains the same tree information as the BACnet Exposed tab, which makes creating commissioning reports easier than ever.
- Context-sensitive Help is now available within the System Selection Wizard, providing online assistance for users looking for more information on specific system selections or control options.
- Users are now able to tailor the screen layout of FX-PCT's main view panels, including resizing and docking/undocking panels and splitting screens across dual monitors.
- The Box Flow Test, which helps the checkout of the mechanical installation and operation of VAV Boxes, now includes support for Dual Duct and Supply/Exhaust type VAV Boxes.

| Features   |  |                                |                                       |
|--|--|--------------------------------|---------------------------------------|
| Parameters   | Connections  | State Tables                   | Display                               |
| Advanced   | BACnet Exposed   | Balancer                       |                                       |
| <b>State Tables</b>  |  |                                |                                       |
| <b>Unit Enable Determination.UNITEN-STATE</b>                  | <b>Unit Enable Determination.UNITEN-STATE</b>                  |                                |                                       |
| State  | Proportional Box Heating Control v51.Mode                      | Supply Damper Control v51.Mode | Supply Flow Setpoint Control v51.Mode |
| Shutdown   | Off  | Close                          | Min                                   |
| Enable   | X  | X                              | X                                     |
| <b>Single Duct VAV Damper Override Check.Output Overridden</b> | <b>Single Duct VAV Damper Override Check.Output Overridden</b> |                                |                                       |
| State  | Proportional Box Heating Control v51.Mode                      | Supply Damper Control v51.Mode | Supply Flow Setpoint Control v51.Mode |
| False  | *  | *                              | *                                     |
| True   |  | Hold                           | Hold                                  |
| <b>Box Heat Override Check.Output Overridden</b>               | <b>Box Heat Override Check.Output Overridden</b>               |                                |                                       |
| State  | Proportional Box Heating Control v51.Mode                      | Supply Damper Control v51.Mode | Supply Flow Setpoint Control v51.Mode |
| False  | *  | *                              | *                                     |
| True   | Hold   | *                              | *                                     |
| <b>Box Heating isAvailable Pass Through.Present Value</b>      | <b>Box Heating isAvailable Pass Through.Present Value</b>      |                                |                                       |
| State  | Proportional Box Heating Control v51.Mode                      | Supply Damper Control v51.Mode | Supply Flow Setpoint Control v51.Mode |
| False  | Off  | X                              | X                                     |
| True   | X  | X                              | X                                     |
| <b>System Mode Determination.Eff Mode</b>                      | <b>System Mode Determination.Eff Mode</b>                      |                                |                                       |
| State  | Proportional Box Heating Control v51.Mode                      | Supply Damper Control v51.Mode | Supply Flow Setpoint Control v51.Mode |
| Cool Only  | Off  | *                              | *                                     |
| Heat Only  | *  | *                              | Heating                               |
| Fan Only   | Off  | *                              | Min                                   |
| Purge  | Off  | *                              | Max                                   |
| Auto   | X  | X                              | X                                     |
| <b>WarmupCooldown Sequencing.WC-STATE</b>                      | <b>WarmupCooldown Sequencing.WC-STATE</b>                      |                                |                                       |
| State  | Proportional Box Heating Control v51.Mode                      | Supply Damper Control v51.Mode | Supply Flow Setpoint Control v51.Mode |
| Normal   | X  | X                              | X                                     |
| Warmup.Satisfied   | Off  | *                              | Warmup                                |

**Figure 7: FX-PCT Showing Active States in the State Table**

With these improvements, it is now easier than ever to program, commission, and service our FX-PC Series Programmable Controllers.

**Table 10: Ordering Codes for the FX-PCT Software**

| Product Code Number | Description  | List Price (USD) |
|---------------------|--|------------------|
| <b>FX-PCT-0</b>     | FX-PCT Programming and Commissioning Tool software, delivered on DVD. Intended for new users.                | \$423.54         |
| <b>FX-PCT-6</b>     | FX-PCT Programming and Commissioning Tool software, delivered on DVD. Intended for upgrading existing users. | \$34.08          |

## New Control Panels with FX-PCA and FX-PCX Controllers



**Figure 8: FX-PCA Panel**

We are also releasing several new control panels that support the new FX-PCA Advanced Application Programmable Controllers. These agency-compliant (UL 508, cUL, and IBC2009 Seismic) preassembled panels allow direct wire termination to the controller, making installation, commissioning, and servicing quicker and easier. See Table 12 for product ordering code numbers and list prices.

**Table 11: Ordering Codes for Control Panels with FX-PCA and FX-PCX Controllers**

| <b>Product Code Number</b>          | <b>Description</b>  | <b>List Price (USD)</b> |
|-------------------------------------|---|-------------------------|
| <b>PAYE00001FH0</b>                 | Panel, FX-PCA2611-0 Controller, 16X20 Enclosure, 96 VA Power Supply                             | \$1,977.46              |
| <b>SAYE00001F00</b>                 | Subpanel for 16X20 Enclosure, FX-PCA2611-0 Controller, 96 VA Power Supply                       | \$1,457.98              |
| <b>PAYE00001FH4</b>                 | Panel, FX-PCA2611-0 Controller, 16X20 Enclosure, 96 VA Power Supply, Remote Display Face        | \$2,266.47              |
| <b>SAYE00001F04</b>                 | Subpanel for 16x20 Enclosure, FX-PCA2611-0 Controller, 96 VA Power Supply, Remote Display Face  | \$1,746.99              |
| <b>PAYE00001AH0</b>                 | Panel, FX-PCA2611-0 Controller, 20x24 Enclosure, 96 VA Power Supply                             | \$2,001.29              |
| <b>SAYE00001A00</b>                 | Subpanel for 20x24 Enclosure, FX-PCA2611-0 Controller, 96 VA Power Supply                       | \$1,481.81              |
| <b>PAYE00001AH4</b>                 | Panel, FX-PCA2611-0 Controller, 20x24 Enclosure, 96 VA Power Supply, Remote Display Face        | \$2,290.29              |
| <b>SAYE00001A04</b>                 | Subpanel for 20x24 Enclosure, FX-PCA2611-0 Controller, 96 VA Power Supply, Remote Display Face  | \$1,770.81              |
| <b>PAYE00002AH0</b>                 | Panel, FX-PCA2611-0 Controller, 20x24 Enclosure, 96 VA Power Supply & 96 VA Transformer         | \$2,156.28              |
| <b>SAYE00002A00</b>                 | Subpanel for 20x24 Enclosure, FX-PCA2611-0 Controller, 96 VA Power Supply and 96 VA Transformer | \$1,636.80              |
| <b>PAYE00011EH0</b>                 | Panel, FX-PCA2611-0 Controller, 24x24 Enclosure, 96 VA Power Supply, Terminal Blocks            | \$2,411.54              |
| <b>SAYE00011E00</b>                 | Subpanel for 24x24 Enclosure, FX-PCA2611-0 Controller, 96 VA Power Supply, Terminal Blocks      | \$1,892.06              |
| <b>PAYE00001BH0</b>                 | Panel, FX-PCA2611-0 Controller, 24X36 Enclosure, 96 VA Power Supply                             | \$2,287.95              |
| <b>SAYE00001B00</b>                 | Subpanel for 24X36 Enclosure, FX-PCA2611-0 Controller, 96 VA Power Supply                       | \$1,768.47              |
| <b>PAYE00011BH0</b>                 | Panel, FX-PCA2611-0 Controller, 24X36 Enclosure, 96 VA Power Supply, Terminal Blocks            | \$2,670.74              |
| <b>SAYE00011B00</b>                 | Subpanel for 24X36 Enclosure, FX-PCA2611-0 Controller, 96 VA Power Supply, Terminal Blocks      | \$2,151.26              |
| <b>PAYE00001BH4</b>                 | Panel, FX-PCA2611-0 Controller, 24X36 Enclosure, 96 VA Power Supply, Remote Display Face        | \$2,959.74              |
| <b>SAYE00001B04</b>                 | Subpanel for 24X36 Enclosure, FX-PCA2611-0 Controller, 96 VA Power Supply, Remote Display Face  | \$2,440.26              |
| <b>Continued on next page . . .</b> |   |                         |

| <b>Product Code Number (Cont.)</b>  | <b>Description</b>   | <b>List Price (USD)</b> |
|-------------------------------------|--|-------------------------|
| <b>PAYEZA001BH0</b>                 | Panel, FX-PCA2611-0 & FX-PCX1711-0 Controller, 24X36 Enclosure, 96 VA Power Supply                               | \$2,995.68              |
| <b>SAYEZA001B00</b>                 | Subpanel for 24X36 Enclosure, FX-PCA2611-0 and FX-PCX1711-0, 96 VA Power Supply                                  | \$2,476.20              |
| <b>PAYEZA011BH0</b>                 | Panel, FX-PCA2611-0 & FX-PCX1711-0 Controller, 24X36 Enclosure, 96 VA Power Supply, Terminal Blocks              | \$3,526.72              |
| <b>SAYEZA011B00</b>                 | Subpanel for 24X36 Enclosure, FX-PCA2611-0 and FX-PCX1711-0, 96 VA Power Supply, Terminal Blocks                 | \$3,007.24              |
| <b>PAYEZA001AH0</b>                 | Panel, FX-PCA2611-0 and FX-PCX1711-0 Controller, 20X24 Enclosure, 96 VA Power Supply                             | \$2,710.29              |
| <b>SAYEZA001A00</b>                 | Subpanel for 20X24 Enclosure, FX-PCA2611-0 and FX-PCX1711-0 Controller, 96 VA Power Supply                       | \$2,190.81              |
| <b>PAYEZB002AH0</b>                 | Panel, FX-PCA2611-0 & FX-PCX2711-0 Controller, 20X24 Enclosure, 96 VA Power Supply and 96 VA Transformer         | \$3,058.89              |
| <b>SAYEZB002A00</b>                 | Subpanel for 20X24 Enclosure, FX-PCA2611-0 and FX-PCX2711-0 Controller, 96 VA Power Supply and 96 VA Transformer | \$2,539.41              |
| <b>PAYEZC002AH0</b>                 | Panel, FX-PCA2611-0 & FX-PCX3711-0 Controller, 20X24 Enclosure, 96 VA Power Supply and 96 VA Transformer         | \$3,122.25              |
| <b>SAYEZC002A00</b>                 | Subpanel for 20X24 Enclosure, FX-PCA2611-0 and FX-PCX3711-0 Controller, 96 VA Power Supply and 96 VA Transformer | \$2,602.77              |
| <b>PAYEZD002AH0</b>                 | Panel, FX-PCA2611-0 & FX-PCX4711-0 Controller, 20X24 Enclosure, 96 VA Power Supply and 96 VA Transformer         | \$3,056.43              |
| <b>SAYEZD002A00</b>                 | Subpanel for 20X24 Enclosure, FX-PCA2611-0 and FX-PCX4711-0 Controller, 96 VA Power Supply and 96 VA Transformer | \$2,536.95              |
| <b>PAYEZB002BH0</b>                 | Panel, FX-PCA2611-0 & FX-PCX2711-0 Controller, 24X36 Enclosure, 96 VA Power Supply and 96 VA Transformer         | \$3,345.55              |
| <b>SAYEZB002B00</b>                 | Subpanel for 24X36 Enclosure, FX-PCA2611-0 and FX-PCX2711-0, 96 VA Power Supply & 96 VA Transformer              | \$2,826.07              |
| <b>PAYEZC002BH0</b>                 | Panel, FX-PCA2611-0 & FX-PCX3711-0 Controller, 24X36 Enclosure, 96 VA Power Supply and 96 VA Transformer         | \$3,408.91              |
| <b>SAYEZC002B00</b>                 | Subpanel for 24X36 Enclosure, FX-PCA2611-0 and FX-PCX3711-0 Controller, 96 VA Power Supply and 96 VA Transformer | \$2,889.43              |
| <b>PAYEZD002BH0</b>                 | Panel, FX-PCA2611-0 & FX-PCX4711-0 Controller, 24X36 Enclosure, 96 VA Power Supply and 96 VA Transformer         | \$3,343.09              |
| <b>Continued on next page . . .</b> |  |                         |

| <b>Product Code Number (Cont.)</b> | <b>Description</b>  | <b>List Price (USD)</b> |
|------------------------------------|---|-------------------------|
| <b>SAYEZD002B00</b>                | Subpanel for 24X36 Enclosure, FX-PCA2611-0 and FX-PCX4711-0 Controller, 96 VA Power Supply and 96 VA Transformer                | \$2,823.61              |
| <b>PAYEZB012BH0</b>                | Panel, FX-PCA2611-0 & FX-PCX2711-0 Controller, 24X36 Enclosure, 96 VA Power Supply and 96 VA Transformer, Terminal Blocks       | \$3,914.52              |
| <b>SAYEZB012B00</b>                | Subpanel for 24X36 Enclosure, FX-PCA2611-0 and FX-PCX2711-0, 96 VA Power Supply and 96 VA Transformer, Terminal Block           | \$3,395.04              |
| <b>PAYEZC012BH0</b>                | Panel, FX-PCA2611-0 & FX-PCX3711-0 Controller, 24X36 Enclosure, 96 VA Power Supply and 96 VA Transformer, Terminal Block        | \$4,048.91              |
| <b>SAYEZC012B00</b>                | Subpanel for 24X36 Enclosure, FX-PCA2611-0 and FX-PCX3711-0 Controller, 96 VA Power Supply and 96VA Transformer, Terminal Block | \$3,529.43              |
| <b>PAYEZD012BH0</b>                | Panel, FX-PCA2611-0 & FX-PCX4711-0 Controller, 24X36 Enclosure, 96 VA Power Supply and 96 VA Transformer, Terminal Block        | \$3,997.41              |
| <b>SAYEZD012B00</b>                | Subpanel for 24X36 Enclosure, FX-PCA2611-0 and FX-PCX4711-0 Controller, 96 VA Power Supply and 96VA Transformer, Terminal Block | \$3,477.93              |
| <b>PAYEZE002BH0</b>                | Panel, FX-PCA2611-0, FX-PCX1711-0 and FX-PCX4711-0 Controller, 24X36 Enclosure, 96 VA Power Supply and 96 VA Transformer        | \$4,048.55              |
| <b>SAYEZE002B00</b>                | Subpanel for 24X36 Enclosure, FX-PCA2611-0, FX-PCX1711-0 & FX-PCX4711-0 Controller, 96 VA Power Supply and 96 VA Transformer    | \$3,529.06              |
| <b>PAYEZD002BH4</b>                | Panel, FX-PCA2611-0 and FX-PCX4711-0 Controller, 24X36 Enclosure, 96 VA Power Supply and 96 VA Transformer, Remote Display      | \$4,014.88              |
| <b>SAYEZD002B04</b>                | Subpanel for 24X36 Enclosure, FX-PCA2611 and FX-PCX4711-0 Controller, 96 VA Power Supply and 96 VA Transformer, Remote Display  | \$3,495.40              |

## Documentation

Table 14 provides titles and code numbers for the new and updated documents at Release 6.0.

**Table 12: Release Schedule for the New FX-PC Series Programmable Controller Family Release 6.0**

| <b>Document Name</b>  | <b>LIT Number</b> |
|---|-------------------|
| <i>FX-PC Series Programmable Controllers and Related Products Product Bulletin</i>    | LIT-12011657      |
| <i>FX-PCG General Purpose Programmable Controllers Catalog Page</i>                   | LIT-1900670       |
| <i>FX-PCA Advanced Application Programmable Controllers Catalog Page</i>              | LIT-1900818       |
| <i>FX-PCV1610 and FX-PCV1620 Programmable VAV Box Controllers Catalog Page</i>        | LIT-1900672       |
| <i>FX-PCV1615 and FX-PCV1630 Programmable VAV Box Controllers Catalog Page</i>        | LIT-1900766       |
| <i>FX-PCX Expansion Input/Output Modules Catalog Page</i>                             | LIT-1900671       |
| <i>FX-PCT Programming &amp; Commissioning Tool Catalog Page</i>                       | LIT-1900681       |
| <i>FX-WRZ Wireless Room Sensors Product Bulletin</i>                                  | LIT-12011687      |
| <i>FX-WRZ Wireless Room Sensors Catalog Page</i>                                      | LIT-1900685       |
| <i>FX-PC Series N2 Programmable Controllers and Related Products Product Bulletin</i> | LIT-12011809      |
| <i>FX-PCV1832 N2 Programmable VAV Box Controller Catalog Page</i>                     | LIT-1900783       |

## Release Schedule

**Table 13: Release Schedule for the New FX-PC Series Programmable Controller Family Release 6.0**

| <b>Item</b>                             | <b>Date</b>    |
|---|----------------|
| <b>Orderable Date</b>                   | March 4, 2013  |
| <b>Literature Available on QuickLIT</b> | March 4, 2013  |
| <b>Shipping Date</b>                    | March 25, 2013 |

Sincerely,



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 Johnson Controls, Inc.  
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