Product Manual
J85501X-1 Lists K1, K2, K3

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Lucent Technologies
Lineage® 2000
Battery Thermal Protection
210A Control Module

Notice:
Every effort was made to ensure that the information in this document was complete and accurate at the time of printing. However, information is subject to change.

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1 Product Description

Function

The 210A Control Module (shown in Figure 1-1) monitors the temperature of a battery string and provides an isolated contact closure when the battery string temperature exceeds 42°C. The contact closure can be used by a battery plant's controller or rectifier to reduce the float voltage of the plant to prevent thermal runaway.

A maximum of 20 modules may be connected together to monitor up to 20 battery strings. Each module accepts two thermistor (sensor) inputs to monitor the temperature of the battery string. The 210A Control Module monitors the thermistors for proper operation and failure. In addition to the thermistors, the module monitors the controller sanity and interconnect between units. The interconnect monitor is achieved through the Battery Thermal Integrity (BTI) signal. Each module is equipped with a lamp test pushbutton to test the functionality of the **Normal** and **Status** LEDs.

If the 210A Control Module is used in conjunction with a battery plant equipped with an ECS CP3 Datalogger Board or OMNIpulse™, the battery temperatures at the thermistors can be measured by using an analog measurement channel.

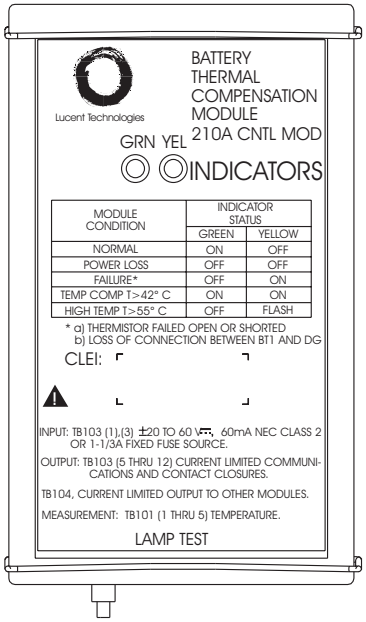

Figure 1-1: 210A Control Module

Operations

Table 1-A describes the operations of the Battery Thermal Protection Module.

Table 1-A: 210A Control Module Operations

Condition	Operation	LEDs
Temp. above 42 ± 2° C	Contact Closures: BTP and BTPR BTN and BTNR	Green (ON), Yellow (ON)
Temp above 55 ± 2° C	Contact Closures: BTP and BTPR BTJ and BTJR	Green (ON), Yellow (FLASH)
Temp drops below 50 ± 2° C after being above 55 ± 2° C	Contact Closures: BTP and BTPR BTN and BTNR Open Contacts: BTJ and BTJR	Green (ON), Yellow (ON)
Temp drops below 36 ± 2° C after being above 42 ± 2° C	Open Contacts: BTP and BTPR BTN and BTNR Contact Closure: FLT and BTPR (one second only)	Green (ON), Yellow (OFF)
Thermistor failed (open or short)	Contact Closures: BTN and BTNR	Green (OFF), Yellow (ON)
Loss of continuity between BTI and DG	Contact Closures: BTN and BTNR	Green (OFF), Yellow (ON)
Power Loss	Contact Closures: BTN and BTNR	Green (OFF), Yellow (OFF)

BTP - Battery Thermal Protection
BTPR - Battery Thermal Protection Return
BTN - Battery Thermal Minor Alarm
BTNR - Battery Thermal Minor Alarm Return
BTJ - Battery Thermal Major Alarm
BTJR - Battery Thermal Major Alarm Return
FLT - Float
BTI - Battery Thermal Integrity
DG - Discharge Ground

CAUTION **The alarm circuits are not fuse protected within the unit since an open fuse may obscure an alarm. Therefore, the current limiting protection for these circuits must be provided by the external circuits. Exceeding these limits could result in damage to the unit.**

Specifications

Table 1-B gives the specifications for the 210A Control Module.

Table 1-B: 210A Control Module Specifications

Voltage Range	±20 to 60 Vdc (NEC Class 2 or 1-1/3A fused source)
Input Current	40mA max
Temperature Range	0 to 65° C
Altitude	-61 to 3962m (-200 to 13,000 feet)
Humidity	10 to 95% non-condensing
Radiated Emission	FCC Level A, CISPR 22 Level A
Alarm Contacts	0.1 A, 60 Vdc max
Temperature Measurement Accuracy	2° C (20 to 55° C) 3° C (0 to 20° C and 55 to 65° C)
210A Control Unit Drawings	J85501X-1 (Kit) T-83199-30 SD-83199-01
Ordering Code	J85501X-1 List K1 (Terminal Block Base, Battery Side Temp Measure) List K2 (Connectorized Base, Battery Side Temp Measure) List K3 (Connectorized Base, Battery Post Temp Measure)
Product Warranty	24 months

Technical Support

Technical support for Lucent Technologies equipment is available to customers around the world.

USA, Canada, Puerto Rico, and the US Virgin Islands

On a post-sale basis, **during the Product Warranty period,** our Technical Support telephone number 1-800-CAL RTAC (1-800-225-7822) provides coverage during normal business hours. Product Specialists are available to answer your technical questions and assist in troubleshooting problems. For out-of-hours EMERGENCIES, the 800 number will put you in touch with a Regional Technical Assistance Center Engineer via our 24 hour a day, 7 day per week Help Desk.

When Technical Support is required in **the Post-Warranty Period**, the service may be billable unless you hold an extended warranty or contractual agreement.

Central and South America

If you need product technical support, contact your local Field Support/Regional Technical Assistance Center or contact your sales representative who will be happy to discuss your specific needs.

Europe, Middle East, and Africa

If you need product technical support, contact your local Field Support/Regional Technical Assistance Center or contact your sales representative who will be happy to discuss your specific needs.

Asia Pacific Region

If you need product technical support, contact your local Field Support/Regional Technical Assistance Center or contact your sales representative who will be happy to discuss your specific needs.

Product Repair and Return

Repair and return service for Lucent Technologies equipment is available to customers around the world.

USA, Canada, Puerto Rico, and the US Virgin Islands

For information on returning of products for repair, customers may call 1-800-255-1402 for assistance.

Central and South America

If you need to return a product for repair, your sales representative will be happy to discuss your individual situation.

Europe, Middle East, and Africa

If you need to return a product for repair, your sales representative will be happy to discuss your individual situation.

Asia Pacific Region

If you need to return a product for repair, your sales representative will be happy to discuss your individual situation.

Customer Service

For customer service, any other product or service information, or for additional copies of this manual or other Lucent Technologies documents, call 1-800-THE-1PWR (1-800-843-1797). Specify the select code number for manuals, or drawing number for drawings. Contact your regional customer service organization or sales representative for information regarding spare parts.

2 Installation

To mount a module to a Lucent Technologies VR battery stand, follow this procedure:

1. Mount the VR module bracket to any one of the available 1/4-20 nuts in the stand upright.

2. Attach the base to the VR module bracket with the 10-32 screws. (See Figure 2-1).

   If using the module with other battery stands, mount the base within 10 feet of the battery cells to be monitored.

3. Repeat Steps 1 and 2 for all bases to be used.

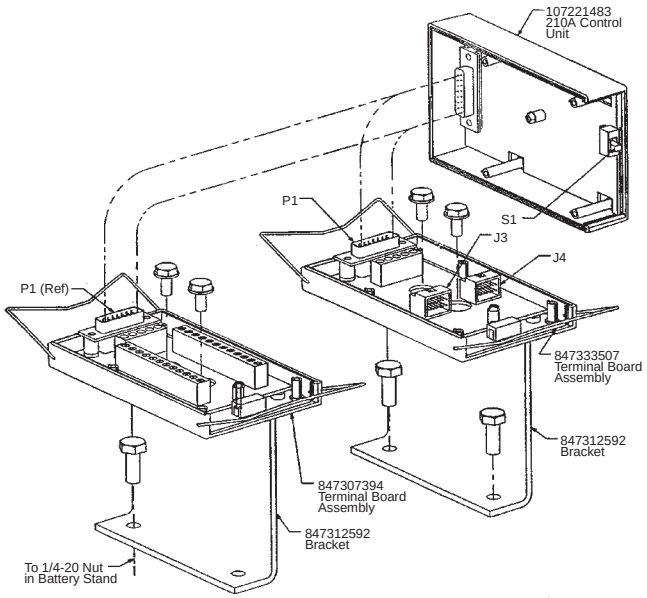

Figure 2-1: 210A Control Module and Bracket

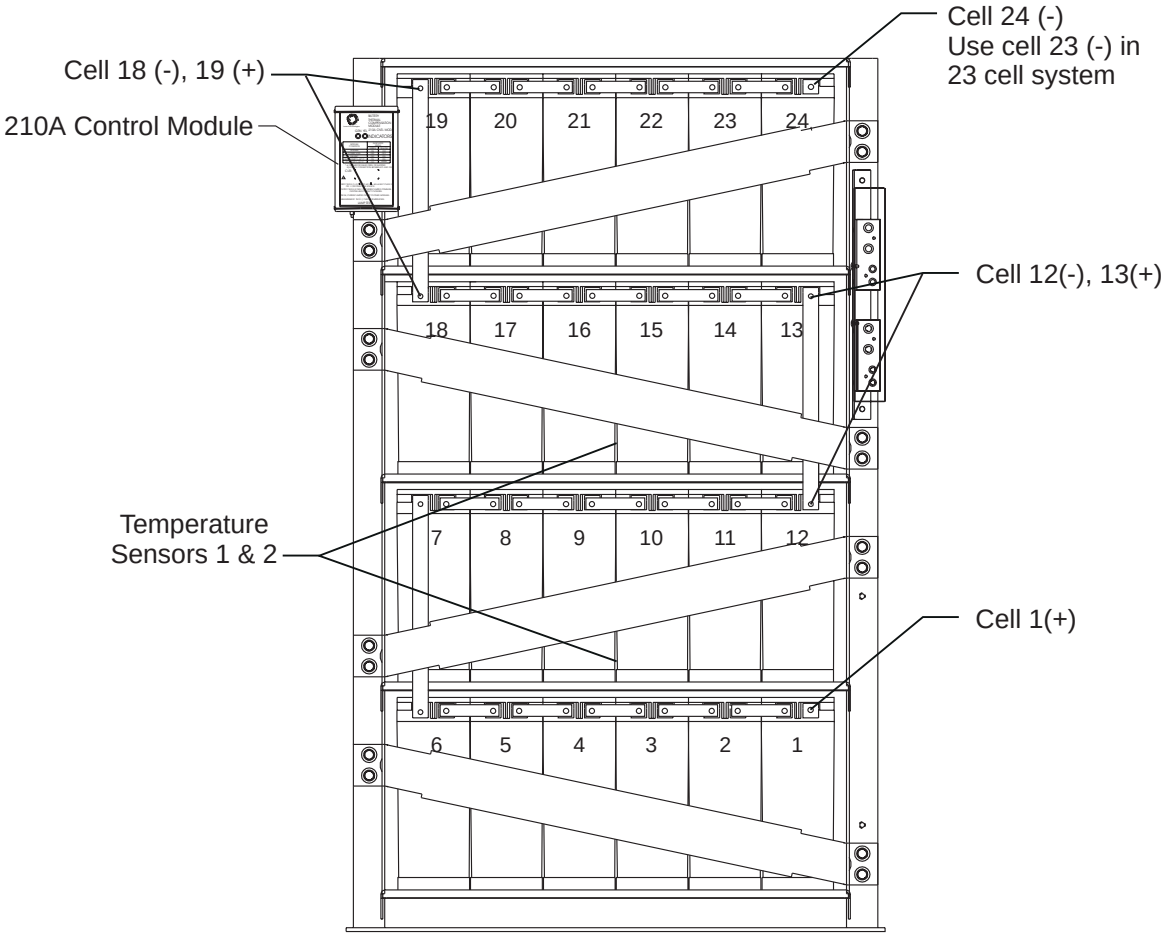

Figure 2-2: Thermistor Locations in VR Batteries

4. Insert the thermistors (temperature sensors) in the battery locations to be monitored. See Figure 2-2 for locations between Lucent Technologies VR batteries.

5. Using the cable provided, connect the two thermistors to the base terminal block. Connect the first thermistor to TB201 positions 1 and 2. Connect the second thermistor to TB201 positions 4 and 5 (see Figure 2-3 or Figure 2-4).

   Connect the shield of each cable to TB201 position 3. If using CP3 (Datalogger) of the ECS controller or OMNIpulse™ to measure the temperature of the batteries, connect a pair of 22-awg wires to the same two positions of each thermistor. When connecting the two pairs of wire to the analog data channels, connect TB201 positions 1 and

4 to the most negative (N) input of each analog channel and TB201 positions 2 and 5 to the most positive (P) input of each analog channel. The pair of wires must be connected through current limiting resistors. For further details, refer to ECS Controller Options product manual (167-790-109) or OMNIpulse™ product manual (167-790-116).

6. Daisy chain connections:

   a) Terminal Block Version

   Using the 12 conductor cable provided, connect TB104 position 12 of one base to TB103 position 1 of the next closest base (see Figure 2-3). Continue with TB104 position 11 to TB103 position 2, etc. to TB104 position 1 to TB103 position 12. Continue this daisy chain connecting until all the bases are connected together.

   b) Connectorized Version

   Using the cable provided connect J4 of one base to J3 of the next base (see Figure 2-4). Continue this daisy chaining until all the modules are connected together.

NOTE **Twenty five feet of interconnecting cable is provided with each kit. If this length is not sufficient, additional cable can be ordered through the J-drawing. Ensure wiring is performed per all local codes or requirements. (Wiring provided with kits should cover most installation needs).**

7. Connecting the last base in the chain:

   a) Terminal Block Version

   In the last base, the one with no connections to TB104, strap pins 9 and 10 together with a 22-awg wire. Any of the wire left from previous steps will work.

   b) Connectorized Version

   In the last base, the one with no connections to J4, insert the strap connector provided into the J4 connector.

8. Connect the first base (TB103 or J3) to the host control/monitoring system. For example, see Figure 2-5 for connections to a Lucent Technologies ECS controller.

9. Mate all 210A control modules (except the last one in the daisy chain) to their respective bases (see Figure 2-1). Latch the two units together with the clips on the base.

10. If the host control/monitoring system is intended to respond to closures from the 210A control unit, ensure that the host control/monitoring system is configured properly.

    Verify the following:

    - If the 210A is connected to a Lucent Technologies ECS controller's TEQ (To Equalize) and TFL (To Float) leads, ensure that ALL the rectifiers connected to the controller have their equalize voltage adjusted to 2 volts BELOW the plant float voltage for 48 volt systems, 1 volt below for 24 volt systems. Refer to the appropriate rectifier manual for procedures on how to adjust the equalize voltage level. Place the white “TP” labels provided over the “EQ” designations on the rectifier.
    - Equalize function has been enabled in the controller. A hardware strap has been included for the Lucent Technologies ECS controller in the event the strap has been lost. Refer to the Lucent Technologies ECS controller manual for procedures to enable equalize (Strap pins 2 and 3 of P106 together). Place the black “TP” labels provided over the “EQ” designations on the controller.
    - The Battery on Discharge (BD) alarm setting may need to be readjusted to a voltage below the thermal protection voltage setting. Refer to Lucent Technologies ECS controller manual for battery on discharge settings. Typically this level is set between 0.5 and 1 volt below the thermal protection voltage.
    - Adjustment for high voltage shutdown when in the equalize mode should be adjusted to the appropriate level selected by the user. Refer to the Lucent Technologies ECS controller product manual for high voltage shutdown when in equalize settings.

11. If the host control/monitor system has the ability to monitor alarms from the 210A control unit, verify the type

of external alarms the system will handle. The 210A controller provides isolated contact closures for the minor and major alarms. For Lucent Technologies ECS controllers these alarms can be connected to the Aux. Alarm minor and major inputs to the controller. For connection to the ECS controller, two current limiting resistors provided must be installed to the first base between E1 and E2 and also between E3 and E4.

12. Perform Acceptance Testing on the last base in the daisy chain.

    a) Terminal Block Versions

    A strap between TB104 position 7 and 8 should cause the host control/monitoring system to issue a minor alarm. A strap between positions 2 and 3 should cause a major alarm. A strap between positions 5 and 4 should (if connected to the host) cause the plant voltage to drop the amount of voltage set up in step 9. (If no load is present on the plant the rectifiers may shut down until the battery voltage has had time to drop to the new voltage level) Removing the strap between positions 5 and 4 and strapping between positions 4 and 6 for approximately 1 second should cause the plant voltage to return to its previous float level, for Lucent Technologies ECS controllers.

    b) Connectorized Versions

    A strap between J4 pins 10 and 4 should cause the host control/monitoring system to issue a minor alarm. A strap between pin 1 and 8 should cause a major alarm. A strap between pins 2 and 9 should (if connected to the host) cause the plant voltage to drop the amount of voltage set up in step 9. (If no load is present on the plant the rectifiers may shut down until the battery voltage has had time to drop to the new voltage level). Removing the strap between pins 2 and 9 and strapping between pins 2 and 3 for approximately 1 second should cause the plant voltage to return to its previous float level, for Lucent Technologies controllers.

13. Ensure that all the straps are removed from TB104 and J4 in the last base except the one required in step 6. Insert the last 210A control module onto the last base.

14. If the thermistors are connected to CP3 or OMNIpulse™, configure the analog channel as defined below:

    a) To display the battery temperature in degrees Celsius this channel must be configured as follows:

    Channel Description: Batt. String # - Temp. #
    Input Type: +DC
    Range: 6V
    Scale Factor: 116.27
    Transducer Offset: -0.854
    Alarm Threshold: An upper and lower user defined channel alarm threshold may be set.
    Units: Deg C

    b) To display the battery temperature in degrees Fahrenheit this channel must be configured as follows:

    Channel Description: Batt. String # - Temp. #
    Input Type: +DC
    Range: 6V
    Scale Factor: 209.30
    Transducer Offset: -1.007
    Alarm Threshold: An upper and lower user defined channel alarm threshold may be set.
    Units: Deg F

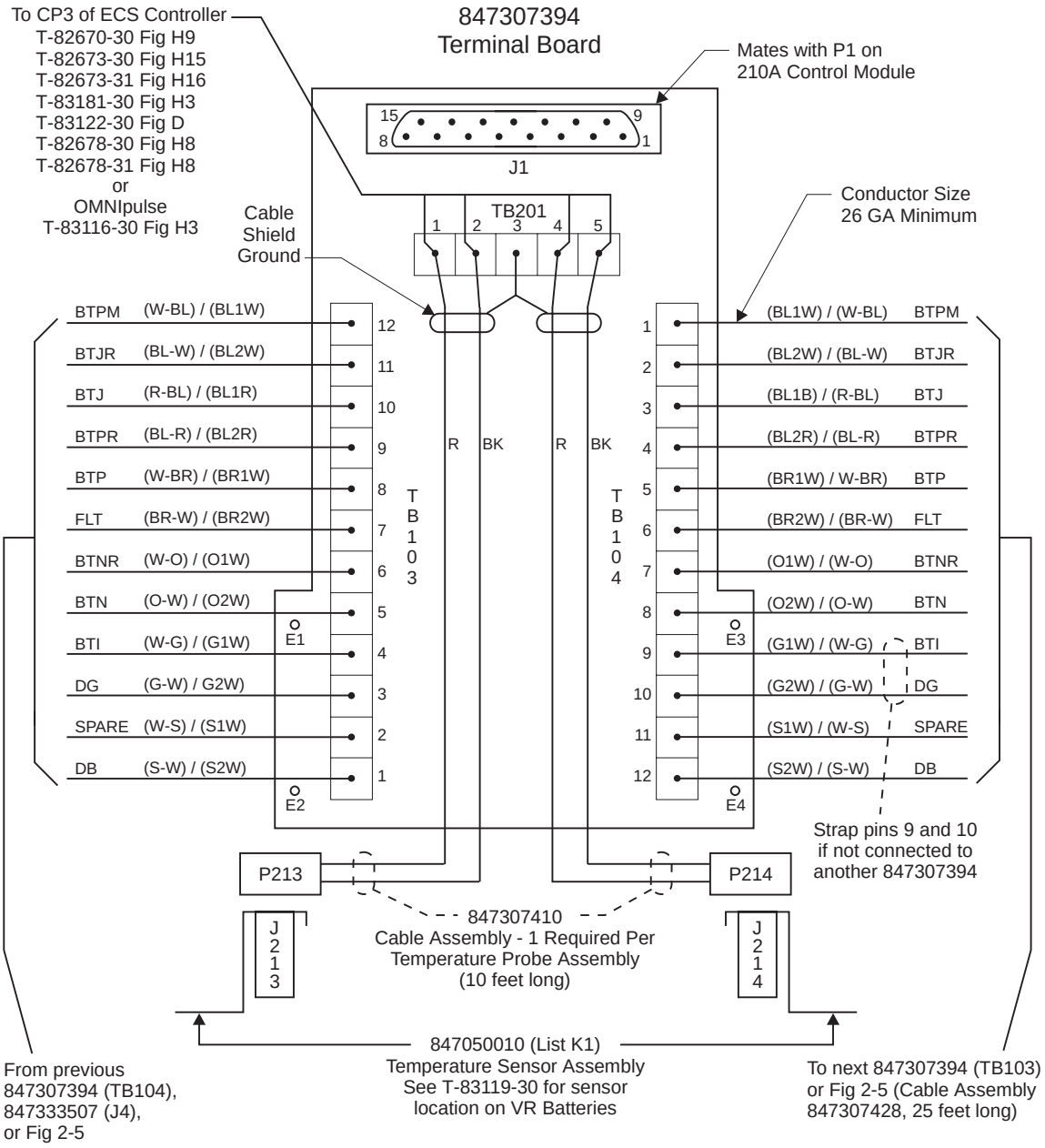

Figure 2-3: Terminal Block Version

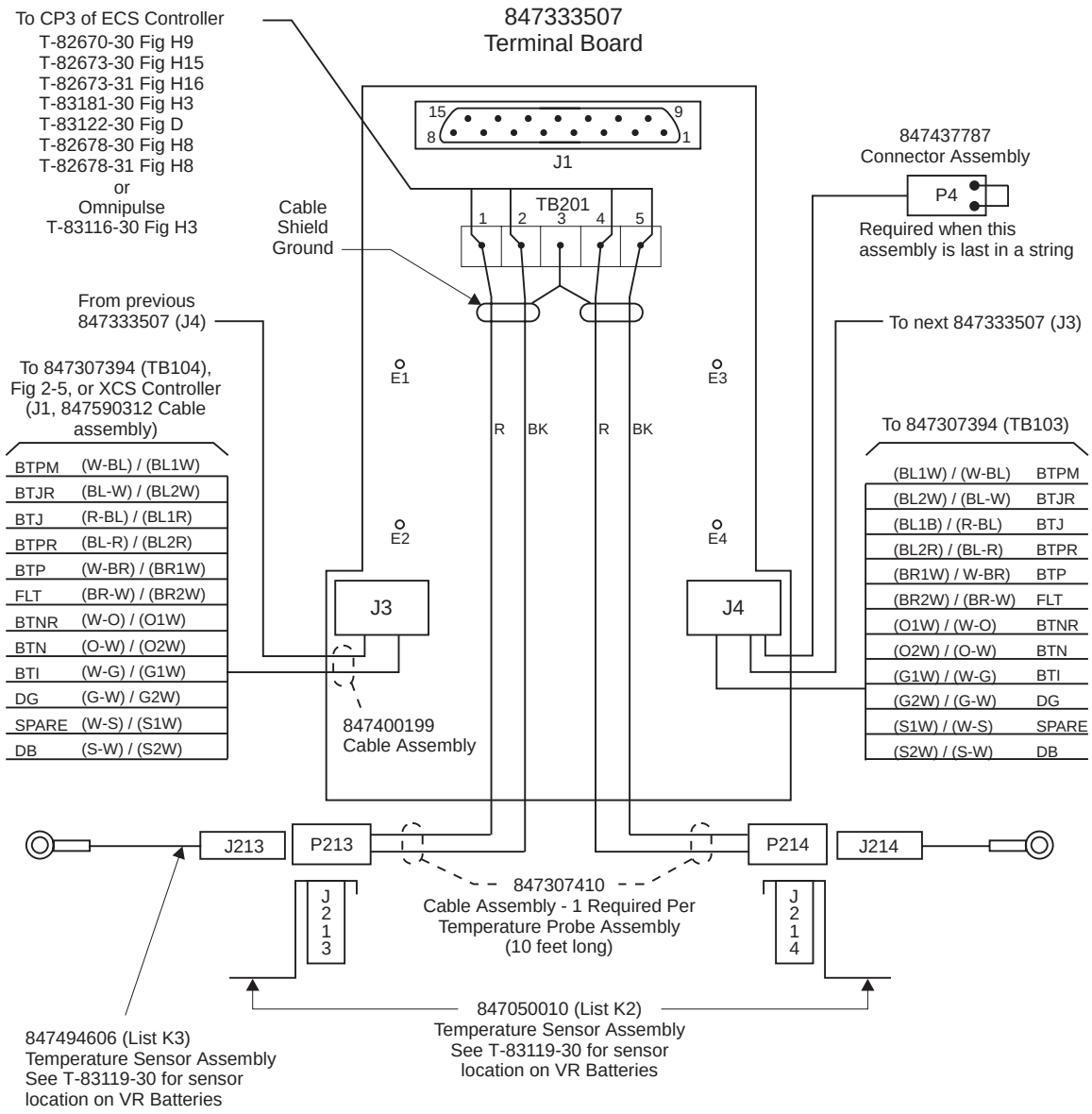

Figure 2-4: Connectorized Version

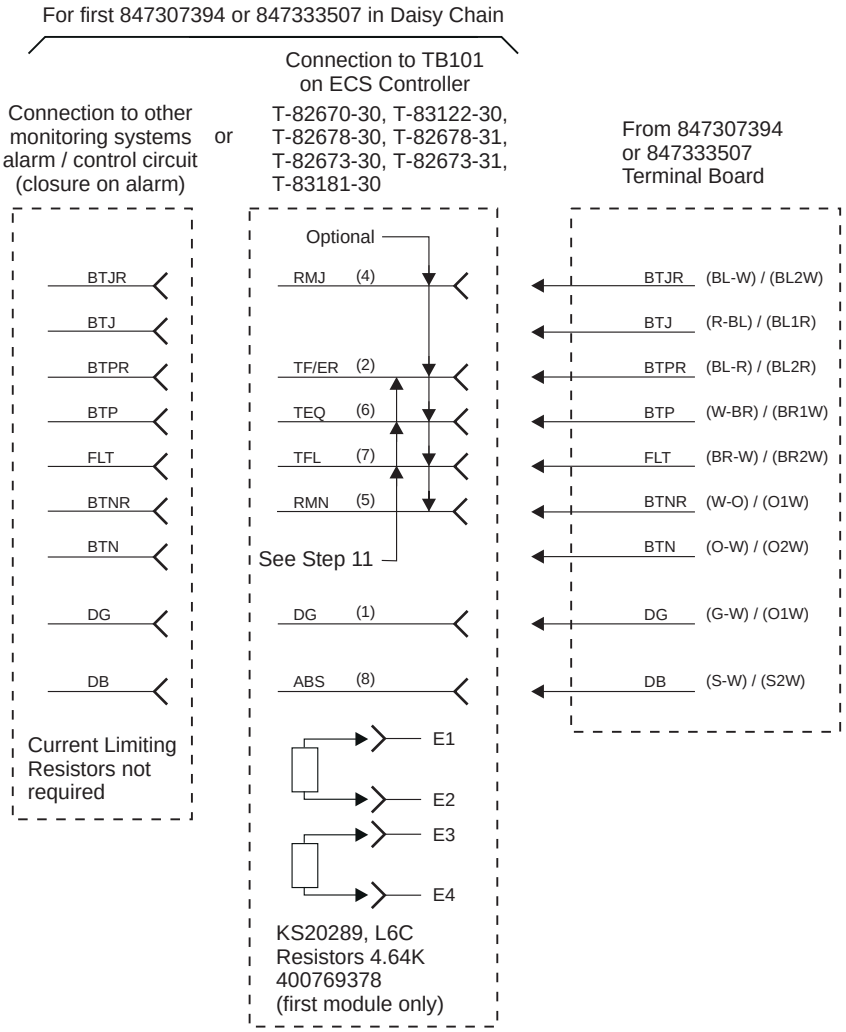

Figure 2-5: Connection to ECS Controller

3 Product Warranty

A. Seller warrants to Customer only, that:

1. As of the date title to Products passes, Seller will have the right to sell, transfer, and assign such Products and the title conveyed by Seller shall be good;
2. Upon shipment, Seller's Manufactured Products will be free from defects in material and workmanship, and will conform to Seller's specifications or any other agreed-upon specification referenced in the order for such Product;
3. With respect to Vendor items, Seller, to the extent permitted, does hereby assign to Customer the warranties given to Seller by its vendor of such Vendor Items, such assignment to be effective upon Customer's acceptance of such Vendor Items. With respect to Vendor items recommended by Seller in its specifications for which the vendor's warranty cannot be assigned to Customer, or if assigned, less than Sixty (60) days remain of the vendor's warranty or warranty period when the Vendor's items are shipped to Customer or when Seller submits its notice of completion of installation if installed by Seller, Seller warrants that such Vendor's Items will be free from defects in material and workmanship on the date of shipment to Customer. In such an event, the applicable Warranty Period will be sixty (60) days.

B. The Warranty Period listed below is applicable to Seller's Manufactured Products furnished pursuant to this Agreement, unless otherwise stated:

WARRANTY PERIOD

Product Type	New Product	Repaired Product or Part
Central Office Power Equipment	24 Months	6 Months

*The Warranty Period for a repaired Product or part thereof is as listed or, in the case of Products under Warranty, is the period listed or the unexpired term of the new Product Warranty Period, whichever is longer.

**The Warranty Period for Products ordered for Use in Systems or equipment Manufactured by and furnished by Seller is that of the initial Systems or equipment.

C. If, under normal and proper use during the applicable Warranty Period, a defect or nonconformity is identified in a Product and Customer notifies Seller in writing of such defect or nonconformity promptly after Customer discovers such defect or nonconformity, and follows Seller's instructions regarding return of defective or nonconforming Products, Seller shall, at its option attempt first to repair or replace such Product without charge at its facility or, if not feasible, provide a refund or credit based on the original purchase price and installation charges if installed by Seller. Where Seller has elected to repair a Seller's Manufactured Product (other than Cable and Wire Products) which has been installed by Seller and Seller ascertains that the Product is not readily returnable for repair, Seller will repair the Product at Customer's site.

   With respect to Cable and Wire Products manufactured by Seller which Seller elects to repair but which are not readily returnable for repair, whether or not installed by Seller, Seller at its option, may repair the cable and Wire Products at Customer's site.

D. If Seller has elected to repair or replace a defective Product, Customer shall have the option of removing and reinstalling or having Seller remove and reinstall the defective or nonconforming Product. The cost of the removal and the reinstallation shall be borne by Customer. With respect to Cable and Wire Products, Customer has the further responsibility, at its expense, to make the Cable and Wire

Products accessible for repair or replacement and to restore the site. Products returned for repair or replacement will be accepted by Seller only in accordance with its instructions and procedures for such returns. The transportation expense associated with returning such Product to Seller shall be borne by Customer. Seller shall pay the cost of transportation of the repair or replacing Product to the destination designated by Customer within the Territory.

E. The defective or nonconforming Products or parts which are replaced shall become Seller's property.

F. If Seller determines that a Product for which warranty service is claimed is not defective or nonconforming, Customer shall pay Seller all costs of handling, inspecting, testing, and transportation and, if applicable, traveling and related expenses.

G. Seller makes no warranty with respect to defective conditions or nonconformities resulting from actions of anyone other than Seller or its subcontractors, caused by any of the following: modifications, misuse, neglect, accident, or abuse; improper wiring, repairing, splicing, alteration, installation, storage, or maintenance; use in a manner not in accordance with Seller's or vendor's specifications or operating instructions, or failure of Customer to apply previously applicable Seller modifications and corrections. In addition, Seller makes no warranty with respect to Products which have had their serial numbers or month and year of manufacture removed, altered, or with respect to expendable items, including, without limitation, fuses, light bulbs, motor brushes, and the like.

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