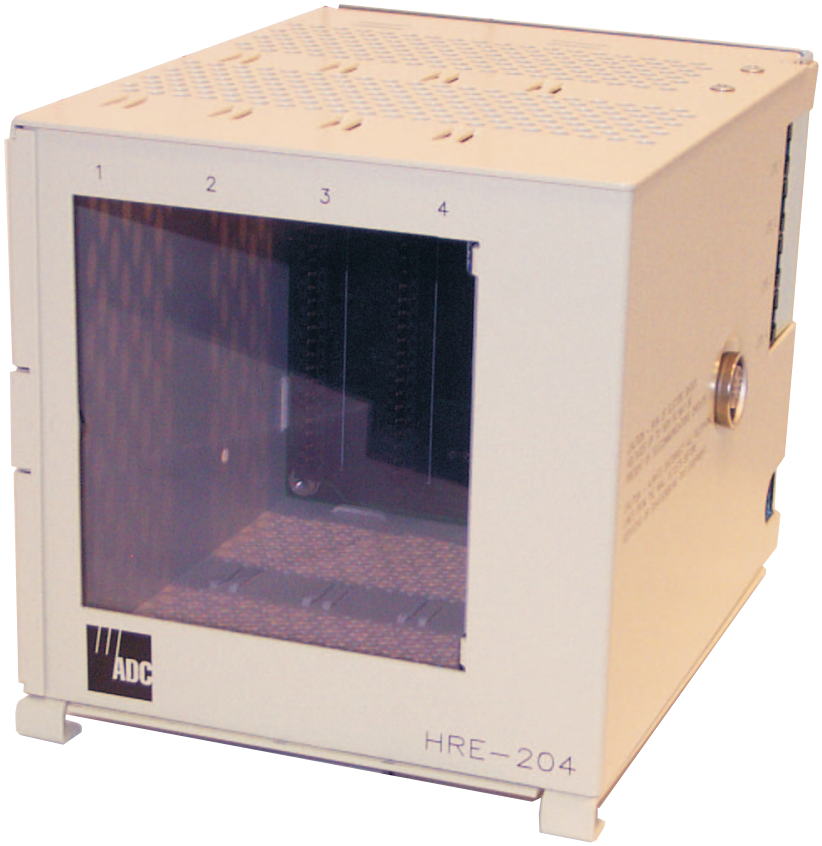
HiGain Remote Enclosure
User Manual



HRE-204 List 3B
Part Number: 1239437
CLEI: T1M3H00D

HRE-204 List 3C
Part Number: 1239439
CLEI: T1M3J00D

Revision History of This Manual

To order copies of this document, use document catalog number LTPH-UM-1180-02.

Issue	Release Date	Revisions Made
1	November 22, 2002	Initial release.
2	February 7, 2003	Enclosure sheet metal, mounting templates

USING THIS MANUAL

Three types of messages, identified by icons, appear in text.

Notes contain information about special circumstances.

Cautions indicate the possibility of personal injury or equipment damage.

The Electrostatic Discharge (ESD) symbol indicates that a device or assembly is susceptible to damage from electrostatic discharge.

For a list of abbreviations used in this document, refer to "Appendix D - Abbreviations" on page 16.

INSPECTING THE SHIPMENT

Upon receipt of the equipment:

- Unpack each container and inspect the contents for signs of damage. If the equipment has been damaged in transit, immediately report the extent of damage to the transportation company and to ADC DSL Systems, Inc. Order replacement equipment, if necessary.
- Check the packing list to ensure complete and accurate shipment of each listed item. If the shipment is short or irregular, contact ADC as described in "Appendix C - Product Support" on page 15. If you must store the equipment for a prolonged period, store the equipment in its original container.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

OVERVIEW

The ADC® HiGain® Remote Enclosure HRE-204 Lists 3B and 3C house up to four 200-mechanics units or two 400-mechanics (HRUs, H2TU-Rs, or H4TU-Rs). A DSX-1 interface may be accessed through either terminal block, RJ48X (HRE-204 List 3B) or RJ48C (HRE-204 List 3C) connectors.

FEATURES

The HRE-204 provides the following features:

- Four 200-mechanics or two 400-mechanics card slots
- Terminal block, RJ48C (List 3C), or RJ48X (List 3B) modular connectors for DS1 customer interface connections
- Printed-circuit backplane provides terminal block connectors for the facility interface
- Terminal block connectors for external alarm connection
- Tamper-proof locking screw for security
- Accepts line powering or external -48 Vdc source
- Wall or desktop mounting
- Optional wall hinge mount
- Pre-painted, cold-rolled #16 gauge steel construction

APPLICATIONS

HiGain provides a quick and cost-effective way of delivering T1 High Capacity Digital Service (HCDS) to customers over metallic cable pairs. The primary application of the HRE-204 is to house remote units of a HiGain T1 transmission system.

Because the enclosure uses standard 200- and 400-mechanics slots, it can accommodate any plug with 200 or 400 mechanics, regardless of manufacturer.

BACKPLANE

Figure 1 shows the HRE-204 backplane. Table 1 on page 3 describes its connectors.

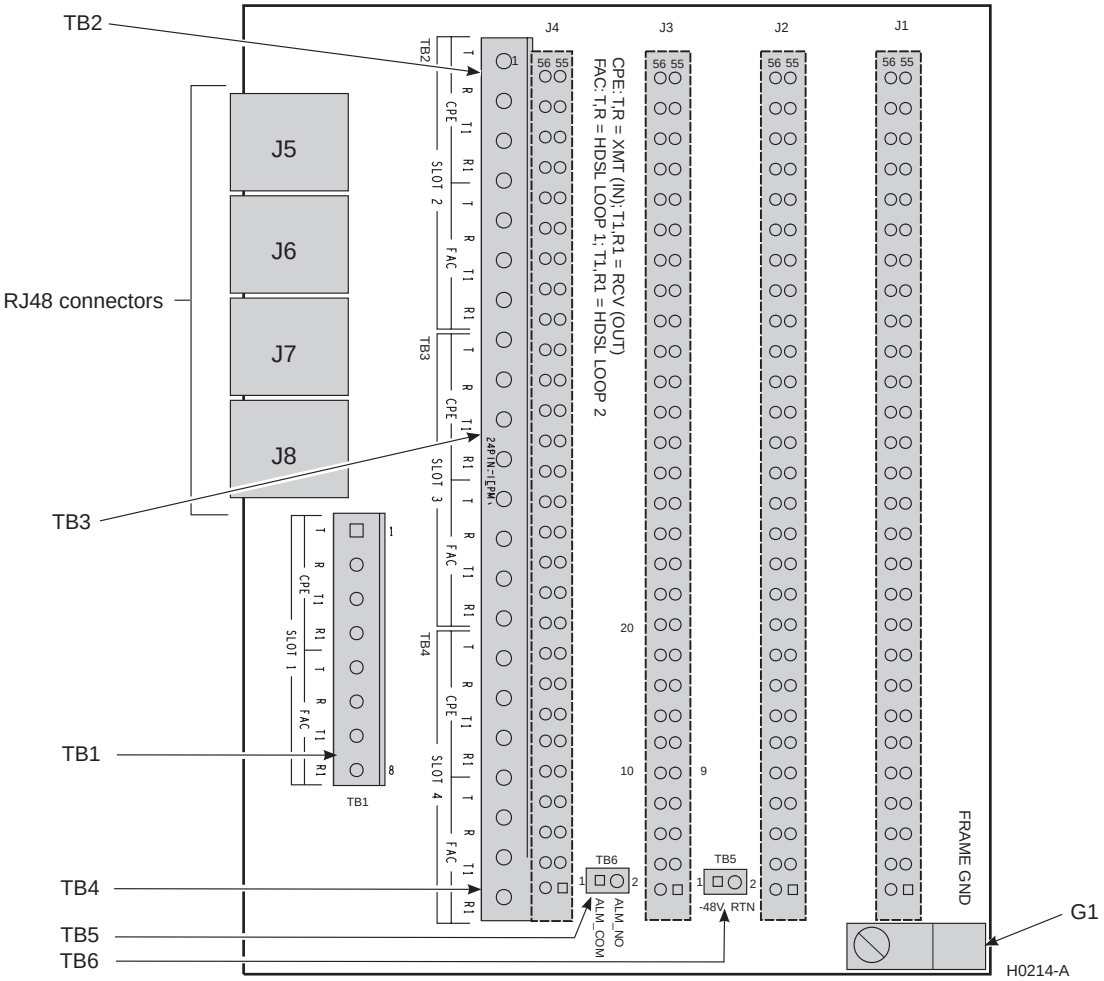


Figure 1. *HRE-204 Lists 3B and 3C Backplane*

Table 1. *Backplane Connectors*

Connector(s)	Function
J5 through J8	RJ48C CPE (List 3C) or RJ48X connectors (List 3B)
TB1	Terminal block connector for Slot 1 CPE (DS1) and FAC (HDSL) interfaces
TB2	Terminal block connector for Slot 2 CPE and FAC interfaces
TB3	Terminal block connector for Slot 3 CPE and FAC interfaces
TB4	Terminal block connector for Slot 4 CPE and FAC interfaces
TB5	Terminal block connector providing -48 Vdc and Battery Return
TB6	Terminal block connector providing external alarm connectivity
G1	Frame ground lug

Figure 2 shows the backplane wiring connections to all slots.

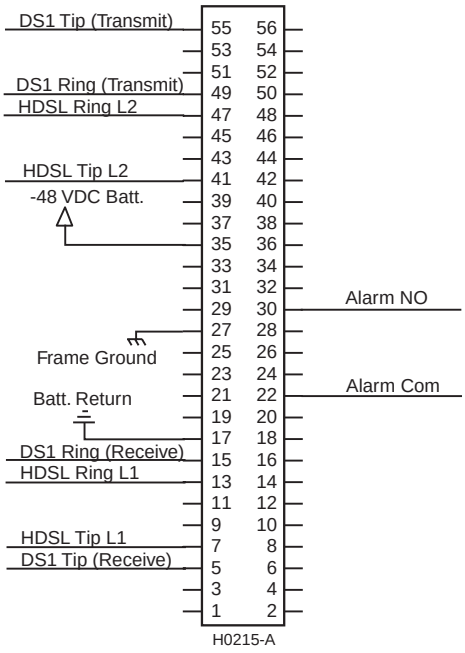


Figure 2. *Backplane Slot Connections (Slots 1 through 4)*

SLOT CONNECTORS

Figure 3 shows the front view of the four slot connectors, J1 through J4. These slots are for installing remote units of a HiGain T1 transmission system.

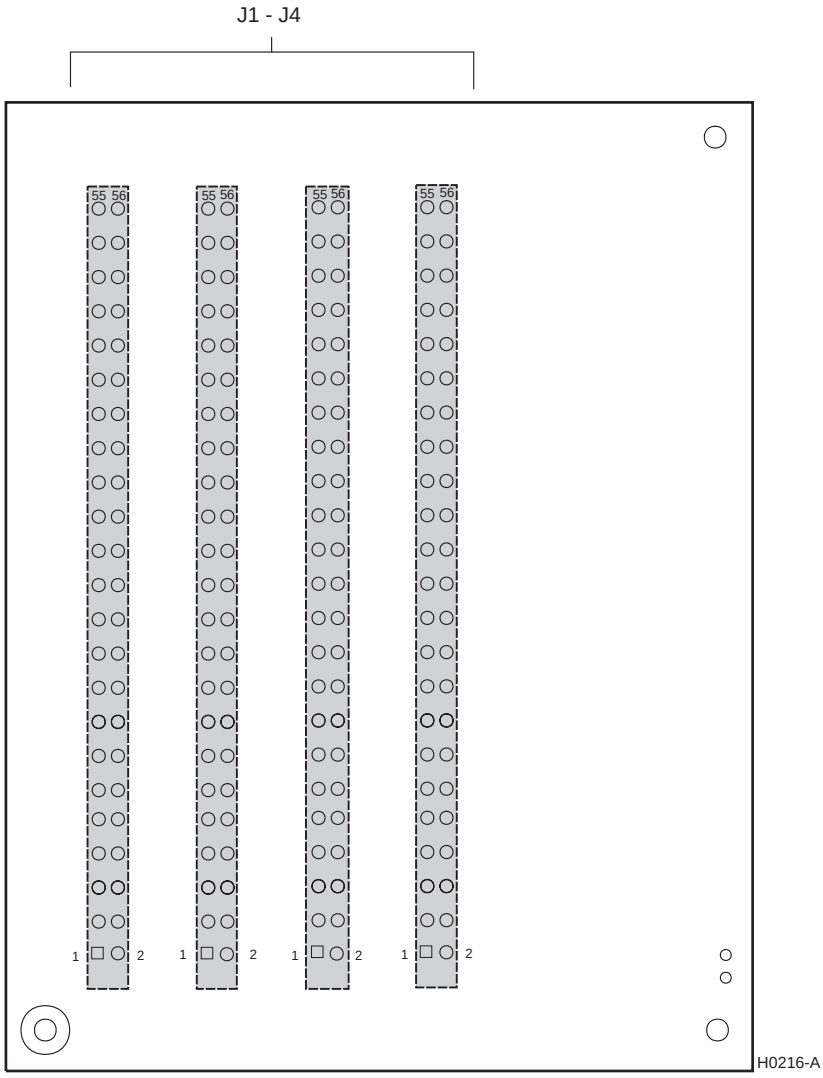


Figure 3. *HRE-204 Slot Connectors (Inside View)*

INSTALLATION

This section provides information on installing and mounting the HRE-204.

A $^{7}/_{16}$-inch can wrench, not included in the installation kit, is required to open the door.

INSTALLATION KIT

- Three #10 x $^{5}/_{8}$ mounting screws
- Three #6-32 machine screws

MOUNTING OPTIONS

The HRE-204 is suitable for mounting on a desktop or wall. Wall mounting may be accomplished using either the backplate (see "Wall Mounting Using the Backplate" on page 6) or chassis side mount (see "Wall Mounting Using the Chassis Side Mount" on page 7) as well as the side mount with an optional hinge assembly (see "Appendix B - Wall Mounting Using the Optional Side-Mounted Hinge" on page 14). Before setting up the equipment, select a location that will provide appropriate security.

Regardless of where the HRE-204 is mounted, ADC recommends that the frame-ground lug should be connected to earth ground according to the grounding recommendations found in Section 9 of Bellcore's GR-1089-DEC 1996. See "Power and Grounding" on page 9 for more information.

Desktop Mounting

The remote enclosure includes standoffs on the bottom plate for desktop mounting. The standoffs create an air gap between the bottom of the enclosure and the surface of the desk. This prevents overheating by providing airflow through the enclosure. Do not block the airflow from the top or bottom of the unit.

Wall Mounting Using the Backplate

To mount the enclosure on a wall, loosen the backplate and use it as a template for three mounting holes or use the template provided in "Appendix E - Mounting Templates" on page 17 to mark the wall locations for drilling the mounting holes.

1 Drill pilot holes in the wall, and install the three No. 10 x $^{5}/_{8}$-inch sheet metal screws and washers supplied with the remote enclosure, leaving approximately $^{1}/_{8}$ under the screw head.

2 Loosen the HEX security nut on the side panel (Figure 4) with a $^{7}/_{16}$-inch can wrench and remove the cover.

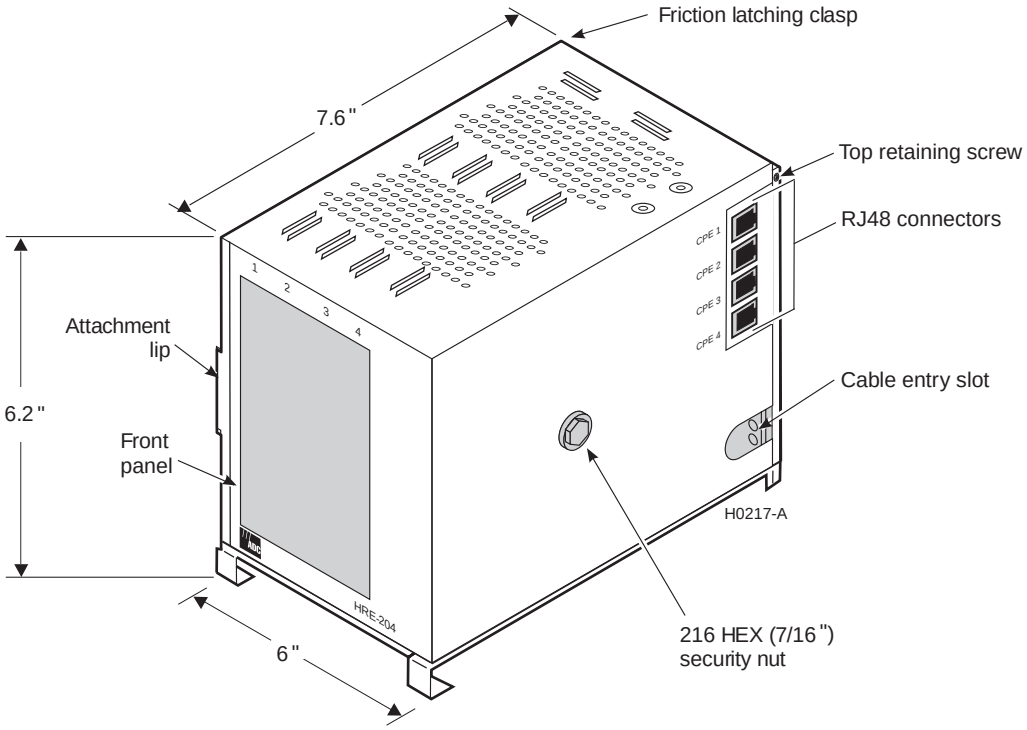


Figure 4. *Preparing the Assembly for Mounting*

3 Remove the top retaining screw that holds the backplate to the chassis.

4 Grip the top of the enclosure, which is held in place with corner friction clasps, unlatch it from the backplate, and rotate the enclosure downward as shown in Figure 5 on page 7.

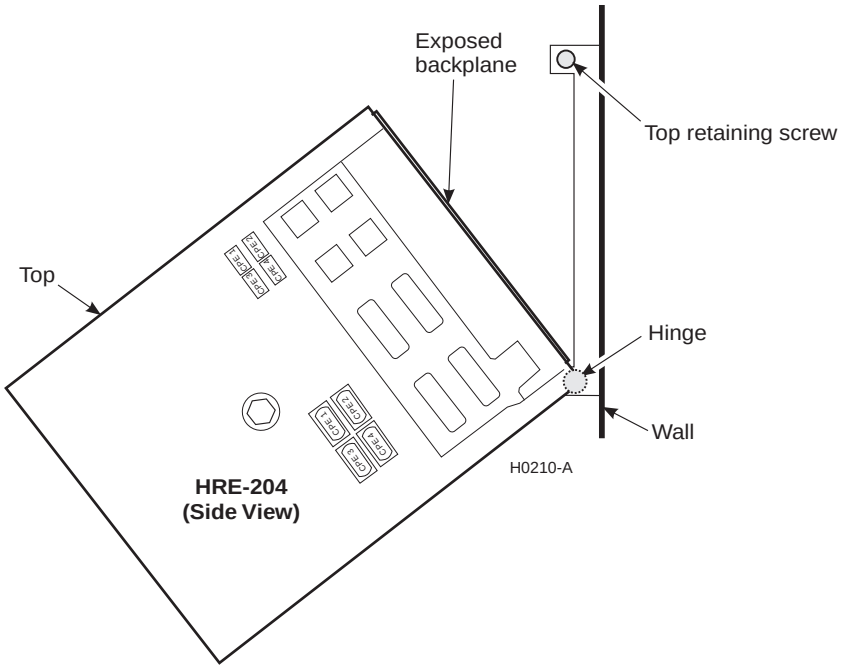


Figure 5. *Wall Mounting and Hinging View*

5 Align the mounting backplate holes with the three screws previously installed in the wall, then mount the enclosure by tightening the screws into the backplate.

6 Rotate the enclosure up and snap it into the backplate friction clasps (Figure 5).

7 Retighten the top retaining screw.

8 Reattach the cover and tighten the HEX security nut to secure it to the main chassis.

When the main chassis is attached to the backplate, it can be rotated down to provide access to the backplane connector and other internal areas. Unlatch the chassis from the two friction clasps in the upper corner of the backplate to lower it. See Figure 5 for hinging details.

Wall Mounting Using the Chassis Side Mount

To mount the enclosure on a wall, loosen the HEX security nut on the side panel (Figure 4 on page 6) with a $^{7}/_{16}$-inch can wrench, remove the cover and use side mounting holes as a template for three mounting holes or use the template provided in "Appendix E - Mounting Templates" on page 17 to mark the wall locations for drilling the mounting holes.

1 Drill pilot holes in the wall, and install the three No. 10 x $^{5}/_{8}$-inch sheet metal screws and washers supplied with the remote enclosure, leaving approximately $^{1}/_{8}$ under the screw head.

2 With the cover removed, align the chassis side mount holes with the three screws previously installed in the wall, then mount the enclosure by tightening the screws into the chassis.

3 Retighten the top retaining screw.

4 Reattach the cover and tighten the HEX security nut to secure it to the main chassis.

TURN-UP

1. Loosen the HEX security nut on the front cover (Figure 4 on page 6) with a $^{7}/_{16}$-inch can wrench.
2. Remove the cover from the chassis to expose the card slots.
3. Insert a card in the assigned slot and refer to the card's user manual for the appropriate turn-up procedure.

If you are using the HRE-204 to locally power one or more remote units, see "Wiring Interfaces" on page 9.

POWER AND GROUNDING

The chassis frame and pin 27 (slot frame ground) of each slot are connected to the HRE-204 ground lug G1, located on the backplane, as shown in Figure 1 on page 2. ADC recommends that the frame ground lug be connected to earth ground according to the grounding recommendations found in Section 9 of Bellcore's GR-1089.

Failure to properly ground the enclosure can cause unsafe voltage levels to occur which can result in the following adverse situations:

- **a shock hazard to craft personnel who come into contact with the enclosure**
- **damage to the installed circuits if the normal discharge path to earth ground of the enclosure's secondary surge voltage protection components is missing**
- **bit errors due to the inability of the ungrounded enclosure to attenuate the noise inducing energy from stray EMI fields**
- **bit errors due to crosstalk from adjacent communication equipment.**

WIRING INTERFACES

48-VOLT POWER

When using the HRE-204 to locally power HRUs or HLUs, -48 Vdc power is provided at terminal block TB5, the pin assignment for which is shown in Figure 6.

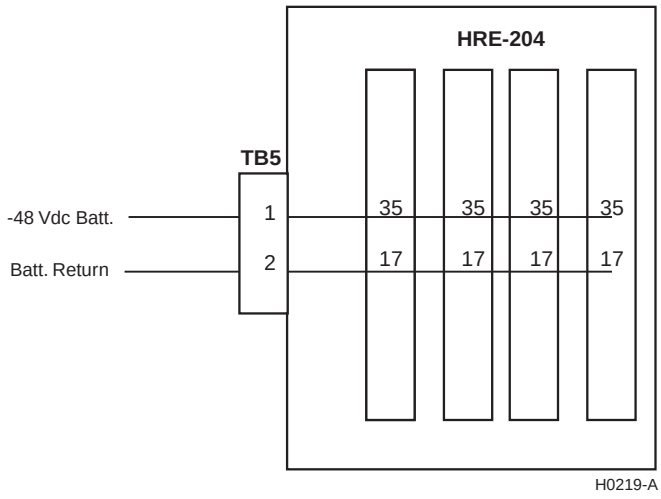


Figure 6. *TB5 Pin Assignments*

ALARM OUTPUT INTERFACE

When HLU-431 or HLU-432 line units are installed in the HRE-204, the system alarm relay contacts for each slot, Normally Open (NO) and Common (COM), are bused together and made available on the Euro-style terminal block TB6. Figure 7 shows the system alarm pin assignments.

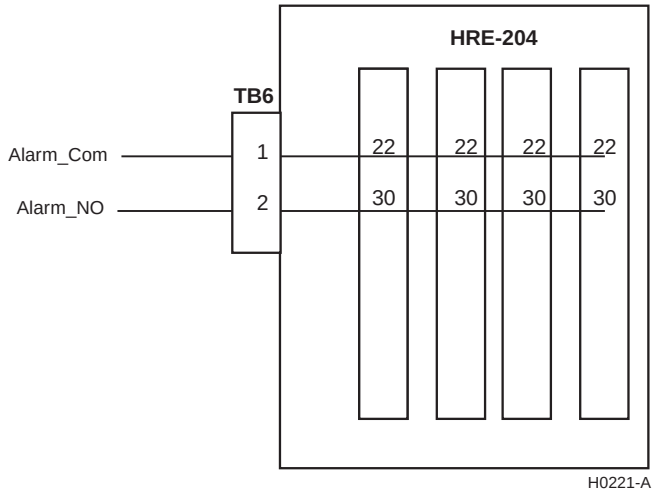


Figure 7. *System Alarm Pin Assignments*

CPE AND FACILITY SIDE TERMINAL BLOCK CONNECTIONS

The HDSL facility side ports are available through the FAC ports of the Euro style screw-down terminal blocks. Figure 8 shows the slot pin assignments.

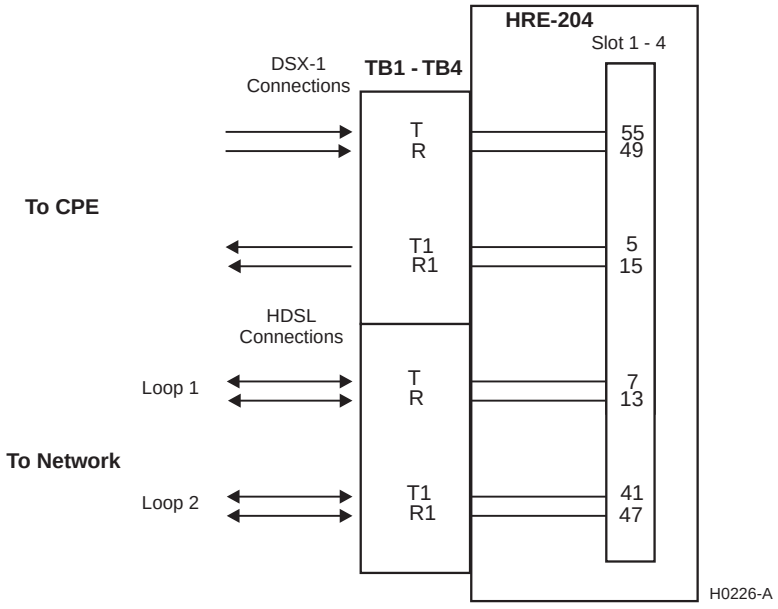


Figure 8. *CPE and Facility Side Terminal Block Pin Assignments*

Loop 1 (L1) connects to the Tip and Ring leads. Loop 2 (L2) connects to the Tip 1 and Ring 1 leads.

If the Loop 1 and Loop 2 leads are reversed in 4-wire applications, a CHREV (Channels Reversed) message appears in the ALARMS display field of the HiGain status screen. This condition does not affect system operation, but should be corrected to avoid any confusion regarding the identities of the two HDSL loops.

CPE SIDE RJ48 PIN CONNECTIONS

Figure 9 shows the RJ48C (HRE-204 List 3C) pin assignments.

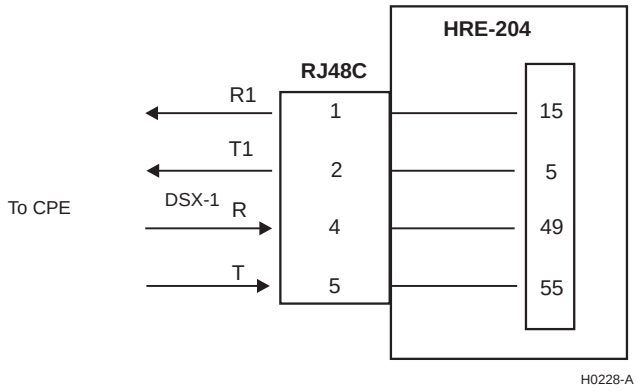


Figure 9. *RJ48C Pin Assignments*

Figure 10 shows the RJ48X (HRE-204 List 3B) pin assignments.

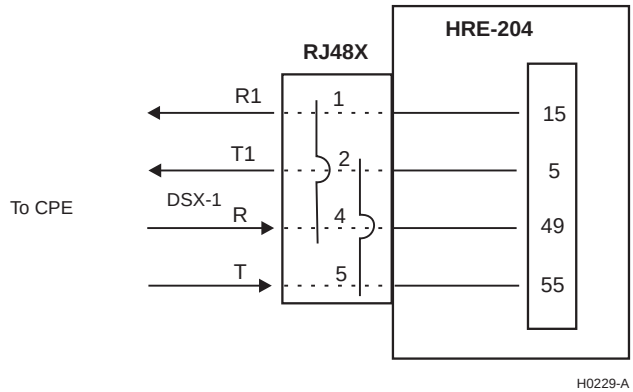


Figure 10. *RJ48X Pin Assignments*

When unplugged, the connector provides a physical loopback of the DSX-1 signals toward the Network through the shorting bars.

APPENDIX A - SPECIFICATIONS

Table 2. *Specifications*

Mounting	Four 200-mechanics or two 400-mechanics units
Telco Facility	Euro-style terminal blocks
CPE	Terminal blocks or RJ48 connector options: • RJ48C (List 3C) • RJ48X (List 3B)
Power Supply Option	See "Wiring Interfaces" on page 9
Height	6.2 in. (15.7 cm)
Width	6 in. (15.2 cm)
Depth	7.6 in. (19.3 cm)
Weight	3.7 lb (1.6 kg)
Operating Environment	Temp: 23°F to +131°F (-5°C to +55°C) Humidity: 0% to 95% non-condensing

BAR CODE AND CONFIGURATION NUMBER INFORMATION

Figure 11 shows the location of the bar code and configuration number labels on the bottom of the HRE-204. Table 3 provides a brief description of the information on the labels.

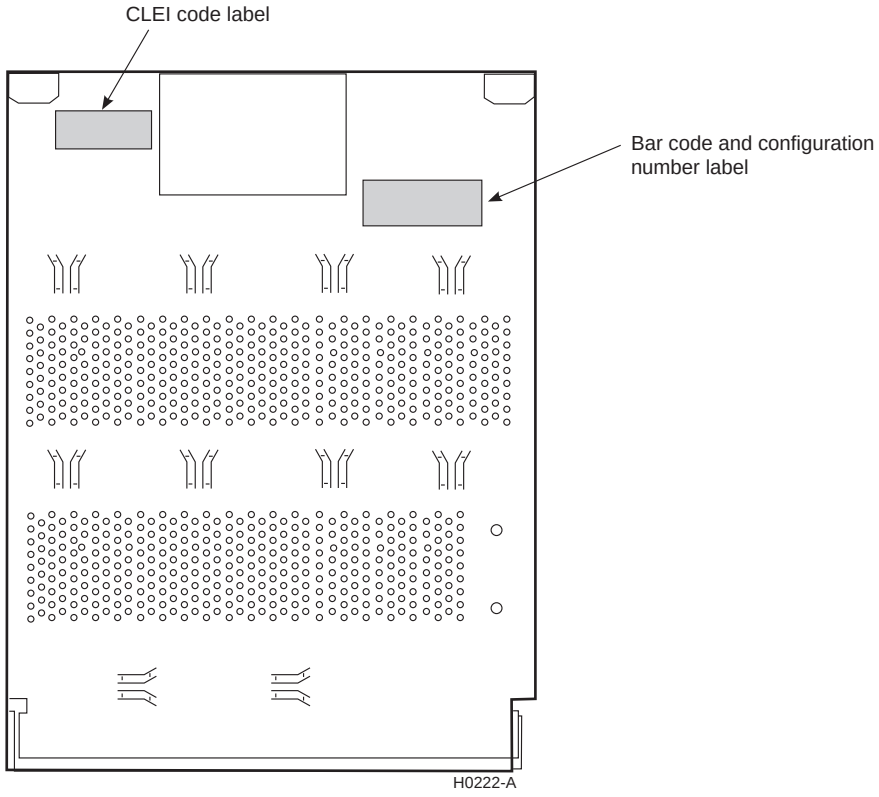


Figure 11. *Bar Code and Configuration Number Label Locations*

Table 3. *Bar Code and Configuration Number Label Descriptions*

Item	Description
CLEI code label	Contains the human-readable Common Language Equipment Identifier (CLEI) code number and Equipment Catalog Item (ECI) bar code number.
Bar code and configuration number label	This label contains the configuration or revision number, the part number, the Julian date, and the bar code serial number.

APPENDIX B - WALL MOUNTING USING THE OPTIONAL SIDE-MOUNTED HINGE

To reduce the forward profile of the normal wall mounted HRE-204, a wall mount hinge assembly, part number 150-2224-01, is available to attach the side of the unit flush to the wall. This reduces the outward projection from 7.5 inches to 4.8 inches.

1 Loosen the HEX security nut on the side panel (Figure 4 on page 6) with a $^{7}/_{16}$-inch can wrench, remove the cover and use side mounting holes as a template for three mounting holes or use the template provided in "Appendix E - Mounting Templates" on page 18 to mark the wall locations for drilling the mounting holes.

2 Drill pilot holes in the wall, and install the three No. 10 x $^{5}/_{8}$-inch sheet metal screws and washers supplied with the remote enclosure, leaving approximately $^{1}/_{8}$ under the screw head.

3 Attach the hinge to the backplate with two No. 10 x $^{5}/_{8}$-inch sheet metal screws as shown in Figure 12.

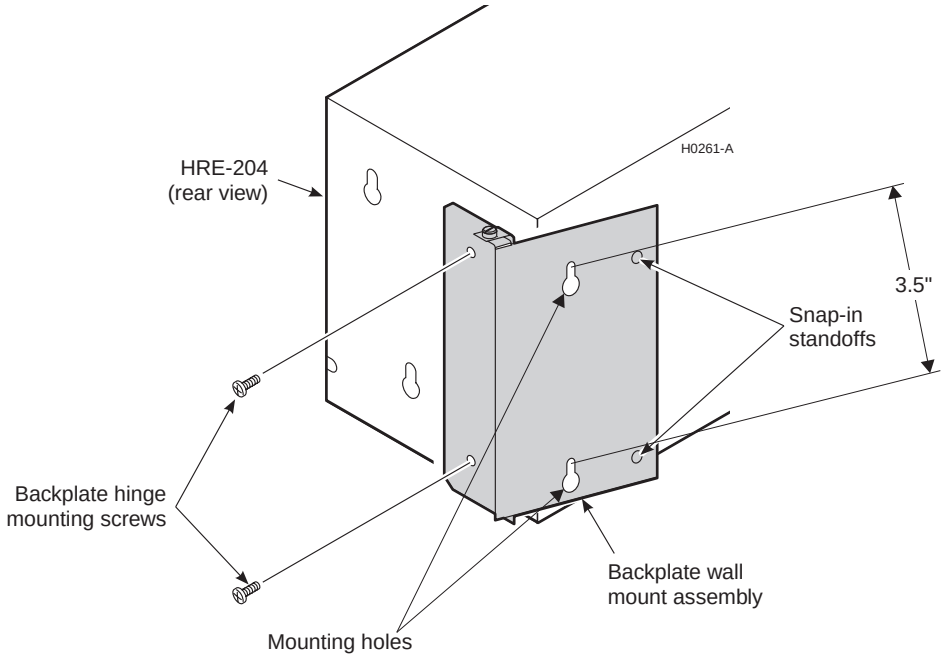


Figure 12. *Optional Mounting Hinge*

4 Align the backplate wall mount assembly mounting holes on the screws, then tighten the screws into the assembly.

5 Rotate the enclosure toward the standoffs to secure the HRE-204 to the wall.

The two snap-in standoffs on the hinge bracket fit into two mounting holes in the HRE-204 side panel when the enclosure is closed against the hinge. This secures the HRE-204 to the hinge and prevents normal vibration from jarring it loose.

APPENDIX C - PRODUCT SUPPORT

ADC Customer Service Group provides expert pre-sales and post-sales support and training for all its products. Technical support is available 24 hours a day, 7 days a week by contacting the ADC Technical Assistance Center.

Sales Assistance 800.366.3891 ext. 73000 (USA and Canada) 952.917.3000 Fax: 952.917.3237	• Quotation Proposals • Ordering and Delivery • General Product Information
Systems Integration 800.366.3891, ext. 73000 (USA and Canada) 952.917.3000	• Complete Solutions (from concept to installation) • Network Design and Integration Testing • System Turn-Up and Testing • Network Monitoring (upstream or downstream) • Power Monitoring and Remote Surveillance • Service/Maintenance Agreements • Systems Operation
ADC Technical Assistance Center 800.366.3891 ext. 73223 or 952.917.3223 Fax: 952.917.3244 Email: wsd_support@adc.com	• Technical Information • System/Network Configuration • Product Specification and Application • Training (product-specific) • Installation and Operation Assistance • Troubleshooting and Repair/Field Assistance
Online Technical Support	• www.adc.com/Knowledge_Base/index.jsp
Online Technical Publications	• www.adc.com/library1/
Product Return Department 800.366.3891 ext. 73748 or 952.917.3748 Fax: 952.917.3237 Email: repair&return@adc.com	• ADC Return Material Authorization (RMA) number and instructions must be obtained before returning products.

All telephone numbers with an 800 prefix are toll-free in the USA and Canada.

APPENDIX D - ABBREVIATIONS

C

CHREV: Channels Reversed

CLEI: Common Language Equipment Identifier

COM: Common

CPE: Customer Premises Equipment

E

ECI: Equipment Catalog Item

ESD: Electrostatic Discharge

F

FAC: Facility

H

H2TU-R: HDLS2 Remote Unit

H4TU-R: HDLS4 Remote Unit

HCDS: High Capacity Digital Service

HRE: HiGain Remote Enclosure

N

NO: Normally Open

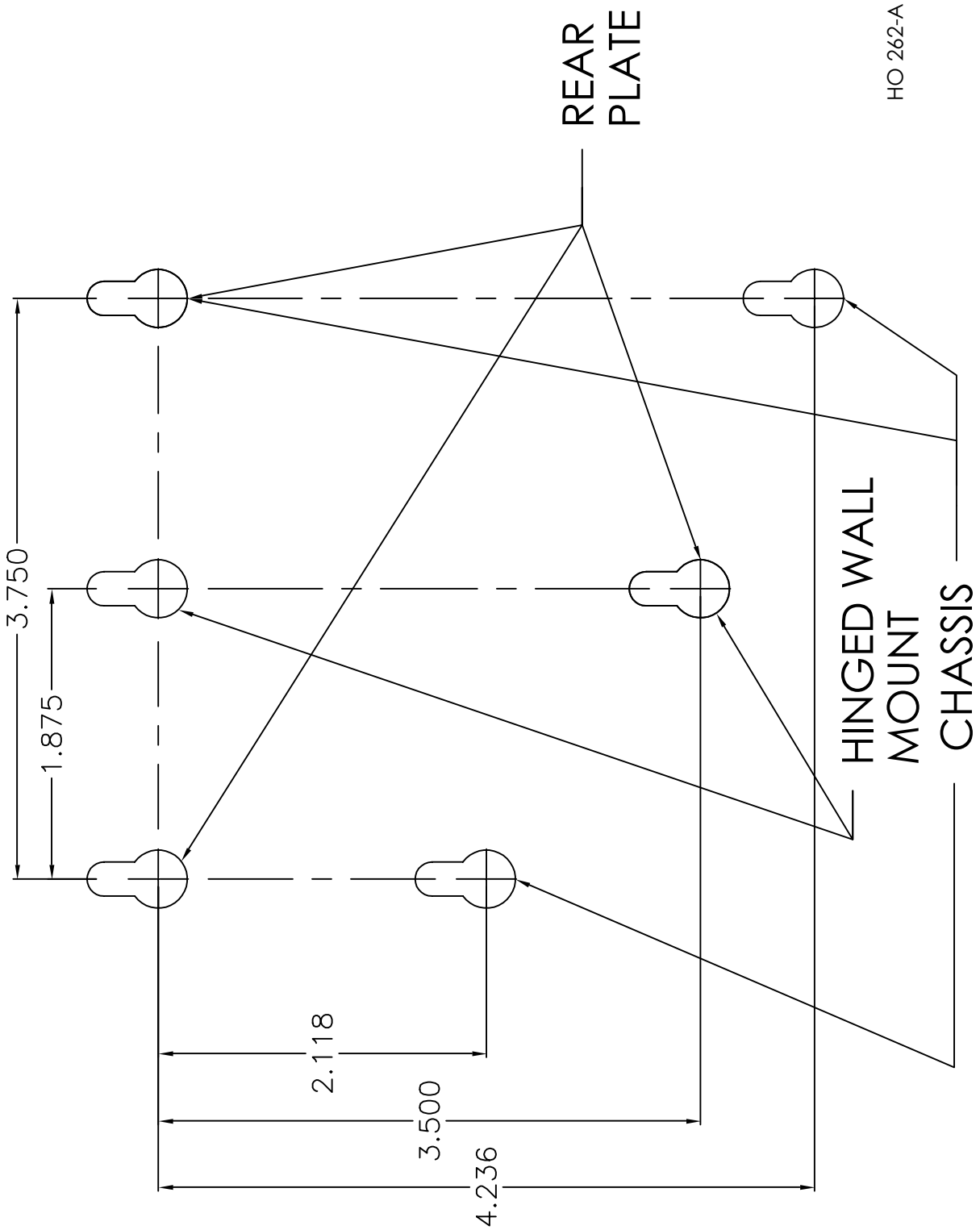
R

RMA: Return Material Authorization

T

TB: Terminal Block

APPENDIX E - MOUNTING TEMPLATES



CERTIFICATION AND WARRANTY

FCC CLASS A COMPLIANCE

This equipment does not have any clocking source and is a passive device per FCC guidelines. When used in conjunction with any clocking devices, this combined system may radiate radio frequency energy that causes harmful interference to radio communications. Operating such a system 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.

LIMITED WARRANTY

Product warranty is determined by your service agreement. Contact your sales representative or Customer Service for details.

MODIFICATIONS

Any changes or modifications made to this device that are not expressly approved by ADC DSL Systems, Inc. voids the user's warranty.

All wiring external to the products should follow the provisions of the current edition of the National Electrical Code.

STANDARDS COMPLIANCE

This equipment has been tested and verified to comply with the applicable sections of the following standards:

- GR 63-CORE - Network Equipment-Building System (NEBS) Requirements
- GR 1089-CORE - Electromagnetic Compatibility and Electrical Safety
- Binational standard, UL-60950/CSA C22.2 No. 60950-00: Safety of Information Technology Equipment

For technical assistance, refer to “Appendix C - Product Support” on page 15.

ADC DSL Systems, Inc.
14402 Franklin Avenue
Tustin, CA 92780-7013
Tel: 714.832.9922
Fax: 714.832.9924

Technical Assistance
Tel: 800.366.3891 x73223
Tel: 952.917.3223
Fax: 952.917.3244

DOCUMENT: LTPH-UM-1180-02

1256135