

Phoenix Controls PROGRAMMABLE BACNET™ CONTROLLER (PBC)

Programmable BACnet™ Controllers (PBCs) provide flexible, freely programmable, demand-led control delivering tangible benefits that improve safety, reduce energy spending, and add new levels of functionality to today's building management systems.

The PBC can be mounted on a Phoenix Controls Venturi Valve or in a control panel and serves as the zone controller for offset control, comfort control, emergency control, dynamic pressurization control, and additional programmability that might be needed in a zone.

The PBC can also be used as a standalone control device where additional I/O and control functions are needed.



Features

- BACnet™ MS/TP or BACnet™ IP support.
- Color-coded, removable terminal blocks to simplify wiring and replacement.
- Easy to install into a cabinet, on a DIN rail, or surface mount.
- Support of standard BMS protocols offering an open system for interconnectivity.
- Easy upgrade to IP:
 - RJ45 available as IP communication standards.
 - Increased network speeds compared to traditional building automation systems.
 - Support of standard BMS and IT protocols, such as BACnet, offering an open system for interconnectivity.
- LED status indicators:
 - Small LEDs - green for communication signal transmission or reception.
 - Large LEDs - device status (green, yellow, red).
- Niagara-based Function Block library and sample applications.
- Power failure detection and data recovery.

APPLICATIONS

Research Environments with High Speed VAV Fume Hoods

As part of the Critical Spaces Control Platform (CSCP), the PBC functions as the zone controller managing offset control, temperature and humidity control, occupancy control, emergency control, and includes additional programmable logic control. Where fume hood containment and rapid airflow control really count, the PBC can manage the demands of laboratory spaces with up to 20 high-speed valves and 10 fume hood monitors in one zone. Multiple temperature zones, built-in diversity, and usage-based controls can all assist in saving energy. You can program zone balance and offset control managed with a one-second speed of response and several emergency control modes for flexible room sequencing. Bluetooth connection to the *Phoenix Controls Flow Manager Mobile App* (available for Android and iOS) allows support for viewing alarms, monitoring space conditions, and making setpoint changes. For more information on the Flow Manager Mobile App, see the *Phoenix Controls Flow Manager Mobile App Datasheet (MKT-0518)*.

Life Sciences / Vivariums

Zone balance, comfort control, and air change rate diversity for general research spaces are key, as well as maintaining more natural, lower stress environments for research animals. The Critical Spaces Control Platform can manage a uniquely broad diversity of demands within a single facility. Each PBC manages up to four standard speed venturi valves that can support low up-front install cost without compromising controllability. Zone balance, offset control, switching polarity of spaces (positive to negative or vice versa), temperature control, humidity control, and other sequencing can all be accomplished with one PBC.

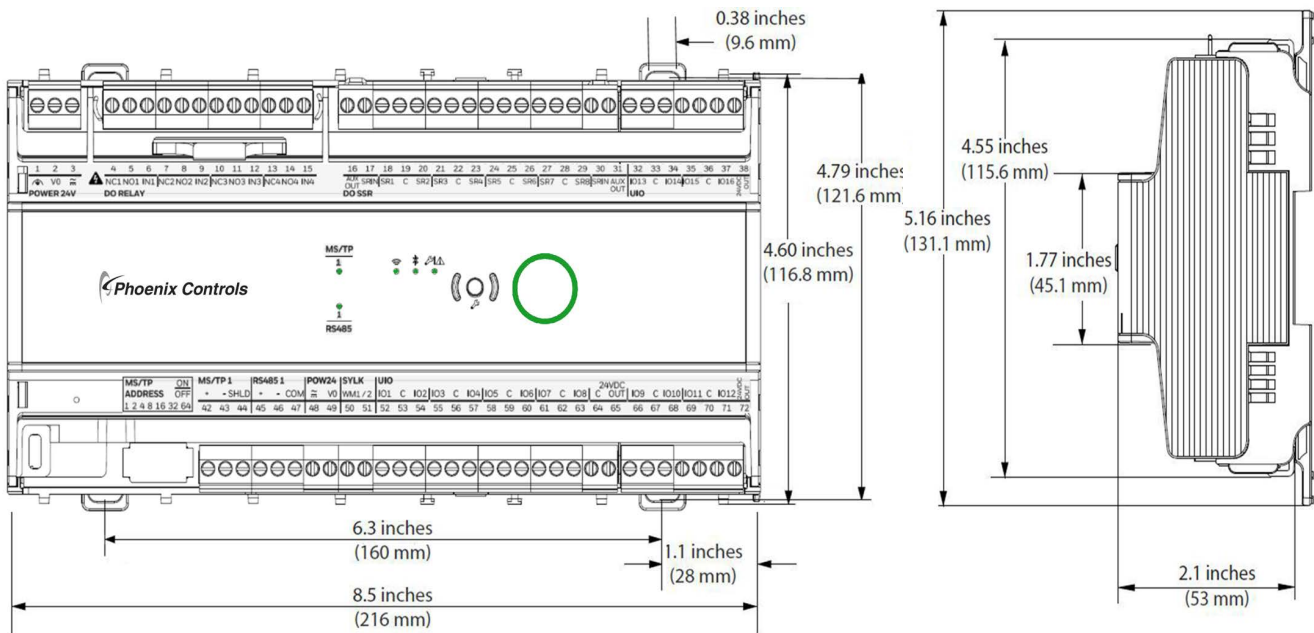
High-Purity Manufacturing Environments

Precision pressure control coupled with high air change rates are critical for high-purity manufacturing, but cost of operations can impact the bottom line. The Critical Spaces Control Platform helps maintain the desired environment while offering the flexibility to repurpose spaces quickly, manage air exchange based on monitoring ISO class and environmental quality parameters, reliably and repeatably cascade pressures from space to space without having to rebalance or create deviations. The PBC's flexibility in supporting multiple valves, whether high speed or standard speed, ensures a solution with a wide array of options for demanding spaces.

Healthcare (including operating room theaters and isolation spaces)

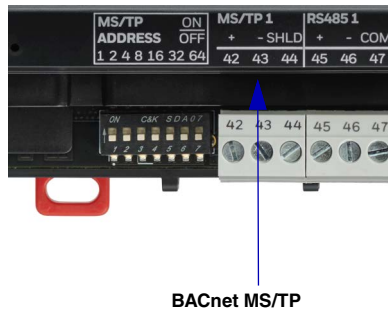
From surgical suites, patient rooms, to Intensive Care Units (ICUs) and compounding pharmacy, nowhere is a comprehensive environment control platform more necessary. The PBC maintains the proper flow control relationship between all valves, ensuring proper offset control for all spaces while allowing variation in flow for more room state flexibility. Ventilation flexibility with CSCP easily allows hospital facilities to manage ventilation requirements more efficiently to address occupancy, environmental quality, pandemic modes, changing temperature demands, to even customized control for surgeons and/or surgical procedures in the operating room theaters.

DIMENSIONS (MS/TP AND IP MODELS)



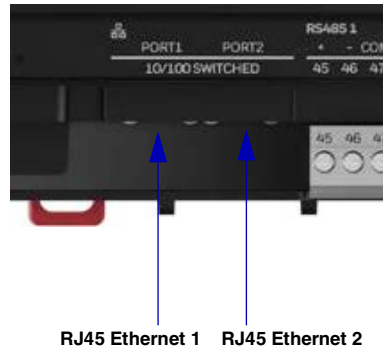
VARIATIONS ON PBC MODEL SETTINGS

MS/TP settings



BACnet MS/TP

IP settings



RJ45 Ethernet 1 RJ45 Ethernet 2

SPECIFICATIONS

Platform

- Crossover processor NXP I.MRT, Cortex M7
- 16 MB SDRAM, 16 MB QSPI Flash
- Real-time clock (24 hours backup after power failure)

Operating System

Niagara N4.9u1 or later

On-Board Communications

- Two RS485 Ethernet ports with integrated Fail-Safe
- Baud Rates: 9600, 19200, 38400, 57600, 76800
- Unit Load (ACM): 1/8
- BACnet IP Controller:
 - IP addressing modes: Dynamic: DHCP and link-local; Static: Assigned
 - Ethernet: Supports two RJ45 Ethernet ports

Integration Points

See the *Integration Points* section in the *Phoenix Controls Programmable BACnet Controller Guide Specification (MKT-0520)*.

Power

24 VAC, 50/60 Hz @ 50 VA

Auxiliary Power Output

- 1 x 24 VAC / VDC @ 300 mA
- 3 x 24 VAC / VDC @ 75 mA

Power Consumption

- Max: 50 VA
- Nominal: 8 VA

Universal I/Os

- AI
 - 16-bit A/D resolution
- UI
 - 0(2)...10 V direct/reverse or 0(4)...20 mA input
 - Sensors: 10K Ohm NTC Type II, 10K Ohm NTC Type III, 10K3A1, 20K Ohm NTC, PT100, PT1000, NI1000TK5000, NI1000 Class B DIN43760, PT3000, 100 Ohm to 100K Ohm resistive (custom characteristic).
 - Hardwired wall modules*: space temperature, space temperature setpoint, fan speed override, occupancy mode override.
 - Dry contact binary input with direct/reverse.
 - Pulse input with maximum frequency 100 Hz, minimum pulse width 5 ms. Compatible with the S0 interface for pulse counters.
- AO
 - Voltage output with 0(2)...11 V direct/reverse with -3 mA ...+20 mA.
 - Current output with 0(4)...20 mA direct/reverse.
 - Hardwired wall modules*: LED Control. Solid State Relays (SSRs).
- DO
 - Dry contact binary output with direct/reverse.

Solid State Relay (SSR)

- SSR works with maximum 24 VAC / VDC.
- 1.5 A constant; 3.5 A inrush for 0.1 seconds per SSR output.
- Factory installed jumper between 24 VAC or 24 VDC supply and SSR input shared by all SSRs.

Relays

- 3 contacts per relay (Normally Open (NO), Normally Closed (NC), Common (IN)).
- Total current across all relays is limited to 12 A if all commons are connected via a relay jumper.
- Up to 277 VAC / 230 VAC (+20%).
- 10 A constant current on normally open contact and 100 A inrush for 100 ms.

Environmental Requirements

- Product is for indoor use only, altitude to 6562 ft (2000 m).
- Storage Temperature Range: -40 to 150°F (-40 to 66°C)
 - Operating Temperature Range: 32 to 122°F (0 to 50°C)
 - Operating Humidity Range: 5 - 95% RH, non-condensing

Dimensions

8.5" x 4.79" x 2.1" (216 mm x 121.6 mm x 53 mm)

Weight

1.256 lbs (570 grams)

Enclosure

IP20, NEMA 1

Mounting

Venturi valve control enclosure, DIN rail, or surface mount with screws. For installation details, see the *Programmable BACnet Controller (PBC) Installation Guide (651-320-001)*.

REGULATORY COMPLIANCE



WEEE Directive 2012/19/EC

Waste Electrical and Electronic Equipment Directive

At the end of the product life dispose of the packaging and product in a corresponding recycling center. Do not dispose of the unit with the usual domestic refuse. Do not burn the product.

Certificates: CE, FCC, ICES, UL/cUL, RoHS3, REACH, Prop 65

EU Contact Address:

Pittway Tecnologica Srl
Via Caboto 19/3
34147 Trieste TS
Italy

ORDERING GUIDE

You can order the PBC as a standalone device or on a Phoenix Controls Venturi Valve. (See the *CSCP Venturi Valves Datasheet (MKT-0525)* for more information.)

When you order the PBC as a standalone device, the PBC provides three possible functions:

- GEN (Generic Application) used as a programmable logic control and I/O module.
- ZBH (Zone Balance High-Speed Control) used as a zone controller for high-speed valves (<1 sec speed of response).
- ZBL (Zone Balance Standard) used as a zone controller for up to four standard speed valves (<40 sec - 90 sec speed of response).

