

AC 1000 Single-Slot T1 Mini Repeater Apparatus Case

CLEI™ Code: T1RCVUF5RA CPR: 135300

CONTENTS	PAGE
Part 1. GENERAL	2
Part 2. INSPECTION	2
Part 3. DESCRIPTION	3
Part 4. MOUNTING	4
Part 5. INSTALLER CONNECTIONS	5
Part 6. TECHNICAL ASSISTANCE	7
Part 7. WARRANTY & CUSTOMER SERVICE	7
Part 8. SPECIFICATIONS & APPROVALS	8

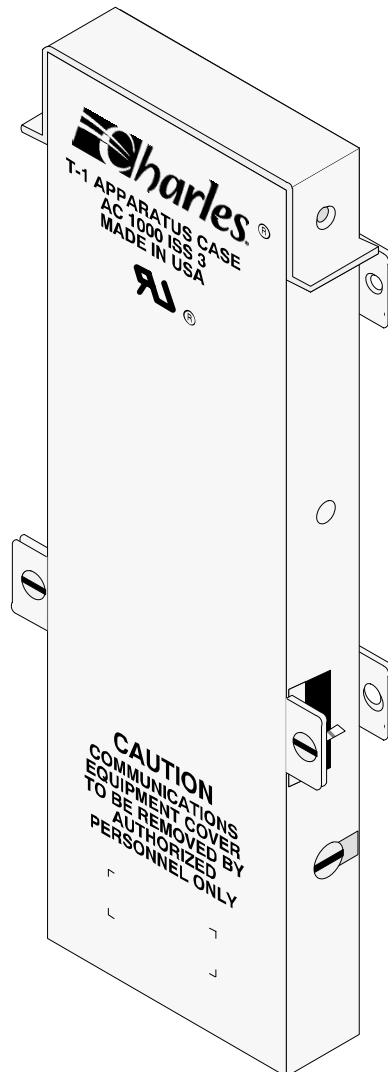


Figure 1. AC 1000 Apparatus Case

1. GENERAL

1.1 Document Purpose

This document provides general and installation information for the Charles Industries AC 1000 Single-Slot T1 Apparatus Case, shown in Figure 1.

1.2 Document Status

This document is updated to change the terminology “rubber grommets” to “grommets”. Figure 2 and Figure 4 have been updated to show the correct grommets.

1.3 Equipment Function

The AC 1000 Apparatus Case provides mounting for one 238-type (unprotected), one 239-type (protected) T1 span line mini repeater, or one 270 SmartSpan™ repeater. (The 239-type repeater is recommended due to the secondary surge protection provided in these units. In all cases, building entrance primary protection **MUST** be provided per local practice.) The AC 1000 can be used to provision DS1 service offerings where cable losses dictate the need for a regenerator at or near the customer’s premises. The AC 1000 is used in lieu of larger apparatus housings and provides DS1 service at a reduced cost.

1.4 Equipment Location/Mounting

The AC 1000 Apparatus Case is designed for indoor mounting at or near the customer’s premises, and is typically mounted on a wood backboard.

1.5 Equipment Features

The AC 1000 case features the following:

- Light-weight all-aluminum case material
- Trim, stackable, piggy-back design saves wall space and provides snug fit for mini repeaters
- Interior card-edge connector for mini repeater
- Interior terminal block for input, output and fault locate connections
- Wiring diagram label for terminal screw functions on inside cover
- Top cap for repeater protection
- Two cable ties

2. INSPECTION

2.1 Inspect for Damages

Inspect the equipment thoroughly upon delivery. If the equipment has been damaged in transit, immediately report the extent of damage to the transportation company.

2.2 Equipment Identification

Charles Industries’ equipment is identified by a model and issue number imprinted on the front panel or located elsewhere on the equipment. Each time a major engineering design change is made on the equipment, the issue number is advanced by 1 and imprinted on subsequent units manufactured. Therefore, be sure to include both the model number and its issue number when making inquiries about the equipment.

3. DESCRIPTION

The aluminum AC 1000 Single-Slot T1 Apparatus Case consists of three basic parts: a case base, a snap-on case cover, and a top repeater-access cap, which, when removed, provides access to the mini repeater card slot.

3.1 Repeater-Access Cap

The snap-on repeater-access cap (item A, Figure 2) functions as a dust or environmental cover, and is designed to fit over the top opening of the case.

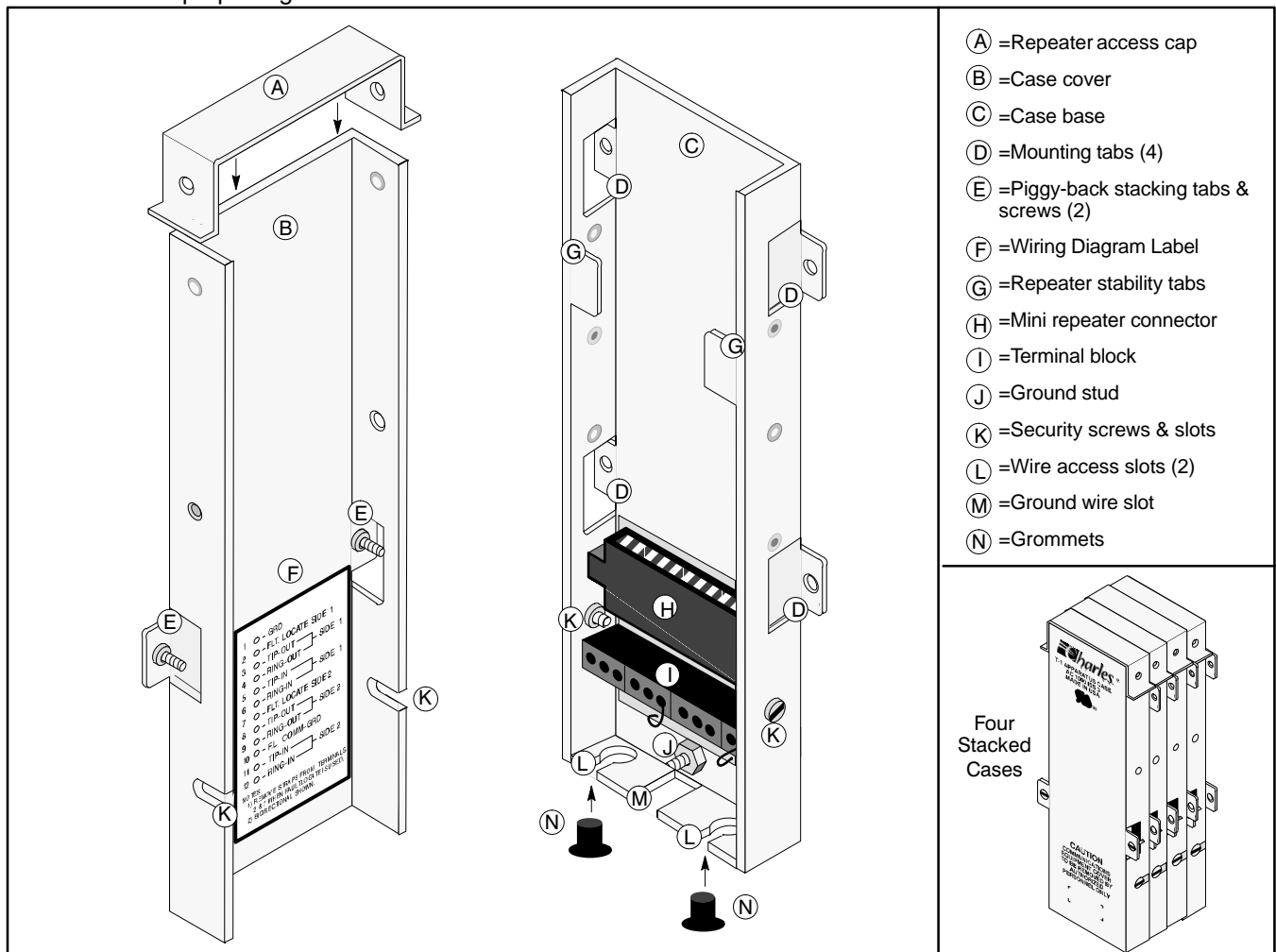


Figure 2. AC 1000 Apparatus Case

3.2 Case Base

The case base (item C, Figure 2) contains the following features:

- 12-pin female card-edge connector (item H, Figure 2), for terminating the plug-in mini repeater (repeater connector contacts are gold-plated)
- Screw-type terminal block (item I, Figure 2), for terminating wire pairs to the repeater, including input, output, and fault locate output connections for both side 1 and side 2 of the repeater (the AC 1000 is shipped/pre-wired with jumpered fault locate outputs 2 and 7 strapped to ground)
- Ground stud, conveniently located at bottom end by wire entrance to facilitate connection to an approved ground source
- Three slots at the bottom; one slot for ground cable access and two keyhole-type with grommets for line/wire access

- Four mounting tabs (ears)
- Two slotted screws (one on each side), which mate with slots in the housing cover to provide security and protection of internal electronics.

3.3 Case Cover

The case cover (item B, Figure 2) fits snugly over the case base, when the screw slots on the sides are properly aligned with the corresponding security screws on the sides of the case base. The front of the case cover is silkscreened with the company and equipment identification information, and on the inside of the cover is a wiring diagram label, as shown in Figure 2 and Figure 3. Also on the front are two “piggy-back” stacking tabs (item E Figure 2), one on each side, for securing apparatus cases together when multiple cases are stacked on top of each other. (To stack up to four cases together, see **Mounting**.)

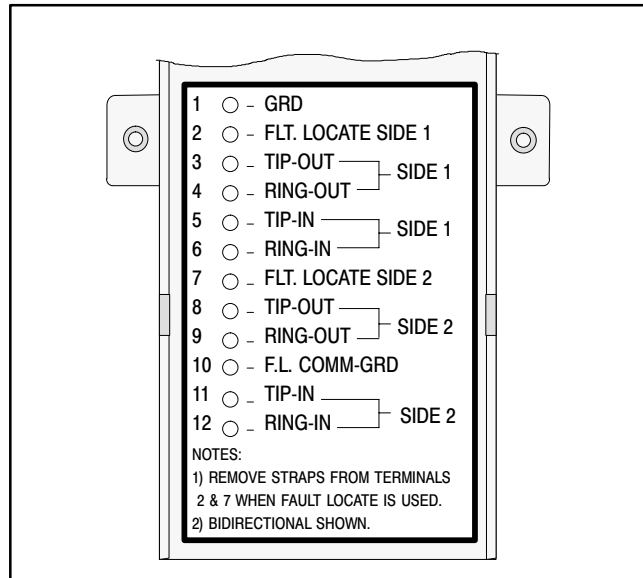


Figure 3. Interior View of Cover, Bottom Half

4. MOUNTING

The AC 1000 is typically mounted on a wood backboard at the customer’s location. Use the following steps to mount the case(s):

Step	Action
1.	Locate the specified mounting location for the AC 1000 case or select a mounting location as close to the cable protector as possible.
2.	Remove the case cap(s) and cover(s), but do not completely remove the side security screws (item K, Figure 2).
3.	Position the case base on the backboard and mark the four mounting hole locations.
4.	Using four appropriate wood screws, secure the case base to the backboard at the marked locations. <i>Note: Depending on the type of wood backboard used, it may be necessary to provide a pilot hole for the wood screws.</i>
5.	If installing only one AC 1000 case, proceed to Part 5, Installer Connections.

Step	Action
6.	When installing more than one AC 1000 case in a stacked or "piggy-back" fashion (see Figure 2), first perform Steps 1 through 7 in Part 5 for the bottom case before stacking the next case on top of it. Once the connections are made to the already-mounted bottom case and the cover is installed, remove the two "piggy-back" stacking screws (item F, Figure 2) from the bottom case cover. With the cover removed from the top or second case, place the top case base in front of the bottom case, carefully aligning the stacking tabs of the bottom case cover with the stacking tabs of the top case base. Secure the two together with the stacking tab screws just removed, one on each side. Then perform Steps 1-7 in Part 5 for the top case. Repeat entire procedure for a third and fourth case, if desired.
7.	After all units are mounted (Part 4) and wired (Part 5), the repeater-access cap(s) can be re-attached to the case(s).

CAUTION

DO NOT stack more than four (4) units.

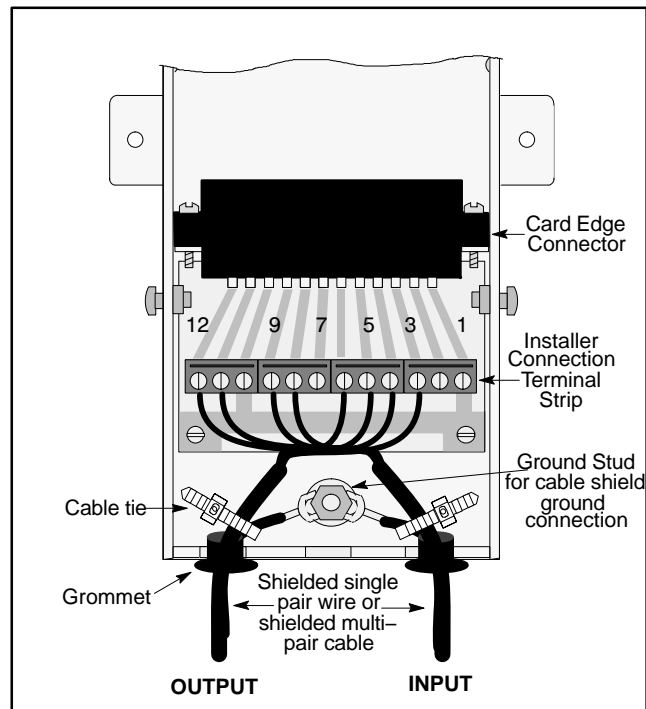


Figure 4. Interior View of Base, Bottom Half

5. INSTALLER CONNECTIONS

Follow the steps below to make the installer connections to the AC 1000 Apparatus Case.

Step	Action
1.	Access the Interior Screw Terminal Block If not already done, first slide off the top repeater access-cap and then remove the case cover. To remove the case cover, first loosen the two slotted screws (one on each side of the case) using a flat-blade screwdriver, and then firmly lift off the case cover.
2.	Prepare Wire Ends The terminal block accepts 19 through 26 AWG copper wire. Strip 1/2-inch of insulation from the wire ends to be connected.

Step	Action
3.	<p>Route the Wires Route the stripped wires through the two 3/8"-inch holes (through the protective grommets) at the bottom of the case. (The middle slot directly below the ground stud is for the ground wire and does not require a grommet.)</p>
4.	<p>Connect Wires to Terminal Strip Make the appropriate connections per the wiring diagram shown in Figure 5. A quick-reference wiring diagram label is provided on the inside of the case cover. Note that the jumpered fault locate outputs at terminals 2 and 7 should always be strapped to ground, as shown in Figure 5, unless an external fault locate filter is specified.</p>
5.	<p>Connect Ground Wire A ground stud at the bottom center of the case base is used for connecting the ground wire and the ground shield of the transmit and receive pairs. Alternately the shields can be tied to positions 1 and 10 on the terminal block, which are internally connected to ground.</p> <p><i>Note: The cable pair shields MUST only be grounded at one end.</i></p> <p><i>Note: Only one 14-gauge (minimum) earth ground wire is required for up to four stacked units.</i></p>
6.	<p>Install Cable Ties After all wiring connections are complete, further secure the wires on each side with the two cable ties provided, as shown in Figure 4.</p>
7.	<p>Close the Apparatus Case After the wiring connections have been made, re-attach the cover to the base by aligning the side security slots on the cover with the side security screws on the base and then pressing together until they snap closed. Firmly tighten the two security screws on the case cover, one on each side.</p>
8.	<p>Insert Mini Repeater With the mini repeater's card edge close to the case base, slide the mini repeater into the apparatus case through the top slot opening, Firmly but gently push the mini repeater into the card-edge connector at the bottom of the case slot.</p>
9.	<p>Install Repeater-Access Cap When wiring is complete and the mini repeater is installed, further protect the apparatus case by installing the snap-on, top repeater-access cap.</p>

CAUTION

Install and remove repeater with care. Do not force a repeater into place. If excessive resistance is encountered while installing, remove the repeater to check for proper alignment and an unobstructed insertion path and connector.

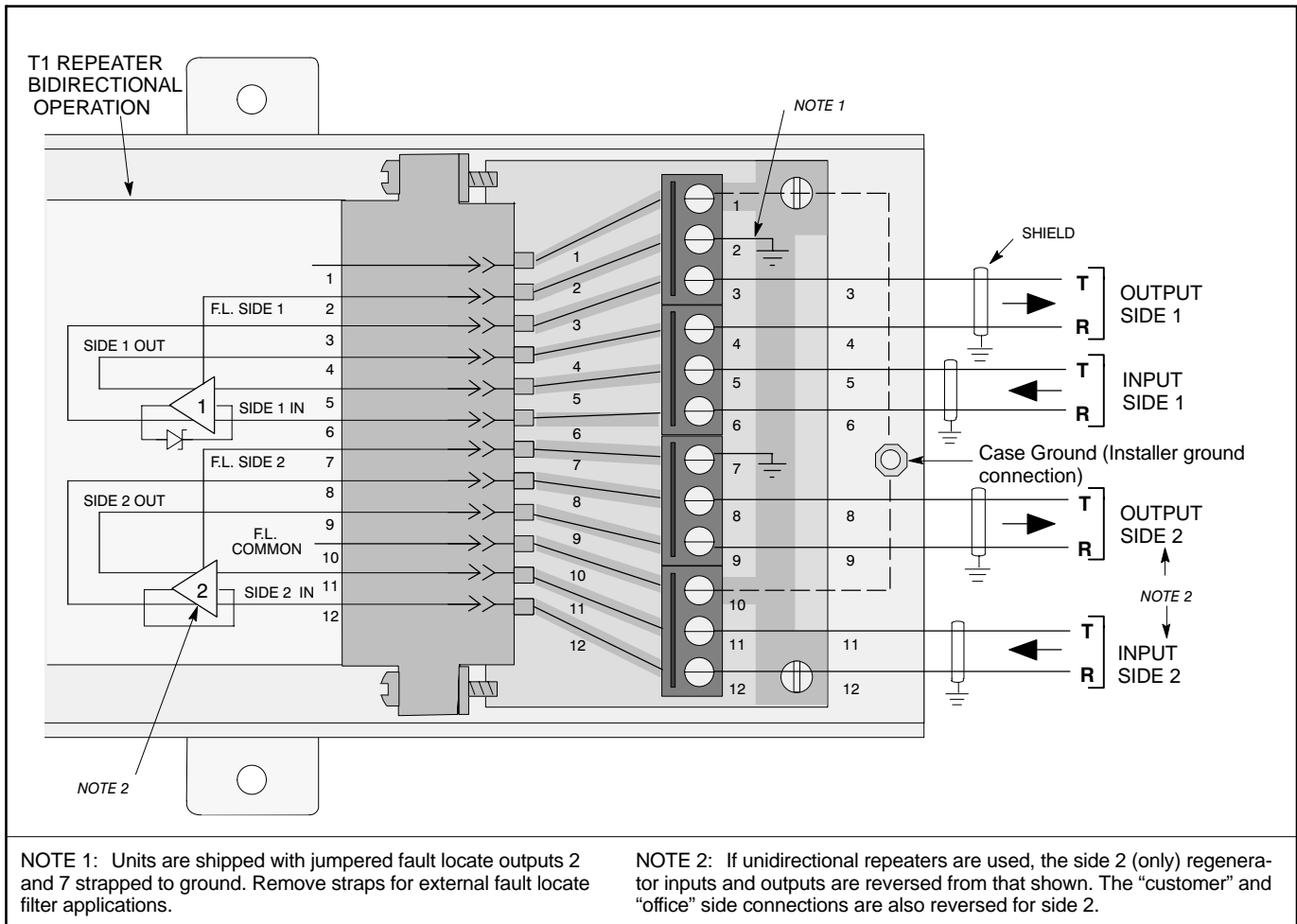


Figure 5. Wiring Diagram of AC 1000 Equipped with Bi-directional (two-way) Repeaters

6. TECHNICAL ASSISTANCE

If technical assistance is required, contact Charles Industries' Technical Services Center at:

847-806-8500

847-806-8556 (FAX)

800-607-8500

techserv@charlesindustries.com (e-mail)

7. WARRANTY & CUSTOMER SERVICE

7.1 Warranty

Charles Industries, Ltd. offers an industry-leading, 5-year warranty on products manufactured by Charles Industries. Contact your local Sales Representative at the address or telephone numbers below for warranty details. The warranty provisions are subject to change without notice. The terms and conditions applicable to any specific sale of product shall be defined in the resulting sales contract.

Charles Industries, Ltd.

5600 Apollo Drive

Rolling Meadows, Illinois 60008-4049

847-806-6300 (Main Office)

847-806-6231 (FAX)

7.2 Field Repairs (In-Warranty Units)

Field repairs involving the replacement of components within a unit are not recommended and may void the warranty and compatibility with any applicable regulatory or agency requirements. If a unit needs repair, contact Charles Industries, Ltd. for replacement or repair instructions, or follow the *Repair Service Procedure* below.

7.3 Advanced Replacement Service (In-Warranty Units)

Charles Industries, Ltd. offers an “advanced replacement” service if a replacement unit is required as soon as possible. With this service, the unit will be shipped in the fastest manner consistent with the urgency of the situation. In most cases, there are no charges for in-warranty repairs, except for the transportation charges of the unit and for a testing and handling charge for units returned with no trouble found. Upon receipt of the advanced replacement unit, return the out-of-service unit in the carton in which the replacement was shipped, using the pre-addressed shipping label provided. Call your customer service representative at the telephone number above for more details.

7.4 Standard Repair and Replacement Service (Both In-Warranty and Out-Of-Warranty Units)

Charles Industries, Ltd. offers a standard repair or exchange service for units either in- or out-of-warranty. With this service, units may be shipped to Charles Industries for either repair and quality testing or exchanged for a replacement unit, as determined by Charles Industries. Follow the *Repair Service Procedure* below to return units and to secure a repair or replacement. A handling charge applies for equipment returned with no trouble found. To obtain more details of this service and a schedule of prices, contact the CI Service Center at 217-932-5288 (FAX 217-932-2943).

Repair Service Procedure

1. Prepare, complete, and enclose a purchase order in the box with the equipment to be returned.
2. Include the following information:
 - Company name and address
 - Contact name and phone number
 - Inventory of equipment being shipped
 - Particulars as to the nature of the failure
 - Return shipping address
3. Ship the equipment, purchase order, and above-listed information, transportation prepaid, to the service center address shown below.

CI Service Center
503 N.E. 15th St., P.O. Box 339
Casey, IL 62420-2054
4. Most repaired or replaced units will be returned within 30 or 45 days, depending on the product type and availability of repair parts. Repaired units are warranted for either 90 days from the date of repair or for the remaining unexpired portion of the original warranty, whichever is longer.

8. SPECIFICATIONS & APPROVALS

8.1 Regulatory/Agency Approvals

The following regulatory agency approvals apply to the AC 1000.

UL Listed under Underwriters Laboratories Standard 1459, Second Edition. Compliance is restricted to inside plant wiring. Field repairs may void compliance.

8.2 Electrical Specifications

The electrical characteristics of the AC 1000 are as follows:

Compatible with T1, T1C, T1D, and T1G Carrier Systems.

8.3 Physical Specifications

The physical characteristics of the AC 1000 are shown in Table 1.

Table 1. Physical Specifications

Feature	U.S.	Metric
Height (incl. cap)	9.375 inches	23.5 centimeters
Width (incl. mounting tabs)	3.75 inches	9.5 centimeters
Depth (incl. stacking screws)	1 inch	2.54 centimeters
Weight (without repeater)	7 ounces	198.5 grams
Temperature	32 to 120° F	0 to 49° C
Humidity	To 95% (no condensation)	

