

# D Appendix D: Voice Interface

Congratulations on purchasing the GSC3000 Voice Interface. With this site control accessory, your GSC3000 site controller can be easily accessed via dial-up telephone line, anywhere, anytime. You will be able to control your site with DTMF tones from your touch-tone telephone.

**GSC3000 Voice Interface Installation and Operations Manual**  
**Gentner Part No. 800-085-130**  
**May 1999 (Rev. 1.1)**

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This equipment complies with the requirements of the EU guidelines:



89/336/EEC "Electromagnetic Compatibility"  
73/23/EEC "Electrical operating material for use within specific voltage limits"

Conformity of the equipment with the above guidelines is attested by the CE mark.

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# 1 Introduction

## Congratulations!

This supplement to the GSC3000 Installation and Operations Manual explains how to install, set up, and operate the Voice Interface. It also supplies instructions on how to resolve technical problems. Please insert this supplement into your GSC3000 Installation and Operations Manual behind the tab labeled "App. D: Voice Interface."

If you need any additional information on how to install, set up, or operate your system, please contact us. We welcome and encourage your comments so we can continue to improve our products and serve your needs.

### Sales and Customer Service

**Telephone:** 1.800.945.7730 (USA) **or** 1.801.975.7200

**Fax:** 1.800.933.5107 (USA) **or** 1.801.977.0087

**e-mail:** [bcastinfo@gentner.com](mailto:bcastinfo@gentner.com)

### Technical Support

**Telephone:** 1.800.283.5936 (USA) **or** 1.801.974.3760

**Fax:** 1.801.974.3638

**e-mail:** [tech1@gentner.com](mailto:tech1@gentner.com)

**Gentner Communications Corporation**

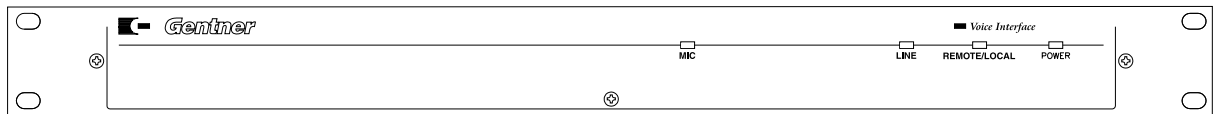
**[www.gentner.com](http://www.gentner.com)**

1825 Research Way, Salt Lake City, UT 84119

## Warranty Registration

Please register your Voice Interface by completing the online registration at **www.gentner.com**. When your product is properly registered, Gentner Communications will be able to serve you better should you require technical assistance or wish to receive upgrades, new product information, etc.

Ensure that the following items were received with your shipment:



GSC3000 Voice Interface  
Part 910-085-130



10-inch G-Bus  
Jumper  
Part 830-085-104



G-Bus  
Terminator  
Part 830-085-100



AC Power Cord  
Part 699-150-006



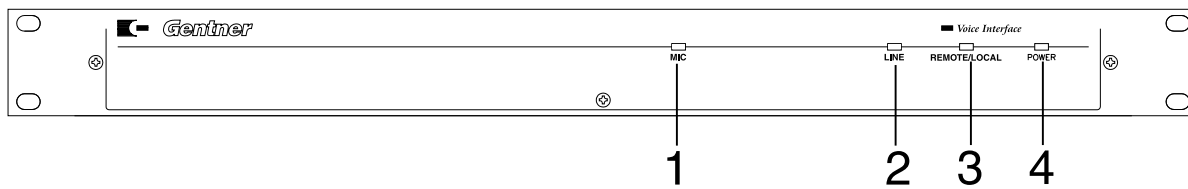
**Gentner Communications is not responsible for product damage incurred during shipment. You must make claims directly with the carrier. Inspect your shipment carefully for obvious signs of damage. If the shipment appears to be damaged, retain the original boxes and packing material for inspection by the carrier. Contact your carrier immediately.**

# 2 Overview

## About the Voice Interface

The Voice Interface is designed for use with the GSC3000 site controller. It provides vocal interaction with the site as an observer (read only) or operator (perform metering, status, command/macro functions, and capture data) via telephone line.

The Voice Interface also allows for interconnection with an on-site modem via RJ11 and RS232 port.



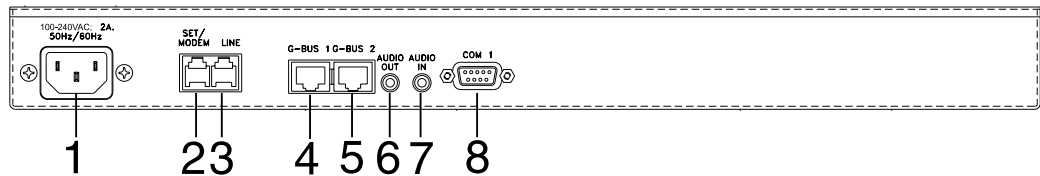
### Front Panel

The Voice Interface's front-panel is designed for simple, at-a-glance monitoring of basic operations.

1. **Mic.** From this opening, dial-up callers can audibly monitor the surrounding area of the installed Voice Interface unit.
2. **Line.** Indicates when the telephone line connected to the Voice Interface is in use. Green indicates a voice-mode session in progress; red indicates a data-mode session. If the LED is off, the line is not in use. On older Voice Interface models, if the LED is amber, the line is in use by a device connected to the Set/Modem input. Newer models will not display any color when another device goes off-hook.

3. **Remote/Local.** Indicates the current status of the I/O units networked on the G-Bus: remote/standard mode (LED will light green), or local mode (LED will flash red), such as when maintenance and/or repairs are being made to site equipment or to the Voice Interface itself. If the LED is OFF, no firmware is loaded into the unit. See Unit Initialization, page 21, to upload firmware.

4. **Power.** Indicates proper power connection of the Voice Interface's external power supply has been properly connected (green). The POWER LED also indicates microprocessor control (POST tests, firmware upload, etc.) by glowing amber. If power is not present, the LED will be off.



## Back Panel Connectors

The Voice Interface back-panel connectors are designed for easy integration of the Voice Interface into the GSC3000 G-Bus environment.

1. **Power.** This switching power module accommodates power ranging from 100–240Vac, 50/60Hz.

2. **Set/Modem.** This RJ11 connector allows for connection to either an on-site telephone set, or an on-site modem.

3. **Line.** This RJ11 connector allows for connection to the on-site telephone line.

4. **G-Bus 1.** This RJ45 connector allows for interconnection with the on-site GSC3000 I/O units via the G-Bus network—the G-Bus 2 of a preceding I/O unit to the Voice Interface G-Bus 1 connector; the Voice Interface's G-Bus 2 connector to the following I/O unit's G-Bus 1 connector—creating a daisy-chain style local network. Terminate the unused connector port with the provided terminator.



5. **G-Bus 2.** This RJ45 connector allows for interconnection with the on-site GSC3000 I/O units via the G-Bus network—the G-Bus 1 of a preceding I/O unit to the Voice Interface G-Bus 2 connector; the Voice Interface's G-Bus 1 connector to the following I/O unit's G-Bus 2 connector—creating a daisy-chain style local network. Terminate the unused connector port with the provided terminator.

6. **Audio Out.** Telco two-wire line receive audio is routed to this sub-miniature connector (when turned on).

7. **Audio In.** This sub-miniature connector allows for external audio (such as off-air audio) to be fed directly through the Voice Interface to the two-wire Telco line.

8. **COM 1.** This RS232 port allows for connection to the on-site modem or direct PC connection to upload firmware into the Voice Interface unit.



# 3 Installation

## Before You Install

The Voice Interface is designed to work with the Windows user interface. However, to further improve your ease in use and installation of hardware and software, prepare your site by taking the following factors into consideration:

### Power Requirements

The Voice Interface will accommodate an AC voltage-input of 100–240Vac, 50/60Hz.

### Network Requirements

The G-Bus (RS485 LAN) gives you the ability to interconnect the Voice Interface with multiple GSC3000 I/O units. The sum total of all G-Bus cable running between locally connected I/O units and Voice Interfaces should be 1,000 feet or less.

### GSC3000 Software/Windows® Requirements

To function correctly, the Voice Interface requires GSC3000 software version 1.9 or later. This software requires Windows 95, 98, or NT.

### On-Site PC Hardware Requirements (Optional)

For best performance, your PC (minimum Pentium 133) should have a minimum of 16MB RAM, 15MB of free hard-disk space, a free COM port, 19,200 bps or faster modem (US Robotics V.34 Sportster 33.6 external modem recommended), and a mouse. Users planning to simultaneously view more than one site at a time may wish to consider a 17-inch or larger monitor.



**The Voice Interface must be connected to a socket-outlet with a protective earthing connection. Verify with a meter.**



**The GSC3000 software should be installed and functioning properly on all PCs accessing the Voice Interface unit before installing the Voice Interface.**

**Virtual Site Monitoring**

For continuous site monitoring, dedicating a PC to the GSC3000 system is recommended. Adding additional COM ports to existing PCs may create problems difficult for users to resolve. If, however, you decide to add PC COM ports, Gentner Communications recommends Control Rocket Port four and eight-port extension boards.

**Four-Wire Modem**

For four-wire modem installations, Gentner Communications recommends the Multi-Tech MT28346 modem.

**Telephone Surge Protection**

The Voice Interface is a sensitive electronic device. In order to avoid damage to your unit, Gentner Communications strongly recommends that you always properly protect your Voice Interface from voltage surges over telephone lines and AC power lines connected to your Voice Interface.



**Never disconnect or bypass surge protection for your Voice Interface.**

**Damage to your Voice Interface system caused by voltage surges is not covered under the terms of the Gentner warranty agreement.**

**Equipment Placement**

The Voice Interface is designed for installation into a standard 19-inch rack cabinet.

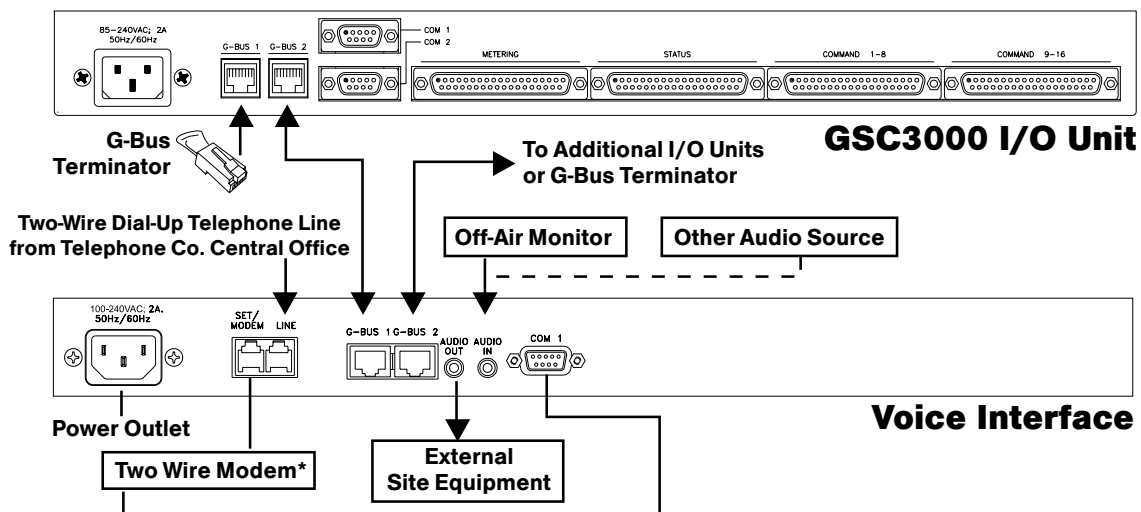
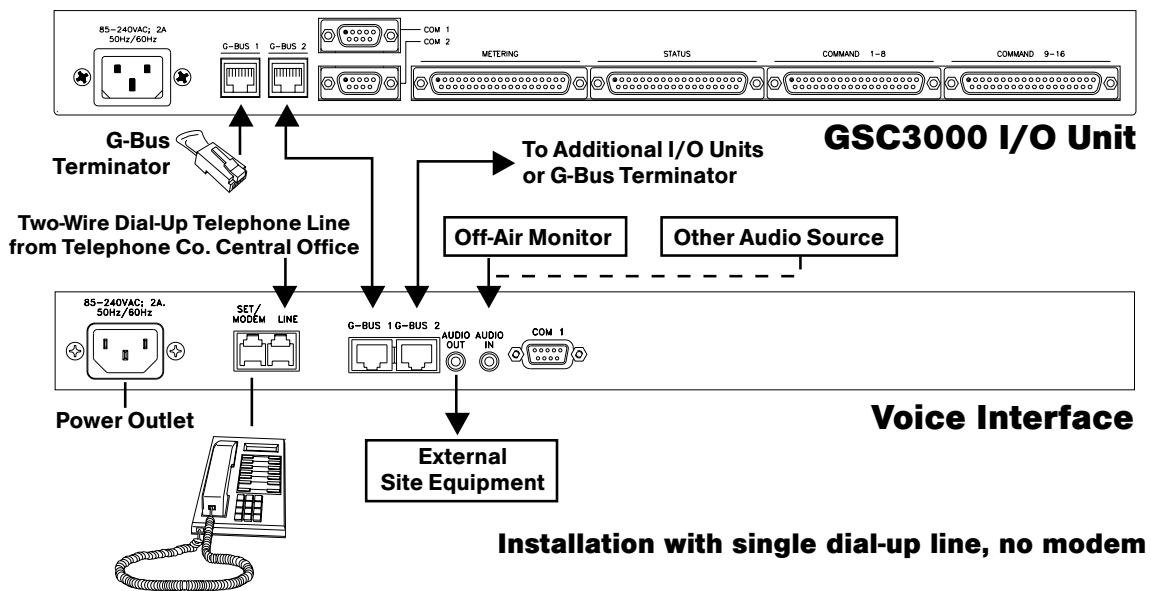
## Connecting to the I/O Unit

The Voice Interface connects directly to your GSC3000 I/O unit, providing expanded accessibility to site equipment. Installation includes installing a dial-up telephone line, a G-Bus network interconnection, and setting the Voice Interface's network address.

**!** Your GSC3000 site controller (both hardware and version 1.9 or later software) should already be installed and functioning properly before installing your Voice Interface.

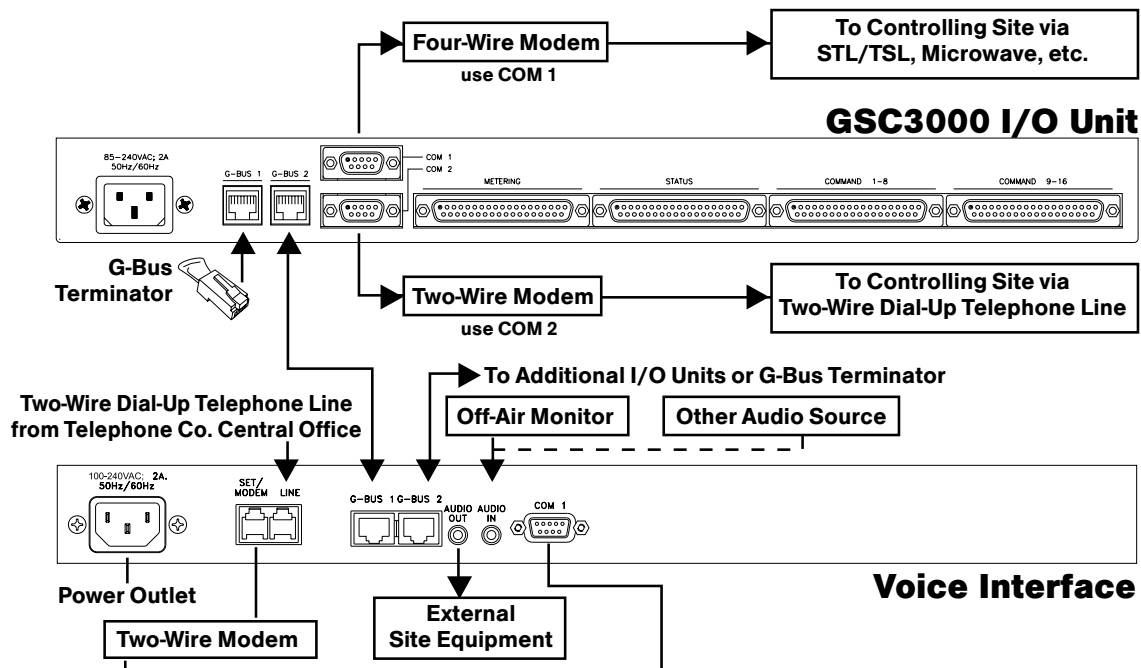
### Completed Installation

The following diagrams illustrate a typical Voice Interface installation with one dial-up telephone line and no modem, one dial-up telephone line and one modem, and two (or more) dial-up telephone lines and two modems.

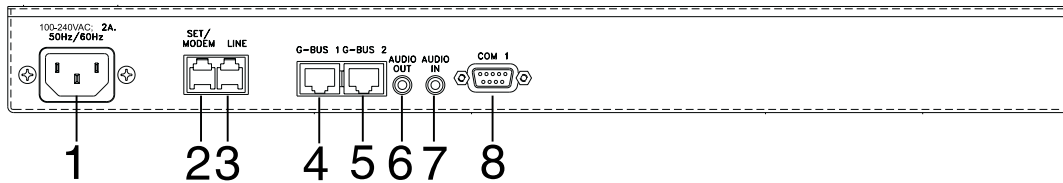


\*When using a single modem, the modem must connect to the Voice Interface unit.

**Installation with single dial-up line, single modem**



Installation with two dial-up lines, two modems



**Step 1 – Telephone/Modem Connections**

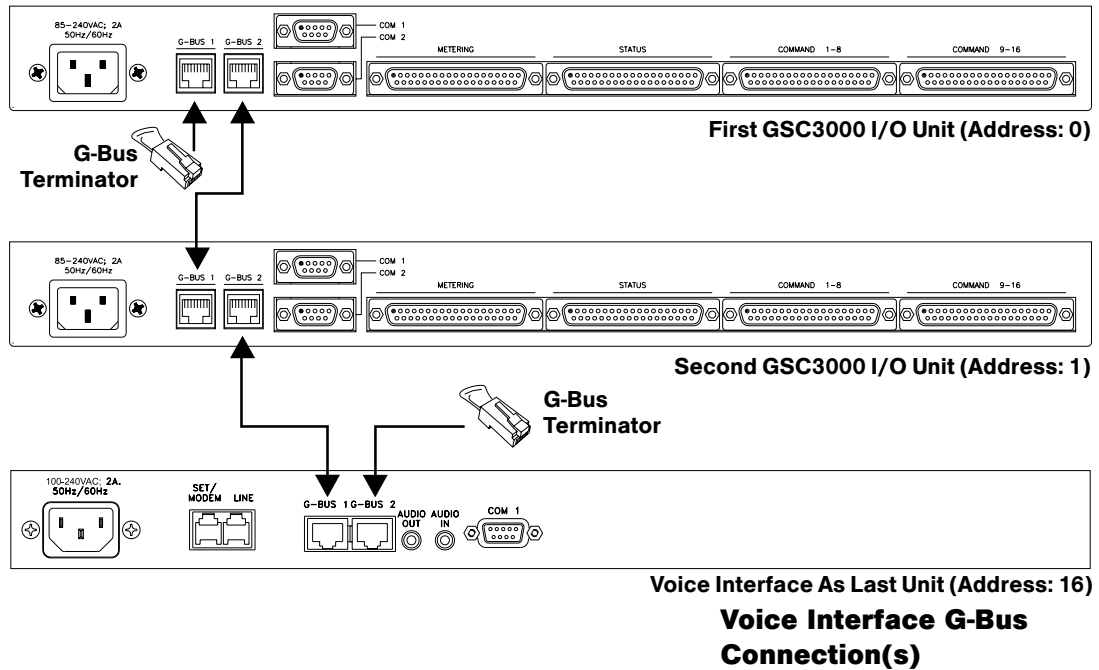
To install a modem with the Voice Interface, two connections are required.

First, connect a line from the telephone company central office to the “line” RJ11 connector [3]. For the second connection, connect a phone cable between the Set/Modem RJ11 connector [2] and the line input of the modem. Next, connect the null-modem cable from the modem to the COM 1 [8] connector.

To install a telephone set with the Voice Interface with a modem, connect it to the set connector of the modem.



**If there is only one telephone line available at the site, the Set/Modem connector must be used for connection with the on-site modem.**



**Step 2 — G-Bus Connection**

The G-Bus 1 and G-Bus 2 connectors on the Voice Interface’s back panel are designed for setting up your G-Bus network, just as with a GSC3000 I/O unit.

In fact, the Voice Interface is treated as another networked I/O unit, connected in a daisy-chain fashion using category five twisted-pair cable.

If connecting the Voice Interface at the end of the G-Bus network, the Voice Interface’s G-Bus 1 connector must be connected to the G-Bus 2 connector of the preceding I/O unit in the chain. The Voice Interface must have the G-Bus 2 connector terminated with a G-Bus terminator. The factory recommended setting for the Voice Interface’s unit number is 16. No matter how many I/O units you have on the chain, the Voice Interface should always be set as unit 16.



**If the Voice Interface and networked I/O unit(s) are stacked vertically, connect them using the short RJ45 jumper (provided). If networking distances between I/O units will be greater than 30 feet, Gentner Communications recommends that category five twisted-pair (10BaseT LAN) cable be used.**





# 4 Security

You don't want just anyone to be able to access your GSC3000. That's why we've created the security feature.

Security for the Voice Interface is similar to that of the GSC3000 I/O unit and is complimented by the Voice Interface's two modes of operation: data and voice. Manipulation of security parameters through the Voice Interface is only possible through data-mode connection and GSC3000 software.

## Changing Security Parameters

Connect the null modem cable from the computer to Com 1 for a direct connection. From the GSC3000 Configuration screen, pull down the Site menu [1] and ensure that Unit Initialization is not checked, then verify that Work Off-Line is cleared [3]. Next, click on the configured site's icon [2].





**Site Access Window**

After connection has been made, the GSC3000 software will open a Site Access window, asking for a password. Enter the default password (GSC3000), or if you have already changed the password, enter your user-defined password.

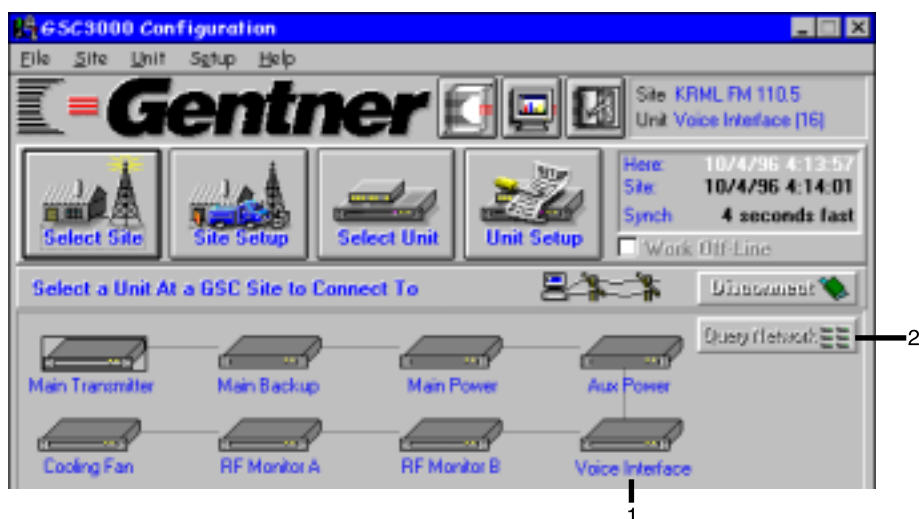
If you are denied access at this point, call 1.800.283.5936 in the U.S. or +1.801.974.3760 internationally for technical support.

After connecting to your Voice Interface for the first time, a map of up to 16 I/O units and the Voice Interface should now be visible in the GSC3000 Configuration window. Since the Voice Interface is new to the site, it should appear white.



Since this will be the first time you are actually communicating with your Voice

Interface, the GSC3000 software will take about 1–2 minutes to query the network.



**Configuration window with mapped I/O-units and Voice Interface**



If the Voice Interface icon does not appear, click on the Query Network

button [2] to requery the network.

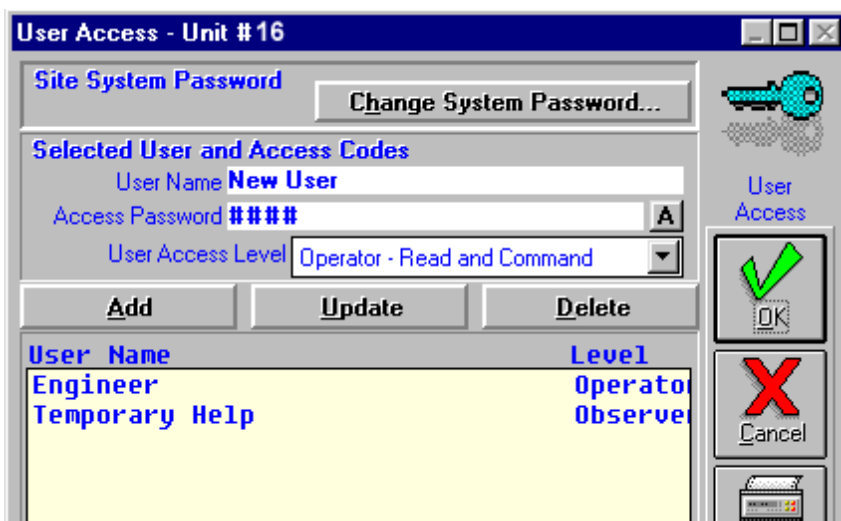
Click on the Voice Interface's icon [1]. This opens the Setup Management window (shown on next page) within the GSC3000 Configuration window.



**Configuration window with Setup Management window**

The GSC3000 Configuration window will open a Setup Management window [A].

Click the Site button [1]. This will call up the User Access window.



**User Access window**

## User Information

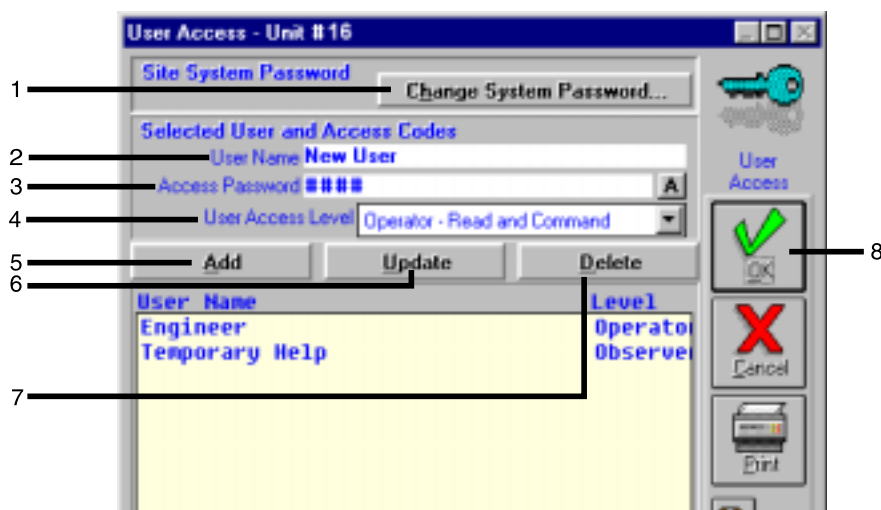


**In Data Mode, there are three levels of user access via the Voice Interface:**

**system, observer, and operator.**

**In Voice Mode, system configuration cannot be set up or changed.**

In Voice Mode there are two levels of user access via the Voice Interface: observer and operator.



**Set the system password (from one to eight characters; digits A–Z and 0–9 are**

**available for use) accessible by dial-up telephone line and DTMF tones. When entering letters, the Voice Interface converts the letter to the numeric equivalent on the telephone keypad (i.e. Q=7, Z=9). Protect the password—give only to those who will have legitimate needs for each level of access.**

**Do not assign the password 999 or 020. The 999 DTMF code signs the caller off from the Voice Interface. The 020 DTMF code switches the Voice Interface from voice to data mode. If 999 is assigned as a password, the Voice Interface will give its good-bye message and drop the line. If 020 is assigned as a password, the Voice Interface will switch from voice to data mode, and no longer accept DTMF tones.**

Observer-level access allows read-only access; Operator-level access allows the user to monitor status, issue commands and macros, and perform data captures.

After entering a user's information for the first time, click the Add button [5] after all the information is entered. If the user is already on the system, but the user's information has changed (e.g. new password, changed access level, etc.), highlight the user, make the changes, then click the Update button [6]. If the user needs to be removed, highlight the user then click the Delete button [7].

When all user information for the unit is complete, click OK [8] to return to the Configuration window. This completes the system/site-security setup. Future changes to system/site security may be accomplished at any time from the Configuration application Site Access window.

# 5 General Setup

## Voice Interface Dial-Up Settings

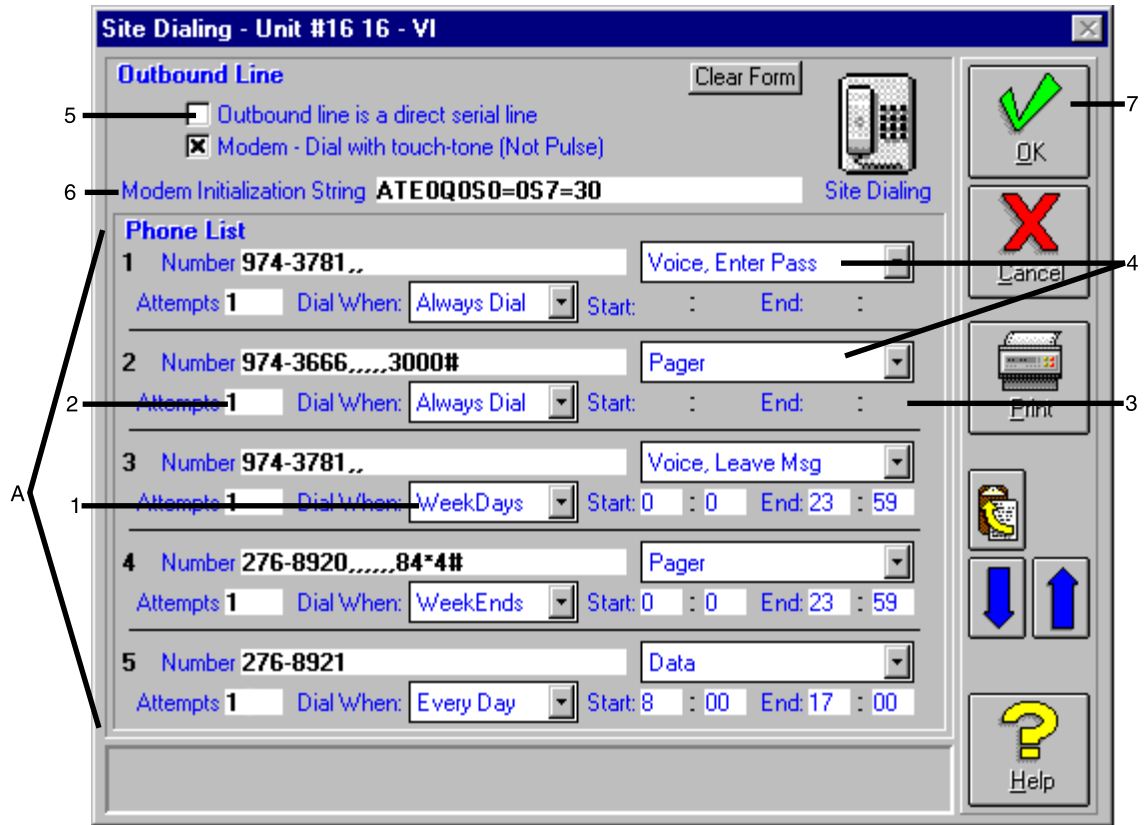
Once security measures are in place, further setup from the GSC3000 Configuration screen should be performed on the Voice Interface

From the GSC3000 Configuration Setup Management window [A], click the Site Dialing button [1].



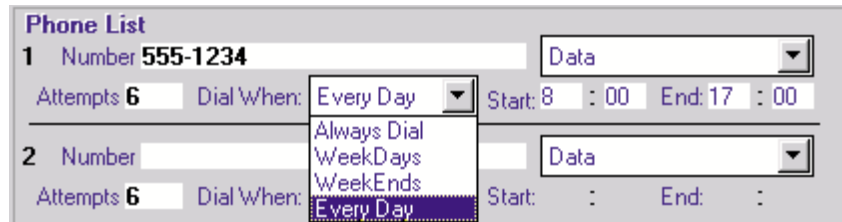
The Site Dialing window (shown below) is where you input the numbers that the Voice Interface will call in the event of an alarm.

Setup outbound numbers in order of priority in the Phone List [A].

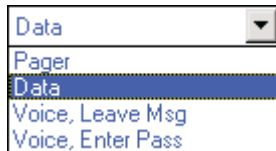


**A comma (,) signifies a two-second pause. You can enter as many commas as you need to have the Voice Interface wait for a voice mail or pager message to finish before the Voice Interface leaves a message.**

Click on the Dial When pull-down menu [ 1 ] to select when you want the Voice Interface to call the particular entry in the phone list: Always Dial, WeekDays, WeekEnds, and Every Day. If you select “Always Dial”, the unit will attempt to contact that number 24 hours a day, 7 days a week, 365 days a year. If you choose any of the other options, you must set up a range of times in which the unit will attempt to contact that number.



Be sure to specify how many attempts should be made to connect [2] and valid calling times [3] (e.g. what hours this number will have someone present to answer it) when appropriate; the valid time must be entered in military time (0:00-23:59 hours). Also enter whether the phone number connects to a pager, data (modem) line, voice line (message only), or voice line (enter password) [4].



**Site Dialing pull-down menu**

If the Outbound Line is a direct serial line, click that option [5]. If you are using a modem, select modem.

If using a modem, verify the modem initialization string [6], then click OK [7]. This uploads the information to the Voice Interface and returns you to Setup Management.



**Start and End times cannot cross midnight on one entry. To setup an entry that crosses midnight, you must use two Phone List entries. The End time of the first would be 23:59. The Start time of the next would be 0:00.**



**Ensure that Modem—Dial with touch-tone [5] is selected. If your phone system is a pulse system, the Voice Interface will not dial out.**

## Unit Initialization

Voice Interface initialization is needed only if you're updating the revision level or if the Remote/Local LED is dark. To initialize the Voice Interface, you must upload the GSC3000 Voice Interface firmware to the unit.

To upload the firmware:

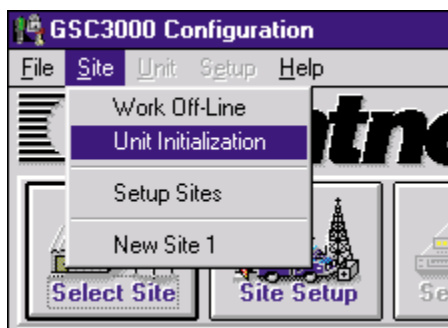
1. Directly connect your PC to the COM 1 port of the Voice Interface unit. Disconnect any G-bus connections to the Voice Interface.
2. Launch the GSC3000 version 1.9 software.
3. From the Menu bar, select Site>Unit Initialization. This places a check mark next to "Unit Initialization."



**The Voice Interface is shipped from the factory with the firmware installed.**



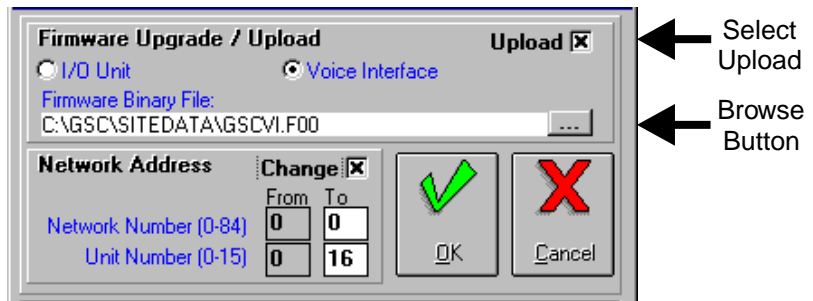
**A firmware upload will not work through the G-bus.**



4. Click on the appropriate GSC Site for a direct connection.
5. A "Burn Firmware" window will open and ask for your password. Enter the password (default is "GSC3000").
6. When the "Unit Initialization" window opens, make sure the upload box is checked.
7. Click the "Voice Interface" button so it has a black dot in the center.
8. Enter the path for the firmware binary file you wish to upload, or click browse to locate a path.



A firmware file always ends with the extension ".F00". The default path is "C:\GSC\SITEDATA\GSCVI.F00".



The Voice Interface unit number should always be set as unit 16.

9. Make sure the "Change" box is not checked at this time.
10. Click "OK."
11. The Special Setup window asks "Are you sure you want to continue?" Click "Yes."

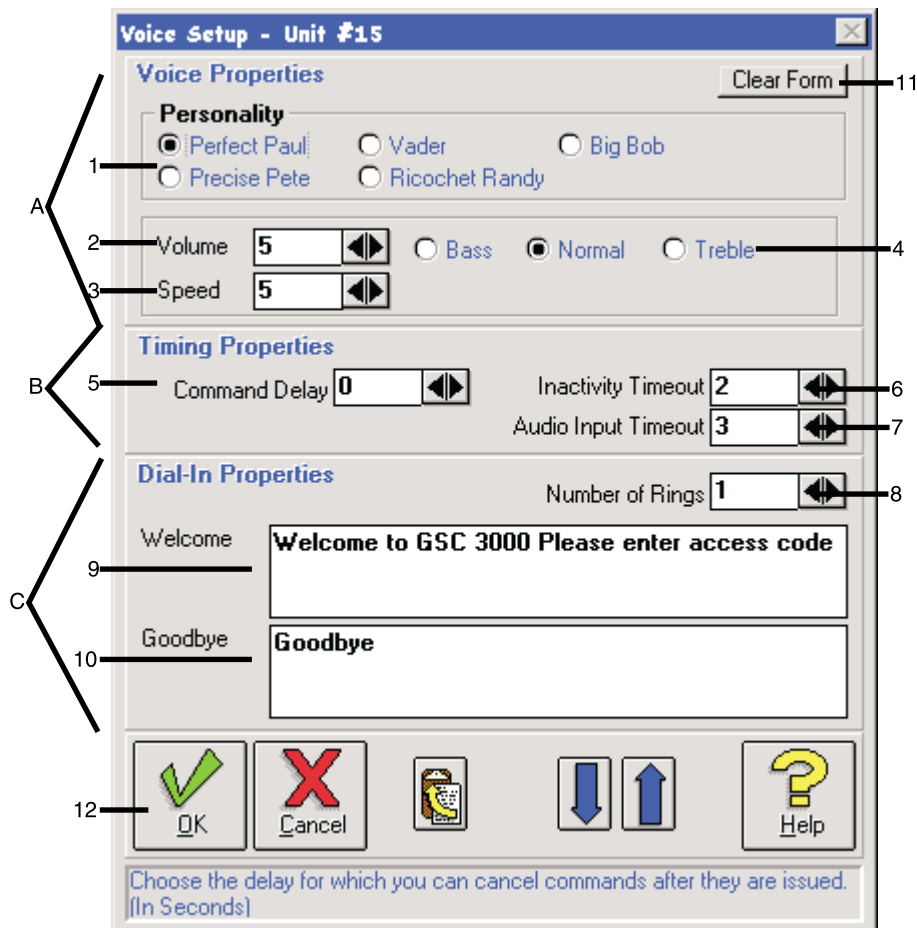
During the upload process, the REMOTE/LOCAL LED will go dark. When finished, the LED should be solid green. If the upload fails, disconnect power to the Voice Interface unit and wait for approximately 10 seconds. Then reconnect power and try again.



# Programming Speech

## Voice Properties

The Voice Interface uses a phoneme-based text-to-speech synthesizer. A 16-bit converter is used to transform ASCII text to a high-quality, male voice.



The Voice Interface's voice properties [A] can be customized to meet practical and preferential needs.

### **Personality**

The vocal personality [1] (pitch, tone and rate of speech) is controllable. Click the desired setting from five options:

- Perfect Paul (default)
- Vader
- Big Bob
- Precise Pete
- Ricochet Randy

### **Volume**

The voice volume can be set [2] at a range of 0–9. Five is default.

### **Speed**

The voice speed of delivery can be set [3] at a range of 0–9. Five is default.

### **Pitch**

Three pitch settings [4] can also be selected from: bass, normal (default), and treble.

## Timing Properties

The Voice Interface's timing properties [B] can be customized to your specific needs.

### **Command Delay**

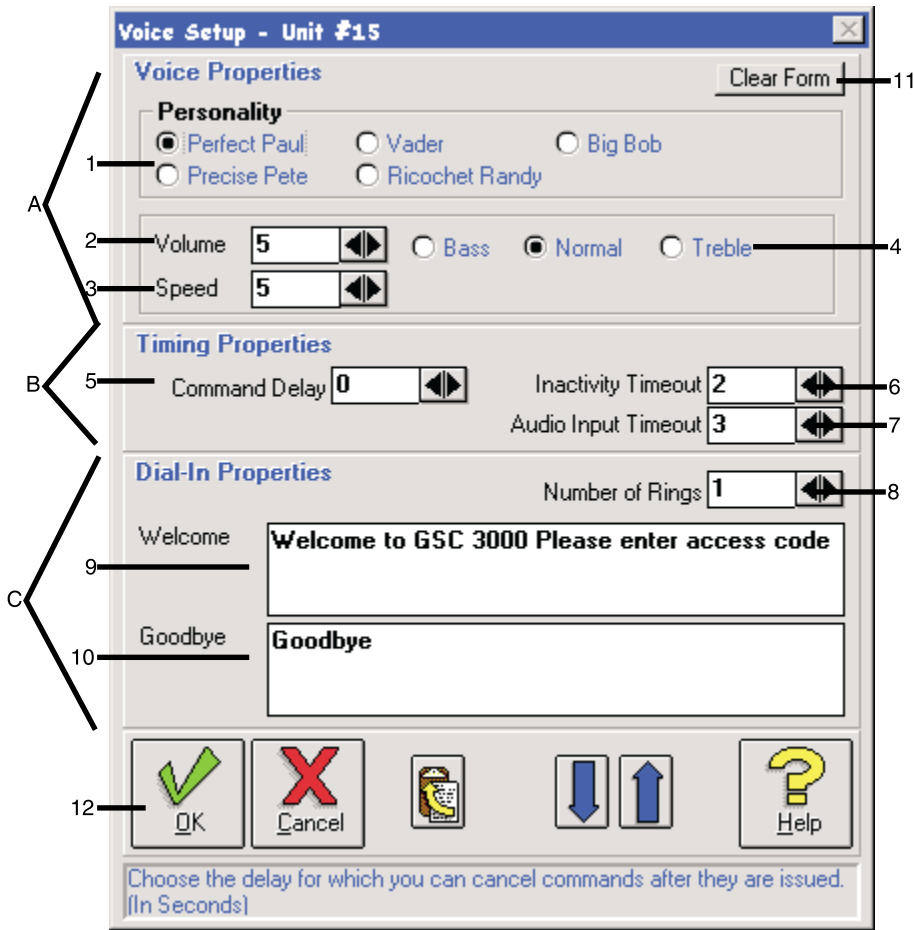
The Voice Interface's command-delay function [5] can be set anywhere from 0–15 seconds (default is zero). This function allows a delay time after a command is issued via telephone line before the command is performed to allow for a miskeyed command to be cancelled (0#; Escape/Cancel Command).

### **Inactivity Timeout**

The inactivity timeout [6] can be set from 1–15 minutes (default is two minutes). If no DTMF tones are issued to the Voice Interface in this amount of time, the Voice Interface will automatically drop the line.

### Audio Input Timeout

The audio-input timeout [6] can be set from 1–15 minutes (default is three minutes). This timeout pertains to any audio being sent along the Telco two-wire line, be it via the sound sensor or Audio In connector, to the person connected to the Voice Interface. When audio is coming in from the sound sensor or Audio In connector, that audio will automatically stop being transmitted when this timer runs out if the user does not manually switch it off.



## Dial-In Properties

The Voice Interface's dial-in properties [C] can also be easily configured to meet your specific needs.

### Number of Rings

The number of rings before the Voice Interface answers [8] the line is also user definable. One ring is default.

### Welcome

The welcome is the greeting the Voice Interface gives when a user signs on to the site or when the unit calls out with verbal alarms. It can be customized [9] as long as it is composed of less than 250 characters. The default welcome states:

• WELCOME TO THE GSC3000 VOICE INTERFACE.

This statement can be altered to include the station call letters or other words relevant to the facility. The Voice Interface can be programmed with almost any desired statement; the only limit is the Voice Interface's ability to pronounce the entered word(s). If the Voice Interface has difficulty pronouncing certain words, it may be necessary to spell the word(s) phonetically.

Gentner Communications recommends that the welcome always begin with the words:

• WELCOME TO THE ....

and include the words:

• PLEASE ENTER ACCESS CODE

at the end of the welcome. This will remind users that they have to enter an access code to operate the Voice Interface.

### Good-Bye

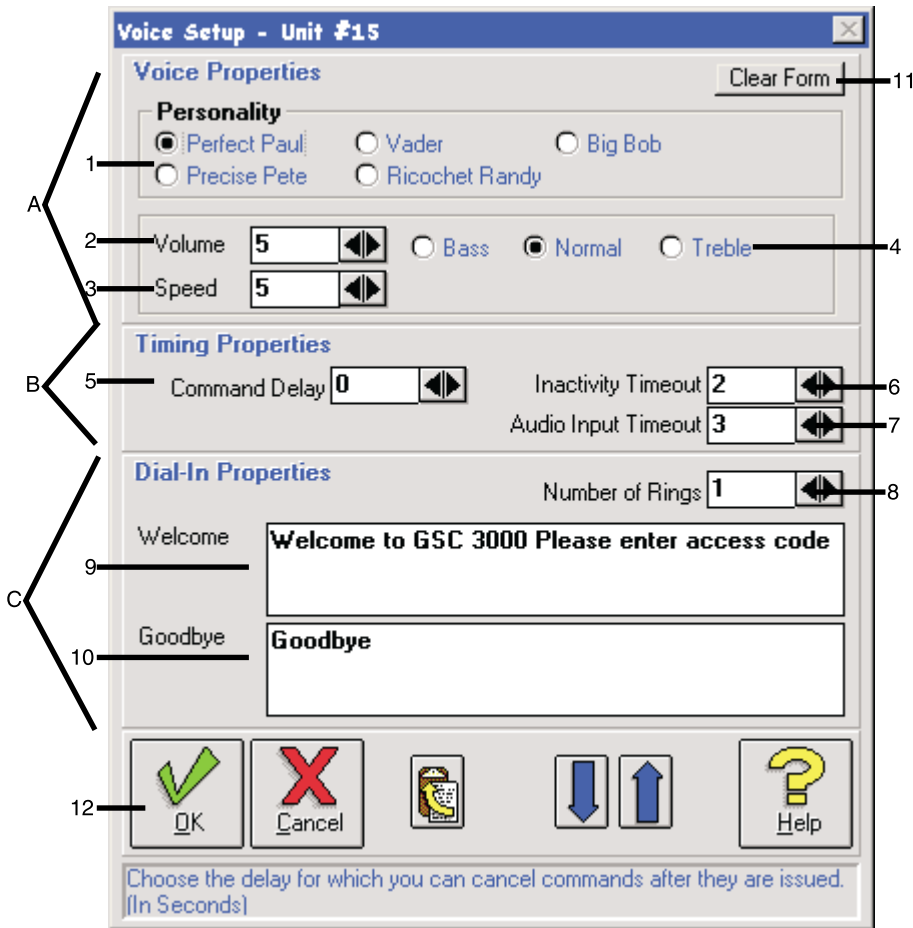
The good-bye (what the Voice Interface says when you disconnect from the site) is also programmable. Enter the desired statement into the provided space [10] and make sure that the entry consists of less than 250 characters. Again, the only limit is the Voice Interface's ability to pronounce certain words.

At any time during voice setup you can click the CLEAR FORM button [11] to start over. When voice setup is complete, click OK [12].



**In instances where the Voice Interface responds verbally, the Voice**

**Interface's responses will be set off by a bullet (•) and printed in SMALL CAPS.**



## Speech

With text-to-speech conversion capabilities, the Voice Interface verbalizes parameters for command, metering, status channels, and alarms as they are defined during setup of the I/O unit themselves (GSC3000 Manual Tab 4: Configuration). For example, when an I/O unit is selected, the Voice Interface will identify the I/O unit by converting the description (entered during I/O unit configuration) into audible speech.



# 7 Operation

DTMF tones operate the Voice Interface. Using any DTMF telephone, the Voice Interface can be called to request readings on status and metering channels, issue commands to any of the command channels, check to see if there are any pending alarms, and/or clear the alarms.

## Voice vs. Data Mode



**If the Voice Interface is set to pick up after one ring, typically six commas (,) should entail enough of a pause for the 020 code to switch the Voice Interface to data mode. Each comma (,) signifies a two-second pause.**

**should entail enough of a pause for the 020 code to switch the Voice Interface to data mode. Each comma (,) signifies a two-second pause.**

The Voice Interface has two modes of operation: voice mode and data mode. To gain access to voice mode, dial the Voice Interface and enter the appropriate access code. (For information regarding access codes, see Security, Page 15.)

The Voice Interface queries its COM 1 port to determine if data mode is a valid mode of operation. If no modem is present, data mode will automatically be disabled, allowing only voice-mode operation.

To enter data mode, the DTMF code 020 must be entered in the telephone number line, similar to a telephone extension.




There are two security levels that allow access to voice mode: observer and operator. Observer is the first level of security. With the observer access code, only status and metering channels can be monitored. Operator is the second security level. With the operator access code, readings can be taken from status and metering channels, commands can be issued to any of the command channels, data captures can be performed, and macros can be evoked.



## Escape/Cancel Command

The Voice Interface can be programmed to pause for a specified length of time (See Command Delay, Page 24) before issuing commands. This gives you a chance to clear/escape entered DTMF codes before the codes are acted on in the case of error.

To clear the Voice Interface memory command buffer, enter:


 "0 #"

The Voice Interface responds:

• CANCELED

New commands can now be entered.



Numbers and phrases sent to the Voice Interface with a DTMF keypad will be offset with a telephone icon () and quotation marks (" "). In instances where the Voice Interface responds verbally, the Voice Interface's verbiage will be set off by a bullet (•) and printed in SMALL CAPS.

## Single/Multiple Responses From Status/Metering Channels

Either single or multiple responses can be requested from status and metering channels.

### Single Response

A single response is requested by entering "\*" after the status or metering-channel code. This instructs the Voice Interface to send only a single response to your request, which will be accurate as of the exact time the "\*" was entered.

### Multiple Response

A multiple response is requested by entering "#" after the status or metering-channel code. This instructs the Voice Interface to give three consecutive responses (at five-second intervals) for the metering or status channel. Each response will be accurate as of the time of the response. Multiple responses allow changes in status or metering-channel inputs to be tracked over a short period of 15 seconds.

## Query Current I/O Unit


Occasionally, it may be necessary to query the I/O unit currently being accessed by the Voice Interface to determine its network address, the security level where the user is logged on, etc. To do so, enter:

 "0 \*"

The Voice Interface will respond with the unit number and identify the access level (observer or operator).

### Remote/Local Status

To determine the state of the Remote/Local button on the current I/O unit, enter:

 "0 9 0"

The Voice Interface will respond with the state of the Remote/Local button (remote mode or local mode).

## Operator and Observer Operation



**The Voice Interface will allow you three attempts to enter the code. If three consecutive mistakes are made entering the code, the Voice Interface will automatically hang up.**

**A "#" must be entered at the end of the password being used when entering DTMF key strokes.**

### Requesting Readings

To request readings from the Voice Interface's status and metering channels, you must:

#### Call the Voice Interface

Dial the Voice Interface's telephone number. The Voice Interface will answer after the programmed number of rings and give its programmed welcome phrase.

#### Enter Access Code

Next, enter the observer or operator access code followed by the # key. The Voice Interface responds:

· SCANNING NETWORK. [BEEP] ... [BEEP] ...

If alarms are pending, the Voice Interface will report which I/O Units have the alarms. When finished scanning the network, the Voice Interface says:

· DONE SCANNING NETWORK. X UNITS FOUND.

If alarms are pending, the Voice Interface will connect immediately to the first I/O unit with alarms pending. If alarms are not pending, the Voice Interface will connect to Unit 0 and say:

· NO ALARMS PENDING.

### Select I/O Unit

Enter the three-digit code (☎ "9 0 0" through ☎ "9 1 5") to select the I/O unit. The Voice Interface will say:

· CONNECTING TO UNIT X. [BEEP] ... [BEEP] ...

If you enter an invalid I/O unit number, the Voice Interface will say:

· I/O UNIT DOES NOT EXIST.

Upon successful connection with an I/O unit, the Voice Interface will say:

· CONNECTION TO UNIT X COMPLETE.

## Status and Meter Channels

After the initial log in stage and I/O unit selection, the following status and meter channels can be monitored.

### List Status Titles

To receive a verbal list of status titles for the current I/O unit, enter:

☎ "7 #"

The Voice Interface will respond with the current I/O unit's status-channel description(s) if a text description has been entered via the GSC3000 Configuration application. If no text has been entered, the Voice Interface will remain silent.

### Request Status Reading

Enter the following code in order to request a reading from a status channel:

☎ "7 x x \*"

If accessing an I/O-8, channel entries 09–16 will trigger an error message:

· EIGHT CHANNELS ONLY IN THIS UNIT.



**Substitute the appropriate code for the x x that corresponds with the channel number to be accessed (e.g. 01 is channel one, 11 is channel 11).**

When the appropriate code is entered, the Voice Interface will respond with the phrase set up for the status channel state.

### List Meter Titles

To receive a verbal list of metering titles for the current I/O unit, enter:

☎ "6 #"

The Voice Interface will respond with the current I/O unit's metering-channel description(s) if a text description has been entered via the GSC3000 Configuration application. If no text has been entered, the Voice Interface will remain silent.

### Request Meter Reading

Enter the following code in order to request information about a metering channel:

☎ "6 x x \*"

The Voice Interface will respond with the phrase set up for the metering channel followed by the actual current reading of the metering channel.

### Sign Off

Sign off from the Voice Interface by entering the following code:

☎ "9 9 9"

The Voice Interface will respond with the programmed good-bye message, then hang up the telephone line.



**The Voice Interface will also automatically hang up if no codes are entered for the user-defined number of minutes. (See Inactivity Timeout, Page 24.)**

## Operator-Only Operations

Operator-level users not only have access to request readings from the status and metering channels, they have the ability to issue commands to the following command channels.

### List Commands


To receive a verbal list of the current I/O unit's commands, enter:

☎ "2 #"

The Voice Interface will respond with the command description(s) for that I/O unit if a text description has been entered via the GSC3000 Configuration application. If no text has been entered, the Voice Interface will remain silent.

**Access Command Channel**


Access the command channel by entering the following code:

 "2 x x\*" or "2 x x #"

The Voice Interface will respond with the command-channel description.

**Energize Switch (A or B)**


Enter the following code to energize switch A:

 "2 x x \*"

The Voice Interface will respond with the programmed phrase identifying switch A and energize the selected command channel's switch A.

OR

Enter the following code to energize switch B:

 "2 x x #"


The Voice Interface will respond with the programmed phrase identifying switch B and energize the selected command channel's switch B.

Each switch is activated after entering "\*" or "#" and the command-delay time elapses. Either symbol can be entered several times in a row (if desired).

You can then enter additional "\*" or "#" to adjust the output as desired.

**List Macros**

To receive a verbal list of the current I/O unit's macro titles and numbers, enter:

 "5 #"

The Voice Interface will respond with the current I/O unit's macro titles and numbers if a text description has been entered via the GSC3000 Configuration application. If no text has been entered, the Voice Interface will remain silent.

**Evoke Macro**

To evoke the macro, enter the following code:

☎ "5 x x #"

The Voice Interface will perform the functions detailed in the macro.

**Perform Data Capture**

Enter the following code to perform a data capture on the current I/O unit: ☎ "0 4 0 \*"

The Voice Interface will capture data within the active I/O unit for later reference at a logged-on PC and say:

• UNIT INFORMATION CAPTURED.

## Remembering Voice Interface Codes



DTMF keypad

The codes for status, metering, and command channels correspond to the letters that are etched into the number keys of a standard DTMF telephone.

Thus, command corresponds with 2, metering corresponds with 6, and status corresponds with 7.

## Muting Outbound Telephone Numbers

The Voice Interface can be prevented from calling an outbound telephone number(s) by entering the following code:

☎ "1 0 1 \*" through ☎ "1 0 5 \*"

The Voice Interface will respond:

• PHONE NUMBER X DISABLED.

This disables alarm reporting for that outbound telephone number.

To enable the outbound telephone number(s) again, enter:

☎ "1 0 1 #" through ☎ "1 0 5 #"

The Voice Interface will respond:

• PHONE NUMBER X ENABLED.

OR

All outbound telephone numbers can be disabled for one hour by disabling alarm reporting. To disable alarm reporting, enter:

☎ "0 3 0 \*"

The Voice Interface will respond:

• ALARM REPORTING DISABLED.

This is useful when reprogramming the unit or making changes to connected site equipment.

### Sample Scenario

Maintenance needs to be performed on the transmitter. Naturally, the best time for the transmitter to be down is around 2 a.m. Just shutting down the transmitter will generate alarms, calling a supervisor at 2 a.m. or calling the station engineer who is performing the maintenance (and already knows the transmitter is down). Thus, the station engineer could shut down the transmitter for a one-hour period to perform the maintenance, and with the alarms disabled, the system would not call the outbound telephone numbers to report them. If maintenance is finished prior to the one-hour period, the alarm reporting can be enabled manually.

To enable alarm reporting before the end of the one-hour period, enter:

☎ "0 3 0 #"


The Voice Interface will respond:

• ALARM REPORTING ENABLED.



**The disabled outbound telephone number will remain disabled until reactivated via DTMF code.**

To determine what alarms are present, enter the following code:

 "0 0 0"

The Voice Interface will respond:

• CHECKING FOR ALARMS ON UNIT X.

If no alarms are present, the Voice Interface will respond:

• NO ALARMS PENDING ON CURRENT UNIT.

The Voice Interface will also tell what mode the Voice Interface is in (operator mode or observer mode).

### Alarm Actions

#	Step Forward
*	Step Back
8	Repeat Last Alarm
6*	Report Mode
3 or 0#	Exit Alarm Reporting
010	Erase All Alarms and Exit

If alarms *are* present, the Voice Interface will list the alarm conditions, beginning with the oldest alarm stored in the system. After each alarm is reported, the following options are possible: scroll forward and back through the alarm list using the # (forward) and \* (back) keys; repeat the alarm just reported with the 8 key; report the current mode by entering 6\* (operator or observer; see Report Mode, Page 41); exit the alarm routine with 3 or 0#; or erase all alarms with 010.

Once the cause of an alarm is determined, the problem can be corrected by issuing commands to the appropriate command channels.

To clear all alarms stored in the Voice Interface, enter:

 "0 1 0"

This clears all alarms. **Be careful with this command, since alarms cannot be recalled once they have been cleared.**



**Clearing an alarm does not mean that the condition that caused the alarm has been corrected.**



### Status-Channel Alarms

Status-channel alarms are generated when the sample changes its state (e.g. a status channel sample goes low or high). For example, if an alarm is generated and cleared, a new alarm will not be generated until the status channel goes back to its nominal condition then changes state to the alarm condition. The alarm is generated by the *transition* between the high and low states.

### Metering-Channel Alarms

Metering-channel alarms are generated the same way as status-channel alarms. The second high limit for a metering channel could be set to generate an alarm. If an alarm is generated and cleared, a new alarm will *not* be generated until the metering-channel's sample returns to the metering-channel's nominal range and then rises to above the second high limit. Once again, the alarm is generated by the *transition* over the tolerance limit.

## Checking Current Date and Time

To check the Voice Interface's real-time clock, enter:

☎ "0 6 0"

The unit will respond with the current date and time (in military time).

## Using the Sound Sensor

The Voice Interface unit contains a small condenser microphone built into its front panel. This microphone can be activated at any time to listen to any sounds being generated in the vicinity of the Voice Interface. This is handy to check for proper operation of cooling fans or other noisy equipment or even listening for voices in the area of your Voice Interface (in the case of a security alarm).

To activate the sound sensor, enter:

☎ "0 5 0 #"

The Voice Interface will respond:

• INTERNAL MICROPHONE ON.

## Sending Telco Audio to the Voice Interface

To deactivate the sound sensor at any time prior to the end of the user-defined duration, enter:

☎ "0 5 0 \*"

The Voice Interface will respond:

• INTERNAL MICROPHONE OFF.

The Voice Interface can patch incoming telephone audio to the Voice Interface's Audio In back-panel connector. This is helpful if you need to broadcast audio directly from the telephone over your transmitter.

Selecting the Audio In path can be done using DTMF tones.

To route telephone audio through the Audio In connector, enter:

☎ "0 7 0 #"

The Voice Interface will respond:

• EXTERNAL AUDIO INPUT ON.

Telephone audio will continue to be routed along the Audio In connector until the user-defined number of seconds runs out (See Audio Input Timeout, Page 25), or until the Audio In routing is manually deactivated (whichever comes first).

To deactivate the two-wire Telco audio routing through the Audio In connector, enter:

☎ "0 7 0 \*"

The Voice Interface will respond:

• EXTERNAL AUDIO INPUT OFF.

## Sending Audio Out to Telco Line

The Voice Interface can send audio to the telephone line along the Audio Out back-panel connector. When checking to see if the transmitter is broadcasting from a location outside of the broadcast radius of the tower, this feature is especially useful.

Selecting the Audio Out path can be done using DTMF tones.

To send the Voice Interface's Audio Out to the telephone, enter:

☎ "0 8 0 #"

The Voice Interface will respond:

• External Audio Output On

Audio will continue to be routed along the Audio Out connector until the Audio Out routing is manually deactivated or until the inactivity timer times out (see Inactivity Timeout, page 24).

To deactivate the two-wire Telco audio routing through the Audio Out connector, enter:

☎ "0 8 0 \*"

The Voice interface will respond:

• EXTERNAL AUDIO OUTPUT OFF

## Requery the Network

At times, it may be necessary to manually requery the network. To do so, enter:

☎ "0 4 0 #"

The Voice Interface will run through the same steps detailed in Operator and Observer Operation, page 32, minus entering the password.

## Report Mode


To determine the mode the Voice Interface is currently in, enter:

☎ "6 \*"

The Voice Interface will respond with either operator mode or observer mode.

## Report Unit Number and Security Level


To report the unit number of the I/O unit currently being accessed and the security level at which the I/O unit is being accessed, enter:

 "0 \*"

The Voice Interface will respond with the unit number and observer or operator access.

## Report Firmware Version Number

To report the firmware version number of the Voice Interface currently being accessed, enter:

 "8 0 0"

The Voice Interface will respond with the unit number and the firmware version number of the Voice Interface only.

# 8 Glossary

**Access Codes.** The Voice Interface provides two security levels. Depending upon the access code, the Voice Interface system will function in either of the security levels: operator or observer. End all access codes with a #.

**Command Delay.** There is a user-programmable time delay before a DTMF command is carried out. This allows for the user to cancel the command quickly in the case of an incorrectly entered code. The delay can be set anywhere from 0–15 seconds.

**Channel Identifiers.** Thirty-two characters can be programmed into the Voice Interface to identify metering and/or status channels. Default is silence (no characters).

**Command Relay Unit.** The Command Relay Unit is a device which provides isolation between the I/O unit's solid-state open collector outputs and equipment which requires relay switching for operation.

**Data Mode.** Data mode is when the Voice Interface communicates via modem to a remote PC.

**DTMF.** Dual-tone multi-frequency (touch-tones by AT&T) for dialing on the phone system.

**FCC Registration Number.** The Voice Interface is registered with the FCC and is governed by FCC Rules and Regulations Part 68 regarding devices to be connected to the switched telephone network. The FCC registration number and ringer equivalency numbers appear on a printed label attached to the Voice Interface chassis.

**G-bus.** A high speed digital bus that allows GSC3000 units to exchange information. G-bus connections are made using a RJ45 jumper.

**Inactivity Timeout.** The Voice Interface must receive at least one valid DTMF command in a user-definable period (1–15 minutes), or it will automatically drop the line.

**Message-Only Function.** The message-only function allows the Voice Interface to call a number and leave a message to return the call.

**Multiple-Response Reports.** The Voice Interface can be programmed to provide three consecutive responses, each at five-second intervals, for metering and status channels. Each response is accurate as of the time of the response. See also Single-Response Reports. Enter a # after the channel number.

**Observer Access Code.** The observer access code allows metering and status-channel readings to be taken.

**Operator Access Code.** The operator access code allows metering and status-channel readings to be taken; commands and macros can be issued and alarms can be cleared.

**Outbound Telephone Number.** The Voice Interface can be programmed to automatically call specified telephone numbers to report alarm conditions.

**Security Levels.** The Voice Interface provides two security levels: observer and operator. Observer access allows metering and status-channel readings to be taken. Operator access allows metering and status-channel readings to be taken; commands and macros can be issued and alarms can be cleared.

**Single-Response Reports.** A single-response report is where the Voice Interface sends a single response to report the readings coming from a status or metering channel. See also Multiple-Response Reports.

**Sound Sensor.** The Voice Interface comes with a built-in condenser microphone in the front panel which can be activated while in voice mode to listen to sounds in the vicinity of the Voice Interface.

**Telephone Surge Protector.** Suggested for protecting against harmful surges caused by lightning strikes, etc.

**Voice Mode.** If a modem is not connected to the Voice Interface's COM 1 port, the Voice Interface will operate only in voice mode.

**Welcome.** The 250-character statement a Voice Interface makes when a user signs onto the system. This option can be customized to suit application needs.

# 9 Appendices

## Appendix A: Specifications

### Dimensions

19"/48.3cmW x 10"/25.4cmL x 1 3/4"/4.45cmH

### Weight

7 lbs./3.2kg (dry)

12 lbs./5.5kg (shipping)

### Connectors

COM 1:	DB9; RS232 serial communication at 19.2kbps
G-Bus 1:	RS485; 115.2kbps; 110 Ohm impedance, category-five twisted-pair cable; 1,000-foot limit for all units networked combined
G-Bus 2:	RS485; 115.2kbps; 110 Ohm impedance, category-five twisted-pair cable; 1,000-foot limit for all units networked combined
Line:	RJ11C; two-wire line interface with DC loop supervision
Set/Modem:	RJ11C; two-wire line interface with DC loop supervision
Audio In:	3.5mm stereo jack; line-level 0.0dBm, 600 Ohm active balanced, +10dBm clip point
Audio Out:	3.5mm stereo jack; line-level 0.0dBm, 600 Ohm active balanced, +10dBm clip point

**Power Requirements**

100–240Vac, 50/60Hz, 15W; input selection automatic over entire input-voltage range

**Operating Temperature**

0–46° C/32–115° F

**Storage Temperature**

0–50° C/32–122° F

**Supplied Cables**

AC power cord  
G-Bus (RS485) jumper  
G-Bus terminator

Specifications are subject to change without prior notice.



## Appendix B: Warranty

Gentner Communications Corporation (Manufacturer) warrants that this product is free of defects in both materials and workmanship. Should any part of this equipment be defective, the Manufacturer agrees, at its option, to:

A. Repair or replace any defective part free of charge (except transportation charges) for a period of one year from the date of the original purchase, provided the owner returns the equipment to the Manufacturer at the address set forth in this warranty. No charge will be made for parts or labor during this period;

B. Furnish replacement for any defective parts in the equipment for a period of one year from the date of original purchase. Replacement parts shall be furnished without charge, except labor and transportation.

This Warranty excludes assembled products not manufactured by the Manufacturer whether or not they are incorporated in a Manufacturer product or sold under a Manufacturer part or model number.

THIS WARRANTY IS VOID IF:

A. The equipment has been damaged by negligence, accident, act of God, or mishandling, or has not been operated in accordance with the procedures described in the operating and technical instructions; or,

B. The equipment has been altered or repaired by other than the Manufacturer or an authorized service representative of the Manufacturer; or,

C. Adaptations or accessories other than those manufactured or provided by the Manufacturer have been made or attached to the equipment which, in the determination of the Manufacturer, shall have affected the performance, safety or reliability of the equipment; or,

D. The equipment's original serial number has been modified or removed.

NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR USE, APPLIES TO THE EQUIPMENT, nor is any person or company authorized to assume any warranty for the Manufacturer or any other liability in connection with the sale of the Manufacturer's products.

Manufacturer does not assume any responsibility for consequential damages, expenses, or loss of revenue or property, inconvenience, or interruption in operation experienced by the customer due to a malfunction in the purchased equipment. No warranty service performed on any product shall extend the applicable warranty period.

In case of unsatisfactory operation, the purchaser shall promptly notify the Manufacturer at the address set forth below in writing, giving full particulars as to the defects or unsatisfactory operation. Upon receipt of such notice, the Manufacturer will give instructions respecting the shipment of the equipment, or such other matters as it elects to honor this warranty as above provided. This warranty does not cover damage to the equipment during shipping and the Manufacturer assumes no responsibility for such damage. All shipping costs shall be paid by the customer.

This warranty extends only to the original purchaser and is not assignable or transferable.

**Gentner Communications Corporation · 1825 Research Way, Salt Lake City, Utah 84119**

## Appendix C: Compliance

### **FCC Part 15 Compliance**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a 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/her own expense.

Changes or modifications not expressly approved by Gentner Communications Corporation could void the user's authority to operate the equipment.

### **FCC Part 68 Compliance**

FCC Registration Number: FBIUSA-31969-MA-T  
Ringer Equivalency Number (REN): 0.7B

A label containing, among other information, the FCC registration number and Ringer Equivalence Number (REN) for this equipment is prominently posted on the top plate, near the rear of the equipment. If requested, this information must be provided to your telephone company.

USOC Jacks: This device uses RJ11C terminal jacks.

The REN is used to determine the quantity of devices which may be connected to the telephone line. Excessive RENs on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of the RENs should not exceed five (5). To be certain of the number of devices that may be connected to the line, as determined by the total RENs, contact the telephone company to obtain the maximum RENs for the calling area.

If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. If advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice for you to make

the necessary modifications in order to maintain uninterrupted service.

If you experience problems with this equipment, contact Gentner Communications Corporation, 1825 Research Way, Salt Lake City, Utah 84119, or by phone at (801) 975-7200 for repair and warranty information.

If the trouble is causing harm to the telephone network, the telephone company may request you remove the equipment from the network until the problem is resolved.

No user serviceable parts are contained in this product. If damage or malfunction occurs, contact Gentner Communications for instructions on its repair or return.

This equipment cannot be used on telephone company provided coin service. Connection to Party Line Service is subject to state tariffs.

## IC Compliance

**NOTICE:** The Industry of Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective operational and safety requirements. 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. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). 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 made by an authorized Canadian maintenance facility designated by Gentner Communications. 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.

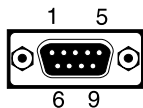
IC Certification Number: 1970-8418A  
Ringer Equivalency (REN) Number: 0.7

## Safety Information

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

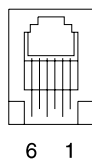
## Appendix D: Connector Pinouts

Table 1. COM 1 RS232 (DB9) Connector Pinouts



<u>Pin Number</u>	<u>Control</u>	<u>Pin Number</u>	<u>Control</u>
1	DCD	6	DSR
2	Receive	7	RTS
3	Transmit	8	CTS
4	DTR	9	RI
5	Ground		

Table 2. Telephone Set and Line Connections



	<u>Telephone Set</u>		<u>Telephone Line</u>
1	No Connection	1	No Connection
2	No Connection	2	No Connection
3	Tip	3	Tip
4	Ring	4	Ring
5	No Connection	5	No Connection
6	No connection	6	No Connection

## Appendix E: Meter Channel Modification

To take full advantage of the Voice Interface's vocal capabilities, metering channels can be modified through the GSC3000 Configuration application (Tab 4: Configuration, Pages 45–46). When describing the unit of measure, the GSC3000 Configuration application will only accept up to four characters. To work within these parameters, there are 15 abbreviations hard coded into the Voice Interface. When these codes are entered into the MEAS Unit space, the Voice Interface will speak the corresponding word.

### Meter Channel Modification Abbreviations

<u>Abbreviation</u>	<u>Spoken Equivalent</u>	<u>Abbreviation</u>	<u>Spoken Equivalent</u>
%	Percent	MA	Milliamps
AMPS	Amps	MIN	Minutes
DB	Decibels	MV	Millivolts
DEG	Degrees	POWER	Power
GAL	Gallons	SEC	Seconds
KV	Kilovolts	VLTS	Volts
KW	Kilowatts	WATT	Watts
LBS	Pounds		

## Appendix F: DTMF Code Quick Reference

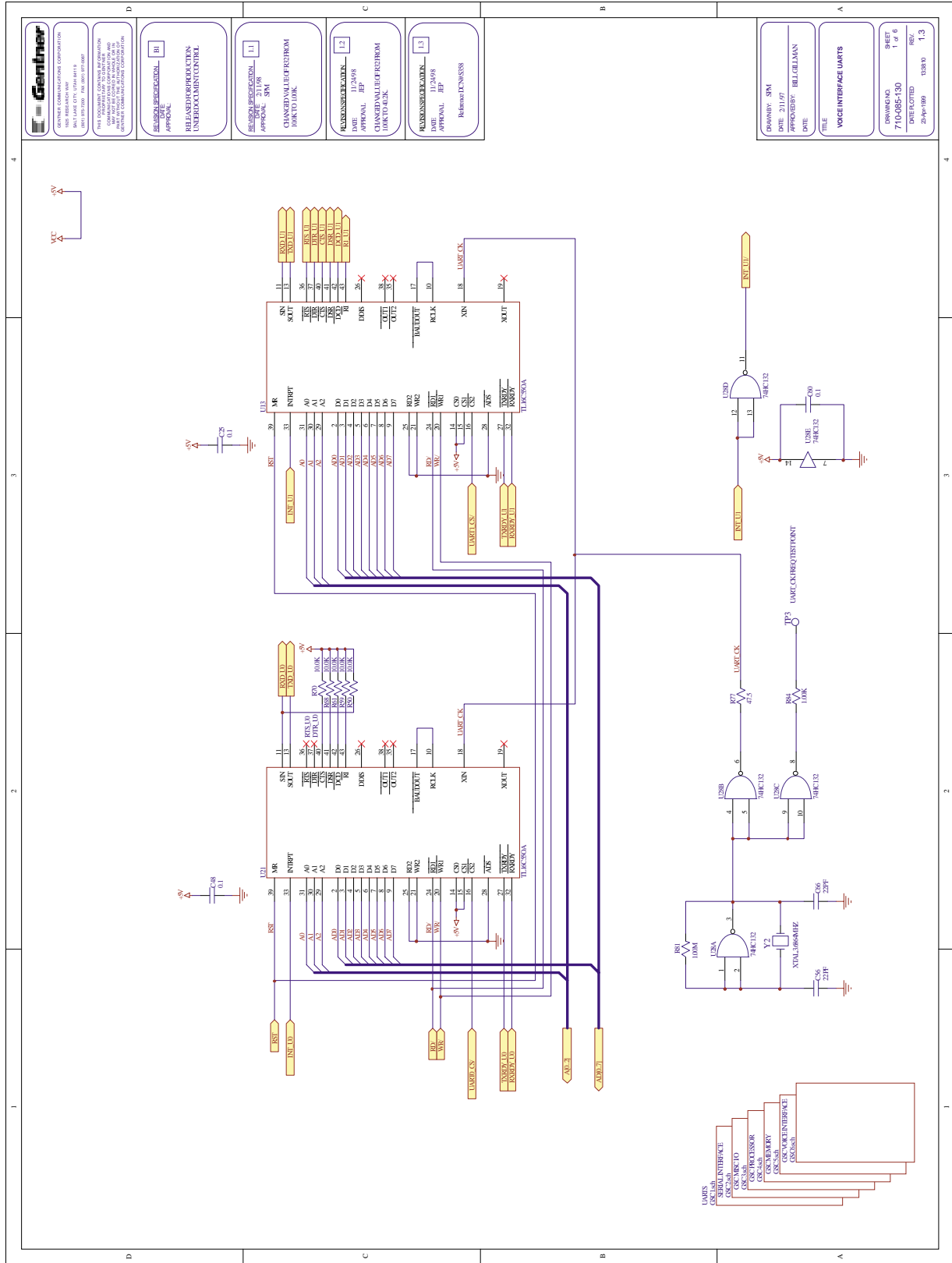
<b>Codes</b>		<b>Voice Interface Modes and Codes</b>
<b>DTMF</b>	<b>Function</b>	
000	Alarm Mode - Report all Alarms (Current I/O Unit)	
	#	Step Forward One Alarm
	*	Step Back One Alarm
	8	Repeat Current Alarm
	3	Exit Alarm Mode (#0) same
	6*	Mode Plus Access Level (Observer, Operator)
	0#	Escape/Cancel
	010	Clear all Alarms + Exit Alarm Mode
010	Clear all Alarms (Current I/O Unit)	
020	At Dial-in Switches From Voice Mode To Data Mode	
030#	Enable Alarm Reporting	
030*	Disable Alarm Reporting (One Hour)	
040#	Requery Network	
040*	Capture Data (Current I/O Unit)	
050#	Internal Microphone On	
050*	Internal Microphone Off	
060	Time ( Real Time Clock)	
070#	External Audio Input On	
070*	External Audio Input Off	
080#	External Audio Output On	
080*	External Audio Output Off	
090	Remote/Local Button State	
101* - 105*	Disable Dial-out Number 1-5	
101# - 105#	Enable Dial-out Number 1-5	
201* - 216*	Command Channel Switch A	
201# - 216#	Command Channel Switch B	
501# - 532#	Macro (Run)	
601* - 616*	Metering Channel 1-16 - Report Once	
601# - 616#	Metering Channel 1-16 - Report Three Times	
701* - 716*	Status Channel 1-16 - Report Once	
701# - 716#	Status Channel 1-16 - Report Three Times	
800	Report Firmware Version Number	
900 - 915	Select I/O Unit	
999	Disconnect (Good-bye Message/End Session)	
2#	Report Current I/O Unit Command Titles	
5#	Report Current I/O Unit Macro Titles	
6#	Report Current I/O Unit Metering Titles	
6*	Report Current Mode (Observer, Operator, Alarm)	
7#	Report Current I/O Unit Status Titles	
0#	Escape/Cancel	
0*	Report Current I/O Unit Number Security Level	
	Operator Access Only	

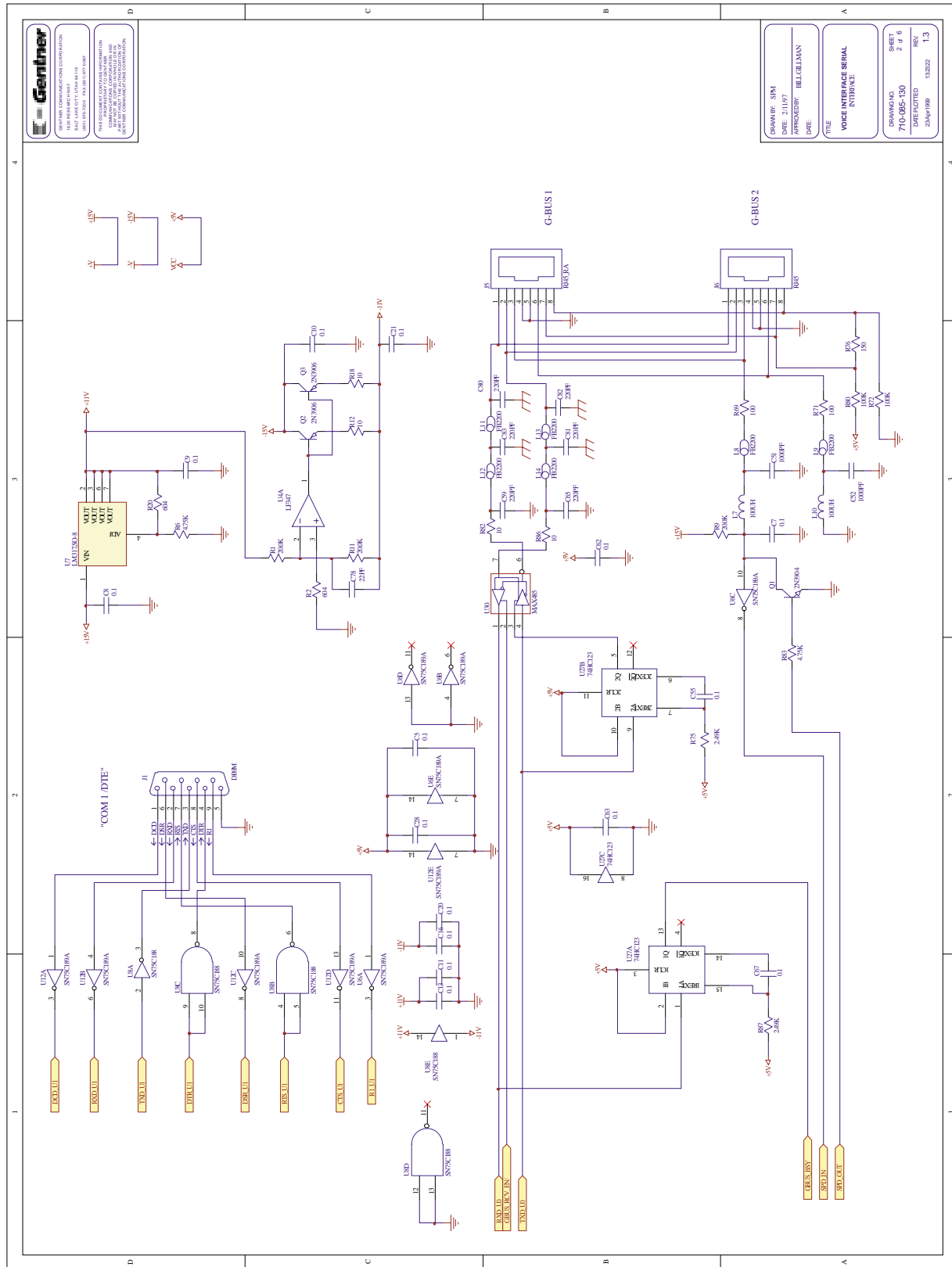
## Appendix G: Bill of Materials

The following bill of materials is accurate as of this printing. This information herein is subject to change without notice. If you are in need of a more current bill of materials, please contact technical support as noted on the bottom of the page.

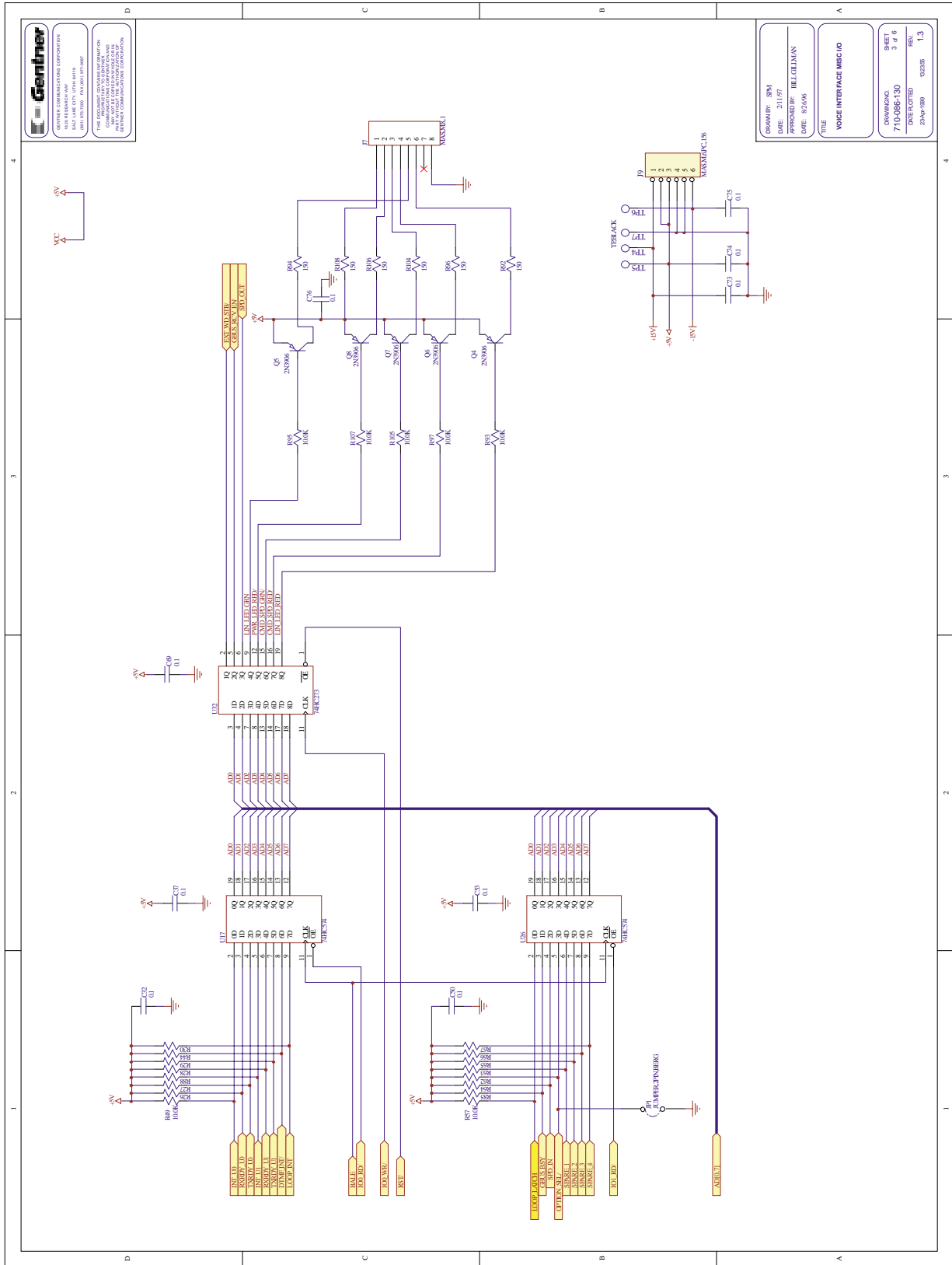
Item	Item Description
401-000-070	BAG, 14" 4MIL CLR PLASTIC TUBING
432-000-015	LABEL, COMPLIANCE FCC PART 15
432-000-018	LABEL, BLANK 1.75 X 2.5 PRODUCT I.D.
432-110-004	LABEL, CAUTION ELECTRICAL SHOCK ADH. BK
460-110-001	POWER SUPPLY, SWITCHING UNIVERSAL 40W
534-108-600	IC, MODULE V8600 TEXT TO SPEECH SYNTH.
681-010-506	SCREW, #6-32 X .38 PPH BLK W/INT TH WASH
681-010-604	SCREW, #6-32 X .25 PPH
681-210-606	SCREW, #6-32 X .38 PPH BLK
682-010-060	NUT, #6-32 X .25
683-046-403	SPACER KIT M/F #4-40 X .19 W/HARDWARE
432-085-130	LABEL, CANADA COMPLIANCE 1970 8418A
683-046-610	SPACER, M/F #6-32 X .62 HEX
684-050-060	WASHER, #6 INTERNAL TOOTH
685-410-604	SCREW, #6-32 X .25 BUTTON HEX
699-360-001	MOD, PWR ENTRY RECEPT. W/EMI FLT. 3 AMPS
740-009-003	COVER, DH
740-085-131	CHASSIS, VOICE INTERFACE
740-085-132	FRONT PANEL, VOICE INTERFACE
740-085-133	SHIELD, DAA PCB, VOICE INTERFACE
820-085-130	MAIN PCB ASSY, VOICE INTERFACE
820-085-131	FRONT PANEL PCB ASSY, VOICE INTERFACE
820-085-132	DAA PCB ASSY, VOICE INTERFACE
830-110-013	CABLE ASSY, AC POWER INPUT
830-110-012	CABLE ASSY, AC POWER INPUT
830-110-003	CABLE ASSY, MASC. 6P/MASC. 6P 9.00
830-111-006	CABLE ASSY, MASC. 8P/MASC. 8P 4.00
830-085-109	CABLE ASSY, MASC. 9P/MASC. 9P 4.00
830-072-022	CABLE ASSY, MASC. 3P/MIC 2.50
745-085-131	ARTWORK, VOICE INTERFACE REAR PANEL
745-085-132	ARTWORK, VOICE INTERFACE FRONT PANEL

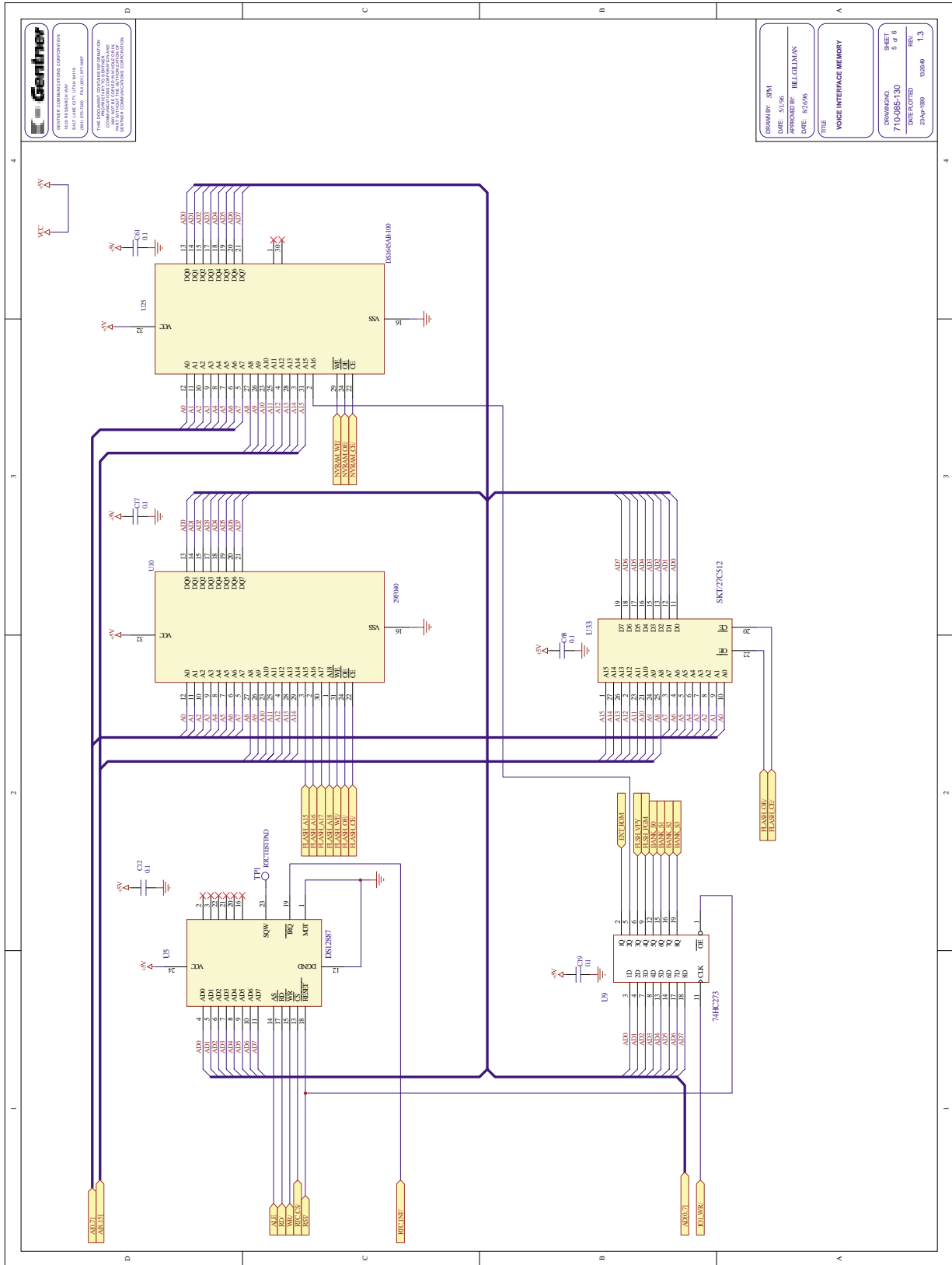
# Appendix H: Schematics











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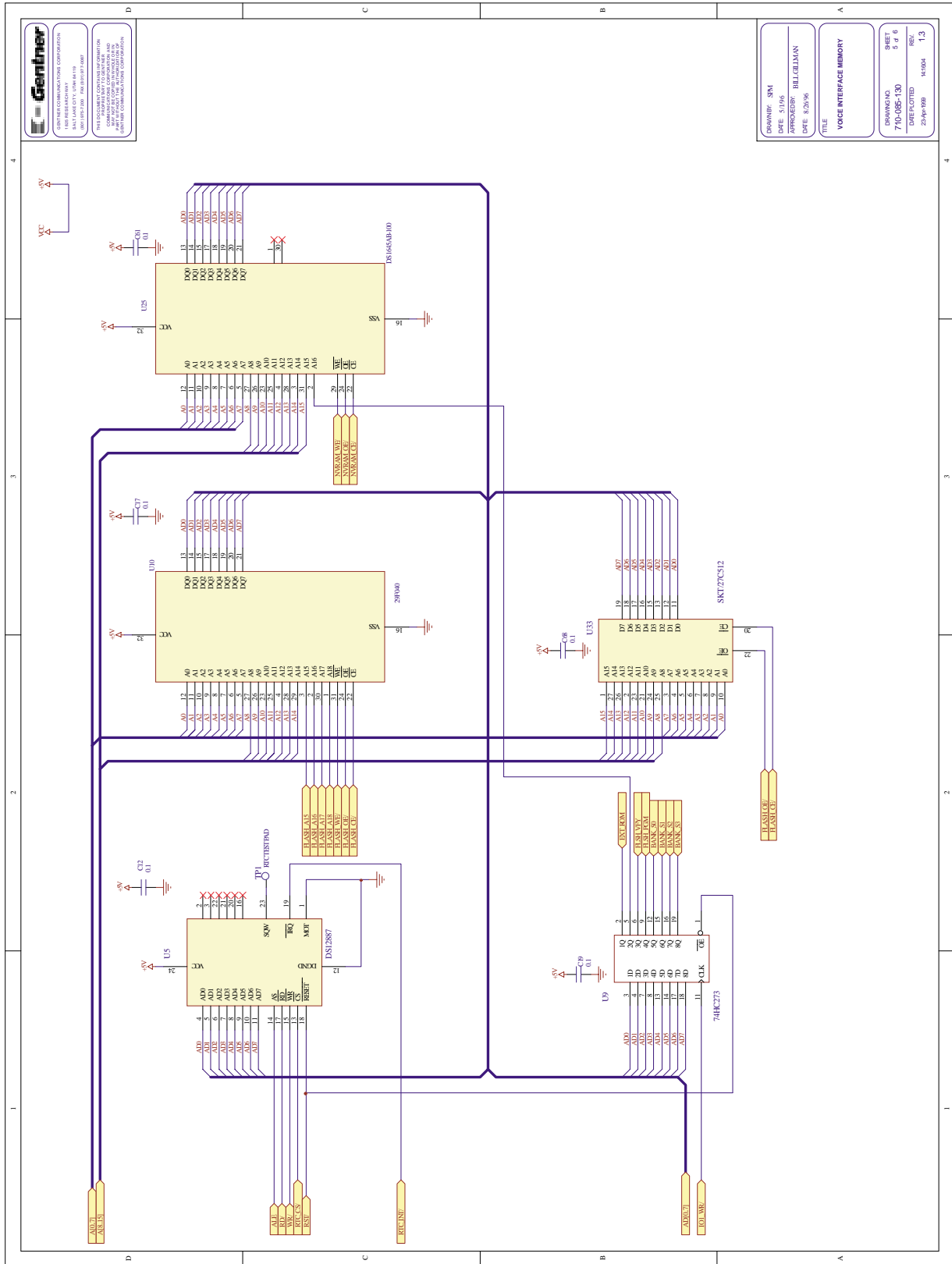
PRIMARY: SM  
 DATE: 5/1/92  
 APPROVED: BILL GILMAN  
 DATE: 5/26/96

TITLE  
 VOICE INTERFACE MEMORY

DRAWING NO:  
 710-095-130

SHEET  
 5 of 6

DATE PLOTTED: 10/26/00  
 REV: 1.3



**REVISIONS**

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