

# JACE-NXT MOUNTING AND WIRING GUIDE

The JACE-NXT is a powerful, fanless embedded industrial PC for DIN rail or wall mounting. An Intel 1.2 GHz Celeron processor and 2GB RAM is standard, with models using either a 250GB hard drive or 2GB Flash drive for storage. Microsoft Windows XP Embedded is the operating system.



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# About This Guide

This document covers the mounting and wiring of the Vykon® JACE-NXT 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
J-NXT-R2	JACE-NXT controller with 250GB hard drive storage, Niagara Release 2 software, and a LOGO!Power universal input power supply module. Both JACE-NXT and power supply module are DIN-mountable
J-NXT-HD-AX	JACE-NXT controller with 250GB hard drive storage, NiagaraAX software, and a LOGO!Power universal input power supply module. Both JACE-NXT and power supply module are DIN-mountable.
J-NXT-FL-AX	JACE-NXT controller with 2GB CompactFlash storage, NiagaraAX software, and a LOGO!Power universal input power supply module. Both JACE-NXT and power supply module are DIN-mountable. Also includes the NXT-UPS option below.
NXT-UPS <sup>a</sup>	Two DIN-mountable modules, as follows: <ul style="list-style-type: none"> <li>SITOP DC-USV-Modul 15: 24Vdc UPS module.</li> <li>SITOP Power Battery: 24V/1.2Ah module for UPS.</li> </ul>

- a. The NXT-UPS is included in the J-NXT-FL-AX model. You can also order and use the NXT-UPS option for any hard-drive based JACE-NXT model.



## Note

Complete details on the companion LOGO!™ Power and SITOP® modules listed above (power supply, UPS and battery) are furnished in separate documents, shipped with each module. All of these modules are covered in this document only as applied to using with the JACE-NXT.

Not covered in this document is the Niagara<sup>AX</sup> or Niagara® R2 software installation and configuration required for a fully functioning unit. Refer to the appropriate JACE-NXT “Startup Guide” for this information.

## Related Documentation

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

- JACE-NXT NiagaraAX Install and Startup Guide*
- NiagaraAX User Guide*
- NiagaraAX Platform Guide*

# Product Description

The Vykon JACE-NXT is an ultra-compact, 24Vdc-powered, industrial PC platform, designed for DIN rail mounting. It provides integral control, supervision, and network management solutions for wide variety of networked field devices. The fanless design of the JACE-NXT incorporates an Intel® Celeron® M processor and 2GB of system RAM. Microsoft® Windows® XP Embedded is the OS, using either 2GB CompactFlash or a 250GB hard drive for storage (depending on model).

The JACE-NXT uses DIN-mountable modules for power and UPS backup—refer to [Table 1](#) for a summary and description of onboard communications ports.

*Table 1 JACE-NXT features and options.*

Model	Description	Ports/Notes
JACE-NXT	Any model JACE-NXT, DIN-mountable, with 2GB RAM, and Windows XP Embedded OS pre-installed. Includes brackets for alternate panel mounting. For 24Vdc operation only, using supplied power supply, described below. LOGO!Power 24V/4A universal input power supply module: 100–240Vac, 47–63 Hz input, 24Vdc output, 90W power supply module, DIN-mountable	2 - 10/100/1000 Mbps Ethernet, RJ-45 1 - RS-232 Serial, DB-9 male 1 - RS-485 Serial, 3-pos. plug 1 - FTT-10A LON, 2-pos. plug 4 - USB (2.0)
NXT-UPS option (standard with J-NXT-FL-AX)	Includes SITOP DC-USV-Modul 15: 24Vdc output UPS (uninterruptable power supply) module, DIN-mountable, with communications to JACE-NXT for power monitoring. Includes/requires battery module, below. Connects to a USB port on the JACE-NXT.	Recommended in all cases, and included/required if a CompactFlash-based J-NXT-FL-AX. Includes two separate SITOP modules, described at left.
	Includes SITOP Power Battery 24V/1.2Ah module, DIN-mountable, use with SITOP DC-USV-Modul 15.	

Although the normal operating mode for a JACE-NXT is “headless,” an onboard DVI-I port supports connection to an LCD or CRT monitor (providing it has a DVI interface, or accepts a DVI-to-VGA adapter). A local console also requires connection of a USB-type keyboard and mouse to the JACE-NXT USB ports.

## Windows Notes

Regardless of JACE-NXT model, Windows “XP Embedded” is pre-installed on CompactFlash (J-NXT-FL-AX) or a hard drive (J-NXT-HD-AX, J-NXT-R2). No Windows CD is included. A “Certificate of Authenticity” sticker is attached near the model number label.

Windows XP Embedded supports a “local desktop environment,” meaning the attachment of a keyboard, mouse, and monitor for a local console. However, typical Windows access is done using a Microsoft “Remote Desktop” client connection to the unit, as all models of JACE-NXT are factory-configured to support this. Refer to the software “startup” guide listed in [“Related Documentation,”](#) page 4.

## Dimensions

Figure 1 and Figure 2 shows dimensions of the JACE-NXT ready for DIN-mounting.

Figure 1 Dimensions of JACE-NXT, Top and Front Elevation.

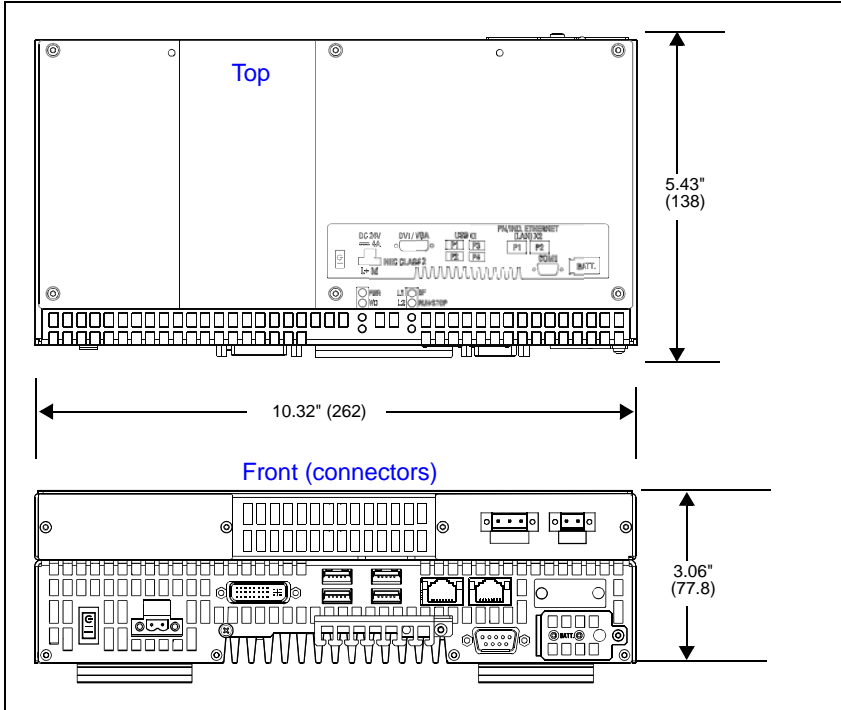
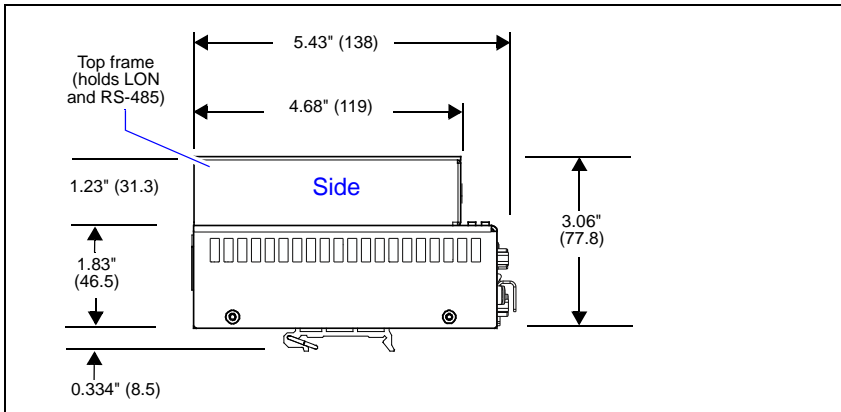


Figure 2 Dimensions of JACE-NXT, Side Elevation.

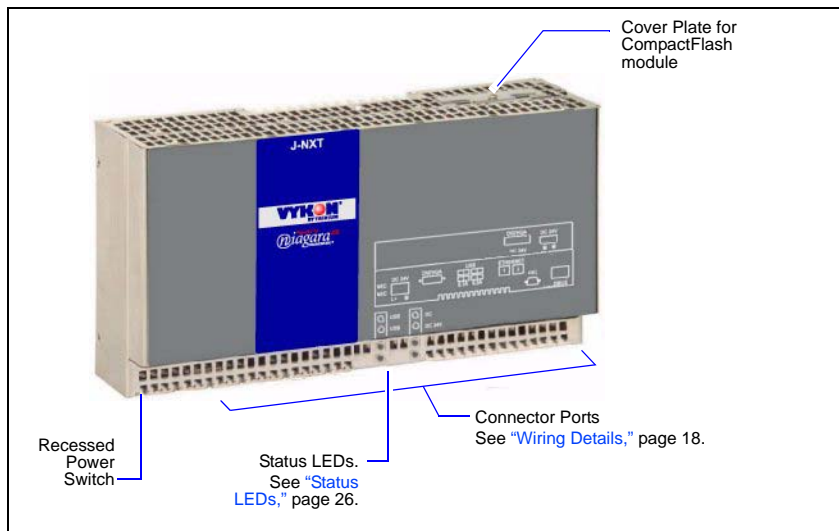


For dimensions with wall mounting brackets fastened, see Figure 10 on page 16.

## JACE-NXT Layout

Figure 3 shows the location of important features of the JACE-NXT, as oriented in its typical mounting position.

*Figure 3 Layout of JACE-NXT features.*



## 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 33.

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

### Included in this Package

Included in this package you should find the following items:

- a JACE-NXT controller.
- a **packing slip**, which lists the factory settings for IP address, machine name, and host logon.
- This *JACE-NXT Mounting and Wiring Guide*, Part Number 11860 Rev 1.3
- a hardware bag containing the following items:
  - One USB cable strain-relief bracket, with Torx T20 mounting screw.
  - Two panel/wall mounting brackets, with Torx T20 mounting screws.
  - One 2-position screw terminal plug, with locking screws, for 24Vdc power.
  - One 3-position screw terminal plug, for RS-485 port.
  - One 2-position screw terminal plug, for LON FTT-10.

## Material and Tools Required

The following supplies and tools are typically required for installation:

- A LOGO! Power 24V/4A DC power supply, DIN-mountable (included in separate package).
- If a J-NXT-FL-AX model (optional for other models), a NXT-UPS option consisting of two modules:
  - UPS module: SITOP DC-USV-Modul 15.
  - Battery module: SITOP Power Battery 24V/1.2Ah.
- Inline fuse holder (Bussmann # HRF or # HMF or equivalent) and compatible 4A, 32V, fast-acting fuse (Bussmann type # SFE-4 or equivalent).
- Suitable enclosure for housing the JACE-NXT and other modules, as applicable.
- 35mm DIN rail(s) for mounting the JACE-NXT controller and other modules, as the recommended method.
- Suitable tools and supplies for mounting enclosures, JACE-NXT controller and other modules, and for making all wiring terminations.

## 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 JACE-NXT controller. Be sure to heed these warnings to prevent personal injury or equipment damage.



### Warning

- **A 120Vac or 240Vac circuit powers the 24Vdc module (Power Supply) powering the 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.**

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## Static Discharge Precautions

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

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## General Precautions



### Caution

Do not install any expansion options (memory, PC/104 modules) apart from those already in the device, or this will void the warranty for the JACE-NXT. Note that the JACE-NXT already contains the maximum amount of allowable system RAM, at 2GB.

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## 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 Asia Pacific Pte Ltd  
17 Changi Business Park Central 1  
Honeywell Building  
Singapore 486073

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

# Mounting



**Note** This product is intended for indoor use, in closed rooms only. Observe the following mounting requirements.

## Mounting requirements

### Ambient environmental and mechanical conditions

Ambient conditions must be within the range of:

- **Humidity:** 5 to 80% at 25°C (77°F), non-condensing.
- **Temperature:**
  - CompactFlash model: 0°C (32°F) to 50°C (122°F) if in horizontal mounting position, or 0°C (32°F) to 45°C (113°F) if in vertical mounting position.
  - Hard drive model: 5°C (41°F) to 40°C (104°F) in either mounting position.

Mechanical ambient limit conditions are as follows:

- **Vibration**, in operation (tested to DIN IEC 60068-2-6):
  - Flash-based model: 5 to 9 Hz: 3.5 mm, 9 to 500 Hz: 9.8 m/s<sup>2</sup>;
  - with hard drive option and wall mounting: 10 to 58 Hz: 0.0375mm; 58 to 200 Hz: 4.9 m/s<sup>2</sup>;
  - with hard drive option and DIN mounting or vertical installation: vibration not permitted.
- **Resistance to shock**, in operation (tested to DIN IEC 60068-2-27):
  - Flash-based model: 150 m/s<sup>2</sup>, 11 ms;
  - with hard drive option: 50 m/s<sup>2</sup>, 30 ms.

### Minimum clearances

Ensure that there is a minimum clearance from the JACE-NXT to other components or the walls of an enclosure, as follows:

- Below: at least 3.94" (100mm)
- Above: at least 1.97" (50mm)

### Mounting orientation

Mounting orientation is strongly recommended to be horizontal only, with connectors at bottom, to maximize heat dissipation. Vertical mounting decreases ambient temperature limits.

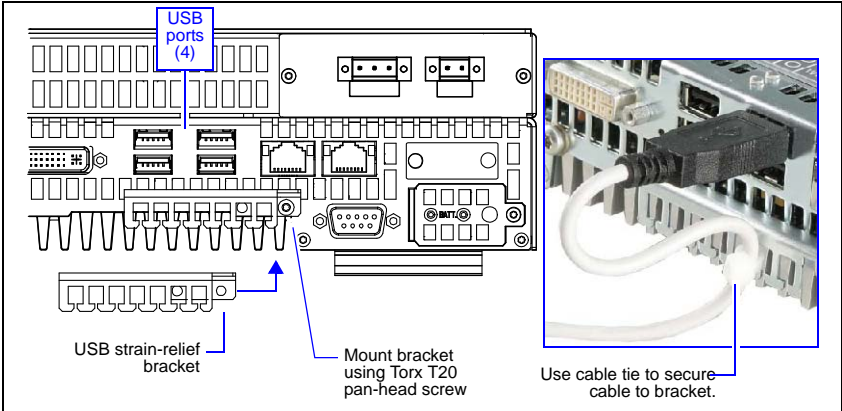
The following sections provide more mounting details:

- [USB strain-relief](#)
- [Space Requirements](#)
- [DIN rail mounting](#)
- [Wall mounting](#)

## USB strain-relief

A strain-relief bracket is included in the unit's hardware bag, for use with USB cables. Securing cables to the bracket helps prevent accidental detachment from the USB ports.

*Figure 4 USB strain-relief bracket.*

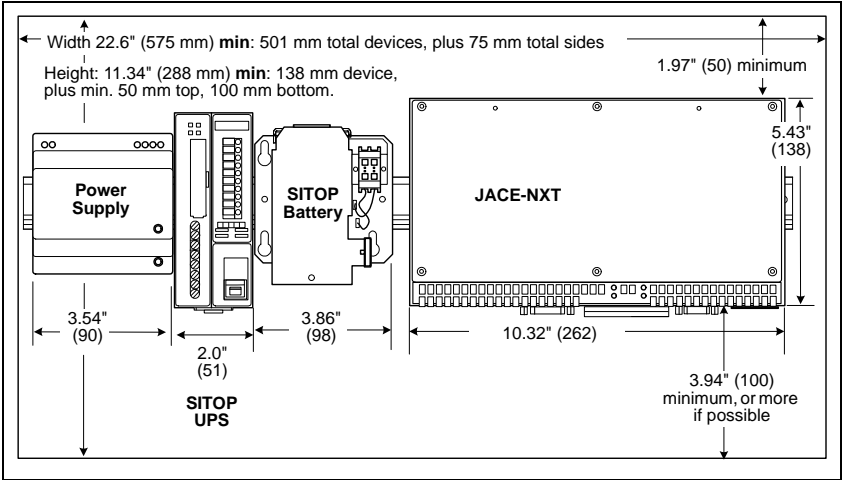


Use one of the provided pan-head screws (Torx T20 head) to mount the bracket below the ports, as shown in [Figure 4](#). Once mounted to the unit, you can secure USB cables to the bracket using cable tie-wraps (not supplied).

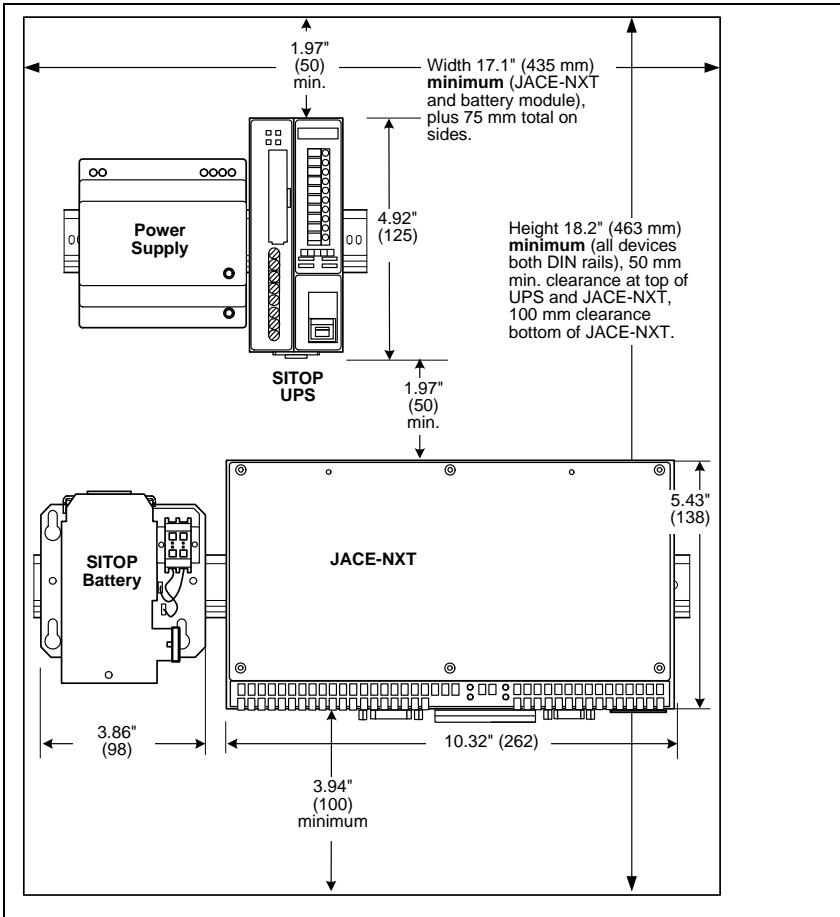
## Space Requirements

A typical installation includes the power supply module, and NXT-UPS (UPS module and battery module). Depending on the enclosure space available, mount the JACE-NXT and other modules on either a single DIN rail, as shown in [Figure 5](#), or on two DIN rails, as shown in [Figure 6](#) (preferred) or in [Figure 7](#).

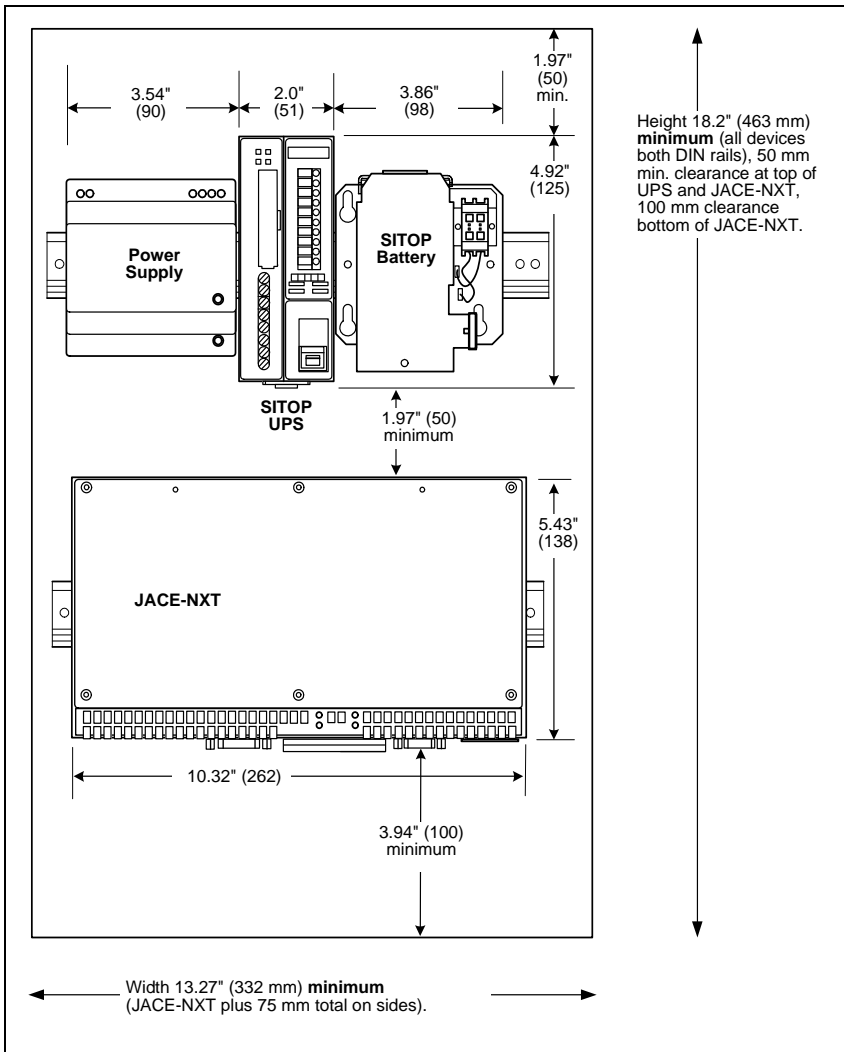
*Figure 5 Single DIN-rail mounting of all devices.*



*Figure 6 Two DIN-rail mounting method A (preferred), JACE-NXT and battery lower.*



*Figure 7 Two DIN-rail mounting method B, all modules located above JACE-NXT*



There are two mounting methods for the JACE-NXT:

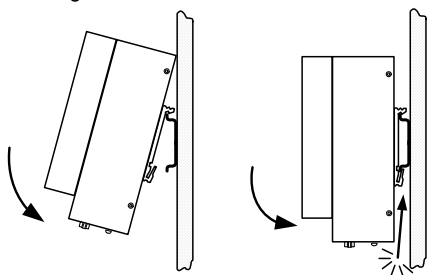
- [DIN rail mounting](#)
- [Wall mounting](#)

## DIN rail mounting

DIN rail mounting is the preferred method. The following procedure provides step-by-step instructions for mounting the JACE-NXT controller on DIN rail.

*Figure 8 Mounting JACE-NXT on DIN rail.*

Mounting on DIN rail



### Procedure 1 DIN rail mounting the JACE-NXT controller.

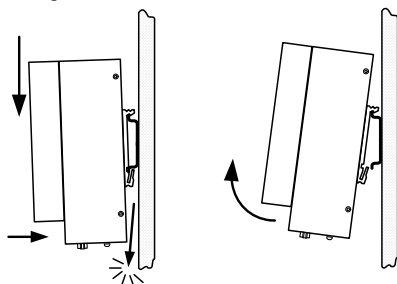
- Step 1 Position the controller on the DIN rail, tilting to hook clamps over the top edge of the rail, as shown in [Figure 8](#).
- Step 2 Swing the device down fully onto the DIN rail, until both clamps completely latch.
- Step 3 Mount other modules (Power Supply, UPS, Battery) onto DIN rail in the same fashion—see the installation document shipped with each module for complete details.
- Step 4 If needed, secure devices with DIN rail end-clips provided by the DIN rail vendor.



**Note** To remove from DIN rail, press down on the unit and in at the bottom, to release the clamps. Then swing the unit up. See [Figure 9](#).

*Figure 9 Removing JACE-NXT from DIN rail.*

Removing from DIN rail



## Wall mounting

To wall mount the JACE-NXT, remove the factory-installed DIN-rail mounting clamps from the back of the device, and install the mounting brackets with the Torx T20 (M4 x 6mm) screws provided in the hardware bag. Step-by-step instructions for installing the brackets are provided below.

### Procedure 2 Wall mounting the JACE-NXT controller.

- Step 1 At the back of the unit, remove the four screws (A) securing the two DIN brackets, as shown below.

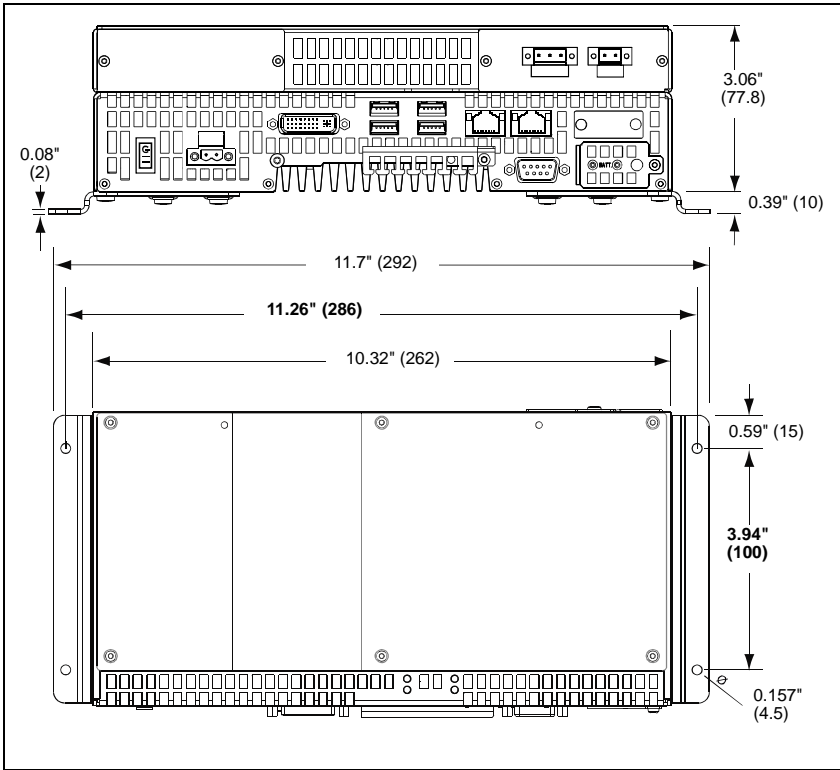


- Step 2 Install the wall mount brackets using the supplied pan-head screws into the mounting holes, using four screws in each bracket, as shown below.



- Step 3 See [Figure 10](#) for dimensions with wall mount brackets installed.
-

*Figure 10 JACE-NXT dimensions with wall mounting brackets.*



When mounting, ensure that a minimum of 3.94" (100 mm) is maintained on the bottom (connector) side from other devices and/or enclosure walls, and a minimum of 1.97" (50 mm) clearance on the top of the unit.

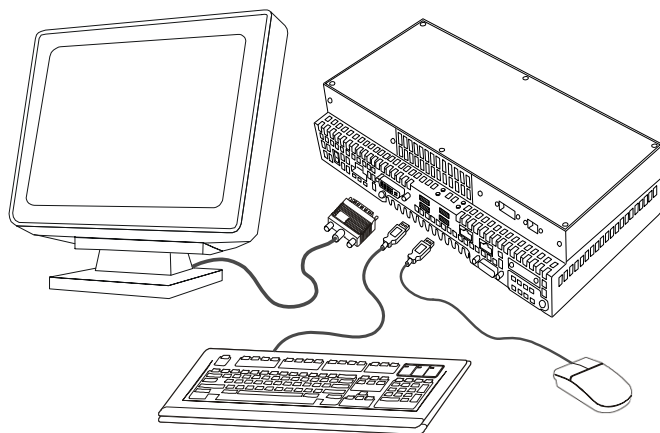


## Local Console

Typically, for initial software installation and commissioning, you access the JACE-NXT remotely, using NiagaraAX or Niagara R2 software (Workbench platform connection or Admin Tool, respectively). In the case of applying Windows updates or making Windows security setting changes, you connect remotely using the Microsoft “Remote Desktop” software. See the appropriate JACE-NXT “Install & Startup Guide” for further details.

However, in some cases you may need a “local console” attached to the JACE-NXT, that is a keyboard, mouse, and monitor. One example is after replacing the backup battery, to re-enter any BIOS setup data that was lost. Note that access of the BIOS setup of a JACE-NXT is not possible over a network connection.

*Figure 11 Attaching local console to JACE-NXT.*



Please note the following about using a local console with the JACE-NXT:

- A USB type keyboard and mouse is required (no PS/2 type connectors).
- A DVI-capable display is needed, or a DVI-to-VGA adapter (not included) and a VGA monitor combination that has been tested to work with the JACE-NXT.
- After attaching these items to the JACE-NXT, you must reboot the unit for local console operation.



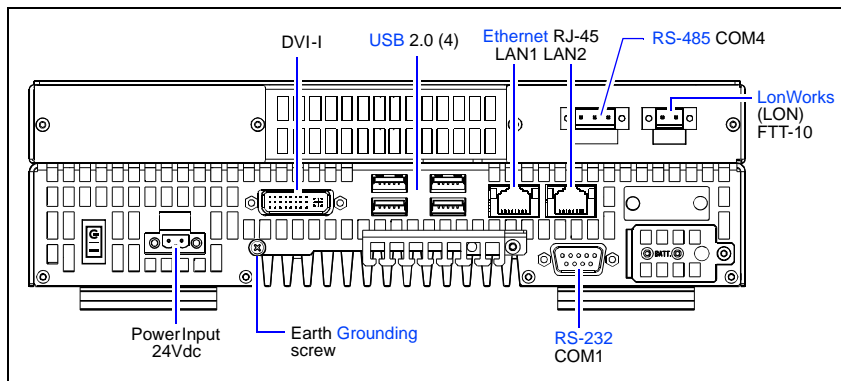
**Note**

The DVI or CRT display should be connected and switched on when the JACE-NXT boots in order for it to be correctly detected by the BIOS and the operating system. Otherwise, the display may remain dark.

## Wiring Details

All wiring is made to the front of the JACE-NXT—when mounted in recommended (horizontal) position, this is at the bottom. See [Figure 12](#) for a layout of connectors.

*Figure 12 JACE-NXT connectors.*



Make connections to the JACE-NXT controller in the following order.

- 1 Connect an earth grounding wire to a nearby earth grounding point, and to the earth ground screw (Phillips head) on the controller. See [“Grounding,”](#) page 19.
- 2 Connect a standard USB A–B type cable between the NXT-UPS (if used) and one of the USB ports on the controller. Note that the UPS module must specifically be configured. See [“USB to NXS-UPS,”](#) page 15.
- 3 Prepare the 24Vdc power source. The LOGO!Power 24V/4A module is typically used for 24Vdc power.

In most cases, two additional modules are used for UPS backup operation during AC power outages: the SITOP DC-USV-Modul 15 (UPS) and SITOP battery module. See the [“Power Input”](#) section on page 16.

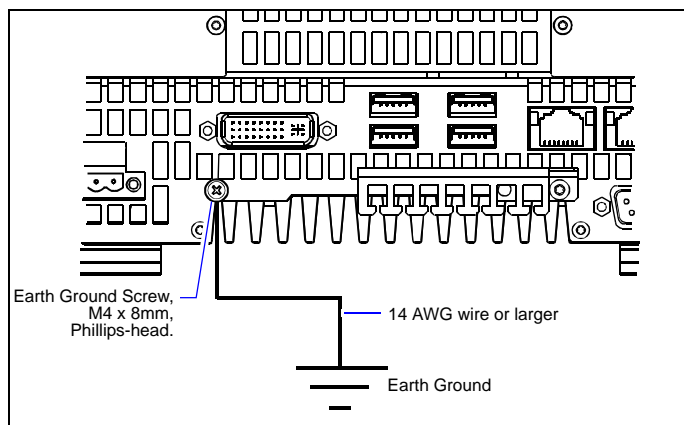
- 4 Connect the Ethernet cable. The JACE-NXT provides two (2) auto-sensing 10/100/1000 Mbps (RJ-45) connectors. Use the **left** RJ-45 connector (LAN1) as the primary port—see [Figure 12](#). Connect to your LAN (local area network).
- 5 Other connectors include an RS-232 serial port (DB-9 connector, COM1) and an RS-485 serial port (3-position, COM4). Both ports can be used to support serial-connected integrations.

In addition, a LON port supports connection to a LonWorks 78-Kbaud free topology (FTT-10) network, using a two-pin connector. Wiring is polarity insensitive.

## Grounding

Connect a wire from a nearby earth ground to the protective earth terminal (Phillips-head screw, M4 x 8mm) on the JACE-NXT.

*Figure 13 Connect earth ground using grounding wire to grounding lug.*

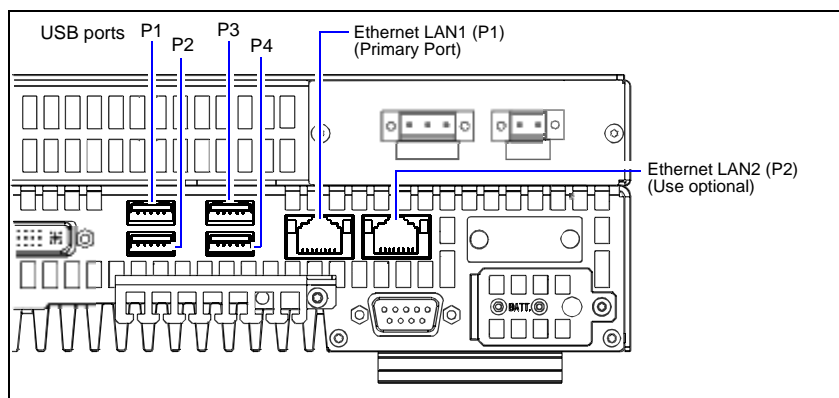


Minimum wire gauge is 14 AWG (2.5mm<sup>2</sup> cross section). Keep this wire as short as possible.

## USB

Four USB 2.0 ports are available, labeled “P1”, “P2”, “P3”, and “P4”—see [Figure 14](#).

*Figure 14 USB 2.0 ports and Ethernet ports on JACE-NXT controller.*



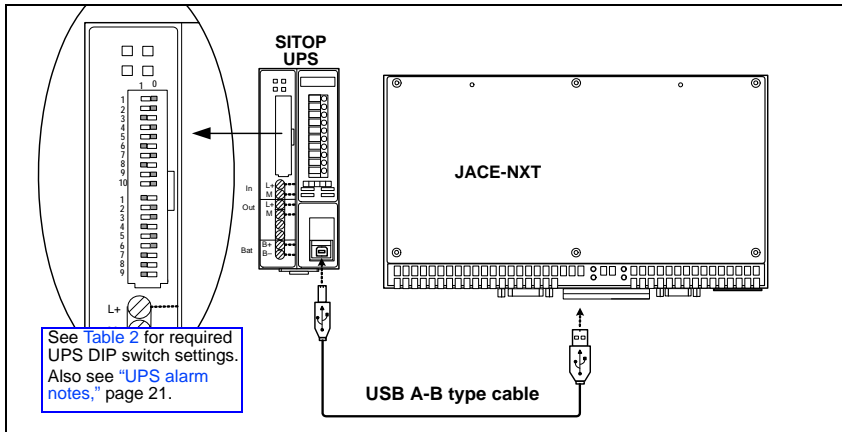
All four USB ports are “high current” types, capable of supplying up to 500 mA each, for a total of 10W maximum.

- The typical application for a USB port is for communications to a NXT-UPS. See the next “[NXT-UPS USB wiring and configuration](#)” section.
- USB ports can also be used with a USB-type PC keyboard and PC mouse, if a local console is needed. Note that the JACE-NXT must be rebooted after attaching a PC keyboard for it to be operational.

## NXT-UPS USB wiring and configuration

If the JACE-NXT is installed with the NXT-UPS modules, connect a USB “A–B type” cable between the SITOP UPS and any one of the USB ports on the JACE-NXT. In addition, you must set the DIP switches on the UPS module to specific positions, for operation with Niagara software. See [Figure 15](#) and [Table 2](#).

*Figure 15 USB wiring to NXT-UPS (SITOP UPS module).*



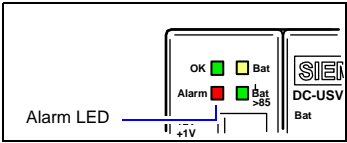
*Table 2 DIP switch settings on SITOP UPS for use with JACE-NXT.*

UPS DIP Switches		Default Recommended Settings
Switch	Pos. (0=Off)	
1	0	Sets cut-in threshold to 22.5 volts. If the input voltage drops below this value, the UPS module switches into buffer mode, supplied solely by the battery.
2	0	
3	1 (On)	
4	0	
5	0	Sets end-of-charge voltage (EOCV) to 27.0 volts. This is the recommended voltage using the associated battery module around a 25 °C (77 °F) operating temperature.
6	1 (On)	
7	0	
8	1 (On)	
9	0	Sets charging current to 0.7A. Continues until EOCV is reached.
10	0	
1	1 (On)	Sets buffering time to 95 seconds.
2	0	
3	0	
4	1 (On)	
5	0	
6	0	
7	1 (On)	
8	1 (On)	Set to 5 second disconnect at end of buffering time.
9	1 (On)	Battery in ON state (as an alternative, jumper terminals X2.9–X2.10).

## UPS alarm notes

The SITOP UPS module (included in NXT-UPS) has 4 LEDs at the top of the unit.

*Figure 16 LEDs on UPS module.*



If the red Alarm LED flashes in a 2 second cycle, this typically indicates that batteries in the battery module need replacement.

The SITOP battery module uses two (2) batteries, both 12V, 1.2Ah, sealed lead acid types with 0.187" faston tabs. The following models (or equivalents) can be used as replacements for the batteries that ship with the unit:

- Yuasa NP 1.2-12
- Rocket ES 1.2-12

For more details, see the printed installation documents that were shipped with the SITOP UPS module and power battery module.

## Power Input



**Warning** Review the “[Safety Precautions](#),” page 8.

Often, power wiring for the JACE-NXT involves all modules listed in [Table 3](#).

*Table 3 Power, UPS, and Battery Modules for JACE-NXT.*

Module	Description	Notes
Power Supply	LOGO!Power 100–240Vac input, 24Vdc output, 90W power supply module, DIN-mountable.	Mount and wire according to shipped installation document. Also see “ <a href="#">Power wiring between modules</a> ,” page 22.
NXT-UPS	SITOP DC-USV-Modul 15, 24Vdc output UPS (uninterruptable power supply) module, DIN-mountable, with USB communications to JACE-NXT for power monitoring.	Mount and wire according to shipped installation document. Also see “ <a href="#">NXT-UPS USB wiring and configuration</a> ,” page 20, and “ <a href="#">Power wiring between modules</a> ,” page 22.
	SITOP Power Battery 24V/1.2Ah battery pack module, DIN-mountable, for use with UPS.	Mount and wire according to shipped installation document. Also see “ <a href="#">Power wiring between modules</a> ,” page 22.

See the following sections for more details:

- [Power wiring between modules](#)
- [Connecting the 24 Vdc supply](#)

## Power wiring between modules

Figure 17 shows power wiring connections for a unit without the NXT-UPS option.

Figure 17 Power-related connections for JACE-NXT without NXT-UPS option.

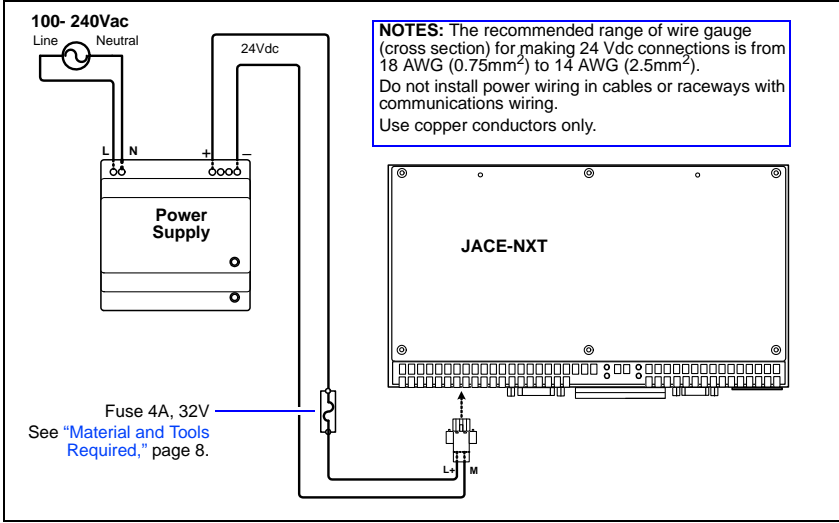
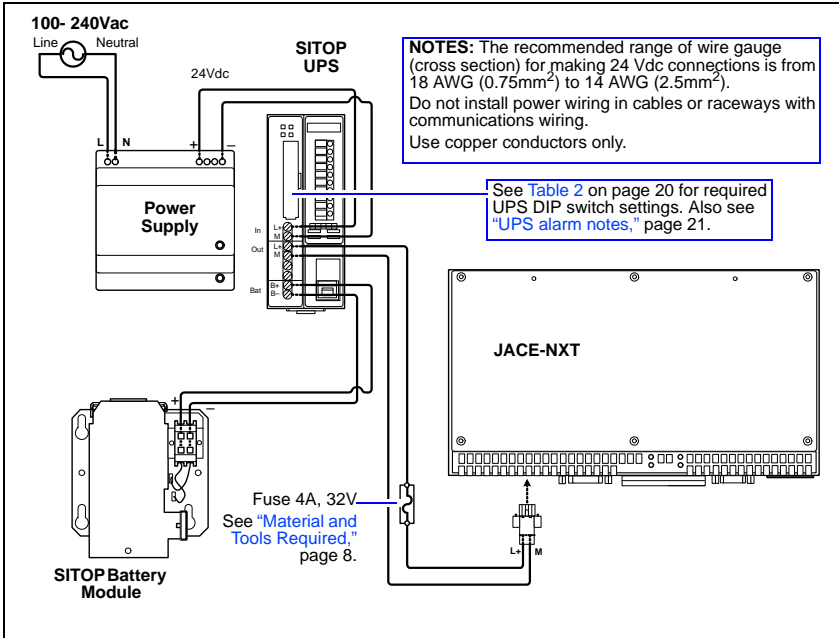


Figure 18 shows power wiring connections for a JACE-NXT with NXT-UPS option (such as for a model J-NXT-FL-AX).

Figure 18 Power-related connections for JACE-NXT with NXT-UPS option.



## Connecting the 24 Vdc supply



### Caution

Before powering the JACE-NXT, note the following:

- Use only the special connector plug supplied with the unit to connect supply voltage.
- The device should only be connected to a 24Vdc power supply that satisfies the requirements of safe extra low voltage (SELV).
- When the device is operated on a wall, in an open rack, or other similar locations, an NEC Class 2 current source must be used for UL requirements (in accordance with UL 60950-1). In all other cases, in accordance with IEC / EN / DIN EN 60950-1, it is necessary to use either a power source of limited performance (LPS - Low Power Source), or use a line-side fuse or line-side power switch. Power needs to be limited to less than 8 A. The recommended fuse rating is 4 A.
- For operation in closed cabinets or fireproofing cabinets (including the operation of a cabinet in accordance with UL508), there are no requirements for current limiting of supply voltage.



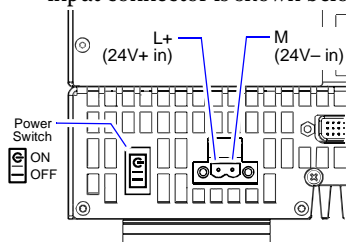
### Note

If the JACE-NXT uses a CompactFlash card, make sure that the card is properly seated before powering the unit. See [Figure 3](#) on page 7.

### Procedure 3 To connect 24Vdc power to the JACE-NXT.

Step 1 Switch off the power source for the 24 Vdc supply.

Step 2 Wire the 24 Vdc source (typically from the NXS-UPS “Out” terminals) to the 2-position connector plug included with the JACE-NXT. The power input connector is shown below.



**WARNING: Do not connect AC mains (line) directly to this connector, or severe damage will result!**

#### NOTES:

- Install an inline, 4A, 32V fast-acting fuse on the “L+” wiring to the JACE-NXT. See [Figure 17](#) and [Figure 18](#) on page 22.
- Do not install power wiring in cables or raceways with communications wiring.
- Use copper conductors only.

The recommended range of wire gauge (cross section) for making 24 Vdc connections is from 18 AWG (0.75mm<sup>2</sup>) to 14 AWG (2.5mm<sup>2</sup>).

Step 3 With the JACE-NXT power switch in OFF, insert the power connector plug into the JACE-NXT.

Step 4 When finished making other wiring connections, restore the power source to the 24 Vdc supply. Then use the JACE-NXT power switch to power it up.

## Ethernet

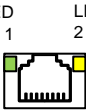
Two, female RJ-45, 10/100/1000 Mbps Ethernet ports are provided, numbered “1” and “2.” See [Figure 14](#) on page 19. The **primary** Ethernet port is the LAN1 (left) port.



- 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.
  - The JACE-NXT is not a “hub” that can forward Ethernet packets between segments on the two LAN ports.

Use a standard Cat 5e or 6 Ethernet patch cable for connecting to a hub or Ethernet switch on the LAN. The maximum end-to-end distance from the controller to the hub is 328 feet (100m). Each Ethernet port has two LEDs, described in [Table 4](#).

*Table 4 JACE-NXT Ethernet port LED operation.*

Ethernet Port	LED	Description
	LED 1	Off: 10 Mbps Lit in green: 100 Mbps Lit in orange: 1000 Mbps
	LED 2	Lit: Active connection (to a hub, for example) Flashing: Activity

## RS-232

A standard RS-232 serial port uses a DB-9 male connector, and is labeled “COM1” (see [Figure 12](#) on page 18). It operates as COM1 in software. Use a standard “null-modem” cable to communicate to another DTE device, or a “straight-through” cable to communicate to a DCE device, such as a modem.

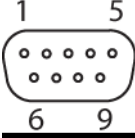
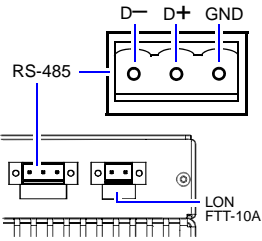


- Note**
- Use only shielded cable for any RS-232 connection, such as typical for a standard (pre-fabricated) straight-through or null-modem cable. If fabricating a cable, connect the shield (drain) wire to the DB-9 connector shell at the JACE end only—do not connect the drain wire at the other end.

Pinouts for the RS-232 port are provided in [Table 5](#).



Table 5     Serial port (RS-232 and RS-485) pinouts.

RS-232 DB-9 Port (COM1)			RS-485 Port (COM4)
Pinout Reference	Signal	DB-9 Pin	Pinouts
DB-9 Plug (male)	DCD	Data carrier detect	1
	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
	RI	Incoming call	9
			

RS-485

An RS-485, optically isolated port uses a 3-position, screw terminal connector port and wiring plug, and always operates as COM4. Wire to this connector with shielded 18-22AWG wiring (refer to the TIA/EIA-485 standard).

As shown in Table 5, the RS-485 screw terminals (from left-to-right) are: Data minus (–), Data plus (+), and shield (GND).

LonWorks


A single, two-pin, male LonWorks FTT-10A connector port and wiring plug is available (see Table 5, lower right). This connection supports twisted pair, unshielded, polarity-insensitive, peer-to-peer communications at 78 Kbps.

Refer to the *LonWorks FTT-10A Free Topology Transceiver User’s Guide* (078-0156-01F) for technical guidelines associated with free topology restrictions, and the *Junction Box and Wiring Guidelines for Twisted Pair LonWorks Networks* (005-0023-01) for more detailed information on wiring specifications. These documents are available on Echelon’s web site (www.echelon.com).

# Status LEDs

The JACE-NXT has four LEDs located on the surface above the USB ports, with operation described in [Table 6](#).

*Table 6 Status LEDs on JACE-NXT.*

Status LED	Label	Meaning	State	Description
	PWR	Power supply	Off Green	Standby mode Supply voltage available
	WD	Watchdog status	Green Red	Not currently used (normally Off).
	L1	LED1	Yellow	Not currently used (normally Off).
	SF	Group errors	Red	Not currently used (normally Off).
	L2	LED2	Yellow	Not currently used (normally Off).
	RUN/STOP	Run Stop	Green Yellow	Not currently used (normally Off).

During typical operation, only *one* of the LEDs above is illuminated: PWR (green).



**Note** Each of the two Ethernet ports have two status LEDs. See the section “[Ethernet](#)” on page 24 for details.

## Power Up and Initial Checkout

Once you have mounted the JACE-NXT and completed all wiring, power on the unit using its power switch. See “[Connecting the 24 Vdc supply](#)” on page 23. Verify that the PWR status LED lights green and remains lit.



- Note**
- Windows takes 1-1/2 minutes, or longer, to load on the JACE-NXT. The actual time depends on applications and services installed.
  - Once the operating system has been successfully loaded, you can commission the JACE-NXT over the network using the appropriate Niagara host platform tool. This is the recommended method to access any JACE controller. For example, see the *JACE-NXT NiagaraAX Install and Startup Guide*.
  - You can also access a JACE-NXT over a LAN using a networked Windows PC and a Remote Desktop Connection (Windows Terminal Services).

## Maintenance

Tools needed when opening and working in the JACE-NXT include the following:

- Lithium backup (CMOS) battery: **Torx T8** driver
- Protective earth terminal: Phillips head driver



**Warning** Remove power from the JACE-NXT before beginning any maintenance.

---



- Note**
- Removing the top cover or front cover on the JACE-NXT should not be necessary. As factory shipped, the unit has all supported options already installed, including maximum amount of RAM memory.
  - Units installed with the NXT-UPS option (SITOP UPS and Battery modules) may periodically require replacement of the two (2) sealed lead acid batteries in the Battery module. See the section “[UPS alarm notes](#)” on page 21 for related details.
- 

As needed, use the following procedures to perform maintenance tasks on the JACE-NXT controller:

- [Replacing the backup battery](#)
- [BIOS setup](#)

### Replacing the backup battery

The JACE-NXT is equipped with a 3.0Vdc Lithium backup battery. The battery provides back-up power to buffered SRAM, the real-time clock, and the CMOS data area that stores BIOS setup.



- Note**
- The life span of the lithium backup battery is approximately 3–5 years, depending on the operating conditions.
  - After replacing the backup battery, you may need to re-enter certain BIOS setup information. A Local Console (at minimum, a USB keyboard and DVI-capable display) must be connected to the JACE-NXT in order to do this. For more details, see “[Local Console](#),” page 17.
- 



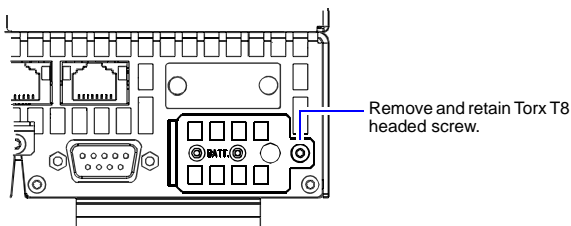
- Caution**
- Risk of damage! Always replace the lithium battery with the identical type. See “[Standard Replacement Parts](#),” page 32.
  - Depleted batteries must be disposed in accordance to local regulations.
-

## Procedure 4 Replacing the lithium backup battery in a JACE-NXT controller.

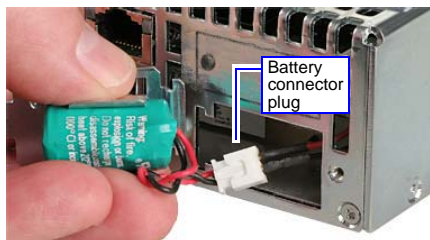


**Note** The configuration data and contents of the SRAM in the device are buffered for at least 30 seconds.

- Step 1 Write down the current settings of the BIOS setup, or save the settings as a user profile in the **Exit** menu of the BIOS setup.
- Step 2 Disconnect the device from the power supply.
- Step 3 Open the battery compartment by removing the Torx T8 headed screw as shown below.



- Step 4 Swing the battery holder out and pull out the battery plug, as shown below.



- Step 5 Take the old battery out of the holder.
- Step 6 Place the new replacement battery in the holder and reconnect the battery connector plug.
- Step 7 Close the battery compartment and refasten the Torx T8 headed screw.

## Battery Disposal

Please dispose of the used 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.

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

## Reconfiguring the BIOS Setup

If the battery replacement takes longer than 30 seconds, the configuration data of the device will be lost. You will have to reconfigure the BIOS setup in this case.

### BIOS setup

The BIOS Setup program is in ROM of the JACE-NXT. When run, it stores the BIOS configuration for the controller in on-board, battery-backed SRAM. This is part of the factory preparation for the unit.

Generally, you should not change anything in the BIOS setup of a JACE-NXT. However, after [replacing the backup battery](#), you may need to re-enter several settings from defaults.



**Note** If you do make changes in BIOS setup, record them for re-entry after a future battery replacement.

#### Procedure 5 To run BIOS setup on a JACE-NXT.

- Step 1 Attach a local console to the controller (see [“Local Console,”](#) page 17).
- Step 2 Reset the device (warm or cold restart).
- Step 3 With the default settings in effect, you should see a screen similar to below:
 

```

Insyhde H20 Setup Utility
SIMATIC IPC427C A5E02316088-ES002
Press F2 to go to the Setup Utility
Press ESC to go to the Boot Manager

BIOS Version v12.01.02
BIOS Build Date 05/28/09
Processor Type: Intel (R) Celeron (R) CPU 722 @1.20 Ghz
          
```
- Step 4 Press the **F2** key to enter BIOS setup.
- Step 5 BIOS Setup provides these selectable categories.
  - **Main** System functions are set here.
  - **Advanced** Extended functions are set here.
  - **Security** Security functions are set here, for example, a password.
  - **Boot** Boot priority is set here.
  - **Version** Provides data about versions of BIOS, boards, firmware, etc.
  - **Exit** Use to save and terminate BIOS Setup.
- Step 6 Use the keyboard cursor keys [←] left and [→] to move between menu categories, and the keyboard cursor keys [↑] up and [↓] down to move between fields. Other “Item Specific Help” is displayed in the right side of any BIOS Setup display.
- Step 7 If restoring from BIOS defaults (say, after replacing the backup battery), enter the necessary non-default settings, either as were previously recorded, or using data in the next section, [“JACE-NXT BIOS Settings”](#).

- Step 8 From the **Exit** menu, select either “Exit Saving Changes” (press F10) if you made changes, or “Exit Discarding Changes” if you were just reviewing BIOS configuration. The JACE-NXT reboots.
- Step 9 Disconnect the USB keyboard, DVI-I capable display, and (if connected) USB mouse.

## JACE-NXT BIOS Settings

The following sections provide a list of BIOS settings for a JACE-NXT—noting any that require settings from “default” values. Defaults can become effective if the backup battery goes bad, or whenever the battery is replaced. By menu grouping, these settings are: • [Main](#), • [Advanced](#), • [Security](#), • [Boot](#), • [Version](#)



**Note** For future reference, you may wish to print out the tables below and keep the pages in a handy place.

## Main

*Table 7 Main menu BIOS settings for JACE-NXT.*

Submenu	System Params	Defaults	JACE-NXT / Notes
—	System Time	hh:mm:ss	You can also set time and date from a NiagaraAX or Niagara connection.
	System Date	MM/DD/YYYY	
Serial ATA Port 0	Transfer Mode	Ultra DMA ATA-100	Defaults. Port 0 applies if hard drive unit, Port 1 setting applies if Flash-based unit.
Serial ATA Port 1	Transfer Mode	Ultra DMA ATA-66	
Boot Options	Quick Boot Mode	Disabled	Enabled
	POST Errors	All without keyboard	Defaults
	Diagnostic Screen	Enabled	
Keyboard Features	Numlock	On	Default
Hardware Options	Onboard Ethernet 1	Enabled	Defaults
	Ethernet 1 Address	00.0E.8C.xx.xx.xx	
	Eth 1 Remote Boot	Disabled	
	Onboard Ethernet 2	Enabled	
	Ethernet 2 Address	00.0E.8C.xx.xx.xx	
	Eth 2 Remote Boot	Disabled	
	Dual View DVI / DRT	Disabled	Enabled

## Advanced

*Table 8 Advanced menu BIOS settings for JACE-NXT.*

Submenu	System Parameters	Defaults	JACE-NXT / Notes
IO Device Configuration	Internal COM1	Auto	Default
SATA Configuration	SATA Controller	Enabled	Defaults
	SATA Controller Mode	Enhanced	

*Table 8 Advanced menu BIOS settings for JACE-NXT. (Continued)*

Submenu	System Parameters	Defaults	JACE-NXT / Notes
—	HPET - HPET support	Enabled	Defaults
	Legacy USB Support	Enabled	
	SafeCard Functions	Enabled	

## Security

*Table 9 Security menu BIOS settings for JACE-NXT.*

Submenu	System Parameters	Defaults	JACE-NXT / Notes
—	Supervisor Password	Not Installed	Defaults
	User Password	Not Installed	
	Set Supervisor Password	—	
	Set User Password	—	

## Boot

*Table 10 Boot menu BIOS settings for JACE-NXT.*

Submenu	System Parameters	Defaults	JACE-NXT / Notes
Legacy Boot Devices	Boot Menu	<Normal>	Defaults
EFI Boot Devices	Boot Type Order	—	

## Version

*Table 11 Version menu BIOS settings for JACE-NXT.*

Submenu	System Parameters	Defaults	JACE-NXT / Notes
—	SIMATIC IPC427C		(Read Only, may vary slightly from values shown in your JACE-NXT's BIOS).
	BIOS Version	V12.01.02	
	BIOS Number	A5E02316088-ES002	
	InsideH20 Version	MONTEVINA.03.56.37.20xx	
	FPGA Revision ID	14	
	Processor Tye	Intel (R) Celeron (R) CPU 722 @1.2 GHz	
	CPU ID	067A	
	Code Revision	07	

# Replacement Parts

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

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

## Non-replaceable Parts

Other than the parts listed in the replacement parts sections, there are no serviceable components on a JACE-NXT.

### Fuses

There are no replaceable fuses inside a JACE-NXT.

An external, inline, 4A 32V fuse should be installed in the “L+” wiring to the power input connector, as shown in [Figure 17](#) and [Figure 18](#) on page 22. See the section “[Material and Tools Required](#)” on page 8.

## Standard Replacement Parts

Standard replacement parts are listed in [Table 12](#), 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 12 Standard replacement parts for a JACE-NXT controller.*

Part Number	Description
10737	3V Lithium backup battery assembly, with cable and plug.
T-11908	Hardware bag for JACE-NXT, with three screw terminal connector plugs (one 3-position for RS-485, one 2-position power input, one 2-position LON).
10778	Replacement 24V/4A universal input power supply module: 100–240Vac, 47–63 Hz input, 24Vdc output, 90W power supply module, DIN-mountable.

## New Replacement Unit

To replace an entire unit, order and install a **new** JACE-NXT 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 33, 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-NXT



**Caution** Be sure to discharge any accumulated static by touching the grounded metal surface of the controller before handling connections. See the section “[Static Discharge Precautions](#)” on page 9 for more details.

### Procedure 6 Replacing a JACE-NXT.

- Step 1 If possible, use the appropriate NiagaraAX or Niagara software tool to back up the device to your PC.
- Step 2 Turn the JACE-NXT off, and unplug the power connector.
- Step 3 Making sure to first properly label all cables, unplug any Ethernet, LON, and serial (RS-232 and RS-485) cables.
- Step 4 Remove the unit from its DIN mount or mounting by wall brackets.
- Step 5 Remount the replacement unit, reattaching it to its DIN mount or wall brackets.
- Step 6 Reconnect any Ethernet, LON, and serial (RS-232 and RS-485) cables.
- Step 7 Plug the power cable in, turn the JACE-NXT on, and verify normal operation.
- Step 8 Using the appropriate NiagaraAX or Niagara platform tools, re-commission the unit, including any needed license files and software modules.
- Step 9 Restore the saved backup or station database, and start the station. For NiagaraAX details, see the *JACE-NXT 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 it, observing all recycling regulations (see “[WEEE \(Waste of Electrical and Electronic Equipment\)](#),” page 9).
- Do not return an out-of-warranty JACE-NXT 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

Contact information for Tridium offices include the following:

## United States

Phone: 804-254-7086, ext. 11

Email for RMA: [rma@tridium.com](mailto:rma@tridium.com)

Return to:

Tridium, Inc.

2256 Dabney Road, Suite C

Richmond, VA 23230

Attn: Return Department RMA# \_\_\_\_\_

## Europe

Phone: +44 (0) 1403 740290

Fax: +44 (0) 1403 741804

Email for technical support: [supportuk@tridium.com](mailto:supportuk@tridium.com)

Email for product orders: [ordersuk@tridium.com](mailto:ordersuk@tridium.com)

Return to:

Tridium Europe Ltd

1, The Grainstore

Brooks Green Road

Coolham, West Sussex

RH13 8GR United Kingdom

Attn: Return Department RMA# \_\_\_\_\_

## Asia/Pacific

Phone: +65 6887 5154

Fax: +65 6887 5342

Email for technical support: [hclim@tridium.com](mailto:hclim@tridium.com)

Return to:

Tridium Asia Pacific Pte Ltd

17 Changi Business Park Central 1

Honeywell Building

Attn: Mr Lim Hoon Chat, Engineering Mgr.

Singapore 486073

Attn: Return Department RA# \_\_\_\_\_

Australia/Asia Pacific Sales:

- Phone: +61 4 1264 4234

Email: [mhodder@tridium.com](mailto:mhodder@tridium.com)

# Certifications

## Federal Communications Commission (FCC)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## Canadian Department of Communications (DOC)

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

## Underwriter Laboratories Inc.

This device has approvals to Standard UL 60950-1, File E115352 and Canadian National Standard CAN/CSA-C22.2 No. 60950-1 (I.T.E) or according to UL508, File E85972 and Canadian National Standard CAN/CSA-C22.2 No. 142 (IND.CONT.EQ) or according to Canadian National Standard CAN/CSA-C22.2 No. 14-05.

## CE Declaration of Conformity

This device fulfills the requirements for the EC directive “204/108/EEC Electromagnetic Compatibility,” and the following fields of application applies according to its CE label.

Area of Application	Requirement for	
	Emitted Interference	Noise Immunity
Residential area, business and trade areas and small business	EN 61000-6-3: 2007	EN 61000-6-1: 2007
Industry	EN 61000-6-4: 2007	EN 61000-6-2: 2005

Requirements regarding noise immunity to EN 61000-6-2 / IEC 61000-6-2 are met if connected peripherals are suitable for industrial applications. Peripheral devices are only to be connected via shielded cables.

## Declaration of RoHS Compliance

This product meets all requirements of RoHS Directive (EU 202/95/EC). All components used in this product are RoHS compliant and there have been no leaded solders used in manufacture.

Related to the RoHS (Restriction of Hazardous Substances) Directive is another European Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE). The WEEE Directive aims to reduce the waste arising from electrical and electronic equipment, and improve the environmental performance of everything involved in the life cycle of electrical and electronic equipment.

For related details, see the precaution “[WEEE \(Waste of Electrical and Electronic Equipment\)](#)” on page 9.