Part 5: Programming

Basic Programming

- **Program 1001 - Trunk Circuit Type**
  Set the circuit type for each T1 trunk. The available types are:
  51 (Loop Start DTMF), 52 (Loop Start DP), 53 (Ground Start DTMF), 54 (Ground Start DP)
  57 (DID DTMF Wink Start), 58 (DID DP Wink Start), 59 (DID DTMF Immediate Start), 60 (DID DP Immediate Start)
  61 (E&M DTMF Wink Start), 62 (E&M DP Wink Start), 63 (E&M DTMF Immediate Start), 64 (E&M DP Immediate Start)
- **Program 9904 - T1/E1 Configuration**
  Use this option to set parameters for the T1 PCB. The default setting is in parenthesis after each option.
  – Clock Control (T1 PCB is the clock master)
    • If a T1 PCB is connected to a telco T1 circuit, it is usually set as clock slave (i.e., uses the telco clock source).
    • If a T1 PCB is connected to a private T1 circuit, set the clock source according to the network configuration.
  – Transmit Pulse Amplitude (0 [0dB], the T1 PCB is within 133' of smart jack or CSU)
  – Framer Type (ESF - Extended Super Frame)
  – Zero Suppression (Enabled - B8ZS)
  – Number of PCM Channels (0 - All channels active). The active channels are always the lower-numbered circuits (i.e., an entry of 8 means that channels 1-8 are active).
  – Loopback (0 - No loopback options enabled)

ANI/DNIS Programming

- **Program 1001 - Caller ID**
  Enter 3 to enable ANI-based Caller ID.
- **Program 1001 - ANI/DNIS**
  Specify the type of ANI/DNIS Caller ID provided by your T1 trunks. The options are:
  0 (None), 1 (ANI), 2 (*ANI*), 3 (*DNIS*), 4 (*ANI*DNIS)
- **Program 1001 - ANI Delimiter**
  For ANI/DNIS options 2-4 above, specify the ANI delimiter (0-9, # or *).
- **Program 1001 - Number of ANI Digits**
  For ANI/DNIS option 1, specify the number of digits in the ANI number.

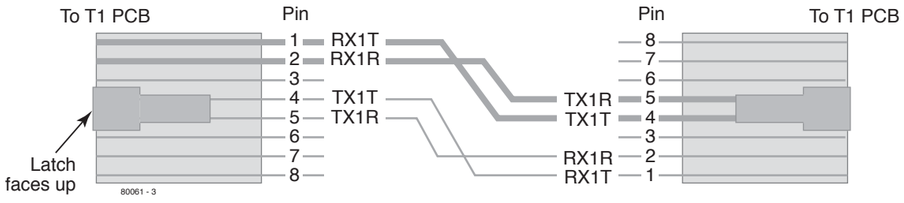
DID Programming (Basic)

- **Program 1401 - Number of DID Digits**
  Specify the number of DID Digits (1-8) expected from the telco.
- **Program 1402 - DID Translation Table**
  Set up the system's DID routing.
  Refer to your *Software Manual* for additional options for setting up DID Camp On and DID Overflow.

Tie Line Programming (Basic)

Refer to your *Software Manual* for additional options for setting up Tie Line trunk and operator access.

If you don't have a T1 Tester, you can alternately test Tie Line operation between two T1 PCBs in the same cabinet or facility using the cable shown below.



Connecting Two T1 PCBs Together without a Telco T1 Circuit
(For Tie Line Testing)

NEC

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80061INS01

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Installing the DS2000 T1 PCB (P/N 80061)

The DS2000 T1 PCB requires system software version 03.03.00 or higher and expanded memory CPU P/N 80025B.

Part 1: Description

The T1 Trunk PCB (P/N 80061) provides advanced digital trunking and gives the DS2000 a maximum of 24 trunks in a single PCB slot. The available T1 trunk types include:

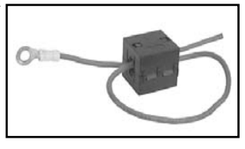
- Loop Start and Ground Start (DTMF and Dial Pulse)
- Direct Inward Dialing (DID) Wink Start and Immediate Start (DTMF and Dial Pulse)
- E&M Tie Line Wink Start and Immediate Start (DTMF and Dial Pulse)

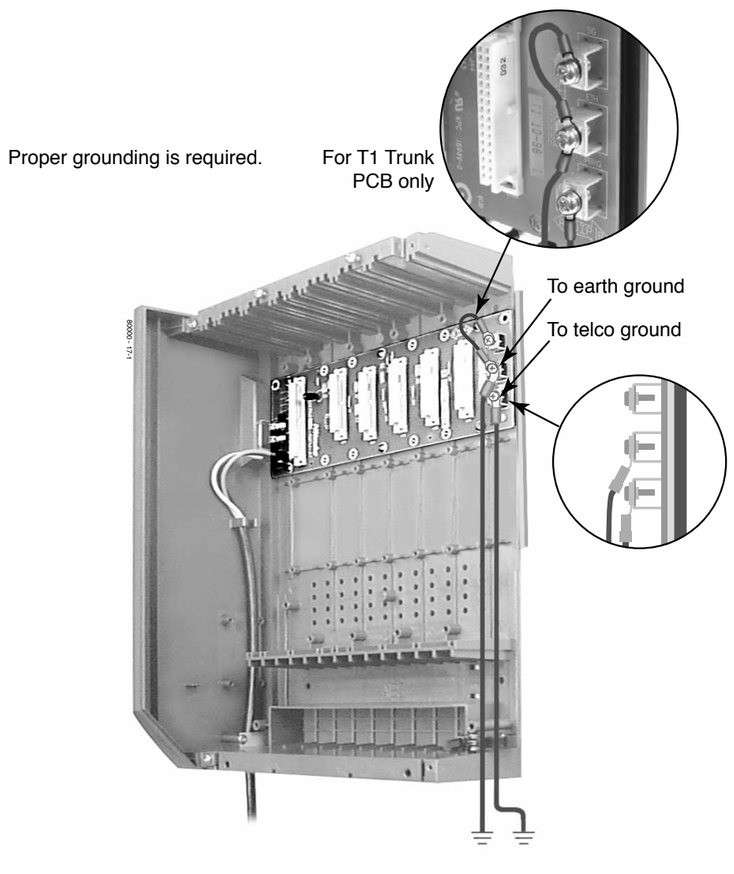
Notes

- Although the T1 PCB can connect directly to the telco's T1 smart jack, a separately-purchased Channel Service Unit (CSU) between the smart jack and the T1 PCB is recommended. Additionally, your telco may *require* a CSU.
- Normally, the T1 PCB connects to the telco's T1 smart jack or your CSU using a standard straight-through CAT 5 cable. However, always check the documentation that came with your CSU for cabling requirements.
- The T1 PCB installs in any universal slot but slot 1.
- A commercially available T1 Tester is recommended.

Part 2: Grounding the Cabinet

1. ***With system power turned off***, remove (unscrew) the lugs from the ground connections.
2. Cut enough 12 AWG ground wire to connect the **PBXG** lug to a known earth ground, connect the **ETH** lug to a known earth ground, and connect a jumper from the **SG** lug to the **ETH** lug.
3. Crimp ring terminals as required to the ground wires.
4. Run your ground wires through an *RFI Suppressor Assembly* as shown at right.
5. Following the illustration below, connect the **PBXG** and **ETH** lugs to a known earth ground. ***In addition, connect a jumper from the* SG *lug to the* ETH *lug***.



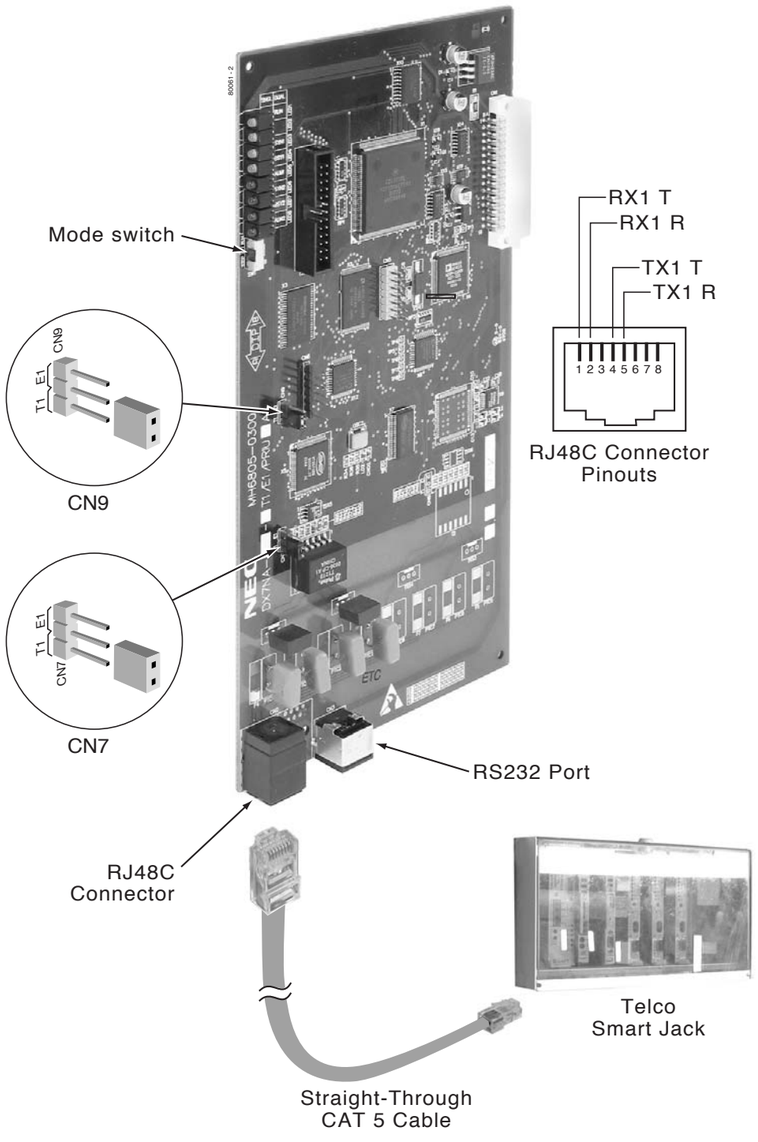


!! Important !!

Do not operate your system if the total load exceeds the power supply capacity.
Review *System Configuration* in your *DS2000 Hardware Manual* for more.

Part 3: Installing the T1 PCB

1. Following the illustration below, set jumpers **CN7** and **CN9** to the T1 position.
2. Set the mode switch to **RUN**.
3. Plug in the T1 Trunk PCB. (The PCB will Auto-ID.)
4. Power up your system.
   You can optionally plug in the T1 PCB "hot" (i.e., with power on).
5. Using a standard straight-through CAT 5 cable, connect the T1 PCB RJ48C connector to the telco's T1 Smart Jack or your Channel Service Unit.
   Although the T1 PCB can connect directly to the telco's T1 smart jack, a separately-purchased Channel Service Unit (CSU) between the smart jack and the T1 PCB is recommended. Additionally, your telco may require a CSU.



Part 4: T1 PCB LEDs

Port Activity (Yellow)
Off: All ports on PCB idle.
Flash: Port(s) busy. The faster the flash, the more ports are busy.

Sync (Master) (Green)
Off: T1 PCB is in the slave mode (i.e., getting the clock from the connected T1 circuit).
On: T1 PCB ***is*** providing the master clock to the telco and is in sync.
Flash: T1 PCB ***is*** providing the master clock but is not in sync.

Loop (Slave) (Green)
Off: T1 PCB is in the master mode (i.e., providing the clock to the connected T1 circuit).
On: T1 PCB ***is*** in sync with the external clock source (and ***is not*** providing the master clock).
Flash: T1 PCB ***is not*** in sync with the external clock source (and ***is not*** providing the master clock).

LOS (Loss of Signal) or Red Alarm (Red)
Off: Signal from the connected telco T1 Circuit ***is*** present.
On: Signal from the connected telco T1 circuit ***is not*** present.

An **LOS** alarm means there is a problem ***upstream*** from the T1 PCB.

BPV (Bi-Polar Violation) Alarm (Red)
This alarm indicates that consecutive "one" pulses have been received in the T1 signal in error.

Off: The telco's T1 signal ***does not contain*** Bi-Polar Violations.
On: The telco's T1 signal is in error. It ***contains*** Bi-Polar Violations.

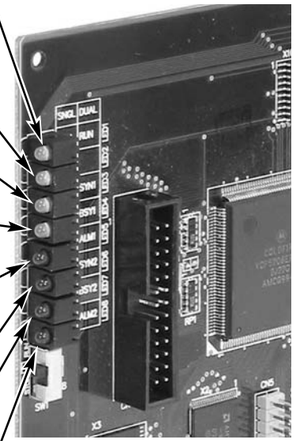
A **BPV** alarm means there is a problem ***upstream*** from the T1 PCB.

AIS (Alarm Indication Signal) or Blue Alarm (Red)
The telco sends an AIS alarm signal to the T1 PCB if the telco receives faulty data from another device on its network (i.e., upstream). It sends the AIS alarm signal to the PCB instead of the faulty data it received.

Off: AIS signal ***not received*** from telco.
On: AIS ***received*** from telco.

An **AIS** alarm means there is a problem ***upstream*** from the telco (and upstream from the T1 PCB).

PCB Running (Green)
Slow flash: T1 PCB running.
On: T1 PCB starting.



Yellow (RAI or Remote Alarm Indication) Alarm (Red)
The telco sends an RAI alarm to the T1 PCB if it detects a problem with the T1 signal received from the installation site. The problem can come from the T1 PCB, the CSU (if any), or be caused by faulty cabling.

Off: RAI signal ***not received*** from telco.
On: RAI ***received*** from telco.

An **RAI** alarm means there is a problem ***downstream*** from the telco (i.e., in the T1 PCB, CSU, or cabling).