Tone Commander
6220-TSG-DD
ISDN Telephone
Installation Instructions
Introduction

For operation instructions and user setup options, please refer to the 6220-TSG-DD User Guide, doc. #14-280193.

General Features

Tone Commander 6220-TSG-DD ISDN Telephones are easy to use multiline terminals with advanced automatic setup capabilities. These models have been TSG-6 certified by the National Telecommunications Security Working Group (NTSWG) to ensure on-hook security measures. In addition, the speakerphone circuitry has been removed and all automatic call origination and answering functions have been disabled. The phones do not provide voice encryption on an active call.

S/T and U interface models are available with 20 call appearances. An external NT1 Network Termination, such as the Tone Commander NT1B-300TC, is required for S/T models. The phones support Lucent 5ESS Custom ISDN and National ISDN on a variety of network platforms (see page 44).

Features of the 6220T-TSG-DD include:

- TSG-6 Certified for use in SCIF areas
- AutoSPID and Parameter Download
- Call Log
- Call Timer
- Last Number Redial
- Speed Dial
- Direct Station Select
- Call Directory
- Automatic Switch Type Detection
- Message Waiting Indication
- Flexible Ringing Options
- Ringing Control for Shared Lines
- Desktop or Wall Mounting
- Tilt Display

Models/Options

Two telephone models are available; they differ in the type of ISDN connection. Models are identified on the bar code/serial number label on the bottom of the phone.

The 6220T-TSG-DD model requires an external NT1 Network Termination, such as the Tone Commander NT1B-300TC. Two S/T telephones can share a single ISDN line in a multi-point arrangement.

The 6220U-TSG-DD model includes a built-in NT1, allowing direct connection to the ISDN line without an external NT1.

Options include the 6030X Button Expansion Module, which adds 30 multifunction keys, and the 6002TA Analog Port Terminal Adapter for interfacing with an analog telephone device, such as an STU-III telephone.

Both models are supplied with the TSG-DD1 Disconnect Device, which completely disconnects the ISDN line from the phone when power is not applied, and a -PWR1 Desktop Power Supply.

TSG-6 Certification Numbers

6220T-TSG-DD ................. TSG-5S0605-2TC
6220U-TSG-DD ................. TSG-5S0605-1TC
6220T-TSG-DD/6220U-TSG-DD On-hook Secure ISDN Telephone

TSG-DD1 Disconnect Device

-PWR1 Desktop Power Supply
1) **Display** – shows the call state, caller ID, dialed digits, network call control messages, and elapsed time during calls. When not on a call, the date, time of day, and softkey options are displayed. The viewing angle can be adjusted by tilting the display, then changing the display contrast.

2) **Softkeys** – select the function displayed above the key on the second line of the display.

3) **Call Key** – selects the Call Directory, Call Log, and Call Identification Display modes.

4) **Setup Key** – enters Setup Mode.

5) **Done Key** – exits the current menu, saves any changes made, and returns to the previous menu options.

6) **More** ➤ **Key** – cycles through the menu option groups in Setup Mode.

7) **Message Waiting Indicator** – a bright red indicator is lit when messages are waiting, controlled by the network.
8) **Multifunction Keys** – select call appearances, activate network features, or dial personal speed dial numbers. Red and green indicators on the keys show call appearance and feature status. The optional 6030X Button Expansion Module provides 30 additional multifunction keys.

<table>
<thead>
<tr>
<th>Call Appearance State</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idle</td>
<td>OFF</td>
</tr>
<tr>
<td>Call Ringing</td>
<td>Green – flashing</td>
</tr>
<tr>
<td>In Use by You</td>
<td>Green – on steady</td>
</tr>
<tr>
<td>On Hold by You</td>
<td>Green – winking</td>
</tr>
<tr>
<td>In Use at Another Terminal or an Activated Feature</td>
<td>Red – on steady</td>
</tr>
<tr>
<td>On Hold at Another Terminal</td>
<td>Red – winking</td>
</tr>
</tbody>
</table>

9) **Vol (Volume) Keys** – adjust the receiver volume when on a call; adjust the ringer volume when on-hook.

10) **Mute Key** – mutes the handset microphone. A red indicator on the key is lit when mute is active.

11) **Spkr (Speaker) Key** – disabled.

12) **Dial Pad** – dials telephone numbers, and sends DTMF tones to external equipment such as voice mail systems. The dial pad is also used for number entry during setup.

13) **Tran (Transfer) Key** – places the current call on hold, and selects an idle call appearance for transferring the call. A second press completes a transfer.

14) **Conf (Conference) Key** – adds other parties to a conference call.

15) **Drop Key** – removes the last party added to a conference call, or disconnects you from a call and returns new dial tone when not in conference mode.

16) **Hold Key** – places a call on hold.

17) **Handset Jack** – a jack on the side of the telephone connects to the handset.
**Installation**

**Ordering ISDN Service**

ISDN ordering forms may be supplied by your service provider. You can also print forms using the PC-based Configuration Wizard. Please refer to Appendix A in this manual.

Consult your service provider to plan your service installation. Allow adequate time after cutover for testing of all call appearances and programmed features. Ask your service provider for your SPID numbers, and confirm the installation date.

**S/T Version (6220T-TSG-DD) Installation**

S/T models require an external NT1, such as the Tone Commander NT1U-223TC or NT1B-300TC.

*Note:* The **NT1B-300TC-TSG** model must be used if the NT1 is located inside the SCIF area.

**Set the Termination Switches on the Telephone and NT1**

Set the termination switches on the bottom of the telephone and on the NT1 to match the termination impedance to your premises wiring configuration. Several typical wiring configurations are shown below, with the appropriate switch setting.

![Switch Settings Diagram](image)

Available switch settings are **OFF** and **100 ohms**.

We recommend the use of Category 3 or better unshielded twisted pair cable with T568A or T568B connector wiring. Distances shown are the maximums for 24-gauge cable, and may vary for other cable types.
Basic Multipoint:
(recommended for most applications)

Set NT1 termination to 50 ohms.

300’ max.

Short Multipoint:

Set NT1 termination to OFF.

400’ max.

Extended Point-to-Point:

Set NT1 termination to 100 ohms.
Set the Power Option Jumpers

Power for the telephone is provided by the included -PWR1 Desktop Power Supply using a PS2 power arrangement (power on pins 7 and 8 from the TSG-DD1 Disconnect Device).

- Make sure that both power jumpers are set to PS2.

Connect the Handset

- Plug the supplied handset into the jack on the left side of the telephone. The jack location is shown on page 7, item 17.
U Version (6220U-TSG-DD) Installation

This model includes a built-in NT1. Optional external ISDN S/T Terminal Equipment may share the telephone’s ISDN line by connecting to the S/T OUT jack on the telephone, which supplies PS1 and PS2 output power.

If you are not using external Terminal Equipment, no termination switch setting is required.

Connect the Handset

- Plug the supplied handset into the jack on the left side of the telephone. Refer to page 7, item 17.

Line and Power Connections

The TSG-DD1 disconnect device completely disconnects the ISDN line when power is not applied. It is installed in series with the phone’s line cord.

- Clip the ends off of the retainer tabs on the cord that connects the TSG-DD1 to the phone, to prevent the TSG-DD1 from being disconnected from the phone. *Clip the tabs as shown; do not completely remove the tabs!*

- Install the TSG-DD1 in series with the phone’s line cord as shown on the following page.

  For the S/T version (6220T-TSG-DD), connect the S/T IN jack on the telephone to the TO PHONE jack on the TSG-DD1, using an 8-conductor line cord.

  For the U version (6220U-TSG-DD), connect the U IN jack on the telephone to the TO PHONE jack on the TSG-DD1, using an 8-conductor line cord.

- Plug the supplied Tone Commander -PWR1 Desktop Power Supply into the 48 VDC jack on the TSG-DD1.
  
  *Do not connect the power supply directly to the phone.*
### Wall Jack Wiring

<table>
<thead>
<tr>
<th>Pin #</th>
<th>S/T Signal</th>
<th>U Signal</th>
<th>Wire Color</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Wire Color</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>T568 A</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>T568 B</strong> <em>(AT&amp;T 258A)</em></td>
</tr>
<tr>
<td>5</td>
<td>Tx-</td>
<td>Ring</td>
<td>WHT-BLU</td>
</tr>
<tr>
<td>4</td>
<td>Tx+</td>
<td>Tip</td>
<td>BLU</td>
</tr>
<tr>
<td>1</td>
<td>unused</td>
<td>unused</td>
<td>WHT-GRN</td>
</tr>
<tr>
<td>2</td>
<td>unused</td>
<td>unused</td>
<td>GRN</td>
</tr>
<tr>
<td>3</td>
<td>Rx+</td>
<td>unused</td>
<td>WHT-ORN</td>
</tr>
<tr>
<td>6</td>
<td>Rx-</td>
<td>unused</td>
<td>ORN</td>
</tr>
<tr>
<td>7</td>
<td>-48V</td>
<td>-48V</td>
<td>WHT-BRN</td>
</tr>
<tr>
<td>8</td>
<td>GRD</td>
<td>GRD</td>
<td>BRN</td>
</tr>
</tbody>
</table>

- **T568 B jacks are recommended**: they allow conventional station pair ordering when connecting to S/T punchdown blocks on NT1 racks.

Use Category 3 or better unshielded twisted pair cable for all premises wiring.
Wall Mounting

Robust handset retainer clips for wall mount use are available on request from Tone Commander.

Rotating the Base

The phone base must be rotated for wall mounting.

- Disconnect the line cord.
- Remove the retaining screw in the center of the base.
- Press the top of the tall edge of the base to disengage the snap tabs, and then lift the base from the telephone body. 
  
  *Do not touch the expansion connector. If using the 6030X or 6002TA, leave the expansion cable plugged into the phone.*

- Turn the base 180°, insert the tabs on the short edge of the base into the holes near the display end of the telephone, and then snap the tall side of the base onto the telephone.
- Replace the retaining screw (required for UL compliance).

Attaching to a wall mount jack

*Note: The TSG-DD1 Disconnect Device must be connected in series with the ISDN line (page 12).*

- **6220T-TSG-DD:** Plug the line cord from the TO PHONE jack on the TSG-DD1 into the S/T IN jack on the telephone. Route the cord under the guide tabs on the base. Connect an 8-conductor line cord between the TO LINE jack on the TSG-DD1 and the wall jack.
  
  Plug the supplied Tone Commander -PWR1 Desktop Power Supply into the 48 VDC jack on the TSG-DD1.

- **6220U-TSG-DD:** Plug the line cord from the TO PHONE jack on the TSG-DD1 into the U IN jack on the telephone. Route the cord under the guide tabs on the base. Connect an 8-conductor line cord between the TO LINE jack on the TSG-DD1 and the wall jack.
  
  Plug the supplied Tone Commander -PWR1 Desktop Power Supply into the 48 VDC jack on the TSG-DD1.

  *Do not connect the power supply directly to the phone.*

- Hang the telephone on the wall plate mounting studs. Press down firmly to lock in place.

  The phone can also be mounted directly to the wall with screws, and connected to a line jack or to the TSG-DD1 with the supplied line co
Configure the Set

ISDN configuration is performed automatically in many cases. The telephone set will detect the switch type, set the SPID number, and download other setup parameters when these features are available from the Telco central office.

You will be prompted for any required setup information that cannot be set automatically.

Initialization

A self-test is performed upon power up. Press any key to begin initialization with the network. Unattended initialization begins automatically after a short random time interval. This delay prevents multiple terminals at a site from initializing simultaneously after a power outage.

The display will show progress while establishing the communication layers. When all three communication layers are established, the TEI (Terminal Endpoint Identifier) and switch type will be shown for two seconds.

SPID Entry

The SPID number will be assigned automatically if the network supports AutoSPID. If there is more than one SPID available for your terminal, you will be prompted to select your primary telephone number.

If AutoSPID is not supported, you will be prompted to enter the phone’s primary telephone number, which is used by the phone to generate a SPID number. Enter the number with the dial pad, and then press the Done key. ←BKSP (backspace) deletes the previous digit.

National ISDN – enter your full 10-digit telephone number (including area code)

5ESS Custom ISDN – enter your 7-digit telephone number

Parameter Download (National ISDN only)

Parameter Download is a network feature that identifies Call Appearance and Feature Activator keys that are assigned to your line so that your phone may be configured automatically.

Note: Speed Dial, DSS keys, and other user preference settings are not configured by Parameter Download.

If Parameter Download is not supported, the following screen may appear momentarily, prompting you to manually configure the telephone at a later time (see page 18).

Automatic Button Detection (5ESS Custom ISDN only)

Press each multifunction key. The phone will discover the key’s network assignment. Keys that have no network assignment may be used for speed dialing – please refer to page 22.
Using Local Inspect to Verify Keys

Local Inspect allows you to identify the call appearance or feature assignment of each configured key, directory number bearer capabilities, and the feature indicator assignment for the Message Waiting Indicator. Please refer to page 27.

Label the Set

Label the multifunction keys with the telephone number, feature name, speed dial party name, or other appropriate designation. A perforated label sheet is provided with the telephone.

An ISDN Telephone Setup Wizard for Windows can be downloaded from www.teotech.com. This program prints key labels and service ordering forms. A Microsoft Word template for key labels only is also available. Please refer to Appendix A on page 37. Label text is on 1” centers, with 0.9” text space for each key.

To install the labels, remove the plastic overlay surrounding the multifunction keys. Peel off the protective strips from the adhesive in the grooves beneath the keys. Insert the label strips in the grooves, and then replace the overlay.
Installation Options

Options in this section are typically set at the time of installation. Many options can be set automatically by the AutoSPID, Automatic Switch Detect, and Parameter Download features, if supported on the network.

The following options can be changed from the Installation Options menu:

- SPID
- Keys and Indicators
- Parameter Download
- Installation Password
- Terminal Mode
- Reset to Default Settings

Installation Options Menu

You can enter the Installation Options menu when the phone is idle.

Press the Setup key.

Select INSTL.

When \(\Rightarrow\) appears in the top line of the display, you can press the More \(\Rightarrow\) key to see additional menu selections.

Notes: The PARAM and MODE options are only available with National ISDN. The POTS option is only available when the Model 6002TA Analog Port Terminal Adapter is installed.

A password may be set to prevent unauthorized entry into the Installation Options menu. When prompted for a password, enter your password with the dial pad. Press the Done key after entering the password.

To change or remove the password, please refer to page 25.
Tone Commander 6220-TSG-DD Installation Instructions

SPID Entry

A unique SPID (Service Profile IDentifier) is required for operation of the 6220-TSG-DD. If the network supports AutoSPID, a SPID that is assigned to your ISDN line can be automatically selected. If National ISDN generic SPID assignments are used by your service provider, your SPID will consist of your primary telephone number followed by “0101” (e.g., 42534910000101). Contact your network service provider for your telephone’s SPID.

From the Installation Options menu, select SPID.
(Setup → INSTL → SPID)

Using the dial pad, enter the SPID number supplied by your network service provider. If you need to make corrections, select BKSP (backspace) to delete the previous digit. CLEAR removes all digits, allowing you to start over.

When digits have been entered, press the Done key to return to the Installation Options menu or press the Setup key to exit Setup Mode.

Parameter Download
(National ISDN only)

ISDN Parameter Download is an automated feature for configuring Call Appearance and Feature Activator keys. If configured for auto download, a Parameter Download is executed when the phone initializes with a new SPID, or when requested by the network, due to a line configuration change.

Note: Speed Dial and DSS keys are not configured by Parameter Download.

Starting a Download

Select START to manually initiate a Parameter Download.

Enabling/Disabling Automatic Download

Select AUTO.

Select ENABLE or DISABLE.
Configuring Keys and Indicators

If the network does not support Parameter Download, you can assign call appearances, directory numbers and feature activators using this option.

From the Installation Options menu, select KEYS.

From the Installation Options menu, select KEYS. 

(Setup → INSTL → KEYS)

The status indicator for each key will indicate the current setting:

- **Green** – Call Appearance or DSS
- **Red** – Feature Activator
- **Off** – Unused or Speed Dial

On the phone or Button Expansion Module, press the multifunction key to be programmed. The selected key's indicator will alternately flash red and green.

Select CA/DN (Call Appearance /Directory Number), FA (Feature Activator), DSS (Direct Station Select), SPDIAL (Speed Dial), or UNUSED from the menu.

Programming procedures for each key type are described below.

Call Appearance / Directory Number Keys

These “line” keys are used to place and answer calls. If you have BASIC service or are connected to a Nortel Meridian 1 Option Series PBX, each **directory number** key is assigned a unique directory number. If you have CACH EKTS service, one directory number may be assigned to multiple **Call Appearance** keys; multiple calls can be handled on one directory number.

Enter the assigned directory number with the dial pad.

For the Nortel Meridian 1 Option Series PBX, enter the same number of digits used in the PBX dialing plan (2 to 7 digits).

* If you need to make corrections while entering numbers, select ←BKSP (backspace) to delete the previous digit.
* You can press the **Done** key to return to key selection.

12=CA/DN

<table>
<thead>
<tr>
<th>CA/DN</th>
<th>FA</th>
<th>DSS</th>
<th>SPDIAL</th>
</tr>
</thead>
</table>

12=CA/DN

| UNUSED |

12=CA/DN# 5559876

+BKSP ORIG RESERV
Automatic Call Appearance Selection

A call appearance is automatically selected when originating a new call, answering an incoming call, or conferencing or transferring a call. Three configuration options determine how call appearances are selected:

Call Preference (User option) – determines whether a new call is originated when you lift the handset. If set to NONE, you must manually press a Call Appearance key to originate a call.

Originating DN – only call appearances with this option set to YES will be automatically selected for call origination.

CA Reservation – within the group of originating DNs, call appearances set for NOT RESERVED are selected first, followed by OUTGOING ONLY, followed by OUT/PRIORITY call appearances (OUTGOING ONLY call appearances are selected first for conferencing and transferring). Within each subgroup, call appearances are selected in ascending order. INCOMING ONLY call appearances are never selected for an outgoing call. If an idle CA is not found, “SELECT AN IDLE LINE” is displayed.

To change the Originating DN assignment:

Select ORIG.

Select YES or NO from the Originating DN menu.

Press the Done key to return to the CA/DN menu.

To change call appearance reservation:

Select RESERV.

Select the call appearance reservation for this CA/DN.

OUT – Originate (outgoing calls) only.
IN – Terminate (incoming calls) only.
PRI – Outgoing or priority incoming calls only.
NOT – Not Reserved - default value for all keys.

Press the Done key to return to the CA/DN menu.
Feature Activator Keys

Feature Activator keys must be configured to match network feature activator codes that have been assigned to your line.

- Using the dial pad, enter the feature activator code assigned by your network service provider. 
  *If you need to make corrections while entering numbers, select ←BKSP (backspace) to delete the previous digit.*

```
10=NETWORK FA#59 (CALL)  ←BKSP CALL
```

- Select CALL if a call needs to be originated when the feature is activated. When enabled, (CALL) will appear in the top line of the display as shown above.
  
  With CALL enabled, the feature is always activated within the context of a call. Features that need to originate a call include Call Forward (on Siemens EWSD), ICM intercom (on Nortel DMS-100), and Call Pickup.

  If the phone is on-hook when a Feature Activator key with CALL enabled is pressed, a new call will be originated. If the phone is already off-hook when the feature key is pressed, the feature will be activated within the context of the current call.

  The CALL feature is not used with Lucent 5ESS Custom ISDN and Avaya Definity Custom ISDN.

- Press the **Done** key twice to return to the key selection menu or press the **Setup** key to exit Setup Mode.

DSS Keys

DSS keys are a special type of Call Appearance/Directory Number keys that are programmed with speed dial numbers to provide Direct Station Selection. When the call appearance is idle or busy, DSS keys act like Speed Dial keys, to call a station. When ringing, DSS keys act like CA/DN keys, to answer a call. The LED indicator on the key shows the status of the station’s call appearance (idle, ringing, hold, busy).

Shared call appearances for stations you wish to monitor must be configured on your ISDN line. You must program the DSS number to dial the monitored station on your phone (even if Parameter Download is provided).

- If the Call Appearance/Directory Number is not shown in the top line of the display, you can enter a reference directory number for the monitored station with the dial pad. This number is not required for operation.
  *If you need to make corrections while entering numbers, select ←BKSP (backspace) to delete the previous digit.*

```
08=DSS/DN# 5559876  ←BKSP DSS#
```

- Select DSS#.

```
1001  ←BKSP CLEAR PAUSE
```
Using the dial pad, enter the number you would dial to call the monitored station. CLEAR removes all digits, allowing you to start over.

Press the **Done** key three times to return to the key selection menu or press the **Setup** key to exit Setup Mode.

### Speed Dial Keys

Unused keys not assigned for call appearances or feature activators may be used as Speed Dial keys. Dialing strings can include network feature activator codes, to simplify the use of features such as Directed Call Pickup and Call Forwarding. Speed Dial keys may also be programmed from the User Options menu.

The currently programmed dial string, if any, will be shown in the display.

Enter digits (24 maximum) with the dial pad.

After entering the first digit, pause, or feature activator, the FA softkey will be replaced by CLEAR.

If you need to make corrections while entering numbers, select **<BKSP** (backspace) to delete the previous digit.

CLEAR removes all digits, allowing you to start over. A Speed Dial key will revert to 'Unused' if saved with a cleared dial string.

### “Smart” Pauses

Pauses are entered with the PAUSE softkey, and are shown in the display as a P character. The first pause in a dial string will wait until the call is answered; additional pauses delay dialing for one second. Enter multiple pauses to increase the delay time.
Feature Activator Codes
You can use Local Inspect (page 27) to view the codes assigned to Feature Activator keys on your telephone, or consult with your network service provider for the required codes.

Feature Activator (FA) numbers are entered with the FA softkey, and are shown in the display as an F character. **F must be the first character in the dialing string; the two numeric digits immediately following the F indicate the network feature activator code. The FA softkey is only available when no digits have been entered.**

After entering F, the FA softkey will be replaced by CLEAR. In the example below, the Speed Dial key sends feature code ‘57’ (Call Forward) followed by the directory number ‘555-1234’.

When digits have been entered, press the Done key twice to return to the key selection menu or press the Setup key to exit Setup Mode.

Message Waiting Indicator

The Message Waiting indicator must be configured to match the assigned network feature indicator code.

From the Installation Options menu, select MSG. (**Setup** → **INSTL** → **MSG**)

Using the dial pad, enter the feature indicator code assigned by your network service provider. In most cases, this is set to 63. **If you need to make corrections while entering numbers, select ⬅ BKSP (backspace) to delete the previous digit.**

Press the Done key twice to return to the Installation Options menu or press the Setup key to exit Setup Mode.
Terminal Mode (National ISDN only) ______________________________

If the network does not support Parameter Download, you must manually select the terminal mode.

From the Installation Options menu, select MODE.  
(Setup → INSTL → More → MODE)

Select the terminal mode based upon the type of service that was ordered from your network service provider.

- **CACH** — CACH EKTS (default).
- **BASIC** — Voice or Basic EKTS.
- **MERID1** — Nortel Meridian 1 Option Series PBX.

In most cases, your phone service should be configured for CACH EKTS.

Press the **Done** key to return to the Installation Options menu or press the **Setup** key to exit Setup Mode.
Installation Password

You can set a password to prohibit unauthorized entry into the Installation Options menu. If a password is currently set, the display will prompt you to enter your password prior to making changes.

From the Installation Options menu, select PASSWD. (Setup → INSTL → More → PASSWD)

Select SET.

Enter a new 4 to 11 digit password with the dial pad. If you need to change a password digit after entering it, select ←BKSP (backspace) to delete the previous digit.

Press the Done key.

Repeat the password when prompted to verify the new entry.

Press the Done key.

“PASSWORD SET” will be displayed to confirm the new password.

Record your password for future reference.

Press the Done key to return to the Installation Options menu or press the Setup key to exit Setup Mode.

Removing the Password

Select CLEAR.

“PASSWORD CLEARED” will be displayed to confirm that the password has been removed.

Press the Done key to return to Installation Options menu or press the Setup key to exit Setup Mode.
What to do if you lose your password

Contact your system administrator or call Teo technical support at (800) 524-0024 in the event you misplace your password. You will need to report the serial number of your telephone to receive a new Installation password.

You can use the RESET option to remove all passwords. You must have access to the Installation Options menu, which may be password protected, to use this feature. This option will clear all programmed numbers and settings in your phone.

Reset to Factory Default Settings

Reset returns all settings to the factory defaults, and clears all speed dial numbers, logs, and passwords. This option is useful when moving the telephone to a new user or location.

Default values are listed in the table on page 45.

From the Installation Options menu, select RESET.

(Setup → INSTL → More → RESET)

<table>
<thead>
<tr>
<th>RESET ALL SETUP OPTIONS?</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

Select YES to confirm the reset operation.

<table>
<thead>
<tr>
<th>ALL SETTINGS CLEARED PHONE WILL BE RESTARTED</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>INITIALIZING...</th>
</tr>
</thead>
</table>

Press the Done key to return to Installation Options menu or press the Setup key to exit Setup Mode. The phone will restart.
Administration Options

The following test and diagnostic options are available from the Administration Options menu:

- Local Inspect
- Hardware Version
- Software Version
- Serial Number
- Test Functions
- Diagnostics
- Terminal Restart
- Error Log

Administration Options Menu

You can enter from the Administration Options menu when the phone is idle or during an active call.

Press the Setup key.

Select ADMIN.

When → appears in the top line of the display, you can press the More key to see additional menu selections.

Note: The POTS option is only available when the Model 6002TA Analog Port Terminal Adapter is installed.

Local Inspect

Local Inspect allows you to identify the call appearance/directory number or feature assignment of each configured key, directory numbers, and the feature indicator assignment for the Message Waiting Indicator. You can use Local Inspect after a Parameter Download to verify call appearance and feature assignments.

From the Administration Options menu, select INSPECT.

(Setup → ADMIN → INSPECT)

Select KEYS, DNs (Directory Numbers), or MESSAGE (Message Waiting Indicator). Each option is described below.
Keys

Select KEYS.

On the phone or Button Expansion Module, press the key that you want to inspect. The key’s indicator will alternately flash red and green. Displays will vary depending upon the key type, as shown below.

When you are finished inspecting keys, press the Done key to return to the Local Inspect menu or press the Setup key to exit Setup Mode.

Call Appearance/Directory Number Key

The display will show for the selected key:
- Key number, directory number

01 = CA/DN# 999-555-1012

Press the More key to view:
- Originate usage
- Call appearance reservation

ORIGINATING DN? YES
RESERVED=OUT/PRIORITY IN

DSS Key

The display will show for the selected key:
- Key number, directory number
- DSS number

05 = DSS/DN# 999-555-4251

Press the More key to view:
- Originate usage
- Call appearance reservation

ORIGINATING DN? NO
RESERVED=NOT RESERVED
Feature Activator, Conference, Transfer, or Drop Key
The display will show the key number, network feature activator number, and service description for the selected key.

| 07=NETWORK FA#56 (CALL) Call Pickup |

(CALL) is displayed if the feature has been locally programmed to originate a call when activated (see page 21).

Speed Dial Key
The display will show the key number and programmed autodial string for the selected key.

| 08=SPEED DIAL 9995552341 |

Directory Numbers
Select DNs to view the list of directory numbers on this phone. The first line on the display will show the directory number, and ‘ORIG’ if this is an originating DN.

| DN#999-555-8952 ORIG |

Press the More key to view additional directory numbers.

Press the Done key to return to the Local Inspect menu or press the Setup key to exit Setup Mode.

Message Waiting Indicator
Select MESSAGE. The Message Waiting indicator will light. The display will show the feature indicator number and the service description, if available. If the service description on line 2 is blank after a National ISDN Parameter Download, this feature has not been provisioned on your line.

| MESSAGE=NETWORK FI#63 Message Waiting |

Press the Done key to return to the Local Inspect menu or press the Setup key to exit Setup Mode.
Version

Use this option to view the telephone’s hardware version, software version, and serial number.

From the Administration Options menu, select VERS. (Setup → ADMIN → VERS)

<table>
<thead>
<tr>
<th>VERSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>SERIAL</td>
</tr>
<tr>
<td>H/W</td>
</tr>
<tr>
<td>S/W</td>
</tr>
<tr>
<td>6030X</td>
</tr>
</tbody>
</table>

Serial Number

Select SERIAL.

| SERIAL#: 90108307001 |

Hardware Version

Select H/W.

| MODEL: 6220T TSG                  |
| TDP: 284002B PCB: 288401A        |

Software Version

Select S/W.

| S/W VERSION: 01.07.06 |

Optional Equipment Version

Select 6030X, or 6002TA to display the software version of an installed option.

| MODEL: 6030X BUTTON EXPAN        |
| VERSION: 01.01.04                |

Press the Done key to return to the Administration Options menu or press the Setup key to exit Setup Mode.
Test

Select this option to test the LCD display, LED indicators, and keys.

From the Administration Options menu, select TEST.  
(Setup → ADMIN → TEST)

DISPLAY and LED Indicators

Select DISPLAY.

LCD Display

Select LCD.  
All pixels (picture elements, or dots) on the display should turn dark.

Press any key to return the display to normal operation.

LED Indicators

Select RED to turn on all red indicators, and turn all others off.

Select GREEN to turn on all green indicators, and turn all others off.

Select OFF to turn off all indicators, or wait 5 seconds for automatic off.

Press the Done key to return to the Terminal Test menu or press the Setup key to exit Setup Mode.
Keys

Select KEYS.

Press each key on the telephone (not on the Button Expansion Module), including the dial pad keys, one at a time.

A letter should appear in the display for each pressed key.

If all keys are operational, the following display will be shown. Press any key to return to the Terminal Test menu.

If any key fails, or to exit before testing all keys, go off-hook with the handset or unplug the phone.

6030X Button Expansion Module

This option tests the keys and LED indicators on a 6030X Button Expansion Module. It is only available if a 6030X is connected to the phone.

Select 6030X.

Press each key on the 6030X, one at a time.

The key's LED indicator should flash alternately red and green, and a number should appear in the display for each pressed key.

After all keys have been tested, press any key to exit the test.

You can also exit the test at any time by pressing the Done key to return to the Terminal Test menu or press the Setup key to exit Setup Mode.
Diagnostic Display

From the Administration Options menu, select.
(Setup → ADMIN → DIAG)
The display will show the states of layers 1, 2, and 3, the Terminal Endpoint Identifier, and the network switch type.

```
L1:OK   L2:OK   TEI=64
L3:OK   SWITCH=5ESS NI-X
```

Press the Done key to return to the Administration Options menu or press the Setup key to exit Setup Mode.

Restart

Select Restart to reset the phone. If you are on an active call you will be disconnected. The call log will be cleared. No configuration parameters will be altered.

From the Administration Options menu, select RESTART.
(Setup → ADMIN → More → RESTART)

```
RESTART/CLEAR CALL LOG?
YES    NO
```

Select YES to restart the phone.

Viewing the Error and Download Logs

From the Administration Options menu, select LOG.
(Setup → ADMIN → More → LOG)

```
VIEW LOG ENTRIES
ERROR    PARAM    CLEAR
```

Select ERROR to view the error log or PARAM (National ISDN only) to view the Parameter Download log.
The most recent log entry will be shown.

Press the More key to view previous entries.
Press the Done key to return to the View Log Entries menu or press the Setup key to exit Setup Mode.
Clearing Logs

Select CLEAR to remove all entries from the error log.

Press the Done key to return to the Administration Options menu or press the Setup key to exit Setup Mode. The Parameter Download log is re-written each time that a new download is performed.
Troubleshooting

Inoperable Telephone Recovery Procedures

If a telephone is unable to operate normally or remains locked-up in a particular state:

1. Press the Setup key; the Setup Menu should be displayed. Select ADMIN, then press the More key, select RESTART, then YES. This will cause the telephone to attempt re-initialization with the network. If full initialization is achieved, proceed to “Verify operation…”.

2. If the phone display is active, but the Setup Menu does not function, disconnect and reconnect the line cord or local power supply to cycle power on the phone. If full initialization is achieved, proceed to “Verify operation…”.

3. If the phone display is blank and there are no lit LEDs:
   6220T-TSG-DD – verify connections to the TSG-DD1 Disconnect Device. Make sure that the telephone is connected to the TSG-DD1 connector labeled “TO PHONE”. Verify connection from the TSG-DD1 to an external NT1 and verify power connection to the TSG-DD1. If the phone display remains blank, temporarily plug the cable from the NT1 directly into the telephone (NT1s typically supply power, although this power source is not used when the TSG-DD1 is connected). If the display remains blank, replace the phone. If the phone works without the TSG-DD1 device, verify local power and cable connections to the TSG-DD1 or replace the TSG-DD1.
   6220U-TSG-DD – verify connections to the TSG-DD1 Disconnect Device. Make sure that the telephone is connected to the TSG-DD1 connector labeled TO PHONE. Verify power connection to the TSG-DD1. If the phone display remains blank, temporarily plug the power cable directly into the telephone’s POWER jack. If power is connected to the phone, but the display remains blank, replace the phone.
   Note: The TSG-DD1 Disconnect Device must be installed for TSG-6 compliance.

4. If the phone appears operational but full initialization is not achieved, determine which protocol layer is not initializing by observing the startup diagnostic display.

Layer 1 (L1) does not initialize:
   • For a 6220T-TSG-DD, locate the external NT1 device for the phone; verify connection between the U (LINE) connector on the NT1 and the Telco ISDN line. For a 6220U-TSG-DD, verify connection between the DD1’s TO LINE jack and the Telco ISDN line.
   • If the external NT1 indicates Terminal Error, verify connection and correct polarity of all wire pairs between the phone and the S/T (TERMINAL) connector on the NT1. On a multipoint line, verify correct connections and polarity to the partner phone as well. Verify termination settings on both phones and the NT1 (see page 9).
   • For a standalone or single rack-mount NT1, press the NT1 reset button or cycle NT1 power by temporarily disconnecting its stand-alone power supply or removing the NT1 from the rack.
   • The network may take up to 3 minutes to synchronize L1 and L2 with the phone. If there is an external NT1, verify correct line and terminal status indications on the NT1. Follow additional troubleshooting procedures in your NT1 documentation.
   • When Layer 1 is fully initialized, the display will indicate L1:OK

Layer 2 (L2) does not initialize within a few minutes:
   • Repeat Step 1 (restart phone). If problem persists, contact your service provider.
   • When Layer 2 is fully initialized, the display will indicate L2:OK and show the TEI number assigned by the network.

Layer 3 (L3) does not initialize within one minute after L2:OK:
   • Verify correct SPID number is programmed and that it is not already in use (on a multipoint line).
Verify that your service provider has not changed SPID formats or area codes on your ISDN line. (National ISDN SPID formats include the area code.)

When Layer 3 is fully initialized, the display will temporarily show L3:OK and indicate the network switch type before returning to the normal idle display.

Verify operation of the phone after full initialization:

1. Go off-hook on an idle line. The selected key should light green and you should hear dial tone.
2. Dial a valid directory number for a test call. Verify that the call is successfully completed.

### Telephone Configuration Troubleshooting

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Check</th>
<th>Fix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inbound calls to a specific line cause the LED to flash, but there is no audible ringing.</td>
<td>“RINGER OFF (VOL^ = ON)” is displayed when idle.</td>
<td>Press the Vol key while not on a call to enable the ringer.</td>
</tr>
<tr>
<td></td>
<td><strong>Setup → USER → RING → CONTROL</strong></td>
<td>&gt; ALWAYS</td>
</tr>
<tr>
<td></td>
<td>&gt; Select line key</td>
<td></td>
</tr>
<tr>
<td>A specific line is selected that is supposed to have dial tone, but there isn’t any.</td>
<td><strong>Setup → INSTL → KEYS</strong></td>
<td>&gt; CA/DN</td>
</tr>
<tr>
<td></td>
<td>&gt; Select line key</td>
<td></td>
</tr>
<tr>
<td>All inbound calls appear on CA1. Outbound calls cannot be made.</td>
<td><strong>Setup → INSTL → More → MODE</strong></td>
<td>Select CACH, BASIC, or MERID1 as required by service provisioning.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ringing calls are not answered when going off-hook (National ISDN only).</td>
<td><strong>Setup → USER → More → PREF</strong></td>
<td>&gt; RING</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“SELECT AN IDLE LINE” is displayed when going off-hook.</td>
<td>Originating DN and Call Appearance Reservation settings.</td>
<td>See page 20.</td>
</tr>
</tbody>
</table>
Appendix A
Ordering ISDN Service

Setup Wizard

The ISDN Telephone Setup Wizard simplifies ordering ISDN service. This Windows program prompts you for all required information, and prints the service order forms and key designation labels. You can download the Setup Wizard from Teo's Web site at www.teotech.com.

Ordering Manually

Your service provider may have their own process and forms for ordering ISDN service. Contact them for instructions before you create your order.

Key Assignments

The 6220T-TSG-DD and 6220U-TSG-DD are compatible with all NIUF terminal packages and many other standard line configurations. If Parameter Downloading is available, the phone will automatically assign Feature Activator keys and codes to match almost any line configuration. Call appearances are always assigned in ascending order, starting with button #1. Feature activators are assigned in descending order, starting with button #20 on the phone, or the last button (#50) on the 6030X.

Use the table on the following page as a guide when assigning custom feature activators and indicators.

Where to Go for Help

If you need assistance ordering service, call Teo Customer Technical Support at (800) 524-0024.
### Recommended Button Assignments

<table>
<thead>
<tr>
<th>Network Button #</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Call Appearance (PDN)</td>
</tr>
<tr>
<td>2</td>
<td>Call Appearances</td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>58</td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>Additional Feature Keys</td>
</tr>
<tr>
<td>60</td>
<td>Conference *</td>
</tr>
<tr>
<td>61</td>
<td>Transfer *</td>
</tr>
<tr>
<td>62</td>
<td>Drop *</td>
</tr>
<tr>
<td>63</td>
<td>Message Waiting Indicator</td>
</tr>
</tbody>
</table>

* National ISDN only; DO NOT assign these keys for 5ESS Custom ISDN.

With Parameter Downloading, the phone will automatically remap feature activators (other than Conference, Transfer, Drop, and Message Waiting) in descending order, starting with key 20. For example, network feature key #59 will be assigned to key 20, #58 to key 19, etc.
Appendix B
Setup Menu Tree

INSTL  (Installation Options)

SPID  (Service Profile Identifier) ........................................ page 18

PARAM  (Parameter Download – National ISDN only) ....... page 18
START  (Start Download)
AUTO  (Automatic Download Enable/Disable)

KEYS ................................................................. page 19
CA/DN  (Call Appearance/Directory Number)
  ORIG  (Originating DN)
  RESERV  (Call Appearance Reservation)
    OUT  (Outgoing Only)
    IN  (Incoming Only)
    PRI  (Outgoing/Priority Incoming)
    NOT  (Not Reserved)
FA  (Feature Activator)
CALL  (Originate a Call – National ISDN only)
DSS  (Direct Station Select)
  DSS#  (Enter/Edit DSS Dialing String)
SPDIAL  (Speed Dial)
  PAUSE  (Dialing Pause)
  FA  (Feature Activator)
UNUSED

MSG  (Message Waiting Indicator) ...................................... page 23

MODE  (Terminal Mode – National ISDN only) ............... page 24
  CACH  (Call Appearance Call Handling EKTS)
  BASIC  (Basic EKTS – National ISDN only)
  MERID1  (Meridian 1 Option Series PBX)

PASSWD  (Installation Password) ........................................ page 25
  SET
  CLEAR

RESET  (Reset to Default Settings) ................................. page 26
ADMIN (Administration Options)

INSPECT (Local Inspect) ........................................ page 27
KEYS (Call Appearance and Feature Activator Keys)
DNs (Directory Numbers)
MESSAGE (Message Waiting Indicator)

VERS (Version) ............................................................. page 30
SERIAL (Serial Number)
H/W (Hardware Versions)
S/W (Software Version)
[option model] (Optional Equipment Version, if installed)

TEST ........................................................................... page 31
DISPLY (Display and Indicators)
  LCD (Test LCD Display)
  RED (Test Red Indicators)
  GREEN (Test Green Indicators)
  OFF (Turn All Indicators Off)
KEYS (Test Phone Keys)
  6030X (Test 6030X Keys and Indicators, if installed)

DIAG (Diagnostic Display) ........................................ page 33

RESTART (Restart/Clear Call Log) .......................... page 33

LOG (Error & Parameter Download Logs) ............... page 33
  ERROR (Error Log)
  PARAM (Parameter Download Log – Nat. ISDN only)
  CLEAR (Clear Error Log)
USER  (User Options)

Options in this menu are described in the 6220-TSG-DD User Guide.

CLOCK  (Set Time and Date)

KEYS
CA/DN Keys:
DSS  (Direct Station Select)
   DSS#  (Enter/Edit DSS Dialing String)
   CLEAR  (Remove Dialing String)
   PAUSE  (Dialing Pause)
CA/DN  (No DSS)

Feature Activator Keys:
CALL  (Originate a Call – National ISDN only)

Speed Dial Keys:
PAUSE  (Dialing Pause)
FA  (Feature Activator)
CLEAR  (Remove Dialing String)

Unused Keys

DIR  (Call Directory)

RING  (Personal Ringing)

TONE  (Ringing Tone)
   ALL  (All Keys use the same Ringing Tone)
   OFFHK  (Off-Hook Ringing)
   NORMAL
   SINGLE  (Single Burst)

CONTROL  (Ringing Control)
   ALWAYS  (Ring Immediately)
   NEVER  (Never Ring)
   WAIT2  (Wait 2 Ring Cycles / 12 seconds)
   WAIT3  (Wait 3 Ring Cycles / 18 seconds)
   WAIT4  (Wait 4 Ring Cycles / 24 seconds)
   WAIT5  (Wait 5 Ring Cycles / 30 seconds)
   WAIT6  (Wait 6 Ring Cycles / 36 seconds)
   WAIT7  (Wait 7 Ring Cycles / 42 seconds)

PREF  (Off-hook Call Preference – National ISDN only)
   RING  (Answer Ringing Call)
   IDLE  (Select Idle Call Appearance)
   NONE  (Manual Call Appearance Selection)

VOICE  (Voice Mode)

VOLUME
   RCV+/  (Handset Receive Volume Up/Down)

DISPLY  (Display Contrast)
   +  (Increase Contrast)
   -  (Decrease Contrast)

PASSWD  (Call Log Password)
   SET, CLEAR
POTS (6002TA Analog POTS Port Options)

Options in this menu are described in the 6002TA Analog Port Terminal Adapter User Manual.

RING (Ringing Control)
- ALWAYS (Ring Immediately)
- NEVER (Never Ring)
- WAIT2 (Wait 2 Ring Cycles / 12 seconds)
- WAIT3 (Wait 3 Ring Cycles / 18 seconds)
- WAIT4 (Wait 4 Ring Cycles / 24 seconds)
- WAIT5 (Wait 5 Ring Cycles / 30 seconds)
- WAIT6 (Wait 6 Ring Cycles / 36 seconds)
- WAIT7 (Wait 7 Ring Cycles / 42 seconds)

PRIV (POTS Line Privacy)
- ON
- OFF

CALLWT (Call Waiting Alert)
- CALLID (Caller ID Display and Tone)
- TONE (Call Waiting Tone only)
- DISABLE

ORIG (POTS Originating Call Appearance)
Appendix C
Warranty and Service

Teo Product Warranty

For a period of one year from date of dealer purchase, but not to exceed 16 months from date of manufacture, Teo Technologies, Inc. (Teo) warrants its products to be free from defects in material and workmanship under conditions of normal use and service. Teo 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 Teo's factory. Authorization must be obtained from Teo prior to returning a product for repair. Freight must be prepaid for all units returned to Teo. Units repaired under warranty will be shipped UPS Ground (or equivalent), freight prepaid by Teo.

Products that are older than the warranty period, but less than 7 years old, or still manufactured by Teo 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 Teo; Teo 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; Teo, to the extent permitted by law, hereby disclaims all such other warranties.
Appendix D
Specifications

Contents of Shipping Container
  Telephone
  Handset
  Modular handset coil-cord
  Modular line cord
  Label Sheet
  Label Overlay
  Documentation and Training CD

Standards Compliance
  National ISDN, Lucent 5ESS Custom ISDN
  FCC Part 15
  FCC Part 68
  Hearing Aid Compatible
  FCC Part 68 Volume Control Requirements
  UL, cUL Listed
  TSG-6 Certified, Certification numbers: 6220T-TSG-DD ........ TSG-5S0605-2TC
  6220U-TSG-DD ........ TSG-5S0605-1TC

Network Switch Compatibility
  Lucent 5ESS – National and Custom ISDN
  Avaya Definity, Multivantage, and Communication Manager PBX – National and Custom ISDN
  Nortel DMS-100 – National ISDN
  Nortel Meridian 1 Option Series PBX – National ISDN
  Siemens EWSD – National ISDN
  Lucent/AG Communication Systems GTD-5 – National ISDN

Power Requirements
  24 to 56.5 VDC @ 2 W max – use only the included -PWR1 Power Supply

Physical Dimensions
  8.25” W x 8.5” D x 4.75” H, including handset

Weight
  2.5 lbs.

Environmental
  Operating Temperature: 32° to 104° F (0° to 40° C)
  Storage Temperature: 32° to 122° F (0° to 50° C)
  Humidity: 5% to 95% non-condensing
## Factory Default Settings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default Value (National ISDN)</th>
<th>Default Value (5ESS Custom ISDN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Param. Download</td>
<td>Enabled</td>
<td>N/A</td>
</tr>
<tr>
<td>CA Reservation</td>
<td>Not Reserved</td>
<td>Not Reserved</td>
</tr>
<tr>
<td>Call Log Password</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Call Preference</td>
<td>Ring</td>
<td>(Network Controlled) *</td>
</tr>
<tr>
<td>Clock</td>
<td>Time of the last error log entry</td>
<td>Time of the last error log entry</td>
</tr>
<tr>
<td>Conference</td>
<td>FA/FI=60</td>
<td>N/A</td>
</tr>
<tr>
<td>Display Contrast</td>
<td>Level 5</td>
<td>Level 5</td>
</tr>
<tr>
<td>Drop</td>
<td>FA/FI=62</td>
<td>N/A</td>
</tr>
<tr>
<td>Handset Volume</td>
<td>Level 3</td>
<td>Level 3</td>
</tr>
<tr>
<td>Install Menu Password</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Message Waiting</td>
<td>FI=63</td>
<td>FI=63</td>
</tr>
<tr>
<td>Multifunction Keys 1-3</td>
<td>CA/DN</td>
<td>CA/DN</td>
</tr>
<tr>
<td>Multifunction Keys 4+</td>
<td>Unused</td>
<td>Unused</td>
</tr>
<tr>
<td>Off-hook Ring</td>
<td>Single</td>
<td>Single</td>
</tr>
<tr>
<td>Originating DN</td>
<td>Yes, PDN</td>
<td>Yes, Keys 1-3</td>
</tr>
<tr>
<td>Ringer Volume</td>
<td>Level 3</td>
<td>Level 3</td>
</tr>
<tr>
<td>Ringing Control</td>
<td>Always</td>
<td>Always</td>
</tr>
<tr>
<td>Ringing Tone</td>
<td>#5 (of 8)</td>
<td>#5 (of 8)</td>
</tr>
<tr>
<td>Terminal Mode</td>
<td>CACH</td>
<td>N/A</td>
</tr>
<tr>
<td>Transfer</td>
<td>FA/FI=61</td>
<td>N/A</td>
</tr>
</tbody>
</table>

* fixed setting for 5ESS Custom ISDN
Important Safety Instructions

1. Never install telephone wiring during a lightning storm.
2. Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
3. Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
4. Use caution when installing or modifying telephone lines.

When using your telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

5. Read and understand all instructions.
6. Follow all warnings and instructions marked on the product.
7. Unplug the line cord before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.
8. Do not use this product near water, for example, near a bathtub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool.
9. Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
10. This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your dealer or local power company.
11. Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by persons walking on it.
12. Do not overload wall outlets and extension cords as this can result in the risk of fire or electric shock.
13. Never push objects of any kind into this product through any openings as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on this product.
14. To reduce the risk of electric shock, do not disassemble this product, but take it to a qualified serviceman when some service or repair work is required. Opening or removing covers may expose you to dangerous voltages or other risks. Incorrect reassembly can cause electric shock when the appliance is subsequently used.
15. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
   A. When the power supply cord or plug is damaged or frayed.
   B. If liquid has been spilled into the product.
   C. If the product has been exposed to rain or water.
   D. If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, because improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
   E. If the product has been dropped or the case has been damaged.
   F. If the product exhibits a distinct change in performance.

16. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
17. Do not use the telephone to report a gas leak in the vicinity of the leak.

SAVE THESE INSTRUCTIONS
FCC Requirements

The Tone Commander Models 6220T-TSG-DD and 6220U-TSG-DD 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: RJ49C.

If your 6220T-TSG-DD or 6220U-TSG-DD 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.

The 6220T-TSG-DD and 6220U-TSG-DD are hearing-aid compatible (HAC) per Section 68.316, FCC Rules and Regulations.

If you have trouble with the 6220T-TSG-DD or 6220U-TSG-DD, please refer to the Troubleshooting section in this manual, or contact us at the address listed on the back 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.

NOTE: This equipment has been tested and found to comply with the limits for a Class A 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 commercial 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. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.