TA 850 System Installation and Maintenance

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1. GENERAL

This practice provides installation and maintenance procedures for the ADTRAN Total Access 850 (TA 850) System. The Specifications and Part Numbers Table (Table 4 on page 10) shows part numbers for equipment and documents referenced in this practice. Referenced practices should be on-hand during system installation.

NOTE

This is not an operational manual. To obtain an operational manual, contact ADTRAN Technical Support at (888) 4ADTRAN.

Revision History

This is the initial release of this document. Future revisions to this document will be described in this subsection.

2. PRODUCT OVERVIEW

The TA 850 system (see Figure 1) is an integrated access device designed for cost-effective deployment of voice and data services at the customer's premises. The TA 850 system benefits integrated communications providers, such as CLECs, ILECs, and ISPs, who require a customer premises device that integrates voice and data functions, and provides a viable migration path from TDM to packet-based technology. The TA 850 features remote management, an integrated IP / IPX router, and special services slots.

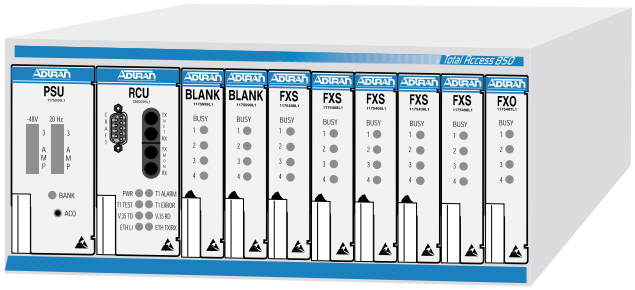

Figure 1. TA 850

The TA 850 is a modular device, with two common slots and eight access slots. Common cards required for operation are a power supply unit (PSU) and a router control unit (RCU). The RCU is a card that currently supports TDM-based applications, but can be easily upgraded to an ATM-based controller as requirements change. The RCU includes a T1 network interface, DSX-1 PBX interface, Nx56 / 64 V.35 interface, and built-in IP / IPX router. Six access slots allow the user to combine a variety of voice and data services. Up to six Quad FXS or Quad FXO access modules can be installed to support up to 24 analog voice lines. Other access modules for data applications include the OCU DP and ISDN U-BR1TE. The other two access slots are for future hardware options.

Using local or remote inband management, carriers can turn features, functions, and access ports on and off. Easy access to modules, common cards, power supplies, and the battery back-up system simplify maintenance procedures. Hot-swappable modules may be replaced without disrupting other units. The four-circuit-per-module design ensures that only four analog circuits are affected when replacing a module.

A compact, NEBS-compliant cabinet suitable for the customer premises or the central office provides added safety and reliability. The 2U design uses little rack space. When wall mounted, the 8.5-inch by 11-inch

chassis occupies a space the size of a piece of notebook paper. Two TA 850 systems can be mounted side-by-side in either 19-inch or 23-inch relay racks. Preconfigured packages are available.

Features

The TA 850 includes the following features:

- T1/FT1 integrated access
- TDM to ATM migration
- Modular network interface for future xDSL compatibility
- Integrated IP/IPX router
- Integrated DSX-1 PBX interface
- V.35 Nx56/64 DTE interface
- TR-08 signaling support
- Analog FXS and FXO voice expansion (four per board)
- SNMP management
- NEBS and UL 1950 compliance
- Industry leading 10-year warranty

Functional Description

The TA 850 System comprises the chassis, common cards, and access modules. Associated with the system are additional elements including an AC to DC power supply and battery charging unit and a battery pack for backup power.

WARNING

On TA 850 installations that do not use all chassis slots, UL 1950/NEBS requires that the empty slots must have a TA 850 blank unit (part number 1175099L1) installed in the opening.

External AC and DC Power. The ADTRAN AC/DC Power Supply/Battery Charging unit receives its power from a standard 115 VAC outlet. During operation, the power supply maintains -54 VDC to the PSU. The power supply battery charging circuit maintains the battery pack at peak charge. In the event of an AC power failure, the battery backup circuit automatically provides battery power to the PSU for up to 8 hours. When AC power is restored, input power automatically returns to the AC supply and the battery charging circuit will recharge the battery to peak.

On the TA 850 chassis, the incoming power termination point is on either of two backplane connections: P7 or P6. (See Figure 2.) Both sources connect directly to the PSU. Connector P6 is used when the chassis is powered by the ADTRAN AC/DC Power Supply unit (P/N 1175043L1) which mounts externally to the chassis. Connector P7 is used when -48 VDC is available on site and screw-type terminal connections are required.

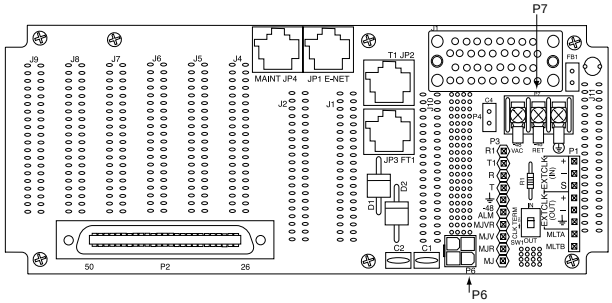

Figure 2. TA 850 Backplane

PSU. The Power Supply Unit supplies -48 VDC and 20 Hz ringing voltage to the Router Controller Unit (RCU) and the access modules. The PSU converts -48 VDC input to the required voltages needed to operate all common units and access modules. The ring generator circuit provides 20 Hz ring voltage to the analog access modules.

The PSU faceplate (see Figure 1 on page 1) shows the following: two GMT fuses (one for power and one for 20 Hz ring voltage), a channel bank status LED, and an alarm cutoff (ACO) pushbutton switch. The separately fused ring generator supplies up to 20 REN to the access modules.

RCU. The Router Controller Unit is a dual board assembly that provides the network interface. The RCU can provision, test, and provide status for any card in the channel bank. The faceplate has a DB-9 **CRAFT** port connection, dual bantam jack connection, plus network, V.35, and Ethernet LEDs.

Access Modules. The TA 850 is designed to support Quad FXS, Quad FXO, OCU DP, and UBR1TE access modules.

3. INSTALLATION

Before installing the TA 850, carefully inspect the TA 850 Base Unit for shipping damage. If you suspect damage, file a claim immediately with the carrier and then contact ADTRAN Customer and Product Service. (See “Warranty and Customer Service” on page 6.) If possible, keep the original shipping container for returning the TA 850 for repair or for verification of damage during shipment.

Your ADTRAN shipment includes the following items (if the unit is not purchased directly from ADTRAN, it may be packaged differently):

- TA 850 chassis, PSU, RCU, and blanks
- TA 850 System Installation and Maintenance Practice

Grounding Instructions

This section provides grounding instruction information from the Underwriters' Laboratory UL 1950 Standard for Safety: Information Technology Equipment.

An equipment grounding conductor that is not smaller in size than the ungrounded branch-circuit supply conductors is to be installed as part of the circuit that supplies the product or system. Bare, covered, or insulated grounding conductors are acceptable. Individually covered or insulated equipment grounding conductors shall have a continuous outer finish that is either green, or green with one or more yellow stripes. The equipment grounding conductor is to be connected to ground at the service equipment.

The attachment-plug receptacles in the vicinity of the product or system are all to be of a grounding type, and the equipment grounding conductors serving these receptacles are to be connected to earth ground at the service equipment.

A supplementary equipment grounding conductor shall be installed between the product or system and ground that is in addition to the equipment grounding conductor in the power supply cord.

The supplementary equipment grounding conductor shall not be smaller in size than the ungrounded branch-circuit supply conductors. The supplementary equipment grounding conductor shall be connected to the product at the terminal provided, and shall be connected to ground in a manner that will retain the ground connection when the product is unplugged from the receptacle. The connection to ground of the supplementary equipment grounding conductor shall be in compliance with the rules for terminating bonding jumpers at Part K or Article 250 of the National Electrical Code, ANSI/NFPA 70. Termination of the supplementary equipment grounding conductor is permitted to be made to building steel, to a metal electrical raceway system, or to any grounded item that is permanently and reliably connected to the electrical service equipment ground.

Install the Chassis

Standard installation is a single unit wall mount. Position the chassis with the access modules facing up. Mount on heavy plywood (3/4 inch minimum). Refer to Figure 3 for component layout.

Required Clearances. A minimum 10-inch clearance is required on the front end for access module insertion and withdrawal. On the backplane end, a five-inch clearance is required for wiring access to the V.35 connector. For those units installed in a communications bay, standard bay clearances are satisfactory.

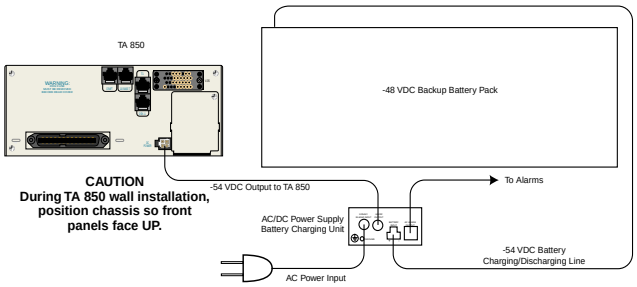

Figure 3. TA 850 Component Layout and Cable Connections

Mounting Brackets. The TA 850 chassis includes wall mount brackets. If rack mount brackets are needed, use part number 1175045L1 or 1175046L1 for 19-inch or 23-inch, respectively.

Tools Needed (Wall-Mount). The TA 850 chassis mounts and connects with standard fasteners and hand tools:

- Four #8 x 3/4 inch pan-head wood screws
- Drill and drill bit set
- Flat head screwdriver (medium)
- Two Phillips head screwdrivers (small / medium)
- Wire-wrap gun (optional)
- 5-pair male amphenol cable (customer connection)
- Selected punch-down block and tool

Mount the Chassis. Install the chassis as follows:

1. Position the chassis at the desired location; observe required clearances and ensure cable plugs reach their designated sockets.
2. Ensure the chassis is plumb; then mark through the flange mounting holes to identify where the pilot holes will be drilled.
3. Using a 1/16 inch bit, drill pilot holes at the marked locations.
4. Mount the chassis using the four #8 by 3/4 inch pan-head wood screws.

Connections. All connections are made through terminals, jacks, and wire-wraps on the backplane. Refer to Figure 2 on page 2 for backplane connections. Refer to Table 1 on page 4 for backplane reference designator descriptions and functions supported.

A removable rear cover provides access to the backplane, and an access panel that mounts to the rear cover allows access to wire-wrap strips P1, P3, and P5, power terminal strip P7, and clock termination switch SW1 without removing the main rear cover. Most CPE applications will not require removal of the rear cover.

Table 1. TA 850 Backplane Connections

Ref Des	Device/Label	Technology
P1	wire-wrap strip	clock/tests
P2	50 pin amphenol	FXO, FXS, etc.
P3	wire-wrap strip	alternate T1 interface
P5	wire-wrap strip	alarms
P6	4 pin jack	primary -48 V in
P7	3-lug terminal	alternate -48 V in
JP1	RJ-48/E-NET	10BaseT Ethernet
JP2	RJ-48/T1	primary T1 interface
JP3	RJ-48/FT1	DSX1 interface
JP4	RJ-48/MAINT	RS 232 craft interface
J1	V.35	Nx56K/64K

UL 1950 Deployment Guidelines. One of the following two powering schemes shall be used when powering this equipment:

1. Use the ADTRAN power supply (part number 1175043L1).

2. Do the following:

a. Connect the unit to a reliably grounded -48 Vdc source which is electrically isolated from the AC source.

b. A readily accessible disconnect device, suitably approved and rated, shall be incorporated in the input source wiring.

c. The branch circuit overcurrent protection shall be a fuse or circuit breaker rated minimum 48 V, maximum 20 A.

d. This unit shall be installed in accordance with the requirements of NEC NFPA 70.

The installation configurations codes are given below:

	In	Out
PC	F	C
IC	E	-
TC	X	X

CAUTION

Both Power and T1 services have two connection points. In all cases, only one of the connection points is used. Adhere to the instructions in the following subsections to ensure correct installation.

Alternate Connections. For wire-wrap or screw terminal connections, the rear cover does not need to be removed; only the terminal access cover needs to be removed. Make wire-wrap or screw terminal connections as follows:

1. Unscrew the access cover hold-down screw.
2. Slide the access cover down slightly to disengage the lock-tabs from their slots.

CAUTION

Use wire gauge suitable for the application.

3. Identify the wire-wrap pins designated for use, and make the connections starting with the pins closest to the exit port to avoid wiring interference as work progresses.
4. If alternate power connection to P7 is to be used, make those terminal connections last.
5. Carefully route wiring through the exit port.
6. Position and align the access cover tabs to the slots; insert the tabs and slide the cover up slightly until the screw holes are aligned. Ensure that exit wiring is not pinched or damaged.
7. Reinsert the hold-down screw.

Customer Connection. One 50-pin male amphenol connector (P2) provides the interconnect wiring for the access modules located in slots 1 through 6 of the chassis. This connector is usually terminated with a punch-down block for premises wiring or connected directly to a cross-connect or main distribution frame. Figure 4 on page 5 details the connector pinout.

T1 Connection. There are two termination points for connecting the network T1 to the chassis: the primary RJ-48 connector (JP2) and the alternate wire-wrap pins on terminal strip P3 (as shown in Figure 2 on page 2). Only one connector type is used (not both).

The T1 primary connection is via the RJ-48 connector labeled T1 (JP2). This arrangement provides a convenient T1 connection for those installations where a T1 Smart Jack is used.

The RCU common module provides termination for DSX-1 and DS1 signals. For wire-wrap connections, shield is provided by the ground pin adjacent to the DSX-1 / DS1 pin set (see Figure 5 on page 5). Line build-out and equalization settings are provisioned on the RCU.

Power Connection. There are two power connections on the backplane: a modular DC plug (P6), and a three lug terminal strip (P7). (Refer to Figure 2 on page 2.)

The primary connection is the modular plug, which receives -48 VDC from the ADTRAN power supply / battery charging unit (P / N 1175043L1). The alternate

connection is screw terminal P7, which can be used if -48 Vdc is available as in central office applications. The screw terminal connection is shown in Figure 6 on page 5.

CAUTION

During installation, power should be the last connection made after all other wire-wrap connections are completed.

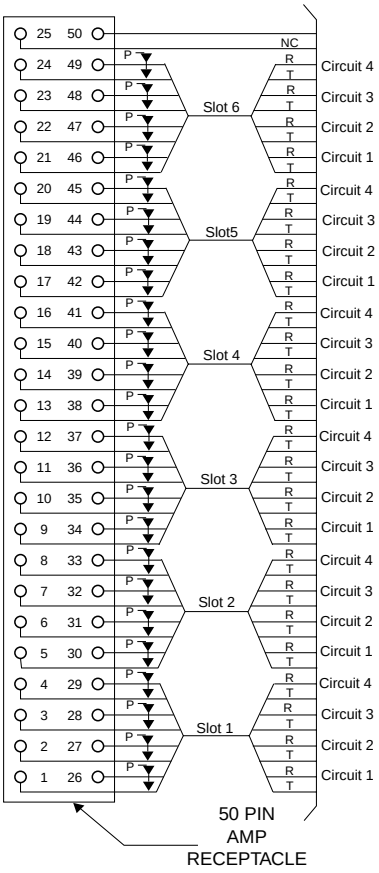

Figure 4. Connector Pinout

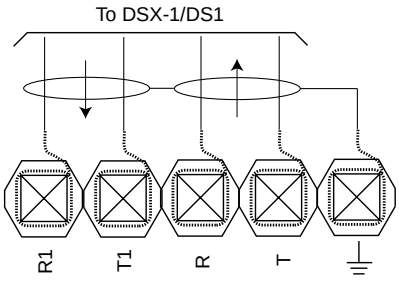

Figure 5. T1 Connections

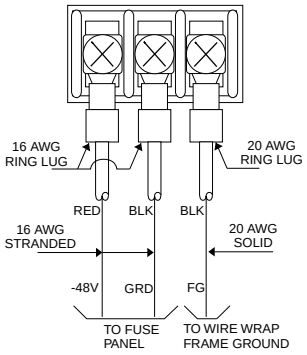

Figure 6. Alternate Power Connection

NOTE

The following section is for information only, and the features described are not necessary for typical applications.

Office Alarms. Backplane alarm connections (P5) are labeled as shown in Table 2 on page 6 and illustrated in Figure 7 on page 6. Alarm relay contacts are open during normal operation. The alarm relay contacts close in the event of a local alarm condition or the receipt of an alarm from the T1 carrier. In a carrier alarm condition such as a Red, Yellow, or Blue (unframed all 1s), various alarm contacts in the PSU close. Carrier alarm conditions cause the TA 850 to initiate trunk processing. The following chain of events then occur:

1. MJ will be directly shorted to MJR.
2. MJV will be directly shorted to MJVR.

Contacts MJ and MJR can be overridden manually during an alarm condition by pressing the ACO pushbutton on the PSU faceplate. If the 3-Amp power fuse on the PSU trips, the -48ALM relay will close, providing a -48 VDC signal on that pin. This alarm cannot be overridden by the ACO pushbutton. Refer to Table 3 on page 6 for alarm notifications.

Table 2. Wire Wrap Identification

P3 Wire-Wrap Connections		
T1 Connections		
1	R1	DS1 Ring input from network
2	T1	DS1 Tip input from network
3	R	DS1 Ring output from network
4	T	DS1 Tip output from network
5	Gnd	Ground
P5 Wire-Wrap Connections		
Alarm Connections		
1	-48 ALM	DC Alarm output
2	MJVR	Major Alarm Visual Common
3	MJV	Major Alarm Visual
4	MJR	Major Alarm Audible Common
5	MJ	Major Alarm Audible

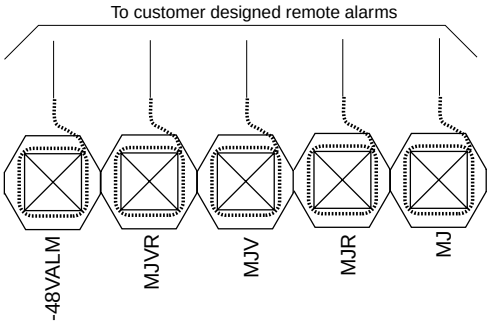

Figure 7. Office Alarm Connections

Table 3. Alarm Notification

Alarm Condition	Relays Activated		
	MJR	MJVR	-48 ALM
Red Alarm	X	X	
Yellow Alarm	X	X	
AIS Alarm	X	X	
PSU Power Fuse Fails	X	X	X
Alarms ACO Deactivates	X	X	
Note: ACO will not deactivate MJR after a power fuse failure.			

Install any Option Modules

After installing the TA 850 Base Unit and connecting the required cables, you can install your choice of option modules.

WARNING

Remove the 20 Hz fuse before exposing backplane or accessing channel units.

Individual access modules insert from the front. A locking bar holds the modules in place for added security. Disengaging the captured screw allows removal of the locking bar. All wiring connections terminate on the backplane. Refer to Table 2 on page 6 for wire-wrap connections, and refer to Figure 2 on page 2 for backplane layout. Refer to Table 1 on page 4 for backplane reference designator descriptions and functions supported.

Power-Up

As shipped, the T A850 is set to factory default conditions. After installing the TA 850 Base Unit and any option modules, the TA 850 is ready for power-up.

4. SPECIFICATIONS

Table 4 on page 10 gives specifications and relevant part numbers.

5. MAINTENANCE

The TA 850 System does not required programmed maintenance for design operation.

ADTRAN does not recommend that repairs be attempted in the field. Repair services are obtained by returning the defective unit to ADTRAN Customer Service.

6. WARRANTY AND CUSTOMER SERVICE

ADTRAN will replace or repair this product within ten years from the date of shipment if the product does not meet its published specifications or if it fails while in service. For detailed warranty, repair, and return information refer to the ADTRAN Equipment Warranty and Repair and Return Policy Procedure.

Return Material Authorization (RMA) is required prior to returning equipment to ADTRAN.

For service, RMA requests, or more information, see the following sections for the correct toll-free contact number.

Product Support Information

Pre-Sales Inquiries and Applications Support. Please contact your local distributor, ADTRAN Applications Engineering, or ADTRAN Sales:

Applications Engineering	(800) 615-1176
Sales	(800) 827-0807

Post-Sale Support. Please contact your local distributor first. If your local distributor cannot help, please contact ADTRAN Technical Support and have the unit serial number available.

Technical Support	(888) 4ADTRAN

Repair and Return. If ADTRAN Technical Support determines that a repair is needed, Technical Support will coordinate with the Customer and Product Service (CAPS) department to issue an RMA number. For information regarding equipment currently in house or possible fees associated with repair, contact CAPS directly at the following number:

CAPS Department	(256) 963-8722

Identify the RMA number clearly on the package (below address), and return to the following address:

ADTRAN, Inc.
6767 Old Madison Pike
Progress Center
Building #6 Suite 690
Huntsville, Alabama 35807

RMA # _____

7. LIMITED PRODUCT WARRANTY

ADTRAN warrants that for ten years from the date of shipment to Customer, all products manufactured by ADTRAN will be free from defects in materials and workmanship. ADTRAN also warrants that products will conform to the applicable specifications and drawings for such products, as contained in the Product Manual or in ADTRAN's internal specifications and drawings for such products (which may or may not be reflected in the Product Manual). This warranty only applies if Customer gives ADTRAN written notice of defects during the warranty period. Upon such notice, ADTRAN will, at its option, either repair or replace the defective item. If ADTRAN is unable, in a reasonable time, to repair or replace any equipment to a condition as warranted, Customer is entitled to a full refund of the purchase price upon return of the equipment to ADTRAN. This warranty applies only to the original purchaser and is not transferable without ADTRAN's express written permission. This warranty becomes null and void if Customer modifies or alters the equipment in any way, other than as specifically authorized by ADTRAN.

EXCEPT FOR THE LIMITED WARRANTY DESCRIBED ABOVE, THE FOREGOING CONSTITUTES THE SOLE AND EXCLUSIVE REMEDY OF THE CUSTOMER AND THE EXCLUSIVE LIABILITY OF ADTRAN AND IS IN LIEU OF ANY AND ALL OTHER WARRANTIES (EXPRESSED OR IMPLIED). ADTRAN SPECIFICALLY DISCLAIMS ALL OTHER WARRANTIES, INCLUDING (WITHOUT LIMITATION), ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SOME STATES DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES, SO THIS EXCLUSION MAY NOT APPLY TO CUSTOMER.

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8. REGULATORY REQUIREMENTS

Affidavit Requirements for Connection to Digital Services

- An affidavit is required to be given to the telephone company whenever digital terminal equipment without encoded analog content and billing protection is used to transmit digital signals containing encoded analog content which are intended for eventual conversion into voiceband analog signals and transmitted on the network.
- The affidavit shall affirm that either no encoded analog content or billing information is being transmitted or that the output of the device meets Part 68 encoded analog content or billing protection specifications.
- End user/customer will be responsible for filing an affidavit with the local exchange carrier when connecting unprotected customer premise equipment (CPE) to 1.544 Mbps or subrate digital services.
- Until such time as subrate digital terminal equipment is registered for voice applications, the affidavit requirement for subrate services is waived.

Affidavit for Connection of Customer Premises Equipment to 1.544 Mbps and/or Subrate Digital Services

For the work to be performed in the certified territory of _____(telco name)

State of _____

County of _____

I, _____ (name), _____(business address),

_____ (telephone number) being duly sworn, state:

I have responsibility for the operation and maintenance of the terminal equipment to be connected to 1.544 Mbps and / or _____ subrate digital services. The terminal equipment to be connected complies with Part 68 of the FCC rules except for the encoded analog content and billing protection specifications. With respect to encoded analog content and billing protection:

( ) I attest that all operations associated with the establishment, maintenance, and adjustment of the digital CPE with respect to analog content and encoded billing protection information continuously complies with Part 68 of the FCC Rules and Regulations.

( ) The digital CPE does not transmit digital signals containing encoded analog content or billing information which is intended to be decoded within the telecommunications network.

( ) The encoded analog content and billing protection is factory set and is not under the control of the customer.

I attest that the operator(s) / maintainer(s) of the digital CPE responsible for the establishment, maintenance, and adjustment of the encoded analog content and billing information has (have) been trained to perform these functions by successfully having completed one of the following (check appropriate blocks):

( ) A. A training course provided by the manufacturer / grantee of the equipment used to encode analog signals; or

( ) B. A training course provided by the customer or authorized representative, using training materials and instructions provided by the manufacturer / grantee of the equipment used to encode analog signals; or

( ) C. An independent training course (e.g., trade school or technical institution) recognized by the manufacturer / grantee of the equipment used to encode analog signals; or

( ) D. In lieu of the preceding training requirements, the operator(s) / maintainer(s) is (are) under the control of a supervisor trained in accordance with _____ (circle one) above.

I agree to provide _____ (telco's name) with proper documentation to demonstrate compliance with the information as provided in the preceding paragraph, if so requested.

_____Signature

_____Title

_____ Date

Transcribed and sworn to before me

This _____ day of _____, _____

_____
Notary Public

My commission expires:

_____

FCC regulations require that the following information be provided in this manual to the customer:

1. This equipment complies with Part 68 of the FCC rules. The required label is affixed to the bottom of the chassis.
2. An FCC-compliant telephone cord and modular plug is provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack which is Part 68-compliant. See Chapter 2, Installation, for details.
3. If your telephone equipment (TA 850) causes harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance. But if advance notice isn't practical, you will be notified as soon as possible. You will be advised of your right to file a complaint with the FCC.
4. Your telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the proper operation of your equipment. If they do, you will be given advance notice to give you an opportunity to maintain uninterrupted service.
5. If you experience trouble with this equipment (TA 850), please contact ADTRAN at (256) 963-8000 for repair / warranty information. The telephone company may ask you to disconnect this equipment from the network until the problem has been corrected or until you are sure the equipment is not malfunctioning.
6. This unit contains no user-serviceable parts.

7. The following information may be required when applying to your local telephone company for leased line facilities.

For a T1 Port:

Service Type	REN/ SOC	FIC	USOC
1.544 Mbps - SF	6.0N	04DU9-BN	RJ-48C
1.544 Mbps - SF and B8ZS	6.0N	04DU9-DN	RJ-48C
1.544 Mbps - ESF	6.0N	04DU9-1KN	RJ-48C
1.544 Mbps - ESF and B8ZS	6.0N	04DU9-1SN	RJ-48C
ISDN	6.0N	04DU9-ISN	RJ-48C

For an FT1 Port:

Service Type	REN/ SOC	FIC
1.544 Mbps - SF	6.0N	04DU9-BN
1.544 Mbps - SF and B8ZS	6.0N	04DU9-DN
1.544 Mbps - ESF	6.0N	04DU9-1KN
1.544 Mbps - ESF and B8ZS	6.0N	04DU9-1SN
ISDN	6.0N	04DU9-ISN

NOTE

When connecting FT1 port towards the network, a suitable crossover cable is required.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio frequencies. Operation of this equipment 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.

Shielded cables must be used with this unit to ensure compliance with Class A FCC limits.

WARNING

Change or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Canadian Equipment Limitations

NOTE

The Industry Canada Certification label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. The Department of Commerce does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic waterpipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or an electrician, as appropriate.

The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the equipment that the total of the LNs of all devices does not exceed 100.

The ringer equivalence number (REN) assigned to each terminal adapter is used to determine the total number of devices that may be connected to each circuit. The sum of the RENs from all devices in the circuit should not exceed a total of 5.0.

Canadian Class A Products

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme á la norme NMB-003 du Canada.

Table 4. Specifications and Part Numbers

Environmental	
Operating Temperature	-40 to 70 ^{o}C (-40 to 158 ^{o}F)
Storage Temperature	-30 to 70 ^{o}C (-22 to 158 ^{o}F)
Relative Humidity	95% maximum, noncondensing
Physical	
Dimensions	8 3/4” W x 3 5/8” H x 11” D
Weight (fully loaded)	8 pounds
Weight (empty)	5 pounds
TA 850 Relevant Part Numbers	
TA 850 Chassis	1200375L1
RCU	1200376L1, User Manual 61200376L1-1A
PSU	1175006L1
Quad FXS	1175408L1, User Manual 61175408L1-1A
Quad FXO	1175407L1, User Manual 61175407L1-1A
AC Power Supply/Battery Charger	1175043L1/L2
Backup Battery Pack	1175044L1/L2
Single Unit 19” Rack Mount Brackets	1175045L1
Single Unit 23” Rack Mount Brackets	1175046L1
System Configuration Part Numbers	
TA 850 DC Chassis Bundle	4200376L1
TA 850 AC Chassis Bundle	4200376L1#AC
TA 850 DC Chassis Bundle + 12 FXS	4200376L2
TA 850 AC Chassis Bundle + 12 FXS	4200376L2#AC
TA 850 DC Chassis Bundle + 16 FXS	4200376L3
TA 850 AC Chassis Bundle + 16 FXS	4200376L3#AC