

NEC

ElectraTM mark II

DIGITAL TELEPHONE SYSTEM

GENERAL DESCRIPTION

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ND-20233

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GENERAL DESCRIPTION

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CHAPTER 1
INTRODUCTION

CHAPTER 1

INTRODUCTION

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1. THIS MANUAL AND SUPPORTING DOCUMENTS

1.01 This manual provides an overview of the Electra MarkII Digital Telephone System. It provides descriptive materials for understanding this business communications system. Other supporting documents are listed below.

1.02 The Electra MarkII Digital Telephone System is the subject of the following documentation:

- ND-20292 Electra MarkII Digital Telephone System Installation Service Manual (Stock # 700401)
- ND-20234 Electra MarkII Digital Telephone System Job Specifications (Stock # 700402)
One copy is provided with each CPU-E() ETU.

2. REGULATORY INFORMATION

- FCC Registration Number:

2.01 If the Electra MarkII is to be installed as a Key System, the registration number to be provided to the local telephone company is:

AY54SM-19166 - KF - E

To install the Electra MarkII as a Key System, the system cannot have dial access to the trunk groups. The trunk group access code group assignment must be programmed to make vacant, all access code group assignments.

2.02 If the Electra MarkII is to be installed as a Multifunction System, the registration number to be provided to the local telephone company is:

AY54SM-19165 - MF - E

2.03 Ringer Equivalence Number: 2.0B

2.04 USOC Jack required: RJ21X

2.05 Complies with UL 1459

For additional detailed information, refer to ND-20292 Electra MarkII Digital Telephone System Installation Service Manual (Stock # 700401).

3. SYSTEM OVERVIEW

3.01 The Electra MarkII Digital Telephone System is based on a universal port concept. A total of 128 ports can be equipped. These ports support telephones, outside lines, other circuits and devices. While the assignment of ports is flexible, limitations of the quantity of each type of device exist.

- | | |
|--|----------|
| ● Universal Ports | 128 max. |
| ● Outside (CO/PBX, DID & Tie) lines | 40 max. |
| ● Multiline Terminals | 80 max. |
| ● Direct Station Selection/Busy Lamp Field Consoles | 6 max. * |
| ● CO Add-On Modules | 4 max. * |
| ● Internal Talk Paths (Multiline Terminals) Non-blocking | 76 max. |
| ● Single Line Telephones | 76 max. |

* Combined system maximum is 6 units.

The universal port technique provides flexibility for meeting various customer requirements and needs by allowing a wide range of configurations.

3.02 The Electra MarkII Digital Telephone System is based on a set of design technologies and design goals.

Design Technologies

- Non-blocking time division switching for Multiline Terminals
- Stored program control
- Distributed processing based on wide use of micro-processors

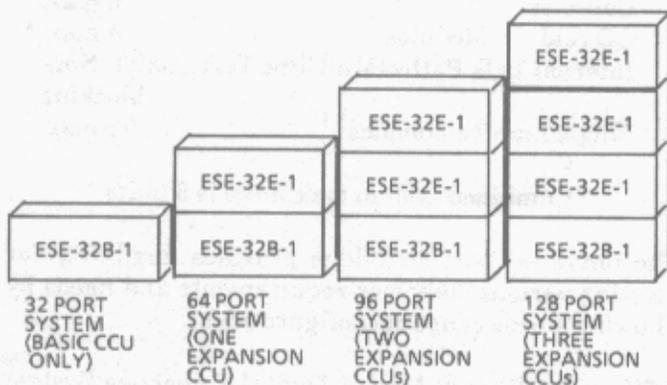
Design Goals

- Modular growth
- Universal ports
- Variety of terminals
- Ease of operation
- Flexible line assignment
- Flexible numbering plan
- Networking capability
- Simultaneous Voice and Data
- Remote Maintenance and Diagnostics

3.03 The Electra MarkII Digital Telephone System is a microprocessor based, stored program controlled, digital communication system, using the Pulse Code Modulation (PCM) technique.

The system is comprised of central equipment cabinets and telephones located throughout the installation site. The central equipment cabinet is composed of Central Control Units (CCUs). One, two, three, or four CCUs may be installed depending on the requirements of the individual customer. The CCUs are designed for modular growth, to be stack mounted, and quickly interconnected. Printed circuit boards, called Electronic Telephone Units (ETUs), are available to provide common control and interface to equipment external to the CCUs.

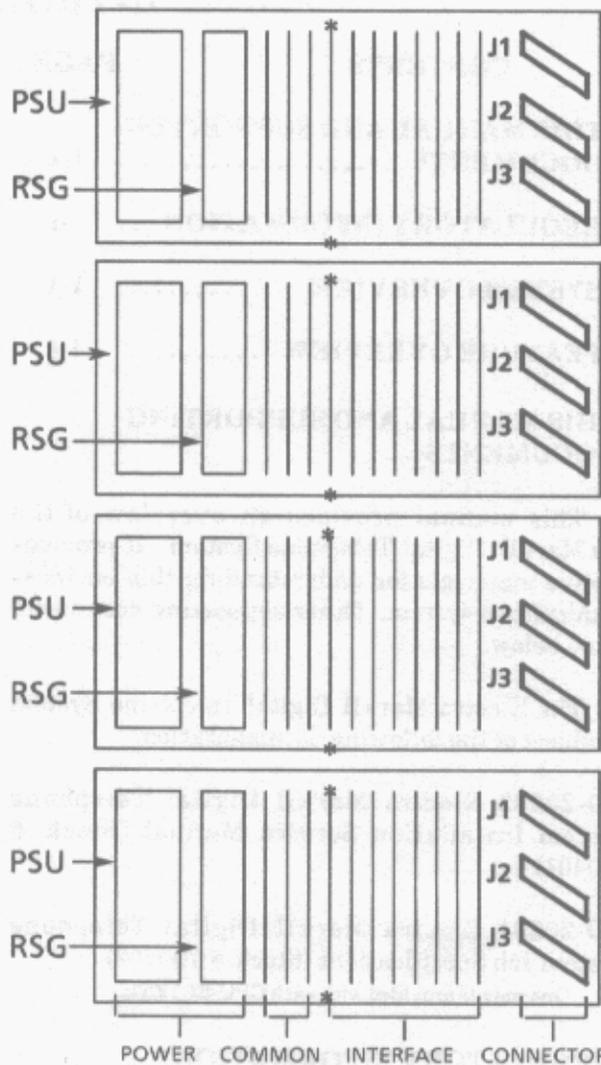
3.04 Interface Electronic Telephone Units (ETUs), are installed in the CCUs to support the various telephones, outside lines, and other devices or features. Each CCU provides 32 universal ports associated with 8 interface ETUs.



The universal port design minimizes the hardware required for a system, and provides greater flexibility in the number and types of devices that can be installed.

3.05 Besides the interface ETU area, each CCU contains three other areas. A common ETU area is provided for installing common control units. These ETUs provide the central processor, the time division switch controller, and data exchange between CCUs. Certain optional ETUs may be installed in this area, or in the interface slot (*) in the CCU which provides a combination slot for either an option or an interface ETU.

A power supply and a connector area complete the CCUs.



*These slots have dual connectors that can be used for either an interface or an option ETU.

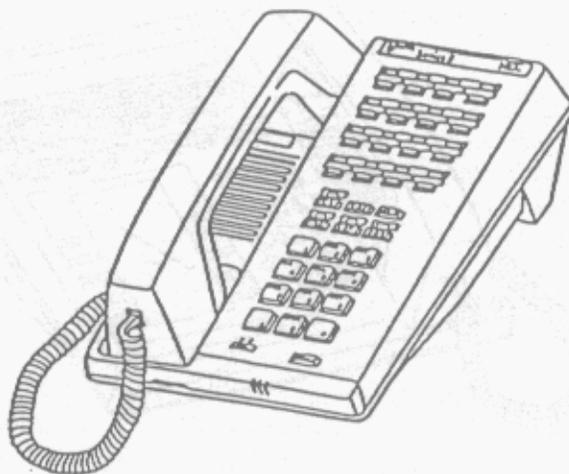
3.06 The Electra MarkII Digital Telephone System allows connection of a variety of telephones to satisfy customer needs. Diverse customer needs may require varying types of telephones. The following telephones may be installed within a system.

- Six Line Multiline Terminal (ETE-6- ())
- Six Line Multiline Terminal with Display (ETE-6D- ())
- Sixteen Line Multiline Terminal (ETE-16-2)
- Sixteen Line Multiline Terminal with Display (ETE-16D- ())
- Sixteen Line Multiline Terminal with Directory Display (ETE-16K-1)
- DSS/BLF Console (EDE-30- ())
- CO Add-On Module (EDE-30- ())
- Single Line Telephone with DTMF dial, with or without a message waiting lamp.



SIX LINE MULTILINE TERMINAL (ETE-6- ())

- 6 line keys with LED indication
- 7 dedicated function keys
- Message waiting LED



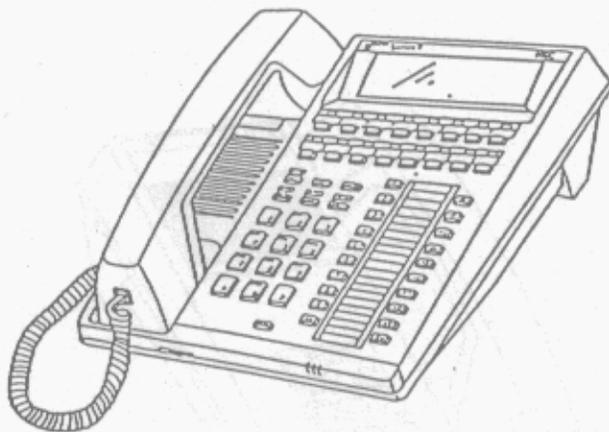
**SIXTEEN LINE MULTILINE TERMINAL
(ETE-16-2)**

- 16 line keys with two color LED indication
- 7 dedicated function keys
- Message waiting LED



**SIX LINE MULTILINE TERMINAL with
DISPLAY (ETE-6D- ())**

- 6 line keys with two color LED indication
- 7 dedicated function keys
- 2 line display, each with 16 characters
- 10 programmable Feature Access keys

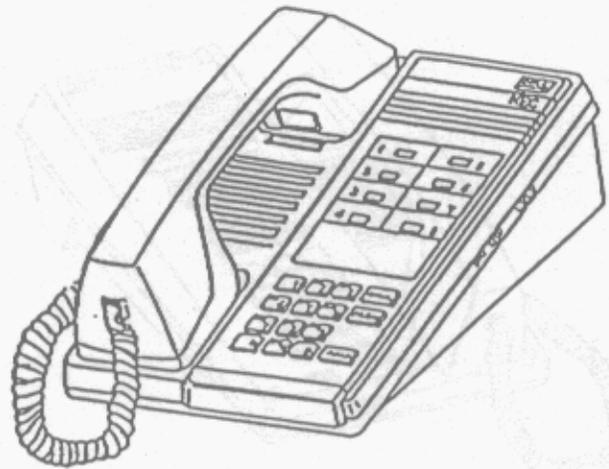


**SIXTEEN LINE MULTILINE TERMINAL with
DISPLAY (ETE-16D- ())**

- 16 line keys with two color LED indication
- 7 dedicated function keys
- 2 line display, each with 16 characters
- 20 programmable Feature Access keys with BLF indication



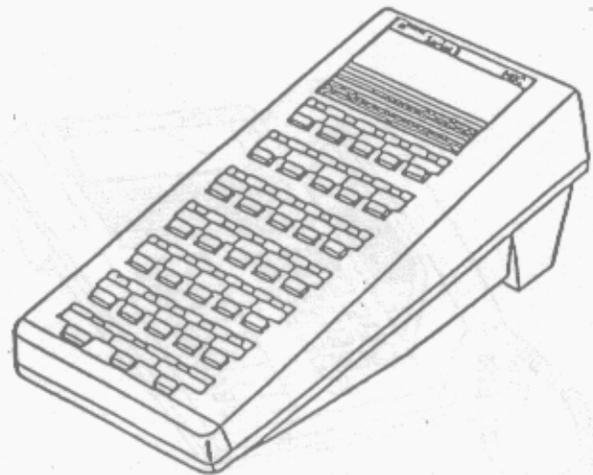
- SIXTEEN LINE MULTILINE TERMINAL with DIRECTORY DISPLAY (ETE-16K-1)**
- 16 line keys with two color LED indication
 - 8 dedicated function keys
 - 7 line directory display, with 16 characters each
 - 11 page directory with 10 programmable Feature Access keys per page



- Dterm II H TELEPHONE (ETE-1HM-2)**
- 8 Speed dial keys
 - 2 dedicated function keys
 - 1 programmable Feature key
 - Message Waiting LED



- Dterm SINGLE LINE TELEPHONE (ETE-1-2)**
- 1 dedicated function key
 - Message Waiting LED



- CO-ADD ON OR DSS/BLF CONSOLE (EDE-30-())**
- 3 programmable function buttons with LED indication.
 - 30 programmable buttons with two color LED indication.
- OR -
- 30 outside line keys with two color LED indication.

3.07 While the system is central processor based, each interface ETU and proprietary Multiline Terminal also has a microprocessor. By distributing the processing demands in this manner, the system is able to offer extensive feature packaging and flexibility. This is demonstrated by the flexible line key assignment which allows every Multiline Terminal to have a unique line key assignment. Individual line keys can be assigned any outside line, extension line, or feature (*Save and Repeat, Do Not Disturb, Pooled Line, Data Transmit and Data Receive, etc.*), on properly equipped Multiline Terminals. This provides on-site and remote customizing of Multiline Terminal appearances to match each users needs.

4. FEATURE OVERVIEW

4.01 The Electra MarkII Digital Telephone System is designed to provide a feature package directed at four goals:

Feature Goals:

- Cost Control
- Productivity
- Time Saving
- Flexibility

4.02 Cost control is served by *Least Cost Routing, Station Message Detail Recording, Station Lockout, Code Restriction with Equal Access Accommodation, Outgoing Restriction, Elapsed Call Timer, Off-Premises Extensions, Tandem Switching of E&M Tie lines*, and *Account Code Entry (Forced / Verified)*.

4.03 Productivity is served by *Incoming Call Identification* (transfers, DIT, DID and internal calls), *Pooled Lines, Station Hunting, UCD, Handsfree Answerback, Call Park, Do Not Disturb, Tone Override, Automatic Callback, Call Forward, Call Pickup, Unsupervised Conference, Calculator Function, CO Add-On Module, Data, Modem Pooling, Trunk Queuing, Delayed Ring*, and *CENTREX Ringing*.

4.04 Time saving is served by *Speed Dial, Save and Repeat, Off-hook Voice Announcement, Callback Messages, Last Number Redial, Answer Key, Ringing Line Preference, Voice Mail Integration, Broker's Call, Step Call, Trunk to Trunk Transfers* and *Maintenance/Diagnostics*.

4.05 Flexibility is served by the universal port concept which allows a multi-variable *trunk to station ratio, Flexible Line Key Assignment, Flexible Ringing Assignment, Pooled Lines* as well as *Flexible Numbering Plan* which includes *Uniform Numbering Network*. The variety of telephones also adds to the system's flexibility.

CHAPTER 2
FEATURES

CHAPTER 2

FEATURES

1. FEATURE LIST

SYSTEM FEATURES

ACCOUNT CODE ENTRY
ACCOUNT CODE - FORCED/VERIFIED
ADD-ON CONFERENCE
ALL CALL PAGE
ASSIGNED NIGHT ANSWER (ANA)
ATTENDANT POSITIONS
AUTOMATIC CALLBACK
AUTOMATIC RELEASE

BACKGROUND MUSIC - EXTERNAL
SPEAKERS
BATTERY BACKUP - MEMORY
BROKER'S CALL
BUSY LAMP FIELD TELEPHONE

CALLBACK MESSAGE
CALL FORWARD - ALL CALLS
CALL FORWARD - BUSY/NO ANSWER
CALL PICKUP - DIRECTED
CALL PICKUP - GROUP
CALL TRANSFER
CENTREX RINGING
CLASS OF SERVICE
CO DIGIT RESTRICTION
CODE RESTRICTION
CONSECUTIVE SPEED DIAL
CONSULTATION HOLD

DATA COMMUNICATION
DATA LINE SECURITY
D.C. POWER OPERATION
DELAY ANNOUNCEMENT (UCD)
DELAYED RINGING
DIAL 0 FOR ATTENDANT
DIRECT INWARD DIALING (DID)
DIRECT INWARD TERMINATION DIT
DISTINCTIVE RINGING

E&M TIE LINES (2/4 WIRE)
EQUAL ACCESS ACCOMMODATION
EXTERNAL ZONE PAGING (MEET-ME)
EXTERNAL TONE RINGING

FLEXIBLE LINE ASSIGNMENT
FLEXIBLE NUMBERING PLAN
FLEXIBLE RINGING ASSIGNMENT
FLEXIBLE TIMEOUTS

GROUND START TRUNKS

INTERNAL ZONE PAGING (MEET-ME)

LEAST COST ROUTING (LCR)
LOOP START TRUNKS

MAINTENANCE AND DIAGNOSTICS
(LOCAL & REMOTE)
MODEM POOLING
MULTIPLE TRUNK GROUPS
MUSIC ON HOLD
NIGHT CALL PICKUP
NIGHT CHIME CONTROL

OFF-PREMISES EXTENSION

PC VOICE DIALING
POOLED LINES
POWER FAILURE TRANSFER
PRIVACY ON ALL CALLS
PRIVATE LINES
PROGRAMMING FROM MULTILINE
TERMINAL
PUSHBUTTON DIAL - DTMF OR DP

RESIDENT SYSTEM PROGRAM
RESTRICTION (INCOMING)
RESTRICTION (OUTGOING)

SINGLE LINE TELEPHONE ACCESS
SPEED DIAL - SYSTEM
STATION CAMP-ON
STATION HUNTING
STATION MESSAGE DETAIL
RECORDING (SMDR)
STORED HOOKFLASH
SYSTEM DATA UP/DOWN LOAD

TANDEM SWITCHING OF E&M TIE LINES
TENANT SERVICE
TONE OVERRIDE
TRUNK NAME ASSIGNMENT
TRUNK TO TRUNK TRANSFERS

UNIFORM CALL DISTRIBUTION (UCD)
UNIFORM NUMBERING NETWORK
UNIVERSAL PORTS
UNSUPERVISED CONFERENCE

VIRTUAL EXTENSIONS
VOICE MAIL INTEGRATION

STATION FEATURES

ALPHANUMERIC DISPLAY
ANCILLARY DEVICE CONNECTION
ANSWER HOLD
ANSWER KEY
AUTOMATIC HOLD
BACKGROUND MUSIC - TERMINAL
SPEAKER
CALCULATOR FUNCTION
CALL PARK
CLOCK/CALENDAR DISPLAY
DIRECTORY FUNCTION
DIRECT PAGING ACCESS
DIRECT STATION SELECTION
DO NOT DISTURB
ELAPSED CALL TIMER
FEATURE ACCESS KEYS - USER
PROGRAMMABLE
FULL HANDSFREE OPERATION
HANDSFREE ANSWERBACK
HANDSFREE DIALING/MONITORING
HOLD (EXCLUSIVE AND NONEXCLUSIVE)
WITH RECALL
I-HOLD INDICATION
I-USE INDICATION
INCOMING CALL IDENTIFICATION
INTERNAL VOICE/TONE SIGNALING
LAST NUMBER REDIAL
MICROPHONE CONTROL
OFF-HOOK VOICE ANNOUNCEMENT
OFF-HOOK RINGING
PRIME LINE ASSIGNMENT
RECALL BUTTON
RINGING LINE PREFERENCE
SAVE AND REPEAT
SPEED DIAL - STATION
STATION LOCKOUT
STEP CALL
TRUNK QUEUING
TWO COLOR LEDs
USER PROGRAMMING CAPABILITY

ATTENDANT FEATURES

ATTENDANT CAMP-ON
ATTENDANT TRANSFER
CO ADD-ON MODULE
DIRECT PAGING ACCESS
DSS/BLF CONSOLE
DSS/BLF RECALL WITH STATION
IDENTIFICATION
MESSAGE WAITING
NIGHT TRANSFER
TRUNK/MFR SELECTABLE TEST/BUSY OUT

2. SYSTEM FEATURES

2.01 ACCOUNT CODE ENTRY

Any station can enter an *Account Code* of up to 14 digits when on an outside call. When the *Station Message Detail Recording (SMDR)* option is installed, this *Account Code* is part of the call record generated.

2.02 ACCOUNT CODE - FORCED/VERIFIED

Preselected telephones must dial a recognized code before originating an outside call from an extension. Only after the dialed account code is found valid, can the outside call proceed. The forced account code is part of the call record generated and can be up to 13 digits long. A maximum of 500 recognizable codes are possible in a system (must be programmed by the Attendant).

2.03 ADD-ON CONFERENCE

Stations are able to establish a non-amplified conference call with outside lines and/or internal stations. Each conference unit installed allows a *Conference* of up to 4 parties, with up to 2 outside lines included.

A maximum of 4 conference ETUs can be installed in the system.

2.04 ALL CALL PAGE

Stations that are allowed access to paging circuits can generate a page over the speaker of all idle Multiline Terminals. Station users can respond to the page call, (releases the paging) and talk privately with the originator. This feature can be disabled when desired.

2.05 ALPHANUMERIC DISPLAY

Both the ETE-6D-() and ETE-16D-() Multiline Terminals are equipped with a two line (16 characters

each line) Liquid Crystal Display. The first line of the display is used for *Message* indications, prompts, and confirmation displays for dialing and feature access. The second line of the display provides a *Clock/Calendar*.

The ETE-16K-1 Multiline Terminal has a 7 line (16 characters each line) Liquid Crystal Display. The top 2 lines of the display provides the same information as the 2 line display on the other Multiline Terminals that have LCD. The other 5 lines are used for the *Directory Function* which provides a total of 110 memory buffers for speed dialing or feature access.

2.06 ANCILLARY DEVICE CONNECTION

Multiline Terminals can be equipped with an option that allows connection of a jackset, an automatic dialer (provides DTMF dial signals), modem, or other ancillary devices.

2.07 ANSWER HOLD

A Multiline Terminal user, while engaged in a conversation, may answer incoming calls to the station by depressing the **Answer** key. The first call is automatically placed on hold.

2.08 ANSWER KEY

Multiline Terminals are provided with an **Answer** key and LED which flashes when any line is ringing at that station.

The **Answer** key LED also flashes when the station receives a *Recall*, *Camp-On* or *Tone Override* call. Depressing the **Answer** key will hold the current call and answer the new call.

2.09 ASSIGNED NIGHT ANSWER (ANA)

The *Assigned Night Answer* feature is a *Direct Inward Termination* programmed to ring directly at selected extensions when the system is in the **night mode**. This assignment operates independently from the *DIT* ringing assignment.

2.10 ATTENDANT CAMP-ON

An attendant with a Direct Station Selection/Busy Lamp Field (*DSS/BLF*) Console and an ETE-16D-() Multiline Terminal, can camp a call onto a busy extension. If the *Camp-On* is not answered within a preprogrammed timed period, the call will return to the *Attendant Position*.

2.11 ATTENDANT POSITIONS

A maximum of 4 ETE-16D-() Multiline Terminals can be assigned as *Attendant Positions*. These Multiline Terminals have access to Attendant features such as setting and displaying *System Speed Dial* memories,

System time & date and *Account Code Forced/Verified*, setting and leaving *Night Mode*, use of one or two Direct Station Selection/Busy Lamp Field (*DSS/BLF*) Consoles, a *CO Add-On Module*, etc.

2.12 ATTENDANT TRANSFER

Attendant Positions equipped with one or two Direct Station Selection/Busy Lamp Field (*DSS/BLF*) Consoles are able to *Transfer* or *Camp-On* calls to any of the extensions which appears on the console(s). The *Transfer* can be by *Voice Announcement*, ringing transfer (before answer), or after answer by the called station. Unanswered Attendant transfers recall to the *Attendant Position*, accompanied by a display identifying the line key and extension number.

2.13 AUTOMATIC CALLBACK

After calling a busy extension, station users can set an *Automatic Callback*. When both parties are idle, the system will signal first the *Automatic Callback* originator and, after answer, the other station.

2.14 AUTOMATIC HOLD

Automatic Hold is provided whenever an attendant, with *DSS/BLF Console*, engaged in a call, depresses a *DSS/BLF* extension or paging access button. *Automatic Hold* is also provided when a Multiline Terminal user depresses a programmable **Feature Access** key which has been programmed for direct station selection or direct paging access.

2.15 AUTOMATIC RELEASE

An outside line will be released by the Electra MarkII system when an outside party abandons the call. For this feature to work with *Loop Start* trunks, the *CO/PBX* providing the outside line must provide a timed disconnect signal. Automatic release is normally provided on *Ground Start* trunks.

2.16 BACKGROUND MUSIC - EXTERNAL SPEAKERS

Background Music can be provided over external paging speakers as an option. *Background Music* to a zone of speakers will only be interrupted when that zone is paged.

2.17 BACKGROUND MUSIC - STATION SPEAKERS

Two separate music sources can be connected to the system. Multiline Terminal users can select either music source for *Background Music* over their station speaker whenever they desire.

2.18 BATTERY BACKUP - MEMORY

Batteries are provided to retain system memory during power outages. The system program, *Speed Dial*

memories, messages and *Clock/Calendar* are among the items protected.

2.19 BROKER'S CALL

Multiline Terminal users can alternate between 2 calls on the same line key by using the **Answer** key. Single Line Telephones can alternate by means of a hookflash and access code.

2.20 BUSY LAMP FIELD TELEPHONE

The ETE-16D-() Multiline Terminal can be assigned to provide busy lamp field status indications on any of its 20 programmable **Feature Access** keys that are programmed for direct station selection.

Up to 10 ETE-16D-() Multiline Terminals with BLF assigned can be installed in each Central Control Unit (CCU). [A maximum of 30 may be installed in the entire system.]

2.21 CALCULATOR FUNCTION

A 4 function, 6 digit calculator is available on the LCD of Multiline Terminals. Up to five stations can access the calculator feature simultaneously.

2.22 CALLBACK MESSAGE

Multiline Terminals with an LCD can receive up to 3 *Callback Messages* from other Display or Non Display stations. The display indicates the number of messages (including *Message Waiting* from an Attendant or Voice Mail System). The messages can be scanned one at a time. A maximum of five messages can be left at a Multiline Terminal. (Three from other stations, one from an Attendant, and one from a Voice Mail System.)

Each message displayed provides the time the message was left, identifies the caller, and the number to call. *Callback Messages* from other stations can be cleared by choice or automatically when the other station is called back. *Callback Messages* from an Attendant can only be cleared by the Attendant.

2.23 CALL FORWARD - ALL CALLS

All calls directed to an extension can be rerouted to any other idle extension or *Attendant Position*. With *Call Forward* set, the destination station can call the forwarded station. The capability to set *Call Forward* is based on the *Class of Service* assignment. *Call Forward-All Calls* can be set or canceled by the forwarding station, the destination station of the *Call Forward*, or by an Attendant. *Call Forward-All Calls* can be chained to up to two stations.

2.24 CALL FORWARD - BUSY/NO ANSWER

All calls directed to a busy extension and unanswered ringing calls to that extension can be rerouted to another extension or to an *Attendant Position*. With *Call Forward Busy/No Answer* set, the destination station can call the forwarded station. The ability to set *Call Forward* is based on *Class of Service* assignment. *Call Forward Busy/No Answer* can be set or canceled by the forwarding station, the *Call Forward* destination station or by an Attendant. *Call Forward Busy/No Answer* cannot be set to chain to two stations.

2.25 CALL PARK

Any station can place a call or conference into one of ten common *Call Park* locations. This feature removes the call from the extension, and frees that extension to process other calls. The call or *Conference* can be retrieved from *Call Park* by any station within the system.

If a busy signal is received because the parking area is occupied, it is possible to *Step Call* to another parking area. Display indications for *Call Park* operations are provided on terminals with an LCD. A call left in *Call Park* longer than the preprogrammed time interval, recalls to the station that placed it in *Call Park*. A separate *Recall* timer is used for parked *Conference* calls. Ten *Call Park* locations are available per system.

2.26 CALL PICKUP - DIRECTED

Incoming *Voice Announcement* or ringing calls to a station can be answered from any other station, using their primary extension.

2.27 CALL PICKUP - GROUP

Stations can be assigned to a *Call Pickup Group*. Any ringing calls within the group can be picked up by any member of the group. Eight *Call Pickup Groups* are available per system.

2.28 CALL TRANSFER

Any station in the system can *Transfer* any call to any other station in the system. The ability to originate or receive *Camp-Ons* (form of *Transfer*) is based on the *Class of Service* assignment of both stations.

2.29 CENTREX RINGING

This feature provides two distinctive tone signals to identify internal CENTREX or PBX incoming calls from outside calls. Additionally, internal Electra MarkII calls provide a separate tone signal.

2.30 CLASS OF SERVICE

This feature is a programming assignment that determines allow/deny access to *Camp-On Originate/Receive*, *Call Forward*, *Operator Restriction*, *Data Line Security*, *Station Lockout*, *Paging Access (Originate)*, *Trunk to Trunk Transfer*, and *LCR Priority* features. *Incoming*, *Outgoing* and *Code Restrictions* are assigned separately.

2.31 CLOCK/CALENDAR DISPLAY

Multiline Terminals with an LCD are provided with a time and date display.

2.32 CO ADD-ON MODULE

The EDE-30-() *DSS/BLF Console* can also be utilized as a *CO Add-On Module* at *Attendant Positions*. This provides the Attendant with the ability of having direct access to forty central office lines.

Outside lines can terminate on the first 15 line keys of the attendant's Multiline Terminal (ETE-16D-()) and the 30 keys of the *Add-On Module* (EDE-30-()). An *Attendant Position* can support two *DSS/BLF Consoles* and one *Add-On Module*, until the system maximum of six EDE-30-() units is reached.

Displays and operating procedures for call processing of outside lines terminating on the *Add-On Module* are the same as that of the Multiline Terminal, with the exception that the calls received on the *Add-On Module* show as CK in the LCD instead of LK as they do for lines appearing on the Multiline Terminal. A maximum of four *CO Add-On Modules* (one per *Attendant Position*) can be assigned in a system.

2.33 CO DIGIT RESTRICTION

CO Digit Restriction provides the ability to restrict the number of digits that can be dialed from a station on a CO line. This feature must be supported by a CPU-EB3 (or higher level revision) ETU and is programmable on a per station basis.

2.34 CODE RESTRICTION

An advanced system of restricting outside calls based on area codes and local exchange codes is provided. This restriction feature provides an override capability based on trunk groups, and accommodates *Equal Access* to secondary common carriers.

2.35 CONSECUTIVE SPEED DIAL

All Multiline Terminals are able to use *Station* and *System Speed Dial Consecutively*; simplifying the dialing of complicated sequences of numbers such as those used for *Specialized Common Carrier* access, credit card verification, and other applications that require authorization codes, customer numbers, etc.

2.36 CONSULTATION HOLD

Station users can place any call on hold, and while using the same line key, originate another call. After consulting with the called party, the station user can initiate a *Conference*, return to the original call, alternate between the calls (*Broker's Call*), or *Transfer* the call to the called party.

2.37 DATA COMMUNICATION

When the system is equipped with a CPU-EB (or higher revision level) ETU, it is capable of providing asynchronous data switching. The Multiline Terminals (ETE-6D-(), ETE-16D-() and ETE-16K-1 only) have access to the data feature when equipped with a DTA-E unit. Users have the ability to establish both voice and data connections simultaneously. Data transmission can be set for full or half duplex.

Data transmission speeds of up to 9.6 kbps can be accommodated via an RS-232C interface. Each Multiline Terminal equipped with a DTA-E unit must be supported by an ESI-EB ETU located in any of the first three CCUs.

2.38 DATA LINE SECURITY

Stations which are assigned *Data Line Security* in their *Class of Service* assignment are protected from receiving all audible tones (such as *Override* or *Camp-On* tones) when busy. This prevents disruption of ongoing data transmissions when a terminal is connected to an acoustically coupled modem.

2.39 DC POWER OPERATION

The PSE-DD-1 PSU allows the system to operate by being powered from a locally provided -48V dc power source. Use of a locally provided dc power supply may be desired because of the simplicity of providing standby power.

2.40 DELAY ANNOUNCEMENT (UCD)

When an incoming DIT call to a UCD group encounters all UCD extensions busy, or receives no answer in a prescribed period of time, the call is queued and the caller receives a recorded announcement via a locally provided device. Multiple Delay Announcements: First and Second are available.

2.41 DELAYED RINGING

Multiline Terminals utilized as secondary answering positions can be programmed to have their CO/PBX and/or extension lines ring on incoming calls after a preprogrammed time interval. Separate day and night operations are possible.

2.42 DIAL 0 FOR ATTENDANT

Stations can be assigned to reach their associated *Attendant Position* by dialing 0.

2.43 DIRECT INWARD DIALING (DID)

When the system is equipped with a CPU-EB (or higher revision level) and TLI-E ETUs, it can accommodate the termination of 10 pps dial pulse DID lines.

DID lines allow outside calls to be directed to particular extensions within the system. These lines are used for incoming calls only and cannot accommodate outgoing calls. Up to 3 digits of the DID line signaling from the CO network can be translated and correlated to the systems *Numbering Plan*. Up to a maximum of forty DID lines can be terminated in a system; this total is shared with all outside lines.

DID Lines can be made to function as an automatic ringdown circuit via system programming.

2.44 DIRECT INWARD TERMINATION (DIT)

CO lines may be programmed to ring directly at selected extensions, bypassing the Attendant. When the system is set to **night mode**, a separate *Assigned Night Answer* ringing assignment is available.

2.45 DIRECTORY FUNCTION

The ETE-16K-1 Multiline Terminal provides a directory function with its display. The first page of the directory is normally displayed. Depressing the directory button enables the display of a Table of Contents for a 10 page directory (customized by the user). Depressing one of the buttons associated with the pages causes that page to be displayed. These buttons can be used to generate speed dial calls, direct station selection calls, or access features as identified by the display. A maximum of 30 ETE-16K-1 Multiline Terminals can be installed in a system.

2.46 DIRECT PAGING ACCESS

Direct Station Selection/Busy Lamp Field (*DSS/BLF*) Console buttons can be programmed to provide direct access for all call, internal, and external zone paging. The programmable **Feature Access** keys on the Multiline Terminals can also be used for Direct Paging Access.

2.47 DIRECT STATION SELECTION

Direct Station Selection is provided with a *DSS/BLF Console* and Multiline Terminals, with programmable **Feature Access** keys. This allows calls to extensions to be made by a single operation.

2.48 DISTINCTIVE RINGING

Distinct tone signals indicate the type of incoming call. Internal calls, and *Boss/Secretary Ring* calls provide different ringing cycles. Additionally, outside calls can

provide two different type tone signals (see *CENTREX Ringing* feature).

Multiline Terminals have two ringing tone frequencies. The selection is made at each Multiline Terminal via user programming.

2.49 DO NOT DISTURB

A line key can be programmed as a *Do Not Disturb* button. When *Do Not Disturb* is set there are no audible indications for incoming calls, except calls from an Attendant and *Boss/Secretary Ring* calls.

2.50 DSS/BLF CONSOLE

The *DSS/BLF* (Direct Station Selection/Busy Lamp Field) console works in conjunction with an attendant Multiline Terminal. 1 or 2 *DSS/BLF Consoles* can be assigned to each of the *Attendant Positions* until the system maximum of 6 *DSS/BLF Consoles* is reached.

Each *DSS/BLF Console* provides access for up to 30 extensions. Busy lamp field status is shown via two color LEDs for each assigned extension.

2.51 DSS/BLF RECALL WITH STATION IDENTIFICATION

When a station does not answer an attendant (via *DSS/BLF Console*) *Camp-On* or *ring Transfer* within a programmed period, the *Attendant Position* is recalled. During the *Recall*, the attendant Multiline Terminal's display shows the line key which is recalling and the extension which did not answer.

2.52 E&M TIE LINES (2/4 WIRE)

E&M Tie Lines (both 2 and 4 wire) can be connected to the Electra MarkII System, providing access to remote systems and facilities. The Electra MarkII System has the ability to receive and/or transmit DTMF or dial pulse signals on *E&M Tie Lines*.

2.53 ELAPSED CALL TIMER

Multiline Terminals with an LCD provide an indication of how long a station has been connected to an outside line.

2.54 EQUAL ACCESS ACCOMMODATION

Speed Dial memories and the *Code Restriction* process are designed to allow connection of lines from Central Offices that provide *Equal Access* for *Specialized Common Carriers* (SCCs).

2.55 EXTERNAL ZONE PAGING (MEET-ME)

With an optional ECR-E ETU installed, 3 zones of *External Paging* with *Background Music* are possible. A one way or two way amplifier must be connected to

provide *External Paging*. No optional ETU is required for one zone of paging, without *Background Music*.

The *Meet-Me* function allows the paged party to quickly respond to the page call.

2.56 EXTERNAL TONE RINGING

The Electra MarkII provides a common, uninterrupted, tone signal to the ECR-E ETU, which has four external ring control relays that can be programmed for up to four ringing interruption patterns. When connected to a locally provided call alerting device, this feature provides a user in a noisy environment the ability to hear incoming outside ringing calls.

2.57 FEATURE ACCESS KEYS - USER PROGRAMMABLE

The programmable *Feature Access* keys of the Multiline Terminals (ETE-6D-(), ETE-16D-(), and ETE-16K-1) can be used to access features (*Calculator Function*, *Boss/Secretary Ring*, etc.) or any system features that can be accessed by dial codes.

2.58 FLEXIBLE LINE ASSIGNMENT

With the exception of its own primary extension line appearance, each Multiline Terminal has complete flexibility of line key assignment. Line keys can be assigned to *outside lines*, *Pooled Lines*, as appearances of other *extension lines*, as *Virtual Extensions*, as *Save and Repeat* keys, *Data Transmit* and *Data Receive* keys, or as a *Do Not Disturb* key.

2.59 FLEXIBLE NUMBERING PLAN

A *Numbering Plan* is automatically assigned by the resident system program when the system is initialized. With few exceptions, the *Numbering Plan* can be changed by system programming to fit the customer's needs.

Also available within the *Flexible Numbering Plan* is a *Uniform Numbering Network*. This allows Electra MarkII station users, in a network, to go off-hook on an extension and dial a 3 or 4 digit extension number to reach a station within the network. The Electra MarkII System(s) automatically translates the dialed extension number into a outside line access code plus the extension number needed to route calls to their proper destination.

2.60 FLEXIBLE RINGING ASSIGNMENT

Incoming outside calls can be programmed to ring at Multiline Terminals with that line appearance, or if it appears in a Pool Group. Ringing extension calls can be assigned to ring at stations with the extension line

appearance. Separate *day* and *night* ring assignments are provided.

2.61 FLEXIBLE TIMEOUTS

Timeouts, set by the resident system program, can be altered through programming to meet customer needs.

2.62 FULL HANDSFREE OPERATION

An optional *Handsfree* unit (HFU-E) that plugs into the ETE-6D-(), ETE-16D-(), or ETE-16K-1 Multiline Terminals supplies *Full Handsfree Operation* for both internal and outside calls. A microphone control button allows muting of the microphone.

2.63 GROUND START TRUNKS

Ground Start trunks can be connected to the Electra MarkII system. Assignment of trunks as *Ground Start* is on a per trunk basis on the associated COI-E or COI-EB ETU.

2.64 HANDSFREE ANSWERBACK

Each Multiline Terminal is equipped with a microphone for *Handsfree Answerback* of internal voice calls. Microphone status is indicated by an LED, located above the microphone control button; the control button is used to cut-off (mute) the microphone to ensure privacy.

2.65 HANDSFREE DIALING/MONITORING

All Multiline Terminals are equipped with a speaker and a control button, to allow dialing and monitoring of calls without using the handset.

2.66 HOLD (EXCLUSIVE and NONEXCLUSIVE) with RECALL

Station users can place a call on *Hold*, freeing the station for other calls. Multiline Terminal users can use *Exclusive Hold* (the held line can be picked up only at the station that held it) and *Nonexclusive Hold* (the held line can be picked up at any station with that line appearance). Single Line Telephones can place calls on *Exclusive Hold* only.

A call on *Hold* for longer than a preprogrammed interval generates a *Recall* at the initiating station.

2.67 I-HOLD INDICATION

Any Multiline Terminal with an LCD provides green LED indications for calls held at that station. Calls held at other stations provide red LED indications. A distinct flash rate is given on any Multiline Terminal for any call held at that station. ETE-6-() Multiline Terminals provide only red LED indications.

2.68 I-USE INDICATION

The ETE-16-2, and Multiline Terminals with an LCD, provide green LED indication for the line in use, other busy lines are shown by red LEDs. The ETE-6-() Multiline Terminals provide red LED indications.

2.69 INCOMING CALL IDENTIFICATION

Multiline Terminals with an LCD identify internal calls to its extension by showing the callers name and extension number. A call ringing in on a line key will generate a display of the line key number and type of line (CO or internal party and number).

2.70 INTERNAL VOICE/TONE SIGNALING

Multiline Terminal users can choose to be signaled of incoming internal calls by *Voice Announcement* or ringing. When a call attempt results in *Voice Announcement*, the caller can dial an additional digit to provide ringing. This selection is made at each Multiline Terminal via user programming.

2.71 INTERNAL ZONE PAGING (MEET-ME)

Three zones, comprised of Multiline Terminals, can be separately paged, one at a time, over their internal speakers, or all zones can be paged at once. With the *Meet-Me* function, any station user can release the page and talk privately to the originator of the page.

2.72 LAST NUMBER REDIAL

Station users are able to redial the last outside number they dialed using a programmable **Feature Access** key or an access code.

2.73 LEAST COST ROUTING (LCR)

Least Cost Routing guides the request (dial access for a CO line) for the completion of an outside call to the least expensive route available. The LCR-E ETU provides cost effective call routing which can be based on the time of day and day of week, prompted by the Central Office number dialed. This option is used to minimize call costs by automatically providing the least expensive connection available for outgoing calls.

2.74 LOOP START TRUNKS

Loop Start trunks can be connected to the Electra MarkII system. Assignment of trunks as *Loop Start* is on a per trunk basis on the associated COI-E() ETU.

2.75 MAINTENANCE AND DIAGNOSTICS

The Electra MarkII automatically checks for hardware and software errors. The detected errors are stored in the system memory. Through use of on site programming or the Remote Administration Adaptor (RAA-E), a Technician can retrieve this information and make programming changes, if required.

This feature allows dial up access to the system from a remote location, such as a service office, by using a PC and modem. The RAA-E unit provides access to the system program to allow remote changes to the system, or to busy out a circuit.

2.76 MESSAGE WAITING

Each (DSS/BLF) Direct Station Selection/Busy Lamp Field console can be programmed to provide *Message Waiting* indications to the extensions assigned on it. A *Message Waiting* indication with time of message is provided in the display of Multiline Terminals so equipped. The ETE-6-() Multiline Terminal, ETE-16-2 Multiline Terminal and properly equipped Single Line Telephones receive a *Message Waiting* lamp (LED) indication.

2.77 MICROPHONE CONTROL

A *Microphone Control* button with status indication is equipped on all Multiline Terminals. It is used to mute the microphone for privacy during incoming *Voice Announcement* calls and during calls using the optional *Handsfree* unit.

Microphone status is indicated by an LED, located above the *Microphone Control* button. When the LED is ON the microphone is ON.

2.78 MODEM POOLING

Modem Pooling allows the system user shared access to a pool of up to four modems, for external, as well as internal switching of data; it supports asynchronous, half or full duplex calls, (up to 9.6 Kbps), via the outside network. Keyboard dialing and Modem Reserve capabilities (if the system is supported with a CPU-EB2 ETU [or higher]) can be allowed through system programming. Terminal Keyboard dialing requires the use of a MFR-EA ETU.

Each of the modems (four maximum) must be 212A type compatible, provide auto answer, and must be supported by an SLI-E () ETU port, a Multiline Terminal with LCD (equipped with a DTA-E unit), and supported by an ESI-EB ETU port. The system must also be equipped with a CPU-EB (or higher) ETU and an RSG-E unit.

2.79 MULTIPLE TRUNK GROUPS

A maximum of 8 trunk groups can be assigned. Each trunk group can have a separate access code.

2.80 MUSIC ON HOLD

A locally provided music source or a provided internal source can be used to supply music to parties on hold, providing them with assurance that they are still connected to the system.

2.81 NIGHT CALL PICKUP

When the system is in the **night mode**, stations are able to answer incoming outside calls by means of an access code or programmed **Feature Access** key. *Tenant* assignment and *Incoming Restriction* affect which calls can be answered.

2.82 NIGHT CHIME CONTROL

When a system equipped with an ECR-E ETU is in the **night mode**, up to three distinct *Night Chime Control* circuits can be available (one per *Tenant*).

If programmed, three relays on the ECR-E ETU can be programmed to provide closures during central office line ringing. In a multi-*Tenant* system, each tenant can have its own *Night Chime Control* relay.

2.83 NIGHT TRANSFER

The *Attendant Positions* (with or without *DSS/BLF Consoles*) can place the system or their tenant into (or out of) **night mode**; thereby, providing a change in the ring assignment and enabling the night *Call Pickup* feature.

2.84 OFF-HOOK VOICE ANNOUNCEMENT

A secondary voice path can be provided to Multiline Terminals with LCD. This allows stations to make a *Voice Announcement* call to a station with a secondary voice path, while its handset is in use on another call. This requires the support of an ESI-EB ETU in any of the first three CCUs as well as a DPA-E unit in the Multiline Terminal.

2.85 OFF-HOOK RINGING

Multiline Terminals can be assigned to either ring or not ring while using the handset in a conversation on a line key. *Off-Hook Ring* is provided at a reduced volume as compared to on-hook ring.

2.86 OFF-PREMISES EXTENSION

Single Line Telephones can be installed in *Off-Premises* locations. The *Off-Premises* station has all the features available to on premises Single Line Telephones. This feature requires locally provided Dial Long Line (DLL) equipment.

2.87 PC VOICE DIALING

PC Voice Dialing allows the system user to dial telephone numbers for voice calls from the PC Keyboard. Modem Pooling is used in conjunction with this feature.

PC Voice Dialing and Modem Reserve capabilities can be allowed through system programming if the system is supported with a CPU-EB3 (V3.05) ETU or higher

revision level. PC Voice Dialing requires the use of a MFR-EA ETU.

Each modem (four maximum) must be able to respond to Keyboard commands such as the Hayes® Command Set, provide auto answer, and must be supported by an SLI-E() ETU port, a Multiline Terminal with LCD (equipped with a DTA-E Unit), and supported by an ESI-EB ETU port.

2.88 POOLED LINES

Multiple trunks can be assigned to a Multiline Terminal line key for incoming and outgoing calls. This feature allows station users to answer and originate outside calls for any line belonging to a Pooled Group with one *Pooled Line* key. Up to 8 Pooled Groups can be assigned.

2.89 POWER FAILURE TRANSFER

During a power outage, CO lines can be switched directly to Single Line Telephones. These Single Line Telephones (supported by SLI-EB ETUs) can be stations normally used in the system or additional telephones can be installed specifically for *Power Failure Transfers*.

2.90 PRIME LINE ASSIGNMENT

Prime Line Assignment simplifies station use by providing automatic selection of a line. When a station programmed for *Prime Line Assignment* goes off-hook, the assigned extension or outside line is seized automatically. This feature seizes the assigned line when the line is idle. Variations of this feature are accomplished when *Ringling Line Preference* and *Prime Line* are assigned or Single Line Telephones are programmed for CO line as *Prime Line*.

2.91 PRIVACY ON ALL CALLS

The system provides complete *Privacy* on all lines. No station can enter another's conversation unless brought in via an *Add-On Conference*.

2.92 PRIVATE LINES

Through the flexible line assignment feature, Multiline Terminals can be assigned *Private Lines*.

2.93 PROGRAMMING from MULTILINE TERMINAL

System programming can be performed from one of three designated ETE-16D-() Multiline Terminals. (The first two are designated in the system's software and are assigned at the first two ESI-E() ETU ports in the system; the third is designated by the installer during system programming.) Some program changes can be entered while the system is operating. Other

program changes will occur when the affected telephones and circuits are idle.

2.94 PUSHBUTTON DIAL - DTMF OR DP

Multiline Terminals are provided with a *Pushbutton Dial pad*. COI-E() and TLI-EB ETUs are programmed on a per trunk basis to generate either *DTMF* (dual-tone multi-frequency) or *DP* (dial pulse) dialing signals.

2.95 RECALL KEY

Each Multiline Terminal is equipped with a *Recall Key* that is used to generate a hookflash (to access features provided by the outside exchange) to abandon a call (while retaining the outside line for origination of another call). When LCR is in use, or when connected to an *E&M Tie* or DID line (depending on system programming) depressing the *Recall Key* disconnects the line and returns **internal** dial tone.

2.96 RESIDENT SYSTEM PROGRAM

The Electra MarkII CPU scans the installed ETUs and Multiline Terminals when first initialized, and makes program assignments that allow basic system operation before installer programming.

2.97 RESTRICTION (INCOMING)

Stations can be restricted from answering incoming outside calls. Assignment is on a per station, per trunk group basis.

2.98 RESTRICTION (OUTGOING)

Station users can be denied the ability to originate outside calls on a per station, per trunk group basis. Stations assigned *Outgoing Restriction* will retain the ability to answer incoming calls and pick up lines that are on hold within the specified trunk group. Additionally, the quantity of digits that can be dialed on outgoing calls via *CO/PBX* lines and *E&M Tie Lines* can be restricted.

2.99 RINGING LINE PREFERENCE

Multiline Terminals can be assigned to automatically seize any ringing incoming calls by going off-hook. Assignment is on a per station basis.

2.100 SAVE AND REPEAT

Multiline Terminals can have line keys dedicated to the *Save and Repeat* function. After dialing an outside number and depressing a *Save and Repeat* key, the system retains the number and lights the associated LED. Depressing this line key (if lit), when the station receives dial tone, will redial the number.

A maximum of 80 *Save and Repeat* keys can be assigned in a system.

2.101 SINGLE LINE TELEPHONE ACCESS

Single Line Telephones (*DTMF*) may be installed in the system and used in conjunction with Multiline Terminals. Users not needing multiline appearances can benefit from the lower cost of Single Line Telephones, and be able to use many system features.

The Single Line Telephone user can access features provided by a PBX or CENTREX, or custom calling features provided by the local operating company, by sending a timed hookflash to the CO/PBX line to which it is connected, and then dialing a PBX/CENTREX feature access code.

2.102 SPEED DIAL - STATION

Each station in the system (except ETE-16K-1 Multiline Terminals) is assigned 20 personal *Speed Dial* memories. These *Speed Dial* memories can contain up to 16 digits (*System Speed Dial* codes can be stored within a *Station Speed Dial* memory to increase this capacity). A pause can be stored for Multiline Terminals within a *Station Speed Dial* buffer. A Hookflash signal can only be stored as the first digit of the stored number, and only in multiline display phones.

The ETE-16K-1 has 110 speed dial memories as part of the directory function feature.

2.103 SPEED DIAL - SYSTEM

Attendant Positions can program up to 80 *System Speed Dial* memories shared within the system. *System Speed Dial* memories can be set to *Override* or not *Override Code Restriction* assignments. Access to portions of the *System Speed Dial* memories, and override, can be set on a per **Tenant** basis.

2.104 STATION CAMP-ON

Attempts to *Transfer* a call to a busy extension, can be camped onto the busy extension. If the *Camp-On* is disallowed for any reason or it is not answered within a preprogrammed interval, the initiating station is recalled.

2.105 STATION HUNTING

Station hunting distributes incoming calls to multiple extensions which are programmed as one group with a pilot number. When the pilot number is dialed, or when it is the destination of DID, Tie Line, or DIT calls, the incoming call is distributed to an idle extension in the group. If the call is not answered within a determined time, the call is transferred to another extension within the same hunt group. Both Linear and Circular Hunting are possible.

After a CO/TIE/DID call is *ring transferred* to a hunt group, if the call is not answered within a predetermined time (FWD NO ANSWER TIMER), the call is transferred to another extension within the same hunt group, or to another hunt group or extension.

2.106 STATION LOCKOUT

Users can remove their station from service by dialing a private code; dialing the code again restores the station. This code is set by the station user. An Attendant can remove a station from lockout or clear the station lockout code, when the system is supported by a CPU-EB (or higher revision level) ETU.

2.107 STATION MESSAGE DETAIL RECORDING (SMDR)

The SMDR-E ETU provides an RS-232C output of detailed call records of telephone usage in the system. Call records are generated for LCR, incoming, outgoing, conference, and transferred outside calls. Station and trunk identification, time of origination, call duration and account codes are among the information provided.

2.108 STEP CALL

This feature is used when a station user encounters a busy signal on an internal call. The user can, by dialing another digit (the units digit), call another extension, or *Call Park* location, that shares the same hundreds and tens group assignment as the busy number. This further simplifies extension and *Call Park* calling procedures. *Step Call* can be used until an idle station is found.

2.109 STORED HOOKFLASH

The stored Hookflash feature allows each Multiline Terminal with LCD to store a Hookflash on the speed dial button to allow one step access to certain CENTREX/PBX features. It can only be stored as the first digit in a Feature Access key of an LCD Terminal, and the line must be assigned as a PBX Line.

2.110 SYSTEM DATA UP/DOWN LOAD

The System Data Up/Down Load feature transfers station speed dial data, system speed dial data, account codes, and all system data from/to an IBM compatible PC. The Up/Down Load may be accomplished from a local or remote location if a CPU-EC4 ETU (or higher revision) is installed in the system.

2.111 TANDEM SWITCHING of E&M TIE LINES

This feature allows *E&M Tie Lines* to be connected to other trunks through the Electra MarkII System without the need for any assistance or supervision by

an internal station. This provides the distant end system users, the ability to remotely access trunks.

Pad control is provided on the TLI-EB ETU by a programmable software transmission pad to adjust to the line loss levels of the Tie Line accessed.

2.112 TENANT SERVICE

The system can be shared by three tenants. Separate access to Attendants, outside lines, *LCR*, *System Speed Dial* memories, with *Code Restriction Override*, *Day/Night* and *Night Chime Control* can be provided.

2.113 TONE OVERRIDE

Station users that call a busy extension are able to generate an *Override Tone* (heard only by the extension user). Multiline Terminal users can answer the *Override* by means of their Answer key. Single Line Telephones can place their existing call on *Exclusive Hold* and respond to the *Override*.

2.114 TRUNK NAME ASSIGNMENT

This feature allows names to be assigned (via programming) to each Trunk of the Electra MarkII System. These names appear on the multiline Terminal's LCD when a line belonging to one of these trunks receives an outside transferred call, an E&M Tie Line, Direct Inward Dialing (DID), or Direct Inward Termination (DIT) call. When receiving an outside call, or receiving an E&M Tie Line, DIT, or DID call at a Multiline Terminal, the name assigned to the Trunk to which this line belongs appears in the LCD (Example: TIE LINE).

2.115 TRUNK TO TRUNK TRANSFER

This feature provides all station users the ability to set-up *Trunk to Trunk Transfers* between 2 central office lines, 2 *E&M Tie Lines*, or any combination of 2 central office, *DID*, and/or *E&M Tie Line* calls.

2.116 TRUNK/MFR TEST AND BUSY OUT

This feature allows *Attendant Positions* the ability to examine each individual trunk circuit to determine if it is in working order. If a particular trunk is found to be inoperable, the Attendant can busy it out. When the problem is corrected, the trunk circuit can be restored.

Single Line Telephones can also be used to test dual tone multi-frequency receiver circuits (on MFR-EA ETUs) to determine if they are operational. If a problem is detected, an attendant can busy out the defective circuit. After the problem is corrected, the circuit can be restored.

2.117 TRUNK QUEUING

This feature allows station users to increase their call processing efficiency in a high traffic environment. Station users who are denied a trunk or *E&M Tie Line* (after trunk dial access via an extension) when all trunks, or *E&M Tie lines*, in the trunk group are busy, can queue onto the trunk group by a dial access code. When a trunk, or *E&M Tie line*, in that trunk group becomes idle, the system reserves it and initiates a *Recall* indication to the queuing station's primary extension (when station and extension are idle). *Trunk Queuing* can be used to any trunk group (not accessed via LCR).

2.118 TWO COLOR LEDS

The ETE-16-2 and the Multiline Terminals with an LCD are equipped with a two color LED for line key indications. Green is used to indicate the *I-Hold*, *I-Use*, and *Recall* conditions; other status indications use red.

The EDE-30-() Console is also provided with two color LEDs. When used as a *DSS/BLF Console*, the buttons programmed for direct access to extensions provide two colors to indicate station and extension status, as well as message status. When used as a *CO Add-On Module*, line key LEDs show green to indicate *I-Hold*, *I-Use*, and *Recall* conditions; red is shown for other status.

2.119 UNIFORM CALL DISTRIBUTION (UCD)

The UCD feature permits incoming DIT or DID calls to terminate at a prearranged group in the order of their arrival. Incoming calls are distributed uniformly between all members of the UCD group, so that new calls terminate at the next idle station.

A DIT or DID call to a UCD group in which all extensions are busy may be overflowed to another designated group, extension, Attendant, or a Voice Mail Box.

When an incoming DIT call to a UCD group encounters all UCD extensions busy or receives no answer, the call is queued and receives a recorded *Delay Announcement* from a locally provided device after a predetermined time interval.

2.120 UNIFORM NUMBERING NETWORK

The Uniform Numbering Network feature allows multiple Electra MarkII systems, or other compatible systems, to be connected in a network application with the use of tie lines. It allows the user to access any station in the network by simply dialing an extension number. By utilizing the Electra MarkII Uniform Numbering Network feature, when an extension number is dialed, the local Electra MarkII System

automatically accesses the appropriate tie line and places the call. If the calling and the called systems are not directly connected by a single tie line, several tie lines may be accessed to route the call to it's final destination.

2.121 UNIVERSAL PORTS

The Electra MarkII Digital Telephone System enables installation of any interface ETU into any interface slot. This allows maximum utilization of CCUs, minimizing hardware costs. It also provides flexibility in the number and type of devices such as telephones, outside lines, etc. installed. Expansion of an existing system is minimized in terms of hardware cost and installation time by using *Universal Ports*.

2.122 UNSUPERVISED CONFERENCE

Station users can *Conference* two outside lines on one line key, put the *Conference* on hold, and then leave the *Conference*, freeing the station for other uses. The *Unsupervised Conference* can be entered at will. After a predetermined time interval, an audible recall signal will remind the Station user of the ongoing *Unsupervised Conference*.

2.123 USER PROGRAMMING CAPABILITY

Multiline Terminal users can program such features as off-hook ringing, internal voice or tone signaling, and ringing tone selection at their station. Each station in the system (except the ETE-16K-1 Multiline Terminal) can program up to 20 personal *Speed Dial* numbers, extensions, and features. ETE-16K-1 Multiline Terminals allow the user to program an index page followed by an 11 page directory, offering button access of up to 110 personal *Speed Dial* numbers, extensions and features.

2.124 VIRTUAL EXTENSIONS

The system will support up to 80 actual stations. However, the software allows for assignment of 48 additional extension lines. These 48 software based extensions can be assigned to line keys and/or EDE-30-() DSS/BLF keys (if system is supported by a CPU-EB (or higher revision level) ETU) for added system flexibility.

2.125 VOICE MAIL INTEGRATION

An optional interface provides connection with a locally provided voice mail system. *Voice Mail Message Waiting* displays are supported, with in-band DTMF signaling. Extensions forwarded to the Voice Mail System will present their extension number to the Voice Mail System when it answers.

A maximum of two VMI-E ETUs can be installed, (providing 8 ports for Voice Mail) if a CPU-EC4 ETU (or higher revision) is installed in the system.

CHAPTER 3
EQUIPMENT

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1. EQUIPMENT IDENTIFICATION

DESIGNATION	DESCRIPTION	MAXIMUM PER SYSTEM
ESE-32B-1 CCU	BASIC CENTRAL CONTROL UNIT	1
ESE-32E-1 CCU	EXPANSION CENTRAL CONTROL UNIT	3
CCU BASE	WALL MOUNTING PANEL (FOR 4 th CCU)	1
PSE-AD-1 PSU	AC/DC POWER SUPPLY UNIT	4
PSE-DD-1 PSU	DC/DC POWER SUPPLY UNIT	4
RSG-E UNIT	RINGING SUPPLY GENERATOR	4
RAA-E UNIT	REMOTE ADMINISTRATION ADAPTOR	1
CPU-EC4 ETU	CENTRAL PROCESSING UNIT	1
MMC-E ETU	MODULE MEMORY AND CONTROLLER	3
TSW-E ETU	TIME DIVISION SWITCH	1
TSW-EB ETU	TIME DIVISION SWITCH to be used in a FOUR CCU system	1
CBL-E UNIT	FOURTH CABINET EXPANSION CABLE UNIT	1
COI-E ETU	CENTRAL OFFICE LINE INTERFACE	10
COI-EB ETU	CENTRAL OFFICE LINE INTERFACE with CENTREX RINGING CAPABILITY	10
TLI-E ETU	E&M TIE LINE and DID LINE INTERFACE	20
TLI-EB ETU	E&M TIE LINE with DTMF DIALING CAPABILITY INTERFACE	20
ESI-EA ETU	ELECTRONIC STATION INTERFACE	20
ESI-EB ETU	ELECTRONIC STATION INTERFACE with OFF-HOOK VOICE ANNOUNCEMENT and DATA CAPABILITIES	20
SLI-EA ETU	SINGLE LINE INTERFACE	19
SLI-EB ETU	SINGLE LINE INTERFACE with MESSAGE WAITING and POWER FAILURE TRANSFER	19
MFR-EA ETU	DUAL-TONE MULTI-FREQUENCY RECEIVER	4
CNF-E ETU	CONFERENCE CIRCUIT	4
ECR-E ETU	EXTERNAL CONTROL RELAYS	1
VMI-E ETU	VOICE MAIL INTERFACE	2 *
SMDR-E ETU	STATION MESSAGE DETAIL RECORDING	1
LCR-E ETU	LEAST COST ROUTING	1
ETE-6- () TEL	6 LINE MULTILINE TERMINAL	78
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HFU-E	HANDSFREE UNIT	80
DPA-E	DUAL PATH ADAPTOR	80 ***
ADA-E	ANCILLARY DEVICE ADAPTOR	80
ADA-ER	ANCILLARY DEVICE ADAPTOR (For Full Duplex Recording Devices)	80
WMU-E	WALL MOUNT UNIT	80
DTA-E	DATA ADAPTOR	80 ***

NOTE: No more than 10 ETE-16D- () Multiline Terminals with BLF function assigned can be connected to each ESE-32B-1 and ESE-32E-1 CCU installed, for a system maximum of 30. *A CPU-EC4 (or higher revision) is required to support two VMI-E ETU's, otherwise, only one VMI-E ETU may be installed. **The EDE-30- () system maximum is six units, when used as BLF, CO Add-On Module and /or DSS/BLF. *** Refer to description of DPA-E and DTA-E.

2. EQUIPMENT DESCRIPTION

2.01 ESE-32B-1 CCU

This unit is the basic Common Control Unit, it contains 11 slots: 3 in a common area and 8 in an interface area. The 3 common area slots are used for the CPU-E(), TSW-E() ETUs and one option (either the SMDR-E or LCR-E ETU). The 8 interface area slots are used by any combination of interfaces. The interface slot adjacent to the common area is a combination slot and can be used for an interface or for the remaining option (SMDR-E or LCR-E ETU). The ESE-32B-1 CCU provides 32 *Universal Ports* which are associated with the eight interface slots.

In this cabinet 1 CPU-E(), 1 TSW-E(), and 1 power supply, the PSE-AD-1 or PSE-DD-1, must be mounted. An RSG-E ringing supply generator can also be mounted. The wall mounting template and hardware are included with this CCU.

Only 1 ESE-32B-1 CCU can be installed in a system.

2.02 ESE-32E-1 CCU

This cabinet is the expansion CCU. Three of these cabinets can be installed in a full system; the first ESE-32E-1 is placed on top of the ESE-32B-1 CCU, the second expansion CCU is placed on top of the first, and the third expansion CCU can be separately mounted with a CCU base panel or be floor mounted on top of the second expansion CCU. (**The third expansion CCU must be secured to a wall**). Each of these cabinets provide 11 slots for insertion of ETUs: 1 is dedicated to the MMC-E ETU, 2 are for options in the common slot area, and 8 are interface slots (the interface slot #8 between the common area and interface area can be used for an option ETU).

Each of these units installed must have an MMC-E ETU and a PSE-AD-1 or PSE-DD-1 power supply installed. Any of these units can have an RSG-E ringing supply generator installed. Each ESE-32E-1 provides 32 *Universal Ports* which are associated with circuits installed in the 8 interface slots which can be installed in each module.

2.03 CCU BASE WALL MOUNTING PANEL

This unit is required for wall mounting the third expansion CCU (ESE-32E-1).

2.04 PSE-AD-1 PSU

This PSU requires an input of nominal 117 VAC and converts it to the DC voltages required by a CCU. This power supply supports all telephones connected to the CCU as well as the ETU circuits. Each CCU requires either a PSE-AD-1 or a PSE-DD-1 PSU, however, they cannot be mixed in the same system.

A maximum of 4 PSE-AD-1 PSUs can be installed in a system, 1 per CCU.

2.05 PSE-DD-1 PSU

This PSU requires a dc input voltage of -48V dc and converts it to the necessary operating DC voltages required by a CCU.

It is designed to support all terminals connected to the CCU as well as all the ETUs installed in the CCU.

This power supply allows the system to be powered with a (locally provided) nominal -48V dc power source. Each CCU requires either a PSE-AD-1 or a PSE-DD-1 PSU, however, they cannot be mixed in the same system.

A maximum of 4 PSE-DD-1 PSUs can be installed in a system, 1 per CCU.

2.06 RSG-E UNIT

The Ring Signal Generator unit is required for signaling Single Line Telephones, voice mail system, modems, etc., when they are called. Each RSG-E unit provides ringing current to support 32 Single Line Telephones. A single expansion cable is provided with each RSG-E unit which enables it to serve Single Line Telephones connected to an adjacent CCU as well as those connected to its own CCU.

A maximum of 4 RSG-E units can be installed, 1 in each CCU.

2.07 RAA-E UNIT

The *Remote Administration Adaptor* provides the capability of accessing the Electra MarkII program from a remote location. When an ESI-E() ETU port is programmed for termination of an RAA-E, that position is automatically designated as the fourth system programming position. The system program can be changed and defective ports can be busied out or put back into service. The RAA-E adaptor must be supported by a port on an ESI-E() ETU.

Required to support this feature are:

Job Site

1. CPU-E() ETU
2. RAA-E unit
3. ESI-E() ETU (one circuit)
4. Modem (212A with auto answer)
5. SLI-E() ETU (one circuit)*
6. RSG-E unit*

*Depending upon installed configuration.

Remote Location

1. Modem
2. NEC PC8300 Laptop Computer †
3. NEC PC8231A Floppy Disk Drive †
4. RAA Host Program Disk

† or RAA-E compatible units ie., IBM AT, XT, PC, NEC APC IV, NEC MULTISPEED, Datavue's SPARK laptop.

2.08 CPU-E () ETU

The Central Processing Unit ETU contains a 16 bit microprocessor which has overall control of the system. This ETU provides an advanced feature package for the Electra MarkII System user.

The CPU-E () ETU must be installed in the ESE-32B-1 CCU.

2.09 MMC-E ETU

The Module Memory and Controller ETU contains a 4 bit microprocessor that controls the data transmission between the CPU-E () ETU and the interface ETUs, located in the same CCU as the MMC-E. Each MMC-E ETU comes with a connector ended ribbon cable. The first MMC-E plugs into the TSW-E () ETU and the second MMC-E plugs into the first. The third MMC-E requires that the system be equipped with the TSW-EB in place of the TSW-E ETU and connects to it via the CBL-E expansion cable unit.

A maximum of 3 MMC-E ETUs can be installed; one must be installed in each ESE-32E-1 CCU installed.

2.10 TSW-E ETU

The Time Division Switch ETU performs the switching function which connects stations to other stations and outside lines to other circuits. Oscillators, (for various internal tones), and RCA phono plugs, (for connecting an amplifier for 1 zone of external paging and/or an external MOH source), are located on the TSW-E ETU.

The TSW-E ETU also acts as the MMC-E ETU in the basic cabinet by controlling the data transmission between the CPU-E () and the interface ETUs in the ESE-32B-1 CCU.

The TSW-E must be installed in the ESE-32B-1 CCU.

2.11 TSW-EB ETU

The Time Division Switch ETU provides the same type of services as the TSW-E ETU plus it comes with an additional connector to connect to the third MMC-E ETU via the CBL-E expansion cable.

The TSW-EB must be installed in the ESE-32B-1 CCU in a four cabinet system. This ETU is installed instead of the TSW-E ETU.

2.12 COI-E ETU

The Central Office Interface ETU supports 4 outside (CO or PBX) lines. It provides circuitry for ring detection, holding and dialing. The outside lines can be any combination of *Loop* or *Ground Start*, *DTMF* or dial pulse dialing trunks.

A maximum of 10 COI-E ETUs can be installed in interface slots.

2.13 COI-EB ETU

This Central Office Interface ETU provides the same type services as the COI-E ETU with the additional support of the *CENTREX Ringing* feature.

A maximum of 10 COI-EB ETUs can be installed in interface slots.

2.14 TLI-E ETU

This Interface ETU supports the termination and operation of up to 2 *E&M Tie Lines* (loop dial, 2 and 4 wire, type I and type V, and 10 pps pulse dial) and DID lines. Immediate or wink start, delay dial, second dial tone or loop dial signaling are accommodated. Additionally, this ETU can be used to support automatic ringdown Tie Line applications. The system maximum of 40 outside lines (CO, Tie, DID) must be observed.

A maximum of 20 TLI-E ETUs can be installed in a system supported by a CPU-EB (or higher revision level) ETU.

2.15 TLI-EB ETU

This Interface ETU supports the termination and operation of up to 2 *E&M Tie Lines* (2 and 4 wire type I and type V). When a TLI-EB ETU is installed, the Electra MarkII system has the ability to receive and/or transmit DTMF or dial pulse signals (10pps) on *E&M Tie Lines* terminated on that ETU. Immediate or wink start, delay dial, or second dial tone signaling are accommodated. The system maximum of 40 outside lines (CO, Tie) must be observed.

Both TLI-E and TLI-EB ETUs can be installed in a system, provided the system maximum of 20 is not exceeded.

2.16 ESI-EA ETU

This Electronic Station Interface ETU contains 4 circuits, each of which can support any type Multiline Terminal, RAA-E unit or the EDE-30-() *DSS/BLF*

Console. This ESI does not support the *Data* or *Off-Hook Voice Announcement* features.

A maximum of 20 ESI-EA ETUs can be installed in interface slots.

2.17 ESI-EB ETU

This Electronic Station Interface ETU is the same as the ESI-EA ETU except this ETU additionally supports the *Off-Hook Voice Announcement* and *Data* features.

A maximum of 20 ESI-E() ETUs can be installed in interface slots. It is recommended that ESI-EA ETUs be installed in the fourth CCU cabinet, as the fourth CCU cabinet cannot support the ESI-EB ETUs additional features. (See note below)

NOTE: Each ESI-EB ETU provides two paths for each of its four ports. However, when a station requires both *Dual Path* and *Data Switching*, it needs the use of three paths. This assignment utilizes the second path from the next (adjacent) port. Therefore, any station connected to that adjacent port cannot be assigned *Dual Path* and *Data Switching*. If ports *one* and *three*, of the ESI-EB ETU, have both features, then ports *two* and *four* cannot have either feature.

2.18 SLI-EA ETU

The Single Line Interface ETU can support 4 single line telephones and/or modems. This ETU does not supply *Power Failure Transfer* or *Message Waiting* lamp voltage to the Single Line Telephones.

A maximum of 19 SLI-EA ETUs can be installed in interface slots.

2.19 SLI-EB ETU

This Single Line Interface ETU is the same as the SLI-EA except this ETU can supply single line telephones with *Message Waiting* lamp voltage. The SLI-EB also provides connection, during *Power Failure*, directly between a CO line and an SLT.

A maximum of 19 SLI-EB ETUs can be installed in interface slots.

2.20 MFR-EA ETU

The Multi-Frequency Receiver ETU detects and translates *DTMF* tones generated by Single Line Telephones, VMI-E ETU, or Modems (*Keyboard Dialing*). If there are no Single Line Telephones or VMI-E ETU installed, the MFR-EA ETU is not

required. Each MFR-EA provides 2 circuits shared by the single line telephones and VMI-E ETU.

The interface slots can accommodate a maximum of 4 MFR-EA ETUs.

2.21 CNF-E ETU

The *Conference* unit ETU contains circuits for a single, *non* amplified, *Conference* that will accommodate a maximum of 4 parties.

A maximum of 4 CNF-E ETUs may be installed in interface slots.

2.22 ECR-E ETU

The External Control Relay unit provides ten relays used for switching of *External Paging* that enable the use of 3 zones and/or *Background Music*, External Ring control, *Night Chime Control*, and *Delay Announcements (UCD)*. This ETU also provides two input jacks. The jacks are for the input of a Music source (*Background Music*) via the Multiline Terminal's built-in speaker, and/or for a *Delay Announcement*.

A maximum of 1 ECR-E ETU per system may be installed in an interface slot.

2.23 VMI-E ETU

The *Voice Mail Interface* has 4 circuits used to interface between the Electra MarkII digital telephone system and a locally provided *Voice Mail* system. The VMI-E generates *DTMF* for control of the *Voice Mail* equipment and provides it with access to MFR-EA ETUs. The system requires an RSG-E to support the VMI-E ETU. Single line telephones, *DTMF* controlled dictation equipment or a modem can be connected to any unused ports of the VMI-E ETU.

A CPU-EB (or higher revision level) ETU is required to support the connection of an SLT, modem, or *DTMF* controlled dictation equipment to the VMI-E ETU.

A maximum of two VMI-E ETUs (which allows for 8 ports for *Voice Mail*) may be installed if a CPU-EC4 ETU (or higher revision) is installed. Otherwise, only one VMI-E ETU can be installed.

2.24 SMDR-E ETU

The *Station Message Detail Recording* ETU generates detailed call records on incoming, outgoing, and transferred outside calls. Reports include digits dialed, call duration, account codes, etc.

A maximum of one SMDR-E ETU can be installed, in any option or combination slot in any CCU.

2.25 LCR-E ETU

The *Least Cost Routing* ETU is equipped with an 8 bit microprocessor. Based on programmed information, the microprocessor checks area codes and office codes dialed and routes the call by the most economical path available.

To program the LCR data base, an NEC PC 8300 Laptop Computer, an NEC PC 8231A floppy disk drive, and a program disk are required (or an IBM AT, XT, PC, NEC APCIV, Datavue's SPARK laptop).

A maximum of one LCR-E ETU can be installed, in any option or combination slot in any CCU.

2.26 ETE-6-() TEL

This Multiline Terminal is a fully modular instrument with 6 line keys, each with LED indications, 7 fixed function buttons and a *Message Waiting* LED.

Five line keys are flexible and can be assigned to any outside lines connected to the system, to any other extension lines, or as a feature button (*Do Not Disturb, Save and Repeat, or Pooled Lines*). The sixth line key is for the terminal's primary extension.

An ADA-E Unit can be installed in this Multiline Terminal.

2.27 ETE-6D-() TEL

This Multiline Terminal is a fully modular instrument with 6 line keys each with *Two Color LED* indications, 7 fixed function buttons, 10 programmable **Feature Access** keys and a 2 line LCD, with 16 characters each.

Five line keys are flexible, (the sixth line key is for the terminal's primary extension). The 10 programmable **Feature Access** keys can be assigned by the user as speed dial buttons for outside calls, Direct Station Selection buttons (to call other extensions), or as **Feature Access** keys.

ADA-E, HFU-E, DTA-E, and DPA-E Units can be installed in this Multiline Terminal.

2.28 ETE-16-2 TEL

This Multiline Terminal is a fully modular instrument with 16 line keys (each with *Two Color LED* indications), 7 fixed function buttons, and a *Message Waiting* LED.

Fifteen line keys are flexible and can be assigned to any of the outside lines connected to the system, any extension line, or as a feature button (for *Do Not Disturb, Save and Repeat, or Pooled Lines*). The

sixteenth line key is for the terminal's primary extension.

An ADA-E Unit can be installed in this Multiline Terminal.

2.29 ETE-16D-() TEL

This Multiline Terminal is a fully modular instrument with 16 line keys (each with two color LED indications), 20 programmable **Feature Access** keys with LED indications, 7 fixed function buttons, and a 2 line LCD, each with 16 characters.

Fifteen line keys are flexible (the sixteenth line key is for the terminal's primary extension). The twenty programmable **Feature Access** keys can be assigned by the user as Speed Dial buttons for outside lines, as Direct Station Selection/Busy Lamp Field buttons to call other extensions (and monitor their busy/idle status), or as **Feature Access** keys.

System programming and Attendant assignment can be performed only with ETE-16D-() Multiline Terminal. ADA-E, HFU-E, DTA-E, and DPA-E Units can be installed in this Multiline Terminal.

No more than 10 ETE-16D-() Multiline Terminals, with BLF function assigned, can be connected to each ESE-32B-1 or ESE-32E-1 CCU (up to a system maximum of 30 Multiline Terminals).

2.30 ETE-16K-1 TEL

This Multiline Terminal is a fully modular instrument with 16 line keys (each with two color LED indications), 7 fixed function keys, a directory key, 10 directory page keys which become programmable **Feature Access** keys when a page is being displayed, and a 7 line (each with 16 characters) LCD.

Fifteen line keys are flexible (the sixteenth line key is the primary extension). Depressing the directory key displays a 10 page directory (an 11th page is normally displayed). Depressing a corresponding page key selects that page and its contents. The 10 page keys are now programmable **Feature Access** keys and can be programmed as Speed Dial for outside calls, as Direct Station Selection keys to call other extensions, or as **Feature Access** keys.

ADA-E, HFU-E, DTA-E, and DPA-E Units can be installed in this Multiline Terminal.

A maximum of 30 ETE-16K-1 Multiline Terminals may be installed in an Electra MarkII Digital Telephone System.

2.31 ETE-1-2 TEL

This Single Line Telephone features a standard dial pad, a "Flash" Key and a Message Waiting Lamp.

2.32 ETE-1HM-2 TEL

This Single Line Telephone features 8 one touch Speed Dial keys, Feature key, Redial key, and a Message Waiting Lamp.

The Feature key can be programmed as an additional Speed Dial key (Hold, Call Waiting, Direct Destination Selection, etc.). Each Speed Dial key may contain a maximum of 17 digits (including #, *, pause, and flash).

2.33 EDE-30-() CONSOLE

The Direct Station Selection/Busy Lamp Field console is equipped with 30 programmable buttons with two color LED indications and 3 programmable function buttons with LED indications. The 30 programmable buttons can be assigned as direct station selection buttons or as function buttons. The programmable function buttons can only be assigned as function buttons.

A maximum of 6 EDE-30-() *DSS/BLF Consoles* can be installed to work with a maximum of 4 ETE-16D-() Multiline Terminals. Either 1 or 2 EDE-30-() *DSS/BLF Consoles* can be assigned to each *Attendant Position*.

The EDE-30-() may also be utilized as a *CO Add-On Module*. The system maximum of six EDE-30-() installed does not change, a maximum of four *CO Add-On Modules* can be installed (one per *Attendant Position*).

When the EDE-30-() is programmed as a *CO Add-On Module* the system must be supported by a CPU-EB (or higher revision level) ETU.

2.34 HFU-E UNIT

The *Handsfree* unit provides *Full Handsfree Operation* on outside and internal calls when installed in an ETE-6D-(), ETE-16D-(), or ETE-16K-1 Multiline Display Terminal.

A maximum of 80 HFU-E units can be installed in a system, one per Multiline Terminal.

2.35 DPA-E UNIT

The *Dual Path Adaptor* unit provides the off-hook *Voice Announcement* feature when it is installed in an ETE-6D-(), ETE-16D-(), or ETE-16K-1 Multiline Terminal. For the terminal to have the off-hook *Voice Announcement* feature, it must also be supported by an ESI-EB ETU installed in any position in the first three cabinets only.

A maximum of 80 DPA-E units can be installed in a system, one per Multiline Terminal. (See note below)

NOTE: Each ESI-EB ETU provides two paths for each of its four ports. However, when a station requires both *Dual Path* and *Data Switching*, it needs the use of three paths. This assignment utilizes the second path from the next (adjacent) port. Therefore, any station connected to that adjacent port cannot be assigned *Dual Path* and *Data Switching*. If ports *one* and *three*, of the ESI-EB ETU, have both features, then ports *two* and *four* cannot have either feature.

2.36 DTA-E UNIT

The Data Adaptor provides a Multiline Terminal with LCD, the capability of asynchronous data switching. Multiline Terminals, (ETE-6D-(), ETE-16D-(), or ETE-16K-1) when equipped with a DTA-E unit, can switch data between the terminal and an outside party via *Modem Pooling*. Internal data switching requires the use of another Multiline Terminal that is also equipped with a DTA-E unit. Speeds of up to 9.6kbps. can be accommodated on the RS-232C type interface.

A maximum of one DTA-E unit can be installed per Multiline Terminal, with LCD. A system maximum of 80 units. (See note below)

NOTE: Each ESI-EB ETU provides two paths for each of its four ports. However, when a station requires both *Dual Path* and *Data Switching*, it needs the use of three paths. This assignment utilizes the second path from the next (adjacent) port. Therefore, any station connected to that adjacent port cannot be assigned *Dual Path* and *Data Switching*. If ports *one* and *three*, of the ESI-EB ETU, have both features, then ports *two* and *four* cannot have either feature.

A CPU-EB (or higher revision level) ETU and an ESI-EB ETU are required to support this feature. The ESI-EB ETU can be installed in any position in the first three cabinets only.

2.37 ADA-E UNIT

The *Ancillary Device Adaptor* unit provides Multiline Terminals with connection for a jackset, an automatic dialer (which generates *DTMF* tones for dialing), modem, or other ancillary devices. An ADA-E unit can be installed in any Multiline Terminal.

A maximum of 80 ADA-E units can be installed in a system, one per Multiline Terminal.

2.38 ADA-ER UNIT

This Ancillary Device Adaptor provides the same type services as an ADA-E UNIT. In addition, it provides support for Full Duplex Recording Devices.

2.39 WMU-E

The WMU-E is a universal *Wall Mount Unit* which can be used to *Wall Mount* any Multiline Terminal or NEC Single Line Telephone (ETE-1-2).

2.40 CBL-E UNIT

This unit provides the required interconnecting cables to install a fourth CCU. It also comes with a special template to facilitate wall mounting of the fourth cabinet.

CHAPTER 4

**OVERVIEW OF INSTALLATION,
PROGRAMMING, AND
MAINTENANCE**

CHAPTER 4

OVERVIEW of INSTALLATION, PROGRAMMING, and MAINTENANCE

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1. INSTALLATION

1.01 The Electra MarkII Digital Telephone System uses modularity and connectorization throughout to reduce installation time and labor. The modular Central Control Units (CCUs) are installed in a stack and most internal connections are made with plug and jack connections.

The power supply and ring generator units slide into place and their preinstalled cables plug into a power distribution panel. All circuitry installed in the CCUs are located on printed circuit boards, which plug into pre-wired connector slots. Connection for voice and data between the CCUs is provided by a single connector ended ribbon cable between the first and second CCUs, and an identical cable between the second and third CCUs. The fourth CCU requires an expansion cable (CBL-E) for connection to the TSW-EB ETU.

Connection to telephones, outside lines and other external devices is made via standard telephone cable connectors. Music sources for *Background Music* or music on hold and *Delay Announcement* units, are connected by standard audio equipment plugs.

Besides reducing the labor required for installation, the use of modularity and connectorization increases reliability. No wiring changes are made in the CCUs and all connectors are factory tested.

1.02 The use of the universal port concept and the provision of a dual purpose slot which allows installation of either an interface or an option Electronic Telephone Unit (ETU) gives flexibility. This avoids the problems associated with dedicated slots where, with additional capacity existing in the current equipment, another cabinet still must be added because the existing capacity doesn't match the new requirement. Full utilization of each CCU, before adding another, reduces hardware requirements.

1.03 A *Resident System Program* is provided when the system first receives power, the CPU scans the CCUs, recognizes the ETUs and Multiline Terminals that are connected. It assigns standard values in the system program for all system and device parameters. This allows the system to operate immediately, before programming is done, after initialization. Later, programming is reduced because many of the resident system values can be retained.

The assignments provided by the resident system program can be altered to fit the requirements of a particular installation. The means of changing programming assignments is the function of one of two preassigned Multiline Terminals, or a third which can be assigned. The various line keys, function buttons, and the dial pad are used to enter new values while the display provides the necessary information for programming.

1.04 A variety of telephones can be connected to satisfy the requirements of a particular installation. All Multiline Terminals are fully modular and are powered from the central unit. Cabling is twisted 2 pairs for proprietary Multiline Terminals and twisted 1 pair for Single Line Telephones.

2. PROGRAMMING

2.01 Programming is accomplished from an ETE-16D-() Multiline Terminal or remotely using the RAA-E unit. The first two ESI-E() ETU ports are automatically given the ability to program, and they can be used to designate a third position to also program (provided it is an ETE-16D-()). A fourth programming position is automatically assigned when an RAA-E unit is assigned to the system.

2.02 When a position is in *program mode*, it is **off-line** (only one programming station can be off-line at one time) while the rest of the system continues to function. Most program changes can be entered at any time but some changes will not take effect until the affected station and circuits are idle. This avoids disrupting any calls in progress.

2.03 Battery backed retention of the system program, Speed Dial memories, SMDR, LCR, etc., is provided. Approximately 7 days of power loss can be withstood when the NiCad batteries are fully charged,

this prevents the need of reprogramming, after a brief power outage.

2.04 Multiline Terminal users can also program several features from their stations:

- *Internal Voice or Tone Signaling*
- *Off-hook Ringing*
- **Programmable Feature Access** keys (speed dial or direct station selection buttons, etc.)
- *Private Station Lockout* code
- *Ring tone* selection
- *Background Music*

Multiline Terminals without programmable **Feature Access** keys and single line telephones can program *Station Speed Dial* memories. *Attendant Positions* can additionally program *System Speed Dial* memories, the system clock/calendar, and *Forced/Verified Account Codes*.

3. MAINTENANCE

3.01 Each interface and option ETU has an ON/OFF switch with an LED indication of power status. An interface ETU with this switch OFF can be removed or installed with the system power on. Interface ETUs which support stations or outside lines, also provide busy/idle status with an LED associated with each individual circuit.

The combination of status indication and ETU replacement with power on gives the maintenance technician the ability to replace suspect circuits without disrupting ongoing calls.

3.02 Individual ports and ETUs can be **busied out** or initialized from a programming position or from a remote location using the RAA-E unit for maintenance purposes. If the first two *Attendant Positions* are in use, the technician can enable a third programming position.

3.03 New equipment (both stations and ETUs) can be added without reinitializing the system. Moves and changes of stations can also be accommodated without system interruption.

Use of a programming position for these tasks provides on-line programming which will take effect when the stations and circuits involved are idle.

3.04 Connectorization and modularity allow for quick replacement of suspect or defective equipment.

3.05 With an RAA-E Unit and the System Data Up/Down Load Software, station speed dial data, system speed dial data, account codes, and all system data can be transferred from/to an IBM compatible PC. The Up/Down Load may be accomplished from a local or remote location when a CPU-EC4 (or higher revision) is installed in the system.

4. DIAGNOSTICS

The CPU keeps checking whether the interface ETU and Multiline Terminals in the system are properly operating and, if a fault is detected, stores fault data in its memory until it is read out of the memory later for maintenance purposes.

CHAPTER 5
SPECIFICATIONS

CHAPTER 5 SPECIFICATIONS

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1. SYSTEM CAPACITY

1.01 Some Electra MarkII Digital Telephone System capacities are as follows:

- System Ports: 128 ports max.
- CO/PBX, DID and E&M Tie Lines: 40 lines max.
- Station Equipment: 80 sets max.
- Virtual Extensions: 48 max.
- DSS/BLF Consoles: 6 units max.*
- CO Add-On Module: 4 units max.*
- Call Park Areas: 10 max.
- System Speed Dial: 80 numbers (16 digits each)
- Station Speed Dial: 20 numbers (16 digits each)
- ETE-16K-1 Station Speed Dial: 110 numbers (16 digits each)

* Combined system maximum is 6 units.

NOTE: These figures represent the maximum number of individual devices that can be installed. System capacity is 128 ports.

1.02 The central equipment of this system is comprised of up to 4 Central Control Units (CCUs):

- | | |
|----------------------------------|-----------|
| 1. Basic CCU: | 32 ports |
| 2. Basic CCU + 1 Expansion CCU: | 64 ports |
| 3. Basic CCU + 2 Expansion CCUs: | 96 ports |
| 4. Basic CCU + 3 Expansion CCUs: | 128 ports |

2. CABLING REQUIREMENTS

Each CCU module is equipped with three 50 position miniature ribbon jacks (female amphenol type connectors). 50 position miniature ribbon plug (male amphenol type connector) ended cables are required for connection to the Main Distribution Frame (MDF). Allowable loop resistance, length and type of cable are as follows:

2.01 Maximum Loop Resistance and Cable Length using 22 AWG or 24 AWG: (Refer to Loop Resistance and Cable Length Table)

2.02 Cable Type:

- Multiline Terminal: Twisted 2 pair
- Single Line Telephone: Twisted 1 pair
- Music Source: Hi-fi type shielded audio cable
- Delay Announcement Player: Hi-fi type shielded audio cable
- External Amplifier: Hi-fi type shielded audio cable
- DSS/BLF Console or CO Add-On Module: Twisted 2 pair

3. POWER REQUIREMENTS

3.01 AC Input (for PSE-AD-1)
120 V ac \pm 10%, 60 Hz \pm 10%, Single Phase.

A dedicated outlet, and ground which is separately fused for 15 amps, is required.

3.02 DC Input (for PSE-DD-1)
40 V dc - -56 V dc

3.03 Maximum Power Dissipation: (Refer to Power Dissipation Table)

NOTE: When a PSE-DD-1 PSU is installed in the ESE-32B-1 CCU, power consumption of the locally provided -48V power source should also be taken into account for the total BTU/hrs calculation.

4. ENVIRONMENTAL CONDITIONS

4.01 Temperature
Operating: + 32° F to + 104° F (0° C to 40° C)
Recommended long term:
+ 50° F to + 90° F (10° C to 32.2° C)

LOOP RESISTANCE AND CABLE LENGTH TABLE

ELECTRA MARKII TERMINAL	22 AWG		24 AWG	26 AWG
	OHMS	FEET	FEET	FEET
ETE-6(-)	80	2,500	1,500	950
ETE-6D(-)	65	1,800	1,300	650
ETE-16D(-) With BLF Feature	40	950	820	350
ETE-16D(-) Without BLF feature	55	1,200	1,000	450
ETE-16-2	55	1,200	1,000	450
ETE-16K-1	55	1,200	1,000	450
DSS/BLF Console or Add-On Module	55	1,200	1,000	450
RAA-E UNIT	55	1,200	1,000	450

NOTE: Single Line Telephone: 600 ohms (including instrument)

4.02 Operating: Humidity 10% to 90% (without condensation)

5. WEIGHTS AND DIMENSIONS
(Refer to Weights and Dimensions Table)

6. OUTSIDE LINE TYPE

- 2 wire, loop start or ground start
- 2 wire loop dial (DID)
- 2 wire E&M Tie lines (type I and V)
- 4 wire E&M Tie lines (type I and V)

7. NETWORK AND CONTROL

7.01 Control Section

- Control: Stored Program Control with distributed processing.
- Central processor: 16 bit microprocessor
- Clock: 8 MHz
- Module processor: 4 bit microprocessor (TSW-E, TSW-EB & MMC-E)

- Interface card: 4 bit microprocessor
- Multiline Terminal and DSS/BLF Console: 4 bit microprocessor

7.02 Transmission

- Data Length:
From Multiline Terminal to ESI-E(): 32 bits
From ESI-E() to Multiline Terminal: 32 bits
- Data Transmission Rate:
Between ESI-E() and Multiline Terminal: 256 K bps (voice, data, and signaling)
- Data Transmission Pair:
To Multiline Terminals and DSS/BLF: 2 pair Data
- Scanning time for each Multiline Terminal: 32 ms.

7.03 Network

- TDM Switching: PCM (μ Law)
- TDM clock: 2.048 MHz
- TDM slot period: 488.28 ns.

POWER DISSIPATION TABLE

MODULE	PSE-AD-1 (120 Vac)			PSE-DD-1 (48V dc)	
	MAXIMUM RMS CURRENT	WATTS USED	POWER DISSIPATION	MAXIMUM RMS CURRENT	WATTS USED
1	1.6A	190	640 BTU/HR.	4.3A	210
2	3.2A	380	1.280 BTU/HR.	8.5A	410
3	3.9A	460	1.560 BTU/HR.	10.4A	500
4	4.5A	530	1.800 BTU/HR.	12.0A	580

WEIGHTS AND DIMENSIONS TABLE

UNIT	SHIPPING WEIGHT (kg)	HEIGHT (mm)	WIDTH (mm)	DEPTH (mm)
ESE-32B-1	43 lbs. 3 oz. (19.6)	14 3/4" (375)	25 9/16" (640)	12 5/8" (320)
ESE-32E-1	26 lbs. (11.8)	11 13/16" (300)	25 9/16" (640)	12 5/8" (320)
PSE-AD-1	3 lbs. 11 oz. (1.7)	8 3/32" (206)	3 15/16" (100)	9 1/16" (230)
PSE-DD-1	3 lbs. 11 oz. (1.7)	8 3/32" (206)	3 15/16" (100)	9 1/16" (230)
RSG-E	5 lbs. 5 oz. (2.4)	8 3/32" (206)	2 5/32" (55)	9 1/16" (230)
RAA-E	2 lbs. 6 oz. (1.1)	2 5/32" (55)	3 15/16" (100)	7 7/8" (200)
ETE-6-()	2 lbs. (0.9)	3 5/16" (84)	6 7/32" (158)	8 7/8" (225)
ETE-6D-()	2 lbs. 10 oz. (1.2)	3 5/16" (84)	8 5/32" (207)	8 7/8" (225)
ETE-16-2	2 lbs. (0.9)	3 5/16" (84)	6 7/32" (158)	8 7/8" (225)
ETE-16D-()	2 lbs. 10 oz. (1.2)	3 5/16" (84)	8 5/32" (207)	8 7/8" (225)
ETE-16K-1	2 lbs. 14 oz. (1.3)	3 5/16" (84)	10 3/8" (263.5)	8 7/8" (225)
EDE-30-()	14 oz. (0.4)	3 5/16" (84)	3 5/8" (98)	8 7/8" (225)
ETE-1-2	1 lb. 14 oz. (0.9)	3.15" (80)	6.30" (160)	9.06" (230)
ETE-1HM-2	1 lb. 10 oz. (0.7)	2.36" (60)	6.30" (160)	9.06" (230)

- TDM data bus: 8 bit
- TDM frame-time: 125 μ s.

7.04 Telephones

- Multiline Terminal and DSS/BLF Console:
Voltage: -11- -26 V dc
Max Current: 200 mA
- Single Line Telephone:
Standard 2500 set: 500 type network
Nominal Current: 35 mA
Ring Signal: 65 VAC RMS @ 20 Hz

8. VISUAL INDICATIONS

- Line Key LED Indications:
Idle: OFF
I-use or Busy: ON
Incoming Call: FLASH

- I-hold: (500 ms. on/500 ms. off) BURST WINK
(125 ms. on/125 ms. off/125 ms. on/625 ms. off)
- Other Held Call: WINK
(250 ms. on/250 ms. off)
- Recall: FLUTTER
(125 ms. on/125 ms. off)

- Microphone Button LED Indication:
Will not transmit: OFF
Will transmit: ON
- Speaker Button LED Indication:
Idle condition: OFF
Monitor call in progress: ON
- Conference Button LED Indication:
Idle conference circuit: OFF
Conference in progress at Multiline Terminal or all conference circuits busy: ON

Establishing conference: **FLASH**
(500 ms. on/500 ms. off)

Programming station function buttons: **FLUTTER**
(125 ms. on/125 ms. off)

• Answer Button LED Indication:
Answer hold not in use: **OFF**
Answer hold being used: **ON**

Incoming call, Camp-On call, or Override call can be answered using ANS key: **FLASH**
(500 ms. on/500 ms. off)

• DND Line Key LED Indication:
Do Not Disturb set: **ON**
Do Not Disturb not set: **OFF**

• Save and Repeat line Key LED Indication:
Number saved: **ON**
No number saved: **OFF**

8.01 Multiline Terminal Visual Indications:
(Refer to Multiline Terminal Visual Indication table)

8.02 DSS/BLF Visual Indications:
(Refer to DSS/BLF Visual Indication table)

9. DIALING SPECIFICATIONS AND AUDIBLE INDICATIONS

9.01 Dial Pulse Address Signaling

- Pulse rate: 10/20 pps
- Percent break: 61 ± 3 percent
- Interdigital interval: Nominal 70 ms.

9.02 Dialing Memories

- Station Speed Dialing: 20 numbers per station (16 digits each)
- ETE-16K-1 Speed Dialing: 110 numbers per station (16 digits each)
- System Speed Dialing: 80 numbers per system (16 digits each)
- Saved Number Dialing: 80 numbers per system (16 digits each)

9.03 Audible Indications
(Refer to Audible Indication table)

9.04 DTMF Address Signaling

- Frequencies:
Two sinusoidal signals, one from a high group of three frequencies and one from a low group of four frequencies.
- Frequency deviation: Less than ± 1.5 percent
- Signal level:
Nominal level per frequency: -6 to -4 dBm
Minimum level per frequency: -10 dBm
Low Group

High Group
Maximum level per frequency pair: -8 dBm + 2 dBm

- Rise time: Within 5 ms.
- Duration of dual frequency signal: 110 ms. default/60 ms. minimum
- Interdigital time: 70 ms. default/40 ms. minimum.

	Nominal High Group Frequencies (Hz)		
	1209	1336	1477
697	1	2	3
Nominal Low Group Frequencies (Hz)			
770	4	5	6
852	7	8	9
941	*	0	#

10. EXTERNAL EQUIPMENT CONNECTION

10.01 Music Sources for Music on Hold, Background Music and Delay Announcement Player.

- Connector: RCA Phono Plug
- Auxiliary Input: 0.6 V RMS Signal Level
- Input Impedance: 50K ohms
- BGM & Delay Announcement Auxiliary Input: 0.1 V RMS Signal Level

10.02 SMDR Output:
Standard Female RS-232C Connector

10.03 External Paging (Audio)

- Output Power: -10.0 dBm Signal Level
- Output Impedance: 600 ohms

10.04 Relay Contacts in ECR-E ETU

- Contact Rating: 500 mA @ 24V dc

10.05 Hookswitch Contacts:

- Contact Rating: 100mA @ 48V dc

10.06 Power relay Contacts in DTA-E unit

- Contact Rating: 1A @ 24V dc
0.5A @ 120V ac

11. NUMBERING PLAN

11.01 Codes dialed while receiving dial tone or feature dial tone. (Refer to Dial/Feature Tone Code Table A)

11.02 Codes dialed when **not** receiving dial tone or feature dial tone.
(Refer to Dial/Feature Tone Code Table B) **ON**

MULTILINE TERMINAL VISUAL INDICATION TABLE

LED	CONDITION	FLASH PATTERNS
Outside Extension Line *	I-Use	Green
	Busy	Red
	Incoming Call	Red
	I-Hold	Green
	Call Hold	Red
	Recall	Green
Microphone	ON	Red
Speaker	ON (Monitor or Handsfree)	Red
Conference	Conference in progress All Conference circuits busy	Red
	Establishing conference	Red
	User Programming	Red
Answer	Broker's Call	Red
	Incoming call, Camp-On Override, Recall	Red
Do Not Disturb	ON (DND set) (Note 2)	Red
Save & Repeat	ON (Saved) (Note 2)	Red
DT or DR	Data connection established	Green
	No Data Path available	Red
	Establishing Data Path	Green
	Incoming Data Call	Red
	Modem/Data Path reserved	Green
	Data Connection Ended	Red

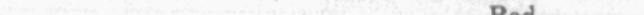
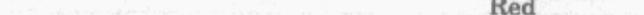
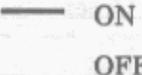
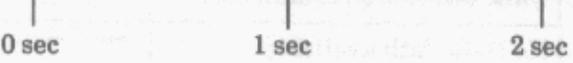

0 sec
1 sec
2 sec

NOTE 1: Green LED indications are not provided for MIC, SPKR, CNF, and ANS keys of Multiline Terminals, nor for outside line keys on ETE-6-() Multiline Terminals. Red LEDs will light in place of Green LEDs on the ETE-6-() Multiline Terminals.

NOTE 2: DND and Save and Repeat functions may be assigned on line keys.

*Applies to CO Add-On Module as well as Multiline Terminals.

DSS/BLF VISUAL INDICATIONS TABLE

LED	STATUS	FLASH PATTERNS
DSS KEY (see Note 1)	Station is idle or busy mode and it's Primary Extension has an incoming call, call on hold, or recalling call.	 Red
	Station is off-hook on a call and it's Primary extension is idle or in the I-Use mode. **	 Green
	Station is idle or in use and it's Primary extension is in use by another station * or off-line.	 Red (Flashing)
	Do Not Disturb	 Red (Winking)
Internal and External Paging	In Use	 Red
Message Waiting	DSS/BLF in Message Mode, Message at station	 Red
Night Transfer	Night Mode	 Red
		

- NOTE 1:** Steadily Lit Red LED - Attendant cannot override a station in this condition
 Flashing Red LED - Attendant cannot override a station in this condition
 Winking Red LED - Attendant can override a station in this condition
 Steadily lit Green LED - Attendant can override a station in this condition
 LED OFF - Attendant can call a station in this condition

NOTE 2: LED indications on DSS keys are the same regardless of dual path, but what Attendant can do may be different.

NOTE 3: On the Multiline Terminals with built-in BLF, LED flash patterns are same as the ones on the DSS/BLF Console, but green is not available.

- * = Phantom extension appearing on the DSS/BLF also provide this indication when in use.
 ** = Virtual extensions appearing on the DSS/BLF also provide this indication when in use.

AUDIBLE INDICATIONS TABLE

NO.	TONE	FREQUENCY (Hz)	TONE PATTERNS
1	Dial Tone	350/440	
2	• Second Dial Tone	350/440	
3	Busy Tone	480/620	
4	Call Waiting Tone	440	
5	Ringback Tone	440/620	
6	Reorder Tone	480/620	
7	• Voice Page Alert Tone	440	
8	• Call Forward Alert Tone • Call Forward Confirmation Tone	350/440	
9	• Confirmation Tone • LCR Dial Tone	440	
10	Error Tone Burst	620	
11	Recall Tone	1024	
12	CO/PBX Ring Tone	480/606	
13	CO/PBX Ring Tone (2)	480/606	
14	Internal Ring Tone	480/606	
15	Boss/Secretary and Attendant Ring Tone	480/606	
16	DIT Alert Tone	480/620	
17	• Attendant/Tone Override • Camp-On Tone	440	

DIAL/FEATURE TONE CODE TABLE A

FEATURE		CONDITION	CODE (Set in Default)
Call to Attendant		Fixed	0
Extension Numbering (3 or 4 digit)		Flexible	xxx or xxxx
Call Forward-All Calls:	Station	Confirm	41
		Set	41xxx
		Cancel	41*
Call Forward-Busy/No Answer:	Station	Confirm	42
		Set	42xxx
		Cancel	42*
Call Forward-All Calls:	Attendant	Confirm	44xxx
		Set	44xxx yyy
		Cancel	44xxx *
Call Forward-Busy/No Answer:	Attendant	Confirm	45xxx
		Set	45xxx yyy
		Cancel	45xxx *
Call Forward-All Calls:	Destination	Confirm	47xxx
		Set	47xxx yyy
		Cancel	47xxx *
Call Forward-Busy/No Answer:	Destination	Confirm	48xxx
		Set	48xxx yyy
		Cancel	48xxx *
BGM Over Multiline Terminal Speaker:		Cancel	49
		Set	49 + 1 or 2
Single Line Telephone Exclusive Hold: Set or Retrieve		Flexible	4# (After flash)
Voice Mail Message:	Set	Flexible	541xxx
	Cancel	Flexible	54*xxx
All Call Voice Page via Multiline Terminal Speakers		Flexible	550
Internal Paging:	Zone 1	Flexible	551
	Zone 2	Flexible	552
	Zone 3	Flexible	553
	All Zones	Flexible	554
	Meet-Me Answer	Flexible	556
External Paging:	Zone 1	Flexible	561
	Zone 2	Flexible	562
	Zone 3	Flexible	563
	All Zones	Flexible	564
	Meet-Me Answer	Flexible	566
Trunk/MFR Busy Out (Attendant Only)		Flexible	57xx#
Trunk/MFR Restore (Attendant Only)		Flexible	57xx*
Station Speed Dial Program for Single Line Telephones		Flexible	58
Station Lockout:	Change Special Code	Flexible	59 + *

DIAL/FEATURE CODE TONE TABLE A (CONTINUED)

FEATURE	CONDITION	CODE (Set in Default)
Call Pickup: Directed Group	Flexible Flexible	6#xxx 6 *
Night Call Pickup	Flexible	60
Station Lockout: Set or Cancel Cancel from Attendant	Flexible Flexible	61 + Special Code 62xxx
Trunk Test (Attendant Only)	Flexible	67xx(x = 01 - 40)
MFR Test (SLT only)	Flexible	67xx(x = 41 - 48)
Night Mode Set or Cancel (Attendant Only)	Flexible	68
Trunk Access: Group 3 - 8 Group 2 Group 1	Flexible Flexible Fixed	70 - 75 8 9
Last Number Redial	Fixed	*
Call Park Set: (On second dial tone) Retrieve: (On dial tone)	Flexible Flexible	*x (x = 0 - 9) 4*x (x = 0 - 9)
Station Speed Dial Access	Fixed	# + 00 - 19
System Speed Dial Access	Fixed	# + 20 - 99
Account Code Entry	Fixed	# #
CO Release (SLT only)	Flexible	none
Hookflash to CO (SLT only)	Flexible	none
Uniform Numbering Network	Flexible	none
Account Code-Forced/Verified	Flexible	none

DIAL/FEATURE CODE TONE TABLE B

FEATURE	CONDITION	CODE (Set in Default)
Change Voice Announce to Tone Signal	Fixed	1
Call Back Messages : Inspect (Receiving Multiline Terminal) : Set (Calling Station) : Cancel (Receiving Multiline Terminal on Hook)	Fixed Flexible Fixed	1 # *
Tone Override/Attendant Override	Flexible	* 0
Automatic Callback : Set	Flexible	* 1
Trunk Queuing: Set	Flexible	* 1

12. LCD DISPLAYS

LCD DISPLAY TABLE

INDICATION	STATION	MEANING
CO LINE	Originator	On CO Line Key (Before Dialing)
EXT LINE	Originator	On EXT Line Key (Before Dialing)
DIT XX	Ring Assigned Extension	Receiving DIT/ANA call while DIT/ANA extension is busy
NEIL A 402	Called/Calling Station	During Internal Call
CONFERENCE	Conference Party	During Conference
CALL WAITING 106	Originator	Call Waiting
BUSY 289	Originator	Called Station is Busy
FWD ALL 298 → 209	Originator	Confirming Call Forward Status
FWD ALL NOT SET	Originator	Confirming Call Forward Status
FWD BNA 298 → 218	Originator	Confirming Call Forward Status
FWD BNA NOT SET	Originator	Confirming Call Forward Status
FWD SET DENIED	Originator	Unable to Set Call Forward
FWD CANCEL	Originator	Confirming Call Forward Status
FWD 256 → 342	Calling Party	Call is Being Forwarded
ACCOUNT CODE ?	Originator	Prompt for Entering Account Code
NIGHT MODE SET	Attendant	Confirmation of Night Mode
NIGHT MODE CNCL	Attendant	Confirmation of Night Mode Cancel
LOCKOUT CODE ?	Originator	Prompt to Set Lockout Code
LOCKOUT CANCEL	Originator	Confirmation of Lockout Cancel
INCORRECT CODE	Originator	Wrong Lockout Code Entered
1326436	Originator	Number dialed or Station Speed Dial Contents
MUSIC NBR?	Originator	Prompt for Station BGM Selection
MUSIC 1 SET	Originator	Confirmation of Station BGM Channel
EXT NUMBER?	Originator	Prompt in Call Pickup Directed
TRANSFER → 213	Calling Party	Confirmation of Ringing Extension Call Transfer
CAMP ON → 345	Originator, Calling Party	Confirmation of Camp-On Transfer
OVERRIDE → 213	Originator	Confirmation of Tone Override
07:43 SEP 02 SUN	All Stations with LCD	Clock/Calendar
OVERRIDE 320	Called Party	Receive Tone Override (From 320)
SAVE & REPEAT	Originator	S & R Number is Stored
DENIED	Originator	Access Denied
LK16 RECALL 201	Originator	Recall for Unanswered Transfer/Camp-On
MSG 2 NIGHT FWD	All Stations	Status Information (3 Separate Displays)
LK16 PAUL.A102	Called Station	Receiving Internal Call
CONFERENCE 03:46	Originator	CO Conference Elapsed Time
ELAPSED 01:35	CO Calling/Called Station	CO Call Duration
LK16 TR CO CALL	Receiving Station	Receiving CO Transfer
LK12 CO CALL	Ring Assigned Station	Incoming CO Call

LCD DISPLAY TABLE (CONTINUED)

INDICATION	STATION	MEANING
INITIALIZE	All Stations	System is Initializing
PARK NBR?	Originator	Prompt for Parking Area Selection
12:31 JUDY.A 209	Called Station	Callback Request (Message)
VACANT	Originator	Speed Dial Memory Buffer Status
11:53 ATT 0	Called Station	Message Waiting
CALLBACK SET	Originator	Confirmation of Automatic Callback
CALLBACK DENIED	Originator	Denial of Automatic Callback
MESSAGE SET 222	Originator	Confirmation of Callback Request Set
MESSAGE DENIED	Originator	Denial of Callback Request Attempt
INT ZONE 1 PAGE	Originator with DSS/BLF	Internal Zone Paging
INT ALL CALL	Originator with DSS/BLF	Internal All Call
INT ALL ZONE PAGE	Originator with DSS/BLF	Internal All Zone Paging
SPEAKER 2 PAGE	Originator with DSS/BLF	External Speaker Paging
ALL SPEAKER PAGE	Originator with DSS/BLF	All External Speaker Paging
CALLBACK 163	Originator	Recall by Automatic Callback
CALCULATOR BUSY	Originator	All Calculator Circuits Busy
CURRENT CODE ?	Originator	Prompt During Lockout Code Revision
NEW CODE ?	Originator	Prompt During Lockout Code Revision
NEW CODE SET	Originator	Confirmation of New Secret Code
LOCKOUT SET 298	Originator	Confirmation of Lockout Status
LOCKOUT DENIED	Originator	Unable to Set Lockout
	0.	Originator
	S20	Originator
CK 3 CO CALL	Called Attendant	Incoming CO Call on Add-On Module
LK16 TIE LINE	Ring Assigned Station	Incoming Tie line call on Primary Extension (with Trunk Group Name Assigned)
QUEUE SET	Originator	Trunk Queuing is set
LK16 QUEUE	Originator	Informing of an Available Trunk
PARK3 SET	Originator	Confirmation of Call Park
BUSY PARK	Originator	Parking Area Attempted is Busy
LK16 PARK3 RECALL	Originator	Recall for Unanswered Parked Call
CO12 NOT INSTALL	Attendant	Confirmation of Trunk Test (For Trunks Not Installed)
CO11 NORMAL	Attendant	Confirmation of Trunk Test (For Trunks Installed)
CO11 BUSY	Attendant	Confirmation of Trunk Test (For Trunks In Use)
CO11 BUSYOUT	Attendant	Confirmation of Trunk Busied Out
MFR3 NOT INSTALL	Attendant	Confirmation of MFR Test (For MFR not Installed)
MFR2 NORMAL	Attendant	Confirmation of MFR Test (For MFR Installed)
MFR2 BUSYOUT	Attendant	Confirmation of MFR Busied Out
DATA PATH BUSY	Originator	Data Path of Called Station is Busy
NOT READY 123	Originator	Data Adaptor at Called Station is Not Ready

LCD DISPLAY TABLE (CONTINUED)

INDICATION	STATION	MEANING
NO DATA PATH 123	Originator	No Data Adaptor Installed in Called Station or No Data Path is Available at the Called Station.
DATA ERROR	Originator and Multiline Terminal dedicated to modem	Error Indication
DATA TO 123	Originator	Originating a Data Call
DATA FROM 123	Receiving Station	Receiving a Data Call
DATA PATH TO 123	Originator	During Data Switching
MODEM BUSY	Originator	All Modems are Busy
DATA END 121	Originator and Multiline Terminal dedicated to modem	End Data Switching by Depressing either DT or DR key
DATA RESERVE 121	Originator	Data Terminal Adaptor Reserved for Outgoing Data Call
LK16 TR EXT CALL	Receiving Station	Receiving Internal Transfer
LK15 RECALL	Originator	Hold Recall
CAMP ON DENIED	Originator	Unable to Set Camp-On Call
CAMP ON CO CALL	Called Station	Receive CO Camp-On Call
CAMP ON EXT 342	Called Station	Receive Internal Camp-On Call (With Station Number)
DATA OFF	Calling/Called Stations and Multiline Terminal dedicated to modem	End of Data Switching by loss of DTR (Data Terminal Ready) Signal
DATA TO MODEM3	Originator	Modem is Being Activated
NOT READY MODEM3	Originator and Multiline Terminal dedicated to the modem	Modem is Not Ready
DATA ONTO MODEM3	Originator	During Data Switching with Outside Party via Modem
DATA END MODEM3	Originator and Multiline Terminal dedicated to the modem	End of Data Switching with Outside Party Via Modem
MODEM HELD 123	Multiline Terminal dedicated to the modem	Reserving Modem.
DATA OFF MODEM 3	Calling / Called Station and Multiline Terminal dedicated to the modem	End of Data Communication by loss of DTR (Data Terminal Ready) Signal
RESERVE MODEM 3	Originator	Modem Reserved.

NOTE: LCD Displays shown in *ITALIC* in this chart FLASH on the terminals LCD.

NEC

ElectraTM markII

**DIGITAL TELEPHONE SYSTEM
GENERAL DESCRIPTION**

04/90



NEC America, Inc.

STOCK No. 700400