

Phoenix Controls PCI8000 is a multi-purpose solution seamlessly integrating critical airflow control devices to building automation networks while providing a platform for custom control logic. It performs:

- Protocol translation and data integration between the company's environmental control systems to BACnet®-capable Building Automation Systems (BAS).
- Bidirectional translation between room-level devices using LonWorks® technology and the BAS utilizing either BACnet over IP or MS/TP to manage read requests and write commands.

The PCI8000 offers a graphical programming environment and configurable inputs and outputs to extend control functions provided by on-site valve controllers. Using optional remote I/O modules, it can also be used to provide local control for hard-wired third party devices - typically room-level lighting control, advanced temperature control sequences, or integrating air quality sensors to the building's front-end visualization system.

A web server is included with functions for troubleshooting and commissioning devices available through web pages. Diagnostic displays can be used to assess problems on the room devices, room network, or device itself. If remote access is provided, many troubleshooting tasks can be performed off-site, saving the time and expense of travel to fix a potentially minor issue.

The PCI8000 can be ordered with Wi-Fi radio enabled. Technicians can wirelessly connect their Workbench to analyze diagnostics or make changes to valves. Or they can stream to a PC web browser to view the health and diagnostics web pages. These wirelessly performed technician tasks reduce labor for difficult to access valves.

The Lab Verification feature is a set of web pages that field technicians use to perform field acceptance testing for one pressurization zone at a time. It temporarily overrides the airflow to min and max settings as well as occupied/unoccupied set points, then captures the readings for reporting and archiving.

The Test and Balance (TAB) feature is also a set of web pages that is used by third party verification experts to measure all airflows to ensure valves are flowing as intended. The TAB function can place several spaces in full heating or cooling so the balancer can check out the hot water and air handling systems. Balancers can enter the measured field data for adjustments and save the data in a .csv format for use in their own reporting tool.



PCI8000 with Communication Module

FEATURES

- Support for Niagara 4 with Phoenix Controls Workbench 3.0 or later.
- Optional support for Niagara AX: Phoenix Controls Workbench 2.5 or later.
- Web User interface for device, network, and platform diagnostics.
- Supports up to 4 optional communications modules.
- Includes 2 on-board RS-485 BACnet® MS/TP ports.
- Up to 49* LON devices with 20 fume hoods maximum per channel. 197 devices maximum per PCI8000.
*First LON module supports 50 devices.
- Data Recovery Services prevent data loss during power interruptions.
- Lab Verification function for field acceptance testing via password protected web pages.
- Test and Balance function for third party balancers to verify valves work as intended via password protected web pages.
- Support for remote I/O modules connected by BACnet MS/TP. Refer to *PCI I/O Module Product Data Sheet (MKT-0431)*.

SPECIFICATIONS

Platform

- ARM® Cortex™-A8 1Ghz processor
- 1GB DDR3 SDRAM
- 2Mb (megabit) Serial FRAM
- Up to 4GB microSD Flash memory
- Removable micro-SD card with 4GBflash total storage; 2GB user storage
- Real-time clock

Operating System

Niagara 4.4 or later

Niagara 3.8 (Optional)

On-Board Communications

- Two 10/100Mbit Ethernet ports
- Two electrically isolated RS485 ports with selectable bias and termination
- USB Type A connector (backup and restore support)

Integration Points

25 points per device (e.g; 20 devices = 500 points)

Power

- 24 VAC, 50/60Hz @ 24 VA minimum
 - Dedicated UL listed Class 2 transformer
- 24 Vdc from Linear Power Supply (LPS) providing at least 1A (24W)
- Wall-mount, Class 2 universal AC power adapter; Input = 90-264 Vac, 47-63 Hz; Output = 24 Vdc, 1.25 A (30W) maximum
 - PCI option WPS
 - Supplies 24 Vdc via barrel-connector plugs, all ungrounded for US, UK, EU, and Australian outlets
 - Intended for office use only; excluded from agency testing
- Internal battery backup is neither required nor available.

Optional Communication Modules

- LON Modules: One LON network port per module (ANSI 709.1 LonTalk Protocol)
 - Up to four LON modules per PCI
- BACnet MS/TP Module: Two RS485 ports, 3 Pin Connector (up to 115,200 baud)
 - Up to two BACnet modules per PCI
- Refer to *Communication Module Ordering Considerations* section

Network Limitations

- First LON module supports up to 50 devices (LVC + LRC + PUL + PTC + LDU + FHD) with 20 fume hoods maximum. Subsequent modules limited to 49 LON devices with 20 hood maximum per channel. Up to 4 LON modules per PCI8xxx with up to 197 devices.
- BACnet MS/TP: Smaller of 32 Unit Loads or 50 Devices per network segment

BACnet Unit Loads

These components each exert the following unit load on the MS/TP network.

- PCI8000 COM-1 = 1/8
- PCI8000 COM-2 = 1/8
- Each PCI8000 BACnet Communication Module = 1/4 (1/8 for each port)

Optional Remote I/O Modules

- 16- and 34-point modules available
- Connect to PCI via RS485 and are ordered separately from PCI
- Refer to *PCI I/O Module Product Data Sheet*

Dimensions

- PCI8000: 6.38" (162 mm) L x 4.33" (110 mm) W x 2.4" (61 mm) H
- Optional Communication Module (LON or BACnet): 2.07" (52.5 mm) L x 4.33" (110 mm) W x 2.4" (61 mm) H
- Optional Wall-mount Power Adapter (option -WPS): 3.56" (90.3 mm) L x 1.97" (50.0 mm) W x 1.50" (38.15 mm) H, excluding AC plug; add 0.25" (6.35 mm) to 1.00" (25.4 mm) to height, excluding prongs, based on which style plug is used

Approximate Weight

- PCI8000: 13.2 oz (0.37kg)
- Optional Communication Module (LON, BACnet): 4.75 oz (0.13 kg)
- Optional Wall-mount Power Adapter (option -WPS): 8.00 oz (0.23 kg)

Environmental Requirements

- Storage Temperature Range
-40 - 185 °F (-40 - 85 °C)
- Operating Temperature Range
-4 - 140 °F (-20 - 60 °C)
- Operating Humidity Range
5 - 95% RH, non-condensing
- Product is for indoor use only, altitude to 6,562 ft (2,000 m).

WiFi

For DIS region only:

- No Wi-Fi capability, not upgradable

For ROW and USA regions only:

- IEEE802.11a/b/g/n
- IEEE802.11n HT20 @ 2.4GHz
- IEEE802.11n HT20/HT40 @ 5GHz
- Configurable radio (Off, WAP, or Client)
- WPAPSK/WPA2PSK supported

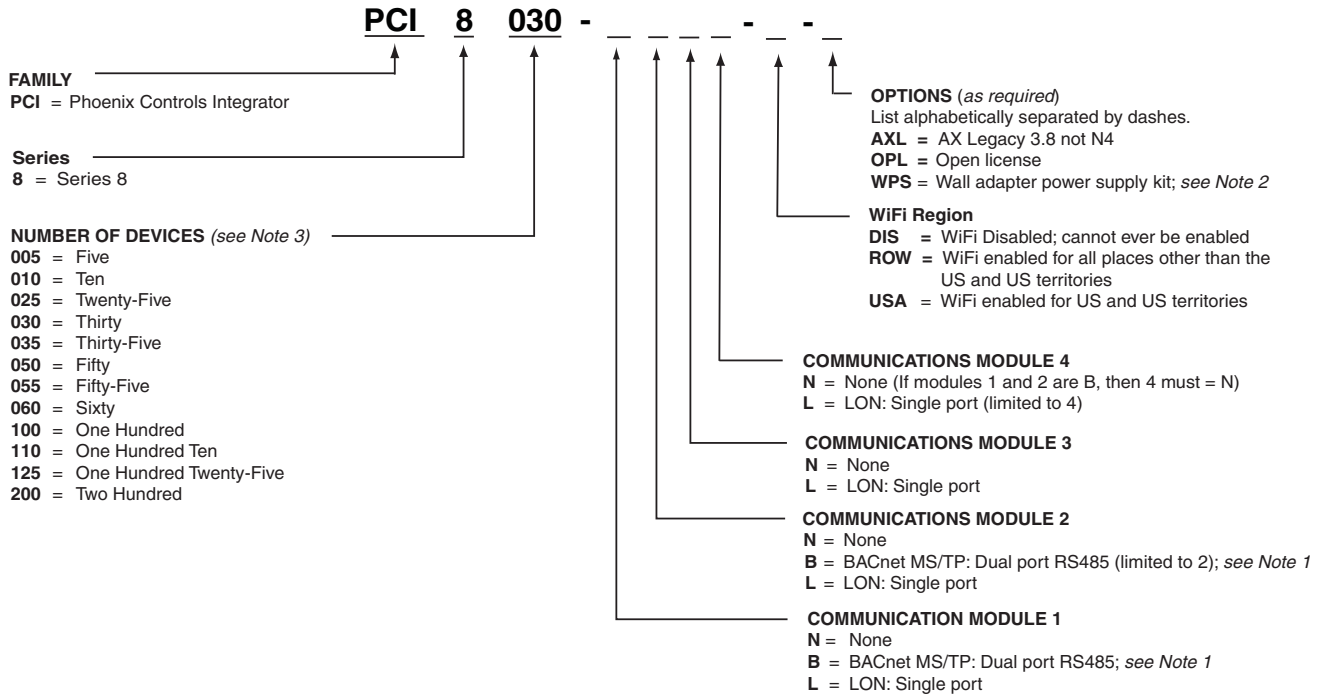
Agency Listings*



- UL 916
- CE EN 61326-1
- FCC Part 15 Subpart B, Class B
- FCC Part 15 Subpart C
- C-UL listed to Canadian Standards Association (CSA) C22.2 No. 205-M1983 Signal Equipment"
- 1999/5/EC R&TTE Directive
- CCC
- SRRC
- RSS
- ROHS
- ICES-003, Class B - Industry Canada Interference-Causing Equipment Standard
- CE Declaration of Conformity (Council Directive 004-108-EC)
- WEEE

*Excludes Option WPS - Wall Adapter Power Supply kit.

ORDERING GUIDE



- NOTES:**
1. Communication Modules terminate BACnet MSTP room networks when more than the two on-board ports are needed.
 2. 100-240 Vac, 50/60 Hz Wall Adapter – Connects to the 2.5 mm barrel plug 24 V input on the PCI8000 and includes US, EU, UK, and AU style plugs.
 3. Maximum Device Count = Total LON Devices + Total BACnet Devices; refer to the *Maximum Number of Devices, Points, and Communications Modules* section.

Communication Module Ordering Considerations

The PCI8000 controller supports a maximum of four communication modules in certain combinations. The following chart details the possible combinations. Note that if you use two RS485 option modules, you are limited to one additional LON module for a total of three.

Communication Module	Module Types							
	BACnet	BACnet	BACnet	BACnet	LON	LON	LON	LON
1	BACnet	BACnet	BACnet	BACnet	LON	LON	LON	LON
2	None	BACnet	BACnet	LON	LON	LON	LON	None
3	None	None	LON	LON	LON	LON	None	None
4	None	None	None	LON	LON	None	None	None

Maximum Integration Channels

The maximum number of channels that can be integrated per PCI are shown in the following table, assuming they also meet the maximum allowable devices and points. Refer to the *Maximum Devices, Points, and LON Communications Modules* section.

Maximum On-Board Channels	Maximum Optional Communication Modules		Maximum Ports/Channels		Maximum Integration Channels
	BACnet	LON	BACnet	LON	
2	2	1	4	1	7
2	1	3	2	3	7
2	0	4	0	4	6