SYSTEM 450™
MODULAR ELECTRONIC CONTROLS

Control what’s important.
Communicate, customize, configure

Now you can get hundreds of control options and flexibility from fourteen basic control modules. The System 450™ electronic controls are part of the PENN® controls family. For nearly a century, PENN has helped people control the things that are important to them. System 450 offers all of the convenience and ease-of-use of plug together modular controls, along with improved efficiency and accuracy. New communication capabilities allow you to monitor and control the entire system and its components remotely, with user-friendly web pages delivered right to your computer. Plus, you can control pressure, humidity and temperature with a single system.

More flexibility and applications from one system

- Fourteen basic System 450 modules replace 80 System 350® modules, which means fewer parts to order and stock.
- Up to ten stages of control.
- Up to three inputs per control provide flexibility and reduce the number of controls required.
- Factory default settings for each sensor.
- Control modules feature easy-to-read backlit LCD and four-button touch pads.
- UL, cUL, CE, C-Tick, RoHS compliant.

Features:

- Remotely monitor and control the entire system and equipment - System 450 communication modules connect to and communicate over RS485 Modbus RTU or Ethernet networks - Ethernet module provides an integral web server allowing you to monitor and control system status on a PC, laptop or tablet via user-friendly web pages.
- Single or dual SPDT relay output modules provide on/off control of the equipment in your controlled system - Set up multiple relay output modules to create a variety of equipment staging configurations.
- Analog output generates a direct-acting or reverse-acting proportional signal (0-10 VDC or 0-20 mA) - Proportional plus Integral (PI) control capability, allows controlled system to operate closer to the desired setpoint even under full-load conditions.
- Reset setback scheduling (C450R only) - Can provide load balancing of equipment (equal run time hours, C450R only).
- The C450CPW-100 uses the same hardware and set-up screens as the C450CP, while adding two new functions: - The ability to use the higher of two (or highest of three) sensor inputs (High Input Signal Selection) - The ability to configure a hybrid Analog Output (AO), which is typically used to run an Electronically Commutated (EC) motor.
- Originally, this model was designed to control an EC motor. By using temperature, humidity, or pressure sensor inputs, this control can also be used for a wide range of additional applications.

Control a wide variety of multifunctional applications with System 450

System 450 standard and reset controls can be used as stand-alone devices, or in conjunction with expansion modules, to control a wide range of single-stage, multi-stage, and proportional refrigeration, HVAC and industrial applications. With System 450, each control module accepts up to three inputs configurable for humidity, temperature or pressure applications. This allows System 450 to handle a variety of applications with multiple conditions like wine cellars, greenhouses, swimming pools and spas.

Sensor options

PS98/P599
Ratiometric Transducer

A99
Temperature Sensor

HE-6753
Humidity Sensor

DPT2650
Low Pressure Differential Transducer

TE-6800
Temperature Sensors

TE-6000-1
Temperature Sensing Element

TE-6300
Temperature Sensors

Communications applications

Network communication can be added to any humidity, temperature or pressure application with a communication module.

Common applications include:

- Greenhouses
- Poultry farms
- Swimming pools
- Boiler control
- Solar heating

Note: network communication is not currently available for applications involving reset, setback or EC motor control.

Humidity applications

- Electronically Commutated (EC) motor control
- Clean rooms
- Computer rooms
- Pharmaceutical manufacturing
- Museums and libraries
- Greenhouses
- Paper manufacturing and storage
- Space humidity control
- Humidity monitoring and display
- High/low humidity alarm
- Humidification/dehumidification control
- Staged On/Off or proportional humidity control
- Reset humidity control

Temperature applications

- Electronically Commutated (EC) motor control
- Refrigerated spaces – coolers/freezers
- Heating & cooling control with deadband
- Stage boiler control
- Boiler circulating pump control
- Mixed-air damper control
- Water mixing valve control
- Modulated or staged temperature damper actuator control
- Reset boiler control

Pressure applications

- Electronically Commutated (EC) motor control
- Modulating condenser fan speed control
- Staged On/Off condenser fan control
- Two-speed fan motor control
- Elevating pressure control of an actuator
- Constant duct static pressure control
- Constant air velocity control
- Relief damper building pressurization control
- Relief fan building pressurization control
- Electric forced air systems
- Room or building static pressure
- Supply side static pressure
- Refrigeration compressor capacity control
**SYSTEM 450 MODULAR ELECTRONIC CONTROLS FAMILY**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C450CBN-4</td>
<td>Single relay control module</td>
</tr>
<tr>
<td>C450CCN-4</td>
<td>Dual relay control module</td>
</tr>
<tr>
<td>C450CPN-4</td>
<td>PI analog output module</td>
</tr>
<tr>
<td>C450CQN-4</td>
<td>PI dual analog output module</td>
</tr>
<tr>
<td>C450SBN-3</td>
<td>Single relay expansion module</td>
</tr>
<tr>
<td>C450SCN-3</td>
<td>Dual relay expansion module</td>
</tr>
<tr>
<td>C450SPN-1</td>
<td>PI analog output expansion module</td>
</tr>
<tr>
<td>C450SQN-1</td>
<td>PI dual analog expansion module</td>
</tr>
<tr>
<td>C450RBN-4</td>
<td>Single relay reset module</td>
</tr>
<tr>
<td>C450RCN-4</td>
<td>Dual relay reset module</td>
</tr>
<tr>
<td>C450CPW-100*</td>
<td>Hybrid analog output and high input signal select</td>
</tr>
<tr>
<td>C450CEN-1</td>
<td>Ethernet Communications Module</td>
</tr>
<tr>
<td>C450CRN-1</td>
<td>RS485 Modbus RTU Communications Module</td>
</tr>
<tr>
<td>C450YNN-1</td>
<td>Power Module</td>
</tr>
</tbody>
</table>

* NOTE: This model was designed for (but is not limited to) controlling an EC motor. By using temperature, humidity, or pressure sensor inputs, this control can also be used for a wide range of additional applications.