PCA Programmable Controllers
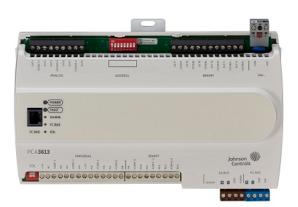
PCA Series Controllers are programmable controllers that can communicate using BACnet/IP, MS/TP, or N2 communications protocols, depending on the model. The PCA4911 Series controller communicates using BACnet/IP communications protocol, and is a BACnet Advanced Application Controller (B-AAC). The other PCA Series controllers can be switched between MS/TP and N2 Communications protocols and when used as MS/TP devices are BACnet Advanced Application Controllers (B-AACs).

PCA Series controllers feature an integral real-time clock and support time-based tasks, which together enable these field controllers to monitor and control schedules, calendars, alarms, and trends. PCAs can continue time-based control and monitoring when offline for extended periods of time from a system network. The PCAs include RS-485 field bus networking with BACnet MS/TP protocols.

PCA controllers can be combined with PCX Expansion I/O Modules to gain more I/O interfaces, if needed. PCAs and their advanced features make them well suited for monitoring and controlling a wide range of more complex equipment (such as airhandlers and central plants).

PCA Series controllers can also operate as stand-alone controllers in applications that do not require a networked supervisory device or for network applications where it is preferred to have the

scheduling, alarming, and/or trending performed locally in the field controllers.

The PCA2513 and PCA3613 are programmable controllers. They are BACnet Application Specific Controllers (B-ASC) with integral MS/TP communications. These controllers run pre-engineered and user-programmed applications and provide the inputs and outputs required to monitor and control a wide variety of HVAC equipment. A PCA2513 or PCA3613 controller combined with the PCX models can be applied to a wide variety of building applications ranging from simple fan coil or heat pump control to advanced central plant management.

Application documentation

Depending on your system (BCPro or FX), refer to *FX-PC Series Programmable Controllers and Related Products Product Bulletin (LIT-12011657)* or *CH-PC Series Programmable Controllers and Related Products for BCPro System Product Bulletin (LIT-12012951)* for product application details.

Features and benefits

Standard BACnet Protocol

Provides interoperability with other 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 (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.

Auto-Tuned Control Loops

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

Universal Inputs, Configurable Outputs, and Point Expansion Modules

Allow multiple signal options to provide input/output flexibility.

BACnet Testing Laboratories™ (BTL) Listed

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 specifications.

End-of-Line (EOL) Switch in MS/TP Field Controllers

Enables field controllers to be terminating devices on the communications bus.

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 Controller Configuration Tool (CCT) and enables persistent application data.

Support for the FX-DIS17

Remote display for monitoring and commanding of I/O and configuration parameters

Johnson Controls

PCA series point type counts per model

Table 1: PCA Series point type counts per model

Point Types	Signals Accepted	PCA2513	PCA2611	PCA2612	PCA3613	PCA4911
Communication Protocol		BACnet MS/TP, N2				BACnet/IP
Modular Jacks		6-pin SA Bus with four communicating sensors and 6-pin FC Bus for tool support				
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	4	6	5	8	10
Binary Input (BI)	Dry Contact Maintained Mode Pulse Counter/Accumulator Mode (High Speed), 100 Hz	6	2	4	6	6
Analog Output (AO)	Analog Output, Voltage Mode, 0–10 VDC Analog Current Mode, 4–20 mA	2	2		6	4
Binary Output (BO)	24 VAC Triac	2	3		6	4
Configurable Output (CO)	Analog Output, Voltage Mode, 0–10 VDC Binary Output Mode, 24 VAC Triac	2	4	4		4
Relay Output (RO)	Relay Output: Single-Pole, Double-Throw (SPDT) Relay Output: Single-Pole, Single-Throw (SPST)			2 - SPDT 3 - SPST		

Johnson Controls

PCA Series ordering information

Table 2: FX-PCA Series ordering information

Product code number	Description
CH-PCA2513-0	16-Point Advanced Application Programmable Controller with 4 UI, 6 BI, 2 AO, 2 BO, and 2 CO; 24 VAC; FC and SA Bus Support; Integral Real-time Clock.
FX-PCA2611-0	17-Point Advanced Application Programmable Controller with 6 UI, 2 BI, 4 CO, 3 BO, and 2 AO; 24 VAC; SA Bus; FC Bus; Integral Real-time Clock
FX-PCA2612-1	18-Point Advanced Application Programmable Controller with 5 UI, 4 BI, 4 CO, 2 SPDT RO, and 3 SPST RO; 24 VAC; SA Bus; FC Bus; Integral Real-time Clock
FX-PCA2612-2	18-Point Advanced Application Programmable Controller with 5 UI, 4 BI, 4 CO, 2 SPDT RO, and 3 SPST RO; 100–240 VAC; SA Bus; FC Bus; Integral Real-time Clock
CH-PCA3613-0	26-Point Advanced Application Programmable Controller with 8 UI, 6 BI, 6 BO, and 6 AO; 24 VAC; SA Bus; FC Bus; Integral Real-time Clock; Improved Fast Persistence.
CH-PCA4911-0	28-Point Advanced Application Programmable Controller with 10 UI, 6 BI, 4 BO, 4 AO, and 4 CO; 24 VAC; SA Sensor Port; Integral Real-time Clock; 2 Ethernet Ports for BACnet/IP Communications

Accessories

Table 3: PCA accessories

Product code number	Description
FX-DIS1710-0	Local display/keypad
TL-MAP 1810-0	Mobile Access Portal Gateway
TL-BRTRP-0	Portable BACnet/IP to MS/TP Router
WRZ Series Wireless Room Sensors	Refer to the WRZ Series Wireless Room Sensors Product Bulletin (LIT-12011653) for specific sensor model descriptions.
FX-DIS1710-0	Local Controller Display
WRZ-7860-0	Receiver for One-to-One Wireless Room Sensing Systems - functions with WRZ Series Sensors room sensors
WRZ-SST-120	Wireless System Survey Tool (for use with the lower power 10mW WRZ and WRZ-7860 systems)
ZFR-HPSST-0	Wireless System Survey Tool (for use with the higher power WRG1830/ZFR183x systems)
WRG1830/ZFR183x Pro Wireless Field Bus System	This system is used for installations that support BACnet/IP but can also coexist with the ZFR1800 Series when installed under the same supervisor such as a network engine. Refer to the WRG1830/ZFR183x Pro Series Wireless Field Bus System Catalog Page (LIT-1901026) for a list of available products.
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 of 10)
AP-TBK4FC-0	Replacement MS/TP FC Bus Terminal, 4-Position Connector (Bulk Pack of 10)
AP-TBK3PW-0	Replacement Power Terminal, 3-Position Connector, Gray (Bulk Pack of 10)

Johnson Controls

Technical specifications

Table 4: PCA Series technical specifications

Product Code Numbers	• CH-PCA2513-0 • FX-PCA2611-0 • FX-PCA2612-1 • FX-PCA2612-2 • CH-PCA3613-0 • CH-PCA4911-0
Supply Voltage	**PCA2513-0, PCA2611-0, PCA2612-1, PCA3613-0, and PCA4911-0** : 24 VAC (nominal, 20 VAC minimum/30 VAC maximum), 50/60 Hz, Power Supply Class 2 (North America), Safety Extra Low Voltage (SELV) (Europe) **PCA2612-2:** 100–240 VAC 50/60 Hz
Power Consumption	**PCA2513-0, PCA2611-0, PCA3613-0, and PCA4911-0:** 14 VA maximum **PCA2612-1:** 30 VA maximum **PCA2612-2:** 40 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).
Ambient Conditions	**Operating:** 0°C to 50°C (32°F to 122°F); 10% to 90% RH noncondensing; Pollution Degree 2 **Storage:** -40°C to 80°C (-40°F to 176°F); 5% to 95% RH noncondensing
Communications Bus	**RS-485, field selectable between BACnet MS/TP and N2 communications:** 3-wire FC Bus between the supervisory controller and FX-PC controllers 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. **FX-PCA4911-0:** BACnet/IP over Ethernet cable 4-wire SA Bus between field controller, network sensors, and other sensor/actuator devices, includes a lead-to source 15 VDC supply power (from field controller) to bus devices.
Processor	**PCA2611-0, PCA2612-1, PCA2612-2**: H8SX/166xR Renesas® microcontroller **PCA2513-0, PCA3613-0:** RX630 32-Bit Renesas microcontroller **PCA4911-0:** RX63N 32-Bit Renesas microcontroller
Memory	**PCA2611-0, PCA2612-1, and PCA2612-2:** 4 MB Flash Memory and 1 MB RAM **PCA2513-0, PCA3613-0, and PCA4911-0:** 16 MB Flash Memory and 8 MB RAM
Real-Time Clock Backup Power Supply	Supercapacitor maintains power to the onboard real-time clock for a minimum of 72 hours when supply power to the controller is disconnected.

Johnson Controls

Table 4: PCA Series technical specifications

Input and Output Capabilities	**PCA2513-0**
	4 - Universal Inputs: Defined as 0–10 VDC, 0–600k ohm, or Binary Dry Contact. **6 - Binary Inputs:** Defined as Dry Contact Maintained or Pulse Counter/Accumulator Mode. **2 - Binary Outputs:** Does not have internal 24 VAC source, external power is required. **2 - Configurable Outputs:** Defined as 0–10 VDC or 24 VAC Triac BO. **2 - Analog Outputs**: Defined as 0–10 VDC
	PCA4911-0
	10 - Universal Inputs: Defined as 0–10 VDC, 0–600k ohm, or Binary Dry Contact. **6 - Binary Inputs:** Defined as Dry Contact Maintained or Pulse Counter/Accumulator Mode. **4 - Binary Outputs:** Does not have internal 24 VAC source, external power is required. **4 - Configurable Outputs:** Defined as 0–10 VDC or 24 VAC Triac BO. **4 - Analog Outputs**: Defined as 0–10 VDC
	PCA2612-1 and PCA2612-2:
	5 - Universal Inputs: Defined as 0–10 VDC, 4–20 mA, 0–600k ohm, or Binary Dry Contact. **4 - Binary Inputs**: Defined as Dry Contact Maintained or Pulse Counter/Accumulator Mode. **4 - Configurable Outputs:** Defined as 0–10 VDC or 24 VAC Triac BO. **2 - Relay Outputs:** (Single-Pole, Double-Throw) Rated as UL 916; 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; EN 60730: 6 (4) N.O. or N.C. only. **3 - Relay Outputs:** (Single-Pole, Single-Throw) Rated as UL 916: 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; EN 60730: 6 (4) N.O. or N.C. only
	PCA3613-0:
	8 - Universal Inputs: Defined as 0–10 VDC, 4–20 mA, 0-600k ohms, or Binary Dry Contact. **6 - Binary Inputs:** Defined as Dry Contact Maintained or Pulse Counter/Accumulator Mode. **6 - Binary Outputs:** Defined as 24 VAC Triac (external power source only). **6 - Analog Outputs:** Defined as 0–10 VDC or 4–20 mA
Analog Input/Analog Output Resolution and Accuracy	**Analog Input:** 15-bit resolution
	Analog Output: 15-bit resolution, +/- 200 mV accuracy in 0-10 VDC applications
Terminations	**PCA2513 and PCA3613-0:**
	Input/Output: Fixed Screw Terminal Blocks
	FC Bus, SA Bus and Supply Power: 3-wire and 4-wire Pluggable Screw Terminal Blocks
	FC Bus and SA Bus Port: RJ-12 6-pin Modular Jacks
	PCA2612-1 and PCA2612-2:
	Input/Output: Pluggable Screw Terminal Blocks
	FC Bus, SA Bus and Supply Power: 3-wire and 4-wire Pluggable Screw Terminal Blocks
	FC Bus and SA Bus Port: RJ-12 6-pin Modular Jacks
	PCA4911-0:
	Input/Output: Fixed Screw Terminal Blocks
	SA Bus and Supply Power: 3-wire and 4-wire Pluggable Screw Terminal Blocks
	SA 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) (except the FX-PCA2612 controller)

Johnson Controls

Table 4: PCA Series technical specifications

Dimensions (Height x Width x Depth)	**PCA2513-0:**150 mm x 164 mm x 48 mm (5-7/8 in. x 6-7/16 in. x 1-7/8 in.) including terminals and mounting clips **PCA2611-0:** 150 mm x 190 mm x 53 mm (5-7/8 in. x 7-1/2 in. x 2-1/8 in.) including terminals and mounting clips **PCA2612 Models:** 150 mm x 164 mm x 53 mm (5-7/8 in. x 6-7/16 in. x 2-1/8 in.) including terminals and mounting clips **PCA3613-0 and FX-PCA4911-0:** 150 mm x 220 mm x 57.5 mm (5-7/8 in. x 8-3/4 in. x 2-1/4 in.) including terminals and mounting clips ⓘ **Note:** Mounting space 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)
Compliance CE	**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: Johnson Controls, Inc. declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive. Johnson Controls declares that the FX-PCA2612-2 models are also in compliance with the essential requirements and other relevant provisions of the Low Voltage Directive. Declared as Independently Mounted, Intended for Panel Mounting, Operating Control Type 1.B, 4kV rated impulse voltage, 100°C ball pressure test.
	Australia and New Zealand: RCM Mark, Australia/NZ Emissions Compliant
	BACnet International: **PCA26xx Models** - BACnet Testing Laboratories (BTL) Protocol Revision 18 Listed BACnet Advanced Application Controller (B-AAC) **PCA2513 and PCA3613-0:** - BACnet Testing Laboratories™ Protocol Revision 18 (BTL) Listed BACnet Advanced Application Controller (B-AAC) **FX-PCA4911-0:** BACnet Testing Laboratories Protocol Revision 18 (BTL) Listed BACnet Advanced Application Controller (B-AAC)

The performance specifications are nominal and conform to acceptable industry standard. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls shall not be liable for damages resulting from misapplication or misuse of its products.

Repair information

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

Product warranty

This product is covered by a limited warranty, details of which can be found at www.johnsoncontrols.com/buildingswarranty.

Johnson Controls

Single point of contact

APAC	Europe	NA/SA
JOHNSON CONTROLS C/O CONTROLS PRODUCT MANAGEMENT NO. 32 CHANGJIJANG RD NEW DISTRICT WUXI JIANGSU PROVINCE 214028 CHINA	JOHNSON CONTROLS WESTENDHOF 3 45143 ESSEN GERMANY	JOHNSON CONTROLS 507 E MICHIGAN ST MILWAUKEE WI 53202 USA

Contact information

Contact your local branch office: www.johnsoncontrols.com/locations

Contact Johnson Controls: www.johnsoncontrols.com/contact-us

Johnson Controls