## Honeywell

# **Building Control Solutions**

#### April 10, 2006

- TO: Authorized System Distributors Authorized Controls Integrator Contractors Automation and Controls Specialist Contractors Honeywell Contractor Development Specialists Honeywell Building Control Specialists Reps Honeywell Commercial Territory Reps
   FROM: Keith Beckstrom, Senior Product Manager
- SUBJECT: Announcing WEB-201 Controller Platform
- BULLETIN: 06-0050

### New Controller Offers Compact, Embedded, Controller / Server Platform.

Honeywell is proud to introduce the WEB-201 controller. The WEB-201 controller is the newest member of the Honeywell WEBs<sup>AX</sup>TM portfolio designed to integrate a variety of devices and protocols into unified, distributed systems. The Honeywell WEBs<sup>AX</sup> product family is powered by the Niagara AX<sup>TM</sup> Framework®, the industry's first software technology designed to integrate diverse systems and devises into a seamless system.



WEBs<sup>AX</sup> supports a wide range of protocols including LonWorks®, BACNet®, MODbus®, and Internet standards and provides integrated network management tools to support design, configuration, installation, and maintenance of interoperable networks.

## WEB-201 Offers Complete Control for Smaller Facility Applications.

The WEB-201 controller is ideal for smaller facilities, remote sites, and for equipment control and monitoring throughout larger facilities. All versions of the WEB-201 controller can be directly connected the WEB-IO-16 (16 point) and WEB-IO-34 (34 point) I/O modules for control of equipment, central plants, and general building control. Up to 66 total points using various combinations of I/O modules can be connected to the controller to provide on board inputs and outputs.



## **Key Features**

- Web User Interface (optional) services rich presentation and live data to a browser.
- Runs stand-alone control, energy management, and multi-protocol integration.
- Standard and optional communication boards.
- Can be expanded with optional WEB-IO-16 and WEB-IO-34 Input / Output Modules.
- Small, compact design is easy to install and supports multiple power options.

## **Product Details**

WEB_201 Controller		<ul> <li>Niagara AX<sup>™</sup> Framework<sup>®</sup></li> </ul>		
WEB-201 Controller	Platform:	IBM PowerPC 405 EP 250 MHz processor		
		64MB SDRAM & 64 MB Serial Flash		
a la		<ul> <li>Battery Backup - 5 minutes typical</li> </ul>		
Honeywell		Real-time clock		
(Brighter" WEB-201	Communications:	• 2 Ethernet Ports (RJ-45)		
		• 1 RS-232 Port (9 pin D-shell)		
		*May need port enablement option		
		<ul> <li>1 RS-485 non-isolated port (3 screw connector in base board)</li> </ul>		
		*May need port enablement option		
		Optional communication cards		
		*See Accessories, below		
		Dimensional C 242 in My 4 020 in 11 y 2 402 in D		
		• Dimensions: 6.313 in. W X 4.820 in. H X 2.483 in. D		
		Dimensions: 6.313 in. W X 4.820 in. H X 2.483 in. D     Designed for DIN rail mounting		
	Construction &	<ul> <li>Dimensions: 6.313 in. W X 4.820 in. H X 2.483 in. D</li> <li>Designed for DIN rail mounting</li> <li>Operating Temp Rating: 32° F to 122° F</li> </ul>		
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## **Connectivity Option Descriptions**

The WEB-201 controller platform has a number of software and driver options available to cost effectively customize the system integration and network connectivity to suit almost any installation requirement:

#### Niagara Network Connectivity

With this software option, a WEB-201 can communicate with another WEB-AX controller or an AX Supervisor using the Niagara protocol (FOX).

#### Enterprise Connectivity Pack (EC-SP-2XX)

The Enterprise Connectivity Pack includes two enterprise protocols, BACNet IP Server and Niagara Network. This option is required whenever a WEB-AX controller needs to communicate with another WEB-AX controller, to an AX Supervisor, and/or when a WEB-AX communicates with a third party front end or controller via BACnet IP.

#### Enterprise Connectivity Upgrade (EC-UP-2XX)

This option is an upgrade from a Niagara Network Connectivity Pack or a BACnet IP Server Connectivity Pack to a full Enterprise Connectivity Pack.

#### Web User Interface (UI-SP-2XX)

Provides support for building and storing operator web pages in a WEB-201 controller for use with a browser. If this option is not chosen, and operator screens are desired then a *WEBStation*<sup>AX</sup> workstation or Workplace AX (*WEBPro*<sup>AX</sup>) is required.

#### Embedded Workplace AX (WP-AX-WEB)

Provides a fully functional version of Workplace AX directly in a WEB-201 controller that can be accessed using a browser. The embedded version of Workplace AX does **not** have the ability to communicate across Ethernet to other WEB-AX controllers.

#### **Protocol Drivers**

Various models come with BACnet, LONWorks, or Modbus drivers. The drivers that come standard with a WEB-201 depend on the particular model but all of the drivers included on the WEBs<sup>AX</sup> price list are available for the WEB-201.

## **Models Available**

	Description	OS Numbe				
WEB-201 LON Application: Network manager and equipment control w/LONWorks subnetwork						
A 64 Mb RAM/64 M installed LON card, TCP driver. RS232 purchased separate	Ab Flash controller with 2 10/100 Mb Ethernet ports, factory NDIO port for IO-16 and IO-34 Modules enabled, and MODBus 2 and RS485 communications are disabled and must be ely to enable MODBus communication.					
In its base configuration, this product is intended to operate as a standalone network manager for a sub-network of LON devices and provide integration to Modbus TCP compatible devices such as power meters.						
With the addition of Lon Servers may be Supervisor.	f the Enterprise Connectivity Station Pack, multiple WEB-201 e networked over Ethernet to one another or to an AX					
WEB-201-L with Ni	agara Network Connectivity	WEB-201-LN				
WEB-201-L with W	eb User Interface	WEB-201-LU				
WEB-201-L Softwa	are Options:					
	Enterprise Connectivity Upgrade	EC-UP-2XX				
	RS232/485 Port Enablement	DRV-RS				
		WF-AA-WED				
Application: N s	letwork manager and equipment control with BAC ubnetwork	net MSTP				
Application: N s	letwork manager and equipment control with BAC ubnetwork	net MSTP				
Application: N S Includes 64 MB RA port, (1) RS-232 se communication care BACnet MS/TP. Th	<b>letwork manager and equipment control with BAC</b> <b>ubnetwork</b> M/64 MB Flash, 2 10/100 Mb Ethernet ports, (1) RS-485 serial rrial port, NDIO port for IO-16 and IO-34 Modules enabled, and 2 d option slots. Standard drivers include BACnet IP Client, and ne WEB-201 is designed for DIN rail mounting.	net MSTP				
Application: N s Includes 64 MB RA port, (1) RS-232 se communication car BACnet MS/TP. Th	<b>Letwork manager and equipment control with BAC</b> <b>Jubnetwork</b> M/64 MB Flash, 2 10/100 Mb Ethernet ports, (1) RS-485 serial rial port, NDIO port for IO-16 and IO-34 Modules enabled, and 2 d option slots. Standard drivers include BACnet IP Client, and ne WEB-201 is designed for DIN rail mounting.	web-201				
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Application: N S Includes 64 MB RA port, (1) RS-232 se communication car BACnet MS/TP. Th Options: WFR-216	Ietwork manager and equipment control with BAC ubnetwork         M/64 MB Flash, 2 10/100 Mb Ethernet ports, (1) RS-485 serial rial port, NDIO port for IO-16 and IO-34 Modules enabled, and 2 d option slots. Standard drivers include BACnet IP Client, and ne WEB-201 is designed for DIN rail mounting.         Web User Interface         Enterprise Connectivity Pack         Embedded Workplace AX         Easy-pack bundle including UI-SP-2XX and EC-SP-2XX	net MSTP				
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Embedded Workplace AX WP-AX-WEB

	0						
Description	OS Number						
WEB-234 Application: 34 Point I/O Equipment control with Ethernet connectivity							
A 34 point equipment controller consisting of a WEB-201 controller, one WEB- IO-34 module and BACnet IP client communications. The WEB-201 includes 64 Mb RAM / 64 Mb Flash memory, 2 10/100 Mb Ethernet ports, NDIO port for IO- 16 and IO-34 Modules enabled, and 2 communication card option slots. <i>RS485</i> <i>and RS232 communications must be purchased separately in addition to any</i> <i>drivers</i> . <b>The LON Card is not an option on the WEB-234 controller</b> .							
WEB-234 Controller with Niagara Network Connectivity	WEB-234-N						
WEB-234 Controller with Web UI and Niagara Network Connectivity	WEB-234-NU						
WEB-234 Controller with BACnet IP Server Connectivity	WEB-234-B						
WEB-234 Controller with Web UI and BACnet IP Server Connectivity	WEB-234-BU						
WEB-234 Software Options:							
Enterprise Connectivity Upgrade	EC-UP-2XX						
RS232/485 Port Enablement	DRV-RS						
Embedded Workplace AX	WP-AX-WEB						
WEB-201 Office Demonstration Controller							
Office Demonstration WEB-201 Controller	W-2XX-AX-DEMO						

#### Notes:

- 1. NPB-LON card is not an option on the WEB-216 and WEB-234 equipment controllers.
- 2. The NPB-LON card does not use the existing RS485port for LON communications. It has an integral LON communication port on the card.
- 3. On all models except the WEB-201 and WEB-201-EZ, the RS232/485 ports are disabled and must be purchased separately to enable driver communications.
- 4. The WEB-201 Office Demonstration Controller is for demonstration purposes only and requires annual renewal of the controller license.

	Controller		I/O Modules		Field Networks			BACnet - Ethernet		Connectivity			
	WEB 201 Controller	NDIO port enabled	WEB IO 16 included	WEB IO 34 included	LON Card included	BACnet MSTP included	RS485 RS232 Ports enabled	MODbus driver included	BACnet IP client included	BACnet IP Server included <sup>2</sup>	Niagara Connectivity included <sup>3</sup>	Enterprise Connectivity included	WEB UI included
WEB-201	~	<b>~</b>				<b>~</b>	~		~				
WEB-201-EZ	✓	✓				✓	✓		✓			✓	✓
WEB-216-N	✓	✓	✓		Not Avail.				✓		✓		
WEB-216-NU	✓	✓	✓		Not Avail.				✓		✓		✓
WEB-216-B	✓	✓	✓		Not Avail.				✓	✓			
WEB-216-BU	✓	✓	✓		Not Avail.				✓	✓			✓
WEB-234-N	✓	✓		✓	Not Avail.				✓		✓		
WEB-234-NU	✓	✓		✓	Not Avail.				✓		✓		✓
WEB-234-B	✓	✓		✓	Not Avail.				✓	✓			
WEB-234-BU	✓	✓		✓	Not Avail.				✓	✓			✓
WEB-201-LN	✓	✓			$\checkmark$			✓			✓		
WEB-201-LU	~	✓			✓			✓					✓

## **Product Features Table**

## Available Accessories

The WEB-201 accessories provide added capabilities to the standard controller. All accessories are designed to connect directly to the controller. I/O Modules connect to each other on the right hand side of the WEB-201 controller. Up to four WEB-IO-16 modules can be added to a WEB-201 controller to achieve a maximum point count of 64. A maximum of one WEB-IO-34 module can be used on a WEB-201 controller and may be combined with up to two WEB-IO-16 modules to achieve a maximum point count of 66. IO modules are connected end to end and space allocation is required to accommodate the controller and IO modules.

The WEB IO modules are designed to accept Type 3 Thermistors (10K ohms @ 25C/77F) as standard. Other types including 20K NTC sensors may be used if they fall in the proper resistance range of the input. Custom sensor types are created using the non-linear table in the *WEBPro<sup>AX</sup>* programming software to characterize the particular sensors used.

Accessory	Description
WEB-IO-16	Expansion Input / Output Module.* 8 Universal Inputs, 4 Relay Outputs, 4 Analog Outputs.
WEB-IO-34	Expansion Input / Output Module.** 16 Universal Inputs, 10 Relay Outputs, 8 Analog Outputs and terminals for 24 Volt AC/DC power.
WEB-NPB-PWR	24 Volt AC/DC input power module, DIN rail mounted
NPB-WPM-US	120 Vac, 50 - 60 Hz Power Supply Wall Adaptor, U.S. plug type
NPB-LON	Optional 78 Kbps FTT10A LON® Adapter (Internal Card, utilizes one card slot)
NPB-MDM	56K Baud Dial-up Modem (Internal Card utilizes one card slot and inactivates the RS232 port)

## **Powering Options**

The WEB-201 platform offers three power supply options to accommodate various applications.

- 1. **WEB-NPB-PWR** 24 volt DC or AC; 50/60 input module that is a Din rail mounted unit and supplies power to the WEB-201 and up to four WEB-IO-16 modules. This is commonly used in field applications where direct wiring is desired.
- NPB-WPM-US This is a wall plug module that has a cord with a "Barrel Connector" for the purpose of powering the WEB-201 and up to four WEB-IO-16 modules. The NPB-WPM-US is commonly used in a panel application where a wall plug is conveniently located and for powering demonstration controllers.
- 3. The **WEB-IO-34** module has a connection for 24 volt AC/DC input power and is capable of powering the WEB-IO-34, the WEB-201, and up to two additional WEB-IO-16 modules. If using the WEB-IO-34, no other power source is need. **Note:** The WEB-IO-16 I/O modules do not have an internal power supply and must be powered by one of the above options.

The WEB-NPB-PWR (and WEB-IO-34) operates on 24VA 50/60 Hz, as well as 24 to 48 VDC for industrial and telecom applications respectively. The nominal power input ranges from about 6VA minimum to 20VA with fully loaded I/O.

Note: Powering the WEB-201 controller from more than one power supply may cause equipment damage.

## **RS485 Node Limits**

The node limitation is primarily restricted by the resources used in the controller for programs, schedules, graphics, etc. Early testing has shown the WEB-201 can support a range of device counts between 10 and 20 depending on the type of bus and the numbers of points in each device. For example, a WEB-201 can support far more "switch" type Lon devices than BACnet MSTP devices that each have a hundred points or more. A separate JACE-2 Resource Guide has been created to provide more information about the capacity you can expect from the WEB-201. Use this guide as a general reference until you are familiar with the product and have developed practical use guidelines for your typical installations.

## Architecture

A typical architecture for the WEB-201 system can include network management and control, direct equipment control, and both network and equipment control. In the diagram below the WEB-201LU controller is utilized in several scenarios to provide Ethernet based AHU control, AHU control with a LONWorks unitary network, and standard network management with a LONWorks unitary network, all communicating as a client with a BACnet chiller controller.



## **Available Literature**

Form #	Descriptions	Туре	Available at
74-4035	WEB-201 Controller	Specification Data	http://customer.honeywell.com
95-7722	WEB-201 Controller	Installation Instructions	http://customer.honeywell.com
95-7723	WEB-IO-16 Input / Output Module	Installation Instructions	http://customer.honeywell.com
95-7724	WEB-IO-34 Input / Output Module	Installation Instructions	http://customer.honeywell.com
95-7729	NPB-LON Option Card	Installation Instructions	http://customer.honeywell.com
74-4025	WEBStation <sup>AX</sup>	Specification Data	http://customer.honeywell.com
74-4026	WEBPro <sup>AS</sup>	Specification Data	http://customer.honeywell.com
63-9358	WEBs Sell Sheet	Brochure	http://customer.honeywell.com
	JACE Niagara AX Install and Startup Guide	Installation Guide	Buildings Forum
	Niagara AX Ndio Guide	User Guide	Buildings Forum
	Niagara AX User Guide	User Guide	Buildings Forum
	JACE 2 Resource Guide	User Guide	Buildings Forum

## **Ordering Information**

Orders for all WEBs-AX products should be sent to Sue Redensek; sue.redensek@honeywell.com, Phone: 847-797-4390, Fax: 866-222-3439. Please allow for a 10 day delivery lead time.

## **Product Support**

First line technical support for WEBs-AX products is provided by the Honeywell Technical Assistance Center (TAC). If TAC determines the problem is outside of the Honeywell product TAC will contact Tridium for second line product support and work with Tridium to resolve the issue. Tridium may have direct contact with ASDs and contractors when it is deemed necessary by the TAC to facilitate problem resolution.

## **Marketing Contact**

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## **Frequently Asked Questions**

#### A. System Capacity

#### Question: Is the Node limitation the same as the WEB-403?

Answer: The node limitations in the WEB-201 is primarily restricted by the resources of the WEB-201. Early testing has shown the WEB-201 can support a range of device counts between 10 and about 20 depending on the type of bus and the numbers of points in each device. For example, a WEB-201 can support far more "switch" type Lon device that BACnet MSTP devices that each have a hundred point or more.

As a general note, drivers may have a specific device or point limit depending on circumstances. This can be checked by viewing the license feature code for each driver. A driver with specific limits will have a device or point limit set to a numeric value.

A separate JACE-2 Resource Guide has been created to provide more information about the capacity you can expect from the WEB-201.

#### Question: Can I have I/O and field devices on the same WEB-201?

Answer: Yes, but refer to the JACE-2 Resource Guide for additional information. Since there is only one RS485, one RS232, and an optional LON card, you are limited by the number of ports and the resource limitations in the controller.

#### Question: What is the Resource Unit max limit on the WEB-201?

Answer: Please refer to the JACE-2 Resource Guide for details.

#### Question: How many data points can a WEB-201 handle?

Answer: There is no single answer to this question, please refer to the JACE-2 Resource Guide for more details.

#### **B.** Communications

# Question: Can we use both Ethernet network ports on the WEB-201? If so, can we setup the two network ports as a network bridge?

Answer: The second network port is designed for use in segregating BACnet IP traffic away from the IT backbone. It is not intended to be used as Bridge or other IT network router at this time. Future development may allow for enhanced capabilities.

# Question: What communications card options are available – i.e. are there more than just LON and modem? What about Zigbee wireless?

Answer: At release, the WEB-201 offers two plug-in option cards: NPB-LON (FTT10A Lon card; 78Kbps) and NPB-MDM (56 Kpbs Auto-dial / Auto-answer modem). As other cards are developed, they will be announced separately.

# Question: Do I need to buy any additional drivers or license keys along with the NPB-LON communication card in order to access LONWORKS devices?

Answer: No, the LONWORKS drivers are included with the purchase of an NPB-LON communication card but the driver must be enabled via the license server.

#### Question: Why is there an RS232/485 Port Enablement option?

Answer: The RS232 and RS485 ports on these models are disabled. In order to use the built-in RS232 and RS485 ports, the DRV-RS driver must be purchased.

#### Question: Is there a model or an option that allows for both LONWORKS and BACnet connectivity?

Answer: Yes, but due to resource limitations of the WEB-201, this is not recommended. By adding an **NPB-LON** card to a **WEB-201** controller which comes which the BACnet drivers, the controller could communicate to both LONWORKS and BACnet.

#### C. Power

#### Question: What power supply options do I have?

Answer: There are 3 choices for the WEB-201.

- 1. **WEB-NPB-PWR** 24 volt DC or AC; 50/60 input module that is a Din rail mounted unit and supplies power to the WEB-201 and up to four WEB-IO-16 modules.
- 2. **NPB-WPM-US** This is a wall plug module that has a cord with a "Barrel Connector" for the purpose of powering the WEB-201 and up to four WEB-IO-16 modules.
- 3. The **WEB-IO-34** module has an integral 24 volt AC input power supply capable of powering the WEB-IO-34, the WEB-201, and up to two additional WEB-IO-16 modules.

The WEB-NPB-PWR (and WEB-IO-34) operates on 24VA 50/60 Hz, as well as 24 to 48 VDC for industrial and telecom applications respectively. The nominal power input ranges from about 6VA minimum to 20VA with fully loaded I/O.

#### Question: How long does the WEB-201 on board battery last during a power failure?

Answer: The NiMH rechargeable battery is capable of several minutes backup time for the WEB-201 with a fully charged battery. The backup begins 10 seconds after the loss of power occurs, to assure database backup completion. After the backup is complete, the WEB-201 shuts itself down and the battery maintains the clock for up to 3 months (with a fully charged battery).

#### Question: Can you use a 24Vac supply which is grounded on one side with the WEB-NPB-PWR?

Answer: It is recommended that the source of power for the WEB-201 be ungrounded or at least on a separate transformer. Although the power supply is designed to accept a grounded source, the best noise immunity is achieved with an ungrounded input.

The WEB-NPB-PWR (and WEB-IO-34) operates on 24VA 50/60 Hz, as well as 24 to 48 VDC for industrial and telecom applications respectively. The nominal power input ranges from about 6VA minimum to 20VA with fully loaded I/O attached to the WEB-201.

#### D. Input / Output

#### Question: How many I/O modules can I put on a WEB-201?

Answer: The WEB-201 can support the following combinations:

- Up to four WEB-IO-16 modules when the WEB-IO-34 is not used.
- Up to one WEB-IO-34 plus two additional WEB-IO-16 modules.

#### Question: Which thermister types are supported by the WEB-IO-34 and WEB-IO-16?

Answer: The WEB-201 I/O module is designed to accept Type 3 Thermistors (10K ohms @ 25C/77F) as standard. Other types may be used if they fall in the proper resistance range of the input and you create a non-linear table for the input to characterize that particular sensor.

#### Question: Will all inputs accept meter pulses and up to what frequency?

Answer: The upper rate for each input is 20 Hz, with a 50% duty cycle.

#### Question: Can I use PT1000 sensors on the inputs?

Answer: While this is possible, the step change over a wide temperature range may produce larger than desired increments of the displayed temperature. The input circuitry has been optimized for the Type 3 Thermistors and it is recommended to use this wherever possible. The other alternative is to use a sensor with a "transmitter" that converts and linearizes the PT 1000 to a 0 -10 volt signal.

# Question: If I use a 0-10V sensor can the WEB-IO-16 / WEB-IO-34 supply 24 Vdc power for it? If so, how much does it costs?

Answer: There is no provision to power external sensors on either I/O modules.

#### Question: Can I extend the I/O connector with a ribbon cable?

Answer: No, this bus must not be extended in any fashion, the electrical transient protection for the WEB-201 and the I/O modules would be compromised if attempted.

#### E. Software

#### Question: Can I get embedded WP-AX on the WEB-201?

Answer: Yes, this option is available; please refer to the price list.

#### Question: What drivers are available for the WEB-201?

All drivers on the AX price list are available for the WEB-201. The drivers that come standard with a WEB-201 depend on the particular model.

#### F. Ordering

#### Question: Are the communication cards factory installed?

Answer: No, communication cards such as the modem card (NPB-MDM) and the LON card (NPB-LON) are sold separately and designed for field installation.