31EE202D 2-Circuit, Universal, Data Environmental Enclosure with Facility-Side and Drop-Side Protection

CLEI* Code: SIM23AAARA

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1. GENERAL

1.1 Document Purpose

This document describes the Westell 31EE202D 2-Circuit, Universal, Data Environmental Enclosure with Facility-Side and Customer/Drop-Side Protection, shown in Figure 1.

- NOTE -
Hereafter, the 31EE202D 2-Circuit, Universal, Data Environmental Enclosure may be referred to as the "31EE202D" or "enclosure."

1.2 Document Status

Whenever this document is revised, the reason will be stated in this paragraph. Revision G of this document inserts the pigtails in Figure 3, Figure 4, and Figure 5, and updates Paragraph 2.3.2 and the Customer side installation caution in Paragraph 3.3 above Step 9. Revision F updated the company contact information. Revision E updated Figure 3, Figure 4, Figure 5, Paragraph 2.3.2, and the Customer side installation caution in Paragraph 3.3 above Step 9, and removed all dashes from all model numbers. Revision D added the ground lug. Revision C updated Figure 1, Figure 4, Figure 5 and Figure 6, and added Figure 3. Revision B included a general format update, updated all figures, the first page footer, and Parts 1-5, and specified the lightning protection for both the Facility side and the Customer/Drop side as gas-tube type.

1.3 Product Purpose

1.3.1 The Westell 31EE202D is a universal, 2-circuit, weatherproof, environmental, plastic enclosure which houses and protects an interior, 2-slot module compartment, a Telco/Facility compartment (with gas-tube lightning protectors for both the Facility and Customer/Drop sides), and a Customer/Subscriber connector area. The outer enclosure provides protection against tampering and the outdoor elements, and is designed for vertical mounting on an inside or outside wall, or on a pole, at the customer's building near the cable drop. When the exterior door is unlocked and opened, the 31EE202D contains two distinct "sides," as shown in Figure 4 and described below.

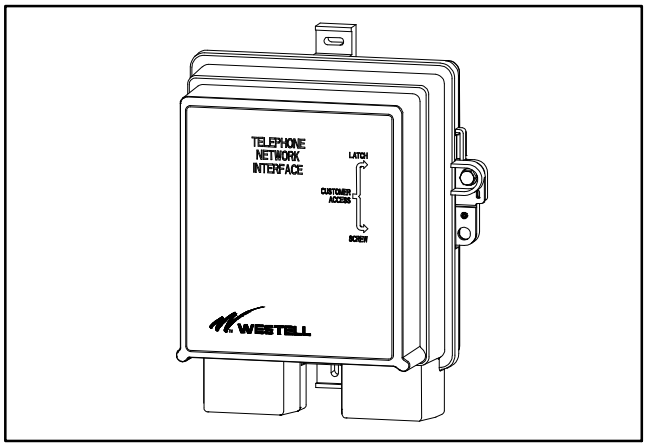

Figure 1. Front View of 31EE202D

1.3.2 Left Side. In the open position, the left, deep, exterior-door side of the 31EE202D contains a concealed inner assembly to house either one 400-type plug-in module or two 200 MECHANICS® plug-in modules in a hinged and locked module compartment. Modules used in the 31EE202D may be T1 Network Interface Units (NIUs), High-bit-rate Digital Subscriber Line Remote Units (HDSL HTU-Rs), Digital Data Service (DDS) units, Integrated Services Digital Network (ISDN) units, or any other service module which complies with the pin-out arrangement of the enclosure, and all modules must be span powered. This side is for Telco use only and requires a special pin-in-socket hex tool to open.

1.3.3 Right Side. The right side is the mounting-base side of the opened 31EE202D (with two mounting brackets) and is divided into two interior areas:

Facility Area — A lockable, *Telco-access-only,* Facility equipment and wiring compartment on the left, which conceals the Telco/Facility connectors, all lightning protectors, and the ground wiring.

Customer Area — *A Customer-access* area on the right with connectors for two, customer DS1-type (T1/HDSL) or DDS/ISDN-type circuits.

1.4 Product Mounting & Applications

The 31EE202D typically resides at a customer or subscriber site, two of which are illustrated in Figure 2. The 31EE202D is either pole-mounted or wall-mounted, indoors or outdoors, typically at the customer's building near the cable drop. The 31EE202D provides for two, high-density, 200 MECHANICS® modules or a single 400-type module.

1.5 Product Features

Features of the 31EE202D are as follows:

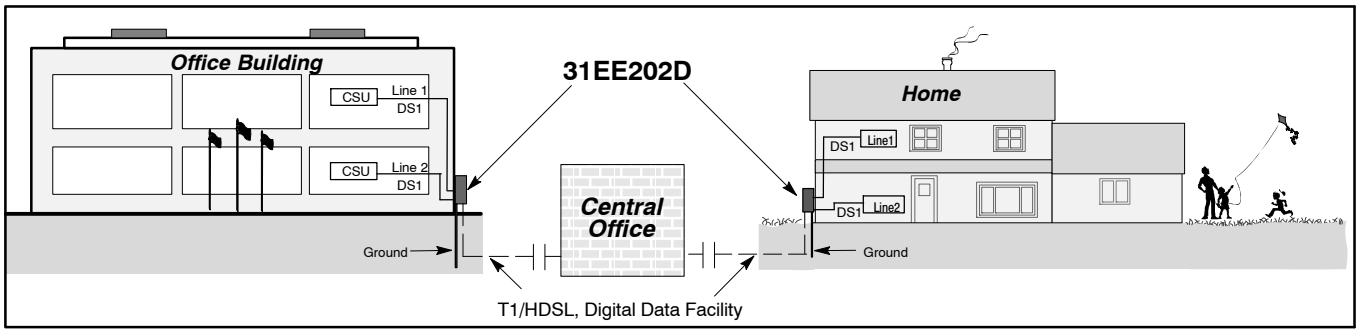

Figure 2. 31EE202D Applications - Home/Office Building Installation Sites

- Convenient, 2-circuit provisioning in one enclosure
- Gas-tube lightning protection for both the Customer/Drop side as well as the Facility side
- Accepts one 400-type or two 200 MECHANICS®-type termination modules
- Configurable for T1/HDSL or DDS/ISDN service
- Separate Subscriber and Telco wiring areas, with separate locking mechanisms
- Interior, lockable module compartment
- Customer connections via screw terminals *(or RJ48C/S jacks)*
- Facility connections via stripped wire or spade/ring connectors to terminal posts (connectors not provided)
- Ground lug for 6-10 AWG ground wire
- Customer-side RJ48C/S jacks facilitate testing
- Wall or pole mountable, indoors or outdoors
- Built-in mounting brackets
- Hinged door design with 150° (wall-mount) or greater (pole-mount) front access
- Rubber grommets at bottom for cable access
- Tamper-resistant
- Water-resistant
- Span-powered from the COT; no batteries or local power required
- -40˚ to +65˚C (-40˚ to +149˚F) operating temperature range
- Telcordia GR-49-CORE compliant & UL50 listed

2. PHYSICAL DESIGN

The 31EE202D, as shown in Figure 4, contains various exterior and interior features, described in the paragraphs that follow:

2.1 Enclosure Exterior Features

The 31EE202D's outer enclosure is designed to be both a mounting mechanism and a secure (tamper-proof), weather-proof housing for the internal electronics and wiring. The gray-colored, plastic exterior material is water-resistant and protects the interior components from the outside elements. Both Telco and Customer personnel can access the 31EE202D interior through a deep, hinged, lockable door, made of the same material, which opens for an interior 150° access (when wall-mounted), and easily snaps shut. The top, Telco lock is opened with a special $^3/_8$" hex nut driver ("can" wrench). This locking mechanism overrides the Customer locking mechanisms. A small, oblong hole to the immediate bottom-right of the Telco hex screw is provided for a Telco lead seal, which, if broken, would alert Telco personnel to possible unauthorized access. Customer access is gained via the slotted screw below the hex nut. The 31EE202D may be locked with a padlock by the Customer to discourage subscriber tampering: a round hole is provided under the slotted screw through which the shaft of a padlock can be inserted for maximum protection. Telco and Customer/subscriber cables enter the enclosure at the bottom through two black rubber grommets; the left grommet/cable hole is for both Telco (Facility) and ground wiring, and the right-side hole is for Customer wiring. When a small hole is pierced through the center of each grommet, the cables can be easily but firmly pulled through the holes, resulting in a tight fit to ensure weather protection. The 31EE202D contains two built-in mounting brackets, one at the top and one at the bottom, for easy wall or pole mounting in the open or closed position.

2.2 Interior Module Compartment

When the 31EE202D is open, the hinged *exterior door* is on the left side of the 31EE202D. Nestled inside this deep door is a 2-slot module compartment concealed by a swing-down panel or hinged cover. Two $^5/_{32}$" pin-in-hex locking screws near the top edge of the panel can be removed/loosened with a pin-in-socket hex tool to open the compartment. A pull-tab at the top-center of the panel is provided. Slot or Circuit 1 is the bottom slot when the swing-down panel is in the open position (see Figure 4). Slot/Circuit 2 is the top slot when the swing-down panel is in the open position (or closest to the exterior wall when the 31EE202D is closed/locked). This module compartment accepts one 400-type plug-in module or two 200 MECHANICS®- type modules (see Figure 6 for wiring diagram).

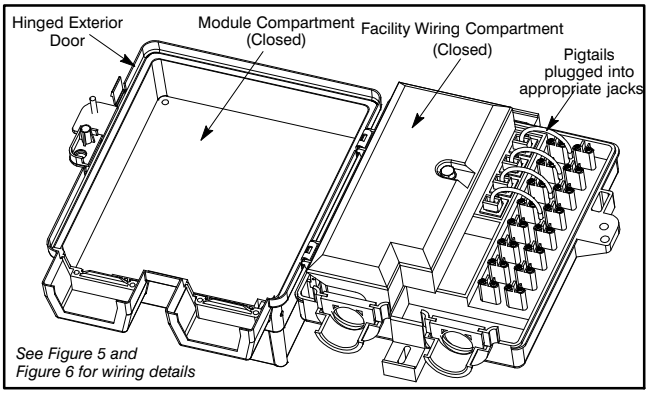

Figure 3. Interior View of 31EE202D

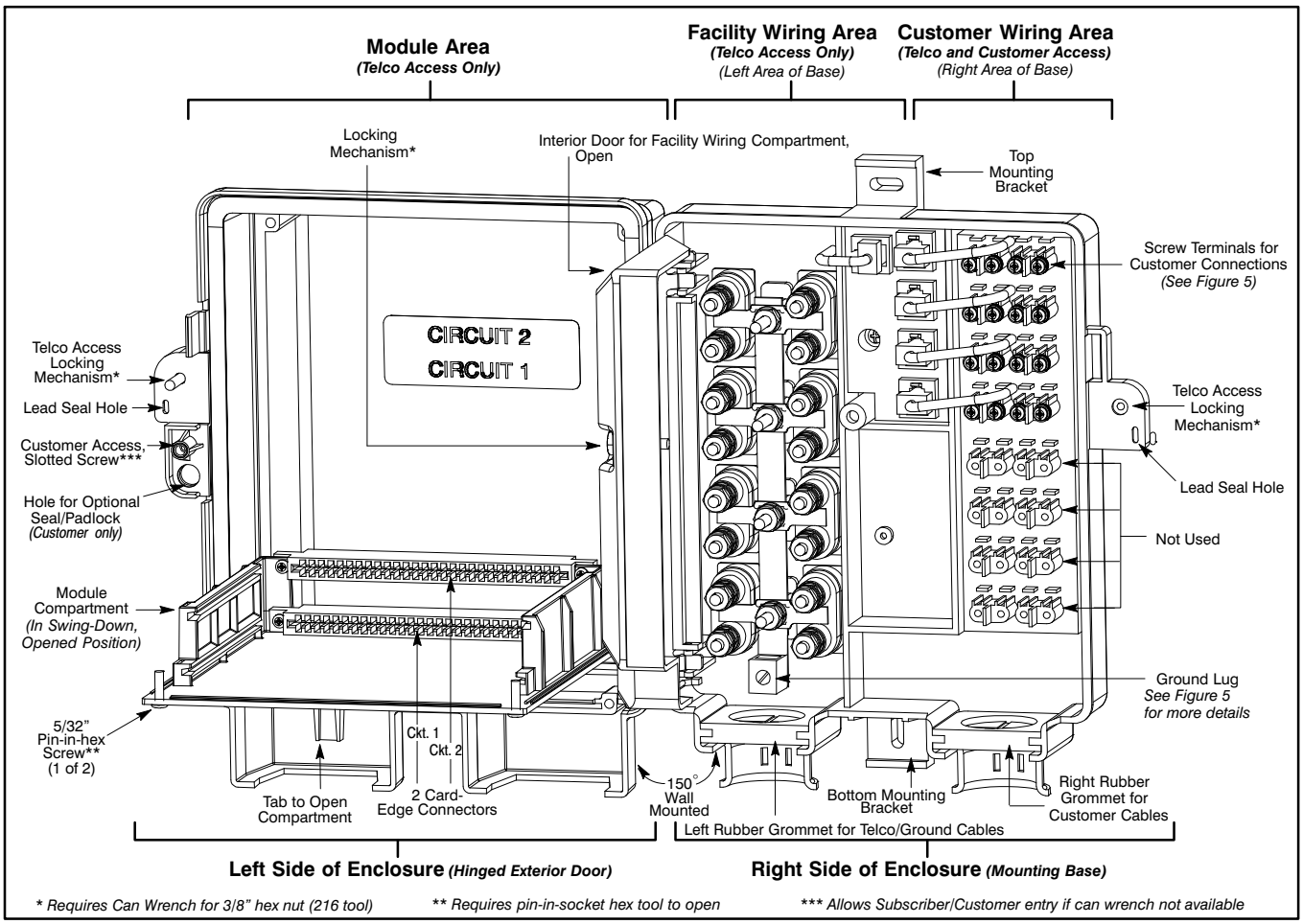

Figure 4. 31EE202D Environmental Enclosure, Open Views

2.3 Interior Wiring Compartments

When the 31EE202D is open, the installer wiring areas are on the right side assembly, or *mounting base* of the 31EE202D. The mounting base also has two sides or areas: the left area for Telco/Facility connections and ground wiring, and the right area for Customer connections/wiring.

- CAUTION -

Hazardous voltages exist on telecommunication transport lines. Always use caution when wiring a live circuit or when performing maintenance testing. Unplugging the COT Line Unit from the COT shelf will remove the hazardous voltages from the line.

2.3.1 Telco/Facility Wiring, Left Area of Mounting Base

The left area of the 31EE202D's *mounting base* contains the Telco/Facility wiring connectors, the ground connectors, and the lightning protectors for *both* the Facility side *and* the customer/drop side. These are all protected from customer access by a lockable, hinged door that requires a special $^{3}/_{8}$" hex nut driver (can wrench or 216 tool) to open. Behind the compartment's door are four sets of five termination posts. At the center of each set is the ground post, and the remaining four are for T, R, T1, and R1 connections. A factory-prewired cable from the module compartment to this Facility wiring compartment connects the modules to these screw termination posts.

2.3.2 Customer/Subscriber Wiring, Right Area of Mounting Base

The right area of the 31EE202D's *mounting base* is for Customer use. At the top are four sets or rows of screw terminals, and each row has four screw terminals: one for the subscriber CT1, CR1, CT, and CR wires. To the left of each screw terminal row is a modular jack. The first and third row's jack is an RJ48C-type jack, for T1/HDSL applications, and the second and fourth row's jacks are RJ48S-type jacks, for Data/DDS applications. The first two rows are for Circuit/Slot 1, and the last two rows, rows 3 and 4, are for Circuit/Slot 2. See Figure 5 for wiring details.

When servicing, after removing the RJ48C/S plugs (for safety), each screw terminal may be loosened/removed with either a phillips or slotted/blade screwdriver. Then, each subscriber stripped wire or ring/spade connector should be inserted between the washers provided. Finally, re-insert the appropriate pigtail jumper back into the jack to connect service. If preferred or provided, a separate subscriber male RJ48C or RJ48S plug may be fed up through the rubber grommet to be inserted into the appropriate RJ48C or RJ48S jack, instead of using the screw terminals.

- INSPECTION NOTE -

Visually inspect the unit for damages prior to installation. If damaged in transit, immediately report the damage to the transportation company and to Westell (see Part 6 for telephone number).

3. INSTALLATION

Installation consists of gathering the necessary equipment, tools, and hardware, mounting the enclosure, then performing all installer connections, as described hereunder.

- PRECAUTIONARY STATEMENT -

Never install telephone wiring during a lightning storm.

Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.

Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

Use caution when installing or modifying telephone lines.

3.1 Gathering Needed Equipment

The following tools and supplies are recommended to mount the enclosure, depending on the type of mounting.

- ☐ $^{5}/_{32}$" pin-in-socket hex wrench
- ☐ $^{3}/_{8}$" hex nut driver (can wrench, 216 tool)
- ☐ Slotted/flat-head and/or phillips head screwdrivers
- ☐ Power or hand drill
- ☐ Center punch and hammer
- ☐ Drill bits:
  - $^{7}/_{16}$" (0.4375 dia.) for hollow wall mounting
  - # 25 (0.1495 dia.) for stud wall mounting
  - ¼" (0.250 dia.) masonry bit for masonry wall
- ☐ Screws/fasteners:
  - Two $^{3}/_{16}$" hollow wall fasteners, for hollow wall
  - Two #10 pan head wood screws, for stud wall
  - Two #10 screw expansion anchors, for masonry wall mounting
- ☐ Utility knife
- ☐ Pliers or line cutters
- ☐ Telephone cable wire stripper
- ☐ Wire clips or staples

3.2 Mounting the Enclosure

The 31EE202D can be mounted on a masonry-type wall, a wood studded wall, a hollow wall, or a post. Determine the best location for mounting the enclosure, and follow the steps below to mount the enclosure, unless otherwise dictated by local codes and practices. Two people should mount the enclosure; one to hold the 31EE202D in place while another drives the screws.

1. **Select mounting location.** Determine the enclosure mounting location per local company practices.
2. **Mark mounted location on wall.** Lift and temporarily hold the enclosure against the wall/pole in the desired mounting location, to use it as a drill-hole marking template. Mark the location of the top and bottom mounting holes, then set aside the enclosure. (Opening the enclosure's exterior door may facilitate this step by allowing closer access to the mounting brackets, if the marking utensil requires it, and for better marking accuracy).
3. **Drill the mounting holes.** Drill appropriately-sized holes, to accommodate the mounting screws or fasteners being used (hardware not included), at the marked locations. *Do not drill holes too big*. Drill bit sizes are, depending on the pole or wall type:
   Hollow wall: $^{7}/_{16}$" bit for $^{3}/_{16}$" hollow wall fasteners.
   Stud wall: #25 bit (0.1495 dia.) for #10 screws.
   Masonry wall: ¼" masonry bit for #10 screw expansion anchors.
   Wood post/pole: Same as stud wall.
4. **Prepare holes.** For masonry and hollow wall applications, install the screw expansion anchors or hollow wall fasteners in the drilled holes before the next step. Insure the anchors or fasteners are snug.
5. **Lift enclosure and drive mounting screws.** Lift, hold, and attach the enclosure to the wall by inserting the mounting screws into the holes or anchors/fasteners and carefully tightening the screws. Make screws snug but do not over-tighten.

3.3 Performing Installer Connections

After the 31EE202D is securely mounted, installer connections are performed. The installer connections consist of making ground connections, making the Facility cable connections, making any required customer cable connections, and installing the plug-in modules into the 31EE202D. Follow the steps below, unless otherwise dictated by local codes and practices.

1. **Follow Safety Precautions.** Always exercise caution and follow safety precautions and instructions to reduce risk of fire, electric shock, injury to person, and damage to equipment.
2. **Run Cables to Enclosure.** Run all cables and an earth ground wire to the enclosure, insuring sufficient length to make connections and to relieve cable strain.

- CAUTION -

Hazardous voltages exist on telecommunication transport lines. Always use caution when wiring a live circuit or when performing maintenance testing. Unplug the COT Line Unit from the COT shelf to remove hazardous voltages from the line.

Improper grounding could be service-affecting and cause service interruptions. To insure personnel safety and protect the equipment, make ground connections as shown in Figure 6, unless local codes dictate otherwise.

Making Ground Connections

3. If not already opened, open the exterior door by turning the tamper-resistant hex screw counter-clockwise with a can wrench until the enclosure door can be opened.
4. Open the interior Telco/Facility door with the can wrench.
5. Pierce a small hole through the left-side, black, rubber grommet at the bottom of the enclosure base and then gently pull the ground wire through the hole in the rubber grommet. Pull enough extra wire/cable through the hole into the base to provide cable strain relief.
6. Connect the ground wire (#6 AWG) to the ground lug (see Figure 4 or Figure 5). Loosen this lug's set screw, place the ground wire around the lug, and re-install and re-tighten the set screw, insuring the ground wire is secure under the set screw.

- CAUTION -

Hazardous voltages exist on telecommunication transport lines. Always use caution when wiring a live circuit or when performing maintenance testing. Unplugging the COT Line Unit from the COT shelf will remove the hazardous voltages from the line.

Making Facility Side Cable Connections

7. Route/dress the Facility line wires along the right side of the compartment, strip a sufficient wire length of each for connection purposes, loosen each stud/post's top hex nut, install each wire to its corresponding post (see Figure 5), and firmly tighten the top hex nut against the wire to secure the wire connection to the post.
8. Verify all wires and connections are secure and tight, then close and lock the Telco compartment door *(unless installing modules)*.

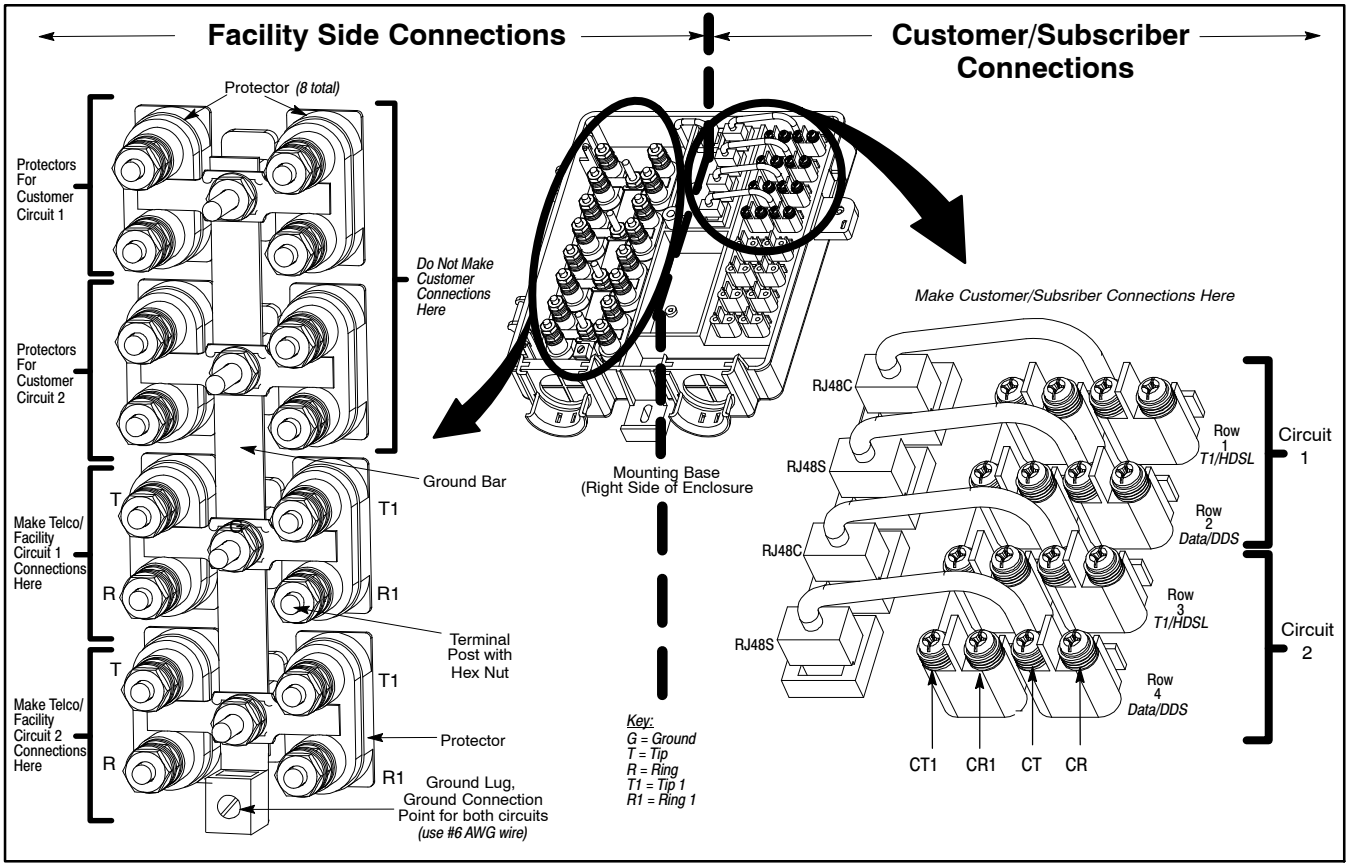

Figure 5. Mounting-Base-Side Interior View of Wiring Components

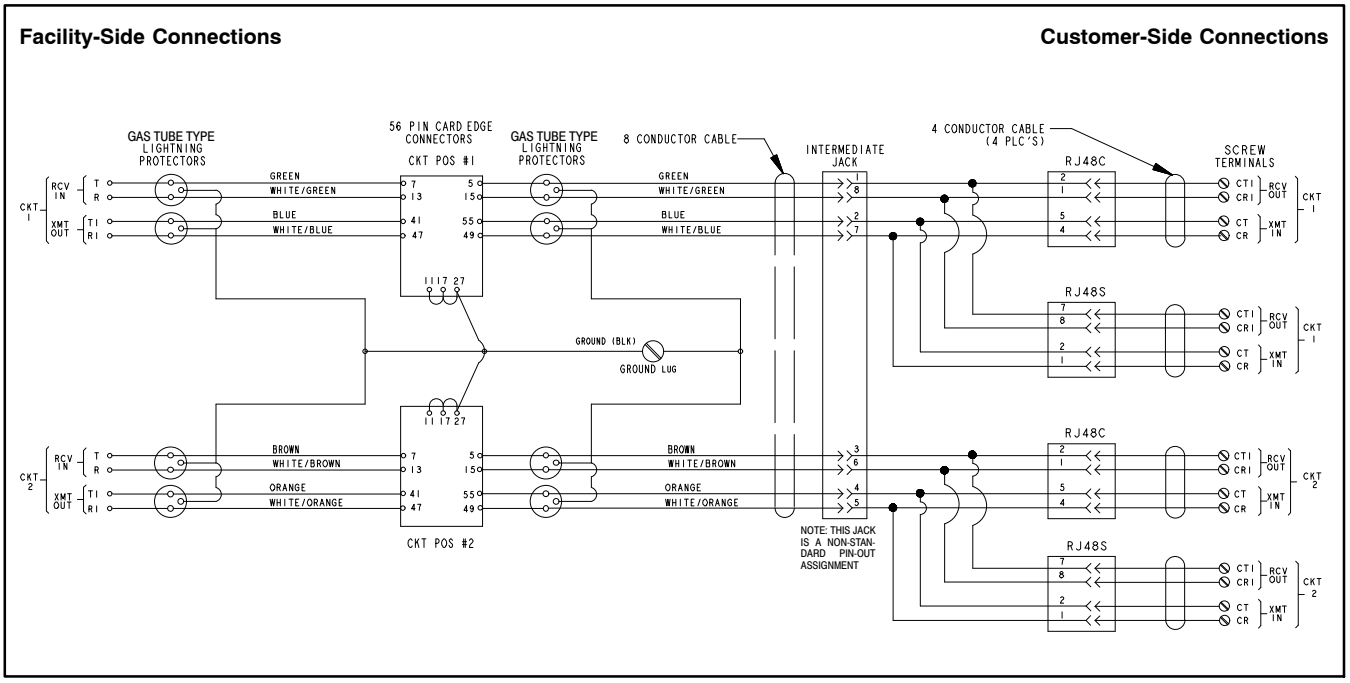

Figure 6. Wiring Diagram for 31EE202D

Making Customer Side Connections

- CAUTION -

To avoid shock during installation, unplug the T1/HDSL and DDS/DATA RJ48 pigtails (plugs) from their jacks and allow them to hang free before connecting the customer wires to the screw terminals. After installer connections are made, the pigtails can be plugged into the jacks.

9. Pierce a small hole through the right-side, black rubber grommet at the bottom of the enclosure base and then gently pull the customer's telephone line(s) through the hole in the rubber grommet. Pull enough extra cable through the hole into the base to provide cable strain relief.
10. Determine which row of terminals will be used for connecting the customer wires. Use Rows 1 and 3 for T1/HDSL service, and Rows 2 and 4 for Data/DDS service (see Figure 5 and Paragraph 2.3.2).
11. Neatly guide/route the customer wires along the right side of the inner enclosure (between the screw terminals and the outer enclosure wall), strip a sufficient length of insulation from each wire's end, loosen each terminal's screw, install each wire to/around its corresponding screw between the washers provided, carefully matching correct wire colors (see Figure 5), and re-tighten each screw firmly down against each wire to secure the wire connection.
12. After verifying all wires and connections are secure and tight, that each color wire is properly matched to its proper terminal, and that the correct terminal row is used, gently re-insert the RJ48 plugs into their proper jacks.

Installing Plug-in Modules

- NOTE -

Set any module manual option switches prior to installation, and consult the module's practice for module information.

13. Open the module compartment (pin-in-socket hex tool) on the enclosure's left side and install modules, if applicable at this time. Slot/circuit #1 is the *bottom* slot and slot #2 is the *top* slot in the swing-down module compartment *when the compartment is hinged/fully-opened*.

- CAUTION -

Use care when installing or removing modules - *do not force a module into place*. If a module resists insertion, remove it and check for obstructions by the connectors and mounting slots. Then carefully align and re-insert the module.

14. Close and secure all doors, unless testing is to follow.

4. TESTING & TROUBLESHOOTING

If trouble is encountered, verify all installer connections to/in the enclosure and check that the CO power fuse is not blown. Verify all module connections and switch settings. If trouble persists, replace the suspect unit and repeat procedures outlined. These procedures are not designed to effect repairs or modifications. Tests beyond those outlined herein, or repairs made beyond replacing a faulty unit, are not recommended and may void the warranty.

5. CUSTOMER & TECHNICAL SERVICES

Customer Service. If technical or customer assistance is needed, contact Westell by calling or using one of the following options:

Voice: (800) 377-8766
email: *global_support@westell.com*

For additional information about Westell, visit the Westell World Wide Web site at http://**www.Westell.com.**

5.1 Part Numbers. The enclosure is identified by a product number (A90-31EE202D), which consists of three parts: the issue letter of the equipment (A), the assembly type (90), and the specific model number (31EE202D). Each time a product change affects the form, fit, or function of the product, the issue letter is incremented or advanced by one. Be sure to indicate the issue level *and* the model number when making inquiries about the equipment.

6. WARRANTY & REPAIRS

6.1 Warranty

Westell warrants this product to be defect-free at shipment time. Westell also warrants this product to be fully functional for the time period specified by the terms and conditions governing the sale of the product. Equipment repairs/modification attempts by an unauthorized person will void the warranty.

6.2 Repair and Return

Westell repairs or replaces defective Westell equipment without cost during the warranty period if the unit is defective for a reason other than abuse, improper use, or improper installation. To return defective equipment, first secure a Return Material Authorization (RMA) number from Westell by using one of the options shown below. After obtaining an RMA number, send the defective unit (freight prepaid), and a brief problem description, to the address we will provide to you when you contact us.

Voice: (630) 375-4457
email: rgmdept@westell.com

Replacements will be shipped in the fastest manner consistent with the urgency of the situation. Westell will continue to repair or replace faulty equipment beyond the warranty period for a nominal charge. Contact Westell for details.

7. SPECIFICATIONS

To order units, call the telephone number shown in Part 5 and please specify the model number shown in Table 2. Physical and regulatory agency specifications are shown in Table 1.

Physical Feature	U.S.	Metric
Height	9.5 in.	24.1 cm
Width	7.5 in.	19.1 cm
Depth	5.28 in.	13.4 cm
Weight (approx.)	3 lbs.	1.59 kilogram
Operating Temp.	-40° to 149°F	-40° to 65°C
Humidity	0 to 95% (no condensation)	
Regulatory Specifications		
ETL (INCHCAPE) tested to comply with UL Standard 50, 2nd Edition. Field repairs may void compliance.		

Table 1. Physical Specifications

Part #	Description
A90-31EE202D	Westell 2-Circuit, Universal, Data Environmental Enclosure. *CLEI* Code: SIM23AAARA. Barcode: 438891. CPR: N70715.*

**CLEI is a trademark of Telcordia Technologies.*

Table 2. Ordering Information