Controller Installation (Model CX 9680 (-S))

To install the controller, follow these steps:

1. Mount the controller on a standard DIN rail or to a panel using screws. (See the “Mounting Instructions” and “Physical Dimensions” sections of this document.)

   Warning: Do not apply power to the controller until all connections are secured. Read the “Wiring Rules” section of this document before performing the next steps.

2. Connect the I/O modules by simply plugging the modules together or using a cable assembly to bridge the modules together. (See the “Connecting I/O Modules” section of this document.)

3. Connect the Ethernet and Communication Port connections based on your requirements. (See the “Ethernet and Comm Port Connections” section of this document.)

4. Connect the power supply connector of the controller to an Andover Continuum power supply or third-party UL Listed UL 294 or UL 603 power limited power supply. Access the PC board and connect the battery. (See the “DC Power and Battery Backup Connections” section.)

5. Apply power to the controller and I/O modules.

6. Configure the controller using the controller’s embedded Web-Server pages and CyberStation. For more information, refer to the “Related Documentation” section at the end of this document.
Mounting Instructions

Physical Dimensions
Wiring Rules

These modules are intended for installation within the UL Listed enclosure 3P-UL-ENCL for UL 294 and UL 1076.

For reliable operation, follow these wiring guidelines:
- Never lay wires across the surface of a printed circuit board.
- Use shielded wire.
- Terminate the shield of the wires at one end of the run only — preferably at the end where your I/O module is located.
- When stripping wire, be careful not to drop small pieces of wire inside the cabinet.
- Don’t run your wiring in the same conduit with AC power.
- Don’t run your wiring in the same conduit with your output wiring.

Inspecting the Ground

Be sure to have your grounds inspected before you begin the installation process.

Check your grounds as follows:
Inspect the building power distribution panel for earth-ground termination. If the ground termination is any of the following, it is not adequate and must be corrected:
- Does not exist
- Is connected to a corroded or galvanised pipe
- Is connected using a small gauge wire (less than 14 AWG).

Be sure your Andover Continuum cabinet is connected to the ground with a copper conductor that terminates at the distribution panel. For more information, see the “Related Documentation” section at the end of this document.

Caution: Earth ground (±) must be connected to avoid module damage.

Grounding the Controller

To insure proper operation of the controller, it must be connected to a good earth ground. The connection must be made as close to the module as possible.

DC Power and Battery Backup Connection

Andover Continuum Power Supply

| Continuum Power Supply | CX 9680 (-S) | I/O | I/O |

NOTE: For more information on Andover Continuum Power Supplies, see the “Input Power” section of the Specifications topic.

Third-Party UL Listed UL 294 or UL 603 DC Power Supply

Power Supply Battery Backup

Battery Backup Connection PS 120/240 AC 85-U, AC 50-U and PS -48 DC 50-U

| 2-Conductor Shielded Power Cable from Power Supply |
| 2-Conductor Shielded data cable from NetController |

NOTE: For more information on Andover Continuum Power Supplies, see the “Input Power” section of the Specifications topic.

* The AC 85-U can only be used with the NetController II for UL 294 applications.

** The AC 50-U and PS -48 DC 50-U are not evaluated by UL and not UL Listed to UL 1076.

NOTE: Only if you use a third-party DC power supply, input power to the I/O modules must be supplied externally.
Third-Party Power Supply
(DC Connections)

⚠️ Use care when attaching power wiring to these connectors. They are not to be used as a strain relief. The connectors cannot withstand excessive bending or flexing.

+ 12 to 28VDC ♂♂
VDC Return

Third-Party Power Supply
(AC Connections)

⚠️ Use care when attaching power wiring to these connectors. They are not to be used as a strain relief. The connectors cannot withstand excessive bending or flexing.
**DC Power and Battery Backup Connection (Continued)**

**Internal Battery Connection**

During shipment the internal battery pack has been disconnected to prevent it from draining prior to installation.

**NOTE:** The indicator lamps and switches are connected to the circuit board via two thin ribbon cables. When you lift the plastic housing do not remove the cables from their connectors.

To activate the battery:
1. Locate the plastic tabs on the bottom panel of the controller. (See illustration on the first page of this document.)
2. Using your fingers, gently depress the tabs while lifting the cover. Fold the cover back to access the main circuit board.
3. Connect the battery connector into the receptacle as shown in the illustration below.

![Internal Battery Connection Diagram]

**Connecting the I/O Modules**

**Plugging Modules Together**

The CX 9690 (-S) can directly connect to the I/O modules without using cables through a system of built-in plugs and jacks. All I/O modules include two complementary module connectors. Creating a system is as simple as physically plugging the modules together. (See the Horizontal and Vertical Connection illustrations below).

**I/O Bus Connector**

The I/O bus connector on the upper right side further distributes the 24 VDC input power and special I/O communication signals to all the I/O modules. (See the I/O Bus Connector illustration below.)

**Horizontal and Vertical Connections**

In vertical extended systems, I/O modules may be located above or below other modules. Connector cables bridge the I/O modules together. Connection between the modules is one-to-one, straight-forward wiring. (See the I/O Cable Wiring illustration below.)

**LON Interfaces**

The CX 9680 (-S) supports two types of Local Operating Network (LON) bus media:
- RS-485 (ACC-LON) – Default setting
- FTT-10a (free topology transceiver technology)

**NOTE:** Prior to installing an I/O module network using the FTT-10a bus, read the installation documentation from the Echelon Corporation.

**Maximum Number of I/O modules**

Continuum allows a maximum of 32 I/O modules per CX 9680 (-S). There is also a limit based upon the capacity of the power supply feeding the modules. (60 W maximum power)

**Maximum Length of I/O Bus**

The following are the cable length specifications:
- RS-485 — 2000 ft. (610 m.)
- FTT-10a — 8858 ft. (2700 m.) double termination
  1640 (500 m.) free topology

**Termination of I/O Modules**

An external 120 ohm terminating resistor is required at both ends of the bus for proper termination. (See the I/O Cable Wiring illustration that follows.)
Connecting the I/O Modules (Continued)

**I/O Bus Connector Pins**

- **I/O Bus Connector**
  - PIN | Function
  - 5   | +24 VDC
  - 4   | 24 VDC Return
  - 3   | Shield
  - 2   | Comm B
  - 1   | Comm A

**Horizontal Connection**

- Power Supply
- CX 9680 (-S)
- I/O
- I/O

- Power Supply
- CX 9680 (-S)
- I/O
- I/O

**Vertical Connection**

- Power Supply
- CX 9680 (-S)
- I/O

**I/O Cable Wiring**

- CX 9680 (-S)
- Local I/O

- 120 Ω Resistor

- I/O Module
- I/O Module

- 120 Ω Resistor
## Ethernet and Comm Port Connections

<table>
<thead>
<tr>
<th>Port</th>
<th>Connector Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet</td>
<td>RJ-45 (Ethernet 10/100 BASE-T)</td>
</tr>
</tbody>
</table>
| Comm1 | RS-232  
RS-485 (3-pin)  
Service Port cable (Wireless Adapter or RoamIO2) |
| Comm2 | Service Port cable (Wireless Adapter or RoamIO2)  
RS-485 (4-pin) |
| Comm3 | RS-232  
(Optional) Modem (RJ-11) |
| Comm4 | RS-422 (L-Bus) or  
RS-485 (5-pin) |

*The Ethernet connector has been evaluated by UL for UL294/UL1076. All other communication connectors have been evaluated by UL for "supplemental use."
## Configuring the CX 9680 (-S)

( NOTE: Check with your system administrator for assistance.)

1. Disable the DHCP Services on your PC.
2. Disconnect your computer from the network and set your IP address to 169.254.1.2 and your subnet mask to 255.255.0.0.
3. Using a CAT5 cable (straight-through or crossover), connect the PC Ethernet port to the CX 9680 (-S) Ethernet port.
4. Run your web browser, then go to URL: http://169.254.1.1 to display the Andover Continuum Embedded WebServer page in the CX 9680 (-S).
5. Select Controller Configuration from the WebServer page.

### Specifications

**Dimensions**
8.75” W x 6.00” L x 2.5” H (222.3 x 152.4 x 63.5 mm)

**Weight**
1.5 lbs. (0.68 kg)

**Enclosure Type**
UL open class, flammability rating of UL94-5V, IP 10

**Mounting**
DIN rail or wall mount using attached fasteners. Andover Continuum UL Listed enclosure model 3P-UL-ENCL is available for UL 294 and UL 1076.

**Operating Environment**
Temperature: 32° to 122° F (0° to 50° C)
Humidity: 10 to 90% RH, non-condensing

**Input Power**
Andover Continuum Power Supplies:
- PS 120/240 AC 85 (not evaluated by UL)
- PS 120/240 AC 85-U (AC 85-U can only be used for UL 294)

Third Party Power Supply:
- 12–28VDC @ 10W
- 24VAC @ 20VA, 50/60 Hz.

**Internal Battery**
NiMH, 3.6 VDC, 800 mAh

**Real Time Clock**
Battery-backed by UPS and internal battery.

**Comm. Error Checking**
International Standard CRC 16.

**Ethernet LAN Interface**
10/100 Ethernet: Ethernet cable with RJ-45 connector.

**Serial Comm. Interface**
Four programmable ports, software configurable as printer, modem, wireless adapter, ROAM I/O, or third-party system. Infinit can be configured on Ports 1 and 2.

- **Comm1**: RS-232, RS-485, Service Port
- **Comm2**: Service Port, RS-485
- **Comm3**: RS-232, (optional) Modem (RJ-11 connector)
- **Comm4**: RS-422 (L-Bus) or RS-485

**Serial Comm. Speed**
- **Comm1**: Baud rates up to 38.4 K for RS-232 mode.
- **Comm3**: Baud rates up to 38.4 K when configured for RS-232 or

### Infinet Bus Length
4,000 ft (1,220m) standard for Infinet using approved shielded, twisted pair, low capacitance cable. Inflink module allows extensions to longer distances.

**I/O Bus**
ACC-LON communications. Choice of bus media, **RS-485** or **FTT-10A**.

**RS-485 Bus**
- **Comm. Speed**: 39K baud
- **Bus Length**: 2,000 ft. (610m)
- **Bus Media**: Shielded, twisted pair cable. 120 ohm termination required at both ends of the ACC-LON network (when modules are mounted remotely).

**FTT-10A Bus**
- **Comm Speed**: 78K baud
- **Bus Length**: Up to 8858 ft. (2700m) — bus topology
  - Up to 1640 ft. (500m) — free topology. Repeater required for longer distances.
- **Bus Media**: Refer to Echelon FTT-10A free topology documentation

**Connections**
Power: 5-position plug-in connector on left side of module for direct connection to Continuum power supply module.
3-position connector on left side of module for connection to a third-party power supply module.

**I/O Bus**: 5-position plug-in connector on right side of module for direct connection of up to 32 I/O modules.

**Ethernet**: RJ-45 connector for 10/100 Ethernet.

**Printer**: RJ-45

**Modem**: RJ-11 Connector

**Status Indicator LEDs**
- **System**: Power, CPU, Error
- **Comm1**: TD, RD, DCD, DTR
- **Comm2**: TD, RD
- **Comm3/Modem**: TD, RD, DCD, DTR, MODEM
- **Comm4**: TD, RD
- **I/O Bus**: Status
- **Ethernet**: ACT/LINK, 10/100 Mbps

**Push Button Switches**
- **Clear Memory**: RESET/Clear Memory
- **Reset IP Address**: (On PC board) Resets Network address settings in flash memory and restores all non-volatile settings to factory defaults.
Regulatory Notices

Federal Communications Commission
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference.
(2) This device must accept any interference received, including interference that may cause undesired operation.
Complies with FCC Part 68 Rules (when optional modem is installed).
FCC Registration Number: AU7NMOIBMT5656R  REN Number: 0.1B
Caution: The user that changes or makes modifications not expressly approved by Schneider Electric for compliance could void the user’s authority to operate the equipment.

Industry Canada
This is a Class A digital device This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Industry Canada
This is a Class A digital device This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

CE - Compliance to European Union (EU)
2014/30/EU - Electromagnetic Compatibility Directive
2014/35/EU Low Voltage Directive
2011/65/EU Restriction of Hazardous Substances (RoHS) Directive
This equipment complies with the rules, of the Official Journal of the European Union, for governing the Self Declaration of the CE Marking for the European Union, as specified in the above directive(s) per the provisions of the following standards: EN 60730-1, EN 60730-2-11, and EN 50491-3 Safety Standards.

Regulatory Compliance Mark (RCM) - Australian Communications and Media Authority (ACMA)
This equipment complies with the requirements of the relevant ACMA standards made under the Radiocommunications Act 1992 and the Telecommunications Act 1997. These standards are referenced in notices made under section 182 of the Radiocommunications Act and 407 of the Telecommunications Act.

WEEE - Directive of the European Union (EU)
This equipment and its packaging carry the waste of electrical and electronic equipment (WEEE) label, in compliance with European Union (EU) Directive 2012/19/EU, governing the disposal and recycling of electrical and electronic equipment in the European community.

UL 916 Listed product for the United States and Canada, Access Control Equipment

UL 294 (Access Control System Unit Subassemblies for the United States) and UL 1076 (Proprietary Burglar Alarm System Unit Subassemblies for the United States) and C22.2 No. 205-M1983 (Signal Equipment for Canada)
Note: Refer to the UL Listed Access Control Proprietary Burglar Alarm System installation manual (the UL 294 Access Control and UL 1076 Proprietary Burglar Alarm Systems Reference 30-3001-504) for specific wiring, operation, and compatibility information.

UL 294 7th Edition Compliance

<table>
<thead>
<tr>
<th>UL 294 Feature</th>
<th>Level</th>
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<tbody>
<tr>
<td>Destructive Attack</td>
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<tr>
<td>Line Security</td>
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</tr>
<tr>
<td>Endurance (Access control)</td>
<td>IV</td>
</tr>
<tr>
<td>Standby Power</td>
<td>I</td>
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</tbody>
</table>

Related Documentation

The following related documentation provides more information on Andover Continuum products. These documents are neither required nor evaluated by Underwriters Laboratories (UL) for UL Listings.

<table>
<thead>
<tr>
<th>Document</th>
<th>Document Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>NetController II Operation and Technical Reference Guide</td>
<td>30-3001-995</td>
</tr>
<tr>
<td>Network Security Configuration Guide</td>
<td>30-3001-996</td>
</tr>
<tr>
<td>Andover Continuum CyberStation HVAC Essentials Guide</td>
<td>30-3001-1000</td>
</tr>
<tr>
<td>Andover Continuum CyberStation online help</td>
<td></td>
</tr>
</tbody>
</table>
California Proposition 65

⚠️ WARNING: This product can expose you to chemicals including lead which is known to the State of California to cause cancer and which is known to the State of California to cause birth defects or other reproductive harm. For more information, go to www.P65Warnings.ca.gov

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