

NT1B-300TC-TSG Installation Instructions

The Tone Commander NT1B-300TC-TSG 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-TSG is intended for use in standalone applications with TSG-6 approved S/T interface ISDN terminals, such as the L3 Communication Systems STE, or the Tone Commander 6220T-TSG, where the NT1 is collocated within the SCIF area.

This model 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. The NT1B-300TC-TSG is a modified version of the Tone Commander NT1B-300TC, with special hardware modifications to support TSG security requirements.

Complete metallic disconnection of the U interface on the ISDN Line jack is provided when the NT1 is not powered, and the design ensures that unintentional microphonic audio signals are not detectable on external wiring.



Specifications

Operating Voltage	34 – 56.5 VDC
Power Consumption	0.95 W typical, from included 901034 Desktop Power Supply
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



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.
- Only power the NT1 from the included Tone Commander Desktop Power Supply (Model 901034).
- Do not mount the NT1B-300TC-TSG within 12" of a heat source.

FCC Requirements

The Tone Commander NT1B-300TC-TSG 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-TSG 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.

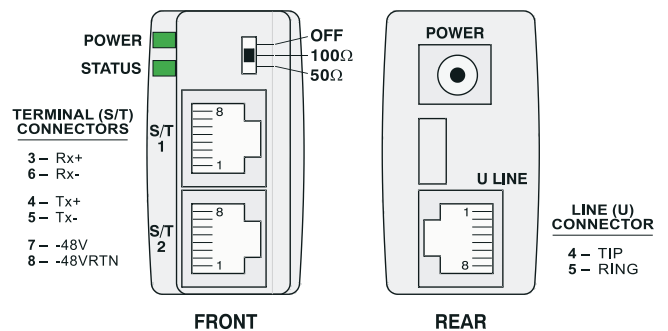
If your NT1B-300TC-TSG causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised 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.



Termination Switch

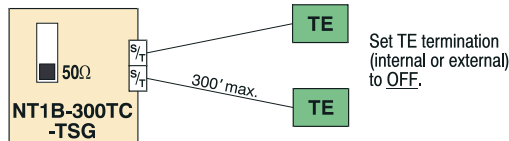
The termination switch is located on the front of the NT1. Available settings are **OFF**, **100Ω**, and **50Ω**.

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.

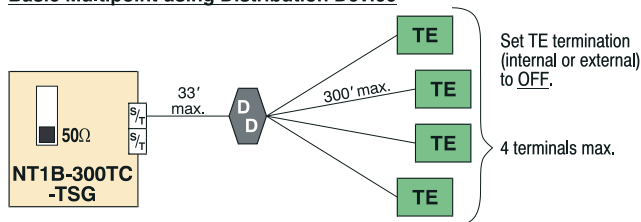
Fixed or adaptive timing selection is not required.

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.

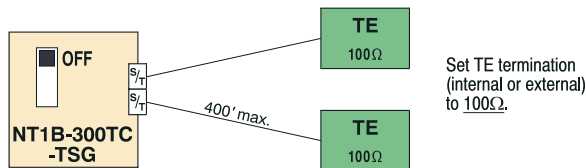
Basic Multipoint (default)



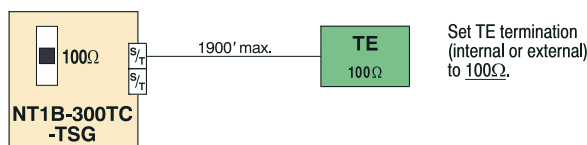
Basic Multipoint using Distribution Device



Short Multipoint



Extended Point-to-Point



Power Connections

The NT1B-300TC-TSG must be powered by the included Model 901034 Desktop Power Supply. Plug the power supply barrel connector into the **POWER** jack on the NT1.

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).

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.

Tone Commander Systems has changed its name to Teo Technologies.

13-280128 Rev. B
February 2012

TEO

11609 49th Place West – Mukilteo, WA 98275-4255
(800) 524-0024 (425) 349-1000 Fax: (425) 349-1010
www.teotech.com