



## CONTINUUM™

### NetController CPU Module

The *Continuum* NetController is the high-powered Central Processing Unit (CPU) module and network manager for the Andover Controls *Continuum* intelligent building system. With its 8 MB DRAM, 4 MB FLASH, math co-processor, and four programmable communications ports, including an interface to *Infinity's* Inifinet distributed controllers, the *Continuum* NetController provides a total solution for facility-wide network communications and information management. A lower-cost version of the NetController is also available with 4 MB DRAM, 2 MB FLASH, and no math co-processor.

- Powerful, Modular CPU Board for Monitoring and Control of Both *Continuum* I/O Modules and *Infinity* Inifinet Distributed Controllers

- High-Speed Networking—4 Million Nodes on Ethernet

- Four Programmable Comm. Ports for Flexible Interconnect and Third-Party Communications

- Programmable Battery Backup Provides Choice of Shutdown Options

- FLASH for Easy On-Line Software Updates

- *Plain English*® Language Simplifies Programming

- DIN Rail Mounting and Slide-Together Connectors for Easy Installation

- Backward Compatible with *Infinity* Hardware

#### HIGH-SPEED COMMUNICATIONS

The NetController acts as the system coordinator, providing integrated global control and monitoring, history logging, and local and remote alarming for both the *Continuum* I/O modules and the RS-485 Inifinet controllers that control your individual building services—heating, ventilating, air conditioning, lighting, access control, smoke control, and more. The NetController communicates with up to 32 *Continuum* I/O modules via Andover Controls LON communications and a choice of RS-485 or free topology bus media. The NetController supports expansion of up to two Inifinet networks. Each Inifinet network can contain 127 Inifinet controllers and up to 31 ACX series access controllers or DCX 250 display controllers.

An optional Ethernet port also allows the NetController to communicate with other NetControllers and *Continuum* Workstations over a high-speed 10 MB/s Ethernet Local Area Network (LAN) using the TCP/IP protocol. *Continuum* workstations are capable of communicating with up to 4 millions nodes on Ethernet. Two different Ethernet interfaces are available—you can choose either a 10BASE-2 (thin coax) or 10BASE-T (twisted pair) cable media.

NetController's FLASH allows you to download software revisions over Ethernet using a *Continuum* workstation. FLASH memory feature eliminates the need to perform EPROM change-outs in the field.

#### SERIAL COMMUNICATIONS

NetController's four programmable communications ports can be configured as a combination of RS-232 or RS-485 interfaces to modems, printers, third-party devices, and up to two *Infinity* Inifinet field controller networks. Andover Controls has developed an extensive library of third-party software interfaces, including controls for chiller panels, fire alarm systems, emergency generator systems, bar code readers, elevator controls, videomatrix switchers, and more.

#### PLAIN ENGLISH® PROGRAMMING

The *Continuum* NetController can be configured to meet the exact requirements of your application using the powerful Andover Controls *Plain English* programming language. Programs are entered into NetController using the *Continuum* Workstation. The program is then stored in, and executed by, the NetController. Just as with *Infinity*, one *single* language is used system-wide.

### SOFTWARE CAPABILITIES

The dynamic memory of the *Continuum* NetController can be allocated for any combination of programs, scheduling, alarming, reporting and data logging. Our object-oriented *Plain English* language with intuitive keywords provides easy operation and programming. In addition, *Plain English*'s pre-defined and customized functions and powerful math capabilities reduce programming time.

### OPTIONAL AUTO-BAUD MODEM

The optional Andover Controls *Continuum* modem allows NetController to communicate and exchange data over standard voice grade telephone lines with speeds up to 14,4K baud. The modem has built-in data compression and error-correction protocols, auto-dial/auto-answer capabilities, and is UPS-supported.

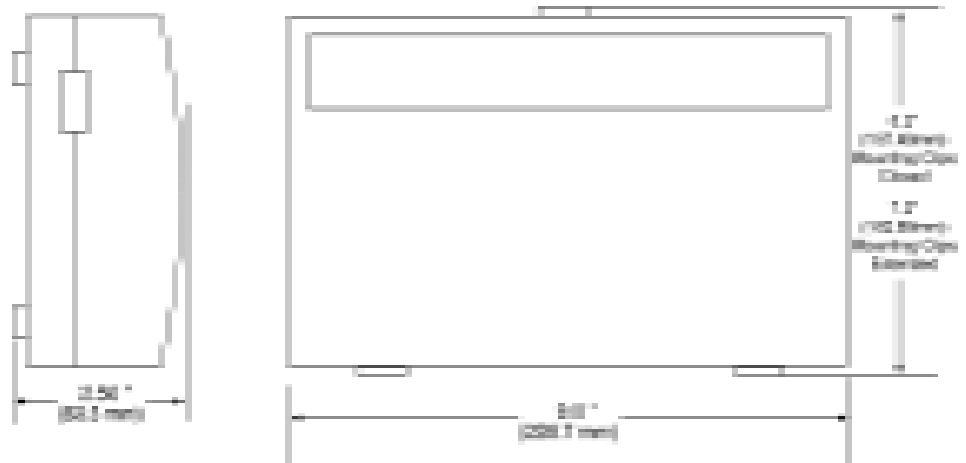
### UPS OPERATION

The *Continuum* NetController incorporates software programmable battery backup that reduces or eliminates the impact of power failure. In powerfail mode, the NetController CPU can turn off I/O power to extend battery life and support modem and network operation for up to four hours. In addition, NetController can go into a low-power mode in which only the DRAM and real-time clock are powered for up to 72 hours.

### MODULAR DESIGN FOR SLIDE-TOGETHER CONNECTION

NetController features a sleek, lightweight casing designed for natural convection cooling. Built-in connectors on either side of the NetController module allow power transmission from the power supply module and communication signals to the *Continuum* I/O modules to feed through easy slide-together connections. Built-in quick-release fasteners at the back of the module are provided for DIN rail mounting—no tools required. These fasteners also snap into a locked position for panel mounting. The NetController module is designed for mounting in an optional NEMA 1-style *Continuum* enclosure. (See the *Continuum Enclosure and Display Module System* data sheet.)

## DIMENSION DRAWING



## SPECIFICATIONS

### ELECTRICAL

Power Consumption:	10 watts at 24VDC max.; provided by <i>Continuum</i> power supply module.
Overload Protection:	3A resettable fuse with transient voltage suppressor (TVS) and reverse polarity protection.
Real Time Clock:	Battery-backed by UPS

### MECHANICAL

Operating Environment:	32 to 120°F, (0 to 49°C), 10 to 95%RH (non-condensing)
Size:	9.0"W (228.7mm) 7.2"H (182.88mm) (with mounting clips extended) 6.2"H (157.48mm) (with mounting clips closed) 2.5"D (96.5 x 170.2 x 63.5mm)
Weight:	1.6 lbs (0.73kg)
Enclosure Type:	UL open class, flammability rating of UL94-5V, IP 10
Mounting:	Mount on DIN rail or wall-mount using attached fasteners. <i>Continuum</i> NEMA 1-style enclosure available.

### BATTERY

Battery Backup:	Two 12V 7.0Ahr sealed rechargeable batteries on the <i>Continuum</i> power supply provides 60 minutes @ 35 watts power consumption full UPS (CPU plus I/O power); 4 hours CPU module only (including modem and network interface) with no I/O; or 72 hours DRAM and real-time clock. Expandable by use of greater amp-hour batteries.
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### COMMUNICATIONS

Comm. Error Checking:	International Standard CRC 16
Ethernet LAN Interface:	Supports two cable media interfaces: 10BASE-T or 10BASE-2
Bus Length:	10BASE-T: 327 ft (100m) standard between 2 nodes using 10BASE-T unshielded twisted pair cable. Standard Ethernet repeaters allow for longer distances. 10BASE-2: 606 ft (185m) standard for 30 nodes using 10BASE-2 thin coaxial cable. Standard Ethernet repeaters allow for longer distances.
Serial Comm. Interface:	Four programmable RS-232/485 ports, software configurable as printer, modem, third-party system, or TankNet. Infinet can be configured on Ports 1 and 2. Port 1: RS-485/232 Port 2: RS-485 Port 3: RS-232/Modem Port 4: RS-485
Serial Comm. Speed:	300 to 19.2K baud selectable for Infinet and 14.4K baud for modem
Infinet Bus Length:	4,000 ft. (1,220m) standard for Infinet using approved shielded, twisted pair, low capacitance cable. InfiLink module allows extension to longer distances.
I/O Bus:	ACC-LON communications. Choice of bus media, RS-485 or FTT-10A

RS-485:	Communications Speed:	39k baud
	Bus Length:	2,000 ft. (610m).
	Bus Media:	Shielded, twisted pair cable. 120Ω termination required at both ends of the ACC-LON network (when modules are mounted remotely).
FTT-10A:	Communications 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 <i>Continuum</i> power supply module.
Ethernet:	Female BNC coax connector for Ethernet 10BASE-2 or RJ-45 connector for Ethernet 10BASE-T
Infinet, TankNet:	Removable terminal block (Requires external +26 volts for TankNet.)
Printer:	RJ-45
Modem:	RJ-11 connector
I/O Bus:	5-position plug-in connector on right side of module for direct connection of up to 32 I/O modules.

## USER LEDS/SWITCHES

### STATUS INDICATOR LEDS

POWER	NetController Power is ON
CPU	NetController Active
SCAN	NetController Scanner ON
ERROR	NetController Error
COMM1 TD	Comm. Port 1 Transmit On-Line
COMM1 RD	Comm. Port 1 Receive Data
COMM2 TD	Comm. Port 2 Transmit On-Line
COMM2 RD	Comm. Port 2 Receive Data
COMM3 TD	Comm. Port 3 Transmit Data
COMM3 RD	Comm. Port 3 Receive Data
COMM4 TD	Comm. Port 4 Transmit On-Line
COMM4 RD	Comm. Port 4 Receive Data
MODEM DCD	Data Carrier Detect
MODEM DTR	Data Terminal Ready
MODEM Selected	Indicates the MODEM is selected (Comm Port 3 is shared—RS-232 and MODEM)
I/O Bus On-Line	Indicates the LON I/O Bus is On-Line
ETHERNET:	TD      ETHERNET Transmit Data
	RD      ETHERNET Receive Data
	COL     ETHERNET Collision
	LINK    ETHERNET Link
	POL     ETHERNET Polarity

#### PUSH BUTTON SWITCHES:

Clear Memory	RESET/Clear Memory
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MODEM RS-232 Override	Selects between the MODEM and RS-232C (Comm 3)
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#### GENERAL

Microprocessor:	68ECO20 running at 24 MHz with 68882 Floating Point Math Co-Processor (8 MB model only)
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Memory:	DRAM: 8 MB or 4 MB FLASH : 4 MB or 2 MB
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#### AGENCY LISTINGS

UL/CUL 916, FCC, CE (Additional Listings Pending)

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#### OPTIONS

Ethernet (TCP/IP) Module, 10BASE-2 (Coax)

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Ethernet (TCP/IP) Module, 10BASE-T (Twisted Pair)

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Third-party Interface Support (up to 3 commports)

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14.4K baud Modem (UPS Supported)

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Consult *Andover Product Installation Guides* for exact installation instructions and specifications.

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