



www.harscorail.com

SERVICE BULLETIN MAINTENANCE OF WAY EQUIPMENT

DATE: 6-19-2009 **BULLETIN NO:** 09-006A

TITLE: G4 JAM BOX CONVERSION KIT

RATING:

<input type="checkbox"/> DIRECTIVE (Action Is Required)	<input type="checkbox"/> ALERT (Potential Problem)
<input type="checkbox"/> INFORMATION (Action Is Optional)	<input checked="" type="checkbox"/> PRODUCT IMPROVEMENT (Enhance Product)

PRODUCT SERIES / MODEL: All Harsco Rail Equipment with Jupiter Control System
Except 6700S Tampers - See Service Bulletin 09-007

SERIAL NO: All Models with Jupiter Control System

SUMMARY: All existing styles of the "Blue" JAM Boxes are now unavailable as repair parts and are being replaced by the new style G4 JAM Box. A Conversion Kit is available to convert to the new style G4 JAM Box that also includes a new J42 Board (to replace the existing P42 Board), Mounting Plate, Cables and Mounting Hardware. A Jupiter software upgrade may also be required.

OPERATIONAL IMPACT: The new style G4 JAM Box provides faster operation, better temperature performance, and offers greater protection from dust and dirt.

ACTION: When needing to replace a "Blue" JAM Box, (HTT #H5991Y01, Y03 & Y04), order the new style G4 JAM Box Conversion Kit (HTT #4017521). Be able to provide your machine serial number so it can be determined if a Jupiter software upgrade is required. Use this Service Bulletin as a reference guide to assist in the installation and use of the new style G4 JAM Box and its associated components.

CONTACT: If you have any questions or if we can be of any service, please contact the Software Department at the Harsco Rail, Columbia, SC. facility.

Peter Maurice 803-822-7439
Ken Hill 803-822-7432
Ned Walker 803-822-4843

SAFETY INFORMATION



n FOLLOW APPLICABLE RAILROAD LOCKOUT - TAGOUT PROCEDURE TO REMOVE MACHINE FROM ENERGY SOURCES. FAILURE TO COMPLY COULD RESULT IN SEVERE BODILY INJURY.

CONVERSION KIT - See Figure 1

Note: See Service Bulletin 09-007 For 6700S Tampers Conversion Kits.

The #4017521 Conversion Kit includes the following parts to convert the old style "Blue" JAM Box to a new style G4 JAM Box. This kit includes the G4 JAM Box (replaces the "Blue" JAM Box) , J42 Board (replaces the P42 Board), Mounting Plate, Cables, and Mounting Hardware. See Figure 1 for a typical mounting installation of the new style G4 JAM Box and J42 Board. **Important:** A Jupiter software upgrade may also be required. Be able to provide your machine serial number so it can be determined if a Jupiter software upgrade is required.

ITEM	PART NO	DESCRIPTION	QTY
1	4017473	Universal Plate (JAM Box)	1
2	4015854	JAM Box, G4	1
3	4016607	Module Assembly, J42	1
4	A0050053	Round Head Machine Screw, #10-24 x 3/8"	4
5	F025837	Lock Washer, #10	4
6	F001050	Wrought Washer, #10	4
7	408013	Serial Cable.	1
8	701113018	Cable, 18 Gauge 2 Conductor	10 Ft
9	F018229	Ty-Rap.	2
10	4015902	Cable Marker.	2

USB Printer Components

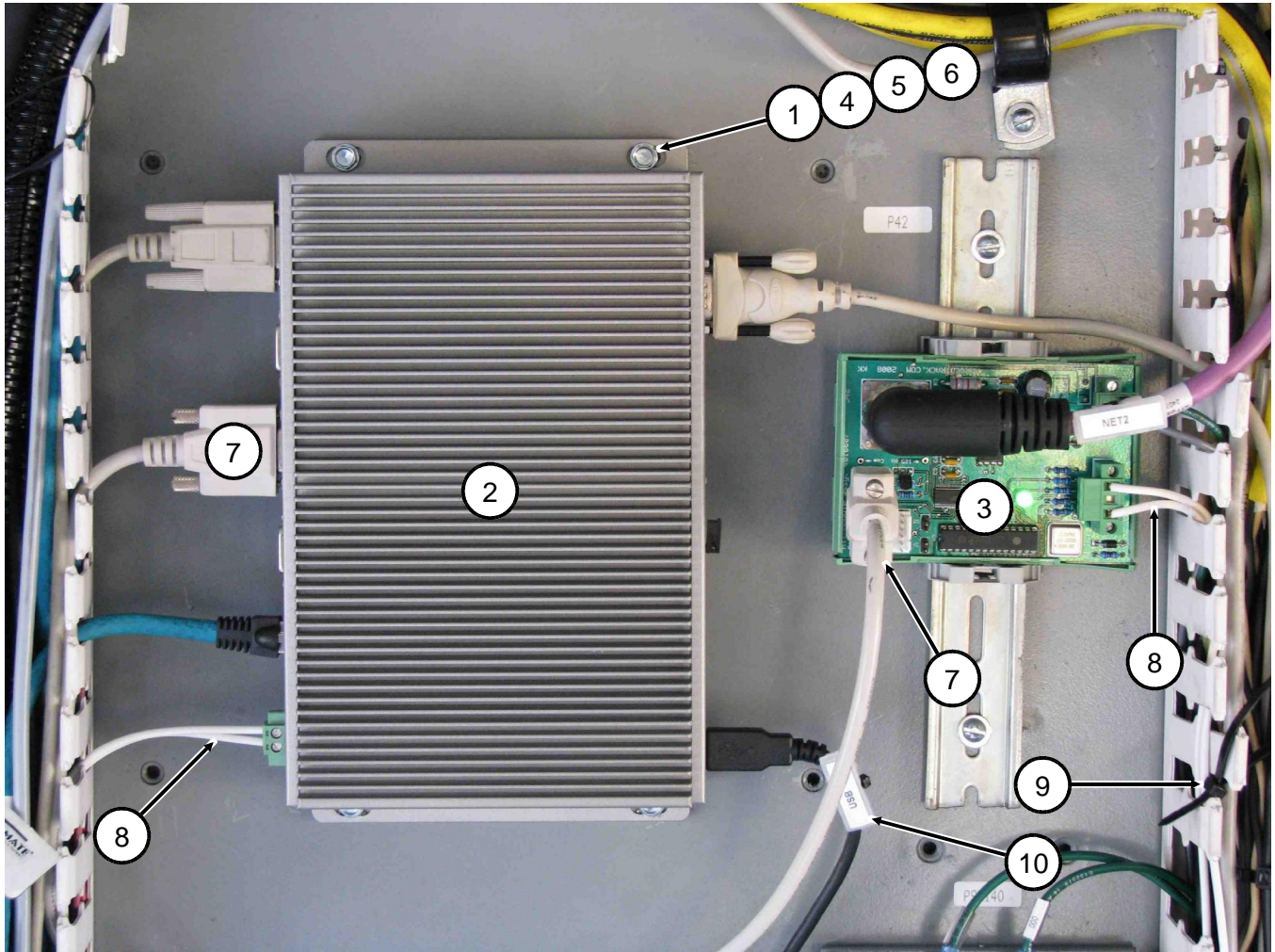
The new style G4 JAM Box does not have a parallel port to connect to a parallel type printer. It uses an USB port to connect to an USB type printer. If your machine currently has a printer connected to the parallel port on the old style "Blue" JAM Box, your existing printer will not work with the new style G4 JAM Box. If you want to connect a printer to the new style G4 JAM Box, consider ordering the following printer components:

ITEM	PART NO	DESCRIPTION	QTY
	351118-1	USB Printer	1
	4010267	USB Printer Cable (6 Ft)	1
	4010266	Active USB Cable (16 Ft) (USB signal booster for printer)	1
	4017998	USB Printer Installation Drawing (MK IV Tamper)	1

CONVERSION KIT - See Figure 1

There are two major components of the Conversion Kit. The G4 JAM Box (2) and the J42 Board (3) which will be explained in further detail in this Service Bulletin.

FIGURE 1
JUPITER G4 JAM AND J42 BOARD



G4 JAM - See Figures 2 and 3

The G4 JAM (Jupiter Application Master) is the main computer. The G4 JAM is labeled as address #J1. The G4 JAM is connected to the J42 Board which provides the physical connection between the G4 JAM and the Jupiter Network Modules (input / output) on the machine.

The G4 JAM consists of the following:

- (1) USB: Two connections used to connect USB devices (printer, memory sticks, etc.) to G4 JAM.
- (2) PC CARD: External access card slot and eject button for PCMCIA memory card not used. An internal access card slot (behind cover plate) is used for a compact flash memory card that contains the Jupiter computer program software. See G4 JAM Memory Card for removing or installing the compact flash memory card.
- (3) RESET: Switch resets power to G4 JAM. If depressed and released, G4 JAM will shut down and then reboot.
- (4) POWER: Switch controls on / off power to G4 JAM. If switch is depressed to shut G4 JAM off, switch must be repressed to reboot G4 JAM.
Important: The switch may feel that it is not mechanically maintained when it is depressed, though it does latch in the On or Off state.
- (5) MIC: Microphone connection not used.
- (6) LINE IN: Audio / Video Input connection not used.
- (7) LINE OUT: Audio / Video output connection not used.
- (8) VGA: Video / Graphics connection used for Touch Screen Monitor.
- (9) MS / KB: Mouse / Key Board connection not used.
- (10) COM 1: Serial port connection used for Touch Screen Monitor.
- (11) COM 2: Serial port connection not used.
- (12) COM 3: Serial port connection used for J42 Board.
- (13) COM 4: Serial port connection not used.
- (14) Rx1 / 2 / 3 / 4 LEDs - Green: Flash - COM serial port is receiving data.
- (15) Tx1 / 2 / 3 / 4 LEDs - Yellow: Flash - COM serial port is transmitting data.
- (16) LAN 1: Ethernet connection not used.
- (17) LAN 2: Ethernet connection not used.
- (18) 24V - GND: Power / ground connection used for J42 Board.
- (19) IDE LED - Green: Flash - Internal compact flash memory card of G4 JAM is transmitting / receiving data.
- (20) BTRY LED - Green: Off - Normal state.
On - Internal battery of G4 JAM needs to be replaced.
See G4 JAM Battery Replacement to replace battery.
- (21) PWR LED - Green: On - 24V power is supplied from J42 Board.
Off - 24V power is not supplied from J42 Board.
Press Power Switch (4).

G4 JAM

FIGURE 2
G4 JAM - FRONT

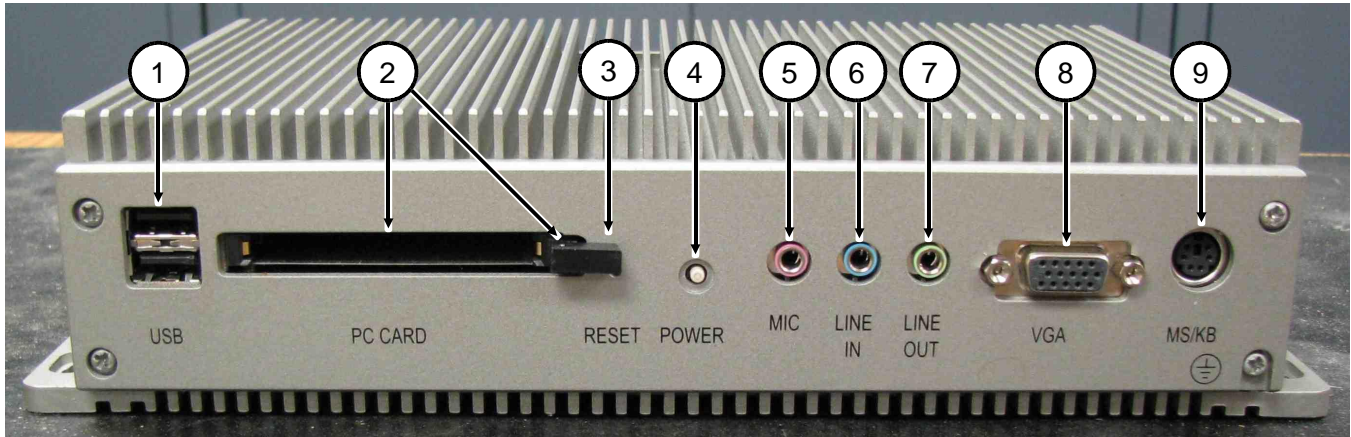
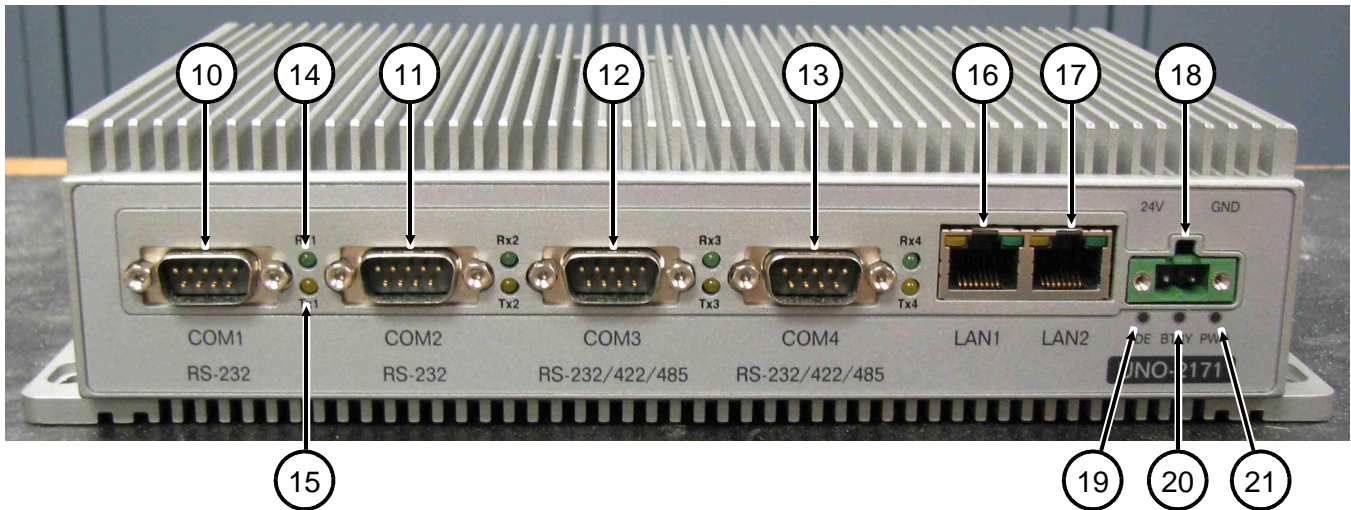


FIGURE 3
G4 JAM - REAR



G4 JAM

Memory Card - See Figures 4 and 5

The G4 JAM incorporates an internal access Compact Flash Memory Card. The memory card stores the operating system, bios configuration, all application programs and all data files for the machine.

If the G4 JAM should fail, the memory card can be removed from the failed G4 JAM and installed in a new G4 JAM. The memory card also allows a newer program version to be easily installed in the new G4 JAM.

1. To remove the memory card:
 - a. **Important:** Make sure all electrical power is turned off on the machine.
 - b. Remove the four screws (1) and the cover plate (2) from the front of the G4 JAM.
 - c. Carefully remove the memory card (3) from the lower compact flash card slot.
Important: The upper card slot (A) is for a PCMCIA memory card that is not used.
2. To install the memory card:
 - a. Flip the memory card upside down (vendor label will be on the bottom).
 - b. Align the memory card with the lower compact flash card slot and carefully push it in until it is firmly seated.
 - c. Replace the cover plate (2) on the front of the G4 JAM and secure with the four screws (1).
3. To start the program on the memory card:
 - a. Turn on the electrical power to the machine.
 - b. Boot-up the Jupiter Control System.
 - c. As the system is booting up, the program on the memory card will be started.
 1. If the existing memory card was installed, the existing program version will be started and all of the data files that were previously entered will be used.
 2. If a different memory card was installed with a newer program version, the newer program version will be started and all of the data files will be reset to the default settings.
 - d. If a newer program version was installed, be sure to record the program version.

G4 JAM

Memory Card

FIGURE 4
G4 JAM - FRONT

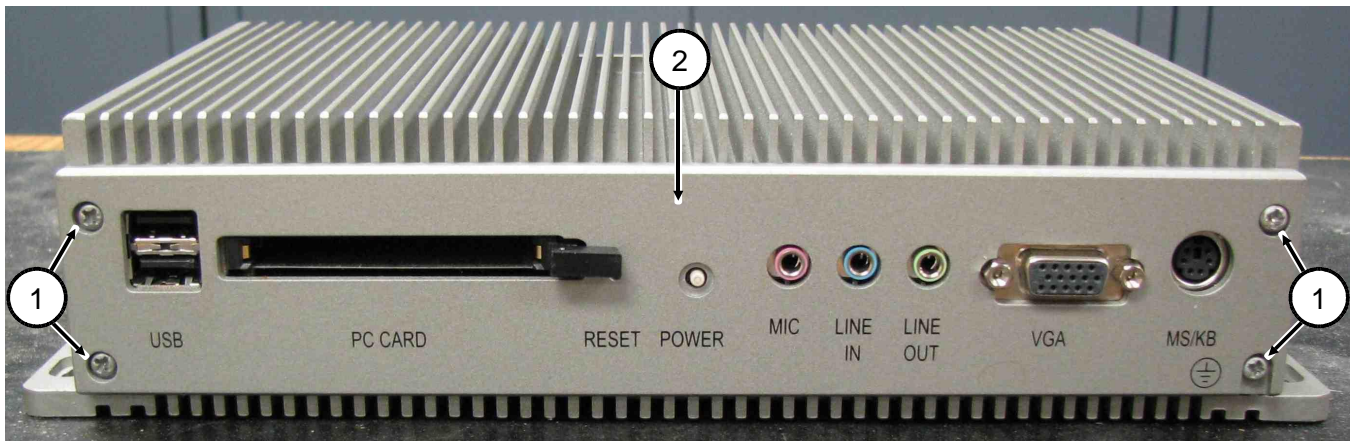
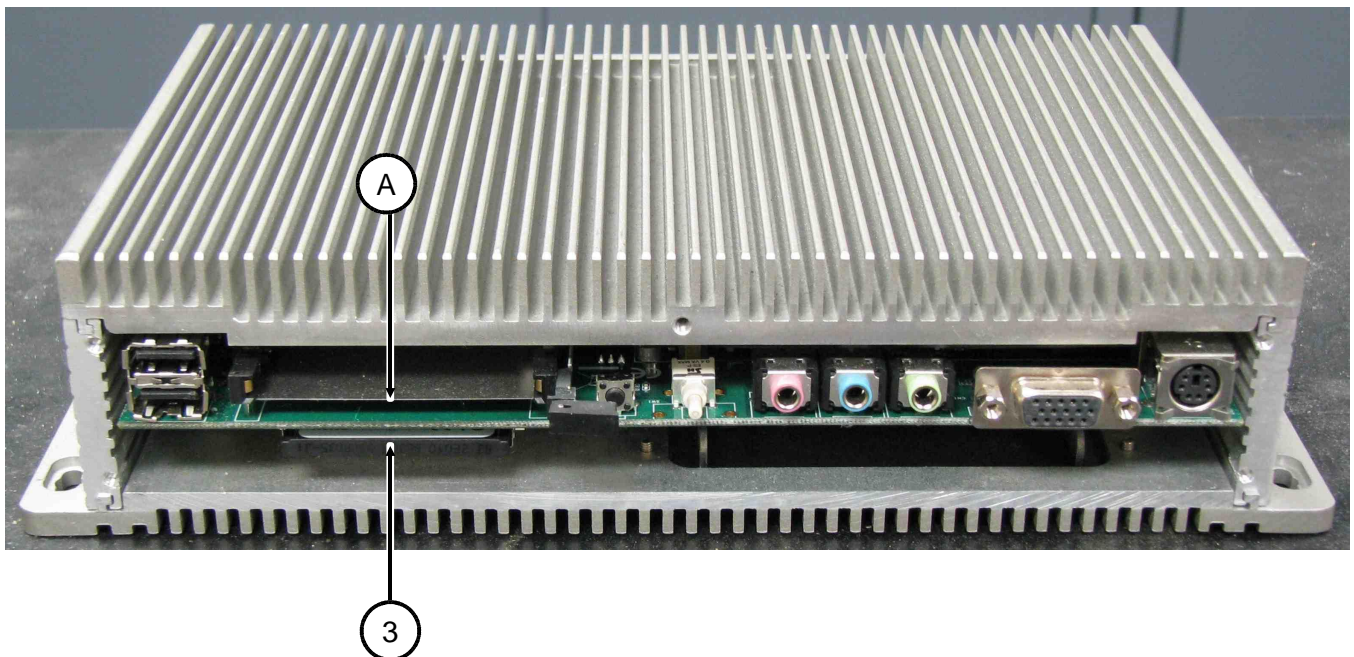


FIGURE 5
G4 JAM - MEMORY CARD



G4 JAM**Battery Replacement** - See Figure 6

The G4 JAM incorporates an internal Clock Battery and SRAM Battery. Both batteries should be replaced when the BTRY LED illuminates on the rear of the G4 JAM.

Battery Specifications - BH1 Clock and BH2 SRAM:

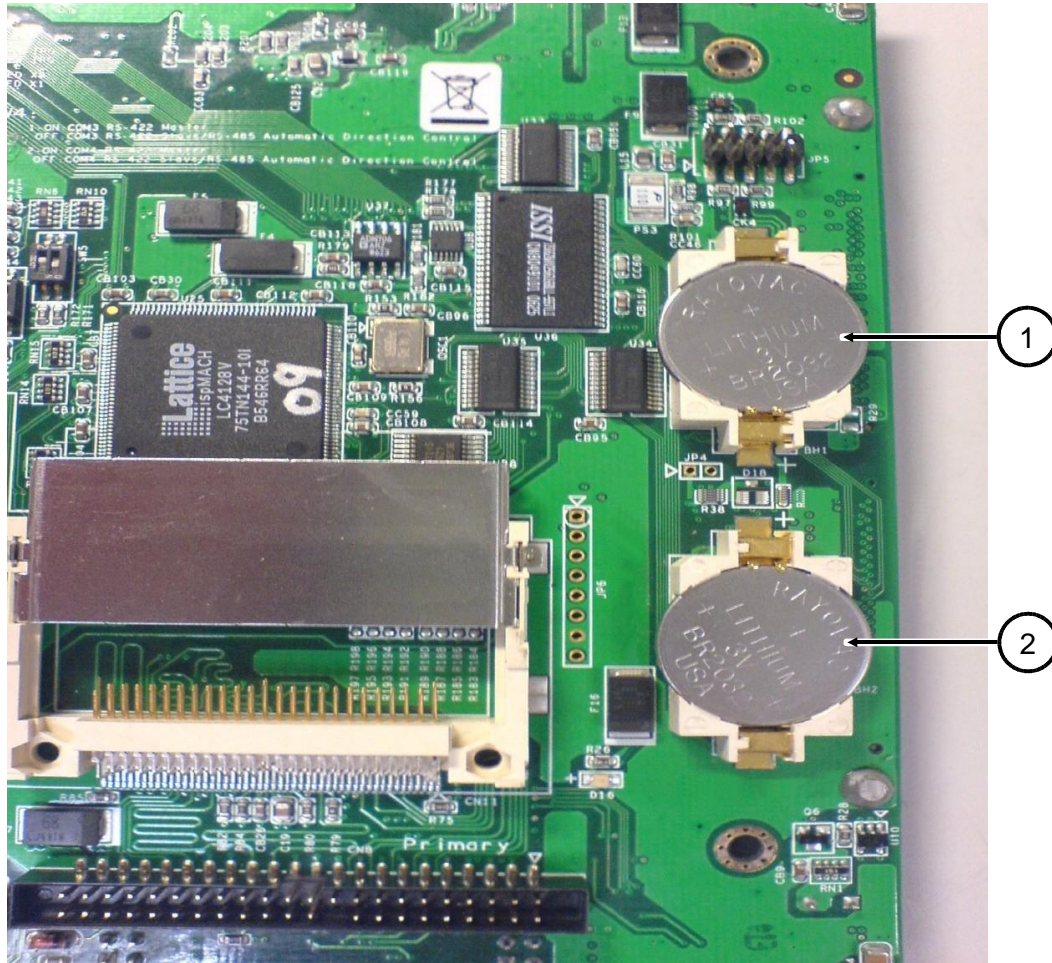
Lithium Battery: BR2032 (Using CR2032 is not recommended)
Output Voltage: 3 VDC

1. To replace the batteries:
 - a. **Important:** Make sure all electrical power is turned off on the machine.
 - b. Disassemble the G4 JAM to gain access to the back-side of the board where the BH1 Clock Battery (1) and BH2 SRAM Battery (2) are located.
 - c. Carefully remove the existing BH1 Clock Battery (1) and BH2 SRAM Battery (2) from the battery holders on the board. Use care not to damage the battery holders or board.
 - d. Be sure the new batteries meet the specifications listed before installing the batteries. See Battery Specifications - BH1 Clock and BH2 SRAM.
 - e. Install the new BH1 Clock Battery (1) and BH2 SRAM Battery (2) in the battery holders on the board. Use care not to damage the battery holders or board.
 - f. Re-assemble the G4 JAM.
 - g. Turn on the electrical power to the machine.
 - h. Boot-up the Jupiter Control System.
 - i. Make sure the BTRY LED is off (not illuminated) on the rear of the G4 JAM.

G4 JAM

Battery Replacement

FIGURE 6
G4 JAM - BATTERIES



J42 BOARD - See Figure 7

The J42 Board provides the communications interface between the G4 JAM and the Jupiter Network Modules (input / output) on the machine. The J42 Board provides 24 volt power to the G4 JAM via the J2 Connector and to the Jupiter Network Modules via the M23 Connector. The J42 Board improves reliability and diagnostics through the following:

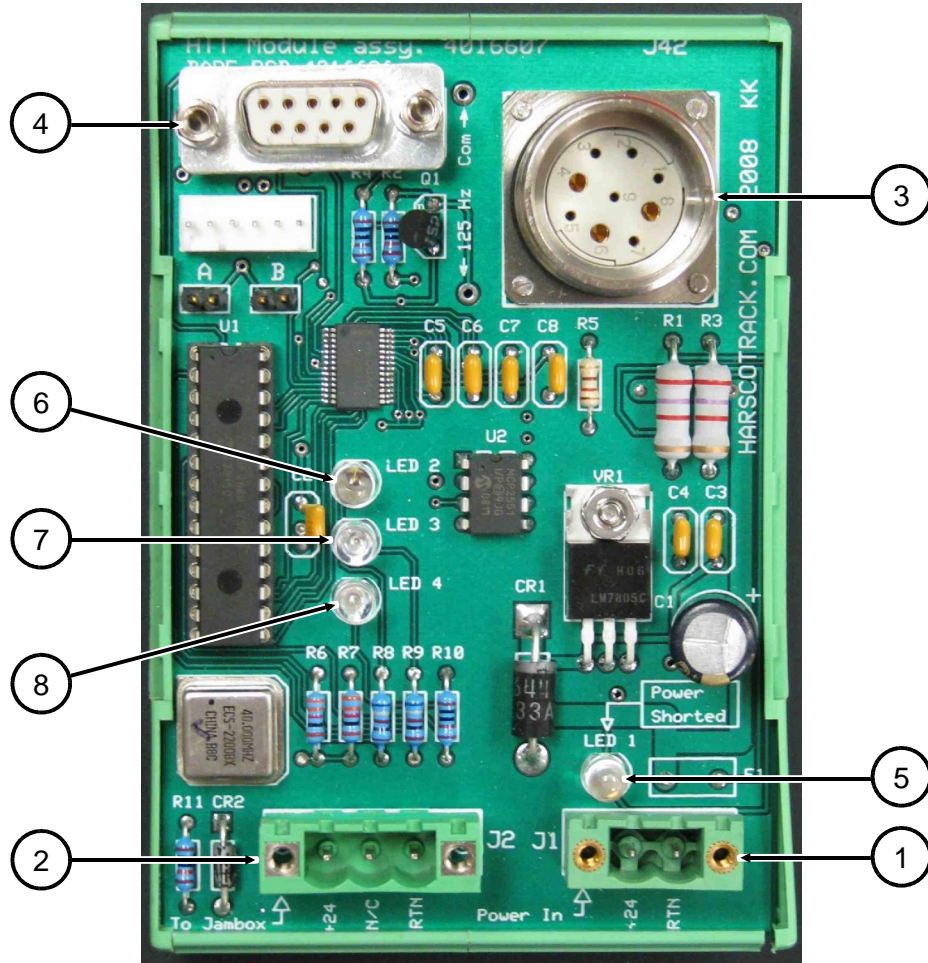
- a. The connection to the 24 volt power on pins 4 and 8 of the Jupiter Network Cables (up to the first power distribution module) is through the J42 Board.
- b. The J42 Board provides the network connections between the G4 JAM and the first Jupiter Module in the network (module #2).
- c. The terminating resistor for the beginning of the network is located on the J42 Board.
- d. The J42 Board has a signal oscillator that drives the "Daisy-Chain" signal on the Jupiter Network Cable which allows the first module in the network to establish its address. All "Daisy-Chain" inputs, outputs and connections between modules must be fully functional for each module to successfully establish its location in the network. Network module addressing is secure and network diagnostics are more comprehensive.

The J42 Board consists of the following:

- (1) J1: 24 V Power In connector used for J42 Board.
- (2) J2: 24V Power Out connector used for G4 JAM.
- (3) M23: Jupiter connector used for first Jupiter Module (module #2) in network.
- (4) TS1: Serial Port connection used for G4 JAM.
- (5) LED 1 - Red: Off - Normal state.
On - Fuse is open (short). After fuse resets (cools), LED will go out.
- (6) LED 2 - Red: Off - Normal state. See LED 2 - 3 - 4 Status Codes for information.
- (7) LED 3 - Yellow: Off - Normal state. See LED 2 - 3 - 4 Status Codes for information.
- (8) LED 4 - Green: Flash at Slow Rate (Heart-Beat) - G4 JAM is in Idle Mode
(not transmitting or receiving data).
Flash at Fast Rate (Heart-Beat) - G4 JAM is in Normal Mode
(transmitting or receiving data).
See LED 2 - 3 - 4 Status Codes for information.

J42 BOARD

FIGURE 7
J42 BOARD



J42 BOARD - See Figure 7**LED 2 - 3 - 4 Status Codes**

The LEDs 2 - 3 - 4 on the J42 Board will flash or illuminate solid in a fashion to help determine if CAN communication is good, or if there is a problem.

Red Flash:	Bus warning (ack errors). Communication problem between G4 JAM and Jupiter CAN bus network.
Red Solid:	Buss off error. No communication between J42 Board and Jupiter CAN network.
Yellow Flash:	Communication problem between G4 JAM and J42 Board.
Yellow Solid:	No communication between G4 JAM and J42 Board.
Green Flash:	Normal operation.
Green Flash with Yellow Solid:	UART receiver framing or overrun error detected.
Green and Yellow Flash in Sequence:	Checksum error while receiving JAM message.
Green and Yellow Flash Alternately:	Heart-beat timeout error.
Green Solid and Yellow Flash:	Can receive software buffer overflows detected.

© 2009 HARSCO RAIL, HARSCO CORPORATION

415 North Main Street
Fairmont, MN
56031-1837
Tel: (507) 235-3361
Fax: (507) 235-7370

2401 Edmund Road, Box 20
Cayce-West Columbia, SC
29171-0020
Tel: (803) 822-9160
Fax: (803) 822-7471

200 South Jackson Road
Ludington, MI
49431
Tel: (231) 843-3431
Fax: (231) 843-1644

Printed In U.S.A.