

Notification

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IMPORTANT SAFETY INSTRUCTIONS



Installation Safety Precautions:

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

The Superkey[®] SK-824 utilizes a detachable power supply cord. This cord is not to be attached to any building surfaces.

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

1. Read and understand all instructions.
2. Follow all warnings and instruction marked on the product.
3. Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
4. Do not use this product near water, for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool.
5. Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
6. Slots and openings in the cabinet and the back or bottom are provided for ventilation, to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on the bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.
7. This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home or office, consult your dealer or local power company.
8. This product is equipped with a three wire grounding type plug, a plug will only fit into a grounding type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding type plug.
9. Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by persons walking on it.
10. Do not overload wall outlets and extension cords as this can result in the risk of fire or electric shock.
11. Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.
12. To reduce the risk of electric shock, do not disassemble this product, but take it to a qualified service man when some service or repair work is required. Opening or removing covers may expose you to dangerous voltages or other risks. Incorrect reassembly can cause electric shock when the appliance is subsequently used.
13. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - A. When the power supply cord or plug is damaged or frayed.
 - B. If liquid has been spilled into the product.
 - C. If the product has been exposed to rain or water.
 - D. If the product does not operate normally by following the operating instructions. Adjust only those control,

that are covered by the operating instructions because improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.

E. If the product has been dropped or the cabinet has been damaged.

F. If the product exhibits a distinct change in performance.

14. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.,

15. Do not use the telephone to report a gas leak in the vicinity of the leak.

SAVE THESE INSTRUCTIONS



**Superkey® Series Model SK-824
Electronic Hybrid Telephone System
General Description - Installation and Maintenance
Programming Forms**

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General Description

Introduction

The General Description section contains an easy to understand overview of the Superkey® SK-824 Electronic Telephone System. It is the intent of this document to provide both technical and non technical readers with information pertaining to the system building blocks, capabilities, key highlights, electrical, physical and environmental characteristics of the Superkey® SK-824 Electronic Hybrid Telephone System.

FCC Rules and Regulation

In compliance with the requirements of Part 68 of the Federal Communications Commission Rules and Regulations for connection of terminal system equipment to the telephone network and for your convenience, the following information is presented.

FCC Registration Number

The Superkey® SK-824 is registered with the FCC in a dual registration capacity enabling the system to operate as a key system only or as a hybrid system. FCC Registration Number 3A7TAI-75995-MF-E.

Ringer Equivalence Number

Ringer Equivalence 0.5B.

Notification of the Telephone Company

Customers connecting terminal equipment to the telephone network shall, upon request of the Telephone Company, inform the Telephone Company of the particular line(s) to which such connection is made, the FCC registration number and ringer equivalence number (REN) of the registered terminal equipment.

The REN is useful to determine the quantity of devices you may connect to your telephone line and still have all of those devices ring when your telephone number is called. In most, but not all areas, the sum of the REN's of all devices connected to one line should not exceed five (5.0). 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 determine the maximum REN for your calling area.

Direct Connection to a Party-Line or Coin Operated Telephone Line is Prohibited.

Incidence of Harm to the Telephone Lines

Should terminal equipment cause harm to the Telephone Network, the Telephone Company shall, where practical, notify the customer that service may be temporarily discontinued. However, where prior notice is not practical, the Telephone Company may temporarily discontinue service, if such action is reasonable in the circumstances. In case of such un-notified temporary discontinuance of service, the Telephone Company shall:

- (a) Promptly notify the customer of such temporary discontinuance of service.
- (b) Afford the customer the opportunity to correct the situation which gave rise to the temporary discontinuance.
- (c) Inform the customer of the right to bring a complaint to the FCC pursuant to the procedures set out in Subpart E of Part 68 of FCC Telephone Equipment Rules.

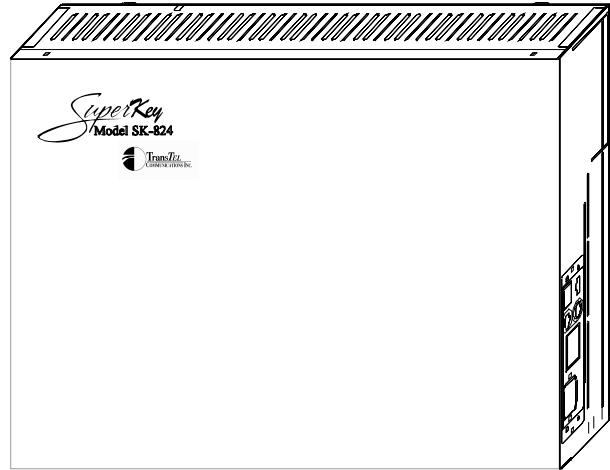
Compatibility of the Telephone Network and Terminal Equipment.	
(a)	Availability of telephone interface information.
	Technical information concerning interface parameters and specifications not specified in FCC Rules, including the number of Ringers which may be connected to a particular line, which is needed to permit Terminal Equipment to operate in a manner compatible with Telephone Company communications facilities, shall be provided by the Telephone Company upon customer's request.
(b)	Changes in Telephone Company Communications Facilities, Equipment, Operations and Procedures.
	The Telephone Company may make changes in its communications facilities, equipment, operations or procedures where such action is reasonably required in the operation of its business and is not inconsistent with the rules and regulations in FCC Part 68 of the FCC Rules and Regulations. If such changes can be reasonably expected to render any customer Terminal Equipment incompatible with Telephone Company Communications Facilities, or require modification or alteration of such Terminal Equipment, or otherwise materially affect its use or performance, the customer shall be given adequate notice in writing to allow the customer an opportunity to maintain uninterrupted service.

Radio Frequency Interference	
This equipment generates and uses radio frequency energy and if not installed and used properly and in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type-tested and found to comply with the limits for a Class B computing device in accordance with the specification in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, this is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:	
	Re-orient the receiving antenna. Relocate the equipment with respect to the receiver. Move the equipment away from the receiver. Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

Overview

The Superkey® Series Model SK-824 is an advanced electronic hybrid telephone system employing a microprocessor stored program and digitally controlled solid-state space-division switching. With a capacity of up to 8 outside lines and 24 station instruments, the Superkey® Series is cost effective to purchase, easy to use and provides a simple and economical way to grow along with your business. The software structure was developed to accommodate multiple languages in order to adapt efficiently to world markets. It is one of the only systems on the market today which unilaterally supports both advanced Electronic Key Telephone Sets as well as industry standard Single Line Sets.

The range of standard features along with thoughtfully designed hardware and software provide the capability to custom tailor the Superkey® SK-824 to your individual telecommunications needs.



Key Highlights of the Superkey® 824 Series include:

Economy and Expandability

The base system is equipped to support four (4) CO lines and eight (8) stations. The system may be expanded to a maximum of eight (8) CO lines. Stations may be expanded in increments of eight (8) stations to a total of sixteen (16) or twenty-four (24) stations. Station cards may be selected to allow practically any combination ranging from all Superkey® Electronic Sets to all industry standard Single Line Telephone sets, with any combination of the two types. In addition to being cost effective at the initial phase and for expanding to its maximum capacity, the Superkey® system also is economical to operate as it consumes about the same amount of electricity as a 100 watt light bulb at full configuration.

Investment Protection

Superkey® SK-824 customers can rest assured their investment is protected for many years to come. When expansion of a business requires greater than 24 stations or 8 CO lines, customers can easily move upward by leaving their phones intact and simply replacing the Key Service Unit with TransTel's larger version; the Superkey® SK-200L which accommodates up to 240 stations.

Ease Of Installation

All Superkey® Series Telephone systems are "ready to go" right out of the box. A well thought out default database is factory installed on each system which meets the needs for most installations. Custom databases can be prepared in advance by Dealer personnel on a stand alone PC program supplied by TransTel. At installation time this database may be downloaded to the system and saved on floppy disk for later use. This alleviates hours of on site time, minimizing installation costs for both dealer and customer.

Flexibility of System Applications

Unlike other conventional systems in the Superkey® 824 size range, the installer will find an unprecedented range of customer database programmability. In "system parameters" there are extensive options for various timing settings related to features. An array of parameters are programmable for signaling options on outside lines and internal single line telephone sets. The installer may Enable/Disable many system wide features. And in class of service, there are over 20 options selectable for each station providing maximum flexibility for nearly any application.

Keypad/Single Line Flexibility

Ability to support proprietary Superkey® Electronic Telephones and/or conventional industry standard single line sets. Single Line interfaces support both DTMF and rotary dial phones.

Dual Port Capability

When the fully hybrid station card (SK-STI/88) is installed on the system, customers have the option of connecting either an Electronic Key Telephone or a Single Line Set or both. This is particularly useful in offices equipped with computers that have modems, fax machines, personal answering machines or simply an executive office that would like to have two phones with the same number.

Liquid Crystal Display

The Superkey® Series Telephone Model SK-EKT/D is equipped with a large, easy to read LCD display. The LCD is 32 characters total, comprised of 2 rows by 16 characters each. This LCD provides an invaluable tool for simplifying the use of the telephone by identifying the calling party by name, outside lines by name and self prompting displays for feature access. Station feature usage is made simple with the help of the LCD display. Continuous prompting information is displayed during calls so that users know what to do and when to do it.

*/# = Sys/Per. Spd 1=Intercom

Enter Letter Darlene

Directory Dialing

A directory dialing function allows users to "dial by name" and scroll through the list of personal, system speed dial as well as intercom directories. Once the desired party is displayed, the call may be placed by simply pressing the speaker key or by lifting the handset.

Voice Service Unit

Custom recorded messages for Auto Attendant, DISA or UCD applications are made by the Operator, providing control over changing the recording for holidays, dialing instructions, or special promotions.

Voice Port (1) *:REC #:PLAY

Line 1	01:26
WATS 2	HOLD
WATS 2	02:12
Line 1	HOLD

Split/Swap

allows busy customers the ability to alternate between two parties with a single keystroke. The LCD will keep track of who is on hold and who you are talking to.

Volume Adjustment

provides you, the station user with the ability to tailor your telephone volume to your preference for ringing, speaker, and handset volume. When individual calls dictate that you change your preferences, those changes are only temporary. Your telephone will return to your original preferences when that call is finished.

Set Voice 1:Ring 2:SPK 3:Handset

Automatic Redial

allows repeated dialing of stored numbers or the last number dialed. If the call must get through, automatic redial will continue to re-try a busy or non-answering telephone number.

Call Pickup

lets you pick up calls ringing at other desks instead of running to the ringing telephone.

1=LN	2=GP
3=STN	4=DEPT

Local 1 TALK -> ST:15

Identification of Busy Stations

and Lines. The Busy Lamp Field (Direct Station selection) provides a visual indication of busy stations. The LCD provides information about the status of CO lines or internal stations. Through the use of the LCD and the Busy Lamp Field, you can easily find out who is using each CO line.

Silent Monitor

Monitor 28 WAREHOUSE

provides a means to observe the telephone manners of your employees and improve customer service. Environmental Monitor allows you to monitor secured areas for signs of intrusion.

Off Hook Call Announce

is available so that those people who must be reached can be reached.

(PROG) (FWD)/(1)
Call Forwarding

User Programming
Help List End

DOOR ALARM!
Mon Sep. 20 05:50

Feature Selection by Menu

If you can't remember how to operate a feature, chances are that it can be accessed through the feature selection menu. It's not necessary to look for the instruction manual to remember those features that you use infrequently.

Day/Night Service

gives you the ability to change the way your telephones and lines operate after business hours. This capability can be customized to conform to variations in your business hours each and every day of the week.

Alarm Sensors

allow you to use your telephones as an extension of your security system. You can make one telephone or all telephones ring when a door is opened, or you can tie the system to your fire alarm system and notify everyone

through the telephone system when it is activated. Each Sensor can have its own name, so that multiple alarm sensors may be identified on LCD telephones.

External Connections/Interfaces

External interfaces include an RS-232 for SMDR, an off hook voice announce port, background and music on hold ports, and an external paging interface with volume adjustment. A fax monitor circuit is equipped on each of the CO line cards as well as a programmable relay which can serve as a variety of functions. (See Features & Services/Relay Assignment). Also, a contact monitor sensor is provided on each of the station interface cards. Two doorphone interfaces are provided on all systems with the capability for door lock control.

Reliability

Stringent quality levels are maintained during the manufacturing process of the Superkey® Series Telephone Systems. The manufacturing process adheres to a tough European Standard (ISO 9001), assuring the utmost in quality and reliability. Optional system battery backup provides minimum 2 hour backup in the event of a power failure. The Key Service Unit is equipped with a battery charging circuit which maintains the backup batteries. Additionally, the system memory is protected by a field replaceable lithium battery cell so that customer database is protected. In the unlikely event of a total system outage, and battery backup is not installed, standard industry telephone sets are cut through to outside CO lines directly to assure communication, which is useful particularly in emergency situations.

Serviceability

The Superkey® Series sustains a high degree of serviceability for its customers. Choose from a variety of options to get the most from your Superkey® Telephone System. Routine changes can be performed by the Attendant operator such as entering speed dial numbers, wake up calls and appointment reminders, changing time and date as well as other functions. For maintenance personnel, system database programming changes can be made on site from a telephone set using a very simple user friendly interface, or remotely on-line or totally off line using the Superkey® Program Manager. Both TransTel Communications and its affiliated Dealers have access to any system in the world via modem to provide assistance with programming and diagnosing certain problems. In fact, we have remote facilities to maintain a database record of each installation, which at a moments notice could be downloaded to a particular site location or updated on floppy disk to reflect any changes.

When Remote Service is required, Dealers can be switched into the modem by a station user. Upon completion of the programming session, the dealer can re-ring the station user to inform them that

programming is complete without hanging up and placing another call. When making program changes on site from a telephone set, it should be noted that the programmer has the ability to speak with the home office or TransTel while in programming. The telephone set does NOT have to be off line.

Superkey® 824 Base KSU Configuration

The base Superkey® 824 Key Service Unit is equipped to support up to 4 Central Office (CO) telephone lines and 8 stations. Total capacity of the SK-824 allows expansion to a maximum of 8 Central Office lines and a maximum of 24 stations.

SK-824/H Basic System

Equipped with 4 C.O. Lines, 8 Hybrid Station Ports. Wired for 8 C.O. Lines, 24 Stations. Includes Common Control Unit, Power Supply w/ battery charger, Ring Generator, 2 Doorphone Interfaces, 3 DTMF receivers/1 generator, Tone Detector, 1 Paging Interface, 1 Music On Hold and 1 Background Music Input, Ram Battery Back-up, 1 OHVA port, 1 Fax monitor and 1 programmable relay.

Superkey® SK- 824 Capacities

Software

Feature	Capacity
Account Codes (Verified)	31
Advisory Messages	10
Attendant Console Groups	8
Attendant Positions per Group	4
Classes Of Service	24
CO Line Groups (Main)	8
CO Line Groups (Secondary)	8
Console Assignment Groups	8
Dial by Name Directory Entries	364 †
Dial 9 Line Groups	8
DSS Console	1
Flexible CO Line Ring Assignment Groups	8
Incoming Call Groups	8
Intercom Single Digit Groups	8
Multiple Attendant Consoles (per Group)	4
Paging Zones (External)	2
Paging Zones (Internal)	8
Pick Up Groups	8
Security Alarm Sensors	3
Simultaneous Ringing Stations	16
Speed Dial (Personal)	480 †
Speed Dial (System)	500 †
Speed Dial (Unrestricted)	500 †
Station Lock Codes	24
Toll Plans	10
UCD Groups	4
UCD Agents per Group	4
Travelling Class Of Service Codes	48

† Above capacities are dynamic and based on specific application. See Features & Services Description for details.

Superkey® SK- 824 Capacities

Hardware

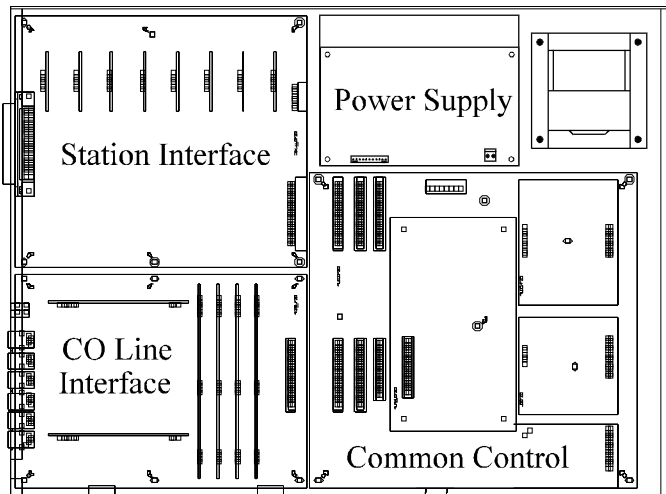
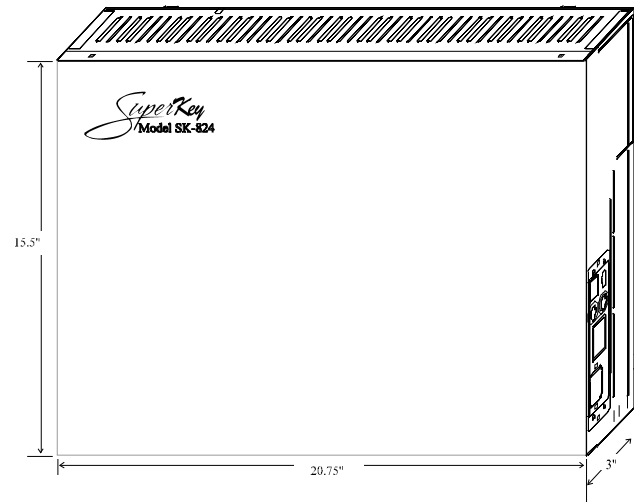
SK-824 Capacities	Quantity	SK-824 Capacities	Quantity
Voice Service Channels	8	Remote Program Interface	1
Keyphone	24	DSS Consoles	1
Single Line	24	External Page Zones	2
Hybrid	24	FAX Monitor Ports	2
C.O. Lines	8	OHVA Channels	1
Doorphones	2	DTMF Senders	1
MOH Circuits	1	DTMF Receivers	3
BGM Circuits	1	Tone Detector	1
SMDR Interface	1	External Sensors	3

Physical Description

Key Service Unit

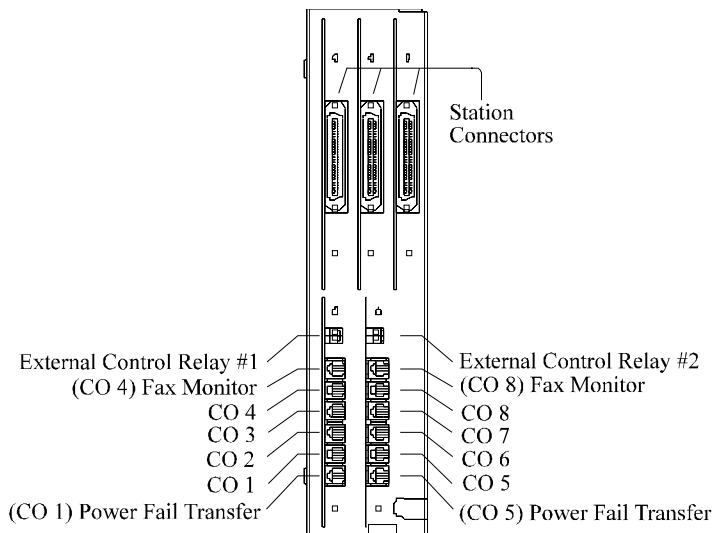
The Superkey® SK-824 Key Service Unit equipment cabinet is of metal construction and is designed to be wall mounted. Convection cooling has been implemented in the cabinet design allowing air flow from bottom to top. The power supply is mounted in the upper right hand section of the KSU allowing dissipated heat direct exit through the top of the cabinet, minimizing excessive temperatures on other system components and extending component life cycles.

The Key Service Unit employs a design to maximize maintenance and serviceability by incorporating separate printed circuit boards for Common Control, Station and CO Line Interfaces.



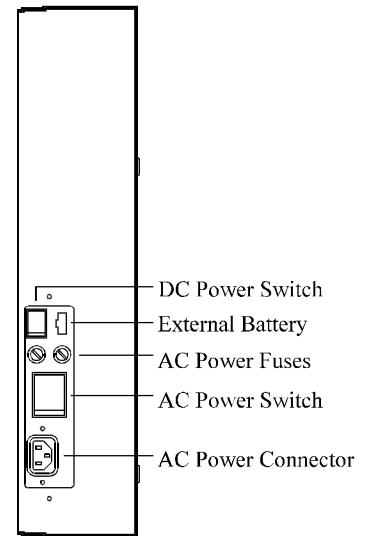
The KSU has the following dimensions: Height 15.5", Width 20.75", Depth 3". The weight of a fully equipped SK-824 KSU is approximately 20 lbs (9.5 kg).

The front panel of the KSU is removable to facilitate system expansion and access to the Common Control Unit motherboard, system Power Supply Unit, up to three (3) station interface cards and up to two (2) Superkey® CO Line circuit cards.



All station connections from the KSU to the cross connection field are via connector terminated 25 pair (50 pin industry standard) cables. Each station connector provides support for eight (8) stations and one external sensor connection. Each CO line card provides four (4) CO lines, one external control relay, one power fail transfer circuit and one FAX monitor connection. Connections for these facilities are provided for via RJ11 connectors and quick connect type connectors.

The power cord connection is EIC 950 compatible. It is not hardwired inside the KSU which provides for adaptation to a variety of different approvals requirements throughout the world. Dual 2 Ampere fuses are located above the AC switch to protect the primary side of the Superkey® SK-824 power supply from excessive over voltage or surge current situations. A battery charging circuit is standard on all Superkey® 824 KSU's and the interface is located beside the input fuses. Two power ON/OFF switches are provided to switch main system power as well as the charging circuit to the batteries. This is particularly helpful when troubleshooting problems and the need arises to isolate the battery backup. Battery backup is available as an option. Battery backup provides a minimum of two hours operation in the event of a local power failure.



Common Control Unit Motherboard

SK-CCUA P/N 80009326

The Common Control Unit motherboard provides the main system program control, central processing unit and main switching matrix. It also provides most ancillary equipment required for normal call processing. Included on the Common Control Unit motherboard are the following:

16 Bit System CPU - NEC V-20 (8088-8mhz equivalent)

Clock Generator - 8 mhz

Watchdog Timer

System Read Only Memory (ROM)

System Random Access Memory (RAM)

Real Time Clock (for Display on LCD sets and Call Detail Reports)

Random Access Memory and System Clock

Battery Backup (Lithium)-For customer database protection

Background Music Interface

Tone Source

Tone Detector

Voice Service Unit (SK-VSU/8) *

RS 232C Interface (SK-RS-232/8) *

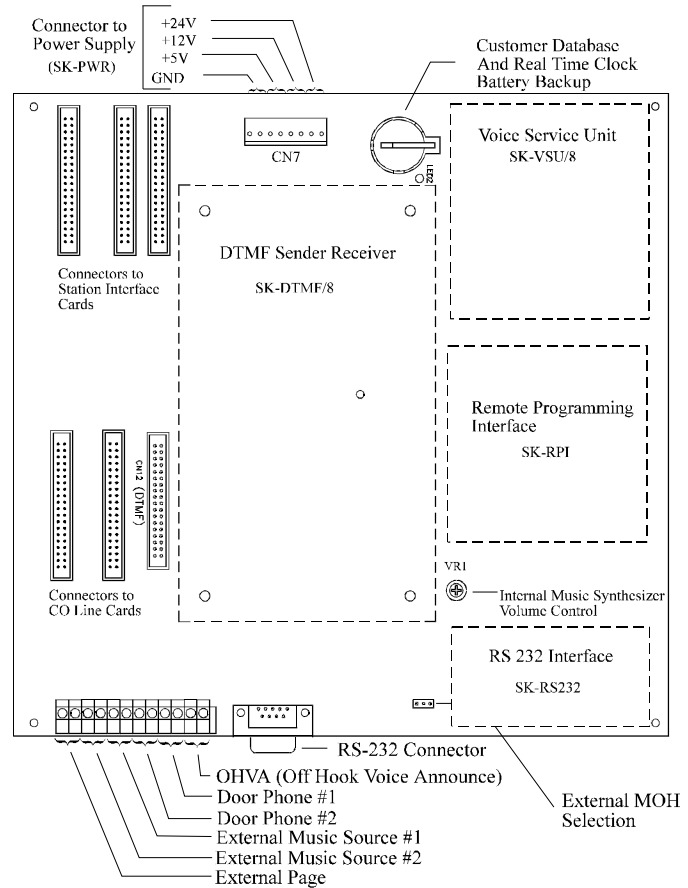
DTMF Generator.* Used when external speed dial is accessed and for Superkey® Electronic Telephones dialing on external CO lines programmed as DTMF

Paging circuitry. System provides connection for external paging equipment

Music On Hold. Bridge circuit is on motherboard to allow connection of external music source or through software programming, an internal music synthesizer may be selected.

Door phone interfaces. There are two door phone interfaces on the Common Control Unit motherboard. These units may be accessed by any station within the system. They may also be used from the doorphone units to contact pre-programmed station locations.

SK-VSU/8, SK-RS232 and SK-RPI are optional PCB boards which install as daughter-boards on the SK-CCUA motherboard.



Off Hook Voice Announce Interface

Remote Programming Interface (SK-RPI/8) *

DTMF Receivers. 3 per system.*

Voice Service Unit

SK-VSU/8 P/N 80009318

The Voice Service Unit is an optional printed circuit board which installs as a daughter-board on the Common Control Unit motherboard. This unit is an integral part of the system and when used can provide a few efficient features without the need for significant investment on external hardware. General characteristics are as follows:

One Maximum per system as required

60 Seconds recording time

Up to 8 voice channels or segments

Adjustable Audio Level

10 year Back Up Retention for recorded messages

Dynamic Channel Allocation- If the company greeting consumes 10 seconds, then 50 seconds are automatically available for any other VSU application.

VSU Features

The following features are offered by the Voice Service Unit:

Automatic Wake Up

When an automatic wake up has taken place at a predetermined time, the station can be notified with a custom recorded message.

Automated Attendant / DISA Service

Custom record an initial greeting with dialing instructions. Additional phrases are available for no answer, busy and invalid stations. On DISA calls a warning message may be given to inform the caller that his conversation time is near expiration. Provisions are available for the calling party to extend the time duration if required.

Attendant Overflow

While designated Attendant positions are busy and unavailable to handle incoming traffic, the Voice Service Unit can provide an assuring message to the calling party to help discourage "hang ups" and ring no answer situations.

Uniform Call Distribution

UCD provides for distributing calls to a group of agents or service representatives. The incoming calls are offered to the agents in a circular hunt manner and recordings are provided to advise the caller of an all busy agents situation.

Remote Programming Interface

SK-RPI P/N 70009308

The Remote Programming Interface installs on the Common Control Unit as a daughter-board and provides TransTel Communications and affiliated Dealers with remote assistance capabilities for programming and some maintenance/troubleshooting procedures. Additionally, TransTel and/or it's Dealers have the ability to maintain a record of the software database for any of it's customers. In the unlikely event of a system malfunction, the database can be easily restored, minimizing downtime. The Remote Programming Interface includes a modem operating at 2400 baud.

RS-232 Interface

SK-RS232 P/N 70009306

The RS232 Interface installs on the Common Control Unit and interfaces with a printer or computer which collects call detail records. Please see STATION MESSAGE DETAIL RECORDING in the Features and Services section of this document for a detailed explanation. General characteristics of the interface are as follows:

1200 bps	8 Data bits
1 Stop bit	No parity
Industry Standard DB9 Connector	

The information recorded for calls include:

Date of call	Line used.
Length of call	DISA calls.
Time of origination	Unanswered Calls.
Digits dialed (on outgoing calls).	Account Code (if entered).
Originating station (outgoing calls).	Time To Answer (incoming calls)
Destination station (incoming calls).	
Stations disconnected due to invalid forced account codes	
Stations disconnected due to restriction (toll or station lock).	

As options, the system will report or ignore reporting of the following information:

Recording of incoming calls.
Recording of local calls.
Unanswered incoming calls.

Power Supply Unit

SK-PWR/8 P/N 80009322

The Superkey® Power Supply Unit converts the locally provided electrical power to lower, regulated voltage and current sources that the system can utilize to operate all other portions of the Superkey® Electronic Telephone system. The Power Supply Unit provides the following:

Operation from 110VAC or 220VAC input (selection by jumper)

Operation from line frequencies of 50Hz or 60Hz

Output Voltages of:

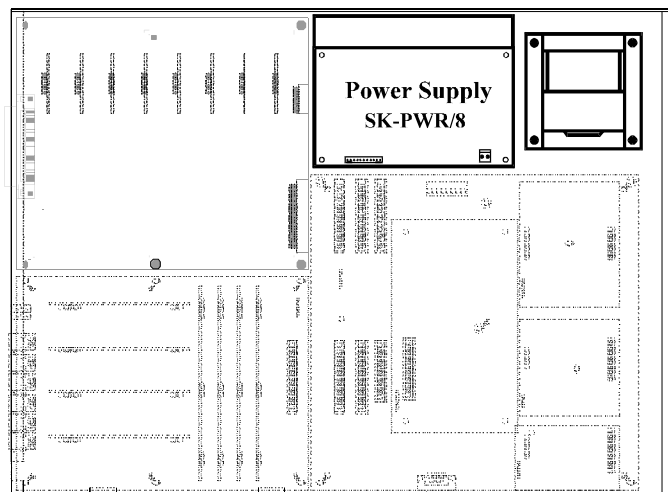
24VDC @ 2.5 Amperes

12VDC @ 0.5 Amperes

5VDC @ 2.0 Amperes

! 24 - 30VDC @ 400 milliamperes battery charging circuit for use with optional battery backup system

! Ring Generator for signalling single line sets or other analog devices. Rated at 90VAC and 20/25 HZ selectable



Circuit Cards

The basic system consists of the Key Service Unit cabinet and a system power supply, common control motherboard, one CO line circuit card (supports 4 CO lines) and one station card (support for 8 stations). One additional CO Line Card and two additional Station Cards may be added to the system as required. The following section describes the various card types and available options.

Station Interface Cards

Station Interface Card Types include:

SK-STI/88

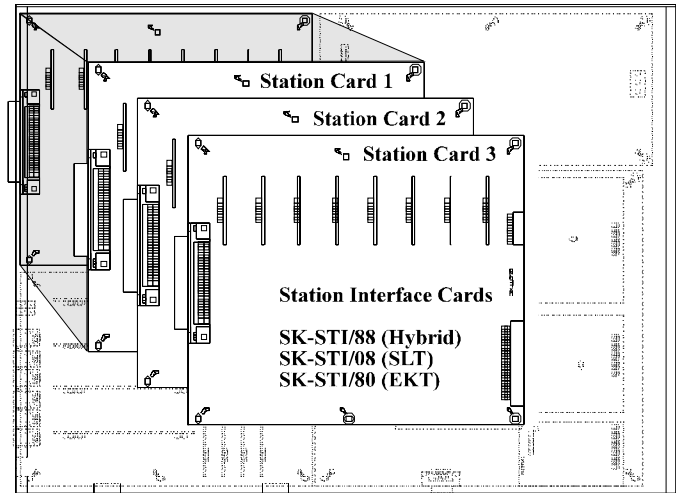
(P/N 80009306) - Provides support for eight stations. This card allows connection of any combination of Superkey® Electronic Telephone (SK-EKT series) and industry standard (500/2500) single line telephones or Superkey® SK-SLT series telephones.

SK-STI/08

(P/N 80009308) - Provides support for eight stations. This card supports only industry standard (500/2500) single line telephones or Superkey® SK-SLT series telephones.

SK-STI/80

(P/N 80009310) - Provides support for eight stations. This circuit card supports up to 8 Superkey® Electronic Telephones (SK-EKT series). It does not support single line telephones.



The total capacity of a Superkey® electronic telephone system is for 3 station circuit cards. The total configuration can support any combination of the cards listed above for a total of 24 telephone sets.

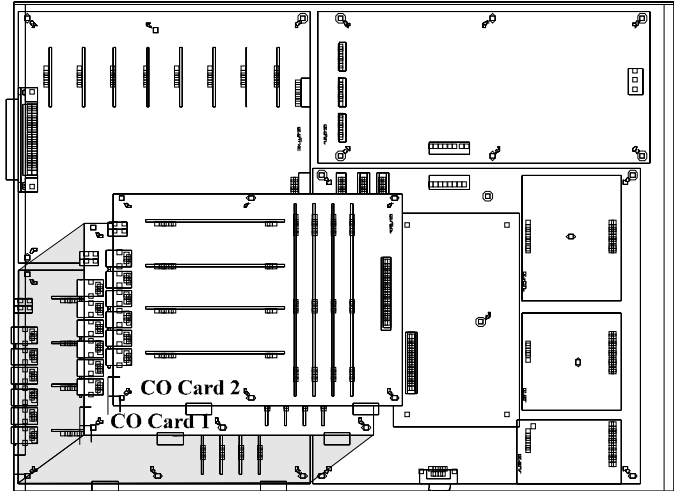
Sensor Circuit

Each Station Card is equipped with one (1) Sensor circuit. A sensor circuit consists of two wires that provide supervision of the circuit to which they are connected. The sensor circuit can be connected to a normally open or a normally closed device. This allows the Superkey® Electronic Telephone system to be connected to various signaling equipment. The sensor(s) can be used to provide notification of security violations within a building, connection to fire or burglar alarms or any activity that can be monitored through the use of switching or relay driven equipment. With a total capacity of three station cards in the system, a total of three sensor circuits may be utilized in the system. Alarm signals may be either latching or non-latching.

Central Office (CO) Line Cards

SK-TRK/8 P/N 80009314

Each SK-824 Key Service Unit is equipped with one (1) CO line circuit card (SK-TRK/8). Each CO line circuit card supports four (4) CO lines, one (1) external control relay, one (1) power fail transfer circuit, and one (1) FAX monitor connection. The system can be equipped with one (1) additional CO line circuit card for a total of two (2) circuit cards supporting a total of eight (8) CO lines, two (2) external control relays, two (2) power fail transfer circuits and two (2) FAX monitor connections.



Programmable Relay

Each CO line circuit card contains one (1) external control relay. The use for this relay can be programmed for a variety of functions. They are as follows:

Music On Hold	System Reminder
Doorphone 1 Lock Control	All Zone Page
Doorphone 2 Lock Control	External Zone Page 1
CO Line Loud Bell	External Zone Page 2
Station Loud Bell	

Power Fail Transfer

Power failure transfer is available for the first line on each CO line card. In the event of a system failure or a power failure on a system with no battery backup, the first CO line circuit on this card can be cut through to a single line telephone so that calls can still be made and received, even with an inoperable system.

Fax Monitor

FAX monitor is available on the fourth circuit on each CO line card. When connected to the system, a machine can share the use of a CO line with the telephone system. When the FAX machine accesses the CO line first (incoming or outgoing call) station users will not have access to the line. All Superkey[®] Electronic Telephones will show a busy condition (via LED) while the FAX machine has control of the CO line. Single line users will be given a busy signal if they attempt access while the line is in use. If a station user within the telephone system accesses the telephone line first, the FAX machine is unable to connect to the telephone line as long it is in use by a station user. This prevents the possibility of a FAX machine attempting to dial over a voice conversation in progress and also prevents the possibility of a station user interrupting a FAX transmission in progress. While this feature is called FAX monitor, it may also be used by any other device that may require similar consideration (i.e. computer modem, security system, etc.).

Central Office Line Card Options

If necessary for installation or required by local regulations, the SK-824 may be optionally equipped with the following circuit cards:

Pulse Metering Detector (50 Hz)

SK-PM50/ P/N 70009300

This circuit card connects to a CO line card and provides the capability to detect 50 hertz meter pulses sent by the Central Office for signaling, timing and supervision of CO lines.

Pulse Metering Detector (12khz)

SK-PM12/ P/N 70009302

This circuit card is essentially the same as the SK-PM50 listed above except that meter pulses received from the Central Office are at a frequency of 12 kilohertz .

Pulse Metering Detector (16kHz)

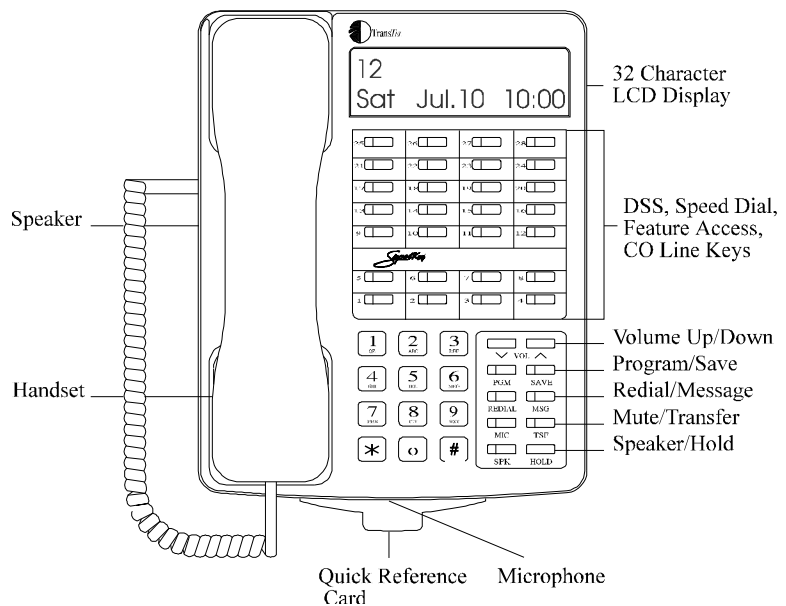
SK-PM16/ PN/ 70009304

This circuit card is essentially the same as the SK-PM50 and SK-PM12 listed above except that meter pulses received from the Central Office are at a frequency of 16 kilohertz .

Superkey® Electronic Telephone Sets

SK-EKT/D P/N 60009300 (Display & Speakerphone)
 SK-EKT/S P/N 60009302 (Speakerphone/ Non Display)
 SK-EKT/M P/N 60009304 (Monitor)
 SK-DSS P/N 60009308 (60 Buttons)

The Superkey® SK-824 Key Service Unit provides support for the Superkey® SK-EKT series of electronic telephone sets as well as industry standard (500/2500 series) single line telephone sets. All Superkey® Series Telephone Sets incorporate an aesthetically advanced European ergonomic design offering an attractive complement to most any office environment and decor. The Superkey® series telephones include the SK-EKT/D with LCD display and speakerphone, the SK-EKT/S with speakerphone and the SK-EKT/M with monitor. An Attendant or secretarial position may be equipped with a 60 button DSS console for more efficient call processing.



Key highlights of the Superkey® Electronic Telephone Sets include:

Adjustable Desk Stand

Each model incorporates an adjustable desk stand whereby users can alter the viewing angle of the telephone set.

Wall Mount Kit

The adjustable desk stand also is conveniently used as a wall mount kit simply by reversing it's position on the bottom of the telephone set.

Volume Adjust Levels

For ultimate customer convenience and ease of use, there are no moving parts on the telephone set to affect the volume levels. Speaker, Ringer and Handset levels are defined by each user in the initial setup at installation time since noise levels differ in various office settings. From that point forward, volume levels for each and every call may adjusted by pressing the clearly identified VOL UP and VOL DOWN keys regardless of whether you are talking on the handset or speakerphone. When call is terminated, the levels revert back to their original settings. In noisy environments such as a warehouse facility, the telephone set may be equipped with a special "Push to Talk" handset to mute unwanted background noise while trying to hear the calling party.

Microphone

For models equipped with a full speakerphone, the microphone is located in center of the lower portion of the set as opposed to the right hand side. This design allows equal reception from all angles and alleviates the need to lean over and speak directly at the right hand side of the telephone while in the handsfree mode. Located on the bottom of the Telephone Set is an adjustment for the volume level of the microphone for optimum performance. This setting is usually made at the time of initial installation based on the ambient noise in the room or office of the telephone set. Once completed, this adjustment is usually not required again.

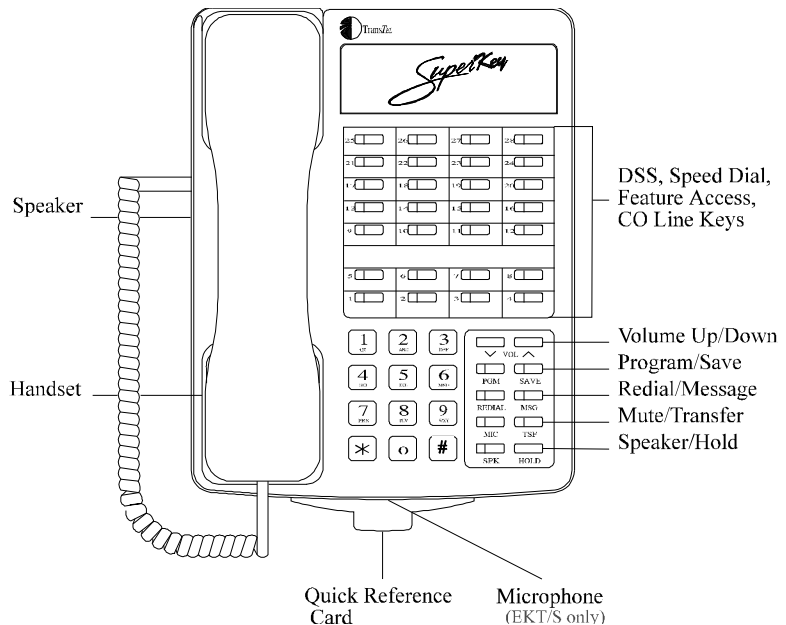
Squared/ Non Squared Configuration

Through programming, ALL sets can be identical in key configuration and operation if desired.

Alternatively, the telephone sets may be programmed independently according to each station user's requirements.

Programmable Function Keys

Each Superkey® Electronic Telephone Set incorporates programmable function keys to meet various applications and user needs. Each Set has 38 keys which are fully programmable. Although the function keys located in the lower right hand corner appear to be fixed according to designated labels, they are actually fully programmable. These are factory programmed default values. Each key can represent one of the following functions:



Direct Station Selection

Assign other station users to specific keys on your telephone set. Call them by simply depressing the key. A visual indication is provided to inform the busy/idle status of other station users.

CO Lines

Outside lines can be assigned to any of the keys. Simple one touch access is available to users once the CO lines have been assigned to specific keys. When assigned to keys 1 through 16, outside lines will have a dual color appearance. This dual color LED appearance allows users to distinguish between their own call placed on hold versus calls placed on hold by other station users.

Speed Dial

Each station user may be assigned up to twenty personal speed dial numbers. Ten of these numbers are accessed by numeric code and ten are accessed by pressing a function key. The speed dial numbers are programmed into keys 1 through 10. Note that the speed dial numbers coexist with either CO line, DSS appearances and/or feature keys.

Feature Key Assignment

For quick and easy access to more commonly utilized features, the Superkey® Series software permits the programmability of a selection of features to specific keys on the telephone set. A complete list of these functions are as follows:

Entry	Description	Entry	Description
CO:XX	CO Lines 01-08	FN:23	Paging All Internal
XXXX	Any valid Station Number	FN:24	Paging All External
FN:00	Non-Operational	FN:25	Paging Zone 1
FN:01	Account Code	FN:26	Paging Zone 2
FN:02	Answer Paging	FN:27	Paging Zone 3
FN:03	Auto Answer/MIC On/Off	FN:28	Paging Zone 4
FN:04	Call Forward	FN:29	Paging Zone 5
FN:05	Call Park	FN:30	Paging Zone 6
FN:06	Check Out	FN:31	Paging Zone 7
FN:07	Check In	FN:32	Paging Zone 8
FN:08	Conference	FN:33	Pickup
FN:09	Day/Night Service	FN:34	Program
FN:10	Directory	FN:35	Pulse/Tone
FN:11	Do Not Disturb	FN:36	Redial
FN:12	Flash	FN:37	Reminder
FN:13	HOLD	FN:38	Save
FN:14	Lock/Unlock	FN:39	Speaker On/Off
FN:15	Message Waiting	FN:40	Speed Dial
FN:16	Microphone On/Off	FN:41	Split/Swap
FN:17	Monitor	FN:42	Transfer
FN:18	O.H.V.A.	FN:43	Volume Up
FN:19	Open Door/Door Status 1	FN:44	Volume Down
FN:20	Open Door/Door Status 2	FN:45	Privacy Release
FN:21	Paging	FN:46	Headset Operation
FN:22	Paging All		

Key Group Assignment

Each Telephone Set is assigned to one of eight key groups. These eight key groups or "templates" are programmed in advance and may reflect the key layout or appearance of a group of telephones, perhaps in a specific department. Once defined, a pattern or layout of the key group is assigned to each station user on an individual basis.

Macrokeys

In addition to the key group assignment as described in the previous paragraph, station users may further customize their sets for their own individual requirements by taking advantage of the Macrokey assignment function. Macrokey assignment allows each station user to customize programmable keys 21 through 28. This is totally independent of system programming and key group assignment. While in the Macrokey programming mode, users can enter up to 5 keystrokes or functions for each key. Macrokey entries may consist of station numbers, feature keys, access codes, speed dial numbers in any combination. Users may even emulate transfer, on/off hook conditions, flash, message sending or any valid system function.

Liquid Crystal Display

The Superkey® Series Telephone Model SK-EKT/D is equipped with a large, easy to read LCD display. The LCD is 32 characters total, comprised of 2 rows by 16 characters each. This LCD provides an invaluable tool for simplifying the use of the telephone by identifying the calling party by name, outside lines by name and self prompting displays for feature access.

Single Line Station Features w/ Access Codes

The Superkey[®] 824 system provides for an extensive selection of features for the use of single line sets. When these features are programmed on and used along with the Superkey[®] Single Line Telephone Set, the customer is presented with an extremely cost effective and powerful communications solution. The features and their associated access codes are as follows:

0 or 9	Operator Call / CO line Access	Flash	Call Swap
87	Alternate CO Group	3	Conference
80X	Individual CO Line Access	Flash	Hold
		Flash or 72	Hold Retrieve
		85+Orbit	Call Park
		85+Orbit	Call Park Retrieve
	Speed Dial		
75+00-09	Personal		
75+100-999	System		
708+0-	To Program		
9+CO Line			
	Doorphone		Paging
88	Call Doorphone 1	#2+Zone1-8	Internal Zone Paging
89	Call Doorphone 2	#1	All Internal Zone Paging
0	Open Doorphone	#3+Zone1-2	External Zone Paging
1	Off Hook Voice Announce	#9	All External Zone Paging
		#0	All Call Page
		#*	Meet Me Answer
	Message Waiting		Call Forward
6	Activate	701	To Program
5	De-Activate	+1	All Calls
6	CO Line Queuing	+2	Busy
74	Last Number Redial	+3	No Answer
0	Override	+4	Busy/No Answer
		+Your Stn	Cancel Call Forward
		Number	
#	Monitor	704+Acct	Traveling COS
		704+Acct	Forced Account Code
		709+Code	Station Lock/Unlock
		706+Code	Unlock One Call Only
	Call Pickup		Wake Up
*1+CO Line	CO Line	7001	To Program
*2+GN	Group Pickup	XX:XX	Enter Time
*3+ST	Station Direct	99	Wake Up Code
*4	Department		
1	Any Ringing Line		
	Timed Reminder		Do Not Disturb
7001	To Program	7051	Activate
XX:XX	Enter Time	7052	Cancel
00-98	Duration (Minutes)	770	Room Monitor
		777	Latching Alarm Reset

Electrical Specifications

The following Table lists the Electrical Specifications of the Superkey® SK-824 Electronic Telephone System:

ELECTRICAL SPECIFICATIONS	
POWER REQUIREMENTS	110-120 VAC @ 0.90 Amperes (50/60 hz) Maximum configuration 210-230 VAC @ 0.45 Amperes (50/60 hz) Maximum configuration
CIRCUIT REQUIREMENTS	Dedicated Circuit Desired
GROUNDING REQUIREMENTS	Grounded 3 Wire Electrical Outlet
POWER DISSIPATION (Common Control + Telephone sets)	Common Equipment 35 Watts Superkey® Electronic Telephone. . 1.9 Watts Single Line Telephone 0.85 Watts
BATTERY BACKUP (Optional)	Approximately 2 Hours under full load when equipped with optional battery backup. (24 VDC, 6.5A/H)
FUSING	2 Amp (AGC 2 or equivalent)

Cabling Requirements

This table lists cabling requirements for the Superkey® SK-824 Electronic Telephone System:

CABLING REQUIREMENTS	
GROUNDING REQUIREMENTS	Grounded 3 Wire Electrical Outlet
Key Service Unit to Main Distribution Frame (Stations)	25 pair cabling with female industry standard 50 pin (Amphenol) Connector to 66 type punch block.
Common Control Unit to Main Distribution Frame (CO Lines)	Industry Standard RJ11 connectors
Loop Limits (Superkey® Electronic Telephones)	22 AWG. 1239 FEET 24 AWG. 780 FEET 26 AWG. 490 FEET
Loop Limits (Single Line Telephones)	22 AWG. 24,780 FEET 24 AWG. 15,584 FEET 26 AWG. 9,800 FEET
Loop DC Resistance/AC Impedance: Doorphone Music Source External Paging	600 ohms Input Impedance 12,000 ohms (Maximum Input 0.2V p-p) Output Impedance 600 ohms
Distribution Cable Minimum Requirements:	
CO Line	Twisted 1 Pair (2 wire)
Superkey® Electronic Telephone	Twisted 2 Pair (4 wire) (Add'l pair required if OHVA is required)
Single Line Telephone Set	Twisted 1 Pair (2 wire)
Superkey® Doorphone	Twisted 1 pair (2 wire)
Door Strike Switch	Twisted 1 pair (2 wire)
FAX Monitor	Twisted 1 pair (2 wire)
External Music Source	Twisted 1 pair (2 wire)
External Paging Equipment	Twisted 1 pair (2 wire)

Environmental Specifications

The following table lists the environmental requirements of the Superkey® SK-824 Electronic Telephone

system:

ENVIRONMENTAL SPECIFICATIONS	
Operating Temperature:	0° to 45° Celsius (32° to 113° Fahrenheit)
Operating Humidity:	10% to 95% non-condensing
Storage Temperature:	-40° to 66° Celsius (-40° to 150° Fahrenheit)
Storage Humidity:	10% to 95% non-condensing

Transmission Characteristics

SK-824 SYSTEM TRANSMISSION CHARACTERISTICS	
INSERTION LOSS	
Reference Frequency: 1000 Hz Reference Impedance: 600 ohms " 1% Test Equipment: Hewlett Packard 35660 Dynamic Signal Analyzer	
Station to Station connection	-5.4 dB
Station to CO line connection	+0.2 dB
CO line to Station connection	+0.8 dB
TOTAL HARMONIC DISTORTION	
Frequency Range: 200 - 4000 Hz Reference Impedance: 600 ohms " 1% Signal Level: 0 dBm Test Equipment: Hewlett Packard 35660 Dynamic Signal Analyzer	
System Total Harmonic Distortion	# 1%
INTERMODULATION DISTORTION	
Reference frequencies: f1=996 Hz f2=1048 Hz Test Equipment: Hewlett Packard 35660 Dynamic Signal Analyzer	
Test #1 2 X f1 +f2	-47 dB
Test #2 2 X f2 +f1	-47 dB
OVERLOAD	2.5 Vpp (THD=1%)
RETURN LOSS	
Reference Impedance: 600 ohms " 1% Test level: -6dBm Test Equipment: Hewlett Packard 4937A Transmission Impairment Measuring Set	
Station Side:	ERL = 7 dB SRL-Lo = 6.8 dB SRL-HI = 8.6 dB
Trunk Side:	ERL = 23 dB SRL-Lo = 14.9 dB SRL-Hi = 16 dB
Station to Station Connection:	ERL = 20 dB SRL-Lo = 20 dB SRL-Hi = 17dB

System Features

Account Code Capability	External Call Forwarding	Single Line Telephone
Forced	External Music Source	Support
Client / Optional	Interface	Speed Dial
Verified	External Paging Interface	Flexible Assignment
Answer Supervision	FAX Monitor	Personal
Attendant Overflow	Flash	System
Automated Attendant	Flexible Line Ring Assignment	Unrestricted
Automatic Line Search	Flexible Key Group	Station Group Assignment
Automatic Ringdown	Assignment	Station Hunting (I/C Calls)
Automatic Wake Up	Flexible Number Plan	Linear
W/Voice Announcement	2, 3 or 4 Digit	Circular
W/Background Music	12/24 Hour Time Display	No Answer/Overflow
Battery Backup (Memory)	Select	Day/Night Options
Battery Charger	Incoming Call Groups	Station Message Detail
Background Music	Intercom	Recording
Programmable Source	Intercom Single Digit	Date/Time
Behind PABX Operation	Assignment	Duration
Centrex Operation	ICM Ring / Voice Select	Dialed Number
Class Of Service	Line Group Assignment	Originating Station
CO Line Groups	Loud Bell	Destination Station
CO Line Hunting	Station	Account Code
CO Line Name Programming	CO Line	CO Line Used
CO Line Ringing Types	Meter Pulse Detection	Time To Answer Calls
Linear	Multiple Attendant Consoles	Transferred Calls
Common Audible	Multiple Trunk Groups	Unanswered Calls
Circular	Multi Language Prompts	Station Disconnect Due To:
Hunt	Music On Hold	Invalid Account Code
Complex Impedance Support	Programmable Source	Toll Restriction
Console Assignment	Music Source Selection	Station Lock
Day/Night Service	Paging	Station Monitor
Automatic	Internal Zone	System Reminder
Manual	External Zone	Telephone Directory
Dial 9 Group	All Call	System Speed Dial
Dial Pulse To DTMF	All Internal	Personal Speed Dial
Conversion	All External	Intercom Stations
Dial Tone Detector	Meet Me	Tenant Service
Direct In Line	Pause	Toll Control
Direct Inward System Access	Pick Up Groups	Toll Plan - Day / Night
Station	Power Failure Transfer	Tone / Pulse Dialing
CO Line	Relay Assignment	Transfer Recall Timeout
Monitor (Station /	Music On Hold	Travelling Class Of Service
Doorphone)	Door Open	Trunk Queuing
Remote Programming	Station Loud Bell	Trunk To Trunk Connections
Security Code Protected	CO Line Bell	Uniform Call Distribution
Distinctive Ringing	System Reminder	Voice Mail Compatibility
Door Phone Interface	All Call Page	Voice Mail Interface
Door Phone	External Page Zone 1	Voice Service Unit
Door Phone Lock Control	External Page Zone 2	Wakeup
DTMF Signalling	Security Alarm Interface	Disa
Dual Port Capability	Security Alarm Sensors	Auto Attendant
End To End Signaling	Single Digit Dialing	

Station Features

Advisory Messages	Callback Busy	Intercom Voice Announce
System	Calling Name Display	Last Number Redial
Personal	Calling Number Display	Message Waiting
Auto Answer	Camp On	Keypad
Auto Hold	Chain Dialing	Single Line
Auto Hold Recall	Conference	Monitor
Automatic Volume Increase	Add On	Conversation
Auto Redial	Multiparty	Environment
Brokers Call	Unsupervised	Room
Callback	Dial By Name	Doorphone
Call Duration Limit	Direct Station Selection	Remote Monitoring
Call Duration Timer	Do Not Disturb	Off Hook Ringing
Call Forwarding	DND Override	Off Hook Voice Announce
All Calls	DSS Console	On Hook Dialing
Busy	Dual Color LED	Prime Line Select
No Answer	Executive Override	Privacy
Busy / No Answer	Station	Privacy Release
Call Park	CO Line	Private Line
Call Park Retrieve	Hands Free Answer Back	Ringling Line Preference
Call Pickup	Hearing Aid Compatibility	Saved Number Redial
Department	Headset Capability	Speed Dialing
Group	Hold (Exclusive)	Station Lock
Station	Hold (System)	Timed Reminder
CO Line	Hold Recall	Station
Voice Announced Call	Hot Dialpad	System
Call Split	Hotline	Volume Control
Call Transfer	I Hold Indication	Handset
Screened	I Use Indication	Speaker
Unscreened	ICM Ring / Voice Interchange	Ringer
Call Waiting	Intercom Step Call	

Maint. & Admin.

Battery Backup	Password Protected	Upload
Customer Database	Live	Download
System Operation	Any Phone	Floppy Disk Storage
Busy Out CO Line	On Line	Menu Driven
Printout Customer Database	Off Line	Plain English Format
Programming	Remote Programming	

Superkey® SK-824 Series Product Line Up

Model	Part Number	Description
SK-824/H	80009300	SK-824/H Basic System. Equipped with 4 C.O. Lines, 8 Hybrid Station Ports. Wired for 8 C.O. Lines, 24 Stations. Includes Common Control Unit, Power Supply w/ battery charger, Ring Generator, 2 Doorphone Interfaces, 3 DTMF receivers/1generator, Tone Detector, 1 Paging Interface, 1 Music On Hold and 1 Background Music Input, Ram Battery Back-up, 1 OHVA port.

Station Interface Cards

Model	Part Number	Description
SK-STI/88	80009306	Supports up to 8 Single Line Sets or 8 Keysets in any combination. (i.e. Fully Hybrid Max. 3 per system)
SK-STI/08	80009308	Supports up to 8 Single Line Sets. (Max. 3 per system)
SK-STI/80	80009310	Supports up to 8 Keysets. (Max. 3 per system)
*** All Station Interface Cards Are Equipped With One Contact Monitor Sensor ***		

Central Office Line Cards & Equipment

Model	Part Number	Description
SK-TRK/8	80009314	Supports up to 4 Central Office Lines. Includes 1 Programmable Relay, Battery Reversal Detection, 1 Fax Monitor, 1 Power Fail Transfer Circuit. (Max. 2)
SK-PM50	70009300	Pulse Metering Detector (50 HZ)
SK-PM12	70009302	Pulse Metering Detector (12 KHZ)
SK-PM16	70009304	Pulse Metering Detector (16 KHZ)

Telephone Sets & Peripherals

Model	Part Number	Description
SK-EKT/D	60009300	Superkey® Electronic Telephone Set. Includes LCD display and speakerphone. 38 flexible keys for feature access, DSS, C.O. Lines or speed dial. (Max 24 per system)
SK-EKT/S	60009302	Superkey® Electronic Telephone Set. Includes speakerphone. 38 flexible keys for feature access, DSS, C.O. Lines or speed dial. (Max 24)
SK-EKT/M	60009304	Superkey® Electronic Telephone Set with monitor. 38 flexible keys for feature access, DSS, C.O. Lines or speed dial. (Max 24)
SK-DSS/60	60009308	DSS Console with 60 programmable keys (Max 1)
SK-DOOR	60009310	Door Phone Box (Max 2 per system)
SK-HND/S	60009312	Standard Handset for all Superkey® model sets
SK-HND/M	60009314	Handset with mute/push to talk button
SK-HND/C	60009316	Handset Cord (10 Ft.)
SK-EKT/LK	60009318	Superkey® Electronic Telephone Label Kit
SK-DSS/LK	60009320	Superkey® DSS Console Label Kit
SK-SLT/LK	60009322	Superkey® Single Line Telephone Label Kit

Application Products

Model	Part Number	Description
SK-VSU/8	80009318	Voice Service Unit. 60 Seconds. 1 per system. Used for DISA, Wake-up, Auto Attendant etc.
SK-RS232	70009306	RS232 Application Adapter. Installs on Common Control Unit. 1 per system.
SK-RPI	70009308	Remote Programming Interface. Installs on Common Control Unit. 1 per system. Includes 1200 Baud Modem
SK-PGM	70009310	Superkey [®] Program Manager Software Package

Spare Parts

Model	Part Number	Description
SK-CCU/8	80009320	SK-824 Common Control Unit
SK-PWR/8	80009322	SK-824 Power Supply
SK-DTMF/8	80009324	SK-824 DTMF Receiver, Sender and Tone Source
SK-BCAB/A	70009312	Superkey [®] Battery Backup Housing without batteries.
SK-BCAB/B	70009314	Superkey [®] Battery Backup Housing with batteries.

Product Documentation

Part Number	Description
80009399	Superkey [®] 824 Brochure
80009398	Superkey [®] 824 Features & Services
80009397	Superkey [®] 824 General Description, Programming, Installation & Maintenance Manual
80009396	Superkey [®] 824 Keyphone User Guide
80009395	Superkey [®] 824 Single Line User Guide
80009394	Superkey [®] 824 Price List



**Series Model SK-824
Electronic Hybrid Telephone System
Installation and Maintenance Manual**

Installation

Introduction To Installation

The Superkey® Series Model SK-824 is an advanced electronic hybrid telephone system employing a microprocessor stored program and digitally controlled solid-state space division switching. With a capacity of up to 8 outside lines and 24 station instruments, the Superkey® Series is cost effective to purchase, easy to use and provides a simple and economical way to grow along with your business. The software structure was developed to accommodate multi-language support in order to adapt efficiently to world markets. It is one of the only systems on the market today which unilaterally supports both advanced Electronic Key Telephone Sets as well as industry standard Single Line Sets. The range of standard features along with thoughtfully designed hardware and software provide the capability to custom tailor the Superkey® SK-824 to your individual telecommunications needs.

This manual is intended to provide the information required for the physical installation of the SK-824. It is recommended that the installer refer to the separate feature and programming documents for fully detailed information on these items.

Specifications

System Capacities

SK-824 Capacities	Quantity	SK-824 Capacities	Quantity
Voice Service Channels	8	Remote Programming Interface	1
Keyphone	24†	DSS Consoles	1
Single Line	24†	External Page Zones	2‡
Hybrid	24	FAX Monitor Ports	2
C.O. Lines	8	OHVA Channels	1
Doorphones	2	DTMF Senders	1
MOH Circuits	1	DTMF Receivers	3
BGM Circuits	1	Tone Detector	1
SMDR Interface	1	External Sensors	3

† Each port may have both a Single line Telephone and a Superkey Set sharing the same Extension Number, if equipped with Hybrid Station Card STI-88.

‡ Two external zones of paging are available through the use of the external relays for switching purposes. One relay is installed on each CO line card. There is one audio output for external page purposes.

Cabling

CABLING REQUIREMENTS	
GROUNDING REQUIREMENTS	Grounded 3 Wire Electrical Outlet
Key Service Unit to Main Distribution Frame (Stations)	25 pair cabling with female industry standard 50 pin (Amp) Connector to 66 type punch block.
Common Control Unit to Main Distribution Frame (CO Lines)	Industry Standard RJ11 connectors
Loop Limits (Superkey® Electronic Telephones)	22 AWG 1239 FEET 24 AWG..... 780 FEET 26 AWG..... 490 FEET
Loop Limits (Single Line Telephones)	22 AWG..... 24,780 FEET 24 AWG..... 15,584 FEET 26 AWG..... 9,800 FEET

CABLING REQUIREMENTS (Continued)	
Loop DC Resistance/AC Impedance: Doorphone Music Source External Paging	600 ohms Input Impedance 12,000 ohms (Maximum Input 0.2V p-p) Output Impedance 600 ohms
Distribution Cable Minimum Requirements:	
CO Line	Twisted 1 Pair (2 wire)
Superkey® Electronic Telephone	Twisted 2 Pair (4 wire) (Add'l pair required if OHVA is required)
Single Line Telephone Set	Twisted 1 Pair (2 wire)
Superkey® Doorphone	Twisted 1 pair (2 wire)
Door Strike Switch	Twisted 1 pair (2 wire)
FAX Monitor	Twisted 1 pair (2 wire)
External Music Source	Twisted 1 pair (2 wire)
External Paging Equipment	Twisted 1 pair (2 wire)

Note: All cabling should have at least 5 twists per foot to prevent induction.

Power

ELECTRICAL SPECIFICATIONS	
POWER REQUIREMENTS 110-120 VAC 0.90 Amperes (50/60 hz) Maximum configuration 210-230 VAC 0.45 Amperes (50/60 hz) Maximum configuration	
CIRCUIT REQUIREMENTS	Dedicated Circuit Desired
GROUNDING REQUIREMENTS	Minimum #14 AWG Earth Ground to Key Service Unit.
POWER DISSIPATION (Common Control + Telephone sets) Listed in Watts	Common Equipment 35 Superkey® Electronic Telephone 1.9 Single Line Telephone 0.85
BATTERY BACKUP (Optional)	Approximately 2 Hours under full load when equipped with optional battery backup.
FUSING Amp (AGC 2 or equivalent)	
LOOP RESISTANCE/IMPEDANCE: Doorphone 600 ohms Music Source Input Impedance 12,000 ohms (Maximum Input 0.2V p-p) External Paging Output Impedance 600 ohms	
DIALING: Outward (Over CO lines) DP - 10 Pulses per second DTMF signaling Intercom Digital Signal (Electronic Sets) DP - 10 Pulses per second (Single Line) DTMF (Single Line)	
Internal Relay Contacts	Type..... SPDT Rating 7 Amperes @ 220 VAC Function..... Door Strike Control

Environment For KSU

The KSU will operate satisfactorily in the following environment:

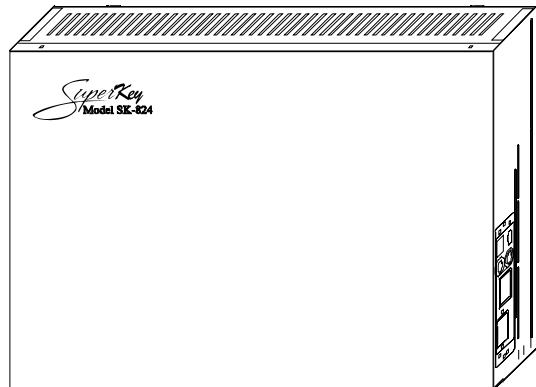
ENVIRONMENTAL SPECIFICATIONS	
Operating Temperature	0° to 45° Celsius (32° to 113° Fahrenheit)
Operating Humidity	10% to 95% non-condensing
Storage Temperature	-40° to 66° Celsius (-40° to 150° Fahrenheit)
Storage Humidity.....	10% to 95% non-condensing

System Components

Key Service Unit

(SK-824/H)

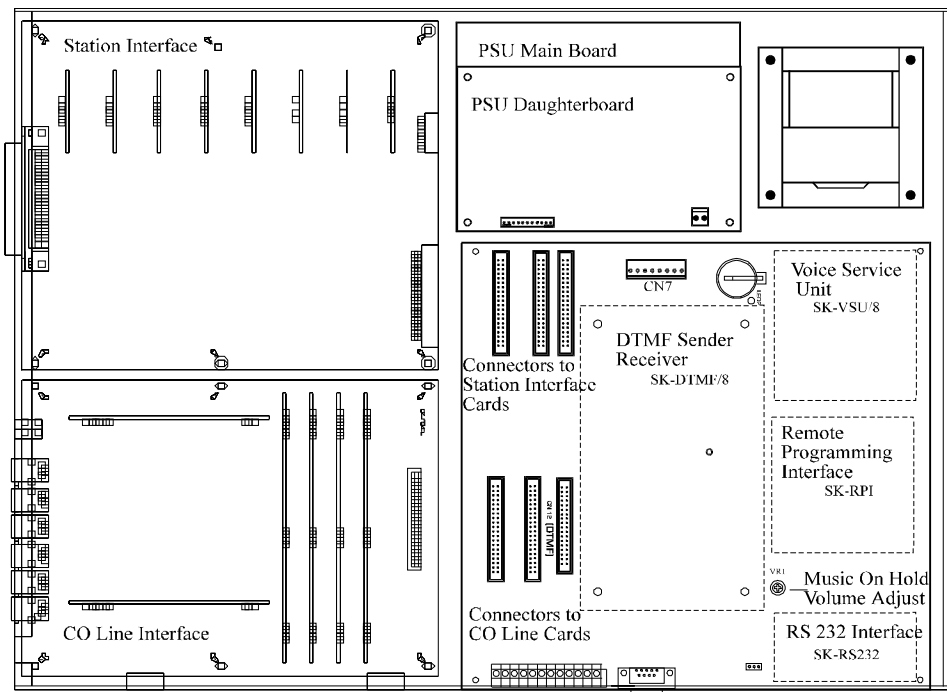
The KSU cabinet is constructed of steel and is equipped with a bracket for wall mounting. The outside view of the cabinet is shown in figure 1.



Common Control Unit Board

(SK-CCUA/8)

The CCUA Mother Board is the heart of the system and contains the processor, ROM (read only memory), RAM (random access memory), the System Clock, and various other circuitry. For a full description see the General Description section. Figure 2 shows the Key Service Unit, Mother board and the placement of the daughter boards that it supports.



C.O. Line Card

(SK-TRK/8)

The SK-TRK/8 C.O. Line board provides interface for four Central Office lines. It has 6 modular connectors on it which provide for the 4 lines, 1 FAX Monitor, and 1 Power Failure connection. The circuitry provides for battery reversal detection. A maximum of 2 boards may be in the system for a total of 8 C.O. lines.

Station Cards

(SK-STI/88)

The SK-STI/88 Station board provides for 8 station ports. These station ports can support either an industry standard single line set or a Superkey® Electronic Key Set. In fact both can share a single port, and extension number. A maximum of 3 boards may be in the system for a total of 24 station ports.

(SK-STI/08)

The SK-STI/08 Station board supports eight industry standard (500/2500) telephone sets. This board does not support Superkey® Electronic Telephone Sets. A maximum of 3 boards may be in the system for a total of 24 station ports.

(SK-STI/80)

Up to eight Superkey® Electronic Telephone Sets may be connected to this station card. This card does not provide support for industry standard single line telephones. A maximum of 3 boards may be in the system for a total of 24 station ports.

Voice Service Unit

(SK-VSU/8)

The Voice Service Unit mounts on the CCUA mother board. It is used in DISA, Wake up, UCD and Automated Attendant features, to provide brief recorded messages, for dialing instructions, no answers, busy stations. etc. For a full description see the General Description section.

RS-232 Interface

(SK-RS232/8)

The RS232 Interface contains the necessary circuitry to send SMDR to a serial printer or if local programming is to be used. The connector for the printer is part of the Motherboard, but this adapter is necessary if SMDR is required or if the system is to be programmed by local a local computer.

Remote Programming Interface

(SK-RPI/8)

The Remote Programming Interface provides a system resident 2400 BPS Modem which may be accessed by calling in by way of DISA. It is used in conjunction with a software program run on a PC which provides remote up-load or down-load system data.

Pulse Metering Detector

(SK-PM12, SK-PM16, AND SK-PM50)

There are three Pulse Metering Detectors available for the detection of call metering pulses. This method of metering is common in Europe, where pulses of 12, or 16 KHz, and in some cases 50 Hz are sent out over the line at intervals that vary according to the charge rate for the call. These metering detectors are daughter boards which connect to the CO line board.

SK-EKT Telephone Sets

The Superkey® family of telephone sets includes a full speaker phone with Liquid Crystal Display, a full speaker phone without the LCD, a monitor set which has a speaker but no microphone or LCD.

DSS Console

(SK-DSS/60)

A DSS/BLF may be provided for the attendant, which has 60 programmable keys. There may be (1) DSS

per system, and it will connect to an EKT port just as a telephone set, and will reduce the maximum telephone sets to a total of 23.

Door Phones

(SK-DOOR)

The Door Phone unit is provided to allow communications with outside doors or unattended service counters, etc.

The Superkey® SK-824 supports 2 door phones. The door phone contains a microphone and speaker for hands-free communications with stations assigned to receive door phone calls. They have their own independent connection point and do not use a station port.

Key Service Unit Installation

This section of this document provides the information necessary for preparation and installation of the KSU. The system will have a default data base which will provide an operational telephone system. Customizing of the system is accomplished by following the instructions in the Programming Manual.

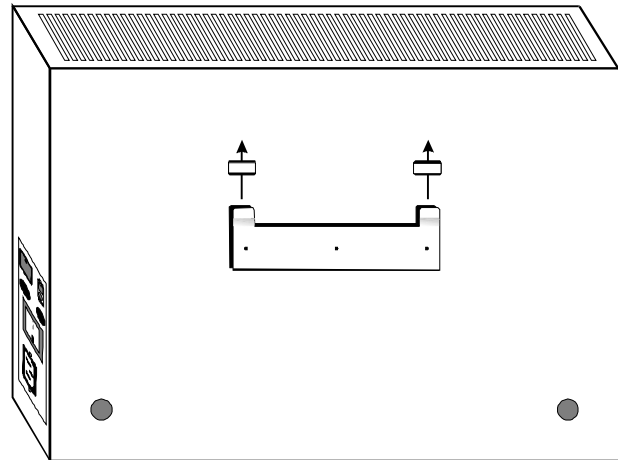
Caution: Before installing or removing parts or troubleshooting Key Service Unit, disconnect AC power cord AND battery backup.

Mounting The KSU

The KSU should be wall mounted and at a height to be comfortable to work on, as well as high enough to be free of any possibility of coming in contact with water or other damaging materials that may be found on the floor.

Every effort should be made to provide a location which will protect the equipment from abuse. The location must meet the environmental conditions listed in Environment For KSU, page 6 of this document.

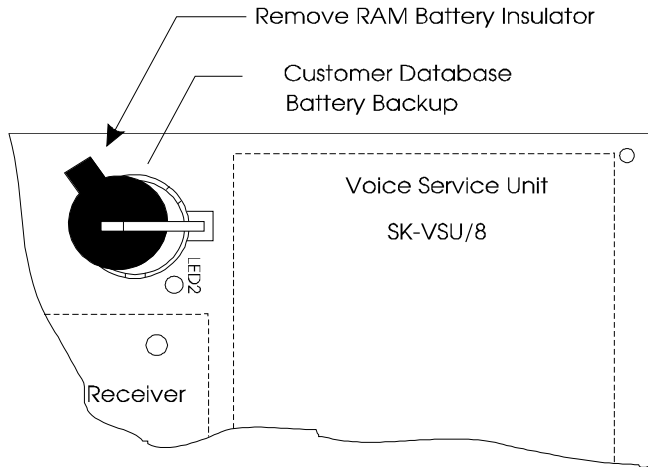
It is suggested that a piece of plywood be mounted securely to the wall which will provide room for both the KSU and a block arrangement for cross connection of stations and other peripherals.



A mounting bracket is provided with each KSU, which should be fastened to the plywood with two screws of a size to make it secure. Before mounting the bracket, please place it in position on the back of the KSU and note the distance from the screw holes to the top of the KSU. This will assure mounting the bracket at the proper position on the plywood. The minimum size requirements are listed below and are measured from the center screw on the KSU mounting bracket.

This approach to mounting provides for easy removal of the KSU from the wall if necessary for any reason.

Minimum Clearance From Center Screw of Mounting Bracket to:	
Top	8 inches
Bottom	13 inches
Either Side	13 inches



Note: Remove insulator from RAM backup battery. See Figure 4.

Installing Station Card

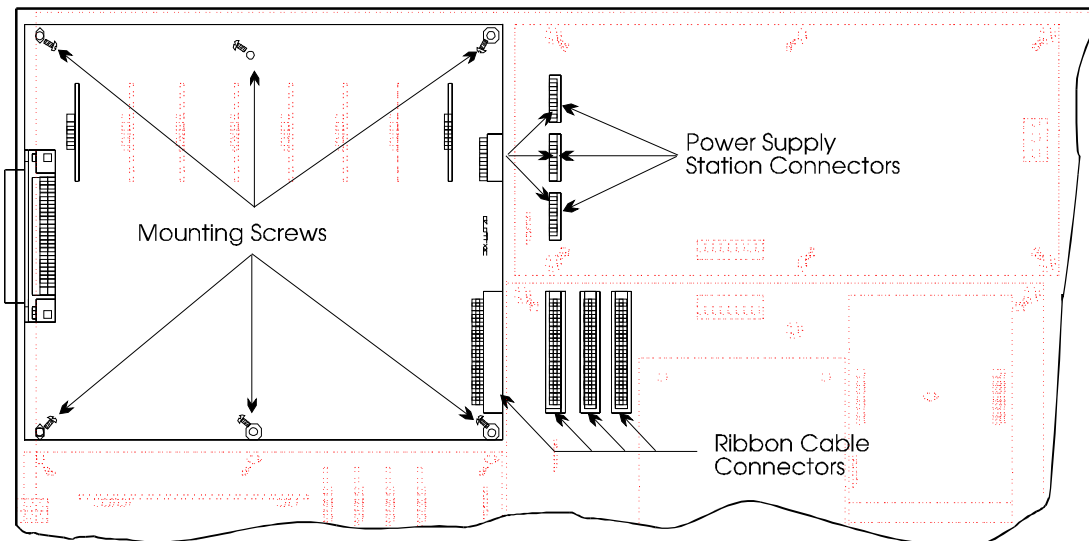
The power should be turned off prior to the addition of any board or daughter board.

The KSU accommodates 3 station boards, each of which provide 8 station ports. To add additional station boards, it will be necessary to remove a blank from the left end of the KSU cabinet for each board that is to be added.

Carefully loosen the screws which hold the cover on the KSU. It is not necessary to remove the screws since slotted holes are provided in the cover and once the screws are loosened,

the cover may be removed by sliding it to the right about 1/2 inch and pulling straight off.

After removing the cover and making sure the power is off, examine the station board or boards already mounted in the KSU. If you already have 16 stations, you will find two station boards mounted. The second board is mounted on top of the first using standoffs. If you have only one board in place you will note that it is secured to the cabinet itself.



In any case, whether you are adding the second or third you will be using standoffs to separate the boards.

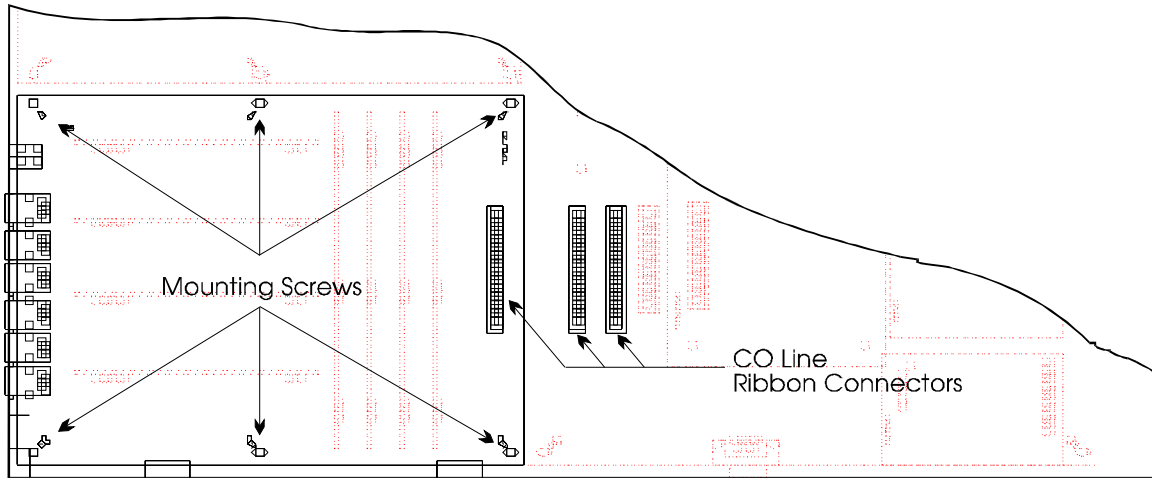
Remove the 6 screws and replace each with a threaded standoff. When all of the screws have been removed and replaced with standoffs, mount the next station board on the standoffs using the same screws that you previously removed.

After the board is secure, connect the ribbon cable to the socket next to the last board installed.

This completes the installation of a station board.

Installing CO Line Circuit Card

To add an additional 4 C.O. lines, remove the cover from the KSU, and the blank from the left end of the KSU. Then, as described in Installing Station Card, page 11 and following the same instructions as for station boards, mount the second CO line board, substituting standoffs for the screws in the first board. Connect the ribbon cable for the second board as for a station board, by connecting it to the vacant location next to the connection of the first board.



This completes the installation of the CO Line board.

The KSU will recognize the presence of the board upon power up of a new system.

Programming will be required for ringing assignments, trunk type, etc. but the trunks will be working upon power up.

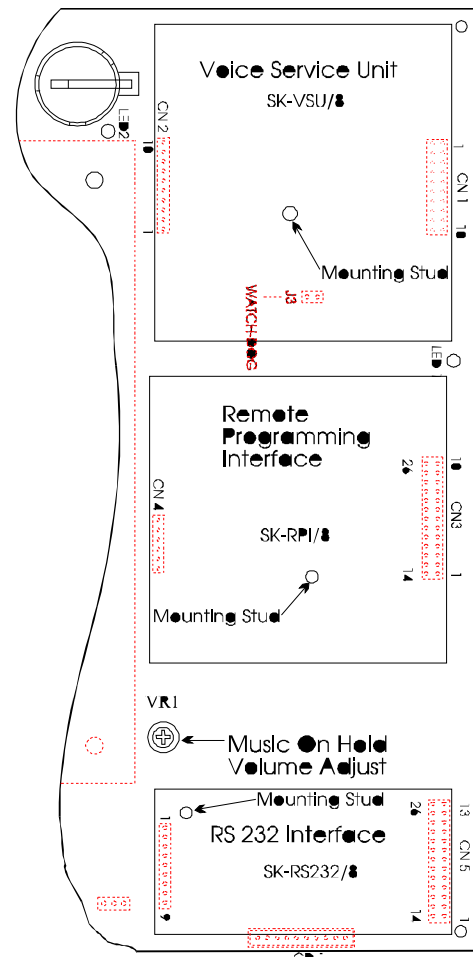
Installing the Voice Service Unit Board

Before installing or removing the Voice Service Unit (VSU) board, turn off the AC power to the KSU.

The VSU or voice service unit is a daughter board which mounts on the CUA. As shown in Figure 7, this board mounts in the upper right hand corner of the motherboard and can be fitted only one way. The VSU mounts on the CUA Motherboard and is held in place by a nut which is screwed down on a threaded nylon stud.

Carefully line up the pins on the connectors, gently push the VSU into place on the mother board. Be sure that all of the pins on the connectors are aligned correctly and fully seated. Install the hold down nut on the nylon stud.

The AC power may be turned on at this point.



Caution: Make sure that all connector pins are properly aligned before powering up the KSU. Misalignment of the connector pins can cause damage and/or failure of the VSU and the main mother board.

Note: Some programming is required for the use of the VSU. See the Features and Services Description for information.

Installing the RS-232 Board

This board is a daughter board which mounts on the CCUA Motherboard and is held in place by a threaded nylon stud and nut assembly. Placement of the RS-232 board can be seen in Figure 7.

To install an RS232 board, turn off the power and remove the cover from the KSU. Observe the connections on the rear of the board and line them up with the pins of the connectors on the motherboard. Carefully push the board into place on the connectors. After examining the connectors to be sure of proper alignment, install the nut on the nylon stud

To remove the RS-232 Interface, turn off the power and remove the cover from the KSU. The RS-232 Interface is mounted on the motherboard in the bottom right of the KSU. Remove the nut from the nylon stud and lift out the interface board.

Caution: Make sure that all connector pins are properly aligned before powering up the KSU. Misalignment of the connector pins can cause damage and/or failure of the RS-232 port and the main mother board.

Installing Remote Programming Interface

Before installing or removing the Remote Programming Interface board, turn off the AC power to the KSU.

The Remote Programming Interface installs on the Common Control Unit as a daughter board and provides a 2400 BPS modem. It allows for remote maintenance and programming capabilities.

To install the RPI, align it with the connectors shown in Figure 7 and press into place.

Caution: Make sure that all connector pins are properly aligned before powering up the KSU. Misalignment of the connector pins can cause damage and/or failure of the RPI and the main mother board.

Note: In order for the Remote Programming Interface to be active, an RS-232 board (SK-RS232/8) must also be installed in the system.

Installing Pulse Meter Boards

The pulse metering boards are mounted on the CO Line boards, as required for recording pulses for call charges. This feature is used in Europe and is not required in the U.S.A.

To mount a metering board, first turn off the power and remove the front cover of the KSU. You will notice that the CO Line board has two connectors along its upper edge, and the one to the left has shorting tools mounted on some of its pins.

Remove the shorting tools and place the metering board on the connectors. If two CO Line boards are installed, the upper one will have to be removed in order to reach the first one.

Installing Battery Backup

Battery Backup may be installed as an option on the SK-824. Installation of battery backup is a very simple procedure. The Superkey® SK-824 is equipped with an internal battery charger. It will not overcharge the batteries installed. DO NOT USE any other type of charging device with the battery cabinet.

Make sure that sufficient room exists on the installation backboard and that any installation is secure, as the battery backup cabinet containing the batteries is quite heavy.

The equipped connecting cable is approximately 26 inches long. This cable is connectorized for connection to the KSU and may not be extended. It is imperative that any installation location is close enough to connect to the KSU so that the cable can easily be connected to the KSU.

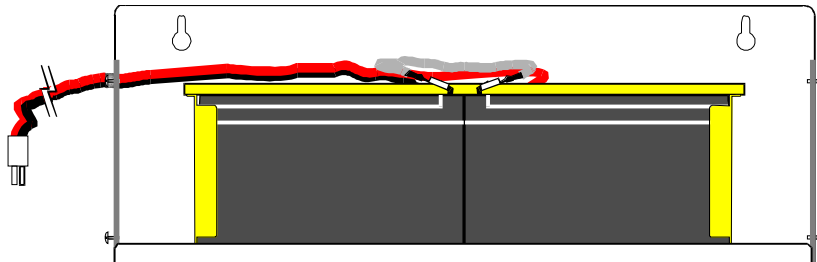
The overall cabinet dimension and mounting considerations are listed below:


Battery Backup Cabinet Dimensions:	5.75" (H) X 15.5" (W) X 3.0" (D)
Mounting Screws	12.25" Center to Center

The battery cabinet can be seen in Figure 8.

The batteries used in the Battery cabinet are "Gel-Cell" sealed batteries. They emit no corrosive gases in normal operation and do not require special ventilation.

Before connecting the battery cabinet to the KSU, check to make certain that the Battery enable switch (the small, black switch on the KSU side panel) is in the off position.



 When connecting the battery cabinet to the KSU, take special care in verifying the proper alignment of the battery connector. The connector is keyed so that reverse polarity connection is not possible. On the male battery cabinet connector, one pin is square plastic. The other is round. Note that the KSU has a female connector that is designed to accept the battery connector only one way. When properly inserted, a locking tab on the battery connector will keep the connection secure. Figure 9 shows an end view representation of the battery cabinet connector.

Do not staple or use any metal fasteners to secure the battery connector cable to the installation backboard. If it is necessary to secure the cable, use a nylon or plastic cable strapping device designed for that purpose.

Installing or Replacing Batteries

Caution- To Reduce the Risk of Fire or Injury to persons, Read and Follow these Instructions.



1. Use only the following type and size batteries:

12 Volt 6.5 Amp/Hour "Gel-Cell" sealed batteries (2).
Dimensions, approximately 3 1/4" (H), 5 15/16" (W), 2 1/2" (D).
PowerSonic model PS660 or equivalent.

2. Do not dispose of the batteries in a fire. The cell may explode. Check with local codes for possible special disposal instructions.

3. Do not open or mutilate the batteries. Released electrolyte is corrosive and may cause damage to the eyes or skin. It may be toxic if swallowed.

4. Exercise care in handling batteries in order not to short the battery with conducting materials such as rings, bracelets, and keys. The battery or conductor may overheat and cause burns.

This product is defined as a secondary battery operated device. As such, the following instructions should also be read and followed:

1. Charge the batteries provided with or identified for use with this product only in accordance with the instructions and limitations specified in this manual.
2. Observe proper polarity orientation between the batteries and battery charger.
3. Do not mix old and new batteries in this product.
4. Do not mix batteries of different sizes or from different manufacturers in this product.

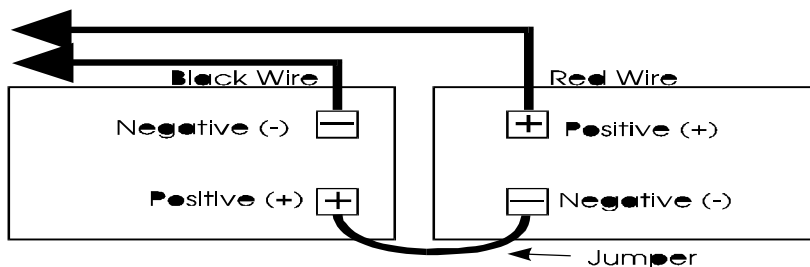
Before installing or replacing batteries, turn off the battery supply switch to the KSU and disconnect the polarized battery connector at the KSU. Due to the weight of the batteries, it is advised that the battery cabinet be removed from the wall before working on it.

To open the battery cabinet, loosen the four screws found on the sides of the cabinet. It is not necessary to completely remove the screws, since the cover will slide upwards and then may be removed by pulling horizontally and away from the battery cabinet. Observe the location of the two screws that hold the batteries in place. Remove and store the screws.

You may then disconnect the batteries from the cable and remove the battery securing bar from the cabinet. Lift out the old batteries if you are replacing batteries.

Installation of new batteries is the reverse of battery removal.

Install batteries end to end, with the terminal connections toward the center of the battery cabinet as shown in Figure 10. Included in the battery cabinet is a jumper cable that is used to connect the positive (+) terminal of one battery to the negative (-) terminal of the other battery. connections to the battery cabinet cable to the KSU are such that the Red positive (+) lead is connected to one battery and the Black negative (-) lead to the KSU is connected to the other. Please see Figure 10 for wiring diagram.



Connections To KSU

Stations Connections

Each station board in the system has a 25 pair connector on it which contains 8 stations and one sensor. Each station has both a voice pair and a data pair, which appear in this connector. The breakouts follow:

Pins	Cable Colors	Function	Pins	Cable Colors	Function
26-01	Wh-BI/BI-Wh	Port 1 Audio T/R	37-12	Bk-Or/Or-Bk	Port 6 Data
27-02	Wh-Or/Or-Wh	Port 1 Data	38-13	Bk-Gr/Gr-Bk	Port 7 Audio T/R
28-03	Wh-Gr/Gr-Wh	Port 2 Audio T/R	39-14	Bk-Br/Br-Bk	Port 7 Data
29-04	Wh-Br/Br-Wh	Port 2 Data	40-15	Bk-SI/SI-Bk	Port 8 Audio T/R
30-05	Wh-SI/SI-Wh	Port 3 Audio T/R	41-16	YI-BI/BI-YI	Port 8 Data
31-06	R-BI/BI-R	Port 3 Data	42-17	YI-Or/Or-YI	Spare
32-07	R-Or/Or-R	Port 4 Audio T/R	43-18	YI-Gr/Gr-YI	Sensor
33-08	R-Gr/Gr-R	Port 4 Data	44-19	YI-Br/Br-YI	Spare
34-09	R-Br/Br-R	Port 5 Audio T/R	Through		
35-10	R-SI/SI-R	Port 5 Data	50-25	Vi-SI/SI-Vi	Spare
36-11	Bk-BI/BI-Bk	Port 6 Audio T/R			

Note: The numbers of ports represent the placement on the station card. The literal port numbers will be 11-18, 21-28, 31-38 for the 3 possible station cards.

The sensor pair can be used to interface with a security alarm or fire alarm. It can be used in either a normally open or normally closed mode and will provide for momentary alarm or an alarm that requires an access code to silence. When activated, each sensor will ring up to 16 pre-programmed telephone sets. It may also be programmed to ring all stations in the system.

CO Line Connections

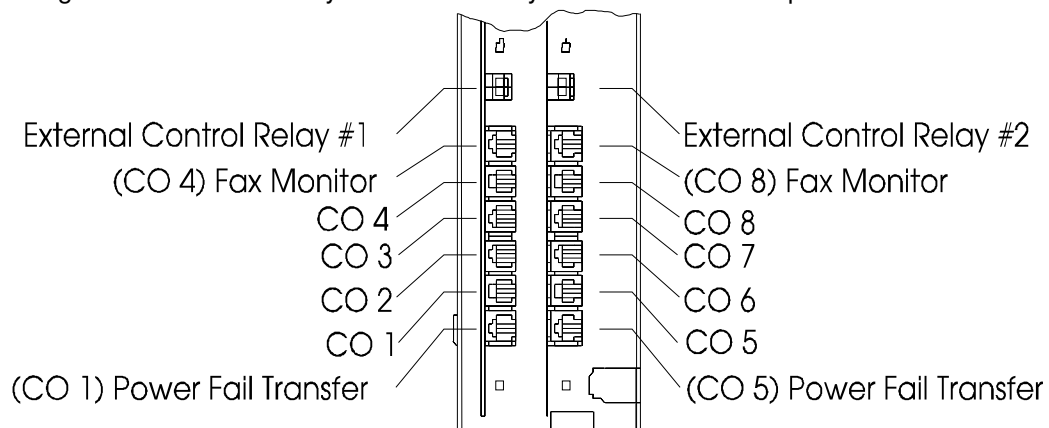
Each CO Line board in the system has 6 modular jacks. The first modular jack is provided for power failure and is connected to the the first line of the card when there is no power to the KSU. The next 4 jacks are the connection point for the CO lines, and the last is a FAX monitor. The FAX monitor is associated with the fourth line on each card (corresponding to line 4 and line 8).

Relay #1, #2 Connections

On the CO Line boards, above the modular jacks as shown in Figure 11 are spring connectors which provide dry relay contacts. Each CO Line board provides one. The one associated with the first CO Line board is Relay #1 and the one associated with the second CO Line board is Relay #2. These contacts may be used for various functions as described in the Features and Services Description. See Figure 11 below.

External Paging Output

The system provides for a single external paging output. This output may be used to feed two external zones by using the contacts of Relay #1 and/or Relay #2 to switch this output to one or the other of two



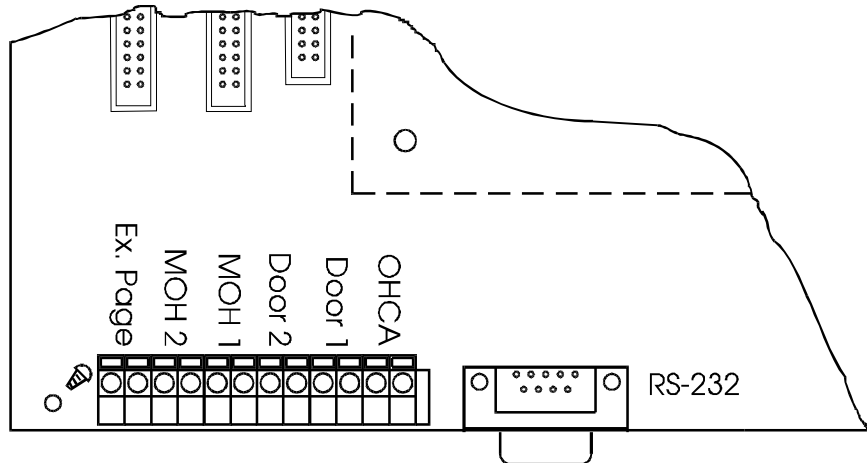
external paging amplifiers.

Note: Programming is required.

This output appears on spring connectors which are located on the mother board, and can be reached by removing the front cover of the KSU. See figure 12.

External Music Sources

Two external music sources may be connected to the system and used for Music on Hold and/or Background Music. They appear on the spring connectors on the mother board. See Figure 12 for connections to MOH1, MOH2 on the spring connectors.



Doorphone Connections

Two Doorphones are provided for, and the connections for these are located on the spring connectors on the mother board. See figure 12 for connections. The two conductors are connected to the two screws on the back of the doorphone unit. They are not polarity sensitive.

Note: Programming is required.

Off Hook Voice Announce

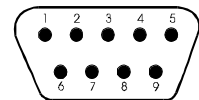
Off Hook Voice Announce is provided in the system and can be offered to Superkey® sets. Industry standard single line sets may not receive Off Hook Voice Announce, but may invoke the function on Superkey® sets equipped for OHVA.

The third pair on the station block is used for OHVA and the OHVA connection on the spring connectors on the mother board must be connected to each station that is to receive OHVA calls.

Note: Programming is required.

Printer Connection

A DB9 connector is provided for connection to a serial printer. The settings are 1200 bits per second, 8 Data bits, 1 stop bit, and no parity. See the table below for connections.



Note: Programming is required.

DB9 Pin Connections to Printer			
Pin	Description	Pin	Description
1	CD (Carrier Detect)	5	GND (Ground)
2	RxD (Receive Data)	6	DSR (Data Set Ready)
3	TxD (Transmit Data)	7	RTS (Ready To Send)
4	DTR (Data Terminal Ready)	8	CTS (Clear To Send)
		9	NC (No Connection)

Through testing and setup with several different printers and call accounting systems, the following cable configuration has proven to be consistently reliable when connected the SK-824 to peripheral equipment.

SK-824 Connector (DB 9)	Printer or Call Accounting Equipment (DB-25)
Pin #	Pin #
1 & 6	20
2	2
3	3
4	6 & 8
5	7
6 & 1	20
7	5
8	4
9	No Connection

Power Up Procedures

Caution: Do Not apply power until you have completed the tests in this section.

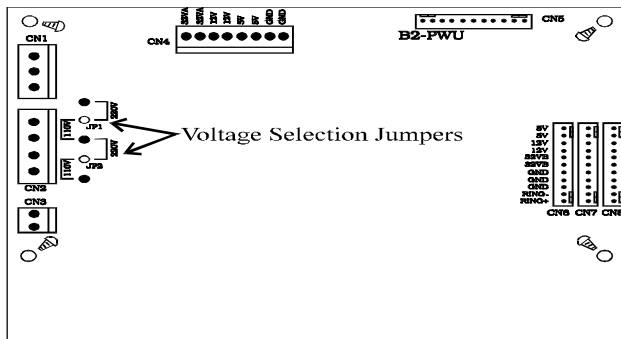


Pre-Power Up checks

1. Verify that the AC outlet that is to be used to supply the KSU is dedicated to the KSU. It should be protected by a circuit breaker or fuse that is not supplying any other outlets.
2. Check voltage selection straps on the power supply for the voltage you are going to be using. See Fig. 14 below.

Note: Before checking the voltage straps, make certain that both the AC connector and the battery connector (if equipped) are disconnected from the KSU.

In order to access the voltage selection straps, it is necessary to remove the daughter-board from the main power supply board. This can be accomplished by removing the four screws that hold the daughter-board in place. The straps should be positioned for the correct AC voltage as shown in Figure 14. When you have determined that the straps are correctly positioned, replace the daughter-board and secure the four screws.



3. If you are going to be using battery backup, verify that you have the Battery switch on the KSU in the OFF position before connecting the batteries. The switch for the connection is shown in Fig. 15 below.
4. Verify that the RAM Battery Insulator has been removed as per Figure 4 of this document.

If all items have checked OK to this point, you may prepare to apply power.

Power Up

The DC or battery backup should remain off until later. When power is applied you should notice the following. Should your results deviate significantly from the described power up procedure, please go to the trouble shooting section and follow the procedures listed under **KSU Start Up Troubles**.

The System will operate and release all relays as a check of functionality. This will be done one at a time and will make a clicking noise. You should also notice that all stations will get a short ring signal. Each EKT Display station will show:

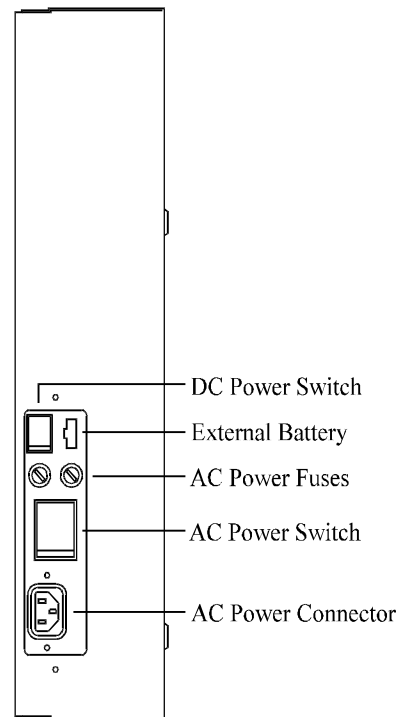
SuperKey Series
VER-TCI 0xx

SuperKey SK824 U
VER: Xxx PORT: 12

This Display will change to the following after the "Boot Up" process is complete and the relays have stopped clicking:

Although the database should be set to default at this point, you should initialize all system data to assure that your RAM has nothing but default data in it. The procedures for initializing system database are described in System

Initialization, page 22 of this document.

**System Initialization****Enable Clock/Database Battery Backup:**

All new systems must have the system clock/database battery backup enabled prior to system programming. If a system database is entered without activation of the clock/database battery, in the event of a power failure, all entered information will be lost. Please see page 11 of this manual for information on removal of the RAM battery insulator and activation of the clock/database battery.

Reset Data

We recommend that all new systems have the system memory reset before system programming takes place. This ensures that any extraneous information in system memory is erased and that the system database will not be corrupt. For more information, please see Reset Data in the Superkey Features and Services Description.

Reset System Memory

Enter System Programming from an LCD equipped Superkey Electronic Telephone Set:

1. Press [PROG]. Press [2].
2. Enter Password if programmed. (New systems will not have a system password).
3. Press [SAVE].
4. LCD display will show:

PROGRAM MODE: __
(01 - 67)

5. Enter [0][5]. Press [SAVE]. LCD display will show:

05- Reset Data
0-9 Default

6. Enter [2].
7. System Database is now reset to default configuration. LCD will display:

PROGRAM MODE: __
(01 - 67)

8. You may commence database entry at this point, or exit system programming by pressing DSS key #5 or by lifting and replacing the handset.

Enter System Programming

1. Press [PROG]. Press [2].
2. Enter Password if programmed. (New systems will not have a system password).
3. Press [SAVE].
4. LCD display will show:

PROGRAM MODE: __
(01 - 67)

5. You may begin system programming at this point.

Basic Programming Commands

For the first time or infrequent installer, a programming overlay is provided with each Key Service Unit. This overlay, when placed on a Superkey LCD telephone set indicates keys used during programming for easy reference. Experienced installers may program without the overlay. Both key designations are listed below.

Note: Keys listed between [] indicate the default keys shown on a telephone set. Keys listed between { } indicate keys displayed by the programming overlay.

These commands are active while in the system programming mode. Whenever you are in the system programming mode, the [SPKR] key will be lit.

[SAVE]{SAVE} Commits the data that is showing on the LCD display into the system database.

[REDIAL]{LEFT} Moves the programming cursor to the left.

[MSG]{RIGHT} Moves the programming cursor to the right.

[VOL 8]{NEXT} Moves to the next section in any multiple part form.

[VOL 9]{NEXT} Moves to the previous section of any multiple part form.

[PGM]{PGM} Moves to the Top Level Programming Mode Display (does not save information entered into any field unless [SAVE] is pressed first).

[TSF]{WILD} Enters a Wild Card (don't care) into Account Codes or Toll control entries. LCD will display d (lower case letter "d") to indicate don't care entry.

[HOLD]{PAUSE} Inserts a Pause when programming a Speed Dial Entry. LCD will display p (lower case "p") to indicate a Pause entry.

[SPK]{FLASH} Enters a FLASH command as part of a Speed Dial Entry. LCD will display F (upper case "F") to indicate a Flash command. Clears a digit during other entries (Passwords, etc). Same operation as [DSS Key 4] below.

[MIC]{P/T} Enters a command to convert from pulse dialing to DTMF dialing into a Speed Dial Entry. LCD will display T (upper case "T") to indicate a tone conversion command.

[DSS Key 3]{EXIT} CHANGE key. Depending on form, it will cycle through available Programming parameters.

[DSS Key 4]{CLR DIGIT} Enters a FLASH command as part of a speed dial number. Clears a digit during other entries (Passwords, etc). (Same as pressing [SPK] key as listed above).

[DSS Key 5]{EXIT} Exits Programming. Returns telephone to normal idle mode.

[DSS Key 8]{CLR ALL} Clears all digits on an entry such as speed dial or account codes.

If an entry is made that is not within valid system parameters, the Superkey system will not accept the entry when [SAVE] is pressed. The Speaker on the programming set will return a busy tone and the LCD Display will place the programming cursor under the offending entry. You may make corrections and press [SAVE] again. If multiple errors are made, the system will continue to return you to the illegal entries as others are corrected.

It is not necessary to re-enter existing information on a multi-item form. You need enter only the information that is to be changed. You may move the cursor to the left or right in order to access only the specific entry that you want to change. You may press [SAVE] without regard for the placement of the cursor on the LCD display.

Maintenance

Trouble shooting

KSU Start Up Problems

No Power Light with KSU plugged into AC Outlet:

1. Verify Voltage at outlet using a test lamp or voltmeter.
2. If voltage OK, remove cord from outlet and open KSU. Check the 2 AC fuses in the upper right hand corner of the Power Supply board. Replace with like value if necessary.
3. If fuses test good, plug the KSU into the outlet again and using caution, test for voltage between the two fuses.
4. If no voltage, check at the KSU end of the power cord, and replace if necessary.

Back up batteries fail to keep the system running upon removal of the AC voltage.

1. Check position of Battery switch on right side of KSU, next to AC switch.
2. Check the voltage of the Batteries.

-
3. Verify that 24 volts is present at plug on end of the wire from batteries.

All programming is lost on power failure.

1. Verify that RAM battery is in place.
2. If the battery is in place, remove it and test it for voltage. It should read a minimum of 1.2 Volts. Replace as necessary, using same type.

Programming Problems

Cannot enter programming using [PGM] + [2] + [SAVE].

(This is most likely caused by a changed password, but can be caused by Prog. 25-STN-06 being set to 1 for the station you are making your attempt from. Try another station to see if you can enter from there.)

1. If you cannot enter from any station, go to 2.
2. If the System is just being installed, turn the system off and remove the RAM backup battery from its holder. Replace the battery and restore power. This will set all values at default and the Programming mode may be entered with [PGM] + [2] + [SAVE].

After setting data in a field pressing SAVE results in the data changing back.

1. Check the data you are trying to enter. The system will reject invalid entries.

Data that has been entered does not give expected results, and when rechecked is not in memory as expected.

1. Enter the data again using the SAVE key for each group of fields you change. Then exit programming with Key #5. If SAVE is not used after each LCD screen of data is changed, the data will not be saved.

Station Problems

No Dial Tone on Single Line Set.

1. Check for proper Station Board - (Must be Hybrid or Single line type)
2. Check for Dial tone at first point after KSU - If dial tone OK, check wiring to jack.

No Dial Tone on EKT set.

1. Substitute a known good station set - If same trouble, check wiring - Data pair reversal?

Can not call or be called.

1. Check program 29 for a duplication of station number - (First entry found will be rung)
2. Check program 28-STN-01 of both stations used in test - Is intercom restriction invoked?

Cannot select line.

1. Check program 28-STN-02 and 22-GRP-01~28 for appearance of lines.

CO Line Problems

Will not ring in (No LED lit).

1. Check for ringing voltage at Telco entry point.
2. If ring OK at Telco, remove modular from KSU and plug into known good Single Line set.
3. If Single Line set rings OK check Program 22 and 28-stn-02 for correct data.

4. If data is correct replace trunk PCB.

Incoming call lights trunk LED but no station rings.

1. Check program 42 and 43 for ringing assign. Is the station in question a member in 42 or 43?
2. Check ring level on station ([PGM] +[6] +[1]).

Cannot select trunk with line key, and LCD shows LN # and RESTRICTED.

1. Check program 41 for line made busy.
2. Check program 28-stn-04 for Dial 9 group, then check program 44-grp to see if the line is a member of the group.
3. Check program 28-stn-05/06 for Toll plan, then check program 61-Toll Plan for Toll Class. Is it 08 for no CO line access?

Cannot select trunk with line key and LCD remains unchanged.

1. Check program 28-stn-02 for key group, then check program 22-grp-key and see if it is programmed for anything. It should be set as a trunk of the number you want.

Cannot select trunk by dialing '9'. Get the attendant instead.

1. Check program 01-06-05. This should contain a '0' for dial '9' for line.

Cannot select all trunks by dialing '9'.

1. Check program 41 for some lines made busy.
2. Check program 28-stn-04 for Dial 9 group, then check program 44-grp to see if the line is a member of the group.



Series Model SK-824

Electronic Hybrid Telephone System

Programming Forms Manual

Software Versions 24.A and Newer

Programming Information

This document contains the system forms required to program the Superkey SK-824 and an explanation of the parameters. While you may program from these forms, it is more convenient to use the programming forms summary document that is included with the Superkey Common Control Cabinet.

New Systems:

We recommend that all new systems have the system memory reset before system programming takes place. This ensures that any extraneous information that may be present in system memory is erased and that the system database will not be corrupt. For more information, please see **Reset Data** in the Superkey Features and Services Description.

To Reset System Memory.

Enter System Programming :
From an LCD equipped Superkey Electronic Telephone Set:

1. Press [PROG]. Press [2].
2. Enter Password if programmed. (New systems will not have a system password).
3. Press [SAVE].
4. LCD display will show:

PROGRAM MODE: __ (01 - 76)

5. Enter [0][5]. Press [SAVE]. Display will show:

05- Reset Data 0-9 Default

6. Enter [2].
7. System Database is now reset. LCD will display:

PROGRAM MODE: __ (01 - 76)

8. You may commence database entry at this point, or exit system programming by pressing DSS key #5 or by lifting and replacing the handset.

To Enter System Programming:

1. Press [PROG]. Press [2].
2. Enter Password if programmed. (New systems will not have a system password).
3. Press [SAVE].
4. LCD display will show:

PROGRAM MODE: __ (01 - 76)

5. You may begin system programming at this point.

Basic Programming Commands:

For the first time or infrequent installer, a programming overlay is provided with each Key Service Unit. This overlay, when placed on a Superkey LCD telephone set indicates keys used during programming for easy reference. Experienced installers may program without the overlay. Both key designations are listed below.

Note: Keys listed between [] indicate the default keys shown on a telephone set. Keys listed between { } indicate keys displayed by the programming overlay.

These commands are active while in the system programming mode. Whenever you are in the system programming mode, the [SPKR] key will be lit.

[SAVE]{SAVE} Commits the data that is showing on the LCD display into the system database.

[REDIAL]{LEFT} Moves the programming cursor to the left.

[MSG]{RIGHT} Moves the programming cursor to the right.

[VOL ↑]{NEXT} Moves to the next section in any multiple part form.

[VOL ↓]{PREV} Moves to the previous section of any multiple part form.

[PGM]{PGM} Moves to the Top Level Programming Mode Display (does not save information entered into any field unless [SAVE] is pressed first).

[TSF]{WILD} Enters a Wild Card (don't care) into Account Codes or Toll control entries. LCD will display d (lower case letter "d") to indicate don't care entry.

[HOLD]{PAUSE} Inserts a Pause when programming a Speed Dial Entry. LCD will display p (lower case "p") to indicate a Pause entry.

[SPK]{FLASH} Enters a FLASH command as part of a Speed Dial Entry. LCD will display F (upper case "F") to indicate a Flash command. Clears a digit during other entries (Passwords, etc). Same operation as [DSS Key 4] below.

[MIC]{P/T} Enters a command to convert from pulse dialing to DTMF dialing into a Speed Dial Entry. LCD will display T (upper case "T") to indicate a tone conversion command.

[DSS Key 3]{CHANGE} CHANGE key. Depending on form, it will cycle through available Programming parameters.

[DSS Key 4]{CLR DIGIT} Enters a FLASH command as part of a speed dial number. Clears a digit during other entries (Passwords, etc). (Same as pressing [SPK] key as listed above).

[DSS Key 5]{EXIT} Exits Programming. Returns telephone to normal idle mode.

[DSS Key 8]{CLR ALL} Clears all digits on an entry such as speed dial or account codes.

Alphanumeric Entry:

The following table indicates the capabilities of the name programming functions if they are selected on the system. System Speed Dial, Personal Speed Dial, Stations, CO Lines and Sensors may be programmed with names.

Key 1 =	Q - Z - (Blank Space) - 1	Key 2 =	A - B - C - 2
Key 3 =	D - E - F - 3	Key 4 =	G - H - I - 4
Key 5 =	J - K - L - 5	Key 6 =	M - N - O - 6
Key 7 =	P - R - S - 7	Key 8 =	T - U - V - 8
Key 9 =	W - X - Y - 9	Key 0 =	(Period). : & 0
Key # =	() \$ #	Key * =	(Dash) / ! *
Redial =	Backspace Cursor	MSG =	Cursor Forward

If an entry is made that is not within valid system parameters, the Superkey system will not accept the entry when [SAVE] is pressed. The Speaker on the programming set will return a busy tone and the LCD Display will place the programming cursor under the offending entry. You may make corrections and press [SAVE] again. If multiple errors are made, the system will continue to return you to the illegal entries as others are corrected.

It is not necessary to re-enter existing information on a multi-item form. You need enter only the information that is to be changed. You may move the cursor to the left or right in order to access only the specific entry that you want to change. You may press [SAVE] without regard for the placement of the cursor on the LCD display.

Form 01-01 System Parameters Form - Timers-1								
Form 01-01-T	01	02	03	04	05	06	07	08
Item								
Options	0-9	0-9	0-9	0-9	0-9	0-9	0-9	0-9
Default	1	1	1	1	5	2	4	2
Item 01 - Hold Recall Timer								
Item 02 - Exclusive Hold Recall Timer								
Item 03 - Hold Recall Timeout								
0=30 seconds	1=60 seconds	2=90 seconds	3=120 seconds	4=150 seconds				
5=180 seconds	6=210 seconds	7=240 seconds	8=253seconds	9=NONE				
Item 04 - Delayed DISA Access Time								
0=1 second	1=3 seconds	2=5 seconds	3=7 seconds	4=9 seconds				
5=16 seconds	6=31 seconds	7=61 seconds	8=121 seconds	9=255 seconds				
Item 05 - Busy Reminder Tone Interval								
0=0 seconds	1=2 seconds	2=4 seconds	3=6 seconds	4=8 seconds				
5=15 seconds	6=30 seconds	7=60 seconds	8=120 seconds	9=254 seconds				
Item 06 - (Dialing) Pause Time Duration (ms. = milliseconds)								
0=400 ms.	1=600 ms.	2=800 ms.	3=1000 ms.	4=1200 ms.				
5=1400 ms.	6=1600 ms.	7=1800 ms.	8=2000 ms.	9=2200 ms.				
Item 07 - DTMF Generation Time (ms. = milliseconds)								
0=50 ms.	1=66 ms.	2=84 ms.	3=100 ms.	4=115 ms.				
5=132 ms.	6=150 ms.	7=165 ms.	8=180 ms.	9=195 ms.				
Item 08 - (No Answer) Call Forward Transfer Time								
0=10 seconds	1=20 seconds	2=30 seconds	3=40 seconds	4=50 seconds				
5=60 seconds	6=70 seconds	7=80 seconds	8=90 seconds	9=100 seconds				

Form 01-02 System Parameters Form - Timers-2								
Form 01-02-T	01	02	03	04	05	06	07	08
Item								
Options	0-9	0-9	0-9	0-9	0-9	0-9	0-9	0-9
Default	3	2	1	8	5	3	2	6
Item 01 - Single Line Telephone - Dial Tone Timeout								
Item 02 - Single Line Telephone - Inter-Digit Timeout								
0=1 second	1=3 seconds	2=5 seconds	3=7 seconds	4=9 seconds				
5=16 seconds	6=31 seconds	7=61 seconds	8=121 seconds	9=255 seconds				
Item 03 - Auto Redial Off Hook Duration (Wait) Timer								
0=1 second	1=10 seconds	2=20 seconds	3=30 seconds	4=40 seconds				
5=50 seconds	6=60 seconds	7=70 seconds	8=80 seconds	9=90 seconds				
Item 04 - Single Line Telephone Release (Disconnect) Time								
0=40 ms.	1=80 ms.	2=120 ms.	3=400 ms.	4=600 ms.				
5=800 ms.	6=1000 ms.	7=1200 ms.	8=1400 ms.	9=1600 ms.				
Item 05 - Key Telephone Flash Timer (ms. = milliseconds)								
0=80 ms.	1=120 ms.	2=160 ms.	3=440 ms.	4=640 ms.				
5=840 ms.	6=1040 ms.	7=1240 ms.	8=1440 ms.	9=1640 ms.				
Item 06 - Single Line Telephone (Hold) Minimum Flash Timer								
0=80 ms.	1=100 ms.	2=200 ms.	3=300 ms.	4=400 ms.				
5=500 ms.	6=600 ms.	7=700 ms.	8=800 ms.	9=900 ms.				
Item 07 - Minimum Ring Detection (Ring On) Timer (ms. = milliseconds)								
0=120 ms.	1=160 ms.	2=240 ms.	3=360 ms.	4=440 ms.				
5=560 ms.	6=640 ms.	7=760 ms.	8=840 ms.	9=960 ms.				
Item 08 - Ring Cycle (Ring Off) Timer								
0=2 seconds	1=2 seconds	2=2 seconds	3=3 seconds	4=4 seconds				
5=5 seconds	6=6 seconds	7=7 seconds	8=8 seconds	9=9 seconds				

Form 01-03 System Parameters Form - Codes-1								
Form 01-03-C	01	02	03	04	05	06	07	08
Code								
Options	0 - 1	0 - 1	0 - 1	0 - 9	1	2 - 4	0 - 1	1
Default	0	0	0	9	1	2	0	1
Code 01 - Pulse Dial - Make / Break Ratio					0=33/67		1=40/60	
Code 02 - Automatic CO Line Search During Speed Dial, Auto Redial, Saved Redial, etc.					0=Enabled		1=Disabled	
Code 03 -Intercom Call Signalling (to Electronic Telephone Set)					0=Voice Signalling		1=Tone Signalling	
Code 04 - PABX (Centrex) Outgoing Code (Reference Form 46-CO-01)					Actual Digit Programmed 0=0, 1=1, 2=2, 3=3, 4=4, 5=5, etc.			
Code 05 - Reserved								
Code 06 - Station Number Digit Length			2=2 digit length		3=3 digit length		4=4 digit length	
Code 07 - SLT Dial Tone Options			0= Normal Dial Tone (When Idle). Interrupted Dial tone on DND, Transfer Dial Tone or Call Forward All Calls Active Special Dial Tone presented if Message Waiting active.					
1= Interrupted Dial Tone (Idle) Normal dial tone (DND, Transfer, Call Forwarding All Calls Special Dial tone (MW Active)			2=Same as 0 except no special dial tone on MW.					
3= Same as 1 except no special dial tone on MW.								
Code 08 - Reserved								

Form 01-04 System Parameters Form - Codes-2								
Form 01-04-T	01	02	03	04	05	06	07	08
Item								
Options	0	0 - 1	0 - 2 5 - 7	0 - 1	0	0 - 1	0 - 1	1 - 2
Default	0	1	2	0	0	0	0	1
Item 01 - Callback Message Cancel Timer				0=Non Cancelling		1=1 Hour		
2=3 Hours		3=6 Hours		4=9 Hours		5=12 Hours		
6=15 Hours		7=18 Hours		8=21 Hours		9=24 Hours		
Item 02 - Dial 9 (Hybrid) Activation				0=Disable		1=Enable		
Item 03 - Call Limit Type								
0=Continuous Warning After Timeout (Outgoing).								
1=1 Second Warning at Duration Limit (Outgoing).								
2=1 Second Tone 10 seconds Prior to Timeout. Continuous Tone 5 seconds prior. Line is released at Timeout (Outgoing).								
5=Same as 1 above, except affects both Incoming and Outgoing.								
6=Same as 2 above, except affects both Incoming and Outgoing.								
7=Same as 3 above, except affects both Incoming and Outgoing.								
Item 04 - Time Format Display				0=12 Hour AM/PM		1=24 Hour 00:00-23:59		
Item 05 - Reserved								

Note: The total number of available Speed Dial numbers is governed by the setting of **Form 01-09-01, Store Speed Dial with Name.**

Item 06 - Speed Dial Distribution (01-09-01 = 1[disable])					
	System	Personal		System	Personal
0	100 Sets	380 Sets	3	400 Sets	180 Sets
1	200 Sets	280 Sets	4-9	500 Sets	80 Sets
2	300 Sets	180 Sets			
Item 06 - Speed Dial distribution (01-09-01 = 0 [enable])					
	System	Personal		System	Personal
0	100 Sets	140 Sets	1	200 Sets	40 sets
Item 07 - Intercom Single Digit Dialing			0=Disabled		1=Enabled
Item 08 - Message Waiting (MW) Status			0= Disable MW Ringing		
1=MW Ring - Route recipient to message originator. (Day and Night)			2=MW - Route to VSU. (Day and Night)		
3=250 millisecond ring every 5 minutes. (Day and Night)			4=No MW during Night Service		
5=No MW Ringing During Night Service Route To originator during Day Service.			6=No MW During Night Service. Route to VSU during day Service.		
7=Disable 250 millisecond ring burst during night service (not currently used).					

Form 01-05 System Parameters Form - Codes-3								
Form 01-05-T	01	02	03	04	05	06	07	08
Item								
Options	0 - 1	0 - 1	0 - 6	0 - 9	0	0 - 1	0 - 9	0 - 9
Default	1	1	0	0	0	0	1	0
Item 01 - Wake Up Call Signalling					0=VSU		1=BGM	
Item 02 - Meter Pulse Detection					0=Enable		1=Disable	
Item 03 - Speed Dial Unrestricted (Hundreds Group)								
0=000	1=100	2=200	3=300	4=400	5=500	6=600		
Item 04 - Speed Dial Unrestricted (Tens Group)						0=00	1=10	
2=20	3=30	4=40	5=50	6=60	7=70	8=80	9=90	
Item 05 - Reserved								
Item 06 - Dial Tone Detector				0=Enabled			1=Disabled	
Item 07 - Auto Redial Attempts					0=Disabled		1=10	
2=20	3=30	4=40	5=50	6=60	7=70	8=80	9=90	
Item 08 - Auto Redial Inter-Call Timer (seconds)						0=10	1=20	
2=30	3=40	4=50	5=60	6=70	7=80	8=90	9=100	

Form 01-06 System Parameters Form - Timer/Codes								
Form 01-06-T	01	02	03	04	05	06	07	08
Item								
Options	0 - 9	0 - 9	0	0 - 1	0 - 1	0-9	0, 1, 3	0
Default	4	4	0	0	0	3	0	0
Item 01 - Transfer Recall Timeout-Busy (seconds)						0=5	1=10	
2=15	3=20	4=30	5=40	6=50	7=60	8=70	9=None	
Item 02 - Transfer Recall Timeout-No Answer (seconds)						0=5	1=10	
2=15	3=20	4=30	5=40	6=50	7=60	8=70	9=None	
Item 03 - Reserved								
Item 04 - Polarity Reverse Detection					0=Enable		1=Disable	
Item 05 - Operator Access Code					0 0 Operator 9 Outside Line		1 9 Operator 0 Outside Line	
Item 06 -CO Disconnect Timer for ECF, Unsupervised Conference, and DISA								
0=Disable	1=1 minute		2=2 minutes		3=3 minutes		4-9=4 minutes	
Item 07 - Single Line Telephone Hold Procedure					0=Flash only			
1=Flash +[7]					3=Flash +[7] (System returns tone after Flash)			
Item 08 - Reserved								

Form 01-07 System Parameters Form - Timer/Codes								
Form 01-07-T	01	02	03	04	05	06	07	08
Item								
Options	0 - 1	0 - 1	0	0 - 1	0 - 1	0 - 9	0 - 9	0
Default	0	0	0	0	0	0	0	0
Item 01 - Intercom Step Call					0=Disable		1=Enable	
Item 02 - SLT Calling Proof					0=Disable		1=Enable	
Item 03 - RESERVED								
Item 04 - DISA Operator Recall Capability (No Digits Dialed)								
0=Recall to Operator				1=Drop Call				
Item 05 - EKT Calling Proof					0=Disable		1=Enable	
Item 06 - SMDR Dialed Number Print				0=Print All Digits		1=Print 1st digit		
2=Print First 2 digits.		3=Print First 3 digits		4=Print First 4 digits		5=Print First 5 digits		
6=Print First 6 digits		7=Print First 7 digits		8=Print First 8 digits		9=Print First 9 digits		
Item 07 - Meter Pulse Detection Delay Time (seconds)							0=0	1=0.68
2=1	3=2	4=3	5=4	6=5	7=6	8=7	9=8	
Item 08 - RESERVED								

Form 01-08 System Parameters Form - Timer/Codes									
Form 01-08-T	01	02	03	04	05	06	07	08	
Item									
Options	0 - 9	0 - 1	0 - 1	0 - 1	0 - 9	0 - 9	0-9	0 - 5	
Default	5	0	1	0	7	0	0	5	
Item 01 - CO HUNT Interval (seconds)				0=0	1=2	2=4	3=6		
4=8	5=15	6=30	7=60	8=120	9=254				
Item 02 - Direct CO Access				0=Disable			1=Enable		
Item 03 - SLT Busy Remind Tone				0=Enable			1=Disable		
Item 04 - DISA Operator Recall Location (No Answer)				0=Recall to Console Group of Dialed Station			1=Recall to CO line Console Group.		
Item 05 - SLT Feature Programming Access Code First Digit					0=Feature Programming of Single Line Telephones Disabled				
1=1	2=2	3=3	4=4	5=5	6=6	7=7	8=7	9=7	
Item 06 - DISA No Answer Recall Timer (seconds)							0=8	1=16	
2=24	3=32	4=40	5=48	6=56	7=64	8=72	9=80		
Item 07 -DISA Transfer Time (No Digits Dialed) Transfer to Console				0=No Expiration Timer Invoked			1 = 1 second		
2 = 2 seconds		3 = 3 seconds		4 = 4 seconds		5 = 5 seconds			
6 = 6 seconds		7 = 7 seconds		8 = 8 seconds		9 = 9 seconds			
Item 08 - Music Source Selection									
Setting	Background Music Source				Music On Hold Source				
0	Internal				Internal				
1	External #2				Internal				
2	Internal				External #1				
3	External #2				External #1				
4	Internal				External #2				
5	External #2				External #2				

Form 01-09 System Parameters Form - Misc.								
Form 01-09-T	01	02	03	04	05	06	07	08
Item								
Options	0 - 1	0 - 1	0-9	0	0	0	0	0
Default	1	1	0	0	0	0	0	0
Item 01 - Store Speed Dial with Name				0=Enable		1=Disable		
Item 02 - Console Automatic Queuing				0=Disable		1=Enable		
Item 03 - CO Break Disconnect Timer				0=Disable		1=80 milliseconds		
2=160 milliseconds		3=240 milliseconds		4=320 milliseconds		5=400 milliseconds		
6=480 milliseconds		7=560 milliseconds		8=640 milliseconds		9=720 milliseconds		
Item 04 - 08 RESERVED								

Note: Speed Dial with Name will control the total number and division of speed dial numbers available to the system. Please see Speed Dial Distribution, Form 01-04-06 of this document.

Form 01-10 Voice Mail Leading Digits								
Form 01-10-T	01	02	03	04	05	06	07	08
Item								
Default	d	d	d	d	d	d	d	d

Form 01-10-01 through 01-10-08 allows programming of treatment digits that are outpulsed over a Voice Mail port (as defined on Form 29-Port-02) when a call is routed to the Voice Mail port due to call forwarding. The information on this form is outpulsed in DTMF format, followed by the extension number of the station from where the call is forwarded. Valid entries on this form include 0-9, *, #, p(ause), and d(on't care). All trailing entries should be filled with don't care entries. Don't care entries are programmed by pressing the TSF (transfer) key. Pause entries are entered by pressing HOLD.

Form 01-11 System Parameters Form - Supplemental.								
Form 01-11-T	01	02	03	04	05	06	07	08
Item								
Options	0 - 1	0	0-1	0-1	0-3	0-9	0-9	0-8
Default	1	0	0	1	0	0	1	0
Item 01 - Power Up Volume Adjust					0=Disabled		1=Enabled	
Item 02 - Reserved					0=Disable		1=Enable	
Item 03 - Music On Hold / Ringback on Transfer					0=Ringback		1=Music On Hold	
Item 04 - DISA Queuing to VSU					0=Do Not Queue		1=Queue	
Item 05 - DISA Digit Acceptance					0=All special digits valid			
1=[*],[#] Special - [8],[9] Digits only					2=[8],[9] Special - [*],[#] Digits Only			
3=No Special Digits								
Item 06 - DISA Transfer Count					0=2	1=3	2=4	3=5
4=6	5=7	6=8	7=9	8=10	9=Infinite			
Item 07 - Door Phone Ring Time					0=5 seconds		1=10 seconds	
2=15 seconds		3=20 seconds		4=25 seconds		5=30 seconds		
6=35 seconds		7=40 seconds		8=45 seconds		9=50 seconds		
Item 08 - DISA Single Digit Dialing					0=No Single Digit Dialing			
1=Single Digit Group 1					2=Single Digit Group 2			
3=Single Digit Group 3					4=Single Digit Group 4			
5=Single Digit Group 5					6=Single Digit Group 6			
7=Single Digit Group 7					8=Single Digit Group 8			

Form 01-12 System Parameters Form - Miscellaneous								
Form 01-12-T	01	02	03	04	05	06	07	08
Item								
Options	0	0	0-1	0	0-1	0	0	0
Default	0	0	0	0	0	0	0	0
Item 01 - Reserved								
Item 02 - Reserved								
Item 03 - Exclusive Hold				0=Enable		1=Disable		
Item 04 - Reserved								
Item 05 - Voice Mail Integration Type				0=Use Form 01-10 DTMF Not Muted		1=Use 10 Digit Spec. DTMF Not Muted		
2=Use Form 01-10 DTMF Muted				3=Use 10 Digit Spec. DTMF Muted		4=Same as 0.		
5=Use 10 Digit Spec. DTMF Not Muted. Does Not send Direct CO Call Code.				6=Same As 2		7=Use 10 Digit Spec. DTMF Muted. Does Not send Direct CO Call Code.		
Items 06 - 08 Reserved								

Note: 10 Digit Voice Mail integration is controlled by Form 01-12-05 provides the following information:

Internal Calls	Digit String	DISA And CO Calls	Digit String
CFWD All Calls	11- <i>STB-STA</i>	CFWD All Calls	21- <i>STB-TRK</i>
CFWD Busy	12- <i>STB-STA</i>	CFWD Busy	22- <i>STB-TRK</i>
CFWD No Answer	13- <i>STB-STA</i>	CFWD No Answer	23- <i>STB-TRK</i>
Direct Call to V-Mail Port	14- <i>STA-STA</i>	Recall to Voice Mail	25- <i>STB-TRK</i>

Direct Call From Trunk	24- <i>TRK-TRK</i>	This digit sequence is played only on incoming calls when 01-12-05 is set at a value of 1 or 3.
------------------------	--------------------	---

STA=The originating station presented as 4 digits.

STB=The forwarding station presented as 4 digits.

TRK=The CO trunk presented as 4 digits.

In systems using 2 digit numbering plans, the *STA* and *STB* fields use leading digits. For example, extension 11 is presented as 0011, extension 12 is presented as 0012, etc.

In systems using 3 digit numbering plans, the *STA* and *STB* fields use leading digits. For example, extension 121 is presented as 0121, extension 122 is presented as 0122, etc.

Systems using 4 digit extension numbering will present all four digits for *STA* and *STB*.

***TRK* is provided as the two digit trunk number** (01-08 on SK-824). The field is also filled with leading zeros, so trunk 01 is presented as 0001, trunk 08 is presented as 0008, etc.

Form 02 - System Passwords								
d=don't care. Programmed by pressing the Transfer Key. All other digits are entered from the station keypad.								
02-01 System Programming Password								
Password								
Default	d	d	d	d	d	d	d	d
02-02 DISA Password								
Password								
Default	3	4	7	2	d	d	d`	d
02-03 Toll Override Password								
Password								
Default	8	6	5	5	d	d	d	d
02-04 Monitor Password								
Password								
Default	d	d	d	d	d	d	d	d

Form 03 - Door Phone Ringing Assignment Form								
Default Information (Door Phone 01 - 02 - ST)								
Item	01	02	03	04	05	06	07	08
STation	11	12	13	14	15	16	17	18
Form 03- Door Phone <u>01</u>								
Item	01	02	03	04	05	06	07	08
Station								
Form 03- Door Phone <u>02</u>								
Item	01	02	03	04	05	06	07	08
Station								

A Door phone can be programmed to ring up to eight telephone sets. The first station to answer a call from a Door phone is automatically connected to the Door phone and all other stations are excluded from the conversation.

Note: Door phones may not be connected to outside telephone lines. They may not be involved in any station conference. They may not be transferred.

Any station can contact the Door phone by dialing 88 for Door phone 01 or 89 for Door phone 02.

Form 04 - Console Assignment Form									
Form 04- Console Group <u>01</u>					Form 04- Console Group <u>05</u>				
Item	01	02	03	04	Item	01	02	03	04
STation					STation				
Form 04- Console Group <u>02</u>					Form 04- Console Group <u>06</u>				
Item	01	02	03	04	Item	01	02	03	04
STation					STation				
Form 04- Console Group <u>03</u>					Form 04- Console Group <u>07</u>				
Item	01	02	03	04	Item	01	02	03	04
STation					STation				
Form 04- Console Group <u>04</u>					Form 04- Console Group <u>08</u>				
Item	01	02	03	04	Item	01	02	03	04
STation					STation				

Form 06 - System Speed Dial Assignment				
Special Characters				
HOLD=Pause (p)		MIC=Tone (T)		SPK=Flash(F)
CHG Key=DSS Key #3 Toggles between Line entry, telephone number entry and name entry.				
Bin # 06-	TK: ##	Number	Name	
___0				
___1				
___2				
___3				
___4				
___5				
___6				
___7				
___8				
___9				

Note: An indication of TK:00 will cause the system to utilize the first free line in a station's dial 9 group. An indication of 01-08 will cause the system to always select the same CO Line. An indication of 41 will access Dial 9 Group #1 through 48 will access Dial 9 Group #8.

Note: To enter a name, press the CHG key until the letter "N" appears in the upper right corner of the LCD display. Letters and numbers may be entered through the keypad.

Phone numbers may not exceed 30 digits in length (including special characters). Names may be entered up to 30 characters, but will only be displayed to 16 characters.

Form 07 - Single Digit Dialing Assignment											
Form 07 - Single Digit Group 01						Form 07 - Single Digit Group 02					
Item	01	02	03	04	05	Item	01	02	03	04	05
Station						Station					
Form 07- Single Digit Group 03						Form 07- Single Digit Group 04					
Item	01	02	03	04	05	Item	01	02	03	04	05
Station						Station					
Form 07- Single Digit Group 05						Form 07- Single Digit Group 06					
Item	01	02	03	04	05	Item	01	02	03	04	05
Station						Station					
Form 07- Single Digit Group 07						Form 07- Single Digit Group 08					
Item	01	02	03	04	05	Item	01	02	03	04	05
Station						Station					

A station with single digit dialing enabled will ring the station number programmed in Item 01 whenever that station dials 1. It will ring the station number programmed in Item 02 whenever the station dials 2, etc.

Single Digit Dialing is enabled on the system by programming Form 01-04-07 as 1 (Enable). Any station that is to utilize Single Digit Dialing must be assigned to a Single Digit Dialing Group on Form 28-STN-01.

DISA Single Digit Dialing is enabled on Form 01-11-08. The group selected will correspond to the table entry on this form. A setting on 01-11-08 of 0 disables DISA Single Digit Dialing.

Form 08 - Relay Assignment Form		
Form 08-Item	01 (Relay on CO Card #1)	02 (Relay on CO Card #2)
Item		
Options	00 - 12	00 - 12
Default	00	00

Valid Settings:	
00=Non-Operational (Default)	05=Station Loud Bell
01=Music On Hold	06=System Alarm
02=Door 1 Latch Release	10=All Zone Page
03=Door 2 Latch Release	11=External Zone 1 Page
04=CO Line Loud Bell	12=External Zone 2 Page

Form 09 - Sensor Assignment Form			
Form 09-Item (Sensor)-	01	02	Name
Form 09-01			
Form 09-02			
Form 09-03			
Default			

Valid Options for Sensor Item Settings 09-01-01, 09-02-01 and 09-03-01	
00=Disabled	
01=Latch operation	Requires either an access code to disable or will reset automatically after 10 minutes if no access code is dialed.
02=Non-Latching Operation.	Will cause alarm when activated. Will cease alarm when condition returns to normal.

Valid Idle Options for Sensor Item Settings 09-01-02, 09-02-02 and 09-03-02	
00= Normally Open	01=Normally Closed

Names or labels may be programmed for each of the system sensors. This name will appear on all LCD displays whenever the respective alarm is activated. To access the name programming function, press DSS key 3 (CO Line 3) while in Form 09-Sensor. Information on how to enter alphanumeric characters is on page of this document.

All stations to be alerted by sensor activation are programmed on Form 17.

Form 11 - System Alarm Schedule		
Schedule:	Alarm Time (24 Hour Format 00:00-23:59)	Duration (01-98 minutes)
01		
02		
03		
04		
05		
06		
07		
08		
09		
10		

Note: A duration of 00 will deactivate a system alarm

Time entry format: 12 midnight until 11:59 AM = 00:00 to 11:59.
 12 Noon until 11:59 PM = 12:00 to 23:59.

Form 12 - Station Message Detail Recording								
Form 12 -01-	01	02	03	04	05	06	07	08
Item								
Options	0-9	0-1	0-1	0-1	0-1	00-99	0	0-1
Default	0	0	0	0	0	21	0	0
01 - Recording Start Time				0=immediate start		1=5 seconds		
2=10 seconds		3=15 Seconds		4=20 Seconds		5=25 Seconds		
6=30 Seconds		7=35 Seconds		8=40 Seconds		9=45 Seconds		
02 - Record Incoming Calls					0=Enable		1=Disable	
03 - Record Local Calls					0=Enable		1=Disable	
04 - Record Unanswered Incoming Calls					0=Enable		1=Disable	
05 -Print Page Header					0=Enable		1=Disable	
06 - Number of Call Records To be Printed Between Headers					00 & 01=1 Call Record			
02-99=Actual Number Of Call Records Between Headers								
Item 07 - RESERVED								
Item 08 - Detect Polarity Reversal					0=Enable		1=Disable	

Form 13 - Forced Account Code Assignment

Special Character TSF=d (don't care. Any entry is satisfactory)
Entries less than eight digits should have "d" in all trailing locations, (e.g., 123245ddd).

Code#	Actual Code	Code#	Actual Code
01		25	
02		26	
03		27	
04		28	
05		29	
06		30	
07		31	
08		32	
09		33	
10		34	
11		35	
12		36	
13		37	
14		38	
15		39	
16		40	
17		41	
18		42	
19		43	
20		44	
21		45	
22		46	
23		47	
24		48	

Form 14 - Voice Service Unit Channel Assignment			
Channel/Item	Function Number	Channel/Item	Function Number
14-01		14-05	
14-02		14-06	
14-03		14-07	
14-04		14-08	
14-01 - 14-08=Channel Assignments			
00=Disabled			
01=DISA: Answer Greeting		02=DISA: Dialed Station Busy	
03=DISA: Dialed Station Does Not Answer		04=DISA: Dialed Number is Invalid	
05=DISA: Console Busy, Please Hold		06=DISA Timer has Expired	
07=DISA:Insufficient Digits Dialed		14=Wake Up Message	
08=DISA: Night Answer Greeting		09=External Call Forward Reroute	
15=SLT Message Waiting Advisory			

Form 15 - Day/Night Service Schedule			
Schedule	Day	Day Service Begin	Day Service End
15-00	Sunday		
15-01	Monday		
15-02	Tuesday		
15-03	Wednesday		
15-04	Thursday		
15-05	Friday		
15-06	Saturday		

Entries into both Day Service Begin and Day service End must be in 24 hour format:

12:00 Midnight through 11:59 AM = 00:00 through 11:59
 12:00 Noon through 11:59 PM = 12:00 through 23:59.

Any interval not covered by Day Service is automatically Night Service:

If Day Service Begin Time is programmed as 08 00
 and the Day Service End Time is programmed as 17 00,
 Day service will be from 8:00 AM until 5:00 PM.

The system will be in Night Service from 12:00 Midnight until 8:00 AM and again from 5:00 until
 12:00 Midnight.

Form 22 - Flexible Key Group Assignment							
22 - Group ____ (01-08) - Key (01-42)				22 - Group ____ (01-08) - Key (01-42)			
Key	Function	Key	Function	Key	Function	Key	Function
01		22		01		22	
02		23		02		23	
03		24		03		24	
04		25		04		25	
05		26		05		26	
06		27		06		27	
07		28		07		28	
08		29	Reserved	08		29	Reserved
09		30	Reserved	09		30	Reserved
10		31	Reserved	10		31	Reserved
11		32	Reserved	11		32	Reserved
12		33	FN:39	12		33	FN:39
13		34	FN:03	13		34	FN:03
14		35	FN:36	14		35	FN:36
15		36	FN:34	15		36	FN:34
16		37	FN:44	16		37	FN:44
17		38	FN:43	17		38	FN:43
18		39	FN:38	18		39	FN:38
19		40	FN:15	19		40	FN:15
20		41	FN:42	20		41	FN:42
21		42	FN:13	21		42	FN:13

Note: Press DSS Key #3 (CHANGE) to switch between DSS (Intercom), CO line, and FN (function key assignment) capability during system programming.

Form 22 and Form 23 Key Assignment Parameters			
Entry	Description	Entry	Description
CO:XX	CO Lines 01-08	FN:23	Paging All Internal
XXXX	Any valid Station Number	FN:24	Paging All External
FN:00	Non-Operational	FN:25	Paging Zone 1
FN:01	Account Code	FN:26	Paging Zone 2
FN:02	Answer Paging	FN:27	Paging Zone 3
FN:03	Auto Answer/MIC On/Off	FN:28	Paging Zone 4
FN:04	Call Forward	FN:29	Paging Zone 5
FN:05	Call Park	FN:30	Paging Zone 6
FN:06	Check Out	FN:31	Paging Zone 7
FN:07	Check In	FN:32	Paging Zone 8
FN:08	Conference	FN:33	Pickup
FN:09	Day/Night Service	FN:34	Program
FN:10	Directory	FN:35	Pulse to Tone
FN:11	DND & Conference	FN:36	Redial
FN:12	Flash	FN:37	Reminder
FN:13	HOLD	FN:38	Save
FN:14	Lock/Unlock	FN:39	Speaker On/Off
FN:15	MSG & Pulse to Tone	FN:40	Speed Dial
FN:16	MIC & Auto Answer	FN:41	Split/Swap
FN:17	Monitor	FN:42	Transfer
FN:18	O.H.V.A.	FN:43	Volume Up
FN:19	Open Door/Door Status 1	FN:44	Volume Down
FN:20	Open Door/Door Status 2	FN:45	Privacy Release
FN:21	Paging	FN:46	Headset Operation
FN:22	All Page	FN:47	System Speed Dial Directory

Form 23 - DSS Key Assignment					
23 - 01- Key (01-60)					
Key	Function	Key	Function	Key	Function
01		21		41	
02		22		42	
03		23		43	
04		24		44	
05		25		45	
06		26		46	
07		27		47	
08		28		48	
09		29		49	
10		30		50	
11		31		51	
12		32		52	
13		33		53	
14		34		54	
15		35		55	
16		36		56	
17		37		57	
18		38		58	
19		39		59	
20		40		60	

Note: Press DSS Key #3 (CHANGE) to switch between DSS (Intercom), CO line, and FN (function key assignment) capability during system programming.

Form 24 - Station Class of Service (Part 1)

01 - Override/Barge-In Level	0=Unable to Override	1-9= Can Override equal and lower numbered levels	
02 - Monitor Level	0=Unable to Monitor	1-9=Can Monitor lower numbered levels	
03 - Call Limit Duration	0=No Duration Limit	1-9=Actual Duration Limit Time (Minutes)	
04 - Associated Loud Bell	0=Disabled	1=Relay #1 (CO Card #1)	2=Relay #2 (Card #2)
05 - Paging Access	0=Enable		1=Disable
06 - Paging Over Speaker	0=Enable		1=Disable
07- Station Lock/Unlock Status	0=Unlocked		1=Locked
08 - Forced Account Code	00=Any Valid Account Code		
01-48=Only the corresponding Account Code (01-48) is Valid on this Set			

Form 24-STN-	01	02	03	04	05	06	07	08
24-_____								
24-_____								
24-_____								
24-_____								
24-_____								
24-_____								
24-_____								
24-_____								

Form 24-STN-	01	02	03	04	05	06	07	08
24-_____								
24-_____								
24-_____								
24-_____								
24-_____								
24-_____								
24-_____								
24-_____								

24-STN-	01	02	03	04	05	06	07	08
24-_____								
24-_____								
24-_____								
24-_____								
24-_____								
24-_____								
24-_____								
24-_____								

Form 25 - Station Class of Service (Part 2)								
01 - System Alarm Station		0=Enable			1=Disable			
02 - Call Hold		0=Enable			1=Disable			
03 - Call Split		0=Enable			1=Disable			
04 - Manual Line		0=Disable			1=Enable			
05 - Headset Operation		0=Disable			1=Enable			
06 - Default Password (System Programming Access)		0=Enable			1=Disable			
07 - Display Meter Pulses		0=Enable			1=Disable			
08 - Alarm Signaling Type		0=Background Music			1=DND Tone			
25-STN--	01	02	03	04	05	06	07	08
25-_____								
25-_____								
25-_____								
25-_____								
25-_____								
25-_____								
25-_____								
25-_____								
25-STN-	01	02	03	04	05	06	07	08
25-_____								
25-_____								
25-_____								
25-_____								
25-_____								
25-_____								
25-_____								
25-_____								
25-STN-	01	02	03	04	05	06	07	08
25-_____								
25-_____								
25-_____								
25-_____								
25-_____								
25-_____								
25-_____								
25-_____								

Form 26 - Station Class of Service (Part 3)

01-Intercom Dialing Restriction		0=Disable			1=Enable			
02-Dual Port Operation		0=Disable			1=Enable			
03 Ringing Volume Increase Gradually		0=Disable			1=Enable			
04-Station Conference		0=Enable			1=Disable			
05-Inter-Station Group Calling		0=Enable			1=Disable			
06-Accept DTMF/Dial Pulse		0=DTMF or pulse			1=Dial pulse only			
07-System Speed Dial Access		0=All System Access			1=Only Unrestricted			
08-Direct CO Access (Trunks other than Dial 9 Group)		0=Disable			1=Enable			
26-STN--	01	02	03	04	05	06	07	08
26-_____								
26-_____								
26-_____								
26-_____								
26-_____								
26-_____								
26-_____								
26-_____								
26-STN-	01	02	03	04	05	06	07	08
26-_____								
26-_____								
26-_____								
26-_____								
26-_____								
26-_____								
26-_____								
26-_____								
26-STN-	01	02	03	04	05	06	07	08
26-_____								
26-_____								
26-_____								
26-_____								
26-_____								
26-_____								
26-_____								
26-_____								

Form 27 - Station Class of Service (Part 4)								
01 - Dial 87 Line Group		0=Disabled			1-8=Group Number			
02 - Message Waiting Level		0=Cannot Leave Callback Messages						
1-9 -Able To leave messages for stations of equal or lesser Message Waiting Level								
03 - Auto Answer Flag		0= Auto Answer Manual			1=Auto Answer On/MIC Light Lit			
2=Auto Answer On/MIC Light Off		4= Auto Answer Manual/Speakerphone MIC On						
5=Auto Answer On/MIC Light Lit Speakerphone MIC On		6=Auto Answer On/MIC Light Off Speakerphone MIC On						
04 - DISA Recall Capability To Operator (No Answer/Busy)		0=No Recall to Operator			1=Recall on No Answer			
2=Recall on Busy		3= Recall on Busy and No Answer			5=Recall on No Answer (Forwarding station stops ringing)			
6=Recall on Busy and Stop Busy Remind Tone at Forwarding Station		7= Recall to Operator on No Answer/Busy (Stop Notification at Forwarding Station)						
05 - RESERVED								
06 - Doorphone Strike Control		0=Disable			1=Enable			
07 - Telephone Type		0=SK-EKT			1=SK-K7			
08 - RESERVED								
27-STN--	01	02	03	04	05	06	07	08
27-_____								
27-_____								
27-_____								
27-_____								
27-_____								
27-_____								
27-_____								
27-_____								
27-STN-	01	02	03	04	05	06	07	08
27-_____								
27-_____								
27-_____								
27-_____								
27-_____								
27-_____								
27-_____								

27-STN-	01	02	03	04	05	06	07	08
27-_____								
27-_____								
27-_____								
27-_____								
27-_____								
27-_____								
27-_____								
27-_____								

Form 28 - Station Specifications								
01 - Group Assignment Zone Paging - Pick Up Group Station Group Single Digit Dialing Group				1-8 = Valid Group Entries				
02 - Flexible Key Group (EKT)				1-8 = Applicable Key Group From Form 22				
03 - RESERVED								
04 - Dial 9 Group				1-8 = Applicable Dial 9 Group From Form 44				
05 - Toll Plan (Day Service)				0-9 = Applicable Toll Plan				
06 - Toll Plan (Night Service)				0-9 = Applicable Toll Plan				
07 - Port Number				This parameter is not user programmable				
28-STN--	01	02	03	04	05	06	07	08
28-_____								11
28-_____								12
28-_____								13
28-_____								14
28-_____								15
28-_____								16
28-_____								17
28-_____								18
28-STN-	01	02	03	04	05	06	07	08
28-_____								21
28-_____								22
28-_____								23
28-_____								24
28-_____								25
28-_____								26
28-_____								27
28-_____								28
28-STN-	01	02	03	04	05	06	07	08
28-_____								31
28-_____								32
28-_____								33
28-_____								34
28-_____								35
28-_____								36
28-_____								37
28-_____								38

Form 29 - Port Assignments					
	01	02	03	User Name	Comments (Optional)
Card 1					
29-11-					
29-12-					
29-13-					
29-14-					
29-15-					
29-16-					
29-17-					
29-18-					
Card 2					
29-21-					
29-22-					
29-23-					
29-24-					
29-25-					
29-26-					
29-27-					
29-28-					
Card 3					
29-31-					
29-32-					
29-33-					
29-34-					
29-35-					
29-36-					
29-37-					
29-38-					

01 - Station Extension Number	Any valid entry: 10-69 (2 digit) 100-699 (3 digit) 1000-6999 (4 digit)
02 - Equipment Type (Recognized by the system Automatically)	
0=No Equipment Connected	1=Key Telephone without LCD
2=Key Telephone with LCD	3=Parallel Key Telephone and Single Line Set
4=Single Line Telephone	5=DSS Console Set
6=RESERVED	7=Key Telephone With OHVA
8=Voice Mail Port	9=RESERVED
03- DSS Key Group Assignment	Only applicable if 29-02 is set to 5
In Superkey SK-824, this parameter must be set to 1 if DSS is used.	

Programming Station Name.

Entries may be programmed on this form. Select the STN number that you wish to program, press [CHAnG]e (DSS line key 3). During name entry, the numeric keypad keys will operate as alphabetical character keys. Each key will enter the letters that appear on the keycaps. The following table illustrates the entries that each key can make.

Key 1 =	Q - Z - (Blank Space) - 1	Key 2 =	A - B - C - 2
Key 3 =	D - E - F - 3	Key 4 =	G - H - I - 4
Key 5 =	J - K - L - 5	Key 6 =	M - N - O - 6
Key 7 =	P - R - S - 7	Key 8 =	T - U - V - 8
Key 9 =	W - X - Y - 9	Key 0 =	(Period). - :- & - 0
Key # =	(-) - \$ - #	Key * =	(Dash) - / - ! - *
Redial =	Backspace	MSG =	Forward

Each character is indicated in order. For instance, pressing 2 will display A. Pressing it again will display B. Pressing it a third time will display C. Pressing it for the fourth time will display 2. The character that is being programmed will be underscored. Movement from character to character (left to right) is through the use of the Redial (left) and MSG (right) keys.

When the name is acceptable, press [SAVE] to store the name in system memory.

The **Comments** field is a forms only field and is for use by installation personnel.

Form 30 - Personal Speed Dial Table Assignment							
Default	Assigned	Numerical	DSS	Default	Assigned	Numerical	DSS
11				23			
12				24			
13				25			
14				26			
15				27			
16				28			
17				29			
18				30			
19				31			
20				32			
21				33			
22				34			

Default Information provides the basic two digit default numbering plan for the system.

Assigned allows you to enter any station numbering plan instead of default.

Numeric allows you to enter the storage Bin Group that you wish to assign for a station to have numeric keypad speed dialing capability.

DSS permits you to enter a storage Bin Group that you wish to assign for a station to have DSS speed dialing capability on DSS keys 1 through 10.

Note: Entry of **00** at any location (numeric or DSS) disables speed dialing for that station of the selected type.

It is possible to assign the same storage Bin Group to more than one station. If more than one station is assigned the same Bin Group, the stations that share the Bin Group will be able to program the numbers and share the ability to use them

Form 31 - Macro Table Assignment					
STN. #	B1	B2	STN #	B1	B2
11			23		
12			24		
13			25		
14			26		
15			27		
16			28		
17			29		
18			30		
19			31		
20			32		
21			33		
22			34		

Macro button assignment allows assignment of macro function capability to those telephones that require macros.

B1 in the form above indicates assignments that will be effective on DSS keys 21 through 24.

B2 in the form above indicates assignments that will be effective on DSS keys 25 through 28.

There are 24 memory location assignments available within the system. They are numbered 01-24. An entry of 00 in a bin location indicates that nothing is programmed in that location.

If the same bin location is assigned to more than one telephone, both (all) telephones will share access to the macros within the bin location. Both (all) stations will be able to program the macro locations.

Form 42 - Day Ringing Assignment Form						CO 01-08 42-CO-IT	
Ring Type : Linear / Circular / Hunt / Common See Form 46-CO-07							
Form 42- 01-		Form 42- 02		Form 42- 03		Form 42- 04	
ITem	Extension	ITem	Extension	ITem	Extension	Item	Extension
01		01		01		01	
02		02		02		02	
03		03		03		03	
04		04		04		04	
05		05		05		05	
06		06		06		06	
07		07		07		07	
08		08		08		08	
09		09		09		09	
10		10		10		10	
11		11		11		11	
12		12		12		12	
13		13		13		13	
14		14		14		14	
15		15		15		15	
16		16		16		16	
Form 42- 05-		Form 42- 06		Form 42- 07		Form 42- 08	
ITem	Extension	ITem	Extension	ITem	Extension	Item	Extension
01		01		01		01	
02		02		02		02	
03		03		03		03	
04		04		04		04	
05		05		05		05	
06		06		06		06	
07		07		07		07	
08		08		08		08	
09		09		09		09	
10		10		10		10	
11		11		11		11	
12		12		12		12	
13		13		13		13	
14		14		14		14	
15		15		15		15	
16		16		16		16	

Form 43 - Night Ringing Assignment Form						CO 01-08 43-CO-IT	
Ring Type : Linear / Circular / Hunt / Common See Form 46-CO-08							
Form 43- 01		Form 43- 02		Form 43- 03		Form 43- 04	
Item	Extension	Item	Extension	Item	Extension	Item	Extension
01		01		01		01	
02		02		02		02	
03		03		03		03	
04		04		04		04	
05		05		05		05	
06		06		06		06	
07		07		07		07	
08		08		08		08	
09		09		09		09	
10		10		10		10	
11		11		11		11	
12		12		12		12	
13		13		13		13	
14		14		14		14	
15		15		15		15	
16		16		16		16	
Form 43- 05		Form 43- 06		Form 43- 07		Form 43- 08	
Item	Extension	Item	Extension	Item	Extension	Item	Extension
01		01		01		01	
02		02		02		02	
03		03		03		03	
04		04		04		04	
05		05		05		05	
06		06		06		06	
07		07		07		07	
08		08		08		08	
09		09		09		09	
10		10		10		10	
11		11		11		11	
12		12		12		12	
13		13		13		13	
14		14		14		14	
15		15		15		15	
16		16		16		16	

Form 44 - CO Line (Trunk) Groups (Dial 9)								
Line Group	01	02	03	04	05	06	07	08
Group 01								
Group 02								
Group 03								
Group 04								
Group 05								
Group 06								
Group 07								
Group 08								

Note: Each line group may contain up to eight CO lines.
A line may be programmed in any number of Groups.

Form 45 - Alternate CO Line (Trunk) Groups (Dial 87)								
Line Group	01	02	03	04	05	06	07	08
Group 01								
Group 02								
Group 03								
Group 04								
Group 05								
Group 06								
Group 07								
Group 08								

Note: Each line group may contain up to eight CO lines.
A line may be programmed in any number of Groups.

Form 46 - CO Line Specifications									
Line	Data	01	02	03	04	05	06	07	08
Line 01									
Line 02									
Line 03									
Line 04									
Line 05									
Line 06									
Line 07									
Line 08									
Range		0-1	0-1	0-8	0-8	0-3	0-2	0-3	0-3
Default		0	1	0	0	3	0	0	0
01 - Line Type					0=CO Line		1=Behind PABX		
02 - Dial Signaling Type					0=Pulse		1=DTMF		
03 - External Call Forwarding Location (Only applicable if 46-CO-04 is programmed for External Call Forwarding)									
0=Not Active		1=Speed Dial 101		2=Speed Dial 102		3=Speed Dial 103			
4=Speed Dial 104		5=Speed Dial 105		6=Speed Dial 106		7=Speed Dial 107			
8=Speed Dial 108									
04 - DISA External Call Forward Status					0=Day Disable/Night Disable				
1=Day Disable/Night DISA					2=Day DISA/Night Disable				
3=Day DISA/Night DISA					4=Day Disable/Night ECF				
5=Day ECF/Night Disable					6=Day ECF/Night ECF				
7=Day DISA/Night ECF					8=Day ECF/Night DISA				
05 - Line Pick Up Enable (Allows a non-ringing station to answer an incoming call)									
Value	Day Operation				Night Operation				
0	Disable				Disable				
1	Disable				Enable				
2	Enable				Disable				
3	Enable				Enable				
06 - Loud Bell Operation					0=Inoperative				
1=Relay #1					2=Relay #2				
07 - Day Ring Type		0=Common Audible		1=Linear		2=Circular			
3=Hunt		4=Private Line							
08 - Night Ring Type		0=Common Audible		1=Linear		2=Circular			
3=Hunt		4=Private Line							

Note: Private Line (46-CO-07/08) can be used when only one station is programmed as the ringing station on Form 42 or 43. When Private Line is enabled, any call forwarding

programmed on the station will be honored by the incoming CO line.

Programming CO Line Name.

Entries may be programmed on Form 46. Select the CO line number that you wish to program, press [CHAnG]e (DSS line key 3). During name entry, the numeric keypad keys will operate as alphabetical character keys. Each key will enter the letters that appear on the keycaps. The following table illustrates the entries that each key can make.

Key 1 =	Q - Z - (Blank Space) - 1	Key 2 =	A - B - C - 2
Key 3 =	D - E - F - 3	Key 4 =	G - H - I - 4
Key 5 =	J - K - L - 5	Key 6 =	M - N - O - 6
Key 7 =	P - R - S - 7	Key 8 =	T - U - V - 8
Key 9 =	W - X - Y - 9	Key 0 =	(Period). - : - & - 0
Key # =	(-) - \$ - #	Key * =	(Dash) - / - ! - *
Redial =	Backspace	MSG =	Forward

Form 47 - Hunt Group Pilot Assignment					
Group Num.	Pilot Number	Hunt Type	Group Num.	Pilot Number	Hunt Type
01			02		

Pilot Number Indicates the Access Code that must be dialed to reach the Hunt Group. It must be a unique number (it cannot be the same as an extension). It must be within the range of valid numbers for extensions (2 digit numbering plan 10-69, 3 digit numbering plan 100-699, 4 digit numbering plan 1000-6999).

Hunt Type is either Linear (1) or Circular (2).

Linear Hunting will always search for the first free station in the group, starting with entry 01 on Form 48 below.

Circular Hunting will begin it's search just beyond the station where the last call was placed. If the first call is routed to entry 01, the system will begin it's search of free stations starting with entry 02.

Form 48 - Hunt Group Assignment					
48-01-IT Hunt Group 1	01	02	03	04	
48-02-IT Hunt Group 2	01	02	03	04	

Entries on Form 48 must be valid extension numbers. Extensions can be entered in any order.

Form 61 - Exception (Allow) Tables	
Entry Number	Actual Entry (Up to 12 digits in Length)
01	
02	
03	
04	
05	
06	
07	
08	
09	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

Entries on this form provide exception (allowances) to a condition that is restricted on Form 71.

Entries should have trailing digits set to "d"=Don't Care Digits if additional digits are to be allowed after the target digits have been entered.

Form 62 - Exception (Allow) Tables

Entry Number	Actual Entry (Up to 12 digits in Length)
62-01	
62-02	
62-03	
62-04	
62-05	
62-06	
62-07	
62-08	
62-09	
62-10	
62-11	
62-12	
62-13	
62-14	
62-15	
62-16	
62-17	
62-18	
62-19	
62-20	

Entries on this form provide exception (allowances) to a condition that is restricted on Form 72.

Entries should have trailing digits set to "d"=Don't Care Digits if additional digits are to be allowed after the target digits have been entered.

Form 6_ - Exception (Allow) Tables	
Entry Number	Actual Entry (Up to 12 digits in Length)
6__-01	
6__-02	
6__-03	
6__-04	
6__-05	
6__-06	
6__-07	
6__-08	
6__-09	
6__-10	
6__-11	
6__-12	
6__-13	
6__-14	
6__-15	
6__-16	
6__-17	
6__-18	
6__-19	
6__-20	

Note: Please copy and use this form as required for your system.

Entries on this form provide exception (allowances) to a condition that is restricted on Form 7__.

Entries should have trailing digits set to "d"=Don't Care Digits if additional digits are to be allowed after the target digits have been allowed.

If this form is used for Form 67, 68, or 69 there are no corresponding Restriction tables (i.e., Form 77, 78, or 79. If not otherwise specified on Forms 67, 68 or 69, telephones that are subject to toll plans 7,8, and 9 are unable to place any calls on CO lines.

Form 70 - Toll Plan Assignment								
Plan 00 - ITem	01	02	03	04	05	06	07	08
Plan 01 - ITem	01	02	03	04	05	06	07	08
Plan 02 - ITem	01	02	03	04	05	06	07	08
Plan 03 - ITem	01	02	03	04	05	06	07	08
Plan 04 - ITem	01	02	03	04	05	06	07	08
Plan 05 - ITem	01	02	03	04	05	06	07	08
Plan 06 - ITem	01	02	03	04	05	06	07	08
Plan 07 - ITem	01	02	03	04	05	06	07	08
Plan 08 - ITem	01	02	03	04	05	06	07	08
Plan 09 - ITem	01	02	03	04	05	06	07	08

Note: Each Toll Plan defines the dialing characteristics of a telephone that is assigned the corresponding Toll Plan number, (e.g., a Station that is programmed as Toll Plan 01 will be subject to the dialing patterns defined for each of the CO lines in Plan 01. Toll Plan is assigned to a station on Form 28-STN-05 for definition of Day Service Toll Plan and Form 28-STN-06 for definition of Night Service Toll Plan.

Each Toll Plan carries a default value that is equal to the plan number. For example Toll Plan 00 carries all 40 CO lines with a default value of 0. Toll Plan 01 is set by default with all values at 1, through Toll Plan 09, which carries a default value of 9.

A Toll Class must be assigned for each line within a Toll Plan.

Toll Class #	Characteristics of Toll Class
0	Unrestricted
1	Subject to Form 71 & 61
2	Subject to Form 72 & 62
3	Subject to Form 73 & 63
4	Subject to Form 74 & 64
5	Subject to Form 75 & 65
6	Subject to Form 76 & 66
7	Restricted except for entries made on Form 67
8	Restricted except for entries made on Form 68
9	Restricted except for entries made on Form 69

Form 71 - Restriction (Deny) Tables

Entry Number	Actual Entry (Up to 12 digits in Length)
71-01	
71-02	
71-03	
71-04	
71-05	
71-06	
71-07	
71-08	
71-09	
71-10	
71-11	
71-12	
71-13	
71-14	
71-15	
71-16	
71-17	
71-18	
71-19	
71-20	

Entries on this form provide dialing restrictions to a telephone subject to this toll plan. If an entry is not followed by a "d"=don't care digit. The system will not consult the corresponding exception (allow) table, Form 61. The call will be restricted. An entry of "624" will cause a call beginning with the digits 624 to be disconnected.

If an entry is followed by a "d" digit, the system will check the exception (allow) table, Form 61 to see if a valid exception exists. An entry of "624d" will cause the system to check Form 61 for an exception of 624+additional digits. If an exception is found on Form 61, the call will be allowed. If an exception is not found, the call will be restricted.

Form 72 - Restriction (Deny) Tables	
Entry Number	Actual Entry (Up to 12 digits in Length)
72-01	
72-02	
72-03	
72-04	
72-05	
72-06	
72-07	
72-08	
72-09	
72-10	
72-11	
72-12	
72-13	
72-14	
72-15	
72-16	
72-17	
72-18	
72-19	
72-20	

Entries on this form provide dialing restrictions to a telephone subject to this toll plan. If an entry is not followed by a "d"=don't care digit. The system will not consult the corresponding exception (allow) table, Form 62. The call will be restricted. An entry of "624" will cause a call beginning with the digits 624 to be disconnected.

If an entry is followed by a "d" digit, the system will check the exception (allow) table, Form 62 to see if a valid exception exists. An entry of "624d" will cause the system to check Form 62 for an exception of 624+additional digits. If an exception is found on Form 62, the call will be allowed. If an exception is not found, the call will be restricted.

Form 7_ - Restriction (Deny) Tables

Entry Number	Actual Entry (Up to 12 digits in Length)
7__-01	
7__-02	
7__-03	
7__-04	
7__-05	
7__-06	
7__-07	
7__-08	
7__-09	
7__-10	
7__-11	
7__-12	
7__-13	
7__-14	
7__-15	
7__-16	
7__-17	
7__-18	
7__-19	
7__-20	

Entries on this form provide dialing restrictions to a telephone subject to this toll plan. If an entry is not followed by a "d"=don't care digit. The system will not consult the corresponding exception (allow) table, Form 62. The call will be restricted. An entry of "624" will cause a call beginning with the digits 624 to be disconnected.

If an entry is followed by a "d" digit, the system will check the exception (allow) table, Form 6_ to see if a valid exception exists. An entry of "624d" will cause the system to check Form 6_ for an exception of 624+additional digits. If an exception is found on Form 6_, the call will be allowed. If an exception is not found, the call will be restricted.