

NPB-2X-RS485 Option Card

INSTALLATION INSTRUCTIONS

APPLICATION

This document covers the mounting and wiring of the NPB-2X-RS485 option card into a WEBS-AX or CP controller (WEB/CP-201/600/700, SEC-H-201/600, or WEB/CP-202/602-XPR series).

Table 1. NPB-2X-RS485 Option Card Description.

Description	COM Port Assignments and Notes
<p>Dual port, optically isolated RS-485 adapter, with two 3-position, removable screw-terminal connector plugs.</p> <p>The NPB-2X-RS485 has jumper blocks that can be used to enable onboard bias resistors. See "Preparation" on page 2, for more details.</p> <p>NOTE: The controller requires NiagaraAX build level 3.1.24 or higher to use the NPB-2X-RS485 option.</p>	<p>The WEB/CP-202/602-XPR series controller accepts only one (1) option card, where ports for the NPB-2X-RS485 are COM7 and COM8.</p> <p>For other controller models (WEB/CP-201/600/700 and SEC-H-201/600) up to two (2) RS-485 option cards may be installed, where:</p> <ul style="list-style-type: none"> • If a <i>single</i> NPB-2X-RS485 option card is in Option Slot 1, the ports are COM3, COM4. • If there are <i>two</i> NPB-2X-RS485 option cards, the ports are COM3, COM4 for Option Slot 1, and COM5, COM6 for Option Slot 2. • If a <i>single</i> NPB-2X-RS485 option card is in Option Slot 2, the ports are COM3, COM4, unless one of the following cards are in Option Slot 1: <ul style="list-style-type: none"> • If an NPB-2X-RS485 option card is in slot 1, then the ports for slot 2 are COM5, COM6. • If an NPB-GPRS option card is in slot 1, then the ports for slot 2 are COM4, COM5. <p>See Fig. 3 on page 2 for location of Option Slots 1 and 2 on a WEB/CP-201/600/700.</p>

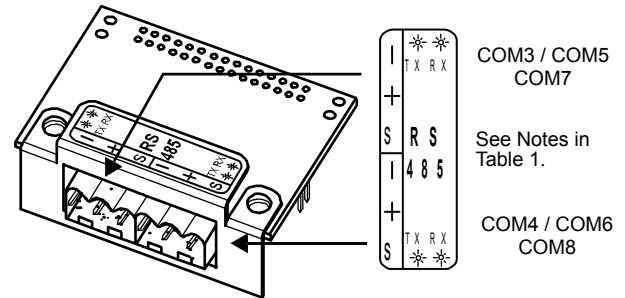


Fig. 1. NPB-2X-RS485 option card, ports, and labelling.

NOTE: Refer to the appropriate controller mounting and wiring document for further controller installation details.

Included in this Package

- Included in this package you should find the following items:
- NPB-2X-RS485 option card, connector end plate, and four 2-pin jumper blocks.
 - Two 3-position terminal plugs for wiring to an RS-485 network.
 - This *NPB-2X-RS485 Option Card* Installation Instructions (Honeywell form 95-7778-01).

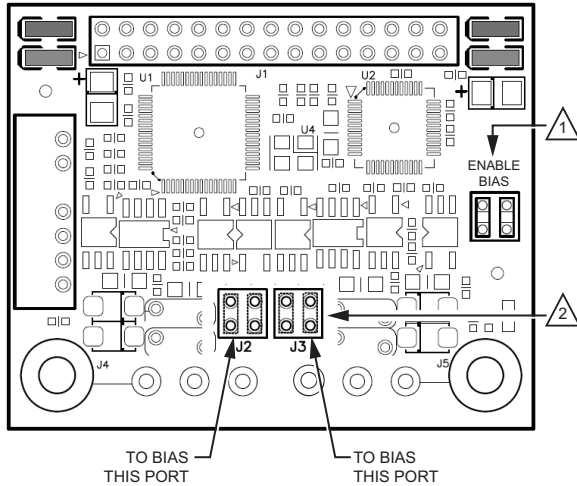
Material and Tools Required

- The following tools and supplies may be required for installation:
- #2 phillips screwdriver: used to install the NPB-2X-RS485 option card.
 - Small flat-blade screwdriver: used for making wiring connections to the RS-485 networks.
 - #1 phillips screwdriver: to remove and refasten WEB/CP-202/602-XPR covers (if applicable).



Preparation

Examine the component side of the option card to locate the bias resistor jumper pins. See Fig. 2. You may wish to enable biasing for either (or both) RS-485 ports before mounting the card.



- 1 SCREENED DIAGRAM SHOWS HOW TO ENABLE THE BIAS RESISTORS BY INSERTING TWO JUMPER BLOCKS OVER EACH SET OF PINS.
- 2 BIAS JUMPER BLOCKS IN PLACE; TWO FOR EACH PORT.

Fig. 2. Jumpers to enable RS-485 Bias resistors.

NOTE: You cannot reach these jumpers when the card is installed.

In general, only one device on an RS-485 trunk should be biased. Otherwise, undue loading of the circuit may result, with fewer devices supported.

NOTE: RS-485 bias resistors are different than termination resistors. They are externally installed at the two physical ends of a daisy chained RS-485 trunk across the + and – terminals. Termination resistors are typically 100 or 120 ohm value resistors. Whenever termination resistors are used, RS-485 biasing is typically required.

To enable biasing, install the two 2-pin jumper blocks (provided in this package) on that port's jumper header, as shown in Fig. 2. To turn off biasing, remove both 2-pin jumper blocks from that port's header.

NOTE: The factory-shipped state is with the jumper blocks removed.

Installing jumpers to enable biasing adds two onboard 3.3K ohm resistors into an RS-485 port's circuit:

- from RS-485 positive (+) to 5V.
- from RS-485 negative (-) to Ground.

Biasing can improve RS-485 communications by eliminating indeterminate idle states.

MOUNTING

⚠ WARNING

Power to the controller must be OFF when installing or removing option cards, or damage will occur!

Also, you must be very careful to plug any option card into its connector properly (pins aligned).

Mount the NPB-2X-RS485 option card in either of the option card slots of the controller, as needed. Note the WEB/CP-202/602-XPR series has only one option card slot.

Mounting the NPB-2X-RS485 option card on a controller

Refer to the "Preparation" section on this page for details about RS-485 resistor biasing.

See "COM Port Usage" on page 3 for details about COM port assignments for the controller.

1. Remove power from the controller. Wait for all LEDs on the unit to be Off.
2. Remove the controller cover or covers (WEB/CP-202/602-XPR). For all but the WEB/CP-202/602-XPR, press in the four tabs on both ends of the unit, and lift the cover off.
NOTE: If accessory modules are plugged into the controller, you may need to slide them away from the unit to get to the cover tabs.
3. For the WEB/CP-202/602-XPR, first remove the right cover, then the left cover, retaining the two screws that secure each cover.
4. For all but the WEB/CP-202/602-XPR, remove the battery and bracket assembly by taking out the screws holding it in place, setting the screws aside for later. Unplug the battery from the connector on the controller. See Fig. 3 on page 2 for an exploded view.

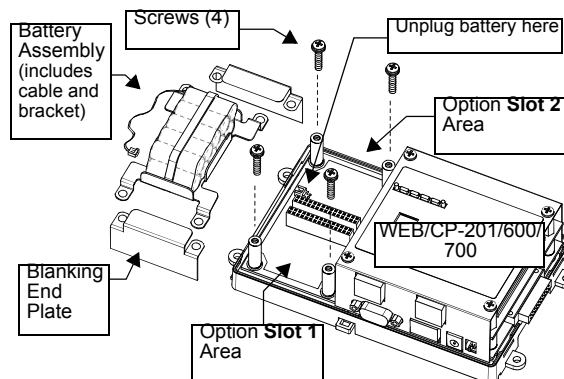


Fig. 3. Remove battery assembly.

5. Remove the blanking end plate for the slot you are installing the option card into. (Retain the blanking end plate in case the option card must be removed at a later date.)

6. If you wish to enable biasing for one or both RS-485 ports, be sure to set the jumpers on the NPB-2X-RS485 option card before installing the card onto the controller.
7. Carefully insert the pins of the NPB-2X-RS485 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.
8. Place the connector end plate that came with the NPB-2X-RS485 over its connector (see Fig. 3 and Fig. 4).

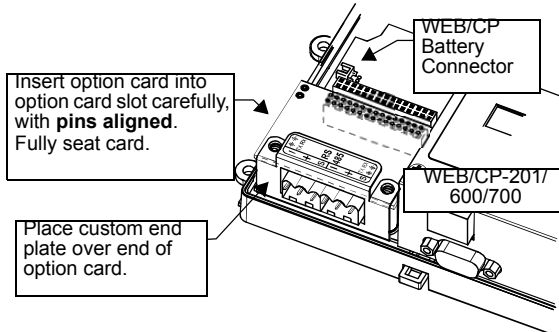


Fig. 4. NPB-2X-RS485 inserted, end plate on top.

9. Plug the battery cable into the battery connector on the controller (see Fig. 4 for location on the WEB/CP-201/600/700).
10. For all but the WEB/CP-202/602-XPR, set the battery and bracket assembly back over the option card slots, with mounting holes aligned with the standoffs. Screws enter holes in the battery bracket first, see Fig. 3.
11. Place the screws through the end plate(s), and into the standoffs on the base board. Using a screwdriver, hand tighten the screws (see Fig. 5 for location on the WEB/CP-201/600/700).

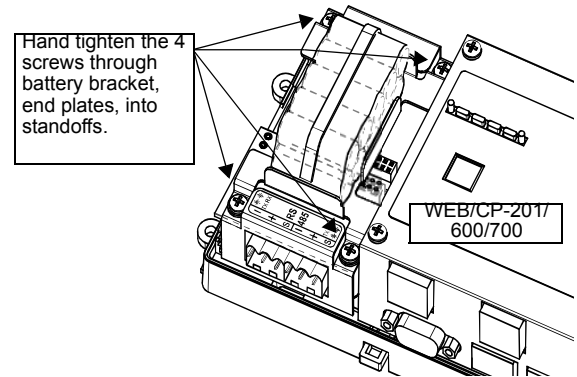


Fig. 5. Re-fasten screws through battery bracket.

12. Replace the controller cover or covers (WEB/CP-202/602-XPR). If accessory modules were unplugged from the controller, plug them back as before, and secure.

WIRING

To connect to an RS-485 multipoint network, use one of the 3-position screw terminal connectors with shielded 18 to 22 AWG wiring. Refer to the TIA/EIA-485 standard for more details. Screw terminals are minus (-), plus (+), and shield (S), as indicated on the NPB-2X-RS485 end plate label. See Fig. 1 on page 1.

LEDS

Four LEDs are visible on the top of the NPB-2X-RS485 option card (cover must be removed from controller). They are also noted on the label as TX and RX. See Fig. 1 on page 1.

The four LEDs (two for each port) are described as follows:

- TX (yellow) — Transmit, indicates that the controller/option card is sending data to a device.
- RX (green) — Receive, indicates that the controller/option card is receiving data from a device.

COM PORT USAGE

The NPB-2X-RS485 option card has two onboard UARTs, and so adds two COM ports on the installed controller. The hosted station automatically resolves the option's COM addresses.

Refer to Table 2 on page 4 for the COMM port assignments for specific controller and option card configurations.

Table 2. COM Port Assignments Based on Controller and Option Card Configuration.

Controller Model	Slots Used	Card Slot 1		Card Slot 2	
		1st Option Card	COM Ports	2nd Option Card	COM Ports
SEC-H-201/600	1 only	NPB-2X-RS485	COM3 COM4	Not Used (Empty)	
	1 and 2	Not Used (Empty)		NPB-2X-RS485	COM3 COM4
	1 and 2	NPB-2X-RS485	COM3 COM4	NPB-2X-RS485	COM5 COM6
	1 and 2	NPB-GPRS	COM3	NPB-2X-RS485	COM4 COM5
WEB/CP-201/600	1 only	NPB-2X-RS485	COM3 COM4	Not Used (Empty)	
	2 only	Not Used (Empty)		NPB-2X-RS485	COM3 COM4
	1 and 2	NPB-2X-RS485	COM3 COM4	NPB-RS232	COM5
	1 and 2	NPB-2X-RS485	COM3 COM4	NPB-2X-RS485	COM5 COM6
	1 and 2	NPB-GPRS'	COM3	NPB-2X-RS485	COM4 COM5
WEB/CP-700	1 only	NPB-2X-RS485	COM5 COM6	Not Used (Empty)	
	1 and 2	NPB-2X-RS485	COM5 COM6	NPB-RS232	COM7
	1 and 2	NPB-2X-RS485	COM5 COM6	NPB-2X-RS485	COM7 COM8
WEB/CP-202/602-XPR	1 only	NPB-2X-RS485	COM7 COM8	There is no second card slot.	

WEB/CP-202/602-XPR Controller

The WEB/CP-202/602-XPR series controller accepts only one (1) option card, where ports for the NPB-2X-RS485 are COM7 and COM8.

WEB/CP-201/600/700 and SEC-H-201/600 Controllers

For the controller models WEB/CP-201/600/700 and SEC-H-201/600) up to two RS-485 option cards may be installed, where:

- If a *single* RS-485 option is in Option Slot 1, the ports are COM3, COM4.
- If there are *two* RS-485 options, the ports are COM3, COM4 for Option Slot 1, and COM5, COM6 for Option Slot 2.
- If a *single* NPB-2X-RS485 option card is in Option Slot 2, the ports are COM3, COM4, unless one of the following cards are in Option Slot 1:

- If an NPB-2X-RS485 option card is in slot 1, then the ports for slot 2 are COM5, COM6.
- If an NPB-GPRS option card is in slot 1, then the ports for slot 2 are COM4, COM5.
- If a WEB/CP-700 controller and installed in Option Slot 1, or if the only option card, ports are COM5 and COM6. If the option card is installed in Slot 1 of a controller along with another option card that uses COM ports in Option Slot 2, note that COM assignments for that other card are affected:
 - For example, if a WEB/CP-201/600 with an NPB-2X-RS485 option installed in Slot 1, and a single port RS-232 option (NPB-RS232) installed in Slot 2, COM assignments are: Slot 1 (RS-485): COM3, COM4, Slot 2 (RS-232): COM5.
 - The same option card mix in a WEB/CP-700 controller yields: Slot 1 (RS-485): COM5, COM6, Slot 2 (RS-232): COM7
 - The NPB-2X-RS485 installed in the only (single) option slot of a WEB/CP-202/602 controller is seen as COM7 and COM8.

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