

Strata[®] ***CTX***
Digital Business Telephone Systems

Strata CTX28
R2.22

Installation and Maintenance Manual

Strata CTX28

General End User Information

The Strata CTX28 Digital Business Telephone System is registered in accordance with the provisions of Part 68 of the Federal Communications Commission's Rules and Regulations.

FCC Requirements

Means of Connection: The Federal Communications Commission (FCC) has established rules which permit the Strata CTX28 system to be connected directly to the telephone network. Connection points are provided by the telephone company—connections for this type of customer-provided equipment will not be provided on coin lines. Connections to party lines are subject to state tariffs.

Incidence of Harm: If the system is malfunctioning, it may also be disrupting the telephone network. The system should be disconnected until the problem can be determined and repaired. If this is not done, the telephone company may temporarily disconnect service. 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.

Service or Repair: For service or repair, contact your local Toshiba telecommunications distributor. To obtain the nearest Toshiba telecommunications distributor in your area, log onto www.toshiba.com/taistsd/pages/support_dealerlocator.html or call (800) 222-5805 and ask for a Toshiba Telecom Dealer.

Telephone Network Compatibility: The telephone company may make changes in its facilities, equipment, operations, and procedures. If such changes affect the compatibility or use of the Strata CTX100 or CTX670 system, the telephone company will notify you in advance to give you an opportunity to maintain uninterrupted service.

Notification of Telephone Company: Before connecting a Strata CTX or CIX system to the telephone network, the telephone company may request the following:

1. Your telephone number.
2. FCC registration number:
 - Strata CTX28 may be configured as a Key, Hybrid or PBX telephone system. The appropriate configuration for your system is dependent upon your operation of the system.
 - If the operation of your system is only manual selection of outgoing lines, it may be registered as a Key telephone system.
 - If your operation requires automatic selection of outgoing lines, such as dial access, Least Cost Routing, Pooled Line Buttons, etc., the system must be registered as a Hybrid telephone system. In addition to the above, certain features (tie Lines, Off-premises Stations, etc.) may also require Hybrid telephone system registration in some areas.
 - If you are unsure of your type of operation and/or the appropriate FCC registration number, contact your local Toshiba telecommunications distributor for assistance.
 - If you are unsure of your type of operation and/or the appropriate FCC registration number, contact your local Toshiba telecommunications distributor for assistance.
 - **CTX28 FCC/ACTA Registration Numbers**
Hybrid: CJ6MF03BDTCHS28, fully-protected multifunction systems
Key: CJ6KD03BDTCHS28, key systems for analog applications
 - Ringer equivalence number: 0.3B. The ringer equivalence number (REN) is useful to determine the quantity of devices which you may connect to your telephone line and still have all of those devices ring when your number is called. In most areas, but not all, the sum of the RENs of all devices connected to one line should not exceed five (5.0B). To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to ascertain the maximum REN for your calling area.
 - Network connection information USOC jack required: RJ11/14C, RJ21/2E/2F/2G/2HX/RJ49C (see Network Requirements in this document). Items 2, 3 and 4 are also indicated on the equipment label.
3. Authorized Network Parts: 02LS2/GS2, 02RV2-T/O, OL13C/B, T11/12/31/32M, 04DU9-BN/DN/1SN, 02IS5, 04DU9-BN/DN/1SN1ZN

Radio Frequency Interference

Warning: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the manufacturer's instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case, the user, at his/her own expense, will be required to take whatever measures may be required to correct the interference.

This system is listed with Underwriters Laboratory.

UL Requirement: If wiring from any telephone exits the building or is subject to lightning or other electrical surges, then secondary protection is required. Secondary protection is also required on DID, OPS, and Tie lines. (Additional information is provided in this manual.)



Important Notice — Music-On-Hold

In accordance with U.S. Copyright Law, a license may be required from the American Society of Composers, Authors and Publishers, or other similar organization, if radio or TV broadcasts are transmitted through the music-on-hold feature of this telecommunication system. Toshiba America Information Systems, Inc., strongly recommends not using radio or television broadcasts and hereby disclaims any liability arising out of the failure to obtain such a license.

CP01, Issue 8, Part I Section 14.1

Notice: The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee the Equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION! Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

CP01, Issue 8, Part I Section 14.2

Notice: The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The terminal on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the Devices does not exceed 5.

Publication Information

Toshiba America Information Systems, Inc., Digital Solutions Division, reserves the right, without prior notice, to revise this information publication for any reason, including, but not limited to, utilization of new advances in the state of technical arts or to simply change the design of this document.

Further, Toshiba America Information Systems, Inc., Digital Solutions Division, also reserves the right, without prior notice, to make such changes in equipment design or components as engineering or manufacturing methods may warrant.

CIX-IM-CTX28-VA

Version A.2, March 2005

© Copyright 2005

Toshiba America Information Systems, Inc. Digital Solutions Division

All rights reserved. No part of this manual, covered by the copyrights hereon, may be reproduced in any form or by any means—graphic, electronic, or mechanical, including recording, taping, photocopying, or information retrieval systems—without express written permission of the publisher of this material.

Refer to page 4 for additional copyright notices.

TOSHIBA AMERICA INFORMATION SYSTEMS, INC. (“TAIS”)

Digital Solutions Division License Agreement

IMPORTANT: THIS LICENSE AGREEMENT (“AGREEMENT”) IS A LEGAL AGREEMENT BETWEEN YOU (“YOU”) AND TAIS. CAREFULLY READ THIS LICENSE AGREEMENT. USE OF ANY SOFTWARE OR ANY RELATED INFORMATION (COLLECTIVELY, “SOFTWARE”) INSTALLED ON OR SHIPPED WITH A TAIS DIGITAL SOLUTIONS PRODUCT OR OTHERWISE MADE AVAILABLE TO YOU BY TAIS IN WHATEVER FORM OR MEDIA, WILL CONSTITUTE YOUR ACCEPTANCE OF THESE TERMS, UNLESS SEPARATE TERMS ARE PROVIDED BY THE SOFTWARE SUPPLIER. IF YOU DO NOT AGREE WITH THE TERMS OF THIS LICENSE AGREEMENT, DO NOT INSTALL, COPY OR USE THE SOFTWARE AND PROMPTLY RETURN IT TO THE LOCATION FROM WHICH YOU OBTAINED IT IN ACCORDANCE WITH APPLICABLE RETURN POLICIES. EXCEPT AS OTHERWISE AUTHORIZED IN WRITING BY TAIS, THIS SOFTWARE IS LICENSED FOR DISTRIBUTION THROUGH TAIS AUTHORIZED CHANNELS ONLY TO END-USERS PURSUANT TO THIS LICENSE AGREEMENT.

- 1. License Grant.** The Software is not sold; it is licensed upon payment of applicable charges. TAIS grants to you a personal, non-transferable and non-exclusive right to use the copy of the Software provided under this License Agreement. You agree you will not copy the Software except as necessary to use it on one TAIS system at a time at one location. Modifying, translating, renting, copying, distributing, printing, sublicensing, transferring or assigning all or part of the Software, or any rights granted hereunder, to any other persons and removing any proprietary notices, labels or marks from the Software is strictly prohibited except as permitted by applicable law; you agree violation of such restrictions will cause irreparable harm to TAIS and provide grounds for injunctive relief, without notice, against you or any other person in possession of the Software. You and any other person whose possession of the software violates this License Agreement shall promptly surrender possession of the Software to TAIS, upon demand. Furthermore, you hereby agree not to create derivative works based on the Software. TAIS reserves the right to terminate this license and to immediately repossess the software in the event that you or any other person violates this License Agreement. Execution of the Software for any additional capabilities require a valid run-time license.
- 2. Intellectual Property.** You acknowledge that no title to the intellectual property in the Software is transferred to you. You further acknowledge that title and full ownership rights to the Software will remain the exclusive property of TAIS and/or its suppliers, and you will not acquire any rights to the Software, except the license expressly set forth above. You will not remove or change any proprietary notices contained in or on the Software. The Software is protected under US patent, copyright, trade secret, and/or other proprietary laws, as well as international treaties. Any transfer, use, or copying of the software in violation of the License Agreement constitutes copyright infringement. You are hereby on notice that any transfer, use, or copying of the Software in violation of this License Agreement constitutes a willful infringement of copyright.
- 3. No Reverse Engineering.** You agree that you will not attempt, and if you employ employees or engage contractors, you will use your best efforts to prevent your employees and contractors from attempting to reverse compile, reverse engineer, modify, translate or disassemble the Software in whole or in part. Any failure to comply with the above or any other terms and conditions contained herein will result in the automatic termination of this license and the reversion of the rights granted hereunder back to TAIS.
- 4. Limited Warranty.** THE SOFTWARE IS PROVIDED “AS IS” WITHOUT WARRANTY OF ANY KIND. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, TAIS AND ITS SUPPLIERS DISCLAIM ALL WARRANTIES WITH REGARD TO THE SOFTWARE, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE WARRANTY OF NON-INFRINGEMENT OF THIRD PARTY RIGHTS, THE WARRANTY OF YEAR 2000 COMPLIANCE, AND THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE SOFTWARE IS WITH YOU. NEITHER TAIS NOR ITS SUPPLIERS WARRANT THAT THE FUNCTIONS CONTAINED IN THE SOFTWARE WILL MEET YOUR REQUIREMENTS OR THAT THE OPERATION OF THE SOFTWARE WILL BE UNINTERRUPTED OR ERROR-FREE. HOWEVER, TAIS WARRANTS THAT ANY MEDIA ON WHICH THE SOFTWARE IS FURNISHED IS FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP UNDER NORMAL USE FOR A PERIOD OF NINETY (90) DAYS FROM THE DATE OF DELIVERY TO YOU.
- 5. Limitation Of Liability.** TAIS' ENTIRE LIABILITY AND YOUR SOLE AND EXCLUSIVE REMEDY UNDER THIS LICENSE AGREEMENT SHALL BE AT TAIS' OPTION REPLACEMENT OF THE MEDIA OR REFUND OF THE PRICE PAID. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, IN NO EVENT SHALL TAIS OR ITS SUPPLIERS BE LIABLE TO YOU FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL OR INDIRECT DAMAGES FOR PERSONAL INJURY, LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION/DATA, OR ANY OTHER PECUNIARY LOSS OF ANY KIND ARISING OUT OF THE USE OR INABILITY TO USE THE SOFTWARE, EVEN IF TAIS OR ITS SUPPLIER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT SHALL TAIS OR ITS SUPPLIERS BE LIABLE FOR ANY CLAIM BY A THIRD PARTY.
- 6. State/Jurisdiction Laws.** SOME STATES/JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES OR LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY MAY LAST, OR THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO SUCH LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU. THIS LIMITED WARRANTY GIVES YOU SPECIFIC RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE/JURISDICTION TO STATE/JURISDICTION.
- 7. Export Laws.** This License Agreement involves products and/or technical data that may be controlled under the United States Export Administration Regulations and may be subject to the approval of the United States Department of Commerce prior to export. Any export, directly or indirectly, in contravention of the United States Export Administration Regulations, or any other applicable law, regulation or order, is prohibited.
- 8. Governing Law.** This License Agreement will be governed by the laws of the State of California, United States of America, excluding its conflict of law provisions.
- 9. United States Government Restricted Rights.** The Software is provided with Restricted Rights. The Software and other materials provided hereunder constitute Commercial Computer Software and Software Documentation and Technical Data related to Commercial Items. Consistent with F.A.R. 12.211 and 12.212 they are licensed to the U.S. Government under, and the U.S. Government's rights therein are restricted pursuant to, the vendor's commercial license.
- 10. Severability.** If any provision of this License Agreement shall be held to be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions hereof shall not in any way be affected or impaired.
- 11. No Waiver.** No waiver of any breach of any provision of this License Agreement shall constitute a waiver of any prior, concurrent or subsequent breach of the same or any other provisions hereof, and no waiver shall be effective unless made in writing and signed by an authorized representative of the waiving party.
- 12. Supplier Software.** The Software may include certain software provided by TAIS suppliers. In such event, you agree that such supplier may be designated by TAIS as a third party beneficiary of TAIS with rights to enforce the Agreement with respect to supplier's software.

YOU ACKNOWLEDGE THAT YOU HAVE READ THIS LICENSE AGREEMENT AND THAT YOU UNDERSTAND ITS PROVISIONS. YOU AGREE TO BE BOUND BY ITS TERMS AND CONDITIONS. YOU FURTHER AGREE THAT THIS LICENSE AGREEMENT CONTAINS THE COMPLETE AND EXCLUSIVE AGREEMENT BETWEEN YOU AND TAIS AND SUPERSEDES ANY PROPOSAL OR PRIOR AGREEMENT, ORAL OR WRITTEN, OR ANY OTHER COMMUNICATION RELATING TO THE SUBJECT MATTER OF THIS LICENSE AGREEMENT.

Toshiba America Information Systems, Inc.
Digital Solutions Division
9740 Irvine Boulevard
Irvine, California 92618-1697
United States of America

5932

DSD 020905

Toshiba America Information Systems, Inc.

Digital Solutions Division

Limited Warranty

Toshiba America Information Systems, Inc., ("TAIS") warrants that this telephone equipment (except for fuses, lamps, and other consumables) will, upon delivery by TAIS or an authorized TAIS dealer to a retail customer in new condition, be free from defects in material and workmanship for twenty-four (24) months after delivery. This warranty is void (a) if the equipment is used under other than normal use and maintenance conditions, (b) if the equipment is modified or altered, unless the modification or alteration is expressly authorized by TAIS, (c) if the equipment is subject to abuse, neglect, lightning, electrical fault, or accident, (d) if the equipment is repaired by someone other than TAIS or an authorized TAIS dealer, (e) if the equipment's serial number is defaced or missing, or (f) if the equipment is installed or used in combination or in assembly with products not supplied by TAIS and which are not compatible or are of inferior quality, design, or performance.

The sole obligation of TAIS or Toshiba Corporation under this warranty, or under any other legal obligation with respect to the equipment, is the repair or replacement by TAIS or its authorized dealer of such defective or missing parts as are causing the malfunction with new or refurbished parts (at their option). If TAIS or one of its authorized dealers does not replace or repair such parts, the retail customer's sole remedy will be a refund of the price charged by TAIS to its dealers for such parts as are proven to be defective, and which are returned to TAIS through one of its authorized dealers within the warranty period and no later than thirty (30) days after such malfunction, whichever first occurs.

Under no circumstances will the retail customer or any user or dealer or other person be entitled to any direct, special, indirect, consequential, or exemplary damages, for breach of contract, tort, or otherwise. Under no circumstances will any such person be entitled to any sum greater than the purchase price paid for the item of equipment that is malfunctioning.

To obtain service under this warranty, the retail customer must bring the malfunction of the machine to the attention of one of TAIS' authorized dealers within the twenty-four (24) month period and no later than thirty (30) days after such malfunction, whichever first occurs. Failure to bring the malfunction to the attention of an authorized TAIS dealer within the prescribed time results in the customer being not entitled to warranty service.

THERE ARE NO OTHER WARRANTIES FROM EITHER TOSHIBA AMERICA INFORMATION SYSTEMS, INC., OR TOSHIBA CORPORATION WHICH EXTEND BEYOND THE FACE OF THIS WARRANTY. ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND FITNESS FOR USE, ARE EXCLUDED.

No TAIS dealer and no person other than an officer of TAIS may extend or modify this warranty. No such modification or extension is effective unless it is in writing and signed by the vice president and general manager, Digital Solutions Division.

Strata and SmartMedia are registered trademarks of Toshiba Corporation.

Stratagy is a registered trademark of Toshiba America Information Systems, Inc.

Windows and Microsoft are registered trademarks of Microsoft.

Trademarks, registered trademarks, and service marks are the property of their respective owners.

Contents

Chapter 1 – CTX28 Installation

- Inspection 1-1
- Packaging and Storage 1-1
- CTX28 FCC/ACTA Registration Numbers 1-1

- Site Requirements 1-2
 - Input Power 1-2
 - Clearance and Location 1-2

- AC Power and Grounding Requirements 1-4
 - Ground Test 1-5

- Installing the CTX28 Cabinet 1-6
 - Step 1: Mount the Cabinet on the Wall 1-6
 - PCB Installation 1-8
 - Step 2: Set Jumpers on the GMAU (Motherboard) 1-10
 - Step 3: Install the GVMU Voice Mail PCB (optional) 1-12
 - Voice Mail and Telephone LCD Prompts 1-13
 - Step 4: Install the GCTU (Processor) 1-17
 - Step 5: Install the GCDU (DKT and Loop Start Interface) 1-19
 - Step 6: Install the GSTU1A 1-20
 - Step 7: Install the GETS1A 1-20
 - Step 8: Install the BSIS1A (optional) 1-21
 - Step 9: Install the HPFB-6 (Reserve Power Battery/Charger) 1-21
 - Step 10: Install Wiring 1-22

- Digital Telephone Connection 1-24
- Loop Limits 1-25
- CTX28 Secondary Protection 1-26
- MDF Wiring 1-27
- GVMU Administration PC Connections 1-28
- Station Loop Lengths 1-29
- CTX28 Default Initialized Data 1-30

This page is intentionally left blank.

This document explains how to install the Strata CTX28 system. It includes information on site requirements, wiring diagrams, and step-by-step instructions on how to install the unit(s), the ground wiring, AC power cabling, reserve power (battery backup) cabling, and Printed Circuit Board (PCB) cabling.

Inspection

1. When the system is received, examine all packages carefully and note any visible damage. If any damage is found, do not open the packages. Contact the delivery carrier immediately and make the proper claims.
2. After unpacking (and before installing), check the system against the packing list and inspect all equipment for damage. If equipment is missing or damaged, contact your supplier immediately.
3. Be sure to retain original packaging materials for re-use when storing or transporting system hardware.

Packaging and Storage

CAUTION! When handling (installing, removing, examining) PCBs, do not touch the back (soldered) side or edge connector. Always hold the PCB by its edges.

- When packaging and storing the system, remove PCBs from the system cabinet. PCBs should be packaged in their original antistatic bags for protection against electrostatic discharge. Be sure to package equipment in its original shipping containers.

CTX28 FCC/ACTA Registration Numbers

- ACTA/FCC Part 68 Registration for Key System Code (KD): CJ6KD03BDTCHS28
- ACTA/FCC Part 68 Registration for Multifunction Code (MF): CJ6MF03BDTCHS28

Site Requirements

This section defines the installation site requirements necessary to ensure a proper operating environment for the CTX28. Also included are grounding requirements.

Input Power

The system requires an input power source of 115VAC \pm 10VAC, 50/60 Hz, 1.5 amps. The AC outlet is recommended to be dedicated and unswitched. (See “AC Power and Grounding Requirements” on page 1-4.)

This eliminates interference from branch circuit motor noise or the like, and to prevent accidental power-off. To avoid accidental power turn-off, Toshiba recommends that you do *not* use an On/Off wall switch on this dedicated AC circuit.

For the Strata CTX28, a reserve power source (HPFB-6) may be connected to the system to serve as a power failure backup (See Step 9 on page 1-21).

Clearance and Location

The minimum clearance requirements for the Strata CTX28 Base cabinet is shown in Figure 1-1. Refer to Figure 1-5 on page 1-7 for CTX28 KSU mounting instructions.

Consider the following conditions when selecting a location for the KSU(s):

The location *must be*:

- Dry and clean
- Well ventilated
- Well illuminated
- Easily accessible

The location *must not be*:

- Subject to extreme heat or cold
- Subject to corrosive fumes, dust, or other airborne contaminants
- Subject to excessive vibration
- Next to television, radio, office automation, or high frequency equipment

If reserve power (HPFB-6) is to be installed for the Strata CTX28, the batteries will require a well-ventilated location close to the CHSU28A.

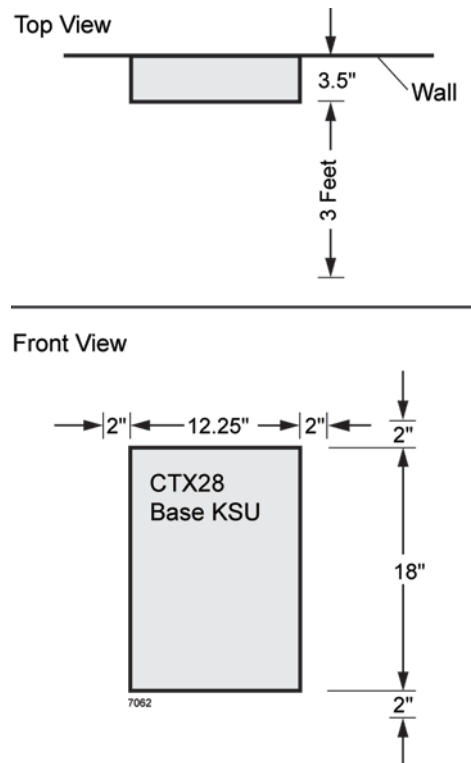


Figure 1-1 CTX28 Base KSU Clearance Requirements

Table 1-1 provides a summary of the electrical and environmental characteristics.

Table 1-1 Summary of Electrical/Environmental Characteristics

CTX28 Primary Power	
Input AC (Power Supply Specification)	100~240VAC
AC frequency	50/60 Hz
Power	CTX28 - 100 watts maximum
AC input current	1.5A maximum
Environmental Specifications	
Operating temperature	32~104° F (0 ~40° C)
Operating humidity	20~80% relative humidity without condensation
Storage temperature	-4~140° F (-20~60° C)
Power	
Input DC	15V to use the factory-shipped AC adapter
Power Converter	
DC voltage output specification	-24VDC (-26.3~-28.3VDC) +5VDC (+4.5~+5.5VDC)
Standard Telephone Ring Circuit (GMAU and GSTU)	
Ring Voltage	180V p-p square wave
Ringing capability	1 REN, 1 circuit - one telephone per circuit

AC Power and Grounding Requirements

The CTX28 requires a earth ground connection for proper operation. The two-wire AC power cord connects to a standard AC power outlet, and does not provide a ground connection. The ground for the CTX28 must originate at the building’s main power distribution panel and have a solid connection to earth ground. Use a an insulated, stranded copper wire to connect the TB3 terminal on the GMAU to earth ground. This wire should be 10 AWG or larger. The total resistance from TB3 to the ground point must not exceed one ohm. Connect the ground wire to the common ground point or ground rod, usually located at the utility entrance of the building. (See [Figure 1-2.](#)) Check local codes.

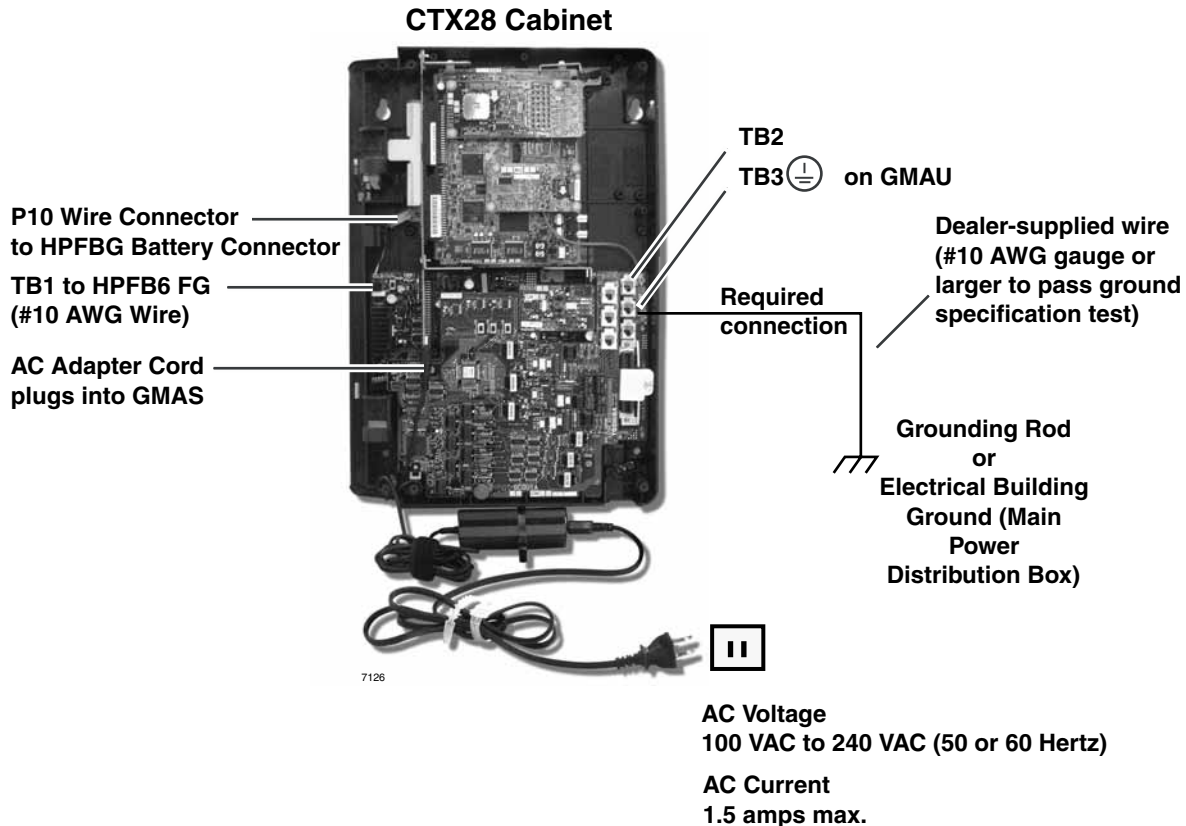


Figure 1-2 Ground and AC Power Cord

CAUTION! Lack of proper ground may cause improper operation and, in extreme cases, system failure.

WARNING! Failure to provide a proper ground may be a safety hazard to service personnel or lead to confusing trouble symptoms, such as noise on the talk path including GVMU greetings and messages. In extreme cases, system failure may result because the system is not properly protected from lightning or power transients.

Ground Test

Test the “wire ground” for continuity by either measuring the resistance between the TB3 terminal (earth ground) on the GMAU and the common point ground on (or near) the MDF, or the utility entrance ground (maximum: 1 ohm), or by using a commercially available earth ground indicator. If neither procedure is possible, perform the following earth ground test procedure.

Table 1-2 Ground Wiring Summary

Grounding Requirement	From	To	Description
System connects to earth ground	Earth ground	TB3 on GMAU	Less than 1 ohm
FG of HPFB-6 connect to GMAU	HPFB-6 FG Screw	TB1 on GMAU	
HPFB-6 Ground Feed	TB1 on GMAU	TB3 on GMAU	
GETS connects green ground wire to GMAU	GETS ground wire	TB2 on GMAU	

Installing the CTX28 Cabinet

Check the items shipped.

- CHSU28A cabinet
- GCTU1A processor PCB
- AC adapter
- Tie wrap for cable clamp
- Tie wrap for AC adapter
- Velcro strap for AC adapter cord

Step 1: Mount the Cabinet on the Wall

The Base cabinet is designed to be mounted on a wall or other vertical surface.

WARNING! To prevent electrical shock, make sure the power supply switch is turned Off.

► To mount the Base KSU

1. Make sure the location for the CTX28 meets the minimum clearance requirements specified in [Figure 1-1 on page 1-2](#).
2. Loosen the screws on the front cover and the side cover of the Base KSU, remove the covers (see [Figure 1-3](#)).

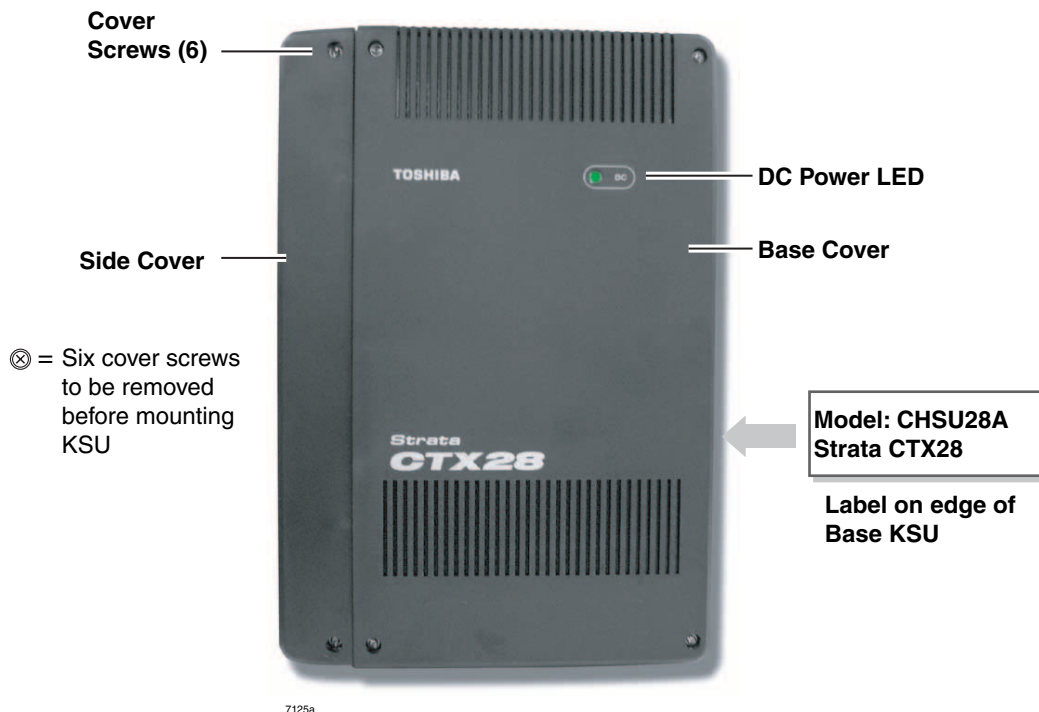
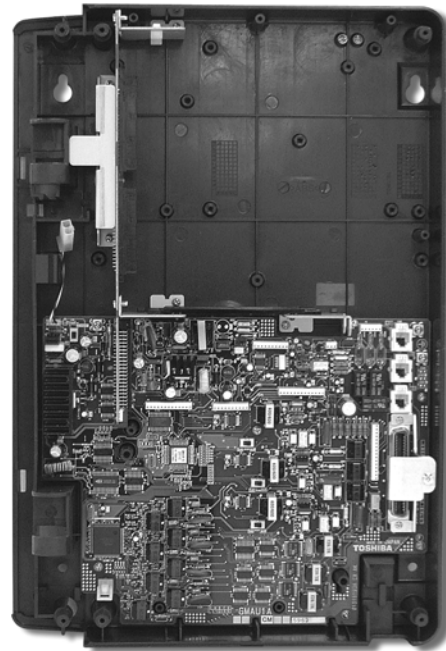


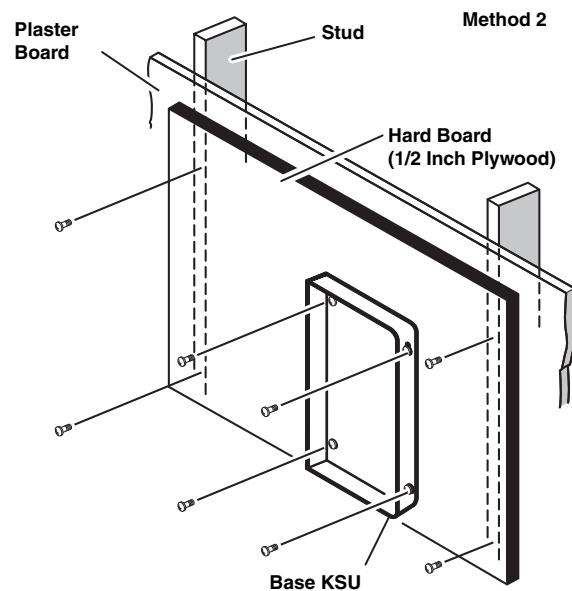
Figure 1-3 CTX28 Cabinet Exterior

3. Place the Base KSU on the desired location on the mounting surface and mark the location of the four screw holes. See [Figures 1-4 and 1-5](#).
4. Using a hard board between the KSU and the wall, secure the hard board to the wall first, making certain that screws are aligned with studs. See [Figure 1-5](#).
5. Drill holes on these marks and secure screws approximately two thirds of the way into the top two holes on the mounting surface.
6. Hang the unit from the top two screws and then secure the top screws completely into the mounting surface.
7. Finish securing the unit to the mounting surface by completely screwing the bottom two screws into the wall.



7104

Figure 1-4 CTX28 Base KSU Interior



7114

Figure 1-5 KSU Wall Mounting

8. Ground system according to [“AC Power and Grounding Requirements”](#) on page 1-4.

PCB Installation

Overview Instructions

The following is an overview for installing the Printed Circuit Boards (PCBs) into the Strata CTX28. After reading this section, proceed to the step-by-step instructions for each PCB.

1. Apply proper settings on the GMAU1A (motherboard [Figure 1-7](#)).
2. If applicable, set SW6 battery jumper to ON and install the GVMU Voice Mail card ([Figures 1-8](#) and [1-9](#)).
3. Set P601 battery jumper to ON and install the GCTU1A (processor [Figures 1-6](#) and [1-10](#)).
4. If applicable, install the GCDU1A (3 CO, 3 CLID and 8 DKT circuits [Figure 1-11](#)).
5. If applicable, install GSTU1A (standard telephone interface [Figure 1-12](#)).
6. If applicable, install the GETS1A 100Base-TX I/F PCB ([Figure 1-13](#)).
7. If applicable, install the BSIS1A for SMDR ([Figure 1-6](#)).
8. If applicable, install HPFB-6 battery/charger ([Figure 1-14](#)).
9. Connect wiring ([Table 1-15](#)).
10. Connect AC Adaptor to P2 of the CTX28 sub-motherboard (GMAS, [Figures 1-15](#) and [1-16](#)) and plug the AC Adaptor into AC power.
11. Turn the System ON by sliding the SW1 ON/OFF switch down. The ON/OFF LED located by STANDBY will turn on ([Figure 1-15](#)).

PCB Descriptions

This describes the CTX28 cabinet PCBs (see [Table 1-3](#) and [Figure 1-6](#).)

Table 1-3 CTX28 (CHSU28) Cabinet circuit cards

Part	Title	Description
GMAU1A	Main Motherboard	The GMAU motherboard supports 3 CO lines, 3 CLIDs, 8 Digital Telephones, 1 Standard Telephone. The GCTU, GVMU, and AC power adaptor plugs into the GMAS sub-motherboard dedicated slots.
GMAS1A	Sub-motherboard	
GCTU1A	Processor	Shipped with cabinet.
GVMU	Voice Mail Circuit Card	(Optional) Voice Mail.
GCDU1A	CO, CLID, DKT circuit card	(Optional) Supports 3 CO lines, 3 CLIDs, 8 Digital Telephones. The GCDU1A plugs onto the motherboard.
GSTU1A	Standard Telephone Circuit Card	(Optional) Provides 1 Standard Telephone port.
GETS1A	100BaseT I/F	(Optional) Ethernet 100Base T cable.(optional)
BSIS1A	RS232C	(Optional) RS232-C. Provides 4 serial I/O ports.
HPFB6	External Battery	(Optional) Provides backup Reserve power.

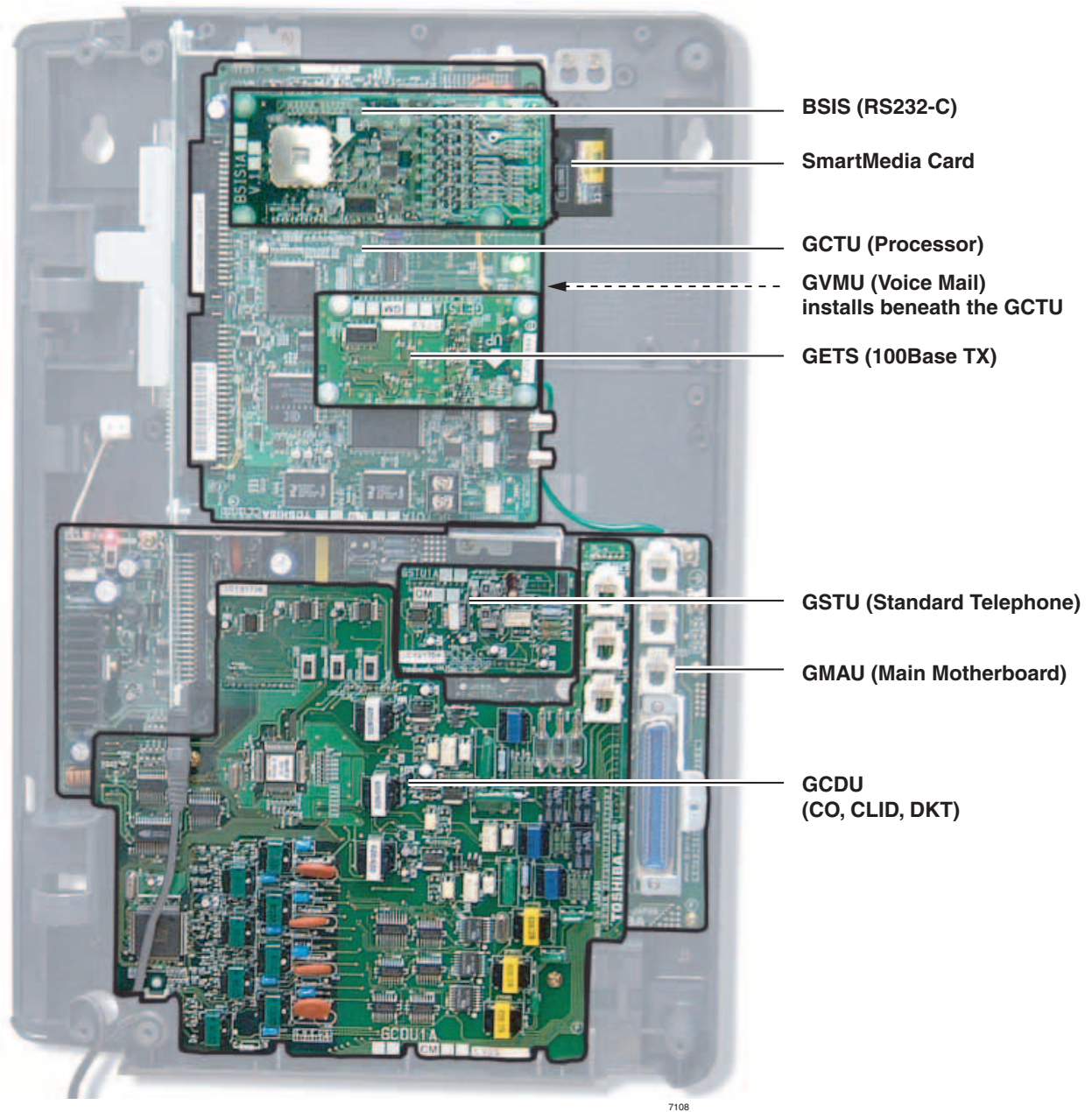


Figure 1-6 CTX28 Interior with PCBs

Step 2: Set Jumpers on the GMAU (Motherboard)

The GMAU (shown in Figure 1-7) supports up to 6 CO lines with Caller ID (CLID).

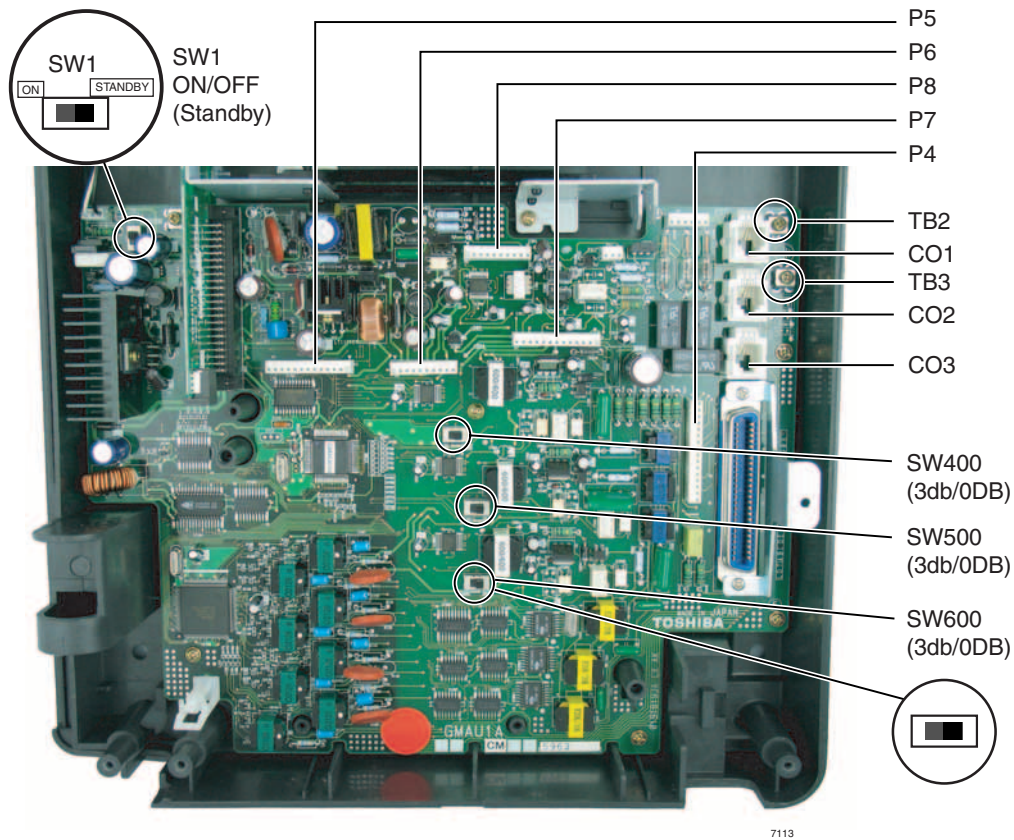


Figure 1-7 GMAU PCB

Table 1-4 GMAU Controls, Switches and Indicators

Control/Indicator/Connector	Type of Component	Description
SW1	2-position slide switch	Power Switch: [STANDBY] = no DC power supply. [ON] = DC voltage supplied. [ON] activates the reserve power from HPFB-6 battery pack.
SW400	2-position slide switch	3dB Pad switch
SW500		
SW600		
CD6	LED	Power indicator; when SW1 is [ON], turned on. Red both AC power and 3Reserve power. SW1 is [STANDBY], turned off.
TB1	Plate with screw	Grounding for HPFB-6 external battery
TB2	Plate with screw	Grounding for GETS Ethernet card
TB3	Plate with screw	Grounding for CTX28 system, connect to earth ground
P1	50-pin Amphenol connector	DKT, SLT and Power Failure Transfer interface
P3	44-pin DIN connector	GMAS interface

Table 1-4 GMAU Controls, Switches and Indicators (continued)

Control/Indicator/Connector	Type of Component	Description
P4	16-pin female connector	GCDU DKT and loop start interface
P5	13-pin female connector	
P6	10-pin female connector	
P7	13-pin female connector	GSTU standard telephone interface
P8	10-pin female connector	
P9	6-pin female connector	GCDU interface
P10	3-pin connector	HPFB-6 external battery interface
P11	3-pin female connector	GSTU standard telephone interface
P400	Modular connector	Interface for CO Line circuit (CO1)
P500		Interface for CO Line circuit (CO2)
P600		Interface for CO Line circuit (CO3)
F1	2.0A Fuse	-24VDC Over current protection

Table 1-5 GMAS (Sub-motherboard)

Control/Indicator/Connector	Type of Component	Description
P1	44-pin DIN male connector	GMAU interface
P2	Pin Jack	DC-IN (DC15V) jack
J1	44-pin DIN female connector	GVMU interface
J2	44-pin DIN female connector	GCTU interface
J3		

Step 3: Install the GVMU Voice Mail PCB (optional)

1. In the CTX28 cabinet, remove the two screws and the PCB stopper (Figure 1-8).
2. On the GVMU, set the SW6 battery jumper to ON and set the Greeting language switch (Figure 1-9). Default language is “English.” See Table 1-6 for other language settings.
3. Turn off system power and if GCTU is installed remove GCTU before installing the GVMU.
4. Install the GVMU into the lower slot of the GMAS (sub-motherboard) (see Figure 1-8).
5. Install the GCTU and turn system power ON.

Note To program GVMU, refer to *Strata CTX28 Voice Processing Programming Manual* and use XADM4 Admin software.

► **To re-initialize GVMU to default data after it has been in use (see CAUTION! below)**

1. Turn off CTX28 system power and uninstall GCTU and GVMU.
2. Remove the GVMU battery jumper for two minutes.
3. Place the GVMU battery jumper back to the ON position, then install the GVMU and GCTU.
4. Turn system power back on.

CAUTION! Initializing GVMU to default data will erase all Names, Security codes and saved Messages.

Voice Mail and Telephone LCD Prompts

The Spanish Language option for CTX telephone LCD prompts and telephone soft keys requires CTX28 R2.22 or above and GVMU2A. The jumpers on GVMU2A (Table 1) and the telephone LCD language settings control the default voice greetings and telephone LCD language. The telephone LCD language can be set from the telephone set or from WinAdmin. Both methods are shown below.

From each telephone set:

- To change the language display on the telephone LCD, Dial #4951 for American English.
- To change the language display on the telephone LCD, Dial #4952 for British English.
- To change the language display on the telephone LCD, Dial #4953 for French.
- To change the language display on the telephone LCD, Dial #4954 for Spanish.

Use WinAdmin:

- To set the Telephone LCD language use WinAdmin >Station>Assignments (Program 204-20).

Table 1-6 Greetings Language Settings on the GVMU

Jumpers		GVMU1A Prompt Language	GVMU2A Prompt Language
SW2	SW3		
OFF	OFF	English	English
ON	OFF	French	Spanish
OFF	ON	English then French ¹	English then Spanish ²
ON	ON	French then English ³	Spanish then English ⁴

1. The default greetings play in English then repeat in French.
2. The default greetings play in English then repeat in Spanish.
3. The default greetings play in French then repeat in English.
4. The default greetings play in Spanish then repeat in English.

Note Voice mail prompts in Spanish requires both the GVMU2A and CTX28 R2.22 software.

Both the Strategy System Admin command; set prompt_file and the GVMU2A language straps effect system operation. Refer [Table 1-7 on Page 14](#).

Table 1-7 GVMU2A Strap and Strategy Configuration Language Settings

GVMU Strap Switch ¹	XADM4 Statagy System Configuration command: set prompt_file ²	Default Greeting BOX 990	Default Greeting BOX 991	Default Greeting BOX 411
SW2 = OFF / SW3 = OFF (English)	English	English	English	English
SW2=ON / SW3=OFF (Spanish)	Spanish	Spanish	Spanish	Spanish
SW2=OFF / SW3=ON (English/ Spanish)	English	English/Spanish	English/Spanish	English/Spanish
SW2=ON / SW3=ON (Spanish/English)	Spanish	Spanish/English	Spanish/English	Spanish/English
The Strap/Configuration combinations shown below are for information only - NOT RECOMMENDED				
SW2 = OFF / SW3 = OFF (English)	Spanish	English	English	English
SW2=ON / SW3=OFF (Spanish)	English	Spanish	Spanish	Spanish
SW2=OFF / SW3=ON (English/ Spanish)	Spanish	English/Spanish	English/Spanish	English/Spanish
SW2=ON / SW3=ON (Spanish/English)	English	Spanish/English	Spanish/English	Spanish/English

1. The telephone LCD language must match the GVMU Strap Switch setting as shown in this table for correct default greeting language.
2. Use XADM4 to set the voice prompt language. The prompt language must be set using the set prompt_file command for correct operation.

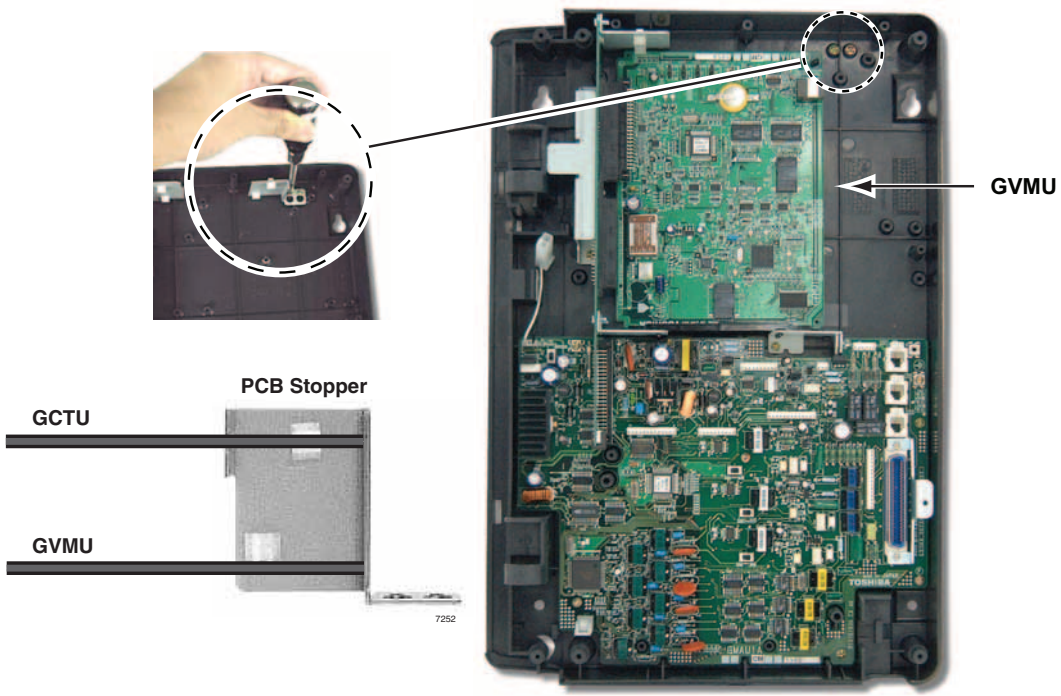


Figure 1-8 GVMU/GCTU PCB Stopper

7162

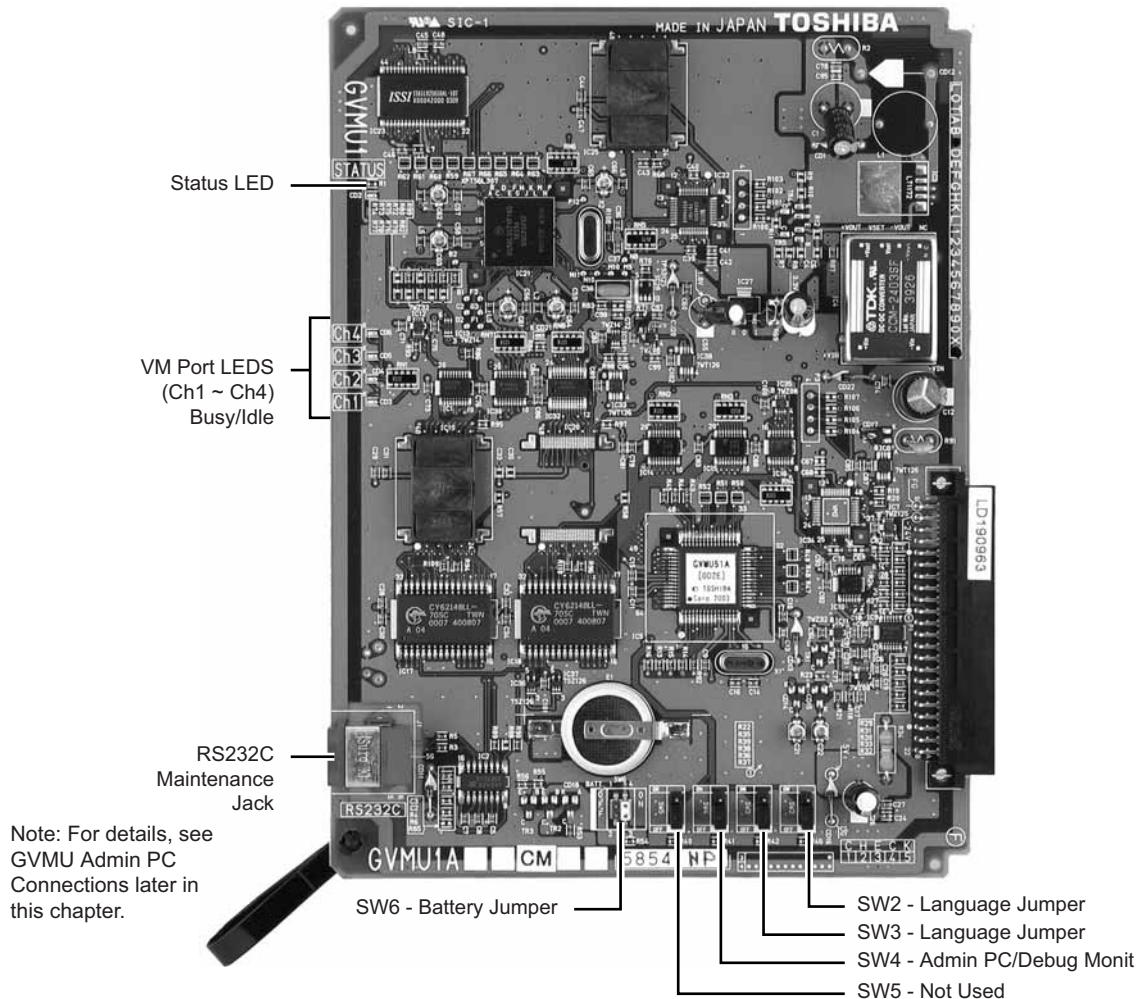


Figure 1-9 Close Up of PCB Stopper for GCTU and GVMU

Table 1-8 LED Indicators on the GVMU

Indication/ State	GVMU LEDs				
	Ch1	Ch2	Ch3	Ch4	Status
Power On (Initialize Sequence*)	All LEDs turn ON (Red), then all LEDs turn OFF and cycle ON/OFF through all ports for one to two minutes while initializing and then all LEDs turn off.				
Normal (Busy/Idle)	OFF	OFF	OFF	OFF	Blinking
Failure	Blinking	Blinking	Blinking	Blinking	OFF
Shut Down	ON	ON	ON	ON	OFF
Back Up/Restore	ON	ON	ON	ON	ON
No 1.8V input Voltage in GVMU	ON	OFF	OFF	ON	ON
Not mounted/defective	Light flickers and switches from the LED to LED (from Ch1 ~Ch4) + Status LED				
* The initialize sequence operates each time the CTX28 power is cycled off/on or the CTX28 processor is reset or initialized – GVMU program data remains saved. However, if the GVMU battery jumper is removed, GVMU program data and saved messages will be erased.					

Step 4: Install the GCTU (Processor)

The GCTU is the main processor for the CTX28. It is shipped with the CTX28 Base cabinet.

► To install the GCTU into the CTX28

1. Skip this step if you have installed a Voice Mail PCB and already removed the PCB stopper. If you have not done this, then in the CTX28 cabinet, remove the two screws and the PCB stopper (see [Figure 1-8](#)).
2. Set the P601 battery jumper to ON (see [Figure 1-10](#)) and insert the GCTU (shipped with the cabinet) in the upper slot of the GMAS sub-motherboard (see [Figure 1-6](#)). Place it next to the guide rail of the PCB stopper (see [Figure 1-8](#)).
3. Secure the PCB stopper with the original two screws.
4. Insert the SmartMedia card (gold contacts face left, notched corner faces forward and up) into the SmartMedia slot on the GCTU (see [Figure 1-6](#)).

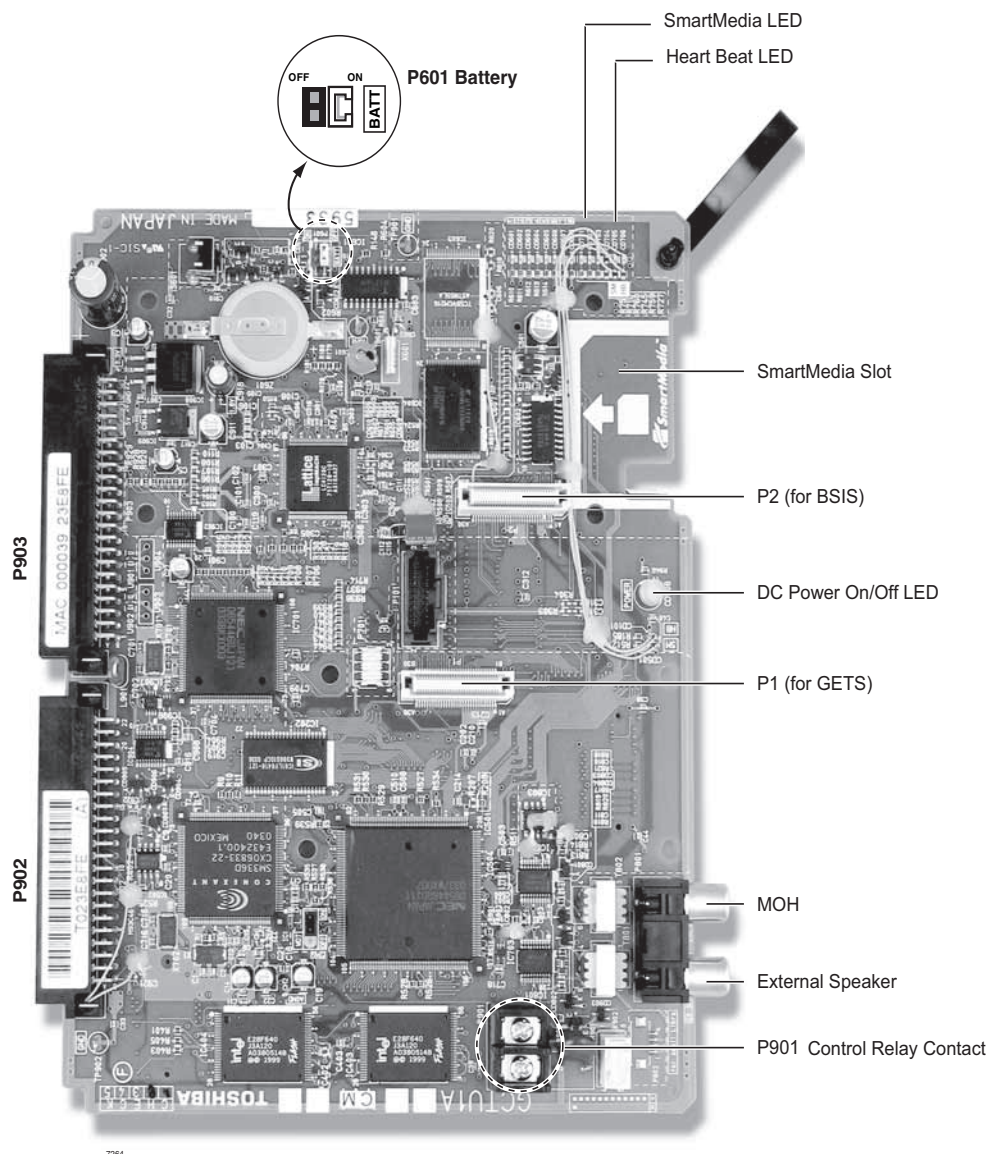


Figure 1-10 GCTU PCB

Table 1-9 GCTU

Control/Indicator/ Connector	Type of Component	Description
P1	60 pin connector	GETS Interface
P2	60 pin connector	BSIS Interface
P501	SmartMedia house	SmartMedia interface
P601	Jumper plug	Must always be in the "ON" position to maintain customer data
P801	RCA Jack	Paging interface and BGM/MOH interface
P901	2 pin screw terminal	Relay contact
P902	44-pin male DIN connector	CTX28 Back plane connector
P903	44-pin male DIN connector	CTX28 Back plane connector
CD101	LED	Processor operation indication (heartbeat)
CD501	LED	SmartMedia access indicator
CD908	LED	Green DC power indicator for CTX28 system. Shown on front cover (see Figure 1-3).

Step 5: Install the GCDU (DKT and Loop Start Interface)

The GCDU1A PCB adds an additional 3 CO lines, 3 Caller ID units, and 8 digital telephone circuits with a single PCB. It attaches to the GMAU1A motherboard. With the GCDU1A installed, the CTX28 supports up to 16 digital telephones (DKTs), 6 CO lines and 6 Caller ID circuits.

► To install the GCDU1A

- Carefully place the GCDU1A pins over the GMAU connectors (see [Figure 1-6](#) and [Figure 1-11](#)). Press down on the PCB to secure the pins to the connectors (see [Table 1-10](#)).

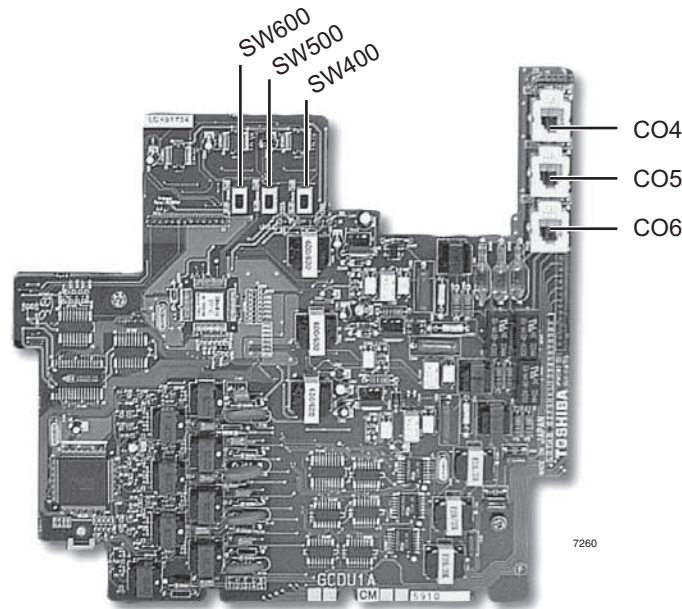


Figure 1-11 GCDU1A PCB

Table 1-10 GCDU1A Controls, Indicators and Connectors

Control/Indicator/Connector	Type of Component	Description
SW400	2-position slide switch	3dB Pad switch
SW500		
SW600		
P4	16-pin male connector	GMAU interface
P5	12-pin male connector	
P6	9-pin male connector	
P9	6-pin male connector	
P400	Modular connector	Interface for CO Line circuit (CO4)
P500		Interface for CO Line circuit (CO5)
P600		Interface for CO Line circuit (CO6)

Step 6: Install the GSTU1A

The GSTU1A provides one additional standard telephone interface.

- To install the GSTU1A, align the GSTU1A pins over the GMAU1A motherboard and press down firmly (see [Figure 1-6](#)).

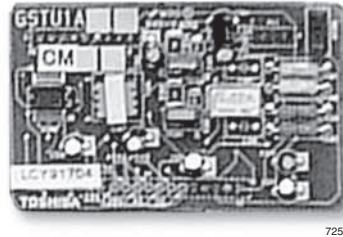


Figure 1-12 GSTU1A PCB

Table 1-11 GSTU1A Controls, Indicators, and Connectors

Control/Indicator/Connector	Type of Component	Description
P7	12-pin male connector	GMAU interface
P8	9-pin male connector	
P11	3-pin male connector	

Step 7: Install the GETS1A

The GETS1A supports 100Base TX Ethernet.

➤ To install the GETS1A

1. Place option PCB arrow side up over the plastic stand-off with the connectors and stand-off holes on the GCTU1A. The “UP” arrow should point down. Snap GETS1A securely into place.
2. Attach the FG ring to TB2 on the GMAU1A motherboard with the screw shown in [Figures 1-2](#) and [1-13](#).

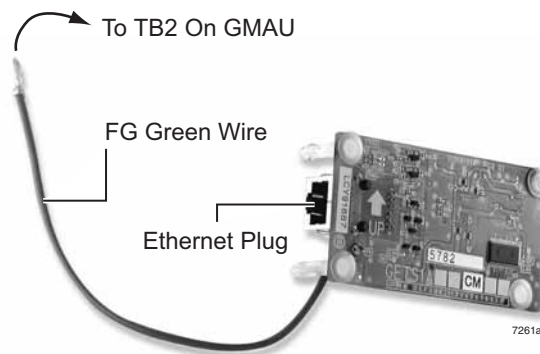


Figure 1-13 GETS (100Base TX)

Table 1-12 GETS (100Base TX)

Control/Indicator/Connector	Type of Component	Description
CD1	LED	LAN link indicator
CD2	LED	Transmission and receive indicator
P1	60 pin connector	GCTU interface
P2	RJ45	Network interface port

Step 8: Install the BSIS1A (optional)

The BSIS provides RS-232 serial ports.

- To install the BSIS1A, align the BSIS1A pins over the GCTU1A and press down firmly (see [Figure 1-6](#)).

Step 9: Install the HPFB-6 (Reserve Power Battery/Charger)

One or two HPFB-6 optional units can be added to the CTX28 to provide reserve power. The amount of reserve power time depends on the hardware (see [Table 1-13](#)). The table below is an estimate of battery backup time based on the premise that the HPFB-6 unit(s) are fully charged at the time of AC power failure. This estimated backup time is based on low call traffic, the time estimates will be reduced by as much as half with extreme heavy traffic volumes.

Table 1-13 CTX28 Reserve Power Duration Estimates

Hardware	1 HPFB-6	2 HPFB-6
3CO/8DKT - No GVMU	1 hr. 40 min.	3 hr. 20 min.
3CO/8DKT - with GVMU	1 hr. 30 min	3 hr.
6CO/16DKT - No GVMU	1 hr. 5 min.	2 hr. 10 min.
6CO/16DKT - with GVMU	1 hr.	2 hr.

1. Place the HPFB-6 directly below the Strata CTX28 KSU. See [Figure 1-14](#) for minimum clearance requirements. A second HPFB-6 can be installed directly below the unit to supply backup reserve power.
2. Mark the location of the two screw holes, then drill holes.
3. Screw the two screws two-thirds into the mounting surface.
4. Hang the HPFB-6 on the screws then tighten the screws into the mounting surface.
5. Plug the first HPFB-6 connector into BATT connector P10 on GMAU.
6. Connect a #10 ground AWG wire from the HPFB-6 “FG” screw to the CTX28 screw labeled “TB1” ([Figure 1-2](#)).

Note The CTX28 should be plugged into AC power and the DC power switch should be turned On when installing the HPFU-6. The HPFU-6 will not start to operate if AC power is not available during the initial installation.

7. The 24VDC LED on the HPFB-6 should light. If it does not light, press the battery Off switch with a pencil point or other small-tipped object.
8. Dress and tie-wrap the HPFB-6 cables.
9. To mount a second HPFB-6, repeat Steps 1~4, then plug the second HPFB-6 connector in the first HPFB-6 and connect an FG wire between each HPFB-6 FG screw.
10. To test the HPFB-6, remove the CTX28 AC plug from the AC outlet. The CTX28 AC LED will go out, but the CTX28 DC LED remains on. Also the system remains in normal working order and the HPFB-6 24V LED remains on.
11. If it is desired to turn off the HPFB-6 (after loss of AC power), use a pencil or other sharp object to press the Battery Off switch.

CAUTION! Once the HPFB-6 is turned Off or unplugged (during AC power loss) it will not operate again until AC power is restored to the CTX28 KSU.

Note The CTX28 KSU does not provide a battery charger, the HPFB-6 contains built-in batteries and a battery charger; therefore, do not connect any other type of batteries to the CTX28.

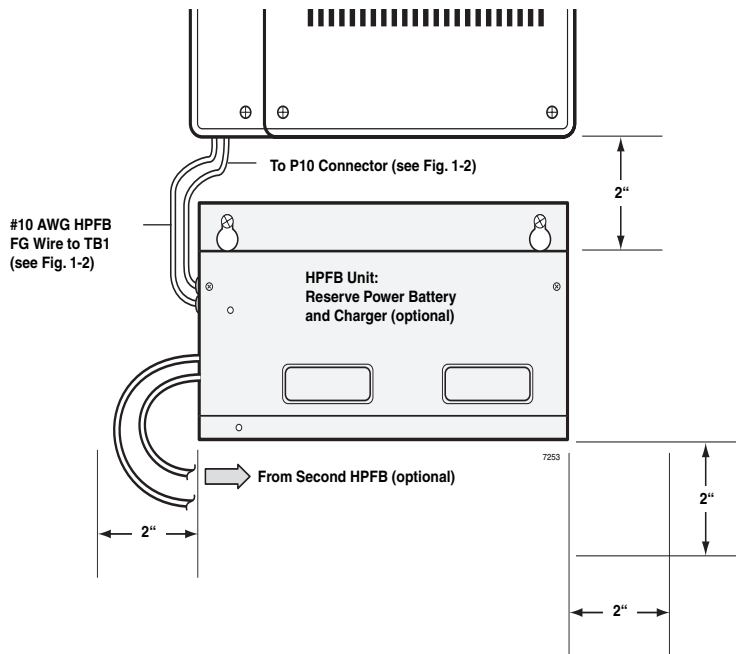


Figure 1-14 HPFB-6 Reserve Power Installation

Step 10: Install Wiring

1. Refer to [Figure 1-15](#) for the following steps. Loosen the screw on the Amphenol clamp and remove the clamp. Plug in the 25-pair Amphenol connector and replace the clamp to hold the Amphenol connector in place.
2. Connect all other PCB wiring (e.g., modular CO line cords, LAN cable, etc.). Slide the shorter tie-wrap through the holder. Then fasten wiring to the unit with the tie wrap that comes with the Base KSU.
3. Connect the end of the AC adapter cable to the GMAS PCB as shown in [Figures 1-15](#) and [1-16](#).
4. Connect the other end of the GETS (100Base TX) LAN cable to the LAN connected to the CTX WinAdmin PC.
5. Plug the AC adapter into a power strip connected to an power outlet.
6. Put the On/Standby switch into “On” position. The DC LED should light green. The CTX28 is now ready to program.

WARNING! Do not smoke near batteries. Avoid creating any electrical sparks near batteries.

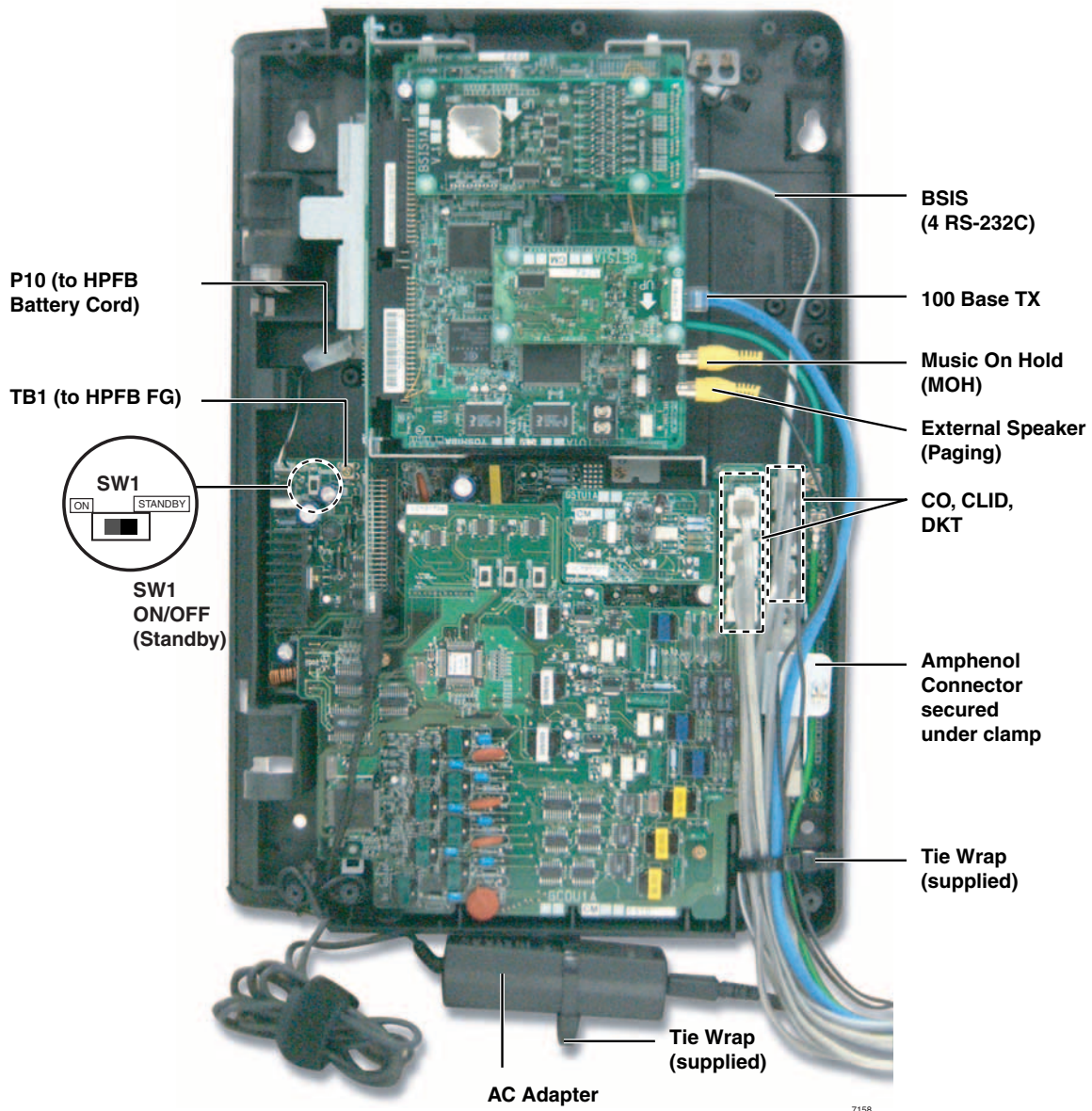
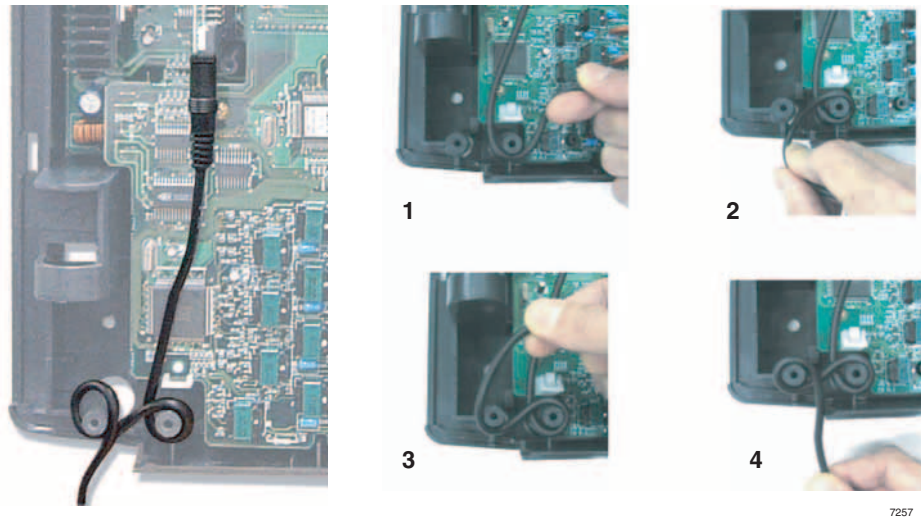


Figure 1-15 Standard Unit Wiring (without option units) and AC Adapter

**Figure 1-16 AC Adapter Wiring Procedure**

Digital Telephone Connection

The Strata CTX28 supports any Toshiba 2000 and 3000-series digital telephones, including the new DKT3007-SD telephone (shown right).

The DKT3007-SD only works on the CTX28.

The DKT3007-SD works just like the DKT3020-SD and DKT3010-SD, except that it has seven flexible buttons.

The CTX28 supports all DKT2000 and DKT3000-series Add-on Modules and DSS Consoles.

CTX28 supports Handset Off-hook Call Announce (OCA), but not Speaker OCA.

**Figure 1-17 DKT3007-SD Telephone**

Loop Limits

This section provides the maximum loop lengths for connection of telephones, lines, peripheral equipment, and power supplies. The following information applies to only the Strata CTX28 system (see [Table 1-14](#)).

Table 1-14 Digital Telephone/DIU/DDSS Console/ADM/Loop Limits

Mode	CTX28 KSU or Battery Backup ¹	Maximum line length (24 AWG)		
		1 Pair feet	1 Pair meters	
DKT3000-series or DKT2000-series models, DKT with BVSU or DVSU or BHEU or HHEU.	CTX28 KSU	1000	303	1000 feet 303 meters
	Battery Backup	695	204	
DKT with BPCI	CTX28 KSU	1000	303	
	Battery Backup	500	151	
DKT with BPCI and BHEU	CTX28 KSU	1000	303	
	Battery Backup	500	151	
DDSS3060 or 2060	CTX28 KSU	1000	303	
	Battery Backup	675	204	
DDCB3A	CTX28 KSU	165	50	
	Battery Backup	500	151	
BATI, RATI	CTX28 KSU	1000	303	
	Battery Backup	1000	303	
DKT with 1 ADM	CTX28 KSU	675	204	
	Battery Backup	165	50	
DKT with 2 ADMs	CTX28 KSU	500	151	
	Battery Backup	33	10	

1. Battery backup applies to instances when the system is being powered by batteries exclusively.
2. Digital cable runs must *not* have the following:
 - Cable splits (single or double)
 - Cable bridges (of any length)
 - High resistance or faulty cable splices

CTX28 Secondary Protection

The following diagram (see [Figure 1-18](#)) shows where secondary protectors must be installed for outside wiring.

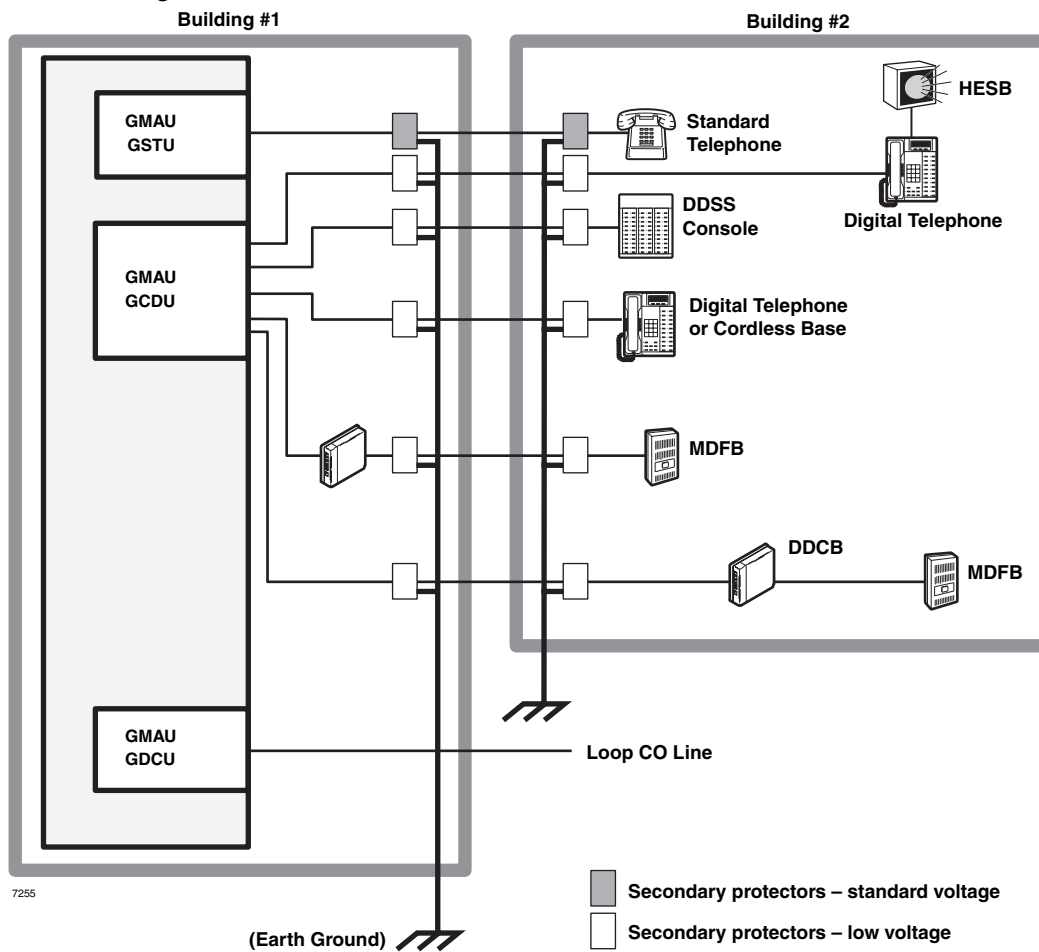


Figure 1-18 CTX28 Secondary Protector Diagram

Important! *To protect against transient voltages and currents, solid state secondary protectors must be installed if there is outside wiring. These protectors, which contain fast semiconductors in addition to fuses, shall comply with the requirements for secondary protectors for communication circuits, UL 497A. Care must be taken to ensure that they are very well grounded to a reliable earth ground. Recommended protectors are available in the fast Series 6 line from ONEAC Corp., Libertyville, Illinois 60048, (800) 327-8801. Install and test the secondary protectors precisely to the installation instructions of these manufacturer.*

MDF Wiring

For Registration information refer to “CTX28 FCC/ACTA Registration Numbers” on page 1-1.

Table 1-15 Station Wiring for Amphenol Connector (P1) on GMAU1

Pin No.	Signal	Pin No.	Signal	Station
1	VR1	26	VT1	DKT #1
2	VR2	27	VT2	DKT #2
3	VR3	28	VT3	DKT #3
4	VR4	29	VT4	DKT #4
5	VR5	30	VT5	DKT #5
6	VR6	31	VT6	DKT #6
7	VR7	32	VT7	DKT #7
8	VR8	33	VT8	DKT #8
9	VR9	34	VT9	DKT #9
10	VR10	35	VT10	DKT #10
11	VR11	36	VT11	DKT #11
12	VR12	37	VT12	DKT #12
13	VR13	38	VT13	DKT #13
14	VR14	39	VT14	DKT #14
15	VR15	40	VT15	DKT #15
16	VR16	41	VT16	DKT #16
17	(NC)	42	(NC)	
18	PF1R	43	PF1T	PFT circuit*
19	(NC)	44	(NC)	
20	(NC)	45	(NC)	
21	(NC)	46	(NC)	
22	(NC)	47	(NC)	
23	CR1	48	CT1	STU #1
24	(NC)	49	(NC)	
25	CR2	50	CT2	STU #2

* Connect a Standard Telephone to PFT pair to provide access to CO Line1 during a power failure.

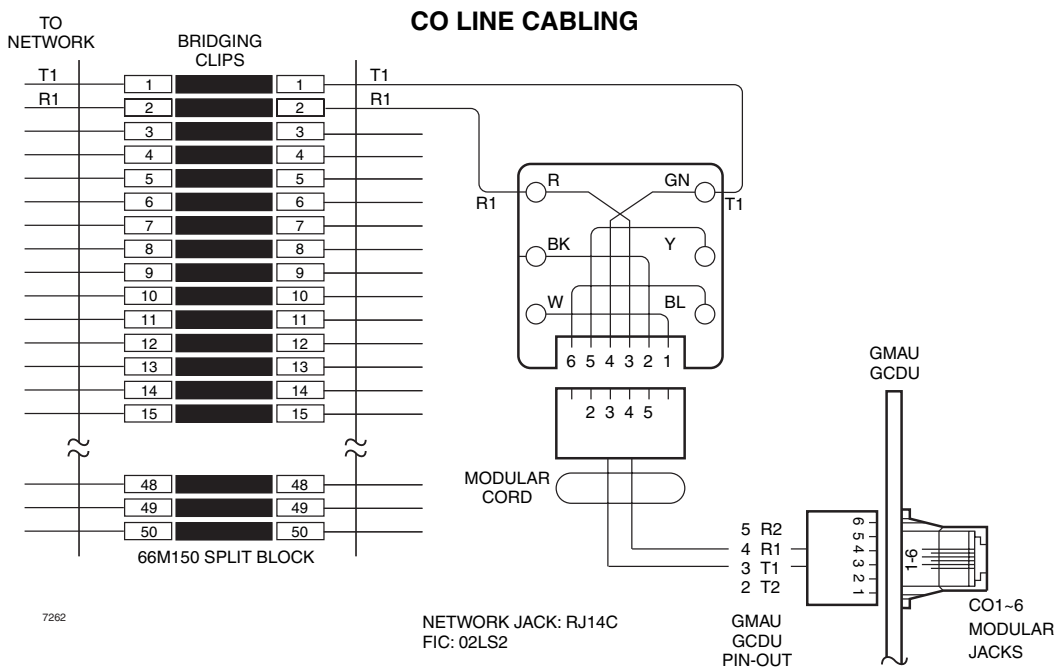
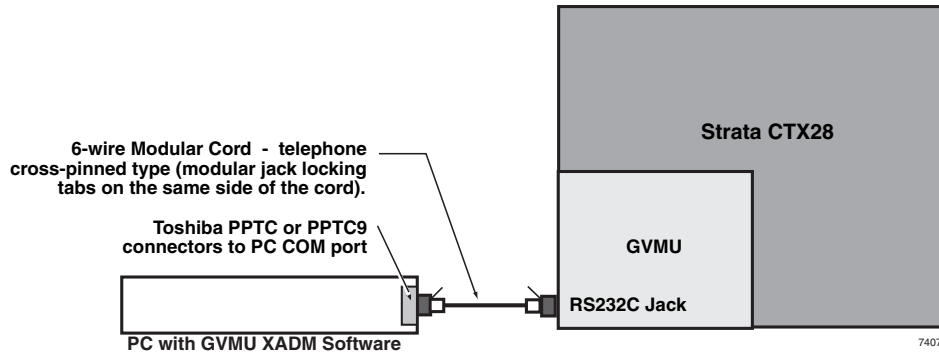


Figure 1-19 MDF Wiring to CO Lines (GMAU and GCDU)

GVMU Administration PC Connections



Strata CTX28 Serial Port Modular Pins

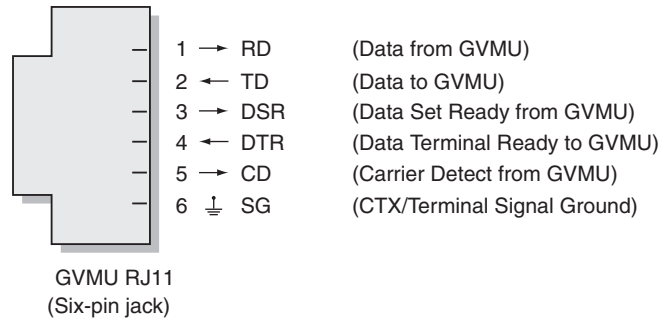


Figure 1-20 GVMU Serial Port Interface Connection

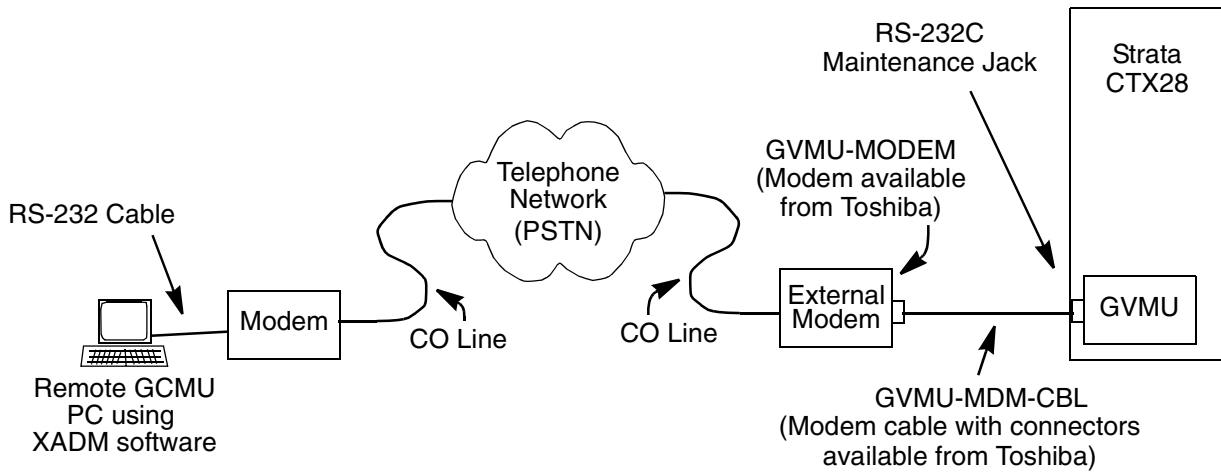


Figure 1-21 GVMU PC Modem Interface Connection

Station Loop Lengths

In a single site installation, the Base and optional Expansion Cabinets must be placed within the allowed maximum distance of each other as designated by [Table 1-16](#)

Table 1-16 Station Loop Lengths¹

Mode	Maximum line length (24 AWG)
DKT3000 or DKT2000-series	1000 ft. (303m)
Standard telephones, voice mail, standard single line telephone device, etc.	Approximately 3000 ft. (909 m) with 150 ohm device. ²

1. When the system is powered by backup battery, range may be less as the backup battery is discharged.
2. See manufacturer's product specifications for exact resistance of device.

DKT3000-series telephone loop limits are in [Table 1-17](#).

Table 1-17 Loop Limits for DKT3000-series Telephones

Telephone/Device	Power Supply Unit (PSU) or Battery Backup	Maximum line length (24 AWG)
DKT3000-series or DKT2000-series models, DKT with BVSU or DVSU or DKT with BHEU or HHEU	PSU	1000 ft. (303m)
	Battery Backup	675 ft. (204m)
DKT with BPCI	PSU	1000 ft. (303m)
	Battery Backup	500 ft. (151m)
DKT with BPCI + BHEU	PSU	1000 ft. (303m)
	Battery Backup	500 ft. (151m)
DKT with DADM3020 or DADM2020 (1 ADM)	PSU	675 ft. (204m)
	Battery Backup	165 ft. (50m)
DKT with DADM3020 or DADM2020 (2 ADMs)	PSU	500 ft. (151m)
	Battery Backup	33 ft. (10m)
DDCB3A	PSU	1000 ft. (303m)
	Battery Backup	165 ft. (50m)

CTX28 Default Initialized Data

- The default programming data shown in Table 1-18 applies even if the option units (GCDU/GSTU/GVMU) are not mounted. This enables voice mail to be used as is if the GVMU is inserted. Default programming accommodates the other options similarly.
- When GCDU is unmounted, CO4-6 and DKTs 9-16 are “make-busy” and cannot be used.
- When GSTU is unmounted, SLT2 is not “make busy.”
- When GVMU is unmounted, VM ports 1-4 are “make busy.”

Table 1-18 CTX28 Digital Telephone Default Programming Data – Program 205

DKT1-8									
		DKT1	DKT2	DKT3	DKT4	DKT5	DKT6	DKT7	DKT8
FB7		CO6	CO6	CO6	CO6	CO6	CO6	CO6	CO6
FB6		CO5	CO5	CO5	CO5	CO5	CO5	CO5	CO5
FB5		CO4	CO4	CO4	CO4	CO4	CO4	CO4	CO4
FB4		CO3	CO3	CO3	CO3	CO3	CO3	CO3	CO3
FB3		CO2	CO2	CO2	CO2	CO2	CO2	CO2	CO2
FB2		CO1	CO1	CO1	CO1	CO1	CO1	CO1	CO1
FB1	PDN	200	201	202	203	204	205	206	207
VMID	same as PDN								
DKT9-16 (Optional)									
		DKT9	DKT10	DKT11	DKT12	DKT13	DKT14	DKT15	DKT16
FB7		CO6	CO6	CO6	CO6	CO6	CO6	CO6	CO6
FB6		CO5	CO5	CO5	CO5	CO5	CO5	CO5	CO5
FB5		CO4	CO4	CO4	CO4	CO4	CO4	CO4	CO4
FB4		CO3	CO3	CO3	CO3	CO3	CO3	CO3	CO3
FB3		CO2	CO2	CO2	CO2	CO2	CO2	CO2	CO2
FB2		CO1	CO1	CO1	CO1	CO1	CO1	CO1	CO1
FB1	PDN	209	210	211	212	213	214	215	216
VMID	same as PDN								

Table 1-19 Program 204 Default Data

In Program 204, all telephones are programmed as 20 buttons.

Table 1-20 Program 102 New Default Data

Feature Code	Default Value	Function
870	#963	Call Monitor Log Off

Table 1-21 Program 205/213/215 New Default Data

Feature Code	Function
870	Call Monitor Feature Button

Table 1-22 Program 313 Default Data

Caller ID	Prog 313	Function		CTX28 default
	FB1	Caller ID Receive Method	<u>nothing</u> /ANI-MCI/ANI-Sprint/ CLASS	CLASS
	FB2	Caller ID Identification Notice Contents	<u>ANI and DNIS</u> /DNIS/DID	ANI or DNIS
under line is CTX100's default				
Note Class Equipment number is not required for CTX28 because CLID circuits are built-in and dedicated to each CO line.				

Table 1-23 Program 100 Default Data

Virtual Slot Equip. Nos.	Circuits	PCB Code	Station Line Numbers	Connection
0101	8 - Digital Telephones (no spkr OCA)	017	200~207	GMAU1A (motherboard)
0102	3 - CO lines, with CLID	028	CO1~CO3	
0103	Not used			
0104	Standard Telephone 01~02	026	01~208 02~217	01-GMAU1A 02-GSTU1A
0105	4 - Voice Mail ports	026	220~223	GVMU1A
0106	Not used			
0107	8 - Digital Telephones	017	209~216	GCDU1A
0108	3 - CO Lines with CLID	028	CO4~CO6	
0205	Virtual BIOU	020	Relay Contact Page, MOH	GCTU1A
*Slot codes are set during system initialization and cannot be changed.				

Table 1-24 Program 200 Default Data

	GMAU									
FB0	DN	200	201	202	203	204	205	206	207	208
FB1	EQUIP	010101	010102	010103	010104	010105	010106	010107	010108	010401
FB2		DKT	DKT	DKT	DKT	DKT	DKT	DKT	DKT	SLT
FB3		Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.
FB19	VM ID	200	201	202	203	204	205	206	207	208
FB22	VM MW Center Port	220	220	220	220	220	220	220	220	220

Table 1-25 Prog 200 Default Data

	GCDU									GSTU
FB0	DN	209	210	211	212	213	214	215	216	217
FB1	EQUIP	010701	010702	010703	010704	010705	010706	010707	010708	010402
FB2		DKT	DKT	DKT	DKT	DKT	DKT	DKT	DKT	SLT
FB3		Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.	Ext.
FB19	VM ID	209	210	211	212	213	214	215	216	217
FB22	VM MW Center Port	220	220	220	220	220	220	220	220	220

Note To log into GVMU boxes for the first time, enter the default telephone station number plus 997. Example: for Station 200, enter 200997 as the Voice Mail ID.

Table 1-26 Prog 200 Default Data for GVMU

	GVMU				
FB0	DN	220	221	222	223
FB1	EQUIP	010501	010502	010503	010504
FB2		SLT	SLT	SLT	SLT
FB3		Voice Mail	Voice Mail	Voice Mail	Voice Mail
FB19	VM ID				
FB22	VM MW Center Port				

Table 1-27 Prog 579 Default Data

FB04	Output of Class, ANI and DNIS	1 (Enable)	
FB05	Calling Number Digits Sent to VM	10	Same as CTX100 Do NOT change for GVMU
FB16	VMDN	220	
FB19	SMDI ANI / CLID Digit Length	10	Same as CTX100 Do NOT change for GVMU

Table 1-28 Prog 580 – Voice Mail Data Assignment Default Data for GVMU

FB0	DN	220	221	222	223
FB1	INBAND / SMDI	SMDI	SMDI	SMDI	SMDI
Note In Program 209, the above Voice Mail ports are assigned to Hunt Group 01 (circular).					

Table 1-29 Prog 218 – Voice Mail Hunt Group Assignment Default Data

FB0	GRP	1	1	1	1
FB1	INDEX	1	2	3	4
FB2	DN	220	221	222	223
Note VM ports are assigned to Hunt Group 1 (circular) in Prog. 209 in default data.					

Table 1-30 Prog 300 Default Data

FB0	TRK NO	1	2	3	4	5	6
FB1	EQUIP	010201	010202	010203	010801	010802	010803
FB2	ILG	1	1	1	1	1	1
FB3	OLG	1	1	1	1	1	1
FB4		DTMF	DTMF	DTMF	DTMF	DTMF	DTMF
FB5		LOOP	LOOP	LOOP	LOOP	LOOP	LOOP
FB12	HUNT ORDER	6	5	4	3	2	1

Table 1-31 Prog 310 Default Data (Trunk > Assignment > DIT)

FB0	Trunk Number	1	2	3	4	5	6
FB0	EQUIP	010201	010202	010203	010801	010802	010803
FB1	Day 1 Destination	No Data	No Data	No Data	No Data	No Data	No Data
FB2	Day 2 Destination	No Data	No Data	No Data	No Data	No Data	No Data
FB3	Day 3 Destination	No Data	No Data	No Data	No Data	No Data	No Data
FB4	Music on Hold Source	Processor MOH Jack	Processor MOH Jack	Processor MOH Jack	Processor MOH Jack	Processor MOH Jack	Processor MOH Jack

This is the last page of the document.