

J5-R-AX

MOUNTING & WIRING GUIDE

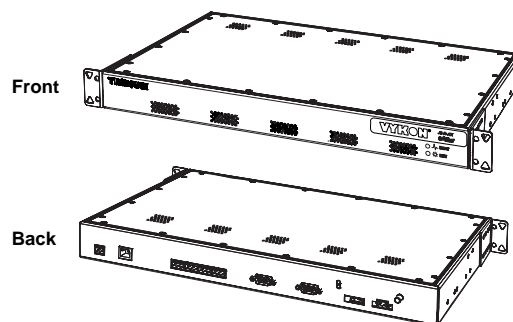
This document covers the mounting and wiring of the Vykon® J5-R-AX series Rack-Mount JACE® controller. It assumes that you are an engineer, technician, or service person who is performing control system installation.

Instructions in this document apply to the following products:

J5-R-AX Rack-Mount JACE controller



Note Not covered in this document is the Niagara^{AX}® software installation and configuration required for a fully functioning unit. This includes host IP address and password, among other parameters. Please refer to the *JACE NiagaraAX Install & Startup Guide* for this information.



These are the main topic sections in this document:

- [Product Description](#), page 1
- [Preparation](#), page 3
- [Precautions](#), page 4
- [Mounting](#), page 5
- [Wiring Details](#), page 7
- [Power Up and Initial Checkout](#), page 9

Also included are several appendixes, as follows:

- [Maintaining the Rack-Mount JACE controller](#), page 10
- [Replacement Parts](#), page 12
- [Certifications](#), page 14
- [Declaration of Conformity](#), page 15

Product Description

The J5-R-AX Rack-Mount JACE controller (**J**ava **A**pplication **C**ontrol **E**ngine) is a compact embedded processor platform with flash memory for backup, specially engineered for equipment rack mounting and 24Vac/dc supply input. Equivalent to a JACE-545 in performance and features (except no support for internal modem), the J5-R-AX provides integrated control, supervision, and legacy device integration.

When connected over an Ethernet network, The J5-R-AX controller can be used to support a network of devices via the LonWorks port and auxiliary devices that can be accessed through the 4 RS-485 ports, or an RS-232 port.

Information and specifications published here are current as of the date of publication of this document. Tridium, Inc. reserves the right to change or modify specifications without prior notice. The latest product specifications can be found by contacting our corporate headquarters, Richmond, Virginia. Products or features contained herein may be covered by one or more U.S. or foreign patents. © 2008 Tridium, Inc.

A complete set of Java-based control, application, logging, and user interface “objects” are included in a library for the Systems Integrator to create a robust monitor and control system for any size building. With the Web User Interface option, it can directly serve live data and dynamic displays over the Internet to any standard web browser such as Internet Explorer or Mozilla Firefox.

Packaging and Features

The J5-R-AX uses an enclosed 1U-height rack mount chassis, with supplied ear brackets for mounting in either a 19" or 23" equipment rack. Optional wall brackets can be ordered for wall mounting. The J5-R-AX is powered by 24VAC or 24VDC input, and consumes less than 20W. A 2A GMT-type fuse is accessible on the back side near the power input connectors, along with LEDs that monitor the power input and GMT fuse.

Also on the back are connectors for all communications ports (see [Table 1](#)), and a push-button for serial-shell startup mode (for troubleshooting use only). The front of the unit features cooling vents, along with two LEDs that monitor Ethernet activity and the JACE controller’s “heartbeat.”

Table 1 J5-R-AX features and options.

Model	Description	Ports / Notes
J5-R-AX	Rack-Mount JACE controller, 1U rack mountable, with Freescale™ RISC Processor 250MHz, 256 MB Ram, 128 MB Flash database backup. Includes brackets for rack mounting. For 24V operation only, with user-supplied transformer or power supply required.	1 - 10/100 MB Ethernet, RJ-45 2 - RS-232 Serial, DB-9 male 4- RS-485 Serial, optically isolated, 3-pos. plug 1 - FTT-10A LON®, 2-position plug See “ Communications Wiring ,” page 8.
J5R-WMT-BKT	Optional wall mounting brackets, pair	Wall anchors/fasteners are not supplied.

Technical Specifications

J5-R-AX Platform

- Freescale™ Semiconductor 8245 RISC Processor @ 250MHz.
- 256 MB RAM, 128 MB Flash for database backup.
- One 10/100 MB Ethernet port, RJ-45 connector.
- Four RS-485 half-duplex serial ports (up to 76,800 baud), optically isolated, 3-position connectors.
- Two RS-232 serial ports (up to 115,200 baud), DB-9 connectors.
- One LonWorks® FTT-10A 78Kbps port with 2-position connector.

Power Supply

- 24Vac/dc input, 20W maximum, one 2-position connector and earth grounding stud.
- 2A GMT fuse, externally accessible.
- Two LEDs on back side of unit for monitoring power and fuse status.

Operating System

- QNX® RTOS, IBM® J9 Java Virtual Machine.
- JACE (Java Application Control Engine) Niagara^{AX} software.

Physical

- Standard 1U rack height chassis for 19" or 23" equipment rack mounting using supplied brackets, optional wall mounting brackets available.
- Cooling by internal air convection.
- Dimensions: 17" (431.8mm) wide x 12" (304.8mm) deep x 1.75" (44.5mm) high.

Environment

- Operating temperature range: 32°F to 122°F (0°C to 50°C).
- Storage temperature range: 32°F to 158°F (0°C to 70°C).
- Relative humidity range: 5% to 95%, non-condensing.

Equipment Ratings**Electrical**

- Input voltage range: 18V to 27V AC or DC.
- Power consumption: 20W maximum.

Preparation

Unpack the J5-R-AX and inspect the contents of the package 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 Module”](#) on page 13.

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

Included in this Package

Included in this package you should find the following items:

- a J5-R-AX Rack-Mount JACE controller
- This document *J5-R-AX Mounting & Wiring Guide*, Part Number 11053.
- Two 19" / 23" rack mounting ear brackets.
- A packing slip, which lists the factory settings for IP address, machine name, and R2 host logon.
- A hardware bag, containing the following items:
 - Four 3-position RS-485 screw terminal connector plugs.
 - One 2-position power input screw terminal connector plug.
 - One 2-position LON connector plug.
 - Two 2A GMT fuses.
 - Eight 3/8" ear bracket screws and lock washers
- Optional items (if ordered):
 - Wall mounting brackets.

Tools Required

The following tools and supplies may be required for installation:

- #2 Phillips head screwdriver: used to install mounting brackets and secure in rack.
- Wire strippers/cutter
- Small flat-blade screwdriver: used for LON, RS-485, and power input terminal plug connectors.
- If wall mounting, suitable tools and fasteners for anchoring the wall mounting brackets to the wall.

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. They alert readers to 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 Rack-Mount JACE controller controller. Be sure to heed these warnings to prevent personal injury or equipment damage.



Warning

- Depending on power module used, the circuit powering the J5-R-AX is 18–27Vac at 50/60 Hz (if using transformer), or 24Vdc (if using DC power supply). 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 Rack-Mount JACE controller 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 the printed circuit board (PCB) without proper protection against static discharge. Use a wrist strap when handling PCBs. The wrist strap clamp must be secured to earth ground.

Mounting



Note

This product is intended for indoor use only. The unit should not be exposed to ambient conditions outside of the range of 0°C (32° F) to 60°C (140° F) and relative humidity outside the range 5% to 95% non-condensing (pollution degree 1).

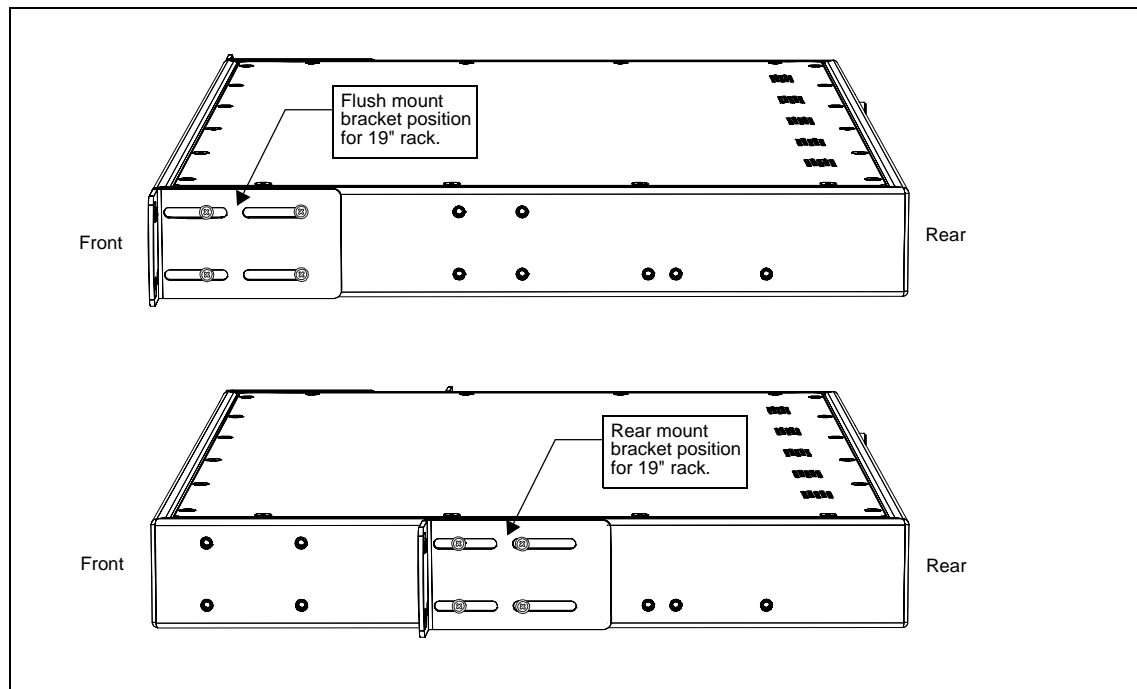
Mount the J5-R-AX controller in a location that allows clearance for wiring and servicing. Typical installation is in a 19" or 23" equipment rack. See [Figure 1](#) for details on locating rack mount brackets.

See the “[Wall Mounting](#)” section on page 6 for details on mounting using optional wall brackets.

Rack Mounting

Using the supplied Phillips head screws, fasten the brackets on either side of the J5-R-AX chassis, using four screws for each bracket. Then mount the J5-R-AX with brackets to the equipment rack.

Figure 1 Side view, rack mounting bracket details (19" rack positions shown).



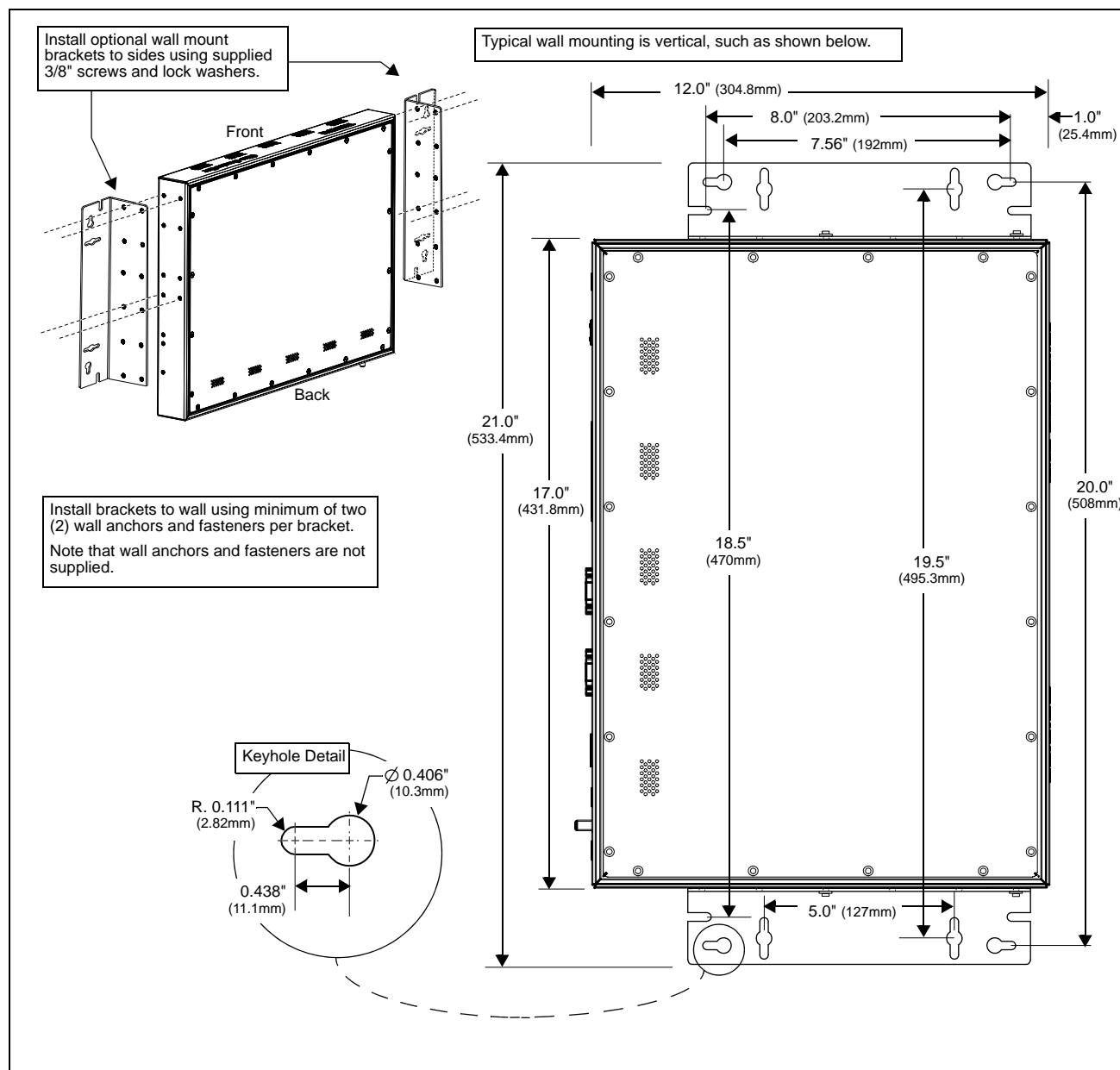
Note

If mounting in a 23" rack, fasten the *short side* of each bracket to the appropriate mounting holes in the sides of the J5-R-AX, with the longer sides projecting as “ears” to fasten to the rack.

Wall Mounting

Wall mounting the J5-R-AX controller requires the optional wall mount brackets (part number J5R-WMT-BKT) used in place of the standard brackets. [Figure 2](#) provides details and dimensions on wall bracket mounting.

Figure 2 Wall mounting details for J5-R-AX controller.



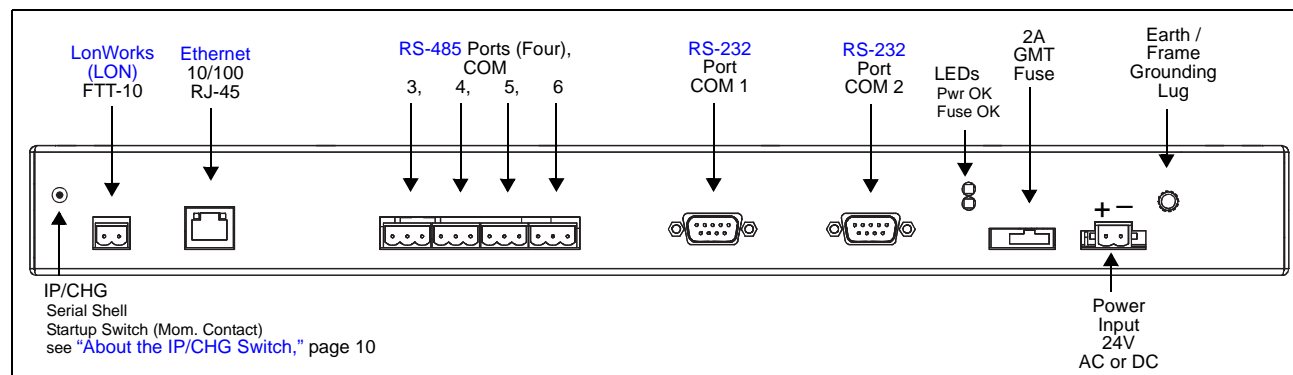
Note

If wall mounting, note that the unit is designed to be mounted with the top facing out, and the front perforated vents either at one side (vertical orientation), or at the top. For proper airflow at temperature extremes, do not wall mount the unit oriented with the vented front towards the floor.

Wiring Details

See [Figure 3](#) below to locate connectors and other features on the back side of the J5-R-AX controller.

Figure 3 Connectors and features on back side of J5-R-AX controller.



- Notes**
- Do not apply power to the J5-R-AX until first performing all steps in the “[Earth Grounding](#)” and “[Power Wiring](#)” sections.
 - There is no power switch—removing or inserting the 2A GMT fuse is how power is switched.
 - Use proper lug terminations on all frame ground and power connections to the J5-R-AX.

Earth Grounding

Connect a 14 gauge (minimum) copper wire with a ring terminal onto the J5-R-AX grounding lug, and secure with the star washer and nut provided. Note that the star washer must be used to prevent anti-rotation. Connect the other end of this wire to a nearby earth/frame ground.

Power Wiring



- Note** Before wiring power, remove the 2A GMT fuse from the holder, and make sure that the power source to be used is turned off.

Procedure 1 Wiring input power to the J5-R-AX controller.

- Step 1** Remove the two-position connector plug for input power and wire 24V supply (AC from transformer secondary, or DC from 24V power supply).



- Note** If wiring 24Vdc from a power supply, note the polarity shown in [Figure 3](#), that is: positive (+) left, negative (–) right.

- Step 2** Push the wired power connector plug into the socket on the J5-R-AX. Note that this connector is keyed, and the plug must be properly aligned.
- Step 3** With the 2A GMT fuse still removed from the J5-R-AX controller, turn on the power source.
- Step 4** Do not power on the unit until all other connections have been made. See “[Communications Wiring](#).”

Communications Wiring

All communications wiring is made to the back side of the unit (see [Figure 3](#) on page 7). Employ strain relief on the communication wiring to prevent damage to the controller.

LonWorks (LON)

A single, two-pin, male LonWorks FTT-10A Weidmuller connection is provided on the controller. 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.

Ethernet

A single, female 10/100-Mbit Ethernet connection is provided on the controller. This connection is capable of running at either 10 Mbps or 100 Mbps—it automatically adjusts to either speed. This means the J5-R-AX can exist on the same network with a mixture of 10BaseT and 100BaseTX hardware connected to a smart 10/100 hub capable of adjusting to the devices it supports.

A standard male RJ-45 (8-wire) connector is provided. Using a Category 5 unshielded twisted pair (UTP) cable, connect one cable end to the JACE's RJ-45 connector, and the other end to a hub/switch on the Ethernet LAN.

Serial

There are six serial ports on the J5-R-AX controller, (see [Figure 3](#) on page 7). From left-to-right, ports are four [RS-485](#) (COM3, COM4, COM5, COM6) three-wire, screw terminal types, and two [RS-232](#) (COM1 and COM2) DB-9 male (plug) types. All RS-485 ports are optically-isolated; the RS-232 ports are not isolated.

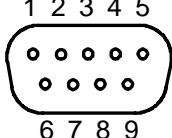
RS-485—RS-485 multi-point connections are made to the 3-position, screw terminal connectors. Wire to each connector plug with shielded 18-22AWG wiring (refer to the TIA/EIA-485 standard). The screw terminals on each RS-485 connector plug (from left to right) are shield, plus (+), and minus (–).

RS-232—These are DTE-type ports, using industry-standard DB-9 male connectors. Typically, a standard “null-modem” cable is used to communicate to another DTE device. A “straight-through” cable is used to communicate to a DCE device, such as a modem. [Table 2](#) provides pinouts for the DB-9 connectors.



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

Table 2 RS-232 DB-9 port pinouts.

RS-232 DB-9 Pinout	Signal		DB-9 Pin
DB-9 Plug (male) 	DCD	Data carrier detect	1
	TXD	Transmit data	2
	RXD	Receive data	3
	DSR	Data set ready	4
	GND	Ground	5
	DTR	Data terminal ready	6
	CTS	Clear to send	7
	RTS	Request to send	8
	not used on the J5-R-AX		9

Power Up and Initial Checkout

Ensure power wiring has been completed before proceeding (see “Power Wiring,” page 7). The J5-R-AX controller does not include an on/off switch. To apply power, insert the 2A GMT fuse in the fuse holder. See Figure 4 for the locations of the fuse and status LEDs on the controller.

The following sections provide more details:

- [Checking the LEDs](#)
- [About the Battery](#)
- [About the IP/CHG Switch](#)

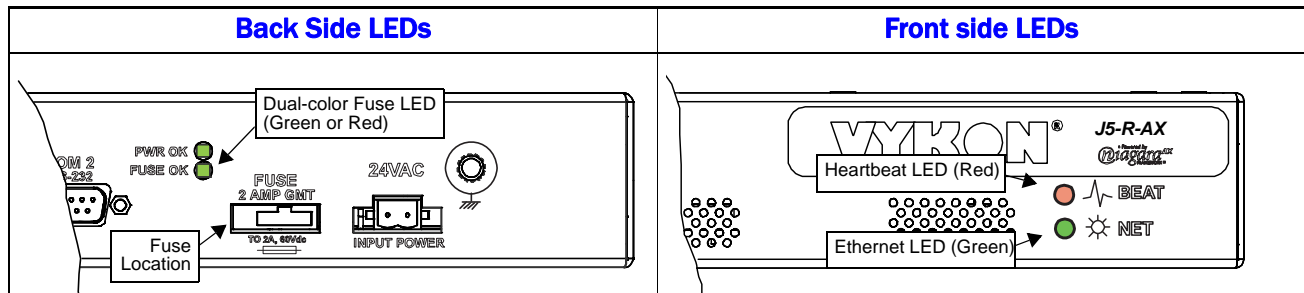
Checking the LEDs

Back Side LEDs

Whenever power is applied to the J5-R-AX controller, the two LEDs next to the fuse (on the back of the controller) should **both be lit green**. See Figure 4. This indicates that power is ok and the fuse has not failed. Note that the “FUSE OK” LED is dual-color type, such that:

- If the “PWR OK” LED is lit, but the “FUSE OK” LED is **lit red**, a fuse failure is indicated.
- If the “PWR OK” LED is lit, but the “FUSE OK” LED is **not lit**, the fuse is missing.
- If **both** LEDs (“PWR OK”, “FUSE OK”) are **not lit**, there is no power. Check input power source voltage.

Figure 4 J5-R-AX status LEDs on back side (left) and front side (right).



Front side LEDs

BEAT: When power is first supplied to the JACE, the red heartbeat LED will come on solid for approximately 10 seconds, then begin to blink. The blink pattern of the heartbeat LED under normal operation will differ for each installation (depending on station activity). But, in general, the LED should blink about once per second. The rate will be slower when the control engine is executing the station database and as more objects are added. If the heartbeat LED stays on constantly or does not light, contact Systems Engineering for technical support.



Caution

During boot-up, the heartbeat LED blinks in a 90% on — 10% off pattern. Do not remove power during this time, or data loss may result.

NET: The green “NET” LED indicates activity on the Ethernet 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.

About the Battery

Internally, the J5-R-AX contains a rechargeable sealed lead-acid battery. This battery is similar to the one in the JACE-545 controller, but has a different form factor and cable (pre-connected). The battery is shipped nearly fully charged. Therefore, the JACE has battery back up protection immediately upon installation. If battery trouble messages are generated upon power up, contact Systems Engineering for technical support.

This sealed lead-acid battery should be replaced at least every 3 years. For more information on the use and replacement of the battery, refer to the section [“Required Battery Maintenance.”](#)

About the IP/CHG Switch

On the left back side of the J5-R-AX controller is a momentary push-button switch labeled “IP/CHG.” This switch is wired to the “serial shell mode” jumper of the JACE controller board. Under normal circumstances, you should not need to use it. However, if you power up the J5-R-AX while holding this switch in until the JACE boots, the RS-232 COM1 port will be enabled for “serial shell access” using terminal emulation software. See the *JACE NiagaraAX Install & Startup Guide* for more details.

Maintaining the Rack-Mount JACE controller

This section provides information on the following topics:

- [Cleaning](#)
- [Required Battery Maintenance](#)
- [Replacing the Battery](#)
- [Replacement Parts](#)

Cleaning

If dust is present on the unit, clean with vacuum or compressed air. Otherwise, no cleaning of the unit is required.

Required Battery Maintenance

The sealed lead acid battery in the J5-R-AX unit is nearly fully charged before shipping. The battery is automatically float-charged during normal operation (while power is applied to the unit). The J5-R-AX monitors the battery and periodically loads the battery to test its ability to maintain battery-backed functions. You should investigate any battery trouble message. Check the voltage level and its connections to the unit. Replace the battery as required.

Note that 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 battery should see relatively few discharges. Therefore, ambient temperature has more to do with determining the life expectancy of the battery than does any other factor. If the Rack-Mount JACE controller is installed in a conditioned space, the battery should provide dependable service for approximately three years (average). In an environment where the operating temperature is higher (i.e., 50°C or 122°F), you should only expect the battery to last approximately one year.

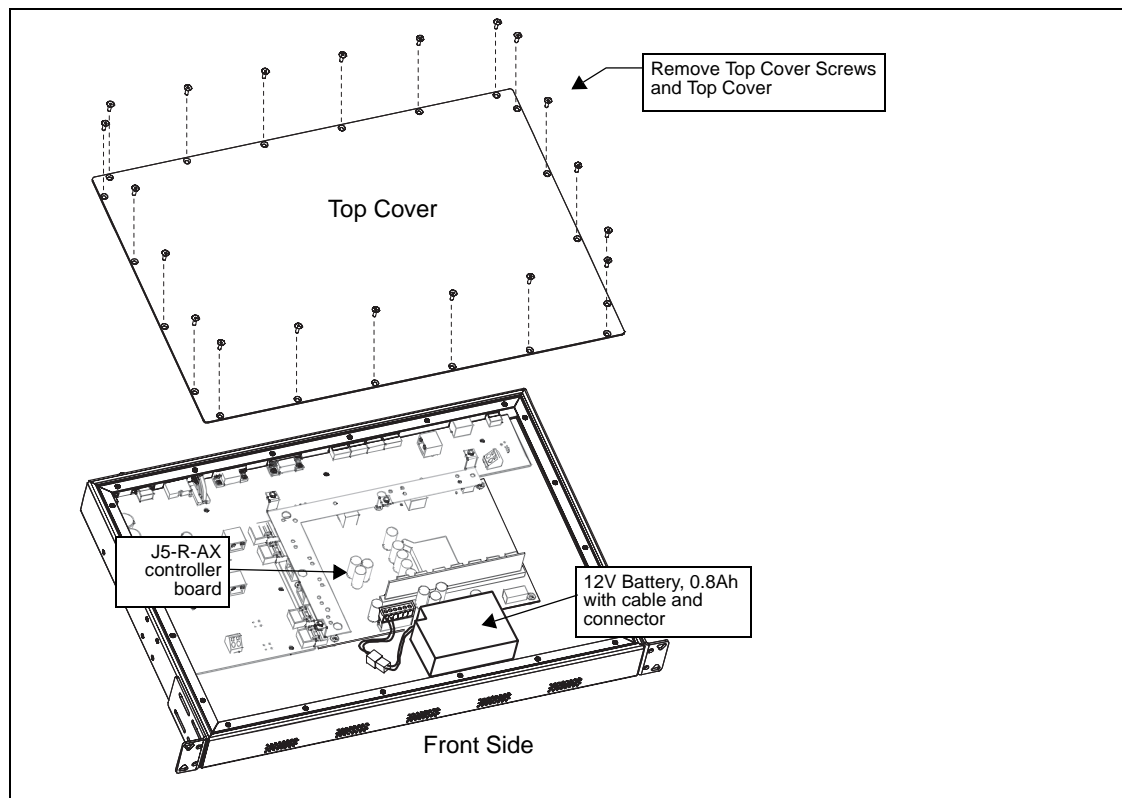
See the [“Replacing the Battery”](#) section on page 11, and to order a new battery, see the [“Standard Replacement Parts”](#) section on page 12.

Replacing the Battery

**Note**

The J5-R-AX controller will lose its time and date settings if it is disconnected from both battery and power for more than one hour.

Figure 5 Remove top cover to replace J5-R-AX sealed lead-acid battery.



To replace the battery in the J5-R-AX Rack-Mount JACE controller, proceed as follows:

Procedure 2 Replacing a Rack-Mount JACE controller battery.

- Step 1** Backup the software configuration of the JACE using the appropriate NiagaraAX software tool.
- Step 2** Remove power from the unit, and unplug all communications connectors.
- Step 3** Unfasten the ground connection from earth ground stud, and remove the unit from its mounting.
- Step 4** Using a Phillips head screwdriver, unfasten all 20 screws around the perimeter of the top cover, and carefully set them aside.
- Step 5** Remove the top cover and set aside.
- Step 6** Remove the bracket that secures the battery to the bottom of the unit.
- Step 7** Unplug the battery cable from the two-position connector coming from the J5-R-AX controller connector harness, and remove the old battery. Recycle the battery as defined by your regional codes. For recycling within the US, see the labelling on the battery.

Non-replaceable Parts

- Step 8** Plug the cable of the new battery into the two-position connector coming from the controller's wiring harness. This 2-position connector keyed, such that when seated the battery polarity is always correct.
- Step 9** Secure the new battery to the bottom of the unit with the bracket and tighten the lock nut.
- Step 10** Replace the top cover on the unit, and refasten with the 20 cover screws.
- Step 11** Remount the unit as before, and refasten the earth grounding wire to the earth ground stud.
- Step 12** Reconnect all communications connectors, and restore power to the unit.

Replacement Parts

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

- [Non-replaceable Parts](#)
- [Standard Replacement Parts](#)
- [Field Replacement Units](#)

Non-replaceable Parts

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

Memory

Any addition, modification, or replacement of memory components requires software configuration and is not a field upgrade. For additional information on modifying the memory capacity of the J5-R-AX Rack-Mount JACE controller, consult your regional Tridium office.

Fuses

The JACE has two 250V, 2.5A delay (series 372) fuses on the printed circuit board. These fuses are Wickman F015-2.5A250V fuses. However, on-board power circuit protection is not user-serviceable. If this circuitry is suspect, contact your regional Tridium office for technical support. See the [“Returning a Defective Module”](#) section on page 13.

Standard Replacement Parts

Standard replacement parts are listed in [Table 3](#) 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 3 Standard replacement parts.

Part Number	Description
11049	Battery, 12V, sealed lead-acid rechargeable, 0.8Ah (with cable and connector).
10933	Hardware bag for the J5-R-AX controller. Includes one 2-position LON connector plug, four 3-position RS-485 connector plugs, a 2-position power input connector plug, one 2A GMT fuse, and two rack-mounting brackets with screws and lock washers.
J5R-WMT-BKT	Optional wall mounting brackets, pair (see “Wall Mounting,” page 6).

Field Replacement Units

To replace a faulty unit, order from the field replacement units (FRUs) listed in [Table 4](#). An FRU consists of the J5-R-AX Rack-Mount JACE controller, without hardware bag (brackets or connector plugs). FRU parts can be ordered from stock, but the replaced J5-R-AX controller must be returned to your regional Tridium office for credit.



- Notes**
- Before ordering an FRU, it is strongly recommended that you contact your normal technical support resource to eliminate the possibility of a software issue or misconfiguration problem.
 - Be sure to contact Tridium for a return authorization (RA) number (see [“Returning a Defective Module,”](#) page 13) before shipping an item for return credit or repair. To allow proper licensing of the replacement unit, please have information ready about the existing unit, including its serial number, model number, and project licensed to, when placing the order.

Table 4 Field replacement unit for J5-R-AX Rack-Mount JACE controller.

Part Number	Description
R-J5-R-AX	J5-R-AX controller without connector plugs or brackets.

Returning a Defective Module

For proper credit on the returned unit, ship the defective module to Tridium within 30 days.

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

- Product model
- Serial number
- Project currently licensed to
- Nature of the defect

United States

Phone: 804-254-7086, ext. 11

Return to:

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

Europe

Phone: +44 (0) 1403 740290

Fax: +44 (0) 1403 741804

Return to:

Tridium Europe Ltd
1, The Grainstore
Brooks Green Road
Coolham
West Sussex
RH13 8GR
United Kingdom
Attn: Return Department RA# _____

Email for technical support:

supportuk@tridium.com

Email for product orders:

ordersuk@tridium.com

Asia/Pacific

Phone: +65 6887 5154

Fax: +65 6887 5342

Mobile: +65 9665 6024

Address:

Tridium Asia Pacific Pte Ltd
101 Cecil Street,
#10-11, Tong Eng Building,
Singapore 069533

Email for technical support:

hclim@tridium.com

Attn: Mr Lim Hoon Chiat, Engineering Manager RA# _____

Sales: (Australia): **Phone:** +61 7 5539 1211

Fax: +61 7 5597 2334

(Japan): **Phone:** +81 044 829 1750

Certifications

Federal Communications Commission (FCC)

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

Canadian Department of Communications (DOC)

- This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.
- Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

UL Test Parameters

The J5-R-AX Rack-Mount JACE controller was tested by Underwriters Laboratories Inc. using the following test parameters.

Environmental conditions	Standard
Operating conditions	Continuous
Connection to supply mains	Permanent
Degree of mobility	Permanently connected
Overall size of equipment: width, depth, height	17.0", 12.0", 1.75"
Mass of the equipment	Net: 5 lbs., Gross: 6 lbs.
Special protection to IEC 529	Yes: IP-20
Accessories and detachable parts included in the evaluation	None
Options included	None

Declaration of Conformity

J5-R-AX Rack-Mount JACE controller

Application of Council Directive: 89/336/EEC, 93/68/EEC, 73/23/EEC, 92/31/EEC

Manufacturer's Name: Tridium, Inc.

Manufacturer's Address: 3951 Westerre Parkway
Suite 350, Richmond,
Virginia 23233, USA

Manufacturer's Representative: Terry Casey, President
Tridium Europe Ltd.
1, The Grainstore
Brooks Green Road
Coolham, West Sussex, RH13 8GR
United Kingdom

Product Model Number: J5-R-AX

Type of Equipment: Information Technology Equipment

	Standard	Description	Criteria Met
EMS Standards Applied:	EN 613326	Electro-Magnetic Compatibility Generic Emissions	Fully Complies
		Electro-Magnetic Compatibility Immunity	Complies as stated below.
	IEC 61000-4-2	E.S.D.	PASS Criteria A
	IEC 61000-4-3	Radiated Field Immunity	PASS Criteria A
	IEC 61000-4-4	Electrical Fast Transient Immunity (Signal Ports) Electrical Fast Transient Immunity (AC Power)	PASS Criteria A PASS Criteria A
	IEC 61000-4-5	Surge Immunity	PASS Criteria A
	IEC 61000-4-6	Conducted Immunity	PASS Criteria A
	IEC 61010-10-1:90 + A1:92 + A2:95	Safety requirement for electrical equipment for measurement, control & laboratory use	PASS

I, **Steve Fey**, hereby declare that the equipment specified above conforms to the above Directives and Standards.

Place: Richmond, Virginia, U.S.A.

September, 2007

Position: President, Tridium Inc.