TONE COMMANDER®

NT1B-300 Rack Installation Instructions

The NT1B-300 Rack houses 24 Tone Commander NT1B-300TC ISDN Network Terminations in a 19" rack, 23" rack, or wall mount configuration. The rack is also compatible with Lucent NT1B-300 NT1s.

The rack supplies power to the NT1 units and terminal equipment connected to the NT1s from an integral power supply. An optional NT1-200 Battery Backup Power Supply can be added to the NT1B-300 Rack to provide uninterrupted NT1 and ISDN terminal power during a power failure.

Specifications

NT1B-300 Rack with Power Supply

Capacity	24 NT1s (48 ISDN BRI terminals)
Physical Dimensions	5.22" H x 17.25" W x 7" D (fits 19" or 23" rack, 3U rack height)
Weight	7 lbs. without NT1s; 12 lbs. with 24 NT1s
Operating Temperature	0° – 40° C (32° – 104° F)
Humidity	5% to 95%, non-condensing
Short Circuit Protection	Individual self-resetting current limiting for each NT1; 20 W max. per NT1
Standards Compliance	UL, cUL 60950
Input Power Requirements	120 VAC, 60 Hz, 5 A max.
Output Power	48-55 VDC, 240 W max.

Contents of Shipping Box

- NT1B-300 Rack with Power Supply
- 19"/23" mounting brackets (2 each)
- 10-24 x ¼" mounting bracket screws (4 each)
- Installation Instructions (this document)

Optional NT1B-300 Rack Locking Kit (Model 102933)
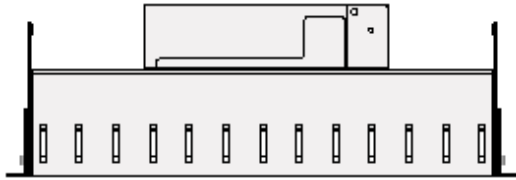
⚠ Important Safety Instructions

- 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 NT1B-300 Rack within 12" of a heat source.
- The socket-outlet shall be installed near the equipment and shall be easily accessible.
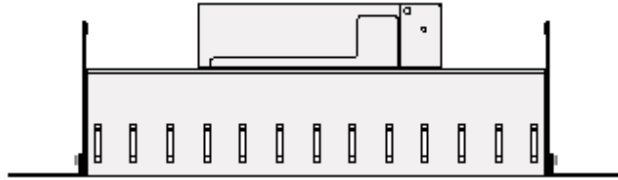
Tone Commander NT1B-300 Rack Installation Instructions

Rack Mounting

1. The NT1B-300 Rack can be mounted in an EIA standard 19" commercial or 23" telco rack.

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

3. Mount the rack to the 19" or 23" rack standards using suitable fasteners.

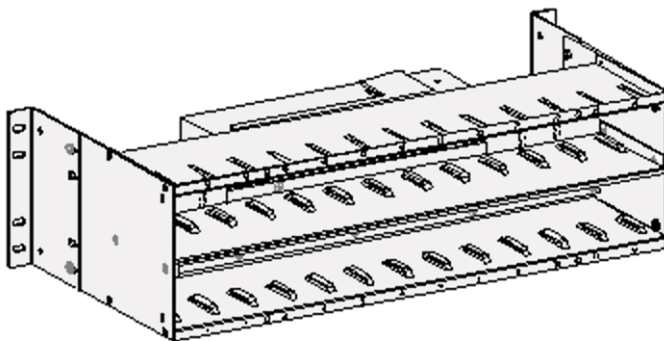**Bracket Positions – 19" Rack**   **Bracket Positions – 23" Rack**

Wall Mounting

Note – ***When mounting the NT1B-300 Rack in conjunction with a Battery Backup unit, refer to the NT1-200 Battery Backup/NT1-200 Add-on Battery Installation Instructions (doc. #13-102688) for proper mounting positions.***
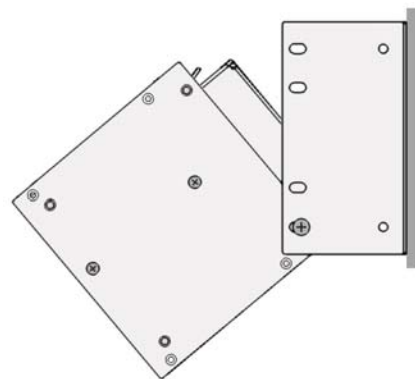
1. Remove all NT1 units from the rack. Unplug the power supply from the wall outlet.

2. Attach the mounting brackets to the rack in the wall mounting position, using the supplied mounting bracket screws.

3. Fasten a ¾" plywood sheet to the wall.

4. Hold the rack up to the wall to mark the hole locations, then pre-drill the mounting holes for the rack.

   When locating the rack make sure:

   - the power supply fan and vents are not obstructed and there is good air flow around the rack.
   - there is enough room to tilt the rack forward to access the cables on the back and enough room to route cables. When mounted with NT1s installed, the rack extends 9.25" from the wall.
   - the power cord can reach a local 120 VAC, 60 Hz, single phase grounded power outlet.

5. Attach the rack to the plywood using four suitable fasteners (such as #10x¾" pan head self-tapping screws). **A fully loaded NT1B-300 Rack weighs 12 lbs.**

6. With no NT1s installed in rack, remove the top bracket mounting screw on each side of the rack and carefully tilt the rack forward to connect ribbon cable connectors. Leave enough slack in the ribbon cables to allow the rack to properly tilt forward for access after installation. After all cables are connected, replace and tighten mounting screws and install the NT1s.
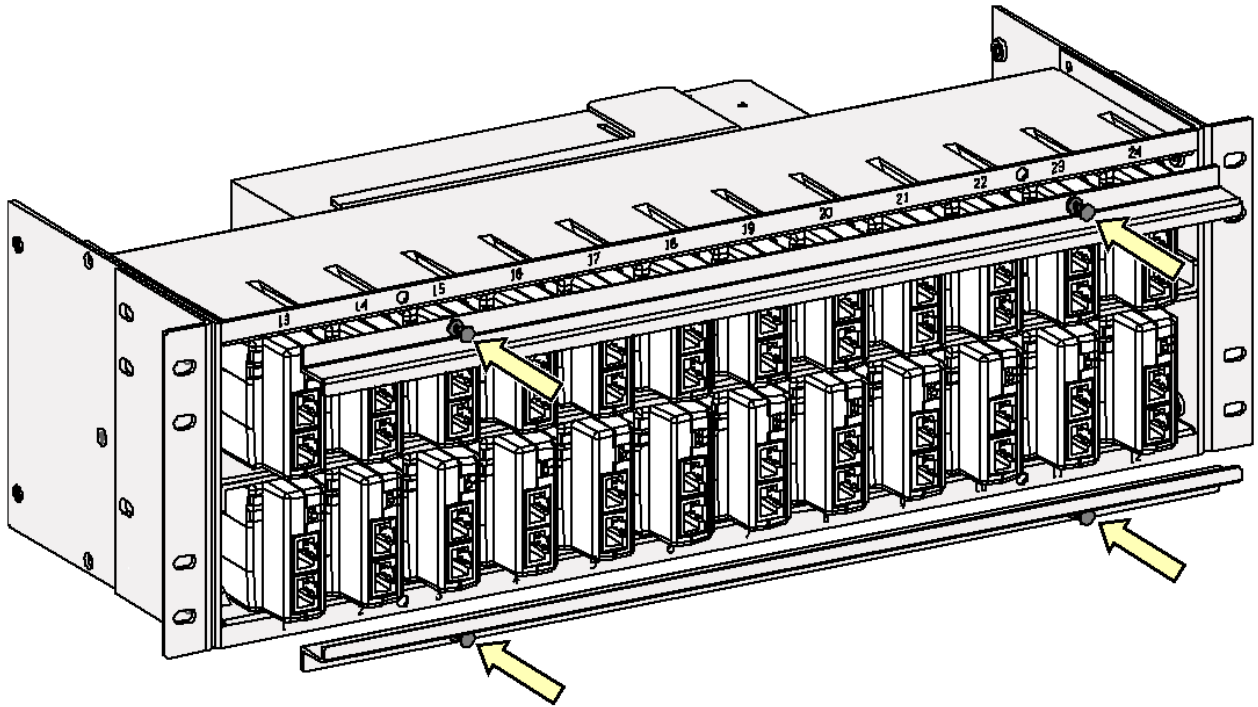

Wall Mount Bracket Positions   **Tilting Rack for Cable Access**

NT1B-300TC Installation

Carefully insert each NT1B-300TC into the appropriate slot in the NT1B-300 rack, with the indicator lights oriented at the top left. The rack connectors are offset to prevent incorrect installation. Slot numbers on the front of the rack correspond to 50-pin connector pinouts listed in Table 2. NT1s may be inserted or removed from an operational rack without affecting the performance of other NT1 units. Make sure all NT1s are oriented properly and fully seated in their rack connectors and verify that the termination switch settings are correct. Refer to the NT1B-300TC installation manual (doc. # 13-280111).
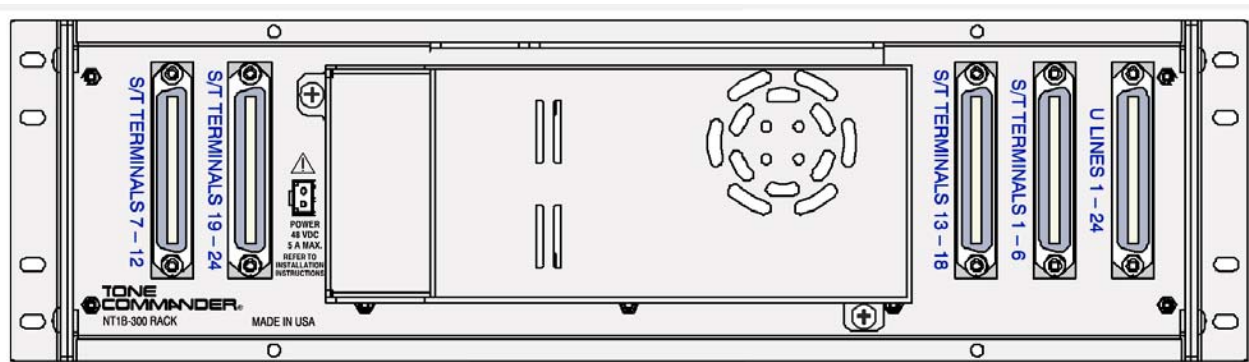
To prevent unintentional removal of NT1 units, install optional locking brackets (Tone Commander Model 102933) after all NT1s are installed. Align the brackets with the mounting holes on the front of the rack and push in the plunger on each panel fastener to secure them.

Rack with NT1B-300TCs Installed – Locking Bracket Installation

Tone Commander NT1B-300 Rack Installation Instructions

Cable Connections

Back Panel Connectors

All rack S/T and U ribbon connectors are female; male connectors are required on the cable ends.

U Interface

Connect each U interface pair from the network interface block into the appropriate position on the 50-pin U interface connector on the rack rear panel. See Table 2 for connector pinouts. The rack uses self-locking connectors; to remove a cable, use a small tool to press in the tabs on the ends of the connector.

S/T Interface

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

1. Modular jacks on the front of the NT1B-300TC units – 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 Table 1 and the figure below for jack pinout.

    Two parallel-wired jacks are provided on each NT1, for two terminals connected in a multipoint arrangement.

2. 50-pin ribbon connectors on the rack back panel – for terminal equipment connection via a punch-down block. See Table 2 for connector pinouts.

Connect the terminal wall jacks to 4-pair cables as shown in Table 1. Punch down the cables to the cross-connect blocks in the order shown in Table 1. Note that pairs 1-2 and 3-6 for T568A jacks are reversed from T568B jacks.

Pin #	Signal	Wire Color	
		T568 A	**T568 B *** **(AT&T)**
5	Tx-	WHT-BLU	WHT-BLU
4	Tx+	BLU	BLU
1	unused	WHT-GRN	WHT-ORN
2	unused	GRN	ORN
3	Rx+	WHT-ORN	WHT-GRN
6	Rx-	ORN	GRN
7	-48V	WHT-BRN	WHT-BRN
8	-48VRTN	BRN	BRN

1 (*unused*)
2 (*unused*)
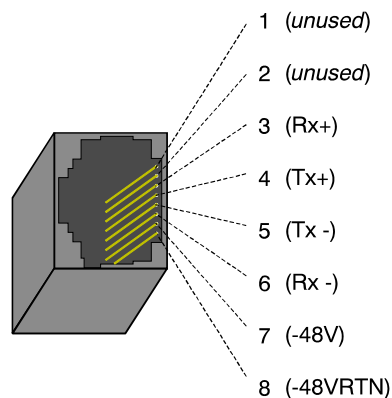3 (Rx+)
4 (Tx+)
5 (Tx -)
6 (Rx -)
7 (-48V)
8 (-48VRTN)

***Table 1** – Modular Jack Pinout*

Pin No.	Wire Color	U Lines 1-24	S/T Ports 1-6	S/T Ports 7-12	S/T Ports 13-18	S/T Ports 19-24
26	WHT-BLU	TIP 1	Tx1 -	Tx7 -	Tx13-	Tx19 -
1	BLU-WHT	RING 1	Tx1+	Tx7+	Tx13+	Tx19+
27	WHT-ORN	TIP 2	–	–	–	–
2	ORN-WHT	RING 2	–	–	–	–
28	WHT-GRN	TIP 3	Rx1+	Rx7+	Rx13+	Rx19+
3	GRN-WHT	RING 3	Rx1 -	Rx7 -	Rx13 -	Rx19 -
29	WHT-BRN	TIP 4	-48V	-48V	-48V	-48V
4	BRN-WHT	RING 4	-48VRTN	-48VRTN	-48VRTN	-48VRTN
30	WHT-SLT	TIP 5	Tx2 -	Tx8 -	Tx14 -	Tx20 -
5	SLT-WHT	RING 5	Tx2+	Tx8+	Tx14+	Tx20+
31	RED-BLU	TIP 6	–	–	–	–
6	BLU-RED	RING 6	–	–	–	–
32	RED-ORN	TIP 7	Rx2+	Rx8+	Rx14+	Rx20+
7	ORN-RED	RING 7	Rx2 -	Rx8 -	Rx14 -	Rx20 -
33	RED-GRN	TIP 8	-48V	-48V	-48V	-48V
8	GRN-RED	RING 8	-48VRTN	-48VRTN	-48VRTN	-48VRTN
34	RED-BRN	TIP 9	Tx3 -	Tx9 -	Tx15 -	Tx21 -
9	BRN-RED	RING 9	Tx3+	Tx9+	Tx15+	Tx21+
35	RED-SLT	TIP 10	–	–	–	–
10	SLT-RED	RING 10	–	–	–	–
36	BLK-BLU	TIP 11	Rx3+	Rx9+	Rx15+	Rx21+
11	BLU-BLK	RING 11	Rx3 -	Rx9 -	Rx15 -	Rx21 -
37	BLK-ORN	TIP 12	-48V	-48V	-48V	-48V
12	ORN-BLK	RING 12	-48VRTN	-48VRTN	-48VRTN	-48VRTN
38	BLK-GRN	TIP 13	Tx4 -	Tx10 -	Tx16 -	Tx22 -
13	GRN-BLK	RING 13	Tx4+	Tx10+	Tx16+	Tx22+
39	BLK-BRN	TIP 14	–	–	–	–
14	BRN-BLK	RING 14	–	–	–	–
40	BLK-SLT	TIP 15	Rx4+	Rx10+	Rx16+	Rx22+
15	SLT-BLK	RING 15	Rx4 -	Rx10 -	Rx16 -	Rx22 -
41	YEL-BLU	TIP 16	-48V	-48V	-48V	-48V
16	BLU-YEL	RING 16	-48VRTN	-48VRTN	-48VRTN	-48VRTN
42	YEL-ORN	TIP 17	Tx5 -	Tx11 -	Tx17 -	Tx23 -
17	ORN-YEL	RING 17	Tx5+	Tx11+	Tx17+	Tx23+
43	YEL-GRN	TIP 18	–	–	–	–
18	GRN-YEL	RING 18	–	–	–	–
44	YEL-BRN	TIP 19	Rx5+	Rx11+	Rx17+	Rx23+
19	BRN-YEL	RING 19	Rx5 -	Rx11 -	Rx17 -	Rx23 -
45	YEL-SLT	TIP 20	-48V	-48V	-48V	-48V
20	SLT-YEL	RING 20	-48VRTN	-48VRTN	-48VRTN	-48VRTN
46	VIO-BLU	TIP 21	Tx6 -	Tx12 -	Tx18 -	Tx24 -
21	BLU-VIO	RING 21	Tx6+	Tx12+	Tx18+	Tx24+
47	VIO-ORN	TIP 22	–	–	–	–
22	ORN-VIO	RING 22	–	–	–	–
48	VIO-GRN	TIP 23	Rx6+	Rx12+	Rx18+	Rx24+
23	GRN-VIO	RING 23	Rx6 -	Rx12 -	Rx18 -	Rx24 -
49	VIO-BRN	TIP 24	-48V	-48V	-48V	-48V
24	BRN-VIO	RING 24	-48VRTN	-48VRTN	-48VRTN	-48VRTN
50	VIO-SLT	–	–	–	–	–
25	SLT-VIO	–	–	–	–	–

***Table 2* – 50-pin Ribbon Connector Pinouts**

Tone Commander NT1B-300 Rack Installation Instructions

Power

Rack Power Supply

1. Verify that the power output cable (red and black wires) is plugged into the rack's POWER connector.

2. Plug the power cord into a local 120 VAC, 60 Hz, single phase power outlet.

Battery Backup Power Supply

Refer to the NT1-200 Battery Backup Installation Instructions (doc. #13-102688) for Backup Battery power supply installation.

ISDN Terminal Power

ISDN terminals connected to the NT1s installed in the rack are powered from the NT1B-300 Rack power supply. Terminal power can be provided by either of the following methods:

PS-2 – Direct power feed on Terminal jack pin 7 (-) and pin 8 (+), approximately 4.5 watts average per terminal for a fully loaded rack (240 watts maximum per rack).

PS-1 – Phantom power feed over the transmission pairs, Terminal jack pins 3/6 (+) and pins 4/5 (-), 4 watts maximum per NT1 circuit.

Power connections to each NT1 are individually short circuit protected.

Power Up Test

Refer to the NT1B-300TC installation manual (doc. # 13-280111) for power up test information.

Service

Repair of the NT1B-300 Rack and NT1B-300TC 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 Models NT1B-300 Rack and NT1B-300TC comply with Part 68 of the FCC Rules. The label affixed to this equipment contains, among other information, the FCC Registration for this equipment. You must, upon request, provide this information to your telephone company.

The following jacks must be ordered from the telephone company in order to interconnect this product with the public communication network: RJ21X.

If your NT1B-300 Rack or NT1B-300TC 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 is not practical you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC.

Your telephone company may make changes in its facilities, equipment, operations or procedures that could affect the proper functioning of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

If you have trouble with the NT1B-300 Rack and NT1B-300TC, contact us at the address listed on page 6 of this manual for information on obtaining service or repairs. The telephone company may ask that you disconnect the telephone from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning.

The Tone Commander NT1B-300 Rack and NT1B-300TC 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.*