



# CTL1 ChronoCom TL Telephone Interface Module Planning and Installation

RAULAND-BORG CORPORATION • 3450 West Oakton Street, Skokie, Illinois 60076-2951 • (708) 679-0900

## General Information

### Description

This module enables an individual DTMF telephone or an electronic key system to control a ChronoCom TL communications system. The telephone user can dial individual rooms, answer call-ins by pressing a single push button, and use the keypad to select paging zones and distribute audio programs. Room stations can have non-dialing telephones as well as speakers.

Refer to the attached wiring diagrams for the descriptions given in this section.

#### "D" and "S" Series Systems

In both "Dial-up" and "Switch-bank" Systems, all the above functions can be controlled by a DTMF telephone. In "Switch-bank" Systems, room-selector panels offer a second way of distributing audio programming and provide two inputs for audio program sources.

### Related Equipment

The CTL1 module is meant to extend the functions of a ChronoCom TL communications system. The enhanced functions also require some additional equipment.

#### Parts Supplied

The module comes with the following parts:

- ✓ Two EPROMs labeled "U1" and "U2." These replace the standard software chips in the 2524 Master Clock and Intercom Controller, to add the CTL1 telephone functions.
- ✓ Four stand-offs (feet) with adhesive tape for surface-mounting the module.
- ✓ A 34-pin flat cable and two connectors, for linking the module with the 2524. In early units, these came unassembled.

#### Standard System Equipment

**2524 Master Clock and Intercom Controller:** This provides the basic control functions for intercom as well as full master-clock functions (updating secondary clocks, ringing bells, providing music during class changes, and controlling lights and equipment via relays).

**Note:** The 34-pin ejector header for the flat cable from the CTL1 is not installed on early 2524 units. This SM0316-1 header can be ordered from Rauland-Borg.

**Speaker-Control Panels:** Rauland switch and relay panels can each handle 25 room stations.

In "D" Series systems, TC4130 rack-mount relay panels switch room speakers individually for intercom functions, and in groups for sending pages and distributing audio programs.

In "S" Series systems, which can control program distribution by manual switches as well as by dialing, use a combination of SW25 switch panels and TC4110 relay panels. The SW25 has a three-position toggle switch for each room, which allows the manual selection of two different audio sources.

**Important:** Be sure to set the DIP switch in each TC4110 or TC4130 panel (see the 2524 installation manual, KI-1628).

**Intercom Amplifier:** The Rauland TC4160 Voice-Control Module (VCM2) enables a telephone to talk with a room speaker. The VCM2 is normally in the "listen" mode, so that the administrative telephone can hear the room. However, when the administrative telephone's user begins speaking into the mouthpiece, the VCM2 automatically switches to the "talk" mode. Only one module is needed in a system.

**Administrative Telephone:** The CTL1 will accept one line for DTMF telephones. This line can serve a single DTMF (dual-tone, multiple-frequency) phone, or it can accept a line from the trunk port of an electronic key system.

**Display:** To give the user essential feedback (the number of a room calling in, zones selected, etc.), each control telephone should have a display. A TC4200 Vacuum Fluorescent Display can be mounted on a wall, where its large, bright display can serve more than one telephone (see N-1460). Alternatively, TC4220 Digital Displays can be attached to individual telephones (see KI-1590). Consult these manuals for the limits on both the number of displays that can be used and on their distance from the central system.

**Power Amplifiers:** Sending paging announcements requires a power amplifier capable of driving all room speakers at once. An amplifier wired to the CTL1's "Amp In" output will handle both program material from one

## CTL1 ChronoCom Telephone Module-Installation

audio source and paging announcements. Adding a second program source in an "S" Series system would require a second power amplifier. Good amplifier choices would be Rauland's DAX60, DAX120, and FAX250 models.

### Optional Central Equipment

The following equipment provides enhancements beyond the basic intercom functions:

**Audio Program Sources:** Almost any program source that can drive a standard "auxiliary" input can be used. A versatile choice is the Rauland MCX300 AM/FM Tuner and Tape Cassette Player. This unit comes with its own power supply and is designed for rack-mounting. Each program channel requires its own power amplifier. As explained in the preceding subsection, the amplifier used for paging doubles as the "A-Channel" program amplifier.

**MTG100 Multi-Tone Generator:** The CTL1's built-in chime-tone generator provides a class-change signal. The MTG100 will supply this tone and three additional tones (e.g., European siren) that can be sounded at will by dialing the appropriate code.

### Room Stations

A speaker enables a room to carry on two-way conversations with the administrative telephone. Even if staff telephones are used, speakers are needed to signal calls. Any of Rauland's standard room speakers that have transformers and center-tap connections can be used. Representative examples are the US0188 eight-inch speaker and the RS505 speaker module.

A normal call-in can be sent by either pressing a momentary-contact push button or lifting the receiver on a staff telephone. The system will also accept emergency)

call-ins. However, privacy switches cannot be used on standard TL systems, because the privacy function has been replaced with the staff-telephone call-in function. Adding the privacy function to a system without staff telephones requires an internal modification to the PC board (contact Rauland Sales Engineering).

A dial-less phone, like Rauland's CRT3, makes an ideal staff phone. It is recommended that you install a 1342 Limiter Module across the "T" and "R" terminals of each staff telephone's modular jack. This will protect the user's hearing; incorrect wiring or a fault (a short or an open) could create an unbalanced audio tone, which, in turn, could cause an excessively loud sound in a telephone receiver during paging or tone signaling.

Aside from the privacy switch, which cannot be used in standard TL systems, you can follow the room-station wiring diagram (KM1014) in the 2524 installation manual W-1628).

### Cabling

**Flat Cables:** As stated in the parts list, the CTL1 comes with the 34-pin cable and connectors. Note that this cable must be no longer than 1½ feet.

The relay panels come with 26-pin connectors, but the customer must supply the flat cable. All these panels should be daisy-chained on this cable.

**Speaker and Telephone Lines:** Use a twisted pair and a single conductor in an overall shield. The room-station wiring diagram (KM1014) in the 2524 installation manual lists the maximum lengths for the common wire gauges.

**Display Cables:** Use a shielded pair, and observe the distance restrictions listed in the pertinent display manual.

## Installation

Most of the information needed is on the attached wiring diagrams. What follows here is additional information.

### Location

The CTL1 board has to be close enough to the 2524 for the 18-inch flat cable to link the two units. This means placing the module on top of the 2524 or next to it, on the inner side of the rack. Place the module away from sources of magnetic radiation, such as large power transformers.

The four plastic stand-offs snap into the corner holes of the board. Peel the protective plastic sheets from the bottom of the feet, then press and hold the board in place for a moment, to allow the adhesive to take hold. Carefully align the module before touching the feet to a surface, because they hold firmly once they have contacted a surface.

### Program Chips

Replace the two program EPROMs on the 2524 PC board with the "U1" and "U2" chips supplied with the L1 (see the attached IL0360).

### Programming

What follows is the special programming required by

the TL system. For the rest of the intercom programming and all of the clock programming, follow the instructions in the 2524 programming manual (KI-1629).

#### CTL1 and Single-Button-Answering Enable

Enter Comm Mode **3** in the programming sequence. Select LED 7 to enable the 2524 to use the CTL1 module. Select LED 8 to activate the single-button-answering function.

#### No Remote Phone or Monitoring or Auto-Answering

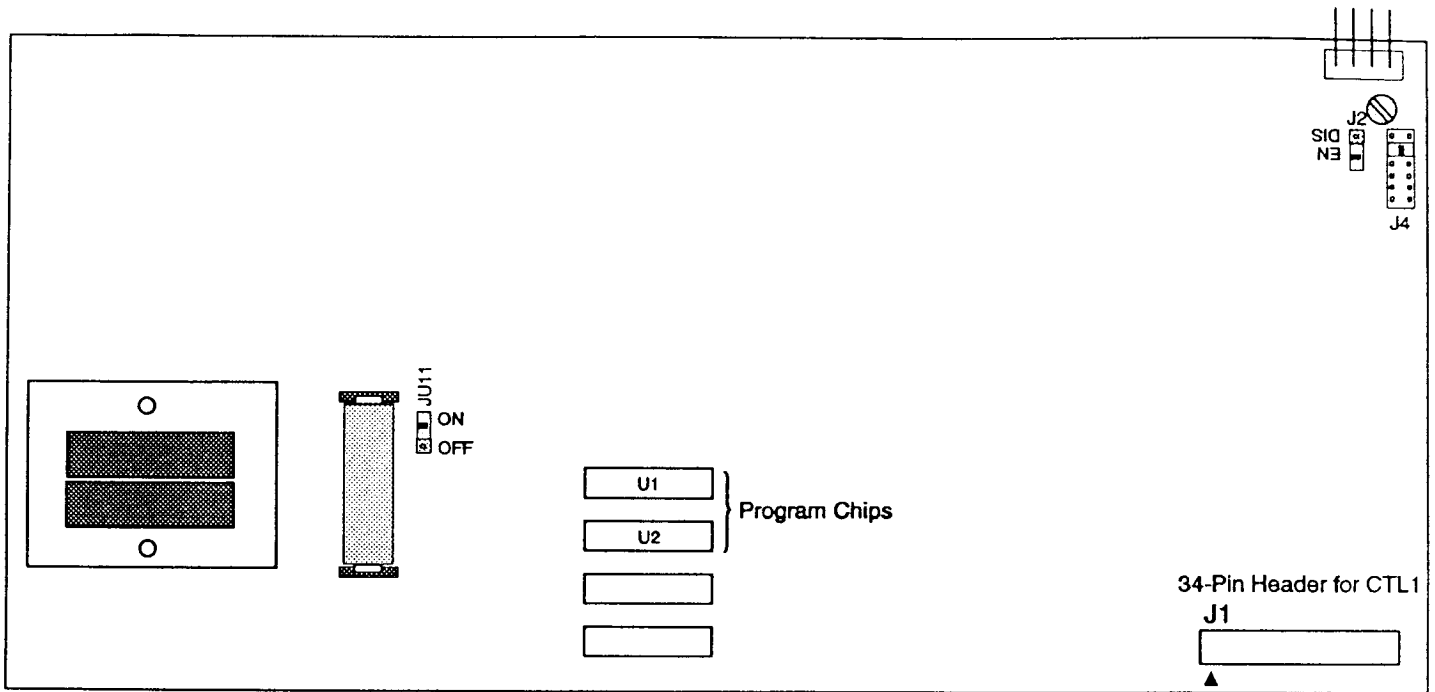
Since a TL system cannot have a remote telephone, use the monitoring function, or auto-answer priority call-ins, the system will ignore any programming for them.

### CTL1 Chime-Tone and Preamp Levels

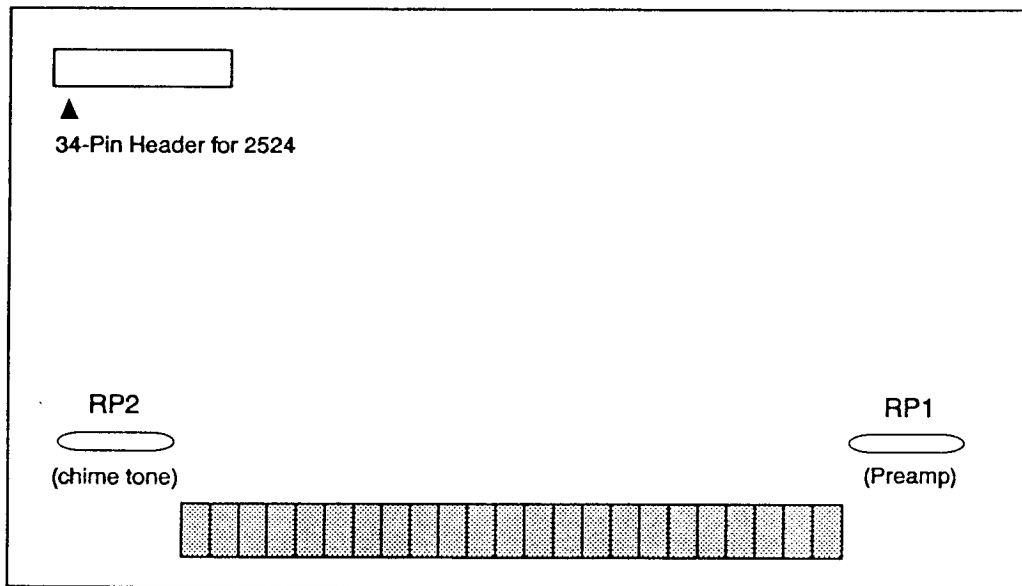
The two potentiometers on the CTL1 can be adjusted by hand or with a narrow-bladed screwdriver. Turning them clockwise increases the output.

√RP1, to the right of the terminal strip (as viewed from the rear), adjusts the output of the built-in pre-amp, which is used for paging functions.

√RP2, to the left of the terminal strip (as viewed from the rear), adjusts the output of the built-in chime-tone generator.

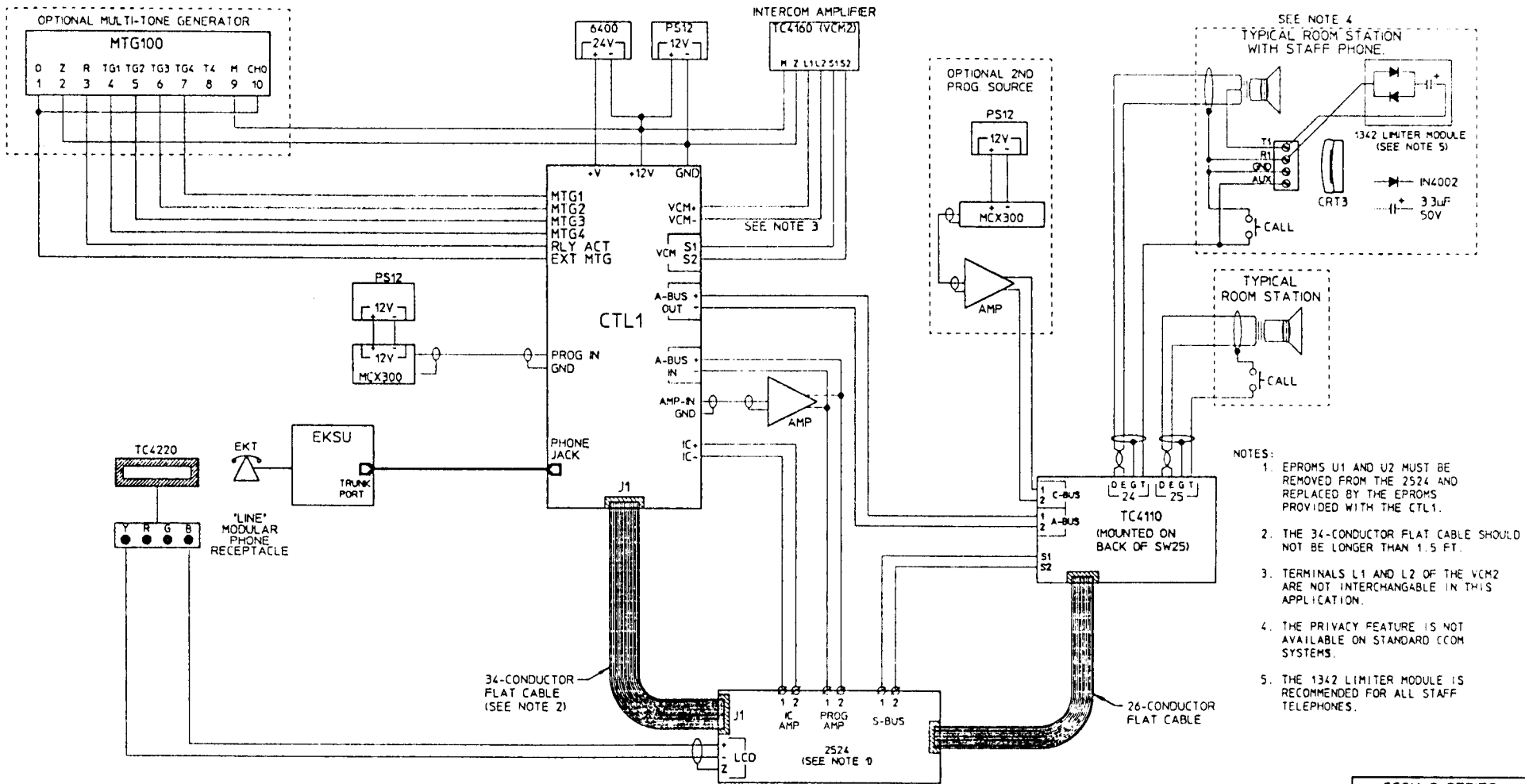


2524 Program Chips and Header for CTL1



CTL1 Potentiometers and Header for 2524

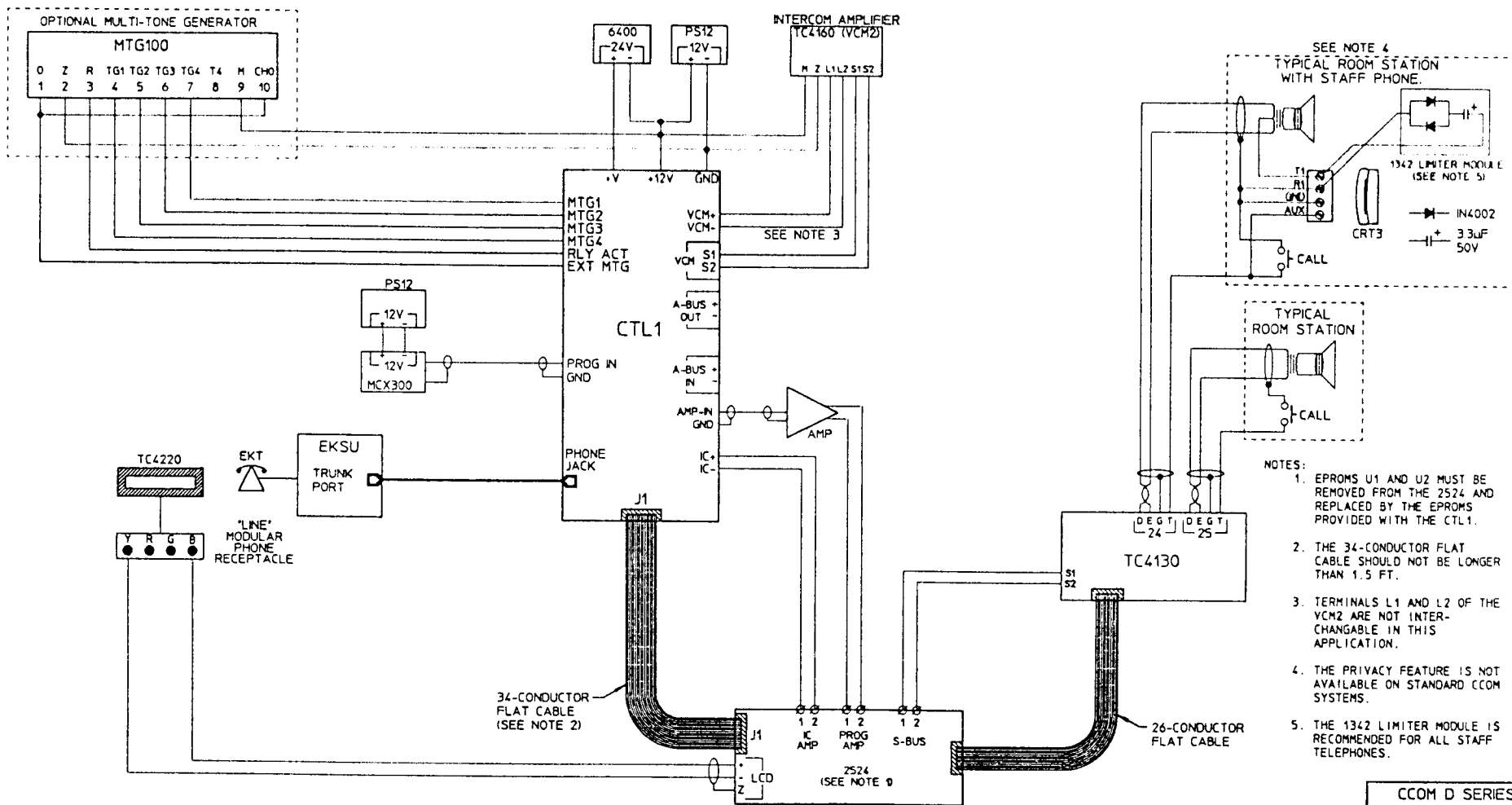
# 2524 ChronoCom™ Clock and Intercom Controller



- NOTES:
1. EPROMS U1 AND U2 MUST BE REMOVED FROM THE 2524 AND REPLACED BY THE EPROMS PROVIDED WITH THE CTL1.
  2. THE 34-CONDUCTOR FLAT CABLE SHOULD NOT BE LONGER THAN 1.5 FT.
  3. TERMINALS L1 AND L2 OF THE VCM2 ARE NOT INTERCHANGABLE IN THIS APPLICATION.
  4. THE PRIVACY FEATURE IS NOT AVAILABLE ON STANDARD CCOM SYSTEMS.
  5. THE 1342 LIMITER MODULE IS RECOMMENDED FOR ALL STAFF TELEPHONES.

CCOM S-SERIES WIRING DIAGRAM

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