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NETWORK CONTROLLER 7 MOUNTING AND WIRING GUIDE

The JACE-700 is a compact, embedded controller/server platform that allows integrated control and management of external devices over the Internet. It provides support for two optional communications boards as well as optional I/O expansion modules.



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About This Guide

This document covers the mounting and wiring of the Tridium® JACE-700 (T-700) Version 2 controller, as well as the previous Version 1 controller. It assumes that you are an engineer, technician, or service person who is performing control system installation. Instructions in this document apply to the following products:

Model	Description
T-700	DIN mount JACE 7 series controller, powered by separate plug-in power supply module or wall mount AC power adapter. Controller supports optional external I/O expansion modules and internal communications option cards.
NPB-PWR-UN	90–263Vac universal input/15Vdc output power supply module, DIN mountable.
WPM-XXX	Wall-mount universal AC power adapter, with different models available, where -XXX is either: -US, -EUR, or -UK (vary by AC wall plug).



Note Not covered in this document is the Niagara^{AX} software installation and configuration required for a fully functioning unit. Refer to the *JACE Niagara AX Install and Startup Guide* for this information.

In addition, the mounting and wiring of JACE expansion options are covered in separate documents. See the section “[About Expansion Options](#),” page 15.

Related Documentation

For more information on configuring and using the controller, consult the following documents:

- *JACE NiagaraAX Install and Startup Guide*
- *Remote I/O-16 -485 Module Mounting and Wiring Guide*
- *LON Option Card Install Sheet*
- *RS-485 Option Card Install Sheet*
- *RS-232 Option Card Install Sheet*
- *Modem Option Card Install Sheet*
- *GPRS Modem Option Card Install Sheet*
- *ZWAVE Option Card Install Sheet*
- *NPB-SED-001 Option Card Install Sheet*
- *NPB-SRAM (Static Ram) Option Install Sheet*
- *JACE 7 WiFi Option (T7-WIFI) Install Guide*
- *NiagaraAX NRIO Guide*
- *NiagaraAX JACE WiFi Option - Engineering Notes*
- *NiagaraAX User Guide*

Product Description

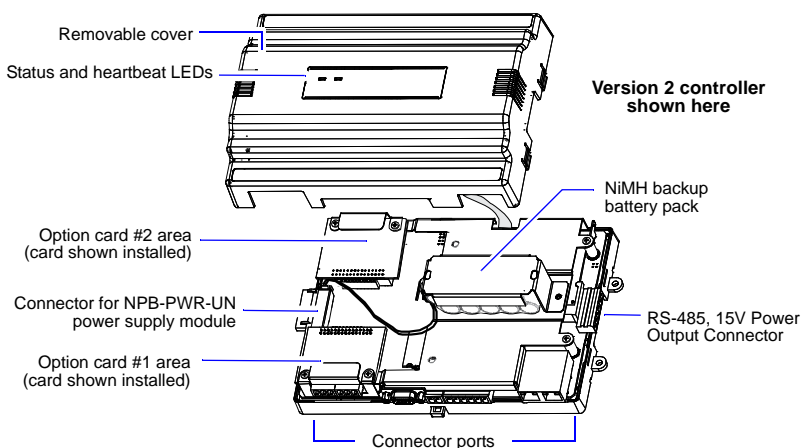
The JACE-700 controller is a compact embedded processor platform using on-board Flash memory for backup, in an expandable DIN-modular package. Designed for use in commercial environments, the controller runs the NiagaraAX Framework to provide integrated control, supervision, and network management solutions for a wide variety of networked field devices. NiagaraAX-3.5 or later is required.

Packaging and Features

The controller features a DIN-mount controller base with mounting tabs for alternate panel mount. Two available comm option card slots are accessed under the controller's removable cover.

Figure 1 and Figure 2 show locations of important features of the controller.

Figure 1 JACE-700 cover removed with 2 options installed on main board.

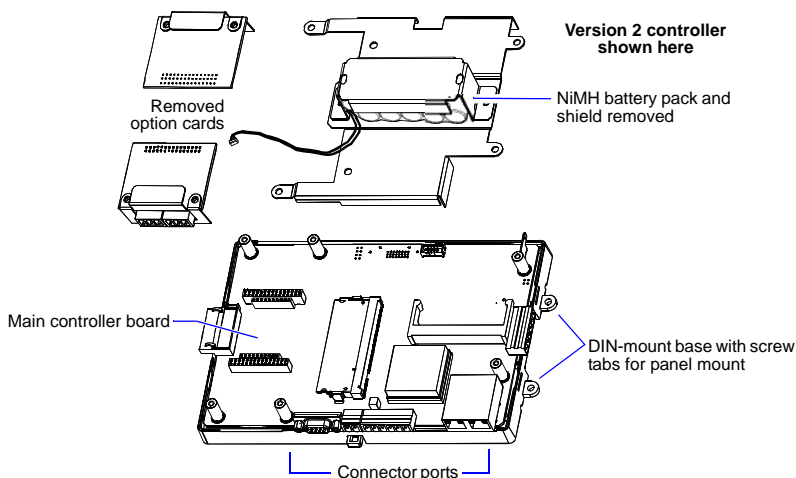


Typical installation requires an NPB-PWR-UN universal power supply module (furnishing 15Vdc) for power, attaching to the controller's left side. An RS-485 port is on the controller's opposite right end connector, along with 15Vdc power for support of I/O expansion modules, either chained directly and/or wired remotely.



Note

Instead of using the NPB-PWR-UN power supply module, you can adapt an WPM-XXX wall mount AC power adapter to power the controller. However, you cannot directly attach I/O expansion modules in this configuration, nor power remote I/O modules from that WPM-XXX.

Figure 2 JACE-700 main controller board and 2 option cards uninstalled.

As a JACE 7 series controller, the JACE-700 Version 2 controller has a PowerPC 440EPx processor, 512MB Flash storage, and 1GB DDR-2 RAM. TCP/IP access is via two standard Gigabit Ethernet ports, and serial communications ports (RS-232, RS-485) are also standard.

One or two option cards can be added for additional communications, e.g. LonWorks FTT-10, or another RS-232 port. A MiniPCI slot is also available for WiFi 802.11g support. The JACE-700 uses the QNX Neutrino operating system, with the Oracle Java Hotspot VM (Virtual Machine).

Two status LEDs are visible atop the cover. Integral contact inputs are provided to allow system monitoring of UPS power and battery, and an external enclosure door. A rechargeable NiMH battery pack is included inside the unit, and a separate connector provides recharging and monitoring of an external 12V sealed lead-acid battery (customer supplied).



Note The previous Version 1 controllers have basically the same features as those described above for Version 2 with the following exceptions:

- On-board NAND Flash storage is 1GB.
- Two USB ports are on the top side, with adjacent LEDs on the main board.
- Less straightforward installation of an option card in slot 2.

You can easily identify controller version by checking for USB ports on the top side. Only Version 1 controllers have USB ports.

The following table provides a summary of features of the controller.

Table 1 JACE-700 features and options

Model	Description	Ports
JACE-700 Version 2	DIN-mountable controller. PowerPC 440Epx 652 MHz processor, 512MB NAND Flash storage, 1GB DDR-2 system RAM. Includes integral NiMH battery pack, two open enhanced comm option card slots, one open MiniPCI slot (for WiFi 802.11g option card). Not furnished is NPB-PWR-UN universal power supply, or external 12V sealed lead-acid battery and harness.	Two 1GB Ethernet, RJ-45 One RS-232 Serial, DB-9 male One RS-485 Serial, isolated, with 15V/12Vdc power, 6-position plug on right side.
JACE-700 Version 1	Same as Version 2 above except: 1GB NAND Flash storage.	As Version 2 above, plus 2 USB ports on top side.

Technical Specifications

The technical specifications listed here are the same for both versions of the controller except where noted otherwise.

JACE 7 Platform

- PowerPC 440Epx @ 652MHz processor.
- On-board NAND Flash storage:
 - 512MB (Version 2)
 - 1GB (Version 1)
- 1GB DDR-2 333Mhz RAM (maximum Java heap size 384MB).
- Two (2) Gigabit Ethernet ports.
- Standard RS-232 port.
- Additional ports:
 - Two (2) USB ports (Version 1)
- 6-position end connector with isolated RS-485/15Vdc power (usable as a standard non-powered isolated RS-485 port, or to support remote I/O modules).
- MiniPCI slot for optional T7-WIFI 802.11b/g WiFi adapter (AX-3.6 required).
- Two (2) available JACE 7 comm option slots in the JACE-700, for LonWorks, RS-485 or RS-232, GPRS/Edge Cellular, Jennic 802.15.4 wireless, etc.
- LEDs on front of unit to monitor power and system status.
- Available contact inputs (3) to monitor external UPS AC present, UPS battery level, external enclosure door status.

Power Supply

- Requires universal AC input (90V – 264V) NPB-PWR-UN power supply module, supplies 15Vdc, 30VA. Or, a WPM-XXX wall-mount AC adapter can power the JACE-700 only (without expansion modules). This requires using a 3rd-party pigtail adapter cable (ex.: KobiConn DC Power Cord 2.1, Mouser Electronics, part number 172-7426-E), or else removal of the WPM-XXX adapter's barrel plug end and stripping back the two leads for a pigtail end. In either case, wire the pigtail leads into the controller's 6-position end connector. See [“WPM-XXX \(Wall Mount AC Adapter\)”](#) on page 23.
- Includes integral rechargeable NiMH backup battery pack, for short duration AC power fail operation.

- Connection for external, rechargeable, 12V sealed lead-acid battery, for continuous system operation over longer power outages. Provides trickle charge and monitoring support to customer-supplied battery.

Operating System

- QNX Neutrino Real-Time Operating System.
- Oracle Hotspot JVM (Java Virtual Machine) in units with NiagaraAX-3.6 or later; IBM J9 JVM is used in units with NiagaraAX-3.5.
- JACE NiagaraAX software (**AX-3.5 minimum**); AX-3.6 or later required to use the optional T7-WIFI adapter.

Physical

- Plastic DIN-mount backplate with screw tabs for alternate panel mounting.
- Removable snap-on plastic cover with status LEDs and connecting cable.
- Cooling by internal air convection.
- Dimensions: 8.7" (221mm) wide x 5.6" (142mm) high x 2.44" (62mm) deep.
- Weight: Net 1.67 lbs. (0.76 kg), Gross 2.0 lbs. (0.91 kg).

Environment

- Operating temperature range: 32°F to 122°F (0°C to 50°C).
- Relative humidity range: 10% to 90% at 77°F (25°C), non-condensing.
- Mechanical ambient conditions are as follows:
 - Vibration, in operation: 5 to 9 Hz: 3.5mm amplitude, 9 to 150Hz: 1g.
 - Shock resistance, in operation: 15g acceleration, 11 ms duration.
- Storage temperature range: 32°F to 158°F (0°C to 70°C).
- Storage relative humidity range: 5% to 94%, non-condensing.

Equipment Ratings

Electrical

- Input voltage range: 15Vdc (DC **only**).
Sourced from separate AC power supply, 90Vac to 264Vac, 50/60Hz.
- Power consumption: 20VA maximum.

Preparation

Unpack the controller and inspect the package contents for damaged or missing components. If damaged, notify the appropriate carrier at once and return any damaged components for immediate repair or replacement. See [“Returning a Defective Unit” on page 35](#).

- [Included in this Package](#)
- [Material and Tools Required](#)

Included in this Package

Included in this package you should find the following items:

- A JACE-700 Version 2 controller.
- These *JACE-700 Mounting and Wiring Instructions*, Part Number 11695 Rev 2.0
- A hardware bag containing the following items:

- Two (2) 6-position screw terminal plugs, one for integral contact inputs (door tamper, UPS battery OK, UPS AC present), one end-mount to wire RS-485/power to optional remote expansion devices.
- One (1) 2-position screw terminal plug for external sealed lead-acid (SLA) rechargeable battery (not provided).
- One (1) grounding wire, with quick-disconnect 0.187" female connector.

Material and Tools Required

The following supplies and tools are typically required for installation:

- NPB-PWR-UN universal AC power supply module, 90-263 Vac input, 15Vdc 30W output, DIN-mount capable, with grounding wire.
- Alternatively, a WPM-XXX wall-mount AC adapter can power the controller only. This requires connecting the WPM-XXX cable to a third-party pigtail adapter cable (ex.: KobiConn DC Power Cord 2.1, Mouser Electronics, part number 172-7426-E) wired into the end connector, or removal of the barrel plug end of the WPM-XXX cable and wiring to the 6-position end connector. See [“WPM-XXX \(Wall Mount AC Adapter\)”](#) on page 23. A multimeter is needed to check polarity.
- DIN rail, type NS35/7.5 (35mm x 7.5mm) and DIN rail end-clips (stop clips), unless using panel mounting method with screws through mounting tabs.
- Suitable tools and fasteners for mounting unit and accessories.
- #2 phillips screwdriver: used to install and remove an optional option card.
- Small flat-blade screwdriver: used for making wiring connections to removable screw terminal plugs.
- (Optional) One or two 12V sealed-lead-acid (SLA) rechargeable backup batteries, with wire harness for connecting to the 2-position connector on the unit. Should be sized as required by the system. See [“External 12V Backup Battery,”](#) page 25.

Precautions

This document uses the following warning and caution conventions:



Caution

Cautions remind the reader to be careful. They alert readers to situations where there is a chance that the reader might perform an action that cannot be undone, might receive unexpected results, or might lose data. Cautions contain an explanation of why the action is potentially problematic.



Warning

Warnings alert the reader to proceed with extreme care in situations where there is a chance that the reader might do something that can result in personal injury or equipment damage. Warnings contain an explanation of why the action is potentially dangerous.


Safety Precautions

The following items are 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.



ATTENTION **Veuillez couper l'alimentation électrique de cet appareil avant de faire l'entretien.**



- Warning**
- A 120Vac or 240Vac circuit powers the NPB-PWR-UN power supply for the controller.
 - 15Vdc  input (DC only) to controller.
 - 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 it for any other purpose.

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 or servicing the system:



- 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 printed circuit boards (PCBs) without proper protection against static discharge. Use a wrist strap when handling PCBs. The wrist strap clamp must be secured to earth ground.

Battery Precautions



- Caution**
- The NiMH battery used in this device may present a risk of fire or chemical burn if mistreated. Do not disassemble, heat above 122°F (50°C), or incinerate.
 - Replace battery pack with part number 12831 (NPB-J-700-BATT) only. Use of another battery may present a risk of fire or explosion.
 - Dispose of used battery promptly. Keep away from children. Do not disassemble and do not dispose of in fire.



WEEE (Waste of Electrical and Electronic Equipment)

Recycling of Electronic Products: (International Installations)

In 2006 the European Union adopted regulations (WEEE) for the collection and recycling of all waste electrical and electronic equipment. It is no longer allowable to simply throw away such equipment. Instead, these products must enter the recycling process. To properly dispose of this product, please take it to a local recycling center. If a local recycling center cannot be found, please return it to one of these offices:

Tridium Europe Ltd
1, The Grainstore
Brooks Green Road
Coolham, West Sussex
RH13 8GR United Kingdom

Tridium AP Sales and Technical Service Center
2206F Building-B, Eagle Plaza
No. 26 Xiaoyun Road
Chaoyang District, Beijing
P. R. China (100125)

Tridium, Inc.
2256 Dabney Road, Suite C
Richmond, VA 23230

Mounting

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



- Note** This product is for **indoor use** only, altitude to 2,000m (6,562 ft.) maximum. The unit should not be exposed to ambient conditions outside of the range of 32°F (0°C) to 122°F (50°C), or relative humidity outside the range of 10 to 90% at 77°F (25°C), non-condensing. Refer to the “[Environment](#)” section on page 8 for further details on mechanical and storage specifications.
- Avoid mounting the controller in a manner that would make it difficult to operate the disconnect device.
 - Before mounting the controller, install any option card(s). See “[About Option Cards](#),” page 15.

Additional mounting information applies, as follows:

- [Environmental Requirements](#)
- [Physical Mounting](#)

Environmental Requirements

Note the following requirements for the controller mounting location:

- 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, plus dissipation from any other devices installed in the same enclosure. 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 with excessive moisture, corrosive fumes, or explosive vapors.
 - where vibration or shock is likely to occur.
 - in a location subject to electrical noise. This includes the proximity of large electrical contactors, electrical machinery, welding equipment, spark igniters, and variable frequency drives.

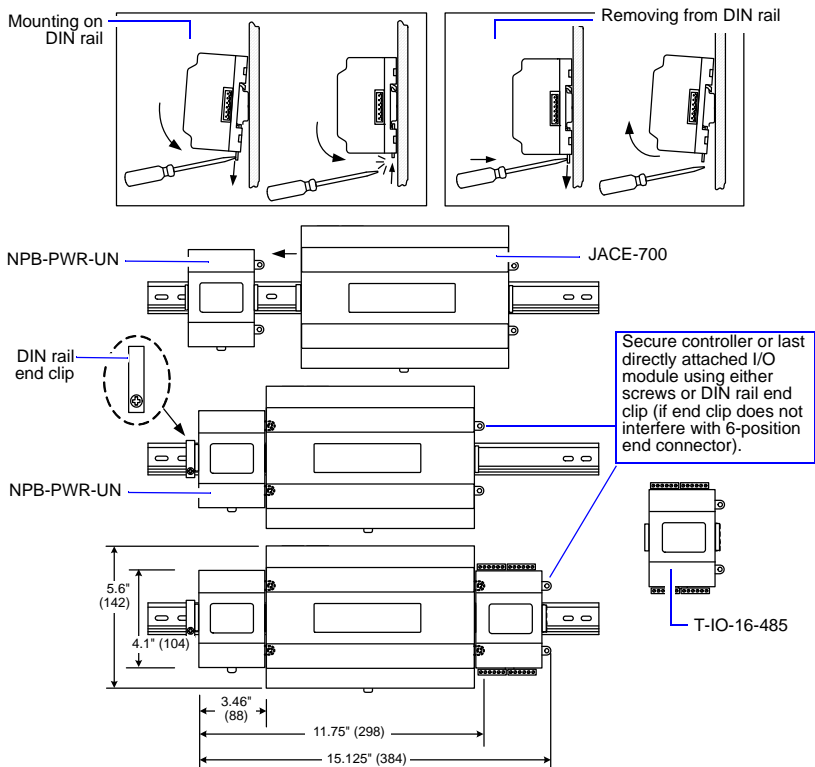
Physical Mounting

You can mount the controller in any orientation. It is not necessary to remove the cover before mounting.

- Mounting on a 35mm wide DIN rail is recommended. The JACE-700 unit base has a molded DIN rail slot and locking clip, as does the NPB-PWR-UN power supply module and any I/O expansion modules. Mounting on a DIN rail ensures accurate alignment of connectors between all modules.
- If DIN rail mounting is impractical, you can use screws in mounting tabs on the NPB-PWR-UN module and the JACE-700, as well as any end-connected accessory. Tab mounting dimensions are on the last page of this document.

Figure 3 and the following procedure provides step-by-step DIN rail mounting instructions for the controller.

Figure 3 JACE-700 controller and accessory mounting details.





Note Mount the NPB-PWR-UN power supply first, then the controller, then any directly attached I/O expansion module.

Procedure 1 To mount on DIN rail

- Step 1 Securely install the DIN rail with at least two screws, near the two rail ends.
- Step 2 Position the NPB-PWR-UN power supply module on the rail, tilting to hook DIN rail tabs over one edge of the DIN rail ([Figure 3](#)).
- Step 3 Use a screwdriver to pry down the plastic locking clip, and push down and in on the module, to force the locking clip to snap over the DIN rail edge.
- Step 4 Mount the controller onto the DIN rail in the same way, such that its left 6-position end connector faces the NPB-PWR-UN power supply.
- Step 5 Slide the two devices together along the DIN rail to connect their 6-position connectors.
- Step 6 If installing any I/O expansion modules, repeat this for each one, until all are mounted on the DIN rail and firmly connected into one assembly.
- Step 7 To keep the final assembly together, secure at both ends with DIN rail **end-clips** provided by the DIN rail vendor. This also prevents the assembly from sliding on the DIN rail. See [Figure 3](#).

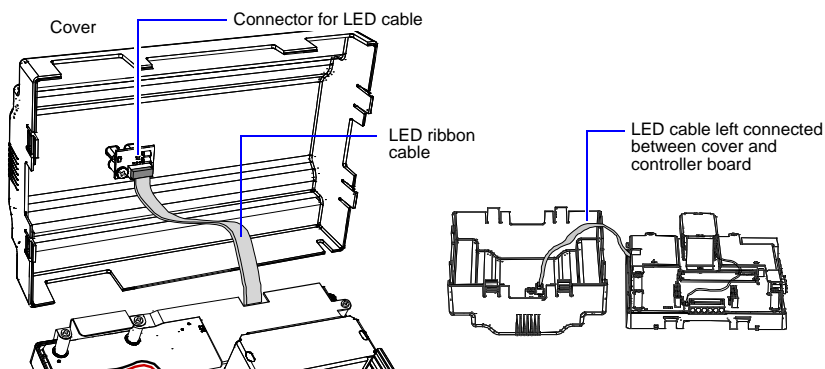
Removing and Replacing the Cover

You must remove the controller's cover to connect the battery (new unit), and/or to install any option cards, or replace the NiMH battery. The cover snaps onto the base with four plastic end tabs—two on each end.



Caution An LED ribbon cable connects the cover to the main board. Be careful when lifting the cover off. If the controller is on a flat work surface, you can leave the cable connected, with the cover next to the unit. See [Figure 4](#).

Figure 4 Removing JACE-700 ontroller cover.



Note If accessory modules are plugged into the controller, you may need to slide them away from the unit to get to the end cover tabs.

- To remove the cover, press in the tabs on both ends of the unit, and carefully lift it off (see previous [Caution](#)). If necessary, unplug the LED cable from the cover, at the connector on the back of the cover (see [Figure 4](#) on page 13).
- To replace the cover, make sure that the LED cable is connected and not folded outside the base. Orient the cover so the cutout area for comm ports is correct, then push inwards to snap in place.

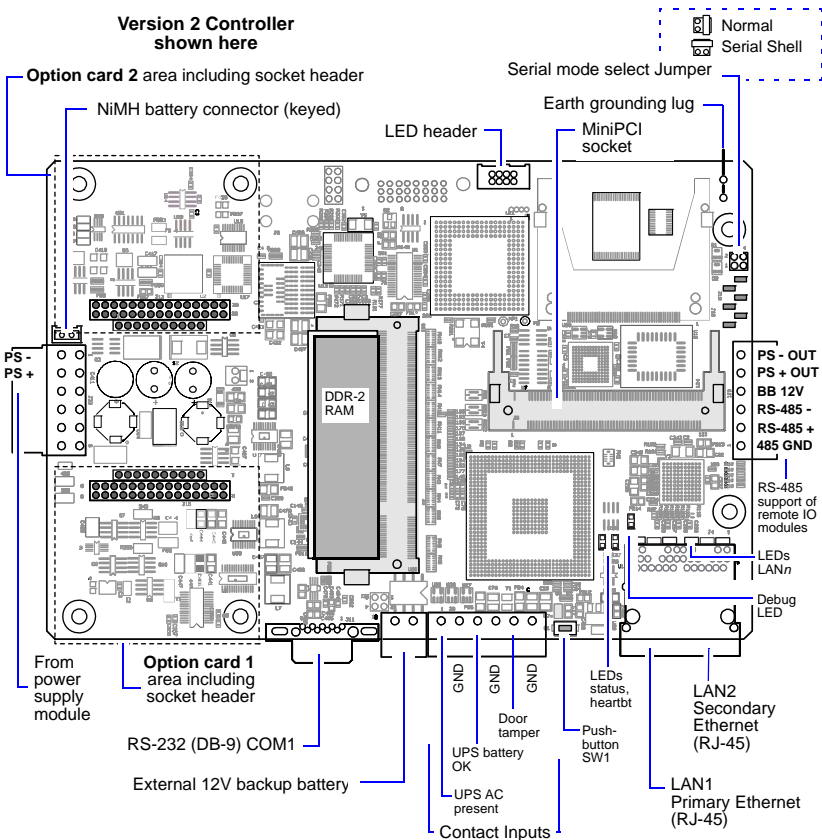
Board Layout

[Figure 5](#) shows the location of connectors, option slots, and other features of the main board in the JACE-700 Version 2 controller. For side views of communications ports and other features, see [Figure 6](#) on page 19.



Note A Version 1 unit has two stacked USB ports on the top side, with 3 LEDs.

Figure 5 JACE-700 controller main board layout details.



The controller ships with both option card slots 1 and 2 open. The DDR-2 RAM socket is populated with a 1GB module. A variety of communications option cards are available. For details, see the next section [“About Expansion Options”](#).

About Expansion Options

The controller provides for **field-installable** expansion using these types of options:


- **Option card** — Install on connectors inside the controller's base unit. See [“About Option Cards,”](#) page 15.
- **Remote I/O modules** — To wire to the controller's right-side 6-pin connector. See [“About Remote I/O Modules,”](#) page 17.
- **MiniPCI option card** — See [“About MiniPCI Cards,”](#) page 18.

About Option Cards

The controller has two (2) available option slots to accept a custom option card, compatible with either of these types:

- T-200/600 (JACE 2/6) compatible options cards: 30-pin, 2 row connector, **or**
- Future release JACE 7 option cards: 40-pin, 3 row connector.

To accept either, both option slots on the controller's base board have a 40-pin connector. See [Figure 5](#) on page 14. Installing an option card is recommended before mounting the unit. See [“Installing an Option Card,”](#) page 16.

 **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 an option card into its connector properly (pins aligned).

 **ATTENTION** Veuillez couper l'alimentation électrique de cet appareil avant de faire l'entretien.

Option cards typically provide additional communications features, with the following available models (with others still in development) listed in [Table 2](#).

Table 2 JACE-700 Controller Option Cards.

Option	Description	Notes
NPB-2X-485	Dual, optically-isolated, RS-485 adapter with two 3-position removable screw-terminal connector plugs.	30-pin option card. If installed in option slot 1, ports operate as COM5 and COM6.
NPB-LON	FTT-10A LON (LonWorks) adapter with a 2-position removable screw-terminal connector plug.	30-pin option card. Port operates as LON1 if only one LON option, or LON2 in slot 2 if two LON cards.
NPB-232	Single port RS-232 adapter, with a DB-9M connector. Supports baud rates up to 115200.	30-pin option card. If installed in option slot 1, port operates as COM5.
NPB-GPRS-W	GSM cellular modem card using GPRS (General Packet Radio Service), with onboard socket for SIM card, and a Wyless SIM. Includes a tilt-and-swivel SMA antenna.	30-pin option card. Card uses two JACE-700 COM ports, e.g. COM5 and COM6 if option slot 1.

Table 2 JACE-700 Controller Option Cards. (Continued)

Option	Description	Notes
NPB-ZWAVE -US or -EU	Z-Wave wireless serial gateway between the JACE's NiagaraAX station and an RF wireless Z-Wave domain. Includes RP-SMA antenna.	30-pin option card. -US model is 908.42 MHz for U.S. usage -EU model is 868.42 MHz for European usage. If installed in option slot 1, card operates as COM5.
NPB-SRAM	Provides "battery-less" operation. Card has static RAM (SRAM) and integral backup capacitor for data storage during power lost periods.	30-pin option card. Does not use/affect COM port operation. NOTE: Starting in AX-3.6.43 or later, you can leave the NiMH battery pack (as well as an external 12V battery) in place with this option card installed. In earlier builds of AX-3.6, you must remove all batteries.
NPB-SED-001	Sedona Framework option card with both wireless 6LoWPAN and wired RS-485 port, based on the Jennic JN5139 wireless microcontroller. Includes tilt and swivel antenna.	30-pin option card. Enables JACE to operate as wireless network coordinator and 6LoWPAN tunnel, to integrate wireless Sedona-based devices in the hosted station. Card uses one COM port, e.g. COM5 if slot 1. NOTE: COM port used is not available in the hosted NiagaraAX station, but is reserved for future MS/TP support.
NPB-MDM	56Kbps Auto-dial/Auto-answer Dialup Modem with one RJ-11 connector for phone line. NOTE: Dialup modems are <i>not supported</i> in AX-3.7 and later.	30-pin option card. Does not have own UART (unlike most other serial cards). Operates as COM5 if installed in option slot 1, COM6 if in slot 2.

Option card COM port assignments

COM port assignments for option cards installed in the controller start at COM5, with Slot 1 evaluated first, then Slot 2. (COM1 and COM2 are always assigned to the onboard RS-232 and RS-485 ports, while COM3 and COM4 are reserved.)

Installing an Option Card

For option-specific details, see the mounting & wiring document that accompanies the particular option card. The following procedure provides a basic set of steps.



Warning On Version 1 controllers, installing an option card in option Slot 2 requires careful attention—you must carefully pry up the shield tab to install the option card under the tab. Do not install an option card in Slot 2 with the card resting on top of the shield tab! Otherwise, an electrical short or some other issue from misaligned card header pins may result.

Procedure 2 Mounting an option card in a JACE-700 controller.

- Step 1 **Remove power** from the controller, including any external battery—see the previous [Warning](#) on page 15.
- Step 2 Remove the cover. See "[Removing and Replacing the Cover](#)," page 13.

- Step 3 Remove the blanking plate for the option slot, retaining the two screws. Retain the blanking plate in case the option card must be removed later.
- Step 4 Carefully insert the pins of the option card into the socket headers of the option card slot.



Note

On Version 1 controllers, if installing in Slot 2 on a Version 1 controller, first carefully pry up the shield tab that goes over the standoff. **Option card 2 must be installed under the shield tab.**

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 5 Place the custom end plate for the option card over the connector(s) of the option card. With some option cards, the card's end plate is pre-fastened.
- Step 6 With the mounting holes aligned with the standoffs, place the two screws through the end plate, and into the standoffs on the controller's base board. Using a screwdriver, hand tighten these screws.
- Step 7 Replace the cover on the controller.

About Remote I/O Modules

The JACE-700 has an integral 6-pin connector to support remote I/O modules. The connector provides both 15Vdc power and RS-485 communications to modules on that connected trunk, and is located on the right side of the unit.

Each remote I/O module has a DIN-mount base, and provides two (2) 6-pin connectors that allow you to “chain” multiple modules together into one assembly. [Table 3](#) lists the currently available modules.

Table 3 Remote I/O modules compatible with the JACE-700 controller.

Model	Description	Notes
T-IO-16-485	Remote I/O RS-485 Module DIN-mountable RS-485 comm module that provides 16 points I/O, with I/O point types 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, 0–10Vdc type. Up to 16 (maximum) T-IO-16-485 accessory modules are supported. See the <i>T-IO-16-485 Installation and Configuration Guide</i> for wiring details.



Note

A maximum of eight (8) T-IO-16-485 modules can be powered by the same NPB-PWR-UN power supply that powers the JACE-700—and this *only* if these modules are either directly attached to the JACE and/or located nearby with little or no “voltage drop” from power cabling.

Higher numbers of T-IO-16-485 modules may be supported; however, you must power them separately from the JACE-700. For more details, please

refer to the “System Planning” section in the *Remote I/O Module (T-IO-16-485) Mounting and Wiring Guide*.

About MiniPCI Cards

The controller has one (1) available MiniPCI slot—see [Figure 5](#) on page 14. This slot supports a specific 802.11 wireless (WiFi) adapter option, model T7-WIFI.



Note

The JACE-700 requires NiagaraAX 3.6 or later for WiFi support. Please refer to the *JACE 7 WiFi Option (T7-WIFI) Install Guide* for mounting details, and the *NiagaraAX JACE WiFi Option - Engineering Notes* document for NiagaraAX platform configuration.

Wiring Details

See [Figure 5](#) on page 14 to locate connectors and components on the controller.

Make connections to the controller in the following order.

- 1 Install any option board (LON, RS-485, RS-232, etc.) in the available option slots. See [“Installing an Option Card,”](#) page 16 for a procedure. For complete details, refer to the specific documentation that accompanied the option.
- 2 Connect communications cables. See [“Communications Wiring,”](#) page 19 for ports available on the controller’s base unit. For ports on any installed option board (485-PWR, LON, RS-485, modem) see the specific mounting and wiring guide for any additional details.
- 3 Apply power to the unit. See [“Power Up and Initial Checkout,”](#) page 27.

Communications Wiring

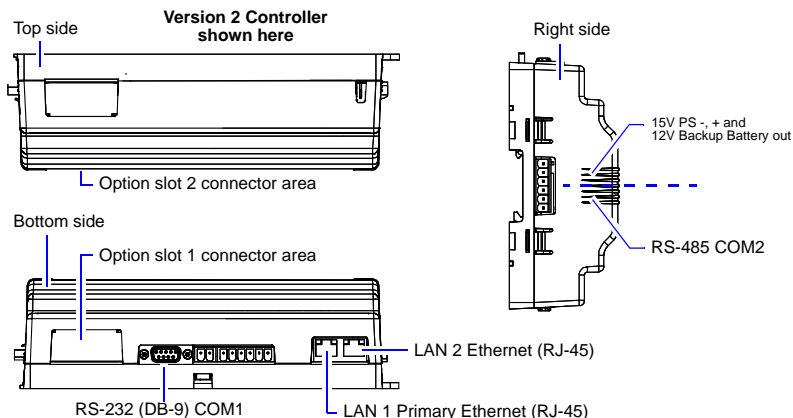
Communications ports on the Version 2 controller are on the bottom side of the unit, with ports also on the right side ([Figure 6](#)). Communications port types include:

- [Ethernet](#)
- [Serial](#)



Note Provide strain relief for any communications cables, to prevent damage.

Figure 6 JACE-700 controller communications ports.



Ethernet

Two, female 1-Gigabit Ethernet connections are provided on the controller. These are RJ-45 connectors labeled LAN1 and LAN2. Use a standard Ethernet patch cable for connecting to a hub or Ethernet switch.

The factory-default IP address for LAN1 is **192.168.1.12n**, where the last numeral **n** in the address matches the last digit in the controller’s serial number, and the subnet mask is **255.255.255.0**. By default, LAN2 is disabled.

Refer to the *JACE NiagaraAX Install and Startup Guide* for details on changing IP address.



Note Typically, you **only use LAN1** (primary port), unless you have a specific application for the other LAN2 port. For example, isolating a driver's network traffic, using LAN2. Do **not** use LAN2 as the primary port.

Serial

There are two “RS” serial ports on the controller’s base board. Each has a UART capable of operation up to 115,200 baud. At the bottom of the board (see [Figure 6](#) on page 19) is an [RS-232](#) port using an DB-9 plug (male) connector. On the right side of the unit is an isolated [RS-485](#) port, using the bottom three terminals of a 6-position screw-terminal connector plug.



Note Additional serial ports may be added with option card(s) in Option Slot 1 and Slot 2, such as an NPB-485-PWR card, NPB-232 card, or NPB-2X-485 card (note the last option actually adds two serial ports).



Note Version 1 controllers have two USB ports that are “stacked” together, located on the top side. These USB ports are “low current” ports, capable of supplying up to 100 mA at 5V, maximum.

RS-232

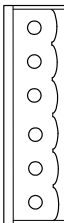
An RS-232 serial port using a male DB-9 connector always operates as COM1. You can use standard DB-9 serial cables with this port.

The controller is a serial DTE device, such another DTE device (PC, for example) requires a “null modem” cable. If connecting to a DCE device (modem, for example), use a straight-through cable. [Table 4](#) provides standard serial DB-9 pinouts.



Note If rebooted with the mode jumper in the “Serial Shell” position (see [Figure 5](#) on page 14), the RS-232 port provides “system shell” access. See the *JACE NiagaraAX Install and Startup Guide* for related details.

Table 4 Serial port (RS-232 and RS-485) pinouts.

Base RS-232 DB-9 Port (COM1)			Base RS-485 Port (COM2)			
Pinout Reference		Signal	DB-9 Pin	Pinouts		
DB-9 Plug (male)		DCD	Data carrier detect	1	6-Position end connector (male)	
1 5		RXD	Receive data	2		
TXD		Transmit data	3			
DTR		Data terminal ready	4			
GND		Ground	5			
DSR		Data set ready	6			
RTS		Request to send	7			
CTS		Clear to send	8			
not used on the JACE 7			9			

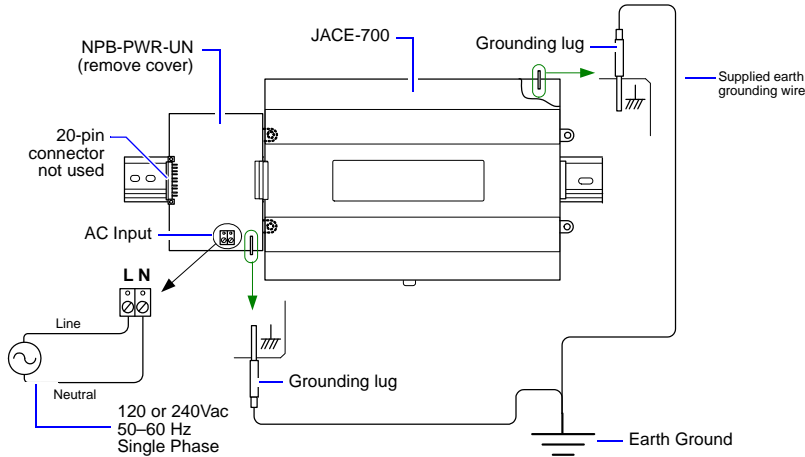
RS-485

An RS-485, optically isolated port is available on 3 pins of the 6-position right-side connector, and always operates as COM2. As shown in Table 4, the screw terminals are minus (–), plus (+), and shield. Wire in a continuous multidrop fashion to other RS-485 devices, meaning “minus to minus,” “plus to plus,” and “shield to shield.” Connect the shield to earth ground at one end only, such as at the JACE-700.

Grounding

An earth ground spade lug (0.187") is provided on 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. Keep this wire as short as possible, see Figure 7.


Figure 7 Grounding and power wiring connections to NPB-PWR-UN module.



Power Wiring

There are two power options for the controller: the **NPB-PWR-UN** power supply module (typical), or a **WPM-XXX (Wall Mount AC Adapter)**.

NPB-PWR-UN

The NPB-PWR-UN module lets you power the controller (and if installed, connected I/O modules) from AC line power, with a universal input range from 90–263Vac. The NPB-PWR-UN module provides 15V **DC** () to the controller, and installs on the **left side** of the controller. See [Figure 7](#).



ATTENTION Veuillez couper l'alimentation électrique de cet appareil avant de faire l'entretien.



- Warning**
- A 120Vac or 240Vac circuit powers the NPB-PWR-UN. **Disconnect power to this circuit** before installation to prevent electrical shock or 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 by the powered devices.

Make power input connections to the terminals on the NPB-PWR-UN circuit board (cover removal is required). Use the supplied earth grounding wires to make a connection from a nearby earth ground to the grounding lug on both the NPB-PWR-UN power supply and the controller. See [Figure 7](#).

Procedure 3 Wiring NPB-PWR-UN input power and earth ground.

- Step 1** **Remove power** from the AC circuit being wired to the NPB-PWR-UN—see previous [Warning](#).
- Step 2** Remove the NPB-PWR-UN cover.
To do this, press in the four tabs on both ends of the unit, and lift the cover off. If the JACE-700 controller is plugged into the unit, you may need to slide it away to get to the cover tabs.
- Step 3** Connect the supplied earth grounding wire to a nearby grounding point. See [Figure 7](#) on page 21.
- Step 4** Make AC circuit connections line (mains) and neutral to the terminals labeled “INPUT PWR.”
- Step 5** Replace the cover on the NPB-PWR-UN module.

Make sure all modules in the mounted assembly are firmly connected together and secured.



Caution Do not energize the AC circuit wired to the NPB-PWR-UN until all other controller mounting and wiring is completed. See “[Power Up and Initial Checkout](#),” page 27.

Power and ground is also provided in wiring to remote I/O modules through the 6-position connector. However, note for **each remote I/O module**, you should also connect its earth ground spade lug to earth ground at that module's location.

WPM-XXX (Wall Mount AC Adapter)

You can order and adapt a wall mount AC adapter (model WPM-XXX, where -XXX is -US, -EU, or -UK) to power **only** the controller.



Note I/O modules cannot also be powered by a WPM-XXX adapter.

There are *two solutions* for adapting the WPM-XXX wall mount AC adapter:

- You can connect the WPM-XXX to a third-party adapter cable that is wired to the 6-position end connector on the controller. See [Solution 1](#).
- Or, you can modify the WPM-XXX cable and so that it can be wired to the end connector. See "[Solution 2](#)" on page 24.

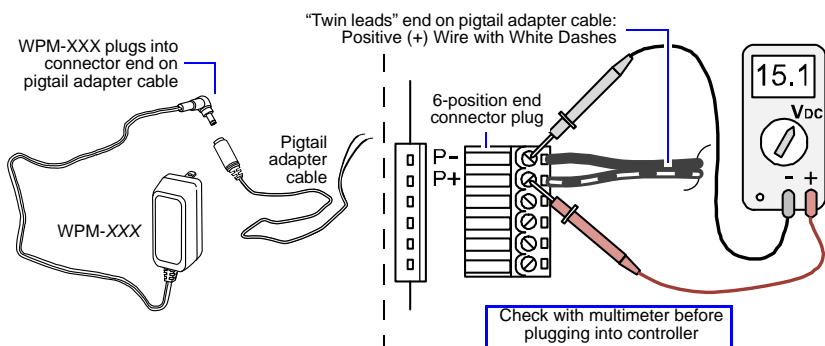


Note Before plugging the wired connector plug into the controller, check for 15Vdc at the **proper polarity** using a multimeter.

Solution 1

Solution 1 requires a pigtail adapter cable, available from third-party vendors (ex.: KobiConn DC Power Cord 2.1, Mouser Electronics, part number 172-7426-E). The barrel plug end of the WPM-XXX is plugged into the connector end on the pigtail adapter cable. Then at the twin leads end of the pigtail cable, wire the two leads into the "P-" and "P+" positions of the 6-position end connector plug, observing proper + and - polarity, as shown in [Figure 8](#).

Figure 8 WPM-XXX wall mount AC adapter using a pigtail adapter cable.



Before plugging connector into controller, plug the WPM-XXX adapter into an outlet and use a multimeter (on V DC) to verify correct polarity.

Do not power the controller until all other mounting and wiring is completed. See "[Power Up and Initial Checkout](#)," page 27.

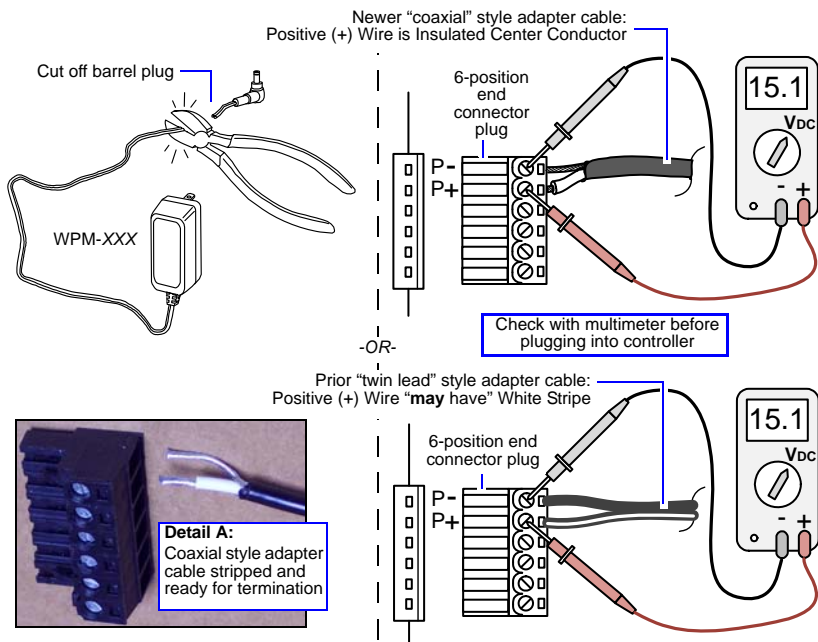
Solution 2

Solution 2 requires that you *modify* the WPM-XXX cable. To do this you must cut off the adapter's barrel end plug and wire the cable into the 6-position end connector plug on the JACE, as shown below in [Figure 9](#).



Note Newer versions of the WPM-XXX adapter use a “coaxial” type cable (insulated center conductor is “+”), whereas prior versions have a “twin lead” type cable, that **may** have the “+” conductor marked with a faint white line.

Figure 9 Adapting a WPM-XXX wall mount AC adapter by modifying the cable.



After cutting off the WPM-XXX adapter's end plug:

- If the coaxial type cable, carefully cut back the outer insulation, and gather the outer shielded conductor (“-”) lead. Cut back about 5/16" (8mm) of the insulation around the center shielded conductor (“+”) lead. See **Detail A** in [Figure 9](#), above. Terminate the two leads into the 6-position end connector plug, as shown at *top*.
- If the twin-lead type cable, carefully cut/separate lengthwise about 1" (25mm) between the two leads, then strip back 5/16" (8mm) of the insulation around each lead's conductor. Terminate the two leads into the 6-position end connector plug, as shown in [Figure 9](#), *bottom right*.

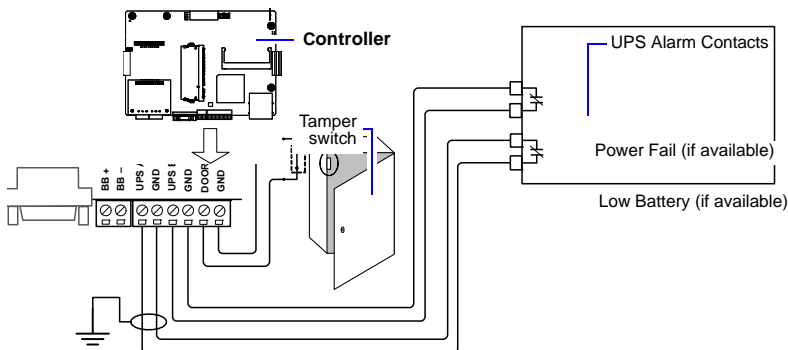
Before plugging the connector into the controller, plug the WPM-XXX adapter into an outlet and use a multimeter (on V DC) to verify correct polarity. Do not power the controller until all other mounting and wiring is completed. See [“Power Up and Initial Checkout,”](#) page 27.

Contact Inputs

Three contact inputs (CIs) are on a 6-position connector next to the 2-position external battery connector. CIs typically monitor normally-closed (N.C.) alarm contacts, if available on a UPS and/or the “door tamper” switch of a nearby enclosure. These CIs are **unsupervised**—no end-of-line resistors are required.

Figure 10 shows example wiring to all three CIs of the controller.

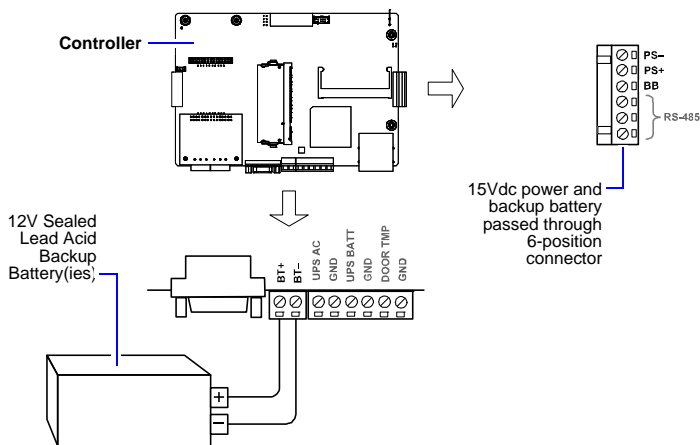
Figure 10 Contact Input wiring to JACE-700 controller.



External 12V Backup Battery

A 2-position connector provides support for an external 12V sealed lead-acid (SLA) rechargeable battery. For more details, see “About the Backup Batteries,” page 27.

Figure 11 Sealed lead-acid backup battery connection on JACE-700 controller.



Note

The minimum wire size for battery connections is 18AWG (1.0mm²) for up to 4 ft. (1.22m), or 16AWG (1.29mm²) for up to 12 ft. (3.66m).

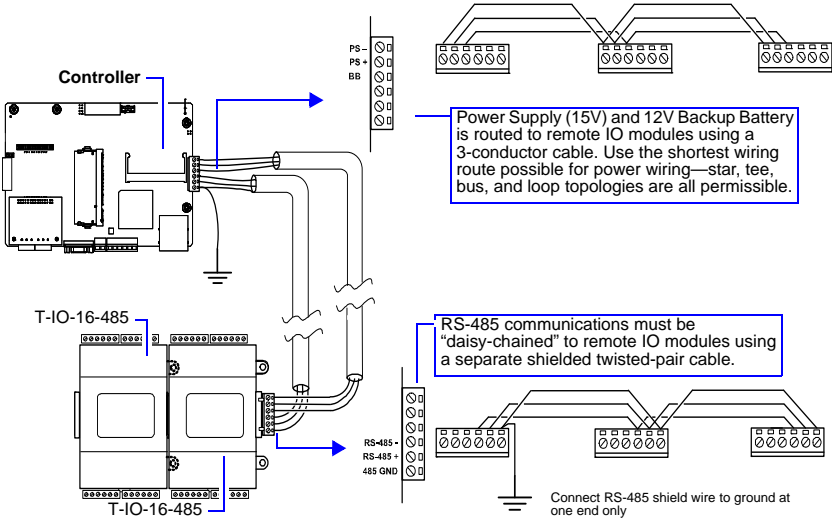
Wiring to Remote I/O Modules

Wiring to remote I/O modules typically provides both 15Vdc power and 12V battery backup, along with RS-485 communications to the modules. See [Figure 12](#).



Note For limits of supported I/O modules, refer to the *Remote I/O-16 -485 Module Mounting and Wiring Guide* section “System Planning”.

Figure 12 Power and RS-485 cabling between JACE-700 and remote I/O modules





Power Up and Initial Checkout

Following all mounting and wiring, perform the following:

Procedure 4 **Initial power up and checkout.**

- 1 Apply Power.
- 2 Check the Status LED.

Also see the section “[About the Backup Batteries](#)” on page 27.

Apply Power

The controller does not include an on/off switch. To apply power, you simply energize the AC circuit (90–263 Vac) wired to the attached [NPB-PWR-UN](#) power supply module. If remote I/O modules are wired to the unit, they are also typically powered by the controller as well.

If powering the JACE-700 controller (only) with a [WPM-XXX \(Wall Mount AC Adapter\)](#), simply plug the AC adapter into a nearby wall outlet.

Check the Status LED

When power is applied, the front cover STATUS LED will light green. This indicates that the system is OK and that power is applied. The STATUS LED may be blinking until the QNX OS has finished loading and the Niagara platform daemon is running.

Once this boot sequence has finished, the STATUS LED should remain lit (steady), and the BEAT (heartbeat) LED should start blinking, typically at a rate of 1Hz at 50%/50% on/off duty cycle. During the first minute of boot up, the heartbeat LED may be off, blink sporadically, or stay on.

If after applying power, the STATUS LED goes out, or if the BEAT LED comes on (steady) and stays lit longer than 2 minutes, contact Systems Engineering for technical assistance. See also the “[About LEDs](#)” section on page 30.

About the Backup Batteries

A JACE 7 series controller has two different backup batteries:

- An on-board [NiMH battery pack](#), and
- An optional external, sealed lead-acid, rechargeable [backup battery](#) (or batteries)

For continuous system operation during loss of primary power (to the NPB-PWR-UN module powering the unit), unless power loss is only a few seconds, both batteries should be installed. Station alarms are generated if either battery is uncharged or unable to hold a sufficient charge, as well as whenever primary power is lost. You should always investigate any alarm related to backup batteries.

NiMH battery pack

A custom 10-cell NiMH (nickel metal hydride) battery pack is inside the controller, mounted atop the shield, and is secured by a metal bracket and two keps nuts. This battery allows the controller to continue station operation (only) through very short power bumps, meaning a few seconds in duration. If a longer outage, the NiMH battery provides enough run time for the unit to backup data and then shutdown.

Typically, this process takes about one minute. Shutdown occurs automatically, after data is backed up to on-board flash memory.

Upon startup (boot), a test of the NiMH battery is performed. A system alarm is generated if the NiMH battery voltage level is found to be bad. A charge is also initiated upon startup, which lasts from 3 hours minimum, and can range up to 18 hours if the battery is completely discharged. During this NiMH battery charge period, neither the NiMH battery or the external [backup battery](#) is tested. After the startup NiMH charge period, a periodic test of **both** batteries occurs, and the appropriate battery alarm is generated if either battery is found to be bad.

**Note**

- If the last NiMH battery test was “bad,” upon loss of primary power the controller performs an immediate shutdown, backing up data and powering off (including expansion modules).
- A NiMH battery characteristic is to lose charge if not left in charge mode (trickle charge). Leaving the battery unconnected, or in the unit powered off will cause the battery to fully discharge in a matter of weeks. Note that in the case of a new controller, it ships from the factory with a completely discharged battery. Therefore, allow at least 18 hours for the battery to charge if it has not been in a powered unit.

You should replace the NiMH battery pack approximately every three years, or more often if the unit is in a high temperature environment. For more information on the use and replacement of the battery, refer to the “[Required NiMH Battery Maintenance](#)” section on page 31.

Backup Battery

The optional sealed lead-acid backup battery is an external, 12V, rechargeable battery (or multiple batteries) sized to operate the system during loss of primary power, for some duration. This includes the controller, as well as power to attached I/O expansion modules.

You connect the backup battery to the controller using a 2-position connector—see [Figure 11](#) on page 25. Whenever primary-powered, the controller supplies a constant “trickle” charge to this battery, at 200mA maximum. At startup (boot), a test of the backup battery is performed, as well as a periodic test. A system alarm is generated if a battery test deems the backup battery to be bad.

Providing that the backup battery has tested good, upon loss of primary power the system operates from this backup battery power until the charge level of the on-board [NiMH battery pack](#) reaches 0. Note that both batteries discharge in parallel. However, as the sealed lead-acid backup battery capacity is much greater, the [NiMH battery pack](#) discharges much slower than if these backup battery(ies) were bad or not present.



Note

If the backup battery test was “bad,” upon loss of primary power, the controller performs an immediate shutdown, backing up data and powering off (including expansion modules).

You should replace the sealed lead-acid backup battery(ies) approximately every three years, or more often if the unit is in a high temperature environment.



Caution

Replace external back up battery with Listed Low Power Source Battery Only.

About LEDs

The controller provides a number of LEDs on its main board, of which only the Status and Heartbeat LEDs are visible on the cover. Checking other LEDs requires first removing the cover. LEDs include the following types:

- [Status](#)
- [Heartbeat](#)
- [Debug](#)
- [Ethernet Ports](#)

For the location of LEDs on the main board, see [Figure 5](#) on page 14.

Status

The green “STATUS” LED is located on the cover. On the main board, it is also the green “SYSOK” LED next to the “BEAT” LED—both are found near the Ethernet connector housing. The status LED should remain lit whenever the controller is **powered**, or else be blinking during the boot sequence. If the status LED **does not light** while power is applied, contact System Engineering for technical support.

Heartbeat

The green heartbeat “BEAT” LED is located on the cover, as well as on the main board next to the “SYSOK” Status LED. In normal operation, this heartbeat LED typically blinks at 1Hz, at 50%/50% on/off duty cycle.

During the first minute of controller boot up, the heartbeat LED may be off, blink sporadically, or stay on. When bootup completes, the platform daemon is started, and the normal (50%/50%) duty cycle heartbeat flash pattern returns.

If the heartbeat LED stays **on constantly**, **does not light**, or blinks **very fast** (more than once per second), contact System Engineering for technical support.

Debug

The yellow “DEBUG” LED is located on the main board near the Ethernet connector housing, and remains lit whenever the controller has been rebooted with the “serial mode select” jumper in the “serial shell” position (see [Figure 5](#) on page 14). This indicates that the DB-9 [RS-232](#) port is operating in serial shell mode.

Ethernet Ports

Two LEDs for each of the two LAN ports are provided on the back of the metal LAN connector housing, and operate as follows.

The left-side **green** “activity” 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.

The right-side **yellow** “speed” LED indicates Ethernet connection speed, as either:

- **Off** — “Fast Ethernet” / “Ethernet” (100 Mbps /10Mbps).
- **On** — “Gigabit Ethernet” speed (1000 Mbps).



Maintaining the controller

This section provides information on the following topics:

- [Cleaning](#)
- [Required NiMH Battery Maintenance](#)
- [Replacement Parts](#)
- [Replacing the JACE-700](#)
- [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, you can wipe it with a damp cloth and mild detergent.

Required NiMH Battery Maintenance

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

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 [“NiMH battery pack,”](#) page 27). Therefore, even a new unit (or replacement battery) will require up to 18 hours of powered operation before it can provide reliable backup power (is at full charge).

The controller monitors the NiMH 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 on page 33. See the next section [“Replacing the NiMH Battery”](#) for a replacement procedure.

Replacing the NiMH Battery

The replacement NiMH battery is an assembly, that is a custom battery pack with an attached cable and connector plug. See [Figure 13](#). To replace the battery, you must remove power to the unit and remove its cover.



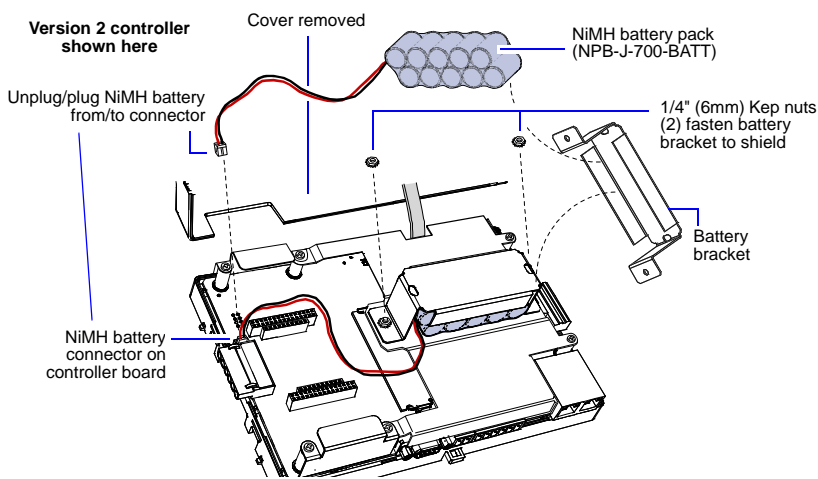
Caution Use only NiMH battery packs approved for use with the JACE-700.

Procedure 5 Replacing NiMH battery assembly on a JACE-700 controller.

- Step 1 **Backup** the controller's configuration to your PC using the appropriate NiagaraAX software tool (for example, Workbench).

- Step 2 Remove all power from the controller, including any sealed lead-acid battery. Wait for LED activity to stop—after a couple of minutes, all LEDs on the unit should be off.
- Step 3 Remove the cover. See “[Removing and Replacing the Cover](#),” page 13. At this point you have access to the NiMH battery assembly ([Figure 13](#)).

Figure 13 Replacing NiMH battery pack in controller.



Note Dispose of the used NiMH battery properly.

- Step 4 Unplug the NiMH battery from the main board connector (see [Figure 13](#)).
- Step 5 Using a 1/4\" (6mm) nutdriver, unfasten and retain the two kep nuts that secure the metal battery bracket to the shield, and remove the shield and battery pack.
- Step 6 Put the **replacement battery** into the metal shield, and refasten back into place on the shield, using the two kep nuts. Hand tighten with a nutdriver.
- Step 7 Plug the battery connector plug of the replacement battery into the NiMH battery connector on the main board of the controller. The connector is keyed—you cannot plug the battery in reversed.
- Step 8 Replace the cover.
- Step 9 Restore power to the controller and verify normal operation.

Battery Disposal

Please dispose of the used NiMH battery in accordance with local, state, and federal regulations.



Warning Do not incinerate or mutilate the battery, as this may cause it to burst or release toxic materials. Refer to “[Battery Precautions](#),” page 10.

If regulations specify returning the old battery to a recycling center, but no acceptable recycling center can be found, please return the old NiMH battery pack to Tridium for proper disposal.

Replacement Parts

Servicing the JACE-700 controller may call for replacement parts. There are three categories of parts:

- [Non-replaceable Parts](#)
- [Standard Replacement Parts](#)
- [New Replacement Unit](#)

Non-replaceable Parts

Fuse

The controller contains a non-user replaceable 2.5A slow-blow fuse, soldered on the main circuit board. This fuse provides protection from internal shorts or connection to incorrect power supplies. If the fuse circuitry is suspect, contact technical support. See the [“Returning a Defective Unit”](#) section on page 35.

Standard Replacement Parts

Standard replacement parts are listed in [Table 5](#), and can be ordered from stock without restriction. Standard replacement parts cannot be returned for credit and should be disposed of in an appropriate manner.

Table 5 Standard replacement parts for a JACE-700 controller.

Part Number	Description
NPB-J-700-BATT	NiMH Battery Pack—see “Required NiMH Battery Maintenance,” page 31
T7-1GB	1 GB DDR-2 333MHz SODIMM RAM memory module (replacement part)
11696	Hardware Bag for JACE-700, containing screw terminal connector plugs (two 6-position, one 2-position, earth grounding wire).

New Replacement Unit

To replace an entire unit, order and install a **new** JACE-700 controller. If the faulty controller is **still in warranty**, you can receive credit by returning it. Be sure to contact the vendor for a return authorization (RA) number before shipping an item for return credit. See [“Returning a Defective Unit,”](#) page 35, for more details.



Note

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

Replacing the JACE-700



Note Before handling circuit boards, discharge any accumulated static by touching a nearby earth ground. For details, see the [“Static Discharge Precautions”](#) section on page 10.

To replace a JACE-700 with a new replacement unit, proceed as follows:

Procedure 6 **Replacing a JACE-700 controller.**

- Step 1 If possible, use the appropriate NiagaraAX software tool to back up the controller's configuration to your PC.
- Step 2 **Remove power** to the controller, including any external 12V battery. The unit should power down automatically. Wait for all LEDs to remain off.
- Step 3 Remove the front cover. See [“Removing and Replacing the Cover,”](#) page 13.
- Step 4 Note positions of all communications and other wiring cables going to the controller. If necessary, label connectors and accessory modules to avoid mis-connection later, after the controller is replaced.
- Step 5 Unplug all Ethernet, serial, LON, modem, and I/O connectors from the controller. Note the position of installed option cards, if any. You must transfer them to the replacement JACE-700 controller.
- Step 6 Remove the controller from its mounting (DIN rail, panel mount tabs, etc.).
- Step 7 Remove any option cards from the old controller and install them into the replacement JACE-700 controller, if applicable. See [“Installing an Option Card,”](#) page 16 for more details.
- Step 8 Mount the replacement controller as it was previously, using the same DIN rail location and/or screws.
- Step 9 Reconnect the earth ground wire to the controller's grounding lug and any installed accessory modules.
- Step 10 Reconnect any Ethernet, serial, modem, and I/O connectors.
- Step 11 If using IO modules, and any of your I/O points have voltage, turn the devices back on, or reconnect power to them.
- Step 12 Replace the cover. See [“Removing and Replacing the Cover,”](#) page 13.
- Step 13 Restore power to the unit. It should boot up as a new unit (see [“Check the Status LED,”](#) page 27).
- Step 14 Using the NiagaraAX platform tools, re-commission the JACE-700 controller, and install the saved station database. For more details, see the *JACE NiagaraAX Install and Startup Guide*.



Returning a Defective Unit

For proper credit on an in-warranty unit, ship the defective unit per the vendor's return material procedures.



Note If the defective unit is under warranty, please follow return instructions provided in this section.

If the unit is **out of warranty**, please discard any replaced part.

- Do not return an out-of-warranty JACE-700 controller.

Prior to returning the unit, contact your vendor to obtain a return materials authorization (RMA) number and other instructions.

Please provide:

- Product model
- Serial number
- Nature of the defect
- PO number to secure the RMA

Certifications

The JACE-700 (T-700) has the following agency listings, compliances, and certifications:

- UL 916 - Underwriters Laboratories, Energy Management Device, CAN/CSA C22.2 Canadian Safety Standards
- FCC Part 15, Class A - Federal Communications Commission
- ICES-003, Class A - Industry Canada Interference-Causing Equipment Standard
- EU 202/95/EC RoHS (Restriction of Hazardous Substances)
- C-Tick (Radiocommunications Determination 1988), supplier code N314
- CE Declaration of Conformity (Council Directive 89/336/EEC, 92/31/EEC, 73/23/EEC, 93/68/EEC)

For complete details on listings and compliances for these controllers, refer to the document *Agency Listings and Approvals for Tridium Hardware Products*.

Tab Mounting Dimensions

Measurements are in inches and (mm). DIN mounting is recommended over tab mounting. See [Figure 3](#) on page 12.



Note Electronic and printed versions of this guide may not show the dimensions to scale. Verify all measurements before drilling.

Figure 14 JACE-700 controller tab mounting dimensions.

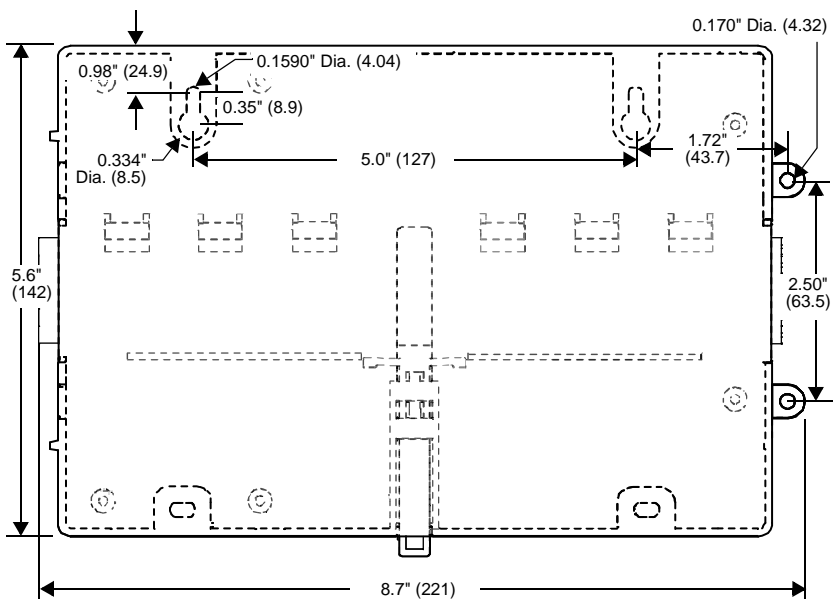


Figure 15 JACE-700 controller with power supply module attached.

