

tone COMMANDER®

NT1-110 Rack NT1U-110TC Card Installation Instructions

The NT1-110 Rack consists of a card cage and an external power supply. The rack is designed to be used in conjunction with Tone Commander NT1U-110TC ISDN Network Termination cards. A maximum of sixteen NT1 units can be used in each rack.

The NT1-110 is intended for use in ISDN applications that use locally powered terminal equipment; no terminal power is available from the rack.

Specifications

NT1-110 Rack

Physical Dimensions 5.2" H x 17.3" W x 4.9" D
Weight 2 lbs.
Operating Temperature 0° - 50° C (32° - 122° F)
Humidity 5% to 95%, non-condensing
Standards Compliance UL 1459, cUL
FCC Part 15, Class B

NT1U-110TC Card

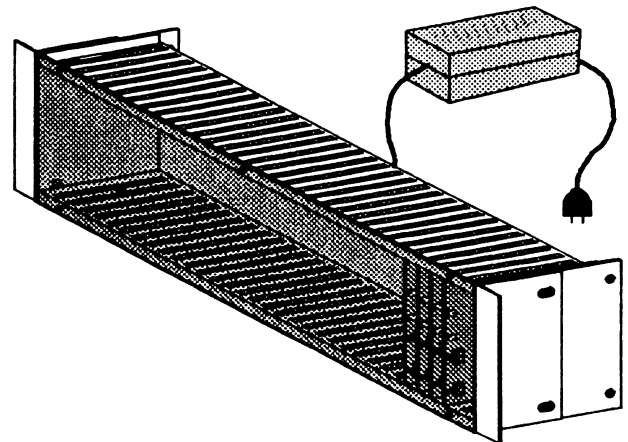
Operating Voltage..... 5 VDC
Power Consumption 500 milliwatts max.
Physical Dimensions 0.8" H x 4.35" W x 3.95" D
Weight 3 oz.
Operating Temperature 0° - 50° C (32° - 122° F)
Humidity 5% to 95%, non-condensing

NT1-110 Rack Power Supply

Power Requirements 120 VAC, 60 Hz, 0.18 A max.
Power Output 5V nominal, 1.5A max.
Physical Dimensions 2.55" H x 3" W x 4.75" D
Weight 1 lb. 14 oz.

Contents of Shipping Box

- (1) NT1-110 Rack
- (1) Power Supply
- (2) Mounting brackets
- (4) 10-24 x 1/4" mounting bracket screws
- (1) Installation Instructions (this document)





Important Safety Instructions

- This equipment is intended for installation in a restricted access location (dedicated equipment rooms, equipment closets, or the like) in accordance with Articles 110-16, 110-17, and 110-18 of the National Electrical Code, ANSI/NFPA No. 70.
- 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 wires.
- Do not mount the NT1-220 Rack within 12" of a heat source.
- The socket-outlet shall be installed near the equipment and shall be easily accessible.

Installation

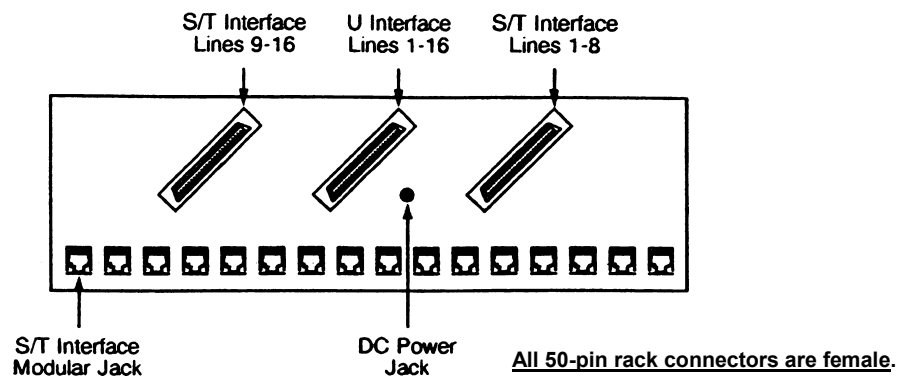
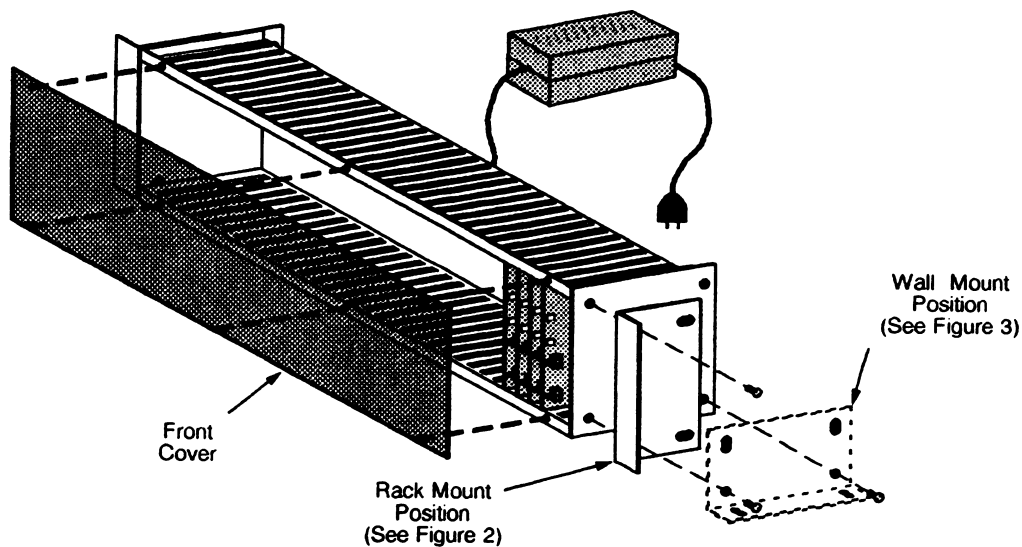


Figure 1

Rack Mounting

The NT1-110 Rack can be mounted in an EIA standard 19" commercial or 23" telco rack.

1. Attach the mounting brackets to the rack in a 19" or 23" mounting position as needed, using the supplied mounting bracket screws.
2. Mount the rack to the 19" or 23" rack standards using suitable fasteners.

Rack Mounting Bracket Positions

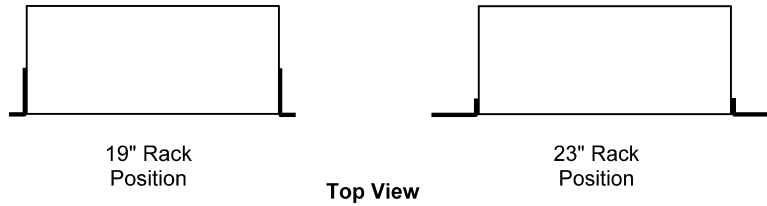


Figure 2

Wall Mounting

1. Attach the mounting brackets to the rack in the wall mounting position using the supplied mounting bracket screws, as shown in Figure 3.
2. Fasten a plywood sheet to the wall.
3. Mark and pre-drill the mounting holes for the rack. Refer to Figure 3 for hole locations.

Make sure that the rack mounting location is within 5 feet of a place to support the external power supply and also close to a 120 VAC, 60 Hz grounded power outlet.

4. Attach the rack to the plywood using four suitable fasteners (such as #10x $\frac{3}{4}$ " pan head self-tapping screws).

Wall Mounting Bracket Positions

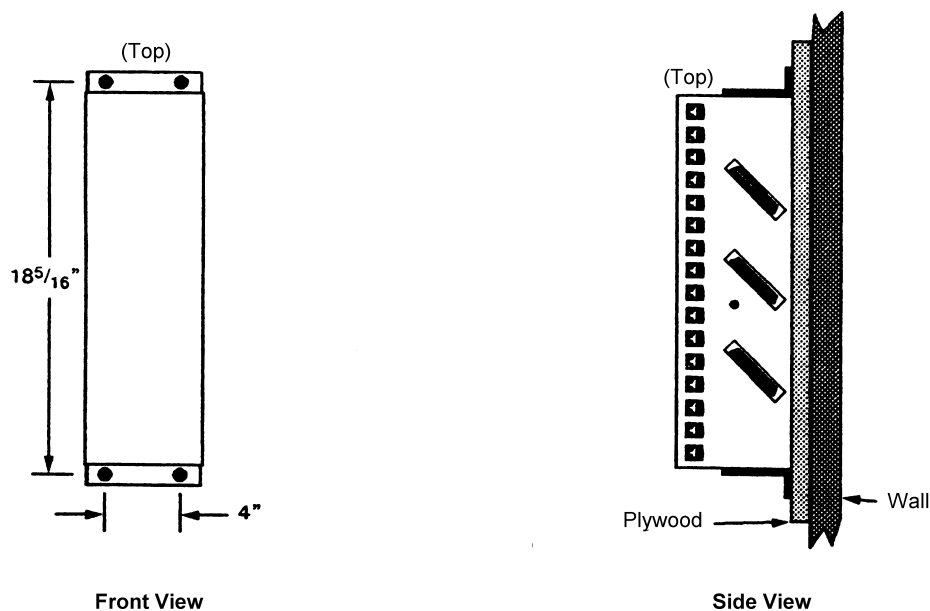


Figure 3

Cable Connections

U Interface

Plug the male-ended U interface cable from the network interface block into the 50-pin U interface connector on the rack rear panel. See Figure 5 and Table 2 for connector pin-out.

S/T Interface

The S/T interface for each terminal can be connected one of two ways:

1. Modular jacks – for terminal equipment or patch panel connection via an 8 position modular phone cord. Connecting cords must be Category 3 or higher with T568 A or T568 B wiring. See Figure 4 and Table 1 for jack pin-out.

Connect the terminal wall jacks to 4-pair cables as shown in Table 1. Punch down the cables to the crossconnect blocks in the order shown in Table 1. Note that pairs 1-2 and 3-6 for T568 A jacks are reversed from T568 B jacks.

| Pin # | Signal | Wire Color | |
|-------|--------|------------|--------------------|
| | | T568 A | T568 B * (AT&T) |
| 5 | Tx - | WHT-BLU | WHT-BLU |
| 4 | Tx+ | BLU | BLU |
| 1 | – | WHT-GRN | WHT-ORN |
| 2 | – | GRN | ORN |
| 3 | Rx+ | WHT-ORN | WHT-GRN |
| 6 | Rx - | ORN | GRN |
| 7 | – | WHT-BRN | WHT-BRN |
| 8 | – | BRN | BRN |

Table 1 – Modular Jack Pinout

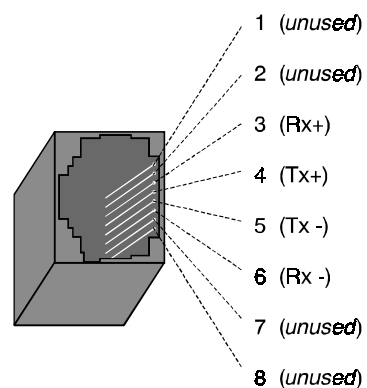


Figure 4

* **T568 B (AT&T 258A) jacks are recommended;** they allow conventional station pair ordering when connecting to S/T punchdown blocks.

2. 50-pin connectors – for terminal equipment connection via a punch-down block. Use cables with male connectors. See Figure 5 and Table 2 for connector pinout.

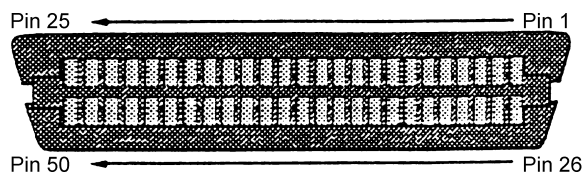


Figure 5 – “U” and “S/T” Interface 50-pin Connectors

| Pin No. | Wire Color | U Interface Lines 1-16 | S/T Interface Lines 1-8 | S/T Interface Lines 9-16 |
|---------|------------|------------------------|-------------------------|--------------------------|
| 26 | WHT-BLU | U1 - | Tx1 - | Tx9 - |
| 1 | BLU-WHT | U1+ | Tx1+ | Tx9+ |
| 27 | WHT-ORN | U2 - | Rx1+ | Rx9+ |
| 2 | ORN-WHT | U2+ | Rx1 - | Rx9 - |
| 28 | WHT-GRN | U3 - | Tx2 - | Tx10 - |
| 3 | GRN-WHT | U3+ | Tx2+ | Tx10+ |
| 29 | WHT-BRN | U4 - | Rx2+ | Rx10+ |
| 4 | BRN-WHT | U4+ | Rx2 - | Rx10 - |
| 30 | WHT-SLT | U5 - | Tx3 - | Tx11 - |
| 5 | SLT-WHT | U5+ | Tx3+ | Tx11+ |
| 31 | RED-BLU | U6 - | Rx3+ | Rx11+ |
| 6 | BLU-RED | U6+ | Rx3 - | Rx11 - |
| 32 | RED-ORN | U7 - | Tx4 - | Tx12 - |
| 7 | ORN-RED | U7+ | Tx4+ | Tx12+ |
| 33 | RED-GRN | U8 - | Rx4+ | Rx12+ |
| 8 | GRN-RED | U8+ | Rx4 - | Rx12 - |
| 34 | RED-BRN | U9 - | Tx5 - | Tx13 - |
| 9 | BRN-RED | U9+ | Tx5+ | Tx13+ |
| 35 | RED-SLT | U10 - | Rx5+ | Rx13+ |
| 10 | SLT-RED | U10+ | Rx5 - | Rx13 - |
| 36 | BLK-BLU | U11 - | Tx6 - | Tx14 - |
| 11 | BLU-BLK | U11+ | Tx6+ | Tx14+ |
| 37 | BLK-ORN | U12 - | Rx6+ | Rx14+ |
| 12 | ORN-BLK | U12+ | Rx6 - | Rx14 - |
| 38 | BLK-GRN | U13 - | Tx7 - | Tx15 - |
| 13 | GRN-BLK | U13+ | Tx7+ | Tx15+ |
| 39 | BLK-BRN | U14 - | Rx7+ | Rx15+ |
| 14 | BRN-BLK | U14+ | Rx7 - | Rx15 - |
| 40 | BLK-SLT | U15 - | Tx8 - | Tx16 - |
| 15 | SLT-BLK | U15+ | Tx8+ | Tx16+ |
| 41 | YEL-BLU | U16 - | Rx8+ | Rx16+ |
| 16 | BLU-YEL | U16+ | Rx8 - | Rx16 - |
| 42 | YEL-ORN | - | - | - |
| 17 | ORN-YEL | - | - | - |
| 43 | YEL-GRN | - | - | - |
| 18 | GRN-YEL | - | - | - |
| 44 | YEL-BRN | - | - | - |
| 19 | BRN-YEL | - | - | - |
| 45 | YEL-SLT | - | - | - |
| 20 | SLT-YEL | - | - | - |
| 46 | VIO-BLU | - | - | - |
| 21 | BLU-VIO | - | - | - |
| 47 | VIO-ORN | - | - | - |
| 22 | ORN-VIO | - | - | - |
| 48 | VIO-GRN | - | - | - |
| 23 | GRN-VIO | - | - | - |
| 49 | VIO-BRN | - | - | - |
| 24 | BRN-VIO | - | - | - |
| 50 | VIO-SLT | - | - | - |
| 25 | SLT-VIO | - | - | - |

Table 2 –50-pin Connector Pinouts

Power

1. Plug the provided power supply barrel connector into the power jack on the NT1-110 Rack rear panel.
2. Plug the power cord into a local 120 VAC, 60 Hz grounded power outlet.

NT1U-110TC Card Installation

Insert each NT1U-110TC into the appropriate slot in the NT1-110 Rack, observing correct card orientation. NT1s may be inserted or removed from an operational rack under power without affecting the performance of the other NT1 units. Make sure all NT1s are fully seated in their rack connectors before replacing the front cover.

Status Indicators

The operating state of the NT1-110 is displayed by the two status indicators.

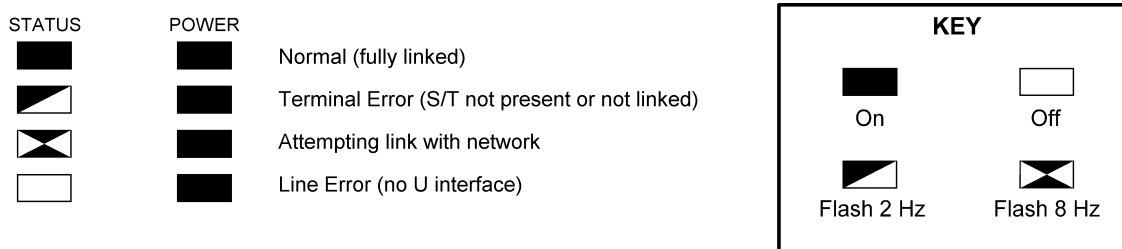


Figure 6

Termination Switch

The termination switch is located on the front card edge of the NT1. Available settings are 100 ohms and 50 ohms. Refer to Figure 7.

Set the termination switch to match the premises wiring between the NT1 and the terminals. Several typical wiring configurations are show below, with the appropriate switch setting.

NOTE – All connecting cords and cables must be Category 3 or higher with T568 A or T568 B wiring. Distances shown are maximum for 24-gauge inside wiring cable and two terminals. These distances may vary for other cable gauges and different number of terminals.

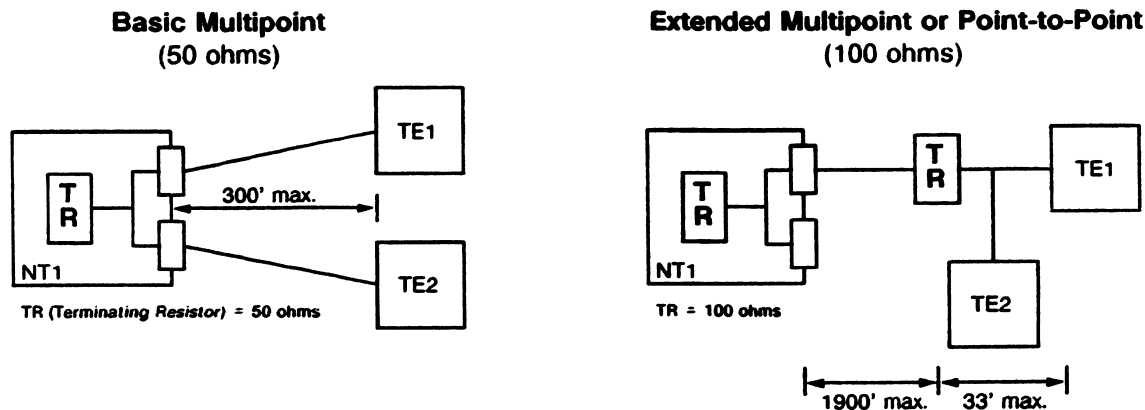


Figure 7

Timing Option

The NT1U-110TC may be set to FXD (fixed) or ADP (adaptive) timing. The default setting is FXD. ADP should only be used for long wiring configurations.

To change the setting:

1. Remove the jumper located between the Reset button and Termination Switch.
2. Slide the jumper over the appropriate two pins. Refer to Figure 8 and the silkscreened labels on the circuit boards.



Figure 8

Reset Button

Possible malfunction of the NT1 is indicated by any status display other than those shown in Figure 6. Press the Reset button (located next to the Power indicator) momentarily to reset the NT1. This has the same effect as powering down, then powering up the NT1. If no improvement is obtained, contact Tone Commander Customer Service at (800) 524-0024.

NOTE – Pressing the Reset button during normal operation will temporarily disrupt communication services and may result in a “Loss of call”.

Service

Repair of the NT1-110 Rack and NT1U-110TC cards must be done by Tone Commander. Prior to equipment removal, call Tone Commander Customer Technical Support for assistance in determining the source of the problem. This critical action can often prevent needless removal of equipment and subsequent customer inconvenience.

Tone Commander
Customer Technical Support Department
11609 49th Place West
Mukilteo, WA 98275-4255 USA

Phone: (425) 349-1000
(800) 524-0024

Fax: (425) 349-1010

E-mail: tech@tonecommander.com

Web: www.tonecommander.com

Tone Commander is committed to meeting the product needs of our customers. Please write or call us with any suggestions for improvement.

FCC Requirements

The Tone Commander NT1-110 Rack and NT1U-110TC have been tested and found to comply with the limits for a Class B 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 residential 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 communications. However, there is no guaranty that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Where it can be done safely, re-orient the receiving television or radio antenna.
- To the extent possible, increase the separation between the telephone equipment and the television, radio, or other equipment.
- If your telephone equipment runs on AC power, plug your product into an AC outlet that is not on the same circuit as the one used by your radio or television receiver.

Tone Commander Product Warranty

For a period of one year from date of dealer purchase, but not to exceed 16 months from date of manufacture, Tone Commander Systems, Inc. (Tone Commander) warrants its products to be free from defects in material and workmanship under conditions of normal use and service. Tone Commander shall, at its option, repair or replace any defective product which, in its opinion, has not been misused, damaged, or improperly installed.

Repair or replacement under this warranty will be performed at Tone Commander's factory. Authorization must be obtained from Tone Commander prior to returning a product for repair. Freight must be prepaid for all units returned to Tone Commander. Units repaired under warranty will be shipped UPS Ground (or equivalent), freight prepaid by Tone Commander.

Products that are older than the warranty period, but less than 7 years old, or still manufactured by Tone Commander may be repaired at the factory for a flat rate charge. Repaired out-of-warranty units are warranted for 90 days from the date of repair.

The repair or replacement of a product under this warranty represents the entire obligation of Tone Commander; Tone Commander shall not be liable for any special or consequential damages resulting from or caused by any defect, failure, incapacity or malfunction of any of its products.

The foregoing express warranty is in lieu of all other warranties, express or implied, including, but not limited to any implied warranty of merchantability, fitness, or adequacy for any purpose or use, quality, productiveness or capacity; Tone Commander, to the extent permitted by law, hereby disclaims all such other warranties.