

# NT1B-300TC Installation Instructions

The Tone Commander NT1B-300TC converts an ANSI standard 2B1Q ISDN U-interface from the telco Central Office to an S/T interface to connect to local customer terminal equipment. Both point-to-point and multipoint ISDN terminal equipment configurations are supported.



The NT1B-300TC complies with ANSI T1.601-1992 and T1.605-1991 interface standards, including MLT (Mechanized Loop Testing) requirements, and is compatible with National-1 and National-2 ISDN standards. In addition, it may be used as a drop-in replacement in Lucent NT1B-300 applications, and is compatible with the Tone Commander NT1B-300 Rack, Lucent NT1B-310 Rack, and SEI PowerRack 300.

## Specifications

Operating Voltage	34 – 56.5 VDC
Power Consumption	0.65 W typical
Physical Dimensions	4.5" x 2.1" x 1.1"
Weight	4 oz.
Operating Temperature	0° – 50° C (32° – 122° F)
Humidity	5% to 95%, non-condensing
Standards Compliance	ANSI T1.601-1992, T1.605-1991 FCC Part 15, Part 68 UL, cUL Listed

## Optional Equipment (not supplied with NT1)

- 901034 Desktop Power Supply
- PS-50 Bulk Power Supply
- 8-Position Line Cords

Contact Teo for ordering information.



## Important Safety Instructions

- 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.
- When powering the NT1 through the Power connector, use only the Tone Commander Desktop Power Supply (Model 901034).
- Do not mount the NT1B-300TC within 12" of a heat source.

## FCC Requirements

The Tone Commander NT1B-300TC has 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 or more 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.

The Tone Commander NT1B-300TC complies 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: RJ49C. A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA.

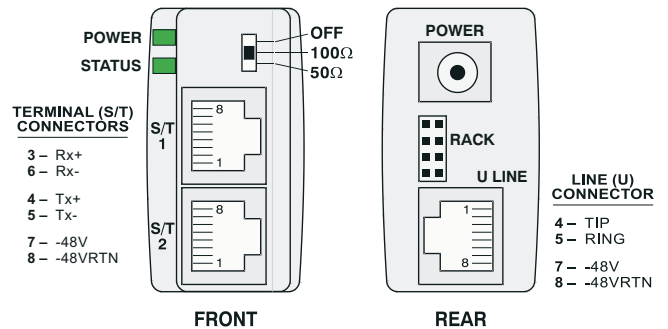
If your NT1B-300TC causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

Your telephone company may make changes in its facilities, equipment, operations or procedures that could affect the proper functioning of your equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

Repair work on this unit must be done by the manufacturer, Teo.

## Connectors

Two terminal connectors are provided for convenient terminal installation; both are parallel connected to the S/T interface. Pins 7 and 8 of the S/T and U Line connectors (power pins) also have metallic interconnection.



## Termination Switch

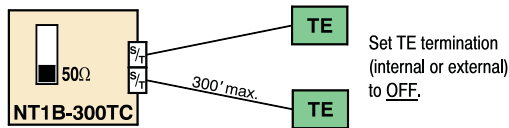
The termination switch is located on the front of the NT1. Available settings are **OFF**, **100Ω**, and **50Ω**.

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

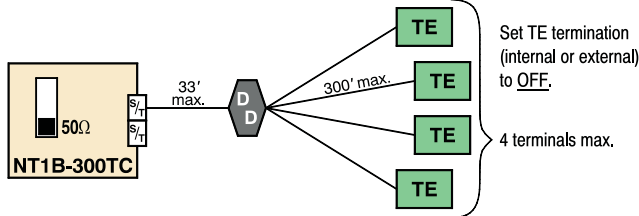
Fixed or adaptive timing selection is not required.

**The use of Category 3 or better unshielded twisted pair cable with T568A or T568B connector wiring is recommended. Distances shown are maximum for 24-gauge wiring cable, and may vary for other cable types.**

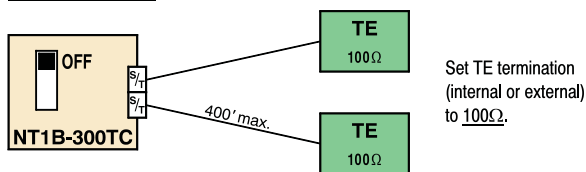
### Basic Multipoint (default)



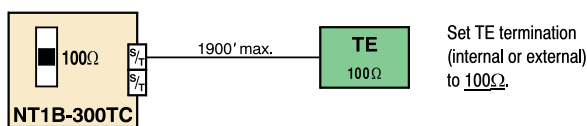
### Basic Multipoint using Distribution Device



### Short Multipoint



### Extended Point-to-Point



## Rack Mounting

Insert the NT1B-300TC into the appropriate slot in the rack. Any unit may be inserted or removed from an operational rack without affecting the performance of other NT1 units. Power is supplied through the rack.

## Powering Arrangements

The NT1 and terminal equipment may be powered through several different arrangements. In a stand-alone configuration, the optional Tone Commander Model 901034 Desktop Power Supply can be used to power both the NT1 and terminal equipment. Plug the power supply barrel connector into the **POWER** jack on the NT1. In a rack configuration, NT1 power is provided by the rack. Terminal power is supplied through the NT1 for either of the following configurations:

**PS2** - Direct power feed on **S/T** jack pin 7 (-) and pin 8 (+), 5 watts maximum per terminal (10 watts total).

**PS1** - Phantom power feed over the transmission pairs, **S/T** jack pins 3/6 (+) and pins 4/5 (-), 4 watts maximum (total for all terminals).

Alternately, a stand-alone NT1 may be powered from a back-room power source (e.g. Tone Commander Model PS-50), or an in-line power source (e.g. Tone Commander Model 901052), on pins 7 and 8 of the LINE connector.

**CAUTION:** Make sure only one power source is connected to the NT1; damage to equipment may result if multiple power sources are connected.

## Installation and Troubleshooting

Connect the network U interface from the telco to the **U LINE** jack on the NT1. Connect ISDN BRI terminals to either **S/T** jack using four pair unshielded twisted pair (UTP) cable, Category 3 or better, with T568A or T568B wiring.

After the U and S/T cords are connected, connect the power source to the NT1. Observe the indicator LEDs. The green **POWER** LED should turn on as soon as power is applied. The green **STATUS** LED should transition from off, to fast flash, slow flash, then on steady as the U and S/T interfaces initialize. The NT1 is fully activated when both LEDs are on steady. Be patient; in some instances, the network may take up to 3 minutes to synchronize with the NT1.

If two S/T terminals are connected to the NT1, the **STATUS** LED will light steady if either terminal has initialized through the NT1. To check each terminal, connect only one at a time and verify LED status.

Incorrect termination on the S/T (terminal) interface is a common cause of unreliable terminal operation. Symptoms include random data errors, intermittent **STATUS** indication, or complete terminal malfunction. Network line synchronization may not be affected. Refer to the wiring configuration diagrams in the Termination Switch section for the appropriate termination setting.

To fully operate with the network, the terminal equipment must also be correctly programmed with required operating parameters (such as SPID) that are provided by your telco. Consult your terminal equipment documentation for programming instructions.

## Status Indicators

The operating state of the NT1B-300TC is displayed by the two indicator lamps.

**POWER:** ON STEADY when power is applied to the NT1.

**STATUS:** OFF – No U interface (line error). Check connection to telco network.

**FAST FLASH** (8/sec.) – Attempting to link U interface with the telco network. A fast flash persisting longer than 15 seconds indicates that the NT1 is in a maintenance mode that was requested by the central office

**SLOW FLASH** (2/sec.) – U linked, S/T link not established with terminal. Check connection to terminal.

**ON STEADY** – Normal operation. U linked, and at least one S/T terminal linked.

## Resetting the NT1

If the U interface is disconnected or disrupted, a loss of linkage between the NT1 and the telco central office may occur. To force immediate network and terminal resynchronization, momentarily disconnect power to reset the NT1.

Removing power from the NT1 during normal operation will temporarily disrupt network communication and will disconnect any call in progress.

## Teo Product Warranty

For a period of one year from date of end user purchase, but not to exceed 16 months from date of manufacture, Teo Technologies, Inc. warrants its products to be free from defects in material and workmanship under conditions of normal use and service. Warranty details are available on our Web site, [www.teotech.com](http://www.teotech.com).

*Tone Commander Systems has changed its name to Teo Technologies.*

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