

WEB-201, WEB-600, CP-201 and CP-600 Series Controllers

INSTALLATION INSTRUCTIONS

BEFORE INSTALLATION

1. Unpack the controller.
2. Inspect contents of the package for damaged or missing components.
3. Check the equipment and report any damage to a Honeywell representative at once and return any damaged components for immediate repair or replacement. See RETURNING A DEFECTIVE UNIT section.
4. Read all of these instructions and ensure they are understood.



GENERAL

This document covers the mounting and wiring of the Honeywell WEB-201, CP-201, WEB-600 and CP-600 Series Controllers. It is assumed that the installer is a trained engineer, technician, or service person, and is fully qualified to install control systems. Instructions in this document apply to the following products. Please read this entire document before beginning the installation procedures.

NOTE: Not covered in this document is the Niagara AX™ software installation and configuration required for a fully functioning unit. This includes setting host IP address and password, serial port configuration, and other parameters. Refer to the *Niagara AX Install and Setup Guide* for this information. In addition, the mounting and wiring of expansion options are covered in separate documents. See sections EXPANSION OPTIONS and RELATED DOCUMENTATION.

Product Description

Model	Description
WEB-201	WEB-201 Basic Unit Controller
CP-201	CP-201 Basic Unit Controller
WEB-600	WEB-600 Basic Unit Controller
CP-600	CP-600 Basic Unit Controller

Included in this Package

Included in this package you should find the following items:

- One base controller
- INSTALLATION INSTRUCTIONS, form no. 95-7722.
- Hardware package containing one grounding wire with quick-disconnect 0.187 in. (4.75 mm) female connector.
- One power module (if ordered), which is required for operation.

The power module, purchased separately, can be one of the following:

- NPB-PWR-H (formerly WEB-NPB-PWR): 24 Vac or 24 Vdc input, DIN-mount capable, with grounding wire,
- NPB-PWR-UN-H 90-263 Vac input, DIN-mount capable, with grounding wire, or
- NPB-WPM-US external wall-mount power adapter (input 90-254 Vac, 50-60 Hz, output: 15 Vdc, 1 A)

Materials and Tools Required

The following tools and supplies are required for installation:

- DIN rail, type NS35/7.5 (1.4 IN. X 0.3 in. [35 mm x 7.5 mm]) recommended for any installation that includes DIN rail power supply and/or optional I/O modules.

NOTE: Length of DIN rail is determined by the number of optional DIN-mounted options. Refer to Fig. 2 for more details.

- If using a DIN rail power supply, one of the following:



- UL listed, Class 2, 24 Vac transformer, rated at a minimum of 8.5 VA to 20 VA (approximate range of controller alone, to fully-expanded unit with 4 additional I/O-16 modules and other option boards). A dedicated transformer is required (cannot power additional equipment).
- 24 Vdc power supply, capable of supplying at least 1 A (24 W).
- Suitable screws and screwdriver for mounting DIN rail, or if DIN rail not used, for mounting bases of controller, DIN rail power supply (if used), and any I/O modules (if used).
- #2 Phillips screwdriver: used to install and remove optional communications modules.
- Small flat-blade screwdriver: used for mounting or removing the controller from DIN rail, also for making wiring connections to RS-485 connector, and LON[®] and I/O connectors (if used).



CAUTION

- **Work in a static free area.**
- **Discharge any static electricity you may have accumulated. Discharge static electricity by touching a known securely grounded object.**
- **Do not handle the printed circuit board (PCB) without proper protection against static discharge. Use a wrist strap when handling PCBs. The wrist strap clamp is to be secured to earth ground.**

MOUNTING

Mount the controller in a location that allows clearance for wiring, servicing and module removal.

Additional mounting information applies as follows:

- Environmental Requirements
- Physical Mounting

SAFETY INSTRUCTIONS

NOTES REGARDING DEVICE DESCRIPTION

These instructions include indications for use and mounting of the device. In case of questions that cannot be answered with these instructions, please consult the product supplier or manufacturer. It is the responsibility of the equipment installer to ensure that all federal, state and local codes are followed.

SAFETY INSTRUCTIONS

- Keep these Installation Instructions for industrial safety and the prevention of accidents.
- The information in these instructions must be read and understood by every person using this device.
- The following items share warnings of a general nature relating to the installation and start-up of the controller.
- Be sure to heed these warnings to prevent personal injury or equipment damage.

! WARNING

- **Depending on power module used, the circuit powering the controller is 90–263Vac at 50/60 Hz (if using NPB-PWR-UN-H), 24Vac at 50/60 Hz or 24Vdc (if using NPB-PWR-H), or from 100–240Vac at 50/60 Hz (if using NPB-WPM-US).**
- **Disconnect power before installation or servicing to prevent electrical shock or equipment damage. Make all connections in accordance with national and local electrical codes. Use copper conductors only.**
- **To reduce the risk of fire or electrical shock, install in a controlled environment relatively free of contaminants.**
- **This device is only intended for use as a monitoring and control device. To prevent data loss or equipment damage, do not use for any other purpose.**

Environmental Requirements

The following are the environmental requirements for the mounting locations of the controller.

- This product is intended for indoor use only. Do not expose the unit to ambient conditions outside of the range of 32° to 122° F (0° to 50° C) and relative humidity outside the range of 5% to 95% non-condensing (pollution degree 1).
- If mounting inside an enclosure, that enclosure should be designed to keep the unit within its required operating range considering a 20-watt dissipation by the controller. This is especially important if the controller is mounted inside an enclosure with other heat producing equipment.
- Do not mount the unit:
 - in an area where excessive moisture, corrosive fumes, or explosive vapors are present.
 - where vibration or shock is likely to occur.
 - in a location subject to electrical noise. This includes the proximity of large electrical contractors, electrical machinery, welding equipment, and spark igniters.

Physical Mounting

The following information applies to physically mounting the unit:

- The unit may be mounted in any orientation. It is not necessary to remove the cover before mounting.
- Mounting on a 1.4 in. (35 mm) wide DIN rail is recommended. The unit base has a molded DIN rail slot and locking clip, as does the 24 Vac power module (DIN rail power supply) and both types of I/O expansion modules. Mounting on a DIN rail ensures accurate alignment of connectors between all modules.
- If DIN rail mounting is impractical, use screws in mounting tabs on the controller, then in any end-connected accessory. Tab dimensions are shown in Fig. 1.

Static Discharge Precautions

Static charges produce voltages high enough to damage electronic components. The microprocessors and associated circuitry within a controller are sensitive to static discharge. Follow these precautions when installing, servicing or operating the system:

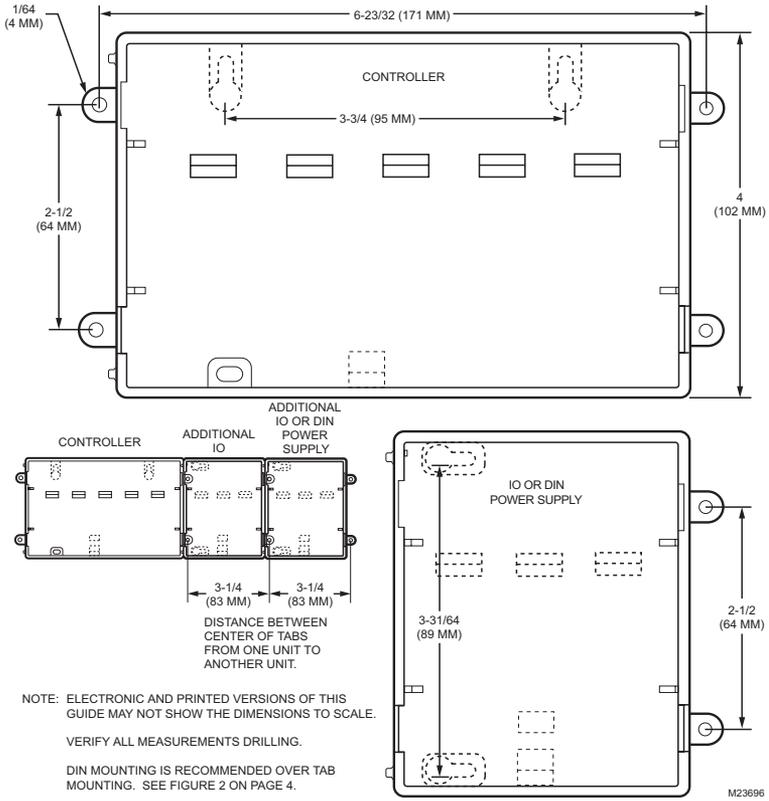


Fig. 1. Tab Mounting Dimensions.

Procedure 1 provides step by step DIN rail mounting instructions for the controller.

NOTE: Mount the controller prior to mounting any accessory items (24 V power module, I/O modules).

Procedure 1. Din Rail Mount.

Step 1	Securely install the DIN rail using at least two screws, near both ends of the rail.
Step 2	Position the controller in the rail, tilting to hook DIN rail tabs over one edge of the DIN rail (Fig. 2).
Step 3	Use a screwdriver to pry down the plastic locking clip, and push down and in on the controller, to force the locking clip to snap over the edge of the DIN rail.
Step 4	To prevent the controller from sliding on the DIN rail, secure with clips provided by the DIN rail vendor, or place a screw in one of the 4 mounting tabs in the base.
Step 5	Mount any accessory item onto the DIN rail in the same manner.
Step 6	Slide the accessory along the DIN rail to connect its 20-position plug into the controller.
Step 7	Repeat this for all accessories, until all are mounted on the DIN rail and firmly connected to each other.
Step 8	To keep this assembly from sliding on the DIN rail, secure the last accessory with clips provided by the DIN rail vendor, or place a screw in 2 one of the mounting tabs in the base of the last accessory.

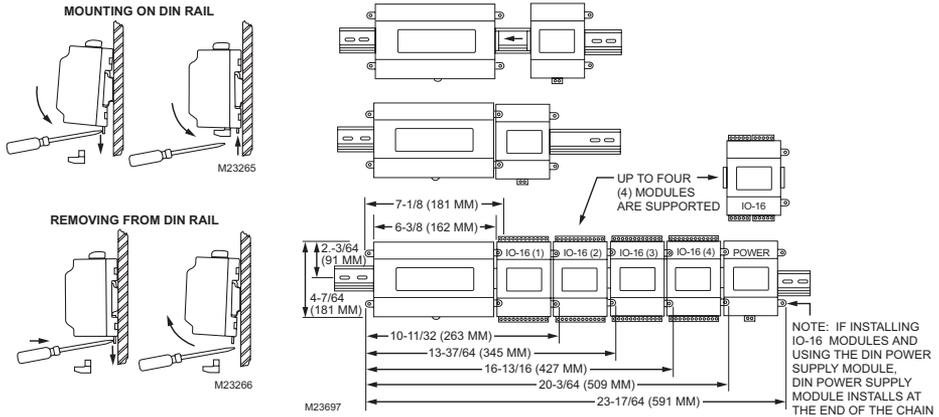


Fig. 2. Controller Accessory Mounting details.

Removing and Replacing the Cover

Remove the cover to connect the battery (new unit) or to replace the battery, and to install any option boards. The cover snaps onto the base with 4 plastic tabs (two on each end).

To remove the cover, press in the 4 tabs on both ends of the unit, and lift the cover off.

NOTE: If accessory modules are plugged into the controller, it may be necessary to slide them away from the unit to get to the cover tabs.

To replace the cover, orient it so the cutout area for common ports is correct, then push inward to snap in place.

BOARD LAYOUT

Figure 3 shows the location of LEDs, option slots, and other features of the controller with cover removed. For a side view of the communications ports and other features (Refer to Fig. 5).

EXPANSION OPTIONS

The controller provides for *field-installable* expansions with two kinds of options:

- **Option cards** - Install on connectors inside the base unit. See Option Cards section.
- **Accessory modules** - To "chain" onto the controller's 20-pin connector. See Accessory Modules section.

Option Cards

The controller has two option slots for custom option cards, designed for use with the controller. Each slot has a 30-pin connector on the Base Board (Refer to Fig. 3).

⚠ WARNING

Power to the controller must be OFF when installing or removing option cards, or damage will occur! Be very careful to plug an option card into its connector properly (pins aligned).

Option cards typically provide additional communications features, such as the following available models listed in Table 1.

Table 1. Controller Option Cards.

Model	Description	Notes
NPB-LON	FTT-10A LON (LONWORKS®) adapter with a 2-position removable screw-terminal connector plug.	Up to 2 LON option cards may be installed. ^a <ul style="list-style-type: none"> • If one LON option, it operates as LON1, regardless of slot. • If two LON options, LON1 is Option slot 1, LON2 is Option slot 2.
NPB-MDM	56kbps Auto-dial/Auto-answer Modem with one RJ-11 connector for phone line.	Maximum of one. Does not have its own universal asynchronous receiver-transmitter (UART). Must be installed in Option Slot 1, where it operates as COM1. This disables the RS-232 base serial port (DB-9 connector) on the controller during normal operation. NOTE: If an NPB-MDM is installed, and the "mode jumper" (see Fig. 3) is put in "Serial Shell" position, the controller base RS-232 port becomes active immediately following a reboot. This allows an RS-232 connection to the "serial shell" for debugging purposes. To re-enable the modem, you must put the mode jumper back in the "Normal" position, and reboot again.
NPB-2X-RS485	Dual, optically-isolated, RS-485 adapter with two 3-position removable screw-terminal connector plugs.	One or two ^a 485 option cards may be installed, with COM assignments as: If one 485 option in Option slot 1, ports are COM3 and COM4. COM3 and COM4 if installed in Option slot 2 also, unless NPB-232 option is in slot 1. In this case only, 485 ports are COM4 and COM5. <ul style="list-style-type: none"> • If two 485 options, ports are COM3 and COM4 for Option slot 1, and COM5 and COM6 for Option slot 2.
NPB-RS232	Single port RS-232 adapter, with a DB-9M connector. Uses its own on-board UART. Supports baud rates up to 115200. NOTE: <i>Niagara AX 3.2.11</i> or higher needed in the controller.	One or two ^a 232 option cards may be installed, with COM assignments as: <ul style="list-style-type: none"> • If one 232 option in Option slot 1, port is COM3. Port is COM3 if installed in Option slot 2 also, unless NPB-485 option is in option slot 1. In this case only, 232 port is COM5. • If two 232 options, ports are COM3 for Option slot 1, and COM4 for Option slot 2.

^a Only one NPB option card is recommended for use on WEB-201 and CP-201 controllers.

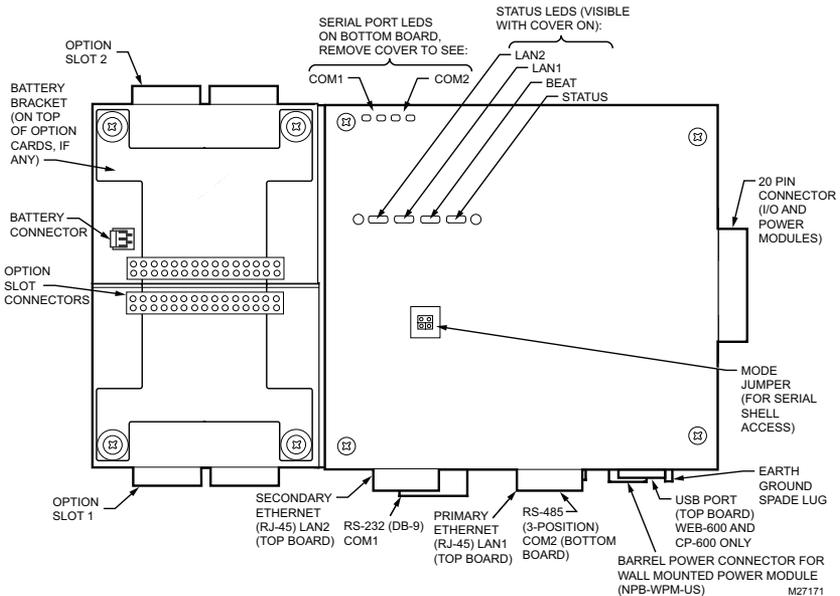


Fig. 3. Controller Board Layout details.

Mounting Option Cards

For complete details, see the INSTALLATION INSTRUCTIONS document that accompany the specific option card.

The following procedure provides a basic set of steps for mounting an option card:

Procedure 2. Mounting Controller Option Cards.

Step 1	Remove power from the controller - see WARNING, Option Cards section.
Step 2	Remove the cover. See Removing and Replacing the Cover section.
Step 3	Remove the battery and bracket assembly by taking out the 4 screws holding it in place, setting the screws aside for later. Unplug the battery from the connector on the controller.
Step 4	Remove the blanking end plate for the slot the option card is being installed into. (Retain the blanking plate in case the option card must be removed at a later date).
Step 5	Carefully insert the pins of the option card into the socket of the appropriate option card slot. The mounting holes on the option board should line up with the standoffs on the base board. If they do not, the connector is not properly aligned. Press until the option card is completely seated.
Step 6	Place the custom end plate that came with the option card over the connector(s) of the option card.
Step 7	Plug the battery connector plug into the battery connector on the controller.
Step 8	Set the battery and bracket assembly back over the option card slots, with the mounting holes aligned with the standoffs.
Step 9	Place the 4 screws through the battery bracket, end plates, and into the standoffs on the controller base board. Hand tighten these screws.
Step 10	Replace the cover.

Accessory Modules

The controller has a 20-pin, right angle, Euro-DIN connector that accepts custom-built accessory modules. The connector provides power and signal lines to any connected modules, and is located on the end of the controller opposite to the option cards.

WARNING

- **Power to the controller must be OFF when inserting or unplugging accessory modules. Wait for all LED activity to stop (all LEDs to be off).**
- **Also, do not connect live voltages to the inputs or outputs of an I/O module (IO-16 or IO-34) while it is in an “un-powered state” before plugging the module into a controller. Otherwise, damage to the I/O module and/or the controller may result!**

Each accessory module has a DIN-mount base and provides two 20-pin connectors that allow a “chain” of multiple accessories (see Procedure 1). Table 2 lists the currently available accessory modules.

Table 2. Accessory Modules.

Model	Description	Notes
NPB-PWR-H	DIN-mountable, 24 V isolated power module, used to power controller from a dedicated, external, Class-2, 24 Vac transformer or a 24 Vdc power supply.	<ul style="list-style-type: none"> • Wiring is covered in <i>this document</i>, see Fig. 4. • Only one NPB-PWR-H per controller. • Do not install if using NPB-WPM-US.
NPB-PWR-UN-H	DIN-mountable, Universal 90-263 Vac input, 15Vdc output, 30W power supply to power controller.	<ul style="list-style-type: none"> • Only one NPB-PWR-UN-H per controller. • Do not install if using NPB-WPM-US or NPB-PWR-H. • Wiring is covered in this document, Refer to “NPB-PWR-UN-H,” page 8.
IO-16-H	DIN-mountable, 16 points WEB-IO module, used to provide I/O ports as noted.	Provides the following I/O points: <ul style="list-style-type: none"> • 8 - Universal Inputs (UIs). • 4 - Digital Outputs (DOs), SPST-relay type. • 4 - Analog Outputs, 0-10 Vdc type. Up to 4 (maximum) IO-16-H accessory modules are supported.
IO-34-H	Din-mountable, combined 34 points I/O with 24 V isolated power module, used to provide I/O points as well as power controller from a dedicated, external, Class-2, 24 Vac transformer or a 24 Vdc power supply.	Only one IO-34-H per controller provides the following I/O points: <ul style="list-style-type: none"> • 16 - Universal Inputs (UIs). • 10 - Digital Outputs (DOs), SPST-relay type. • 8 - Analog Outputs, 0-10 Vdc type. Up to 2 additional IO-16-H modules can be used. Do not power the IO-34-H, if using NPB-WPM-US.

WIRING

Refer to Fig. 3 to locate connectors and other components on the controller.

Make connections to the controller in the following order.

1. Install any option boards (LON, RS-485, or modem) in option slots 1 and 2. See Mounting Option Cards section for a general procedure. For complete details, refer to the specific INSTALLATION INSTRUCTIONS guide that shipped with the option board.
2. Connect the supplied earth grounding wires (with spade connectors) from the earth ground lug on the controller and any accessory modules (if used) to a nearby earth grounding point. See GROUNDING section for details.
3. Prepare power wiring (leave the unit powered off). See Power Wiring section for details.
4. Connect communications cables. See Communications Wiring section for ports available on the controller base unit. For ports on any installed option board (LON, RS-485, modem), see the specific Installation Instructions for any additional details.
5. If I/O accessory modules are installed, connect the I/O wiring. Refer to the appropriate Installation Instructions for complete details.
6. Connect the backup battery to the controller battery connector, and apply power to the unit. See POWER UP AND INITIAL CHECKOUT section.

Grounding

An earth ground spade lug 0.187 in. (4.75 mm) is provided on the base of the controller for connection to earth ground. For maximum protection from electrostatic discharge or other forms of EMI, connect the supplied earth grounding wire to this lug and a nearby earth ground (See Fig. 4). Keep this wire as short as possible.

Connect the earth ground spade lug of *each accessory module* to ground in the same manner.

Power Wiring

The controller must be powered by an approved 15 Vdc power source. This can be *either* an external wall mount AC adapter (NPB-WPM-US), the DIN-mount 24 Vac or 24 Vdc powered module (NPB-PWR-H) or the 90-263 Vac (NPB-PWR-UN-H). The controller does not include an on/off switch. To apply power:

- If NPB-WPM-US, plug in the power connector to the controller.
- If NPB-PWR-H, plug in the 2-position power connector.
- If NPB-PWR-UN-H, energize the AC circuit (90-263 Vac) wired to that module.

CAUTION

Do not connect both the NPB-WPM-US and NPB-PWR-H/NPB-PWR-UN-H supplies at the same time, or equipment damage may result.

If desired, use the wall mount power supply in your office (to initially commission the controller), and then install the controller at the job using a DIN rail power supply. The following sections provide more details:

- NPB-WPM-US (Wall Power Modules).

- NPB-PWR-H (24 Vac-powered in-line module).
- NPB-PWR-UN-H universal 90-263 Vac powered in-line module.

NPB-WPM-US (Wall Wort Power Supply)



CAUTION

Do not plug the barrel connector plug from the NPB-WPM-US into the controller until all other mounting and wiring is completed. See POWER UP AND INITIAL CHECKOUT section.

The NPB-WPM-US power modules are self-contained, isolated, switching power supplies designed to plug into a standard building power receptacle of appropriate voltage. To supply power to the controller, plug the barrel connector plug from the NPB-WPM-US into the barrel power connector on the controller base board (See Fig. 3).

NPB-PWR-H (DIN Rail Power Supply)

Using the NPB-PWR-H module allows the controller to be powered (and if installed, IO-16-H modules) from a **dedicated** Class 2, 24 Vac transformer, or from a 24 Vdc power supply. If installing IO-16-H modules, the NPB-PWR-H installs as the *last* (end) module in the chain (Refer to Fig. 2).



CAUTION

Do not plug 24 V power into the NPB-PWR-H (reinsert connector plug) until all other mounting and wiring is completed. See POWER UP AND INITIAL CHECKOUT section.

NOTE: If powering from a 24 V transformer, do not power any other equipment with it because conducted noise problems may result. Do not ground either side of the transformer's 24 V secondary.

Power consumption depends on installed accessories and option boards, and may vary from:

- Controller with NPB-PWR-H module alone: approximately 8.5 VA (AC) or 8.5 W (DC).
- Controller with NPB-PWR-H and 4 IO-16-H modules, plus option boards: up to 20 VA (AC) or 20 W (DC).

Located at the bottom of the controller with NPB-PWR-H module is a 2-position power connector and an earth ground spade lug as shown in Fig. 4.

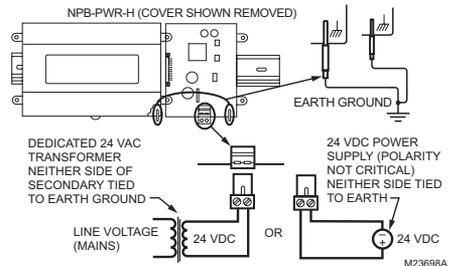


Fig. 4. NPB-PWR-H Module Wiring Connections.

Connect the supplied earth ground wire to a nearby earth ground point. Unplug the power connector plug from the module and make connections to it as shown in Fig. 4.

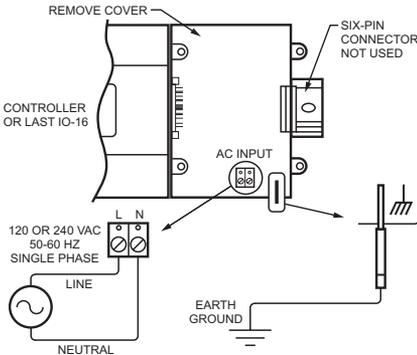
NPB-PWR-UN-H

The NPB-PWR-UN-H module lets you power the controller (and if installed, IO-16-H modules) from AC line power, with a universal input range from 90-263 Vac. If installing IO-16-H modules, the NPB-PWR-UN-H installs as the last (end) module in the chain (Refer to Fig. 2).

⚠ WARNING

- **A 120Vac or 240Vac circuit powers the NPB-PWR-UN-H. Disconnect power to this circuit before installation to prevent electrical shock of equipment damage.**
- **Make all connections in accordance with national and local electrical codes. Use copper conductors only.**
- **Do not exceed the 30W capacity of NPB-PWR-UN-H by the powered devices.**

Power input connections are made to the terminals on the circuit board (cover removal is required). An earth ground connection must be made to the grounding lug using the supplied earth wire (See Fig. 5).



NOTES: THE SIX-PIN CONNECTOR OF THE NPB-PWR-UN-H IS NOT USED WITH A WEB-201 OR WEB-600 SERIES CONTROLLER.

THE SIX PIN CONNECTOR IS DESIGNED FOR USE WITH THE WEBS-AX SECURITY CONTROLLER (SEC-H-201) AND ASSOCIATED SECURITY MODULES, AND ONLY WITH THE VARIATION OF THIS POWER SUPPLY THAT ARE INTEGRAL IN A WEB-AX SECURITY ENCLOSURE.

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Fig. 5.

Communications Wiring

Connect communication wiring to the controller using ports on the bottom of the unit (Fig. 6), which include:

- Ethernet
- Serial

NOTE: Prior to connecting cables, provide strain relief for them to prevent damage to the controller.

Ethernet

Two female 10/100-Mbit Ethernet connections are provided on the controller. These are RJ-45 connectors labeled LAN2 and LAN1. Use a standard Ethernet patch cable for connecting to a hub or Ethernet switch. An activity LED for each Ethernet port is visible, and are labeled "LAN2" and "LAN1" on the cover.

The factory-default IP address for LAN1 on a controller is 192.168.1.12n, where the last numeral n in the address matches the controller's serial number, and subnet mask is 255.255.255.0. By default, LAN2 on a controller is disabled. Refer to the *Niagara AX* Install and Startup Guide for details on changing IP address.

NOTE: Typically, *only LAN1* (primary port) is used, unless there is a specific application for isolating a driver's network traffic to a separate LAN, using LAN2. Do *not* use LAN2 as the primary port.

The packing slip accompanying the controller will provide the "factory-shipped" IP settings for both LAN1 and LAN2. Refer to the *INSTALLATION INSTRUCTIONS* guide for details on changing IP address.

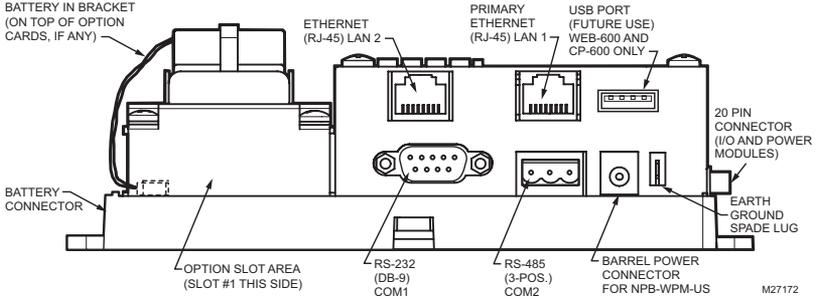


Fig. 6. Controller Bottom Side (cover removed).

Serial

There are two serial ports on the base unit. Each has a UART capable of operating up to 115, 200 baud. At the bottom of the board (refer to Fig. 5), the left port is an RS-232 port using a DB-9 plug (male) connector. The right of this is a two-wire with shield, isolated RS-485 port, using a screw-terminal connector plug.

NOTE: A green "receive" LED and yellow "transmit" LED are provided for each serial port. These LEDs are located on the bottom board, on the *opposite side* of the serial connectors (refer to Fig. 3). These LEDs are labeled on the board (COM1, COM2) and are not visible with the cover on.

RS-232

An RS-232 serial port using a male DB-9 connector always operates as COM1. Standard DB-9 serial cable may be used with this port. The controller is a serial data terminal equipment (DTE) device; another DTE device (PC, for example) requires a "null modem" cable. If

connecting the controller to a data communications equipment (DCE) device (modem, for example), a straight-through cable is used. Table 3 provides standard serial DB-9 pinouts.

NOTE: If a modem option card (NPB-MDM) is installed, this port becomes disabled - except if rebooted with the mode jumper (refer to Fig. 3) in the "Serial Shell" position.

RS-485

An RS-485, optically isolated port, uses a 3-position, screw terminal connector and always operates as COM2. Wire to this connector with shielded 18 - 22 AWG (0.8 mm² - 0.3 mm²) wiring (refer to the TIA/EIA-485 standard). As shown in Table 3, the screw terminals (from left-to-right) are shield, plus (+), and minus (-).

USB (WEB-600 and CP-600 only)

A single USB port is on the top board.
NOTE: The USB port is for future use.

Table 3. Serial Port (RS-485) Pinouts.

Base RS-232 DB-9 Port (COM1)			Base RS-485 Port (COM2)
Pinouts References	Signal	DB-9 Plug Pin	Pinouts
DB-9 Plug (male) 	DCD	Data carried defect	3-position connector (male) 
	RXD	Receive data	
	TXD	Transmit data	
	DTR	Data terminal ready	
	GND	Ground	
	DSR	Data set ready	
	RTS	Request to send	
	CTS	Clear to send	
		not used	

POWER UP AND INITIAL CHECKOUT

Ensure power wiring to the controller is ready - see the Power Wiring section. Refer to Fig. 3 for the location of the controller battery connector, status LEDs, and barrel

power connector (for NPB-WPM-US only). Refer to Fig. 4 for location of the power connector on the NPB-PWR-H module.

After all mounting and wiring procedures are completed, perform the following procedure:

Procedure 3. Initial power and checkout

Step 1	Connect the Backup Battery.
Step 2	Apply Power.
Step 3	Check the Status LEDs.

Connect the Backup Battery

With the cover removed from the controller, (See REMOVING AND REPLACING THE COVER section), locate the red and black wires coming from the backup battery with the 2-position connector plug. Insert the plug into the battery connector on the bottom board (below option slot 2 area), as shown in Fig. 7.

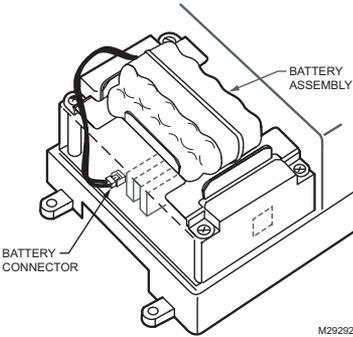


Fig. 7. Backup battery connector on bottom board.

The connector is keyed - it cannot be inserted incorrectly. The red (positive) connections should be the furthest from the two 30-pin option board connectors. For more battery details, see the Battery section.

Apply Power

CAUTION

Do not connect both the NPB-WPM-US and NPB-PWR-H supplies at the same time, or equipment damage may result, or a power outage may go unrecognized.

Apply power to the controller by plugging in the power plug into either the controller (if wall mount AC adapter NPB-WPM-US) or the 24 V-powered NPB-PWR-H module. If powering using the line-voltage input NPB-PWR-UN-H power supply module, energize the 90–263 Vac circuit wired to the NPB-PWR-UN-H module.

Check the Status LEDs

When power is applied, the green LED labeled “STATUS” will light. This indicates that the system is OK and that power is applied. Once the controller boots, the yellow “BEAT” (heartbeat) LED will begin blinking, with a typical rate of approximately 1 Hz. Blinking should begin within 30 seconds after power is applied.

If after applying power, the STATUS LED goes out, or if the BEAT LED comes on (steady) and stays lit longer than two minutes, refer to the Using Status LEDs section.

Battery

The controller is provided with a custom 10-cell NiMH battery pack mounted to the unit (under the cover). This battery allows the controller to continue operation through very short power bumps (a few seconds in duration). If a longer power outage occurs, the battery provides enough run time to backup data and then shutdown. Typically, this is one minute. Shutdown occurs automatically after data is backed up to on-board flash memory.

The controller charges the battery during normal operation until fully charged. Typically, the charge operation completes within 18 hours. Following a power outage, the battery is charged again as necessary. The power and battery circuitry is monitored by a station running on the controller (via the Power Monitor Service). Station alarms are generated whenever primary power is lost or if the battery is uncharged or unable to hold sufficient charge.

The battery should be replaced approximately every three years or more often if the unit is in a high temperature environment.

NOTE: A NiMH battery characteristic is to lose charge if not left in charge mode (trickle charge). Leaving the battery unconnected, or the unit powered off will cause the battery to fully discharge in a matter of weeks. In the case of a new controller the battery is shipped completely discharged. Therefore, allow at least 18 hours for the battery to charge if it has not been in a powered unit.

For more information on the use and replacement of the battery, refer to the Required Battery Maintenance section.

USING STATUS LEDs

The controller includes several LEDs that can help determine the status of the unit. They are located in two places: the top of the controller (visible through the cover), and on the bottom board (visible only with cover removed). From left-to-right, these LEDs include:

- Ethernet Ports
- Heartbeat
- Status
- Serial Ports

Refer to Fig. 3 for the exact locations of status LEDs on the controller.

Ethernet Ports

Each Ethernet port (“LAN2”, “LAN1”) has one green LED, visible on the top cover.

A “LANx” LED indicates activity on that port as follows:

- **Off** - No Ethernet link is made.
- **On** - Ethernet link is present, but no activity on the LAN.
- **Blinking** - Ethernet link is present with data activity on the LAN.

Heartbeat

The "BEAT" LED is located to the right of the Ethernet status LEDs, and is yellow. Under normal operation, this LED should blink about once per second. If the heartbeat LED stays on *constantly*, *does not light*, or *blinks very fast* (more than once per second), contact your Honeywell representative for technical support. During boot-up, the heartbeat LED blinks in a 90% on — 10% off pattern. Do not remove power during this time, or data loss may result (I/O module's firmware upgrade may be in progress).

- New Replacement Units
- Replacing the Controller Base Assembly
- Returning a Defective Unit

Cleaning

If dust or metal filings are present inside the unit, clean with vacuum or compressed air. Otherwise, no cleaning inside the unit is required. Optionally, if the cover becomes dirty, wipe it with a damp cloth and mild detergent.

Status

The "STATUS" LED is located to the right of the heartbeat ("BEAT") LED, and is green. This LED provides a CPU machine status check and should remain lit whenever the controller is powered. If the STATUS LED *does not light* while power is applied, contact your Honeywell representative for technical support.

Required Battery Maintenance

Battery life expectancy is a function of discharge cycles (the number of discharges and their depth) and the ambient temperature of the battery during normal operation. In most applications, the battery should see relatively few discharges. Therefore, ambient temperature has more to do with determining the life expectancy of the battery than does any other factor. If the controller is installed in a conditioned space, the battery should provide dependable service for approximately three years (average). In an environment where the operating temperature is 122° F (50° C) or higher, the life expectancy of the battery is approximately one year.

Serial Ports

LEDs for the two serial ports are located on the controller's *bottom* board (visible only with cover removed), on the *opposite side* of the RS-232 and RS-485 ports (see Fig. 3). Labels "COM1" and "COM2" correspond to the software configuration of the COM ports. LEDs show the transmit and receive activity for the serial ports and optional modem.

The NiMH battery in the controller is fully discharged when factory shipped. Additionally, NiMH batteries lose charge over time if not kept trickle-charged (for more details, see the Battery section). Therefore even a new unit (or replacement battery) will require up to 18 hours of powered operation before it is fully charged and can provide reliable backup power.

NOTE: The cover must be removed to view the serial port LEDs. See Removing and Replacing the Cover section.

- The **yellow** transmit LED indicates that the controller is *sending* data out the serial port over a communications line to a connected device.
- The **green** receive LED indicates that the controller is *receiving* data from a connected device.

The controller monitors the battery and periodically loads the battery to test its ability to maintain battery-backed functions. Investigate any battery trouble message and check the battery connections to the unit. Replace the battery as required. To order a new battery, see the Standard Replacement Parts section.

These LEDs provide a fixed on-time when data is detected on the port. If these LEDs are on constantly, this indicates a problem with the communications channel such as a shorted wire or reversed wiring.

Replacing the Battery



CAUTION

Use only battery packs approved for use with the controller.

A replacement battery is a complete assembly comprised of a battery pack pre-attached to a battery bracket (Refer to Fig. 6).

To replace the battery proceed as follows:

MAINTENANCE

This section provides information on the following topics:

- Cleaning
- Required Battery Maintenance
- Replacement Parts
- Non Replacement Parts
- Standard Replacement Parts

Procedure 4. Replacing the Battery.

Step 1	Backup controller's configuration to your PC using the appropriate Niagara-AX software tool (for example, WEBStation-AX).
Step 2	Remove power from the controller.
Step 3	Remove the cover. See Removing and Replacing Cover section.
Step 4	Remove the old battery and bracket assembly by taking out the 4 screws holding it in place, setting the screws aside for later. Unplug the battery from the connector on the controller.
Step 5	Plug the battery connector plug of the <i>replacement battery</i> into the battery connector on the controller.
Step 6	Set the replacement battery/bracket assembly back over the option card slots, with the mounting holes aligned with the standoffs.
Step 7	Place the 4 screws through the battery bracket, option cards blanking plates, and into the standoffs on the controller base board. Hand tighten these screws.
Step 8	Replace the cover.
Step 9	Restore power and verify normal operation.

Replacement Parts

Servicing the controllers may call for replacement parts. There are three categories of parts:

- Non-replacement Parts
- Standard Replacement Parts
- New Replacement Units

Non-replacement Parts

Other than the parts listed in the replacement parts sections, there are no serviceable components on the base assembly.

Memory

Any addition, modification, or replacement of memory components requires software configuration and is not a field upgrade.

Fuse

The controller contains a non-user replaceable fuse, soldered on the circuit board. This fuse provides protection from internal shorts or connection to incorrect power supplies. If the fuse circuitry is suspect, contact the regional Honeywell office for technical support. See the RETURNING A DEFECTIVE UNIT section.

Standard Replacement Parts

Standard replacement parts are listed in Table 4 and can be ordered directly from Tridium without restriction. Standard replacement parts cannot be returned for credit and should be disposed of in an appropriate manner.

Table 4. Standard Replacement Parts.

Part Number	Description
10499	NiMH Battery Pack (with battery bracket) see Replacing the Battery section.
10027	RS-485 connector plug, 3-position.

NOTE: Screws used for the controller are standard no. 6-32 x 3/8 in (9.5 mm) types, which may be obtained locally if lost.

New Replacement Units

To replace a faulty unit, order and install a new controller.

NOTE: These products do not have special "field replacement units", or FRU's, with separate part numbers.

If the faulty unit is *still in warranty*, credit may be received by returning it to Tridium. Be sure to contact Tridium for a return authorization (RA) number before shipping an item for return credit. See RETURNING A DEFECTIVE UNIT section for details.

NOTE: Before ordering a new controller, it is strongly recommended that your normal technical support resource is contacted to eliminate the possibility of a software issue or mis-configuration problem.

Replacing the Base Assembly



CAUTION

Before handling circuit boards, discharge any accumulated static by touching the metal surface of the Base Assembly. For details, see the Static Discharge Precautions section.

To replace the Base Assembly in the field, proceed as follows:

Procedure 5. Replacing a Base Assembly.

Step 1	Using the appropriate Niagara software tool, backup the station database to PC.
Step 2	Remove power to the controller. The unit should power down automatically.
Step 3	Record positions of all communications and other wiring cables going to the controller, as well as all installed accessory modules. If necessary, label connectors and accessory modules to avoid mis-connection later (after controller is replaced). NOTES: <ul style="list-style-type: none"> — The software that runs on the unit expects the terminal positions to be the same to collect data from or to control the attached devices. — If using I/O modules, and any I/O points have voltage, turn the devices off or disconnect power to them.
Step 4	Unplug all Ethernet, serial, LON, modem, and I/O connectors from the controller and any installed accessory modules if applicable.
Step 5	Unplug the earth ground wires to the controller grounding lug and any installed accessory modules.
Step 6	If the controller has installed accessory modules, remove them, starting with the end module. Modules may be secured by screws in mounting tabs or clipped to DIN rail, or a combination of both methods. For details on DIN rail mounting (including removal), see Fig. 2. NOTE: If DIN rail mounting was used, often it is possible to remove any screws or clips that secure each module (possibly just the last module) and then <i>slide</i> each module (individually) away from the unit until the controller can be removed from the DIN rail.
Step 7	Remove any screws or DIN rail clips securing the controller, removing it from its mounting.
Step 8	Remove the cover from the old controller (see Removing and Replacing the Cover section). Record the position of installed option boards, if any. Transfigure the boards to the replacement controller.
Step 9	Remove the option boards from the old controller and install them into the replacement controller, if applicable. See Mounting Option Cards section for more details.
Step 10	Mount the replacement controller as it was previously, using the same DIN rail location and/or screws.
Step 11	Reconnect/remount any removed accessory modules, being careful to replace in the same order, using the same DIN rail location and/or screws. Secure all accessory modules as done previously.
Step 12	Reconnect the earth ground wires to the controller grounding lug and any installed accessory modules.
Step 13	Reconnect any Ethernet, serial, modem and I/O connectors to the controller and any installed accessory modules.
Step 14	If using I/O modules, with voltage to any of the I/O points, turn the devices back on or reconnect power to them.
Step 15	Restore power to the controller. It should boot up as a new unit (see Check the Status LEDs section).
Step 16	Using the Niagara AX platform tools, re-commission the controller and install the saved station database. For more details, see the JACE Niagara AX Install and Startup Guide.

RETURNING A DEFECTIVE UNIT

NOTES: If the defective unit is under warranty, follow return instructions provided in this section. If the unit is *out of warranty*, discard the unit.

- Do not return an out-of-warranty controller to Tridium.
- There is no “return for repair-and-return” service available for any of these products.

For proper credit on an in-warranty unit, ship the defective unit to Tridium within 30 days.

Prior to returning the unit, contact one of the following Tridium offices to obtain a return authorization (RA) number and other instructions. Please provide:

- Product model
- Serial Number
- Nature of the defect

United States

Phone: 804-254-7086, ext. 11

Return to:

Tridium, Inc.
2256 Dabney Road, Suite C
Richmond, VA 23230
Attn: Return Department RA# _____

Asia / Pacific

Phone: +65 6887 5154

Fax: +65 6887 5342

Mobile: +65 9665 6024

Return to:

Tridium Asia Pacific Pte Ltd
Email for technical support:
101 Cecil Street, hclim@tridium.com
#10-11, Tong Eng Building,
Singapore 069533
Attn: Mr Lim Hoon Chiat, Engineering Manager RA# _____
Sales: (Australia): Phone: +617 5539 1211 Fax: +617 5597 2334
(Japan): Phone: +81 044 829 1750

RELATED DOCUMENTATION

For more information on configuring and using WEB-201, 600, CP-201, 600 Series Controllers, consult the following literature:

- IO-16-H Installation Instructions, literature no. 95-7723.
- IO-34-H Installation Instructions, literature no. 95-7724.
- Niagara AX Ndio Guide.
- Niagara AX User Guide.
- JACE Niagara AX Install and Startup Guide.

CERTIFICATIONS

Federal Communications Commission (FCC)

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause interference with radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area may cause interference, in which case, users, at their own expense, will be required to take whatever measures may be required to correct the interference. Any unauthorized modification of this equipment may result in the revocation of the owner's authority to continue its operation.

Canadian Department of Communications (DOC)

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

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