

## AD-404A™ SINGLE DIGIT DIALER (‘0’ DIALER)

### 1. GENERAL

1.01 The Single Digit Dialer is equipped with normally closed relay contacts which connect in series with one side of the line. When the device receives an off-hook signal, the relay will pulse and dial a ‘0’ to summon the operator for assistance.

1.02 The required start signal is -24 volt battery input ground from A-A1 wiring of the telephone is used to operate an external relay which in turn provides the -24 volt input to the AD-404A. If the telephone is not equipped with A-A1 wiring, a Melco M-62 A-A1 Line Adapter or a Melco S64-1 Loop Detector can be used to derive the initial off-hook signal.

1.03 The device has received Registration Number AQT9PZ-69881-KX-R under Part 68 of FCC Rules and Regulations.

### 2. DESIGN FEATURES

2.01 The dial speed of 10 pulses per second and the ratio of break-to-make interval are fixed and not adjustable.

2.02 Two seconds delay from off-hook time to dialing is provided to assure availability of line equipment during central office busy hours.

2.03 Functions on any line capable of registering dial pulses.

2.04 CMOS circuitry assures low idle circuit current drain.

### 3. INSTALLATION

3.01 Mount the AD-404A on a flat surface with two screws through the upper and lower slotted flange holes.

3.02 Derive the output ground from A-A1 wiring of the telephone or from a Melco M-62 or an S64-1 and install the relay circuit.

3.03 Install the power supply if it is not yet in place.

3.04 Remove the single slotted screw in the front panel and remove the cover.

3.05 Make the connections shown in the attached figures and replace the cover.

3.06 Test for dial tone, talking to the operator and release.



Fig. 1

### 4. MAINTENANCE

4.01 No provision is made for field maintenance or repair. The device is warranted against manufacturing and material defects for one year. If it fails within that time, it will be repaired or replaced at no charge. See the Melco Warranty Service Policy for repair and return details.

### 5. SPECIFICATIONS

Input power requirements:

B bat ..... -18 to -28V DC  
-24V DC nom



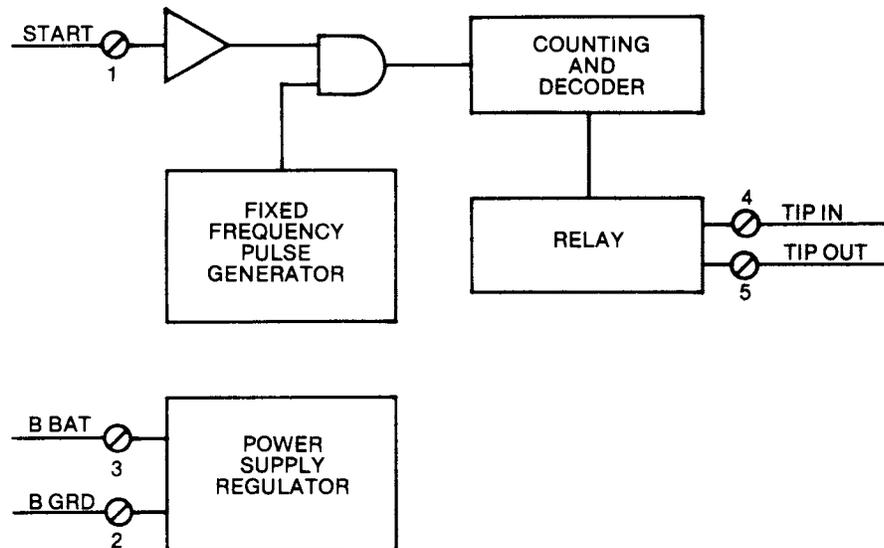


Fig. 3 — Functional Schematic.

# *Service Observing Systems*



 **MELCO**

# Train new telephone representatives quickly and effectively with Melco Service Observing Systems.

Melco Service Observing Systems allow for monitoring two-way telephone conversations. They are ideal for training new telephone representatives because they enable trainees to listen and learn from calls being handled by experienced representatives. Trainees learn much quicker and telephone sales or service programs are dramatically improved.

Melco Service Observing Systems work with almost any telephone system. From a telephone assigned for use as the observer's station, a line or station is accessed for observation by dialing the number assigned to that line. Absolutely nothing can be heard over the line being observed. Then, with some Melco systems, a talk assist feature can be accessed to allow an observer to enter the conversation and offer immediate assistance as necessary.

Melco offers a complete line of Service Observing

Systems to adapt easily to a wide variety of applications. Available in sizes which allow for observation of up to 90 lines or stations, Melco service observing systems can be used with Central Office, PABX, Centrex or key system lines. Almost any telephone can be assigned for use as the observer's station and optional Melco equipment such as line status monitors, consoles and remote access units help to customize operation.

Melco Service Observing Systems are designed for easy connections to the telephone system and to the lines or stations to be observed. In fact, for Merlin and other modular telephone systems, Melco makes special connecting panels to make installation completely modular. A reflection of product reliability, all Melco Service Observing Systems are FCC registered and backed by Melco's Warranty.

## Description

### **KMT-330 Teletrainer, Service Observing/Talk Assist Unit**

Allows for observing and assisting up to 30 lines or stations, and can be expanded to 60 or 90 lines by adding KMX-333B Expanders. The unit features a built-in talk assist feature which is easily accessed from a tone dialing telephone by pressing the asterisk (\*) button.



### **KMT-300 Service Observing/Talk Assist Unit**

Has observing and assisting capability for up to 30 lines or stations. It provides a built-in talk assist feature which is automatically activated any time a line is being observed. The KMT-300 features a flexible numbering plan which allows lines or stations to be assigned any desired two-digit code. The unit can be expanded to 60 or 90 lines with KMX-333B Expanders.



### **KM-330B Service Observing Unit**

Allows for observation of up to 30 lines or stations, and is expandable to 60 or 90 lines with KMX-333B Expanders. Talk assist capability may be added to the system with the TA-300 Talk Assist Unit.



### **KM-308 Service Observing Unit**

Provides service observing capabilities for eight lines or stations. It is ideal for small installations or for larger applications in which it is desirable to have more than one observer's station. In these applications, multiple KM-308 units are installed—each with an associated observer's station—so that several lines or stations may be observed simultaneously.



### **KM-308M/KMC-308M Modular Service Observing System**

Eight-line systems especially designed for easy installation. The units feature fully modular connections, built-in talk assist capability and an internal power supply. Model KMC-308M has the added capability of being compatible with the CM-8 Observer's Console.



### **KM-301 Modular Service Observing Unit**

A modular, self-contained unit for observation of individual lines or stations. It works in conjunction with a telephone headset so that an observer can access a line simply by connecting the headset plug into the modular jack on the KM-301.



# Auxiliary Equipment

**KMX-333B Service Observing Expander** Designed to expand the line or station capacity of the KMT-330, KMT-300 or KM-330B. One KMX-333B increases the capacity to 60 lines or stations, and two increase it to 90.



**TA-300 Talk Assist Unit** Adds talk assist capability to the KM-330B and is accessible through an assigned pushbutton on the observer's telephone. One TA-300 provides talk assist capability for 30 lines or stations, and a second or third may be added (in conjunction with KMX-333B Expanders) to provide for assisting 60 or 90 lines or stations.



**MPS-120 Power Supply** A high performance, cost-effective power supply designed for use with Melco Service Observing Systems or systems with similar power requirements. The MPS-120 has regulated 24V DC output at 1.0 Ampere current and operates from 60 Hertz, 115 volts AC power mains.



**LSM-30 Line Status Monitor** Has 30 LEDs which light to indicate when a line is in use. It is ideal for use with Melco Service Observing Systems, as it allows an observer to select lines for observation which are currently being used, rather than selecting lines in a random manner.



**CM-8 Observer's Console** An optional observer's console for use with the KMC-308M. It features a talk assist button and a digital busy lamp field which clearly indicates the status of the eight lines or stations. In addition, the CM-8 can be used as a standard telephone for outside calls and has an LED to indicate incoming calls and a switch to select between outside line and service observe modes.



**CP-6 and CP-8 Connecting Panels** Prewired connecting panels designed to eliminate hard wiring and connecting blocks when installing a Melco 30-line service observing system with a modular key system or PABX. The CP-6 is for connections to systems with 6-pin connectors and features a 25-pair connector for convenient connections to an RJ-21X or similar block. The CP-8 is for connections to systems like Merlin with 8-pin connectors.



**RA-330 Remote Access Unit** Allows for remotely observing lines or stations from any tone-dialing telephone. The unit is connected to a Melco Service Observing System and is assigned an outside line number so that when the outside number is dialed, the ring trips and the RA-330 is activated. The remote observer then dials an assignable security code, waits for acknowledgment tone, is connected to the Melco Service Observing System and can then dial the access code for any desired line or station.

## Design Features

FEATURES	KMT-330	KMT-300	KM-330B	KM-308	KM-308M	KMC-308M	KM-301
Provides for access of central office, PABX, Centrex, or key system lines or stations	•	•	•	•	•	•	•
Includes a built-in talk assist feature	•	•			•	•	
Works with tone or rotary dialing telephones			•	•	•	•	•
Is accessed from the observer's station by dialing the access code for the desired line or station	•	•	•	•	•	•	
Is accessed through a telephone headset to a modular jack provided on the unit							•
Cannot seize idle lines or interfere with the operation of the lines in any way	•	•	•	•	•	•	•
No noise is detected by the line being observed	•	•	•	•	•	•	•



## KM-330B™ SERVICE OBSERVING UNIT

### 1. GENERAL

1.01 The KM-330B provides for observation of 30 lines of a central office, PABX or key system. Lines to be observed are pre-wired to a selection matrix and accessed from a key system telephone or a single line telephone by dialing a 2-digit code.

1.02 The KM-330B is arranged for interfacing with the Melco TA-300 Talk Assist Unit which allows the observing station to enter the connection and converse with the one being observed. See the TA-300 practice for more information.

1.03 This device has received Registration Number AQT9PZ-69622-MO-N under FCC Rules and Regulations, Part 68. Ringer Equivalence is 0.0B.

### 2. DESIGN FEATURES

2.01 No special installation tools are required. The unit can be installed in an apparatus cabinet, a relay rack or on a backboard. Connections are made with two 25-pair connector cables to a 66 type connector block.

2.02 The 30 lines to be observed are assigned digits 10 through 39. Selection of a line for observation can be done by tone or rotary dialing the 2-digit code assigned to that line. The next line selected for observation can be accessed by operating the switchhook, releasing it, then dialing the code assigned to that line.

2.03 The system capacity can be expanded from 30 lines to 60 lines with a Melco KMX-333B Service Observing Expander, or to 90 lines with a second KMX-333B. For additional information, see the Melco practice for the KMX-333B.

2.04 The KM-330B and KMX-333B do not induce noise onto the observed lines or interfere with the operation of the lines.

2.05 The observing station may converse with the observed station when a Melco TA-300 Talk Assist Unit is installed.

### 3. OPERATION

3.01 Operate the pick-up key assigned to service observing and lift the handset. If the lamp lead has been connected, seizure of the KM-330B will be indicated by a lighted key lamp. No audible signal will be heard.

3.02 Dial the 2-digit access code of the line to be observed. If there is no conversation, nothing will be heard. To access the next line, go on-hook, then off-hook and dial the next code.



Fig. 1

### 4. INSTALLATION

4.01 Mount the KM-330B in an apparatus cabinet, relay rack or on a wall. Connect the KM-330B plugs to the cable connectors and secure them with the clamps provided.

4.02 Make cross connections as shown in the attached drawings. COMMON ALL GROUNDS.

4.03 Connect the tip and ring of the lines to be observed to the input pairs terminated on the connecting block and numbered 10 through 39. The lines to be observed are selected by dialing numbers 10 through 39.



**TABLE A**  
SERVICE OBSERVING SYSTEMS

NUMBER OF LINES	ACCESS CODE NUMBERS	UNITS OF EQUIPMENT REQUIRED		
		LINE OBSERVING		TALK ASSIST
		KM-330B	KMX-333B	TA-300
1 - 30 (Fig. 4)	10 - 39	1	0	1
31 - 60 (Fig. 5)	40 - 69	1	1	2
61 - 90 (Fig. 6)	70 - 99	1	2	3

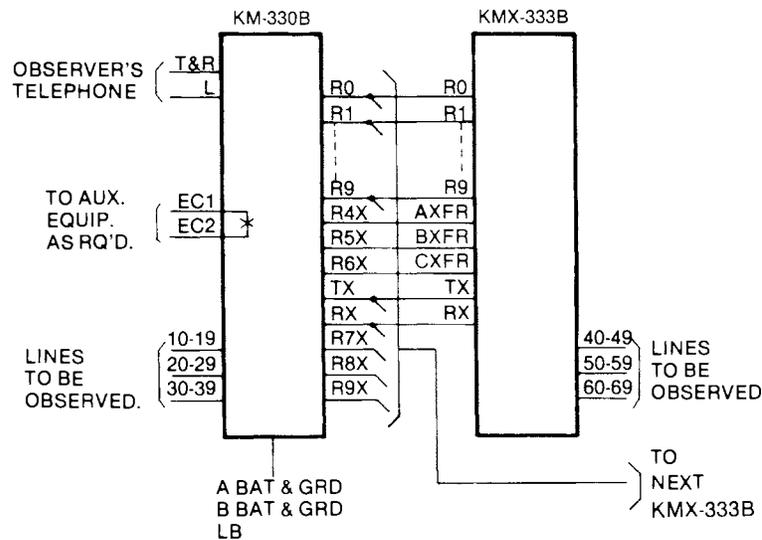


Fig. 2 — KM-330B with KMX-333B Added to Provide Capacity to Observe 60 Lines.

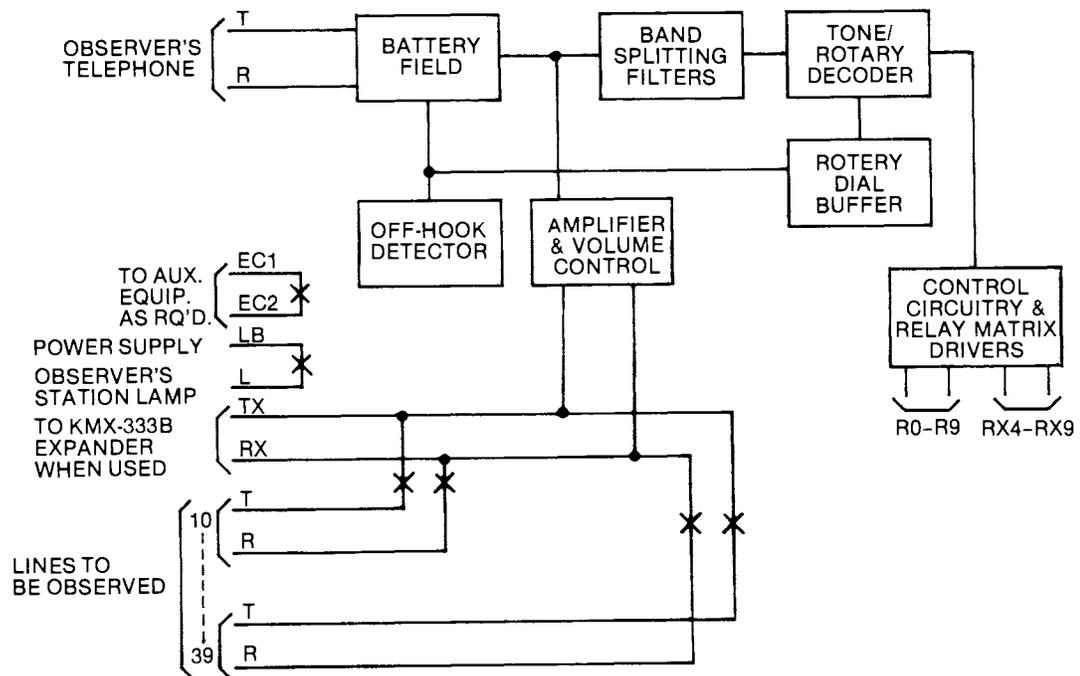
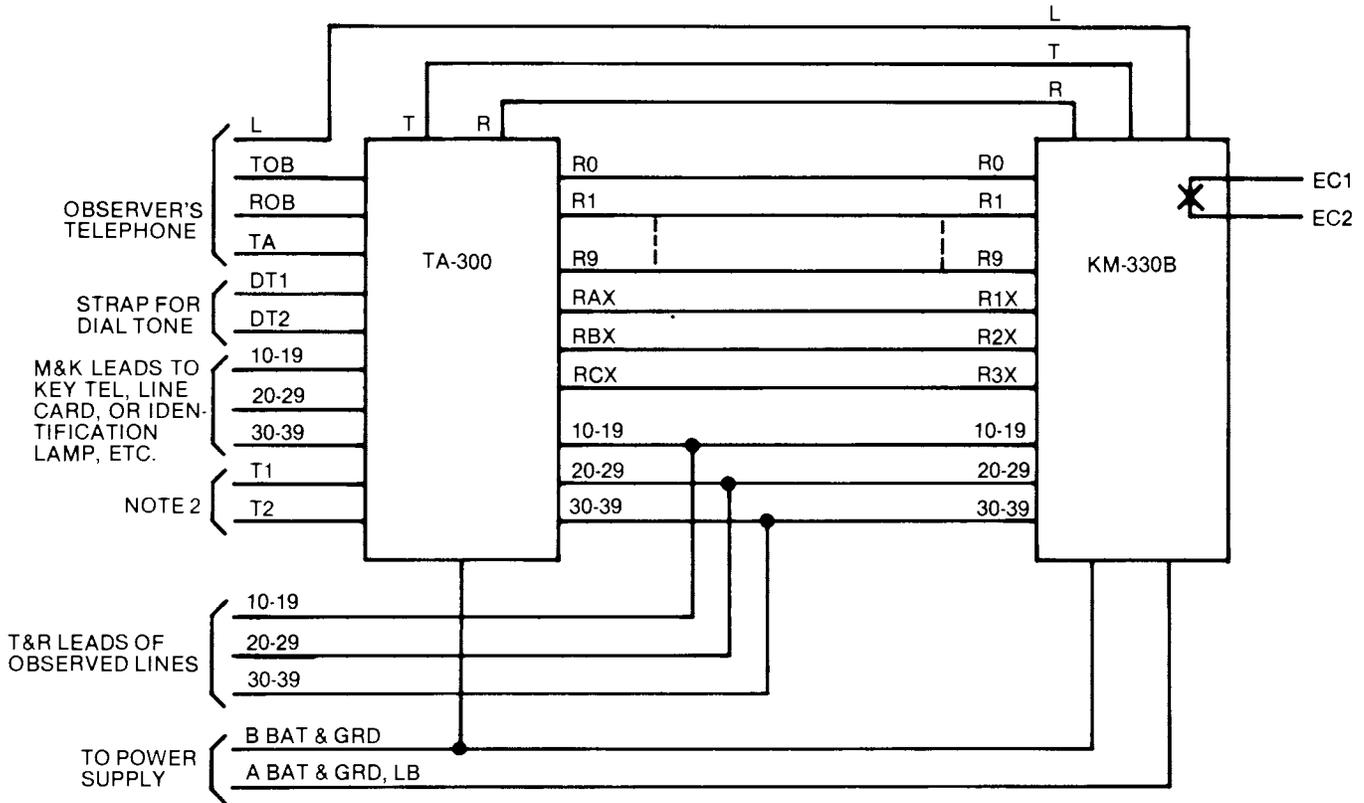


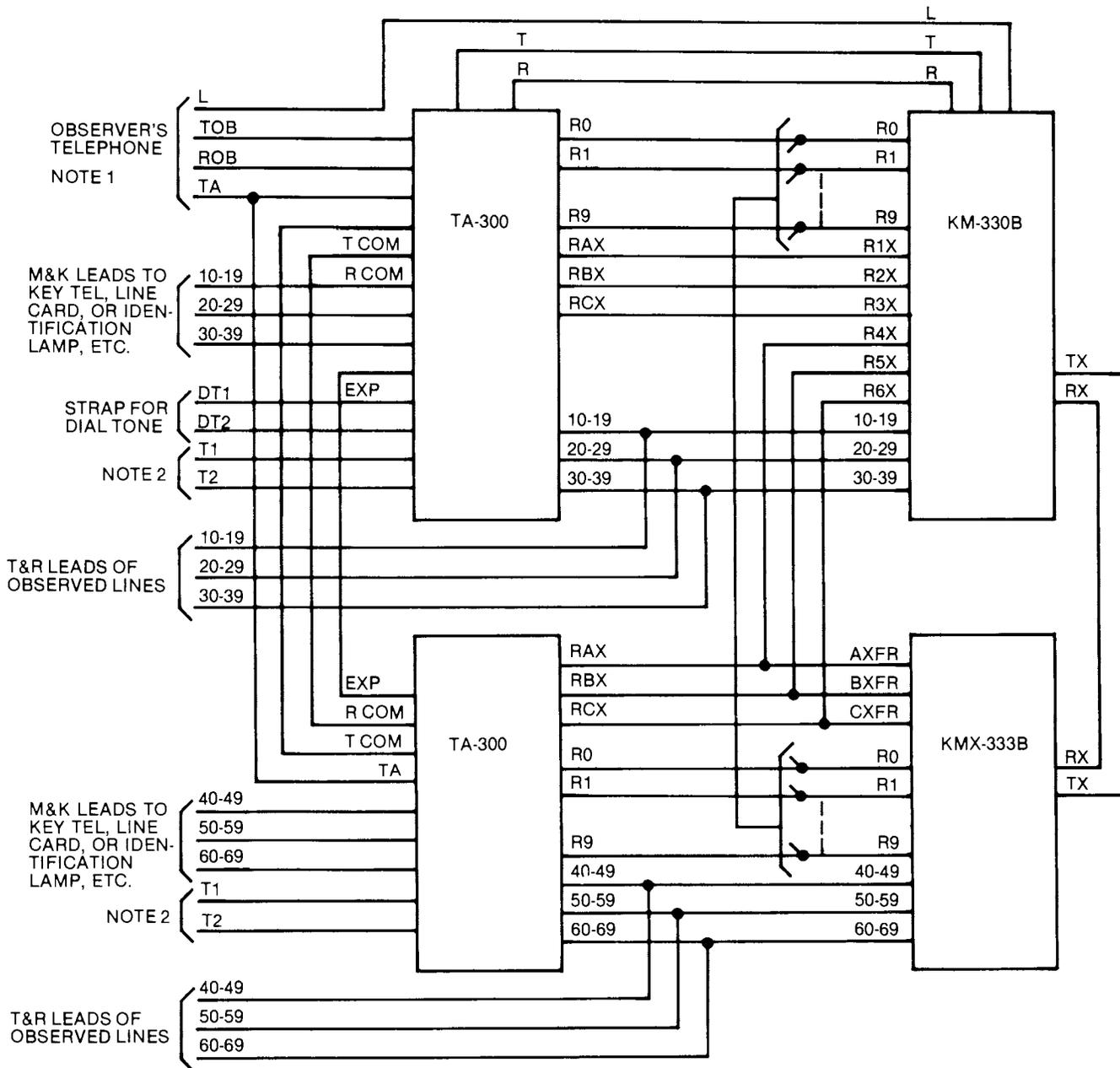
Fig. 3 — Condensed Functional Schematic.



NOTES:

1. CONNECT ONE SIDE OF OBSERVER'S TELEPHONE PUSHBUTTON TO TA-300 LEAD TA; CONNECT THE OTHER SIDE TO GROUND.
2. STRAP T1 AND T2 WHEN RELAY CONTACTS FOR LEADS M AND K ARE TO OPERATE WHEN LINE IS OBSERVED. OTHERWISE M AND K WILL CLOSE WHEN TA-300 BUT-TON TA IS OPERATED.

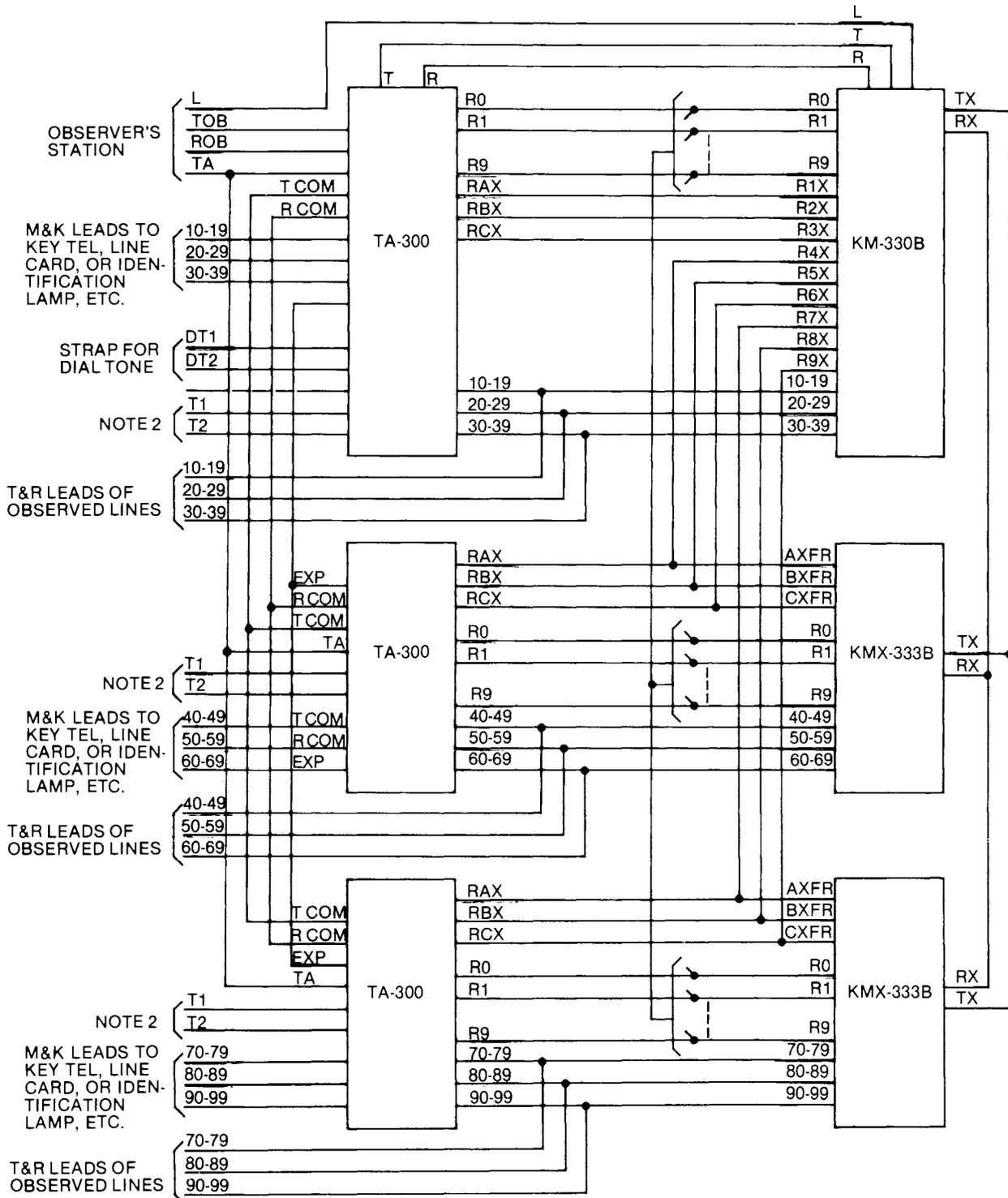
Fig. 4 — Connections of TA-300 and KM-330B Arranged to Observe and Assist 30 Lines.



NOTES:

1. CONNECT ONE SIDE OF OBSERVER'S TELEPHONE PUSHBUTTON TO TA-300 LEAD TA; CONNECT THE OTHER SIDE TO GROUND.
2. STRAP T1 AND T2 WHEN MARKING LEADS M AND K ARE TO OPERATE WHEN LINE IS BEING OBSERVED.

Fig. 5 — Two TA-300's with KM-330B and KMX-333B Arranged to Observe and Assist 60 Lines.



NOTES:

1. CONNECT ONE SIDE OF OBSERVER'S TELEPHONE PUSHBUTTON TO TA-300 LEAD TA; CONNECT THE OTHER SIDE TO GROUND.
2. STRAP T1 AND T2 WHEN MARKING LEADS M AND K ARE TO OPERATE WHEN LINE IS OBSERVED.

Fig. 6 — Connections of KM-330B with Three TA-300 Talk Assist Units and Two KMX-333B Expanders Arranged to Observe and Assist 90 Lines.

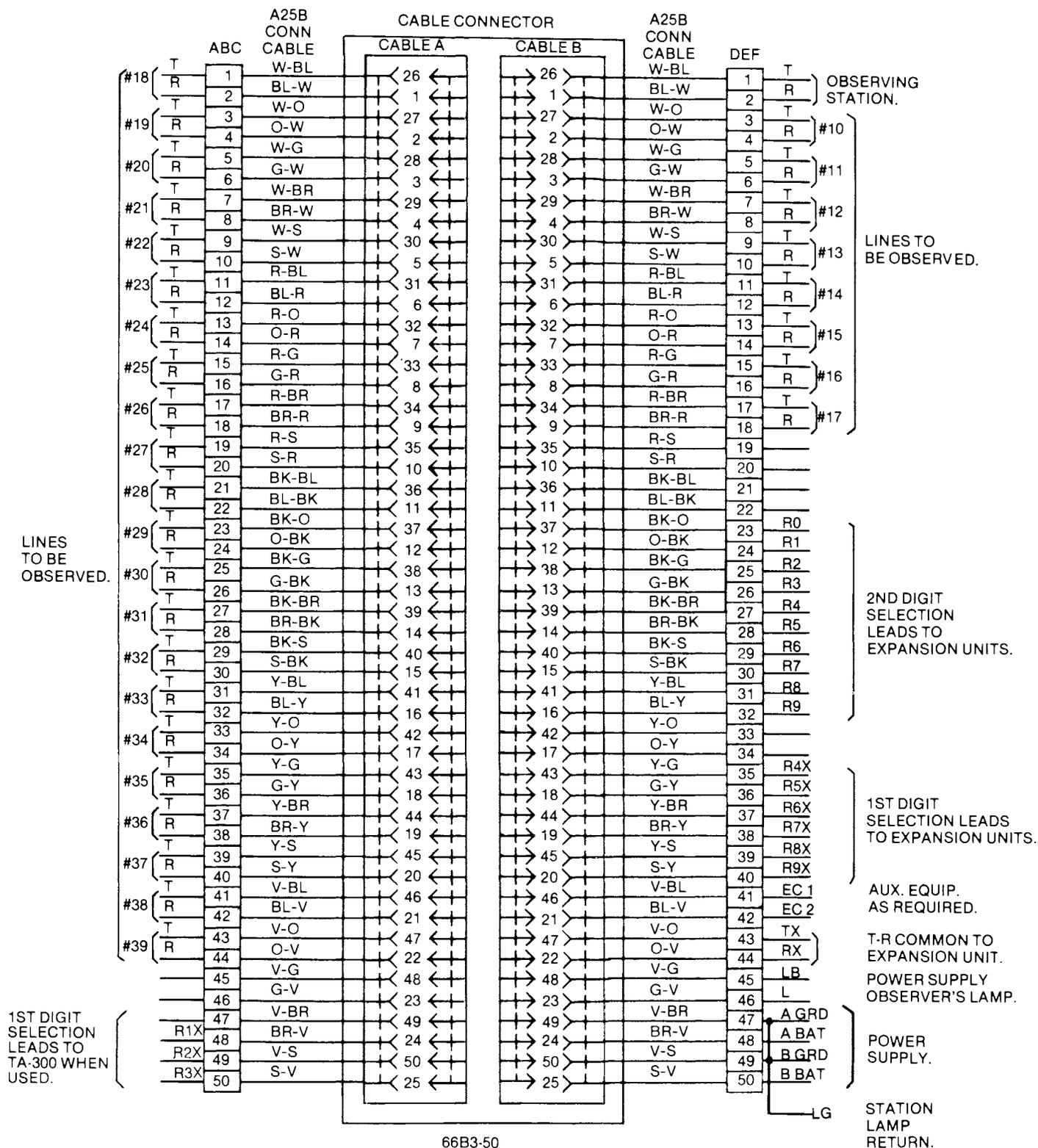


Fig. 7 — KM-330B Cable Connections and Connecting Block Assignments.

## KMT-330 TELETRAINER SERVICE OBSERVING SYSTEM WITH TALK ASSIST

### 1. GENERAL

1.01 Teletrainer, model KMT-330, provides for a complete 30-line service observing system with integrated talk assist capability. The system is compatible with central office, PABX or key system lines or stations. Lines or stations to be observed are pre-wired to a selection matrix, and easily accessed from a telephone selected as the observer's station by dialing an assigned two-digit code. With the talk assist feature, an observer can enter the conversation on a line being observed and converse with the observed parties.

1.02 A tone dialing telephone is required with this unit.

1.03 The KMT-330 can be expanded to allow observation of 60 or 90 lines by adding KMX-333B Service Observing Expanders.

1.04 The KMT-330 is pending FCC Registration under FCC Rules and Regulations, Part 68.

### 2. DESIGN FEATURES

2.01 The KMT-330 Teletrainer:

- is equipped with a built-in talk assist feature which allows an observer to enter the conversation on the line being observed. The talk assist feature is dial activated by simply pressing the asterisk (\*) button.
- mounts in an apparatus cabinet, a relay rack, or on a backboard.
- allows for observation of 30 lines or stations of a central office, PABX, or key system. System capacity can be expanded from 30 lines to 60 lines with a Melco KMX-333B Service Observing Expander, or to 90 lines with a second KMX-333B. For additional information, refer to the KMX-333B Technical Practice (Document No. 490112).
- provides access to service observing lines through a key system telephone or single-line telephone assigned as the observer's station. When a key system telephone is used, one pick-up key is

dedicated for access to service observing lines. When a single-line telephone is used, the station is dedicated for service observing use only.

- has provisions for optional connections to a lamp, when using a multi-button key system service observer's telephone, which lights when a line or station is accessed for observation.
- does not decrease transmission over the line or station being observed, or interfere with the operation of the lines in any manner. *No noise* is induced onto the observed lines upon activation, or at any time by the KMT-330.



Fig. 1

- is equipped with a volume control adjustment which allows for increasing or decreasing the level heard over lines or stations being observed.

### 3. OPERATION

3.01 The 30 lines or stations to be observed are assigned digits 10 through 39. To access a

line or station from a single-line observer's telephone, simply lift the receiver and dial the assigned two-digit code. To access a line or station from a key system observer's telephone, depress the pick-up key assigned to service observing, lift the handset and dial the assigned two-digit code. If the lamp lead at the observer's station has been connected, seizure of the KMT-330 will be indicated by a lighted lamp. No audible signal will be heard.

3.02 If there is no conversation on a line or station accessed for observation, nothing will be heard. Another line or station can be successively accessed by pressing the pound (#) button or going on-hook, then off-hook and dialing the next code.

3.03 The observer can enter the conversation on a line accessed for observation by depressing the asterisk (\*) button on the keypad of the observer's telephone. When the observer speaks, the conversation will be heard by both of the observed parties on the line.

3.04 The service observing/talk assist connection is terminated by pressing the pound (#) button on the keypad, or by restoring the handset.

#### 4. INSTALLATION

4.01 No special installation tools are required. Mount the KMT-330 in an apparatus cabinet, relay rack, or on a wall. Connect the two KMT-330 plugs to 25-pair connector cables and secure them with the clamps and screws provided.

4.02 Make cross connections as shown in Figures 3-7. COMMON ALL GROUNDS.

4.03 Connect the tip and ring of the lines or stations to be observed to the input pairs terminated on the connecting block and numbered 10 through 39. The lines or stations to be observed are selected by dialing numbers 10 through 39.

4.04 When a lamp is used at the observer's station to indicate seizure of a line or station for observation, connect the station lamp lead to an L terminal of the connecting block, and lamp supply to the LB terminal. If necessary, derive lamp return ground from the common power supply ground. See Figure 7.

4.05 Extra contacts, EC1 and EC2, are available for control of auxiliary equipment as required. A relay contact closure is provided between EC1 and EC2 when the observer's station seizes the KMT-330. Extra contacts, TA1 & TA2, are also available for control of auxiliary equipment when in the talk assist mode.

4.06 Test for proper operation on all lines or stations assigned for service observation. From the service observer's telephone, dial each access code and verify that the access code number and the line or station number agree as assigned. Check to ensure that voice can be heard over each line or station accessed. Be certain that all talking paths and power leads are secure.

4.07 A volume control adjustment is provided on the KMT-330 to allow for increasing or decreasing the level heard over the lines assigned for observation. Adjust to the desired level through the volume control potentiometer.

#### 5. MAINTENANCE

5.01 No provision is made for field adjustment or repair. If the unit does not function properly, verify all connections. Inspect the cable plugs and connectors for adequate contact pressure and cleanliness.

5.02 Test by removing the cables from the KMT-330 and reconnecting them to another KMT-330 known to be functional.

5.03 Technical assistance on the KMT-330 is available through Melco's Technical Assistance Department.

5.04 The KMT-330 is warranted against manufacturing and material defects. If it becomes defective within the warranty period, it will be repaired or replaced at no charge. See the Melco Warranty Service Policy for return and repair details.

#### 6. SPECIFICATIONS

Operating voltage . . . . . – 20 to – 28V DC  
– 24V DC nom  
Operating current  
at – 24V DC . . . . . 200ma ± 30%

Operating temperature ..... 0° to 50°C  
32° to 122°F

Operating humidity ..... 0 to 95%  
noncondensing

Tone dialing parameters:  
loop length ..... 580 ohms  
interdigital time ..... 40 msec min  
input signal level ..... - 7.5dB to + 4dB  
bandwidth ..... ± 2%  
recognition time ..... 40 msec

Relay contact ratings:  
lamp ..... 2 amps at 10V AC  
EC1 and EC2 ..... 2 amps at 28V DC  
TA1 and TA2 ..... 2 amps at 28V DC

Breakdown volts—observed  
lines to ground ..... 500V DC max

Connections ..... 2 A25B or equivalent  
25-pair connector cables

Mounting ..... apparatus cabinet,  
relay rack or backboard

Housing ..... epoxy coated aluminum

Dimensions ..... 7.0" x 5.0" x 2.5"

Weight ..... 1.5 lbs.

**7. ORDERING INFORMATION**

7.01 Order one system as follows:

(1) KMT-330 120364 SERVICE OBSERVING SYSTEM

To increase capacity to 60 lines, order:

(1) KMX-333B 120289 SERVICE OBSERVING EXPANDER

To increase capacity to 90 lines, order:

(2) KMX-333B 120289 SERVICE OBSERVING EXPANDERS

7.02 Order the KMT-330 and KMX-333B through your local supplier or distributor.

7.03 Further information or technical assistance on the KMT-330, KMX-333B or any Melco product is available from:

Melco  
P.O. Box 6909  
Bellevue, WA 98008-0909  
(206) 462-6700 or  
1-800-33-MELCO

**TABLE A  
SERVICE OBSERVING SYSTEMS**

NUMBER OF LINES	ACCESS CODE NUMBERS	UNITS OF EQUIPMENT REQUIRED	
		KMT-330	KMX-333B
1-30 (Fig. 4)	10 - 39	1	0
31-60 (Fig. 5)	40 - 69	1	1
61-90 (Fig. 6)	70 - 99	1	2

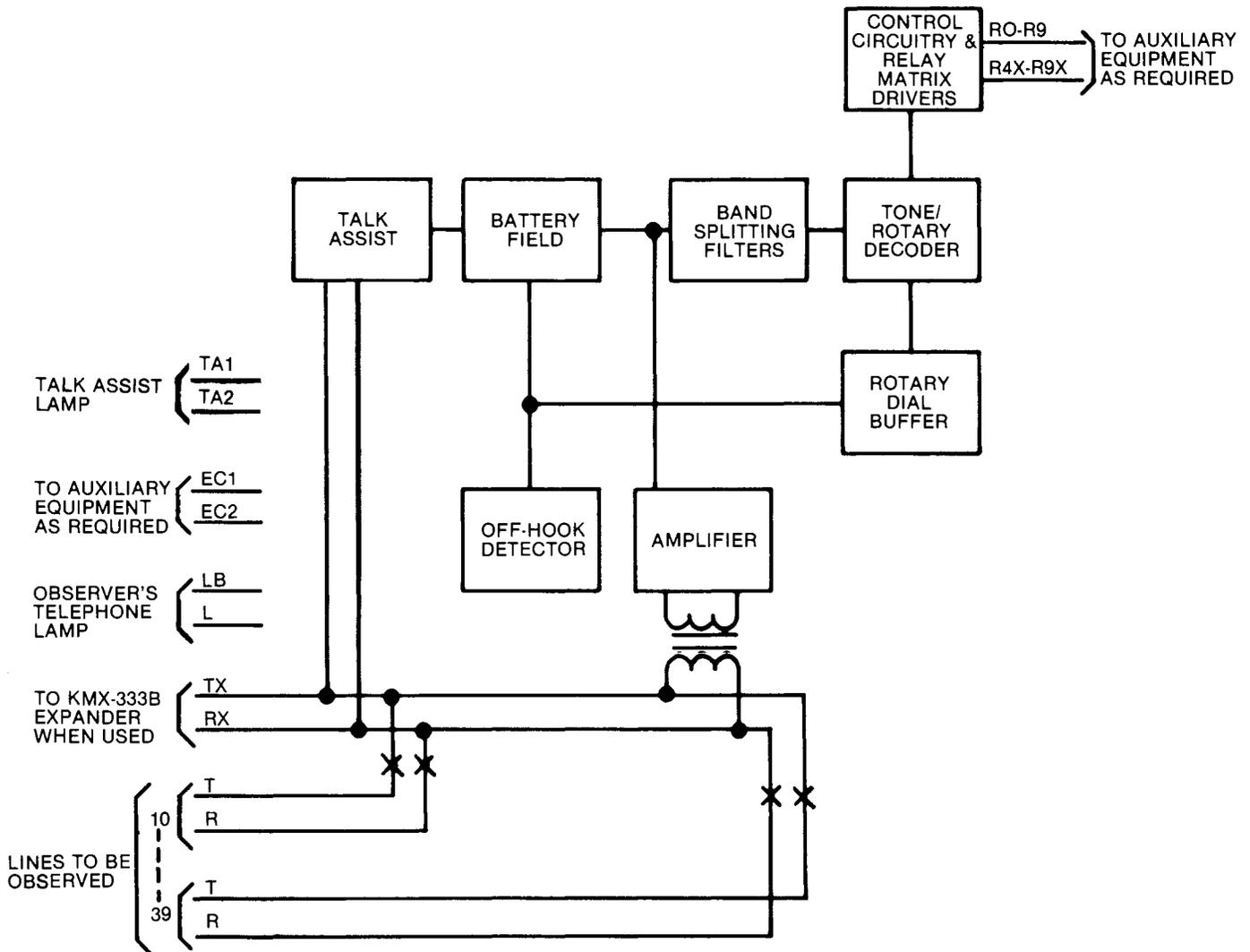


Fig. 2 — Condensed Functional Schematic of KMT-330.

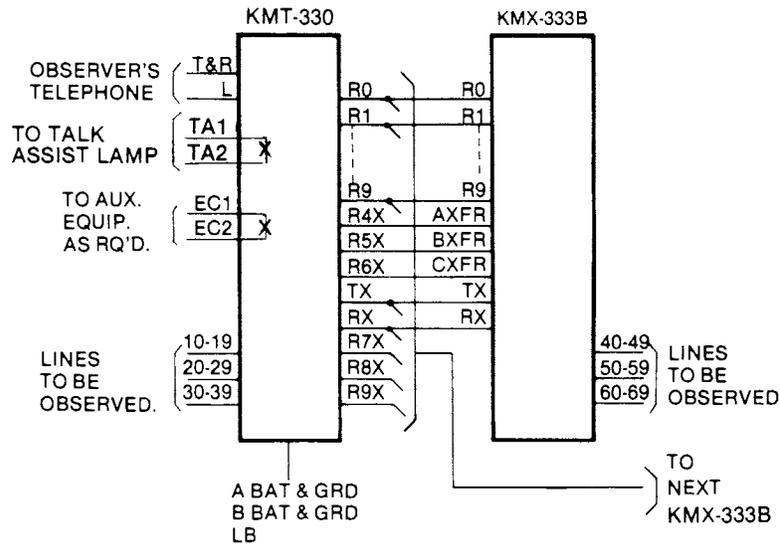


Fig. 3 — KMT-330 with KMX-333B Added to Provide Capacity to Observe 60 Lines.

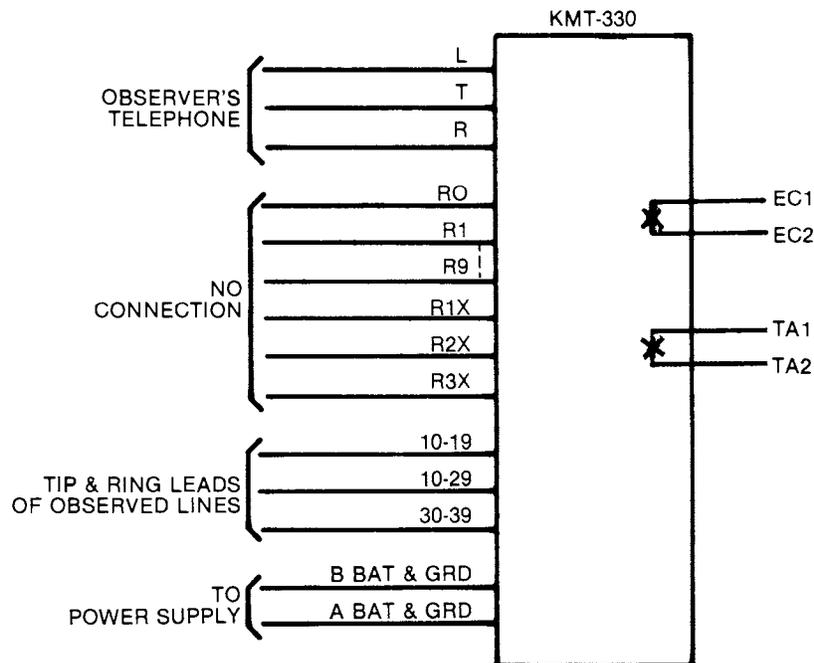


Fig. 4 — Connections of KMT-330 to Observe 30 Lines.

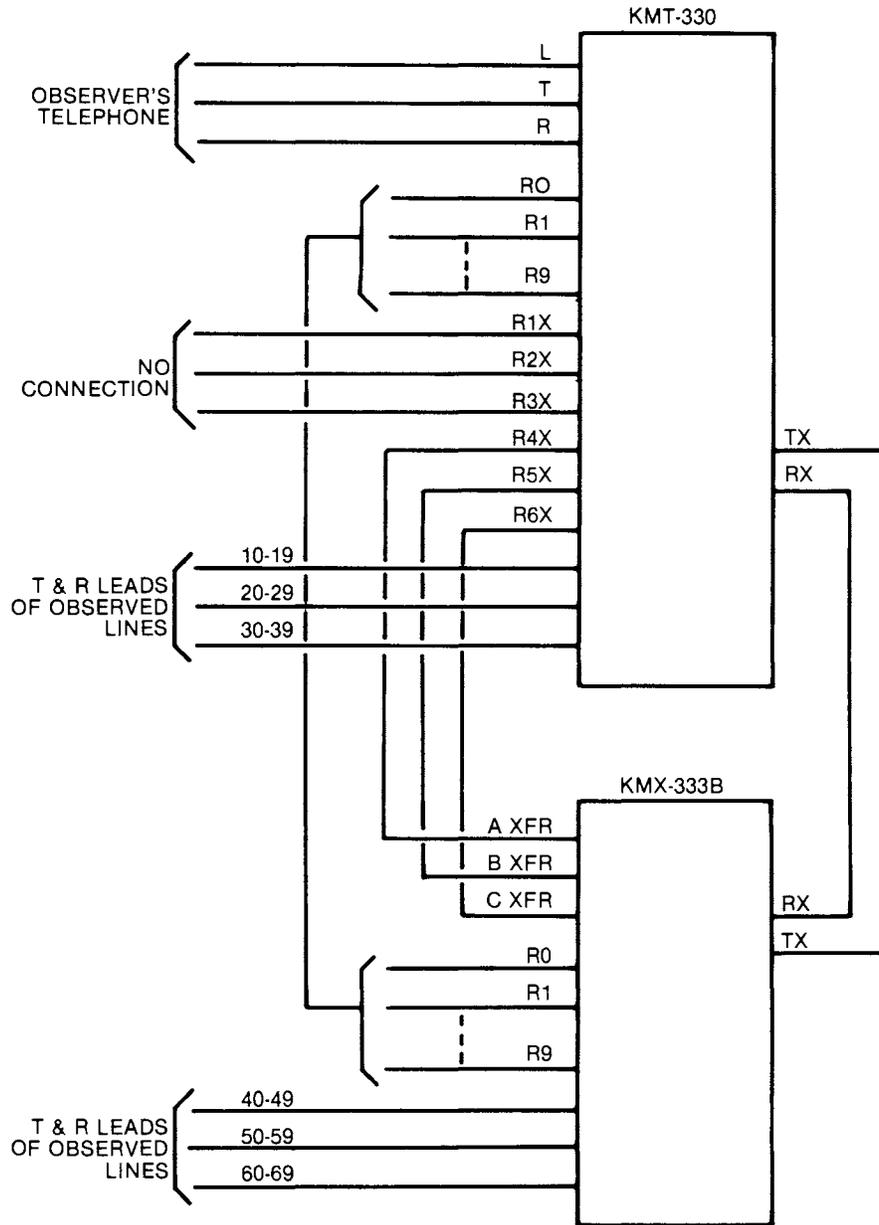


Fig. 5 — KMT-330 and KMX-333B to Observe 60 Lines.

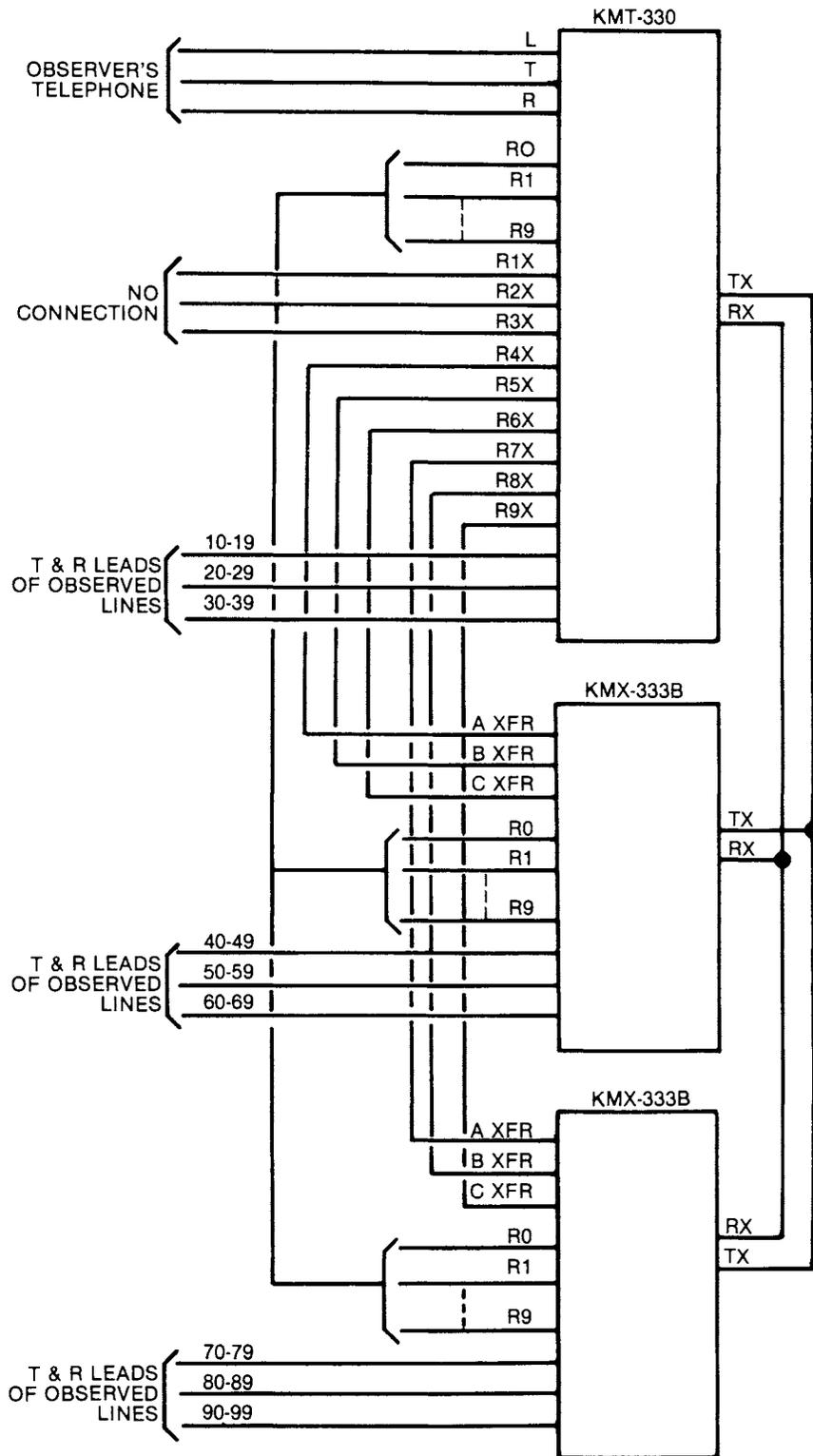


Fig. 6 — KMT-330 and Two KMX-333B Expanders to Observe 90 Lines.

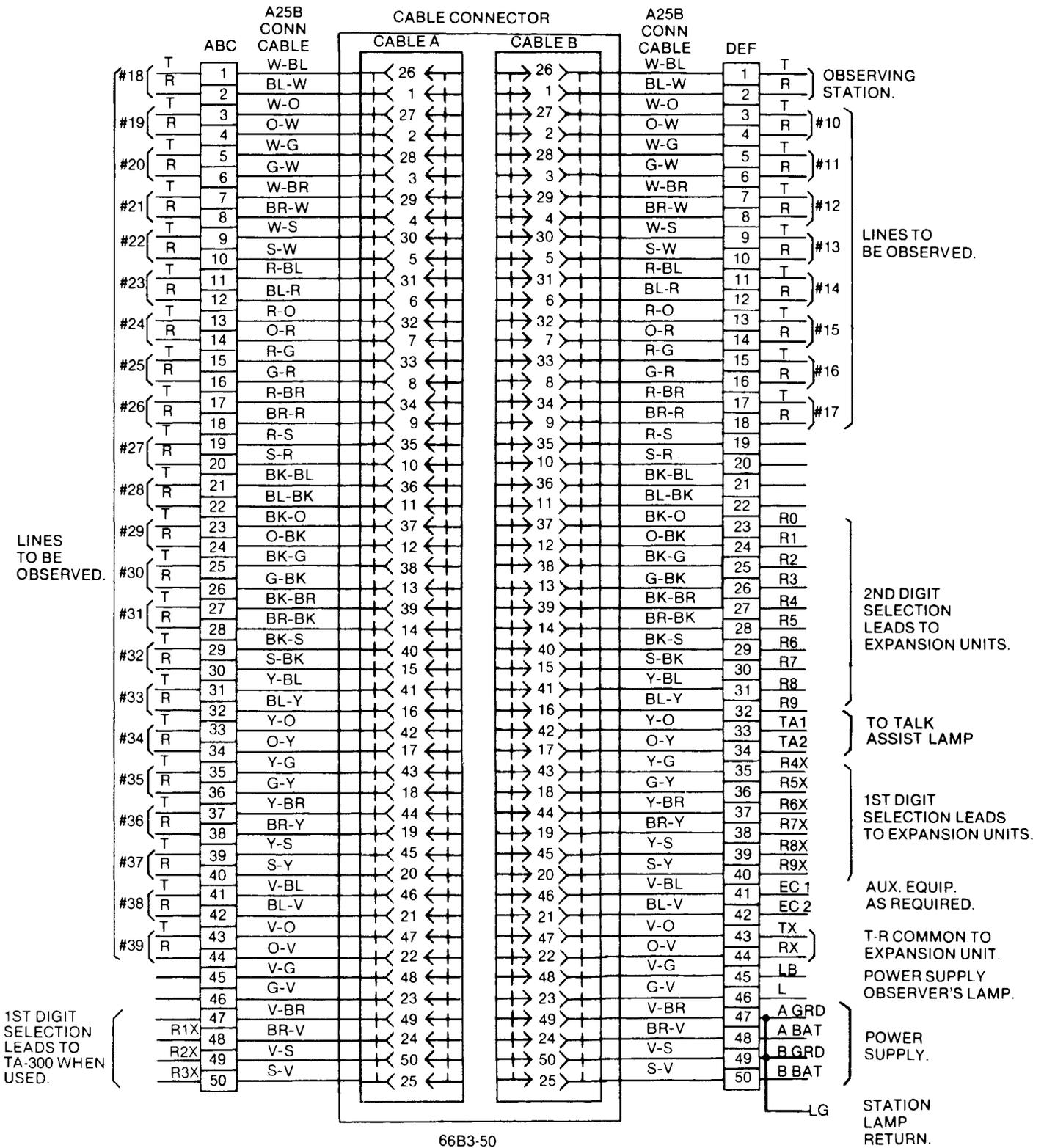


Fig. 7 — KMT-330 Cable Connections and Connecting Block Assignments.

## KMX-333B™ SERVICE OBSERVING EXPANDER

### 1. GENERAL

1.01 The KMX-333B Service Observing Expander provides a line selection matrix to expand the KM-330B Service Observing Unit by 30 lines. A maximum of two KMX-333B's can be used to give a total observing capacity of 90 lines.

1.02 The KM-330B is arranged for interfacing with the Melco TA-300 Talk Assist Unit which allows the service observer to enter the connection and converse with the station being observed.

1.03 This product has been given Number AQT9PZ-68822-TN-N under Part 68 of the FCC Rules and Regulations. Ringer equivalence is 0.0B.

### 2. DESIGN FEATURES

2.01 The KMX-333B provides inputs for 30 T-R pairs for the additional 30 lines to be observed. The KMX-333B provides a high impedance bridge to the T-R pairs.

2.02 Any one of the additional 30 lines can be dial-selected for observing through the Service Observing Unit.

2.03 Any three of the digits 4-9 may be assigned as first digits of the two-digit numbers.

2.04 The KMX-333B and KM-330B do not induce noise onto the observed lines nor do they interfere with the operation of the lines.

2.05 The KMX-333B is not compatible with the KM-330 or the KM-330A.

2.06 All interconnections are provided through two 50-pin amphenol plugs to A25B or equivalent 25-pair cables.

### 3. INSTALLATION

3.01 Mount the KMX-333B in an apparatus cabinet, relay rack or on a backboard.

3.02 Attach two A25B or equivalent 25-pair connector cables to KMX-333B plugs and secure them with the clamps provided.

3.03 Terminate the cable on a 66-type connecting block.

3.04 When adding one KMX-333B to provide a total system capacity of 60 lines, connect as follows (see Fig. 3):

1. Cross-connect the R0-R9 leads and the TX and RX leads from the KM-330B to the KMX-333B.
2. Cross-connect three of the R( )X leads (R4X-R9X) from the KM-330B to the AXFR, BXFR and CXFR leads on the KMX-333B. These determine the first



Fig. 1

digits for the line selection matrix — if AXFR is connected to R4X then the tipping pairs labeled A0-A9 are selected at 40 to 49.

3. Connect the 30 T-R pairs labeled A0-A9, B0-B9, C0-C9 to the 30 additional lines to be observed.

3.05 When adding a second KMX-333B to increase the total system capacity from 60 lines to 90 lines, connect as follows (see Fig. 4):

1. Cross-connect the R0-R9 leads and the TX and RX leads from the KM-330B to the second KMX-333B.
2. Cross-connect the three remaining R( )X

leads (R7X-R9X) to the AXFR, BXFR and CXFR leads on the second KMX-333B. The R( )X leads determine the first digits for the line selection matrix — if AXFR is connected to R7X then the tip-ring pairs labeled A0-A9 are selected at 70 to 79.

3. Connect the 30 T-R pairs labeled A0-A9, B0-B9, C0-C9 to the 30 additional lines to be observed.

3.06 Test for dial selection of all lines through the Service Observing Unit. Be certain that the telephone number and the code number agree as assigned.

#### 4. MAINTENANCE

4.01 No provision is made for field adjustment or repair. Return the defective unit to the supplier. Use the box of the replacement when possible. Include the cable clamps and add a note describing the fault.

4.02 The KMX-333B is warranted against manufacturing and material defects. If it becomes defective within the warranty period, it will be repaired or replaced at no charge. See the Melco Warranty Service Policy.

#### 5. SPECIFICATIONS

Operating temperature range . . . . . 0° to 50°C  
 32° to 122°F

Operating humidity . . . . . 0 to 95%  
 noncondensing

Relay contact breakdown rating  
 (line selection relay) . . . . . 500 VRMS

Mounting . . . . . apparatus cabinet,  
 relay rack or backboard

Connection . . . . . two A25B or equivalent  
 25-pair connector cables

Housing . . . . . epoxy-coated aluminum

Dimensions . . . . . 7" x 5" x 2.5"

#### 6. ORDERING INFORMATION

6.01 Order as follows:

(QTY) KMX-333B SERVICE OBSERVING  
 EXPANDER — 30 LINES

from your local supplier or distributor.

6.02 Technical assistance on the KM-330B Service Observing Unit, KMX-333B Service Observing Expander or the TA-300 Talk Assist Unit is available from:

MELCO LABS, INC.  
 P.O. Box 6909  
 Bellevue, WA 98008-0909  
 (206) 643-3400  
 TWX: 910-443-3040

**TABLE A**  
**SERVICE OBSERVING SYSTEMS**

NUMBER OF LINES	ACCESS CODE NUMBERS	UNITS OF EQUIPMENT REQUIRED		
		LINE OBSERVING		TALK ASSIST
		KM-330B	KMX-333B	TA-300
1 - 30	10 - 39	1	0	1
31 - 60 (Figs. 3 & 5)	40 - 69	1	1	2
61 - 90 (Figs. 4 & 6)	70 - 99	1	2	3

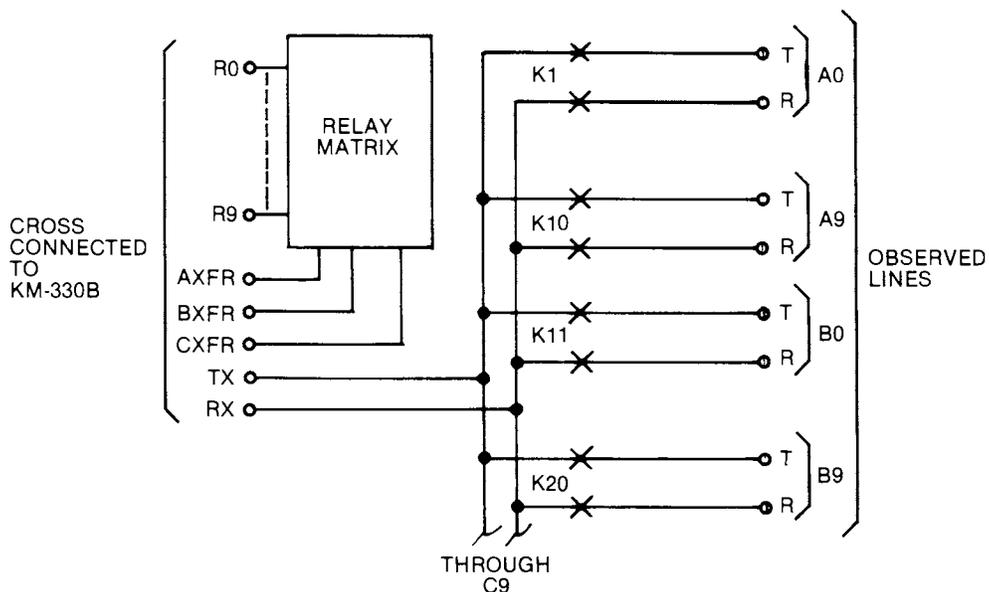


Fig. 2 — Functional Schematic of KMX-333B.

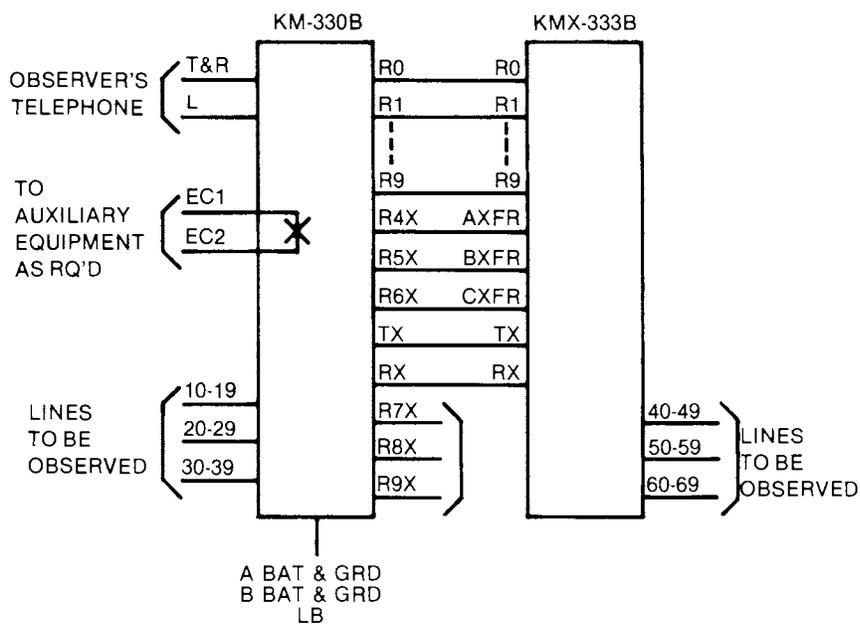


Fig. 3 — Service Observing Unit with One KMX-333B Added to Provide a Total System Capacity of 60 Lines.

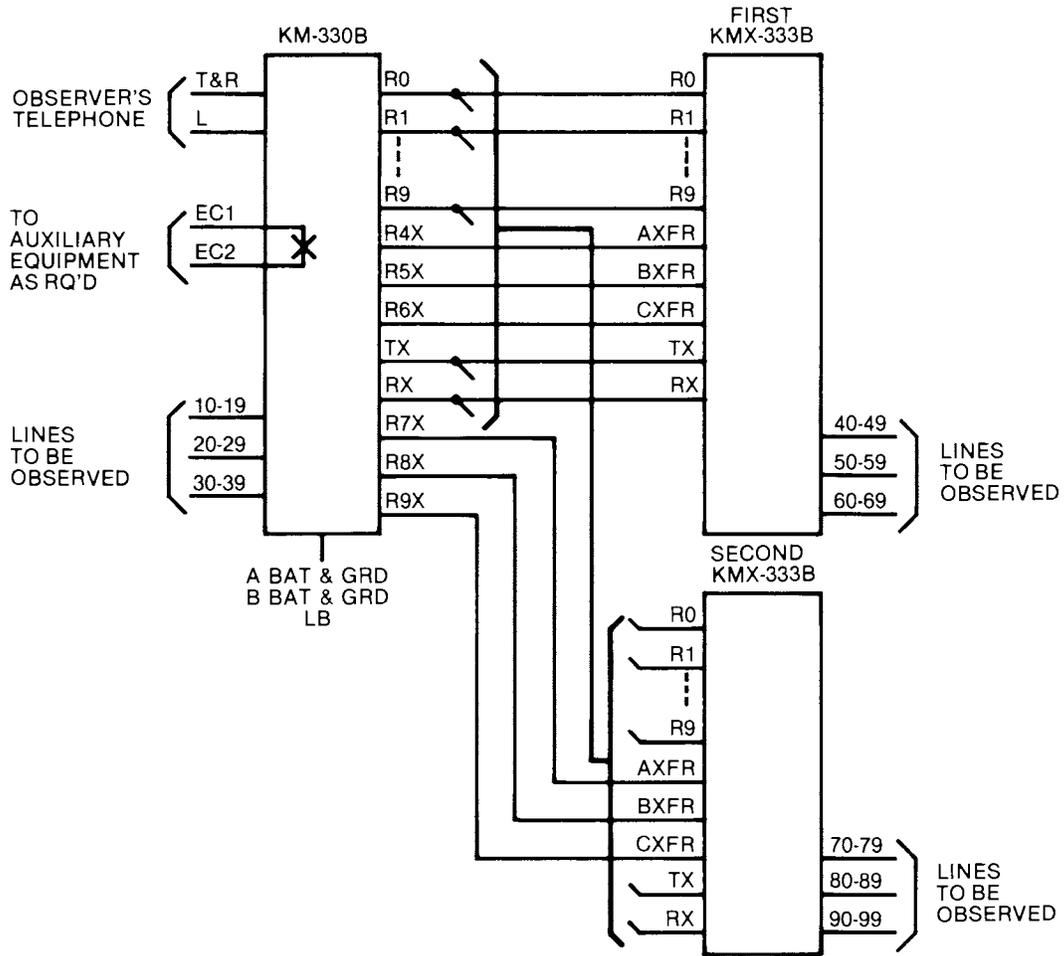
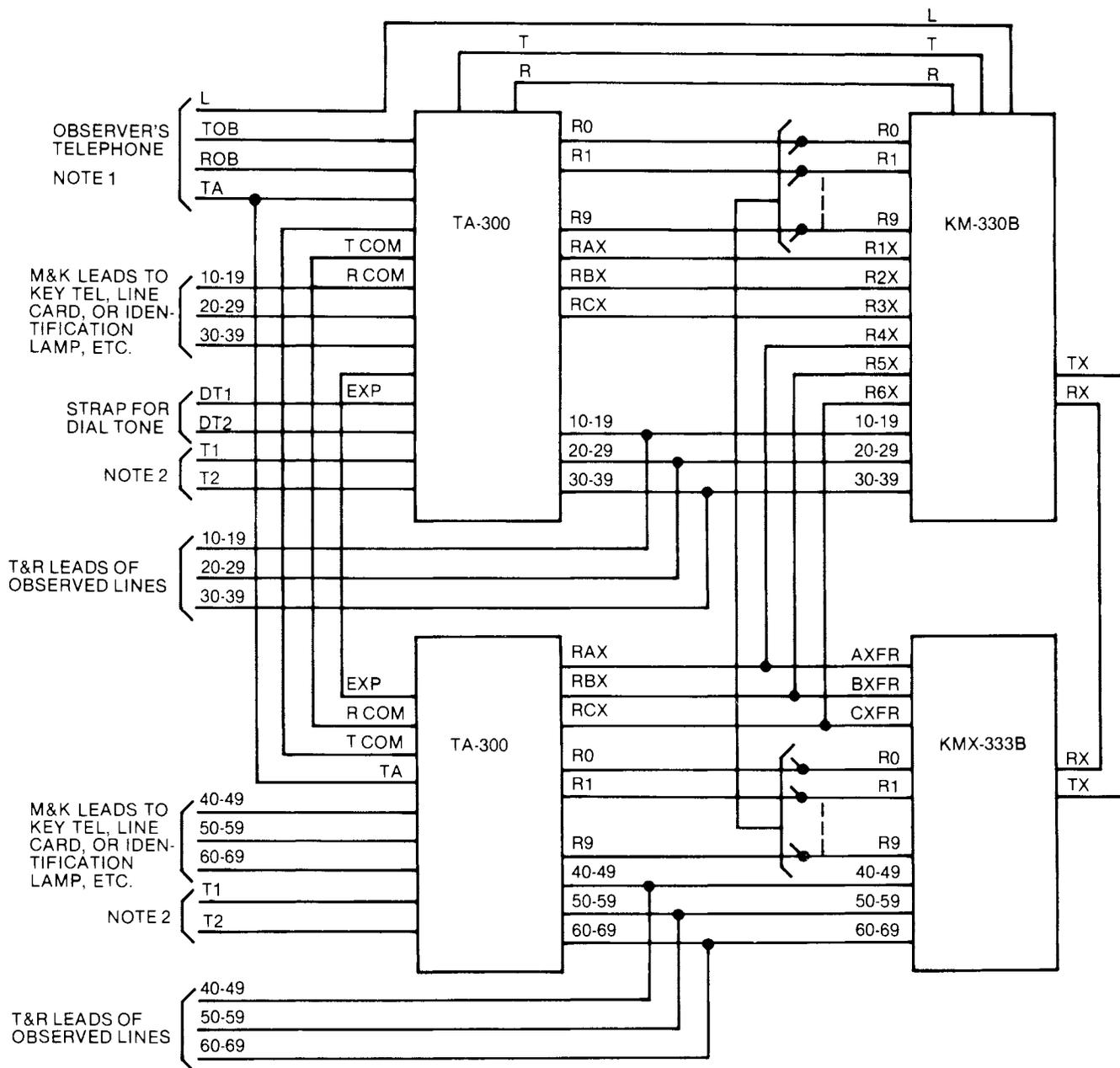


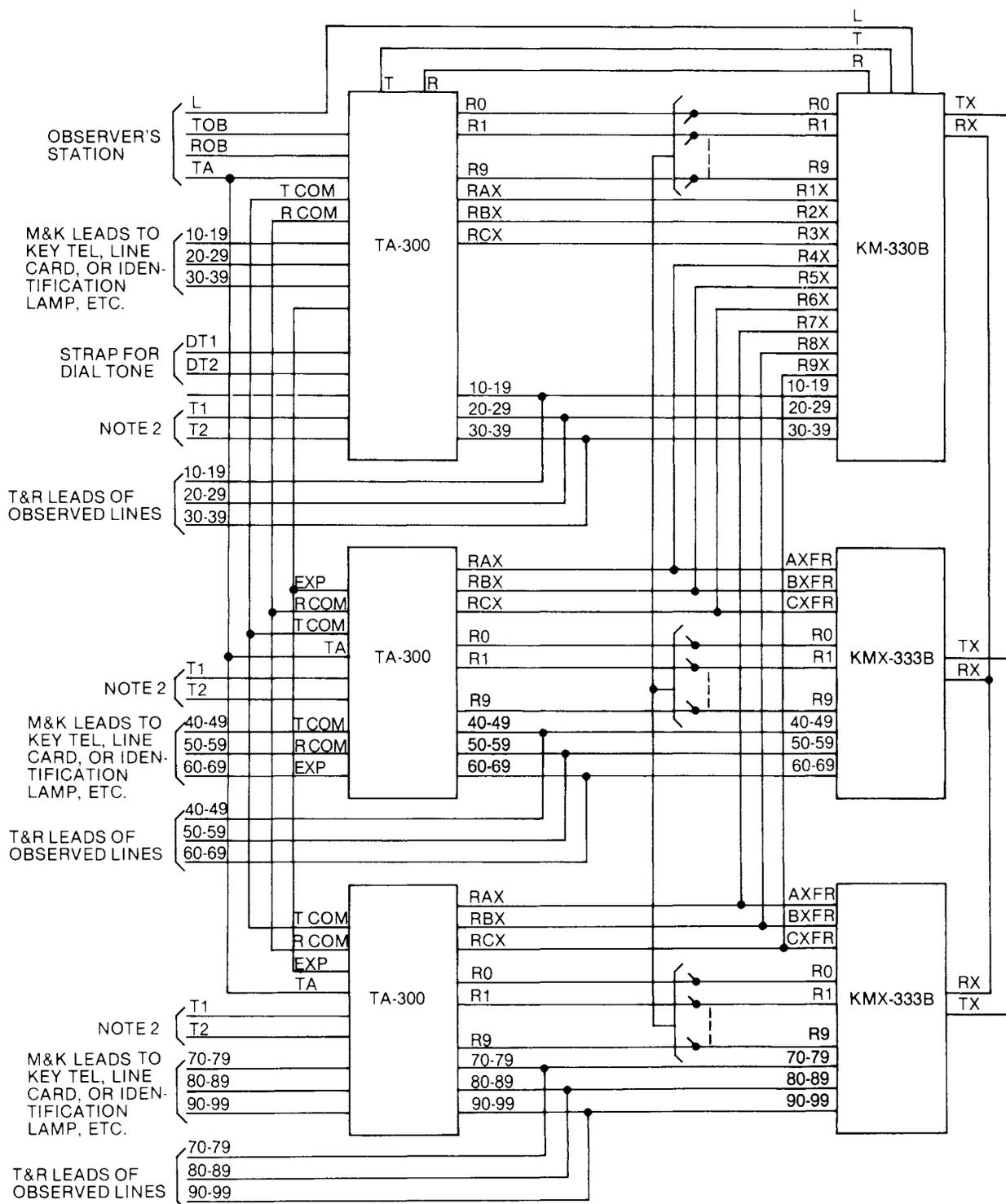
Fig. 4 — Service Observing Unit the Two KMX-333B's Added to Provide a Total System Capacity of 90 Lines.



NOTES:

1. CONNECT ONE SIDE OF OBSERVER'S TELEPHONE PUSHBUTTON TO TA-300 LEAD TA; CONNECT THE OTHER SIDE TO GROUND.
2. STRAP T1 AND T2 WHEN MARKING LEADS M AND K ARE TO OPERATE WHEN LINE IS BEING OBSERVED.

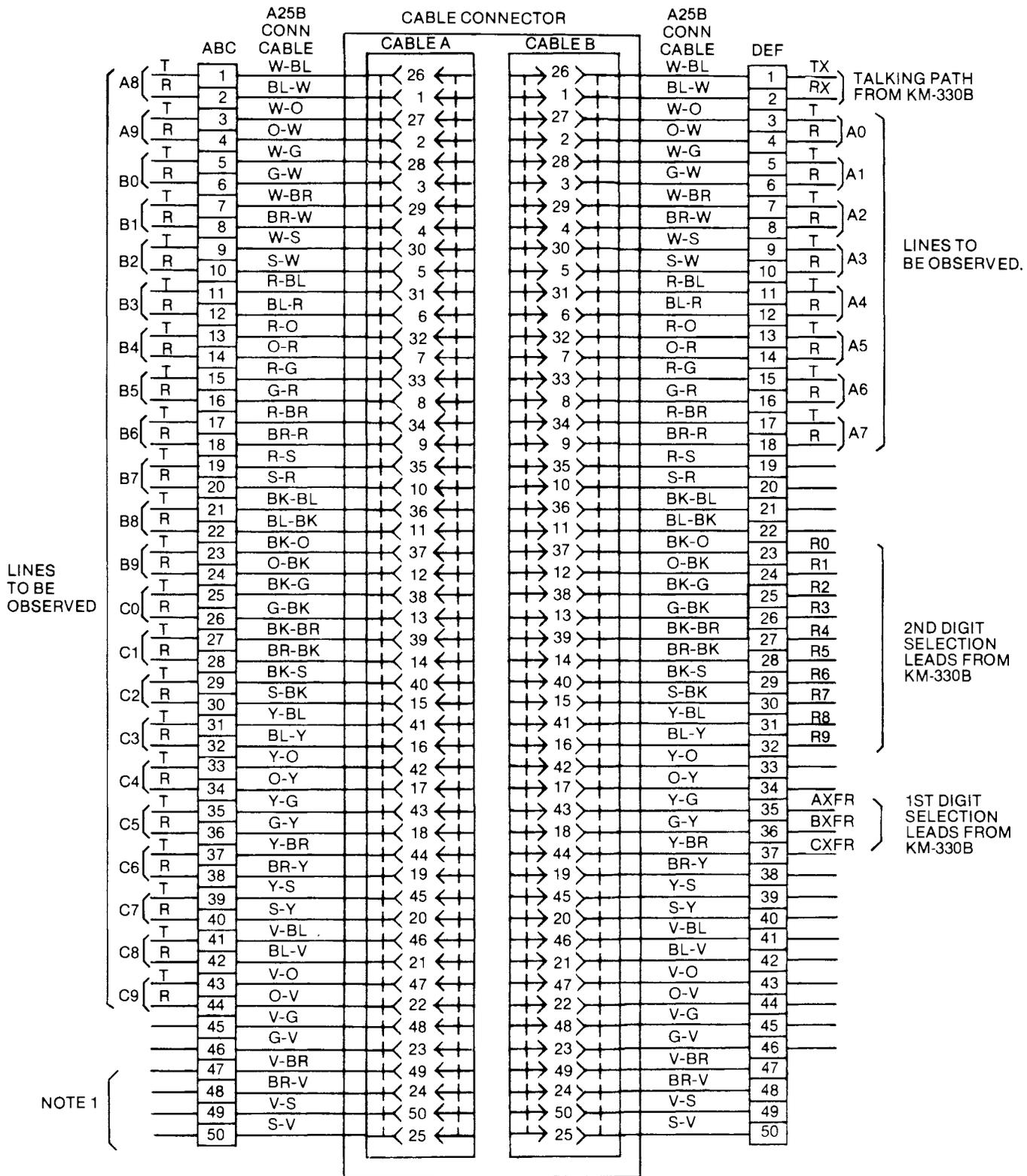
Fig. 5 — Two TA-300's with KM-330B and KMX-333B Arranged to Observe and Assist 60 Lines.



NOTES:

1. CONNECT ONE SIDE OF OBSERVER'S TELEPHONE PUSHBUTTON TO TA-300 LEAD TA; CONNECT THE OTHER SIDE TO GROUND.
2. STRAP T1 AND T2 WHEN MARKING LEADS M AND K ARE TO OPERATE WHEN LINE IS OBSERVED.

Fig. 6 — Connections of KM-330B with Three TA-300 Talk Assist Units and Two KMX-333B Expanders Arranged to Observe and Assist 90 Lines.



66B3-50

NOTES:

1. MAKE NO CONNECTIONS TO CABLE TERMINALS 24, 50 and 25

Fig. 7 — Cable Connections and Connecting Block Assignments.

## TA-300™ TALK ASSIST UNIT USED WITH KM-330B SERVICE OBSERVING UNIT

### 1. GENERAL

1.01 The TA-300, when interfaced with the Melco KM-330A/KMX-333 or KM-330B/KMX-333B Service Observing System, allows an observing station to converse with an observed line by pressing a push button on the service observing telephone. The TA-300, when in the talk assist mode, connects the observer through a metallic path to the previously selected line.

1.02 The Melco KMX-333B Service Observing Expander is a line selection matrix designed to expand the KM-330B Service Observing Unit by 30 lines. A maximum of one KM-330B, two KMX-333B units and three TA-300 units can be used to provide a total observing and assisting capacity of 90 lines.

1.03 The TA-300 has been given Registration Number AQT9PZ-68281-KX-N under Part 68 of FCC Rules and Regulations. Ringer Equivalence is 0.0B.

### 2. DESIGN FEATURES

2.01 The TA-300:

- Operates in conjunction with the KM-330B Service Observing Unit.
- Allows a service observer to converse with an observed line.
- Operates from a push button on the telephone.
- Provides dial tone by a wiring option.
- Operates with a second or a third TA-300.
- Is compatible with the KM-330B with its initial 30 lines or when the observing system is expanded to 60 or 90 lines with the KMX-333B.
- Connects rapidly to 66 type connecting blocks through three 25-pair connector cables.
- Provides marking leads for auxiliary functions.
- Operates from -24V DC, the same as the KM-330B.
- Mounts in a relay rack, apparatus cabinet or on a backboard.

### 3. OPERATION

3.01 Operate the observer's line. If the lamp lead has been connected, seizure of the KM-330B will be indicated by a lighted key lamp. Dial tone will be heard if the TA-300 has been strapped for it. Dial the 2-digit access code of the line to be observed.

**NOTE:** *The receiving circuit of the TA-300 serves only to break dial tone when a digit is dialed. Hence, it does not require the strict parameters of decoder circuits.*



Fig. 1

3.02 The observer's telephone must be equipped with a grounding button. If the telephone is a single-line instrument, it must be equipped with a push button to enable the application of ground for about half a second to lead TA of the TA-300. If a multi-line instrument is used, two push buttons must be dedicated to service observing; one for the talking path to the TA-300 leads TOB and ROB and the other modified for nonlocking and for closing ground to lead TA.

3.03 When the observer wishes to join the conversation, the push button is operated to bypass the high impedance circuitry of the KM-330B/KMX-333B and provide a metallic connection to the observed line. The TA-300 remains operated until it receives an on-hook signal from the observer's telephone.

3.04 The marking relays are equipped with make contacts which may be wired to provide an A-lead function when associated with a key system, to close circuits to line identification lamps or to provide other auxiliary functions. When terminals T1 and T2 are not strapped, the marking relay for the line being observed will not operate until TA-300 button TA is pressed. When T1 and T2 are strapped, the marking relay will operate as soon as the line is under observation.

#### 4. INSTALLATION

4.01 Mount the TA-300 and connect the cable connectors to the TA-300 plugs. Secure the cables with the clamps provided.

4.02 Strap DT1 and DT2 if dial tone is desired.

4.03 Connect the butt end of the cables to 66 type connecting blocks using the standard cut-down for 25-pair cables and 50-row connecting blocks.

4.04 It is recommended that a thorough test of the TA-300 and KM-330B/KMX-333B installation be made. Test to be certain that the KM-330B/KMX-333B can observe each line and the TA-300 can talk to the line that is being observed. If the KM-330B/KMX-333B is already in place, verification of each station number with its assigned access code should already have been done. If the KM-330B and TA-300 are being installed at the same time, the access code to station number assignment can be made at this time and verified while testing. Access code numbers and system components are shown in Table A.

4.05 Common all grounds.

#### 5. MAINTENANCE

5.01 No provision is made for field adjustment or repair. If the unit does not function properly, verify the connections and fuses.

Inspect the cable plugs and connectors for adequate contact pressure and cleanliness.

5.02 Test by removing the cables from the TA-300 and reconnecting them to another unit known to be serviceable.

5.03 The TA-300 is warranted against defects in material and workmanship. If it becomes defective within the warranty period, it will be repaired or replaced without charge. See the Melco Warranty Service Policy for repair and return details.

#### 6. SPECIFICATIONS

External power supply requirements:

Operating voltage, B BAT ..... -24V DC nom  
-20 to -28V DC

Operating current ..... 300 ma max

Dial tone:

frequency ..... 346 Hz and 438 Hz  $\pm$  5%  
level ..... -13 dB

Parameters to break dial tone:

DTMF ..... 40 msec at -7.5 to + 4 dBm

Rotary dialing:

pulse ratio ..... 60%  $\pm$  20%  
dial speed ..... 8 to 12 pps

Relay contact ratings:

marking leads ..... 1A at 20V  
100V, 20W max

On-hook release time ..... 100 msec nom

Operating temperature ..... 0° to 50°C  
32° to 122°F

Operating humidity ..... 0 to 95%  
noncondensing

Storage temperature ..... -30° to 70°C  
-22° to 158°F

Longitudinal balance ..... better than -60 dB  
200 to 1 KHz

Insertion loss ..... 0.5 dB max  
300 to 3.5 KHz

Crosstalk:

line to line ..... -60 dBm, 1 KHz

Breakdown voltage ..... 500V  
T or R to grd

Mounting ..... apparatus cabinet  
relay rack or backboard

Connections ..... three 25-pair A25B or  
equivalent connector cables

Dimensions ..... 5.20" x 7.21" x 11.32"

Housing ..... epoxy coated aluminum

Weight ..... 2 lbs., 10 oz.

**7. ORDERING GUIDE**

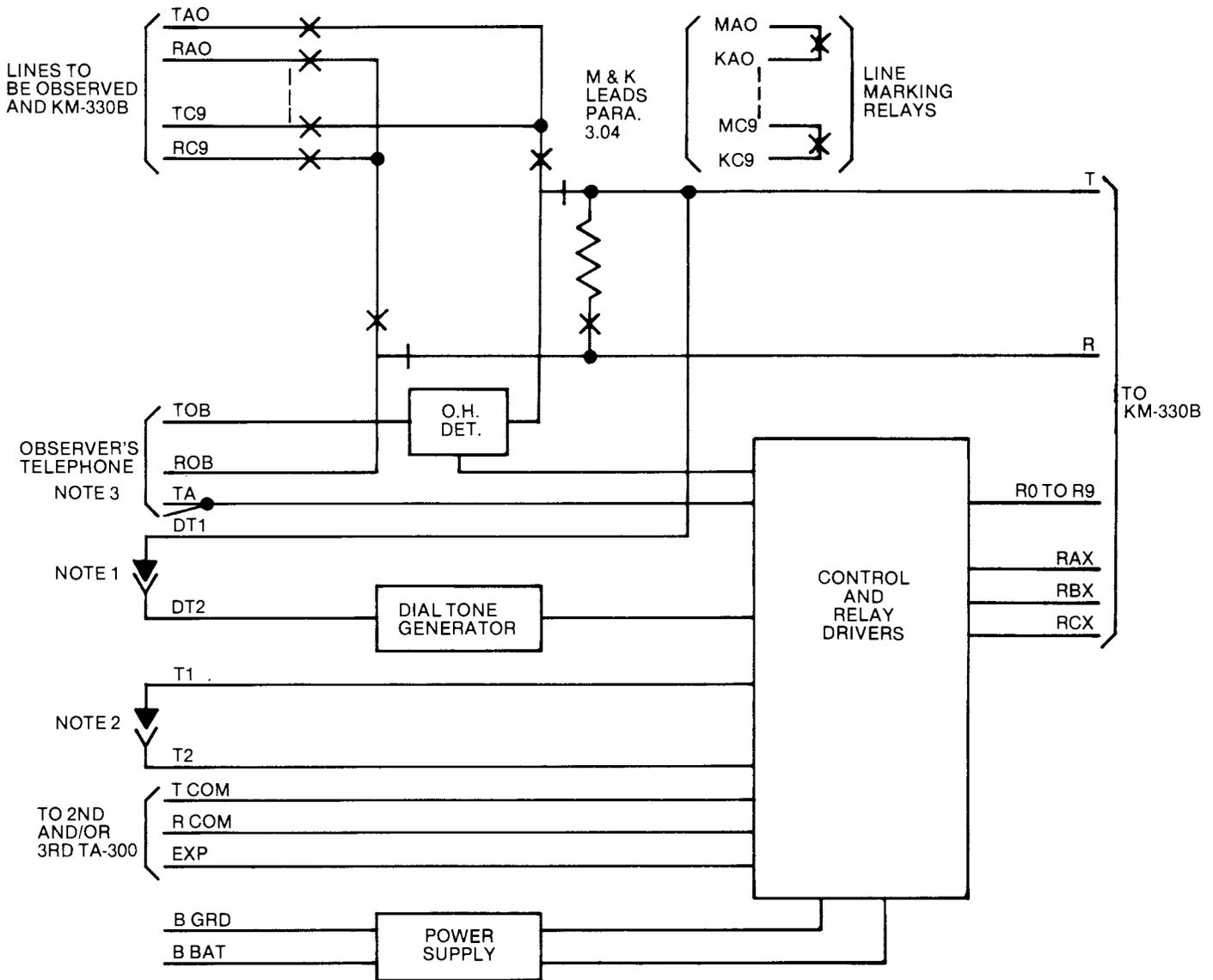
7.01 Order as follows:  
 (QTY) TA-300 TALK ASSIST UNIT  
 (QTY) KM-330B SERVICE OBSERVING UNIT  
 optional:  
 (QTY) KMX-333B SERVICE OBSERVING EXPANDER

7.02 Technical assistance with these or any Melco products is available from:  
 MELCO LABS, INC.  
 P.O. Box 6909  
 Bellevue, WA 98008-0909  
 (206) 643-3400  
 TWX: 910-443-3040

**NOTE:** TA-300 is also compatible with the KM-330, the KM-330A and the KMX-333.

**TABLE A**  
SERVICE OBSERVING SYSTEMS

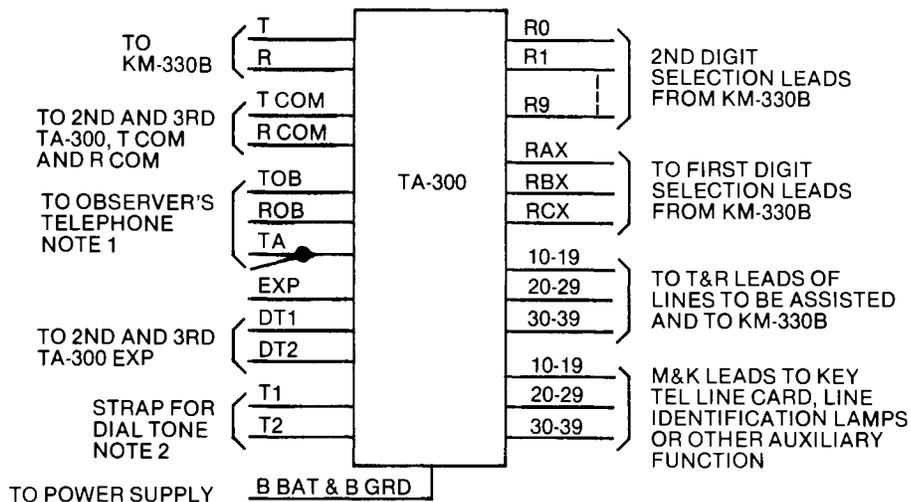
NUMBER OF LINES	ACCESS CODE NUMBERS	UNITS OF EQUIPMENT REQUIRED		
		LINE OBSERVING		TALK ASSIST
		KM-330B	KMX-333B	TA-300
1 - 30 (Fig. 4)	10 - 39	1	0	1
31 - 60 (Fig. 5)	40 - 69	1	1	2
61 - 90 (Fig. 6)	70 - 99	1	2	3



NOTES:

1. STRAP DT1 AND DT2 IF DIAL TONE IS TO BE HEARD ON OBSERVER'S TELEPHONE.
2. STRAP T1 AND T2 IF MARKING RELAY IS TO OPERATE DURING OBSERVATION. OTHERWISE MARKING RELAY WILL NOT OPERATE UNLESS TA BUTTON IS PRESSED.
3. CONNECT LEAD TA TO SECOND OR THIRD TA-300.

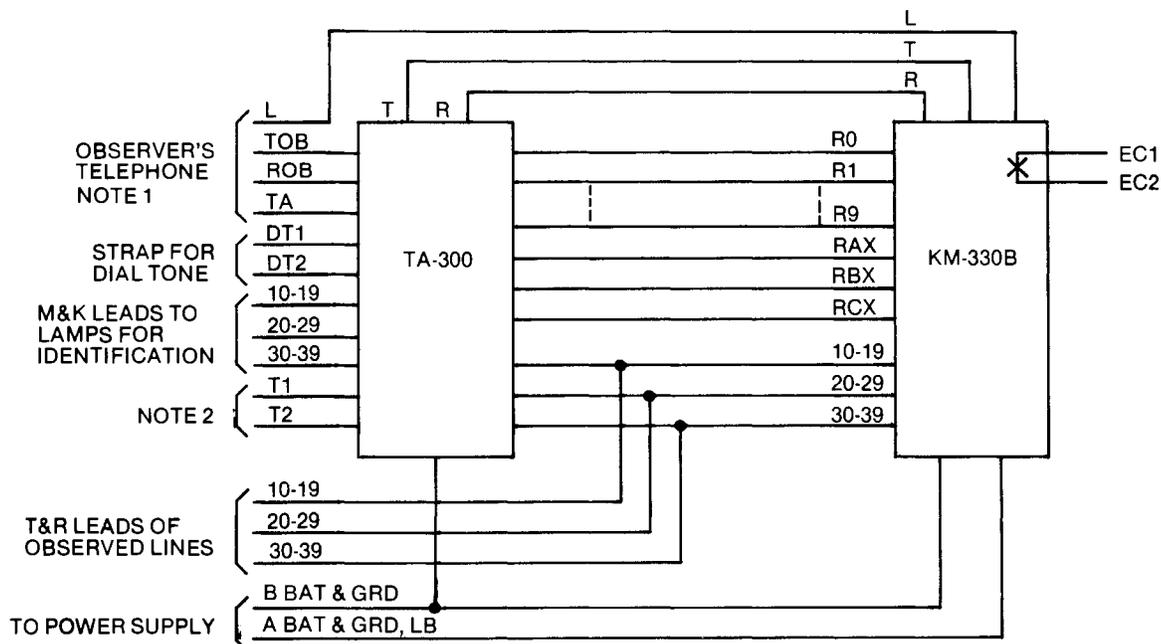
Fig. 2 — Condensed Functional Schematic.



NOTES:

1. CONNECT ONE SIDE OF OBSERVER'S TELEPHONE PUSHBUTTON TO TA-300 LEAD TA; CONNECT THE OTHER SIDE TO GROUND.
2. STRAP T1 AND T2 IF MARKING RELAY IS TO OPERATE DURING OBSERVATION. OTHERWISE MARKING RELAY WILL NOT OPERATE UNLESS TA BUTTON IS PRESSED.
3. CONNECT TA TO SECOND OR THIRD TA-300.

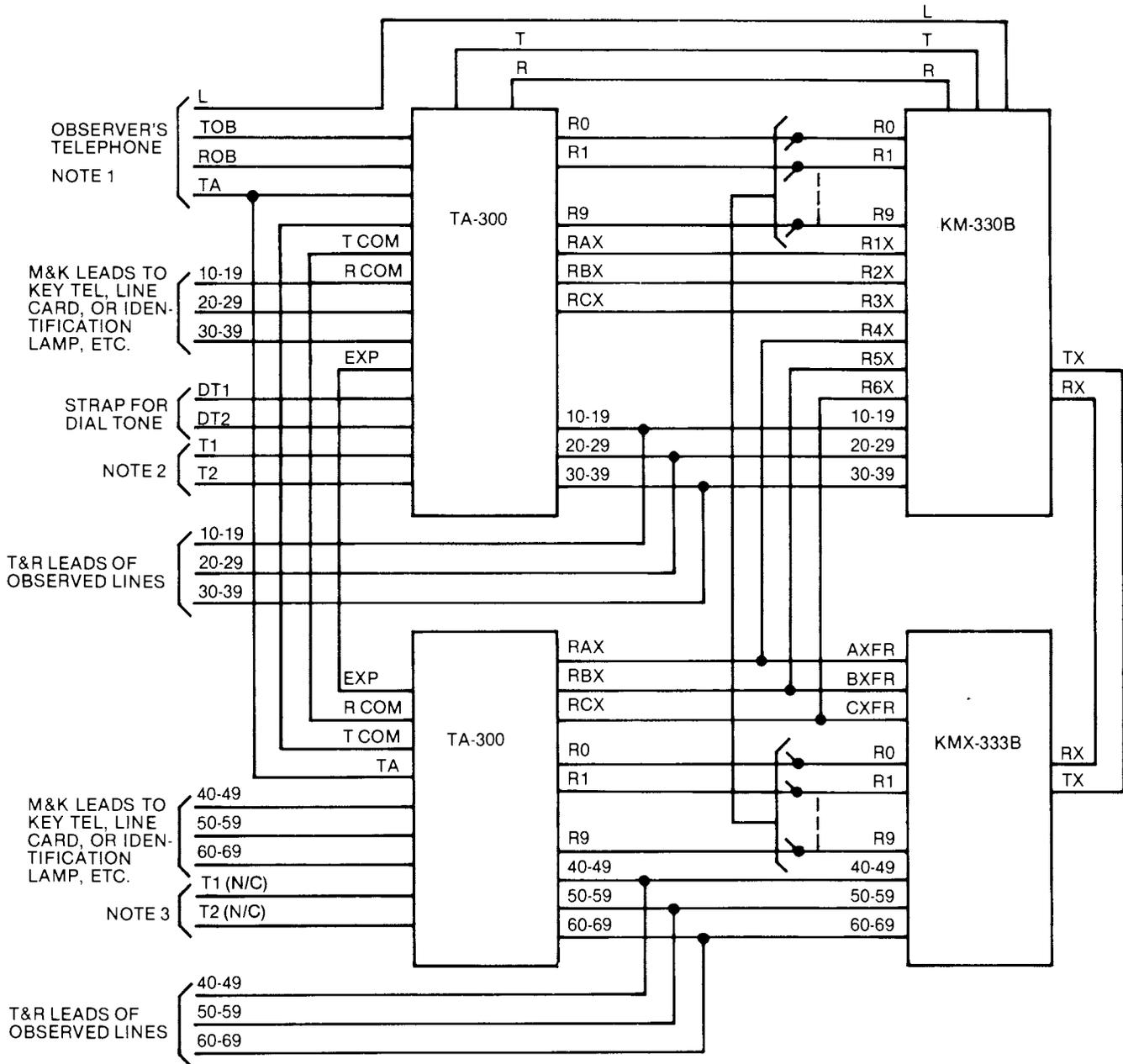
Fig. 3 — Connections of the TA-300.



NOTES:

1. CONNECT ONE SIDE OF OBSERVER'S TELEPHONE PUSHBUTTON TO TA-300 LEAD TA, CONNECT THE OTHER SIDE TO GROUND.
2. STRAP T1 AND T2 IF MARKING RELAY IS TO OPERATE DURING OBSERVATION. OTHERWISE MARKING RELAY WILL NOT OPERATE UNLESS TA BUTTON IS PRESSED.

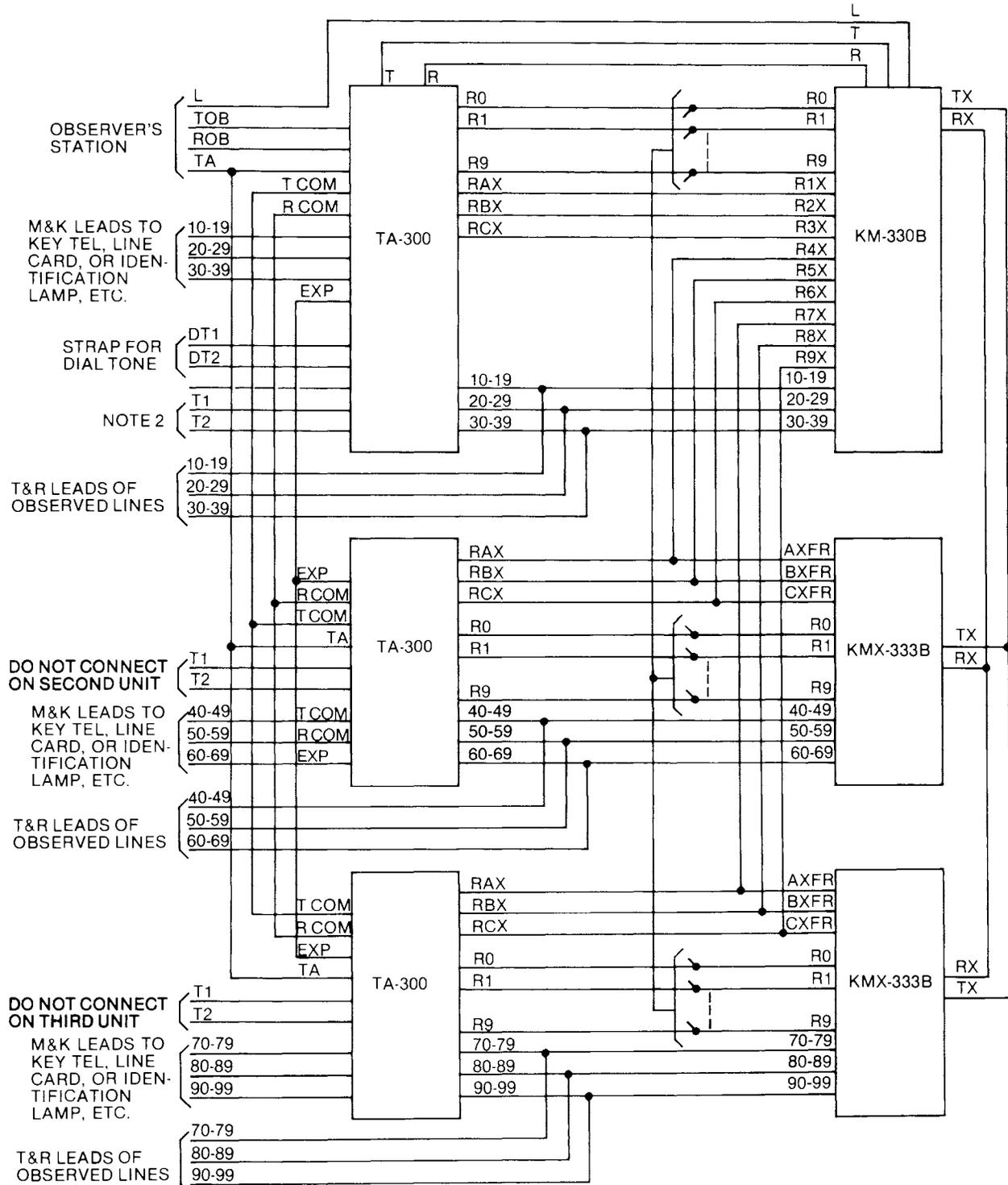
Fig. 4 — Connections of TA-300 and KM-330B Arranged to Observe and Assist 30 Lines.



NOTES:

1. CONNECT ONE SIDE OF OBSERVER'S TELEPHONE PUSHBUTTON TO TA-300 LEAD TA; CONNECT THE OTHER SIDE TO GROUND.
2. STRAP T1 AND T2 WHEN MARKING LEADS M AND K ARE TO OPERATE WHEN LINE IS BEING OBSERVED.
3. DO NOT CONNECT T1 AND T2 ON SECOND UNIT.

Fig. 5 — Two TA-300's with KM-330B and KMX-333B Arranged to Observe and Assist 60 Lines.



- NOTES:
1. CONNECT ONE SIDE OF OBSERVER'S TELEPHONE PUSHBUTTON TO TA-300 LEAD TA; CONNECT THE OTHER SIDE TO GROUND.
  2. STRAP T1 AND T2 WHEN MARKING LEADS M AND K ARE TO OPERATE WHEN LINE IS OBSERVED. FIRST TA UNIT ONLY.

Fig. 6 — Connections of KM-330B with Three TA-300 Talk Assist Units and Two KMX-333B Expanders Arranged to Observe and Assist 90 Lines.

66B3-50 CONN. BLOCK	A25B CONN. CABLE	CONNECTOR CABLE A	66B3-50 CONN. BLOCK	A25B CONN. CABLE	CONNECTOR CABLE B	66B3-50 CONN. BLOCK	A25B CONN. CABLE	CONNECTOR CABLE C
TOB	W-BL	26	R3	W-BL	26	RO	W-BL	26
ROB	BL-W	1	R4	BL-W	1	R1	BL-W	1
T	W-O	27	R5	W-O	27	R2	W-O	27
R	O-W	2	R6	O-W	2	TA	O-W	2
DT1	W-G	28	R7	W-G	28	T COM	W-G	28
DT2	G-W	3	R8	G-W	3	R COM	G-W	3
N/C	W-BR	29	R9	W-BR	29	EXP	W-BR	29
RAX	BR-W	4	R9	BR-W	4	RBX	BR-W	4
MA0	W-S	30	MC0	W-S	30	MB0	W-S	30
KA0	S-W	5	KC0	S-W	5	KB0	S-W	5
MA1	R-BL	31	MC1	R-BL	31	MB1	R-BL	31
KA1	BL-R	6	KC1	BL-R	6	KB1	BL-R	6
MA2	R-O	32	MC2	R-O	32	MB2	R-O	32
KA2	O-R	7	KC2	O-R	7	KB2	O-R	7
MA3	R-G	33	MC3	R-G	33	KB3	R-G	33
KA3	G-R	8	KC3	G-R	8	KB4	G-R	34
MA4	R-BR	34	MC4	R-BR	34	KB5	R-BR	35
KA4	BR-R	9	KC4	BR-R	9	KB6	BR-R	36
MA5	R-S	35	MC5	R-S	35	KB7	R-S	37
KA5	S-R	10	KC5	S-R	10	KB8	S-R	38
MA6	BK-BL	36	MC6	BK-BL	36	KB9	BK-BL	39
KA6	BL-BK	11	KC6	BL-BK	11	TBO	BL-BK	40
MA7	BK-O	37	MC7	BK-O	37	RBO	BK-O	41
KA7	O-BK	12	KC7	O-BK	12	TB1	O-BK	42
MA8	BK-G	38	MC8	BK-G	38	RB1	BK-G	43
KA8	G-BK	13	KC8	G-BK	13	TB2	G-BK	44
MA9	BK-BR	39	MC9	BK-BR	39	RB2	BK-BR	45
KA9	BR-BK	14	KC9	BR-BK	14	TB3	BR-BK	46
TAO	BK-S	40	TC0	BK-S	40	RB3	BK-S	47
RA0	S-BK	15	RC0	S-BK	15	TB4	S-BK	48
TA1	Y-BL	41	TC1	Y-BL	41	RB4	Y-BL	49
RA1	BL-Y	16	RC1	BL-Y	16	TB5	BL-Y	50
RA2	Y-O	42	TC2	Y-O	42	RB5	Y-O	21
TA3	O-Y	17	RC2	O-Y	17	TB6	O-Y	22
RA3	Y-G	43	TC3	Y-G	43	RB6	Y-G	23
TA4	G-Y	18	RC3	G-Y	18	TB7	G-Y	24
RA4	Y-BR	44	TC4	Y-BR	44	RB7	Y-BR	25
TA5	BR-Y	19	RC4	BR-Y	19	TB8	BR-Y	26
TA5	Y-S	45	RC5	Y-S	45	RB8	Y-S	27
RA5	S-Y	20	RC5	S-Y	20	TB9	S-Y	28
TA6	V-BL	46	TC6	V-BL	46	RB9	V-BL	29
RA6	BL-V	21	RC6	BL-V	21	T1	BL-V	30
TA7	V-O	47	TC7	V-O	47	T2	V-O	31
RA7	O-V	22	RC7	O-V	22		O-V	32
TA8	V-G	48	TC8	V-G	48		V-G	33
RA8	G-V	23	RC8	G-V	23		G-V	34
TA9	V-BR	49	RC9	V-BR	49		V-BR	35
RA9	BR-V	24	RC9	BR-V	24		BR-V	36
B GRD	V-S	50	N/C	V-S	50		V-S	37
B BAT	S-V	25	N/C	S-V	25		S-V	38

NC: NO CONNECTIONS

Fig. 7 — Connections for A25B Connector Cables to 66B3-50 Connecting Blocks.

## KM-308™ SERVICE OBSERVING UNIT

### 1. GENERAL

1.01 The KM-308 provides for observation of a maximum of 8 lines or stations of a central office, PABX or key system. When a line is to be observed, it is prewired from any appearance of the talking path to the selection matrix of the KM-308. When a station is to be observed, the talking pair is wired from the network side of the telephone switchhook to the selection matrix.

1.02 Because almost any talking path can be observed at almost any accessible point with the KM-308, this text will refer to that point as a line without regard to where it might be connected.

1.03 The KM-308 has received Registration Number AQT9PZ-69622-MO-N under FCC Rules and Regulations, Part 68. Ringer Equivalence is 0.0B.

### 2. DESIGN FEATURES

2.01 The unit can be installed in a relay rack, an apparatus cabinet or on a backboard. Connections are made with a 25-pair connector cable to a 66 type connecting block.

2.02 The eight lines to be observed are assigned access digits 10 to 17. Selection of a line for observation can be done by tone or rotary dialing the two-digit code assigned to that line. When the next is to be selected, the switchhook is operated, then released, and the next code is dialed.

2.03 The device does not introduce noise onto the observed lines or interfere with their operation.

### 3. OPERATION

3.01 Operate the pick-up key assigned to service observing and lift the handset. If the lamp lead has been connected, seizure of the KM-308 will be indicated by a lighted key lamp. No audible signal will be heard.

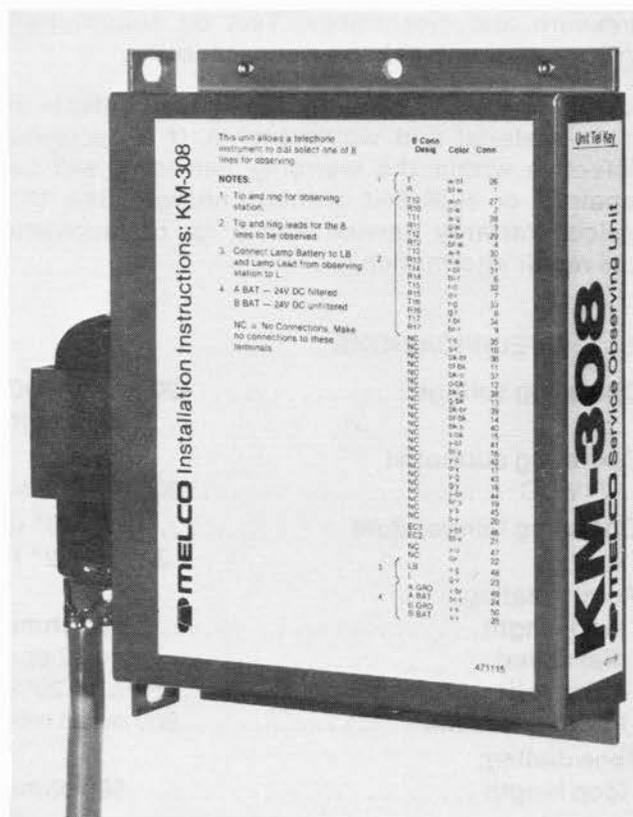
3.02 Dial the two-digit access code of the line to be observed. If there is no conversation, nothing will be heard. Release the line simply by restoring the handset of the observing telephone.

### 4. INSTALLATION

4.01 No special tools are required.

4.02 Mount the KM-208 in an apparatus cabinet, a relay rack or on a wall. Connect the cable connector to the KM-308 plug and secure it with the clamp provided.

4.03 Make cross-connections as shown in the attached drawing. **CONNECT ALL GROUNDS IN COMMON.**





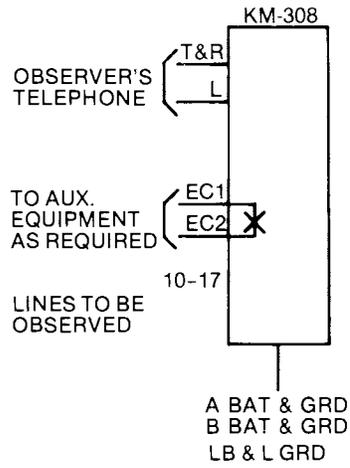


Fig. 2 — Connections, KM-308.

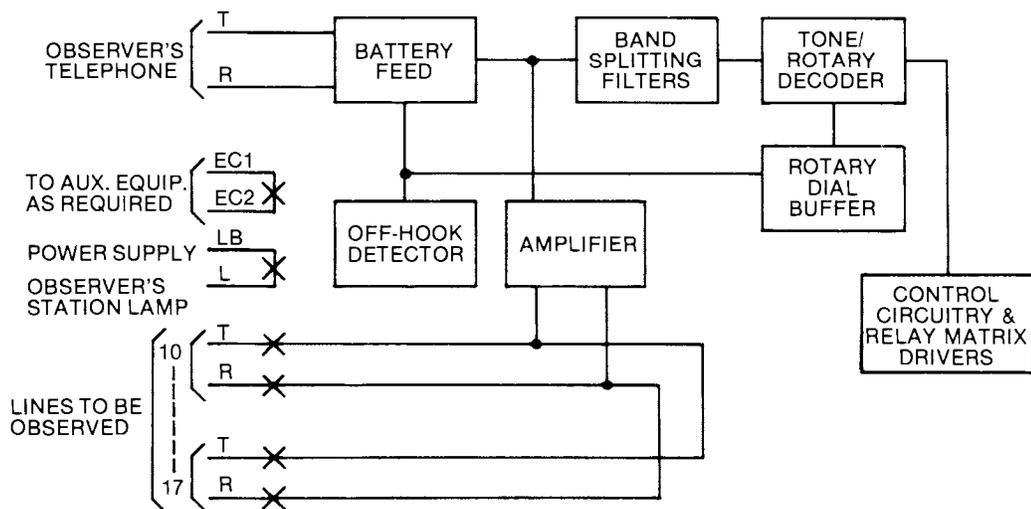


Fig. 3 — Condensed Functional Schematic.

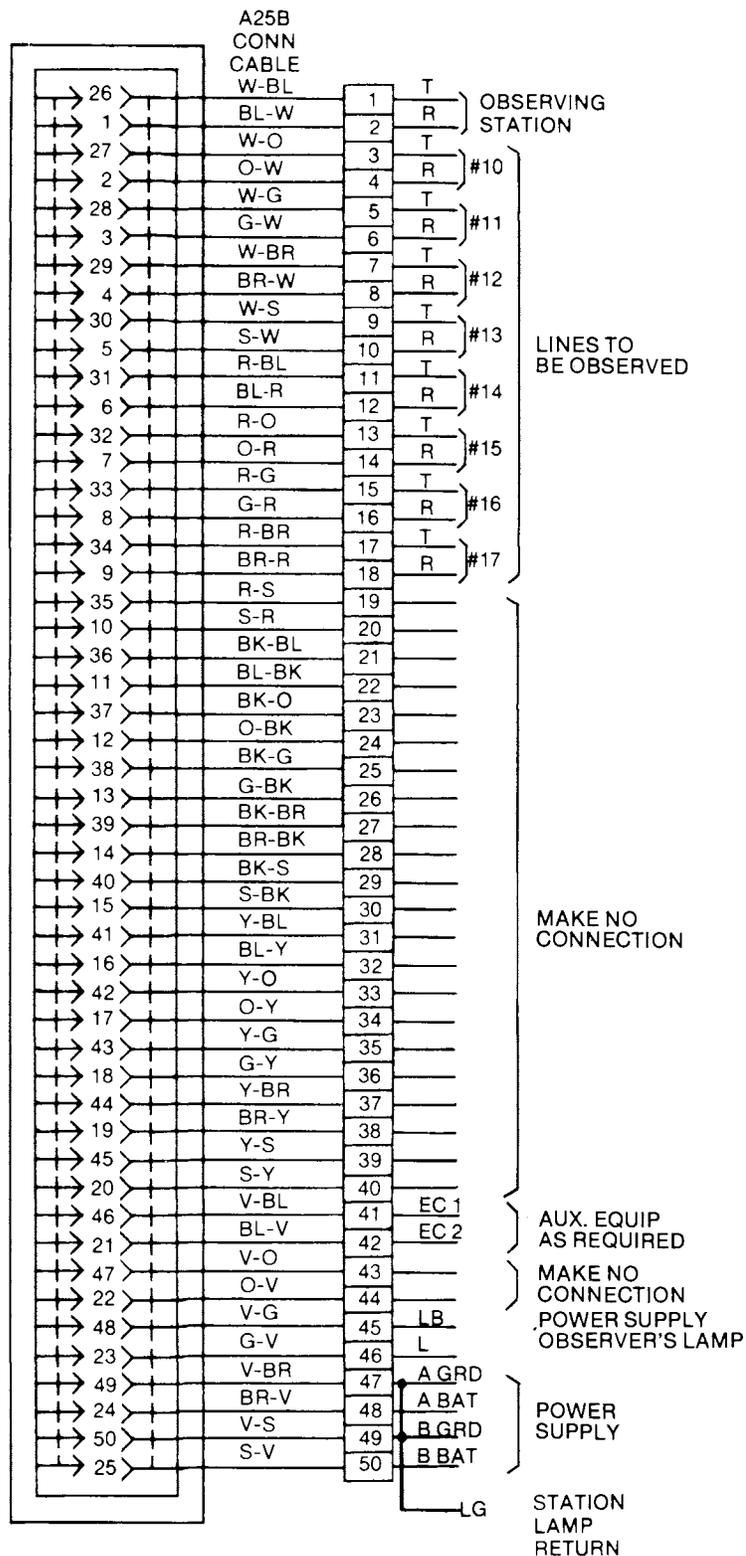


Fig. 4 — KM-308 Cable Connections and Connecting Block Assignments

## KM-301™ SERVICE OBSERVING UNIT

### 1. GENERAL

1.01 The KM-301 provides for service observing individual lines or stations of a PABX or central office. The device connects in parallel with the station through the in-place modular jack.

### 2. DESIGN FEATURES

2.01 The KM-301 does not produce noise on the line or interfere with line operation.

2.02 The KM-301 connects to modular jacks at each station in parallel with the station instrument. A standard four-wire operator's headset plugs into the KM-301.

2.03 A volume adjustment is provided to match the device to the observed line.

### 3. INSTALLATION

3.01 Connect -24V d.c. through the station wiring to the modular jacks of the stations to be observed.

3.02 Mount the KM-301 on any flat surface near the modular jack.

3.03 Disconnect the telephone cord from the modular jack, insert the plug end of a double outlet adapter and reconnect the telephone cord, this time to a jack of the double outlet adapter.

3.04 Connect the remaining jack to the KM-301 with a standard modular cord. Connect the observer's headset to the KM-301.

3.05 Make a test call and, with the volume adjustment, adjust the level of the headset to the level of the test call.

### 4. MAINTENANCE

4.01 No provision is made for field repair. If the unit does not function properly, check all connections. Verify output from the power supply. Check for the presence of -24V at the modular jack. Make a substitution test with a KM-301 known to be serviceable.

4.02 The KM-301 is warranted against defects in material and workmanship. If it fails from

such defects within the warranty period, the unit will be repaired or replaced without charge. See the Melco Warranty Service Policy for additional warranty and service information.

### 5. SPECIFICATIONS

Operating voltage range . . . . . -20 to -28V DC  
-24V DC nom filtered

Operating current . . . . . 30 mA ± 30%

Operating humidity . . . . . 0% to 95%  
noncondensing

Operating temperature . . . . . 0° to 50°C  
32° to 122°F

Mounting . . . . . screws on wall

Housing . . . . . Plastic, ash color

Dimensions . . . . . 1.15" x 2.21" x 5.30"



Fig. 1

### 6. ORDERING GUIDE

6.01 Order as follows:  
(QTY) KM-301 120296 SERVICE OBSERVING  
UNIT

from your supplier or distributor.

6.02 The double outlet adapter is not furnished.

6.03 For further information about this or any  
Melco product, contact:

MELCO LABS, INC.  
P.O. Box 6909  
Bellevue, WA 98008-0909  
(206) 643-3400  
TWX: 910-443-3040

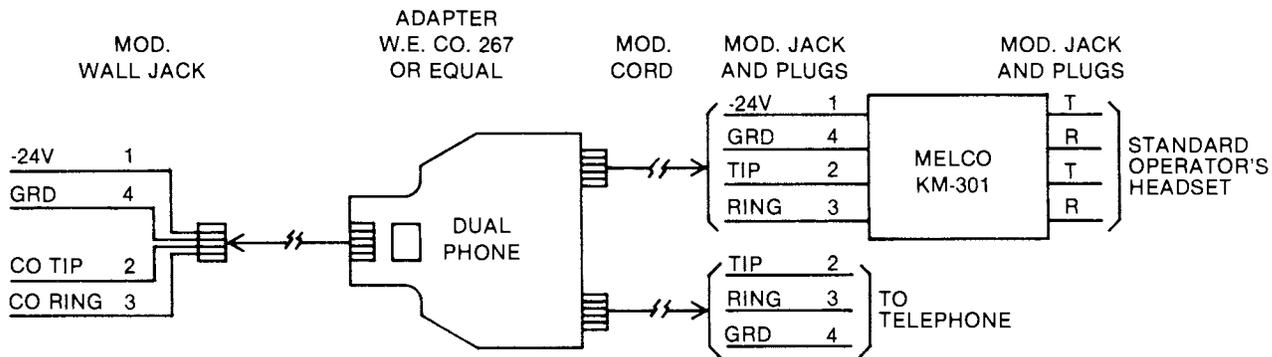


Fig. 2 — Station Connections.

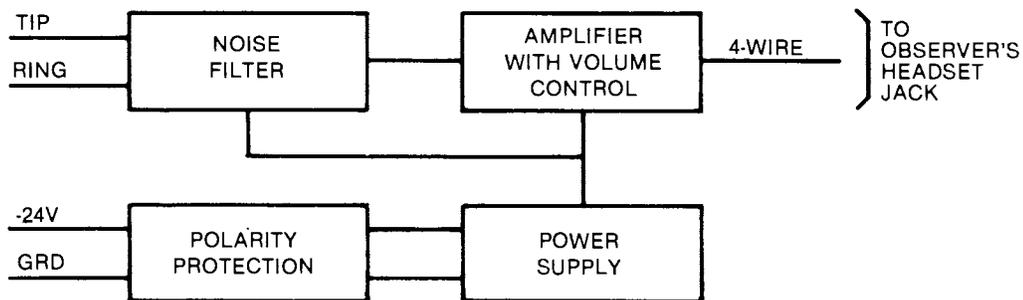


Fig. 3 — Block Diagram.

## KMC-308M/KM-308M MODULAR SERVICE OBSERVING SYSTEM

### 1. GENERAL

1.01 The KMC-308M and KM-308M are self-contained, modular systems which allow for observation of up to 8 central office, PABX or key system lines or stations. Lines or stations to be observed are easily accessed from an observer's station by dialing an assigned two-digit code. Designed for quick and easy installation, the KMC-308M and KM-308M include a built-in power supply and optional talk assist capability. All station or line, observer's station and auxiliary equipment connections are made to modular receptacles on the KMC-308M or KM-308M through standard 4 or 6-wire modular cords.

1.02 Two versions of the system are available—the KMC-308M which is compatible with an optional CM-8 Observer's Console, and the KM-308M which is not compatible with the console. Because both systems operate in the same manner, this document will refer only to the KMC-308M, except where differences occur due to CM-8 compatibility.

1.03 An optional CM-8 Observer's Console is available for use as the observer's station in KMC-308M installations. The CM-8 provides outside line access and includes a standard tone-dialing keypad, a talk assist button, and a digital busy lamp field with eight LEDs which light when the associated line is busy. Refer to the CM-8 Technical Practice (Document No. 490137) for detailed information. When the CM-8 is not used, any tone or rotary dialing keyset or single-line telephone can be assigned as the observer's station.

1.04 The KM-308M is pending FCC Registration under FCC Rules and Regulations, Part 68.

### 2. DESIGN FEATURES

2.01 The KMC-308M Modular Service Observing System:

- provides for modular plug-in connections from the KMC-308M to stations or lines, service observer's station, and auxiliary equipment through standard 4- or 6-wire modular telephone cord.
- installs in a relay rack, an apparatus cabinet or on a backboard.

- provides access to service observing lines through the optional CM-8 Observer's Console, (KMC-308M only) or through a tone or rotary dialing keyset or single-line telephone. When a key system telephone is used, one pick-up key is dedicated for access to service observing lines. When a single-line telephone is used, the station is dedicated for service observing use only. When the CM-8 Console is used, an observer can access outside lines as well as service observing lines. The CM-8 Console is equipped with a keypad, a talk assist button and a digital busy lamp field.

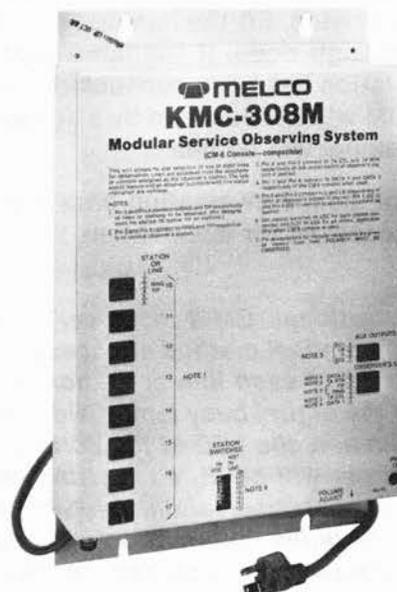


Fig. 1

- has provisions for optional connections to a lamp, when using a multi-button key system service observer's telephone, which lights when a line is accessed for observation.
- is equipped with an optional talk assist feature which allows an observer to enter the conversation on the line being observed.
- does not decrease transmission over the line or station being observed, or interfere with the operation of the lines in any manner. No noise is induced onto the observed lines at any time by the KMC-308M.

- provides a power on/off indicator which lights when power is applied.
- is equipped with a volume control adjustment which allows for increasing or decreasing the level heard over lines or stations being observed.
- has an internal power supply and allows for easy power connections through the power cord to a standard 120V AC outlet.

### 3. OPERATION

3.01 The eight lines or stations to be observed are assigned digits 10 through 17. To access a line or station from the CM-8 Console or from a single-line observer's telephone, simply lift the receiver and dial the assigned two-digit code. To access a line or station from a key system observer's telephone, depress the pick-up key assigned to service observing, lift the handset and dial the assigned two-digit code. If the lamp lead at the observer's station has been connected, seizure of the KMC-308M will be indicated by a lighted lamp. No audible signal will be heard.

3.02 If there is no conversation on a line or station accessed for observation, nothing will be heard.

**NOTE:** *The optional CM-8 observer's console eliminates the random method of accessing lines, since the status of each line or station is clearly indicated on the digital busy lamp field. If the line or station is in use, the LED of the corresponding two-digit number will be lit, so that the observer can select a line for observation which is currently being used. Detailed information on the CM-8 Observer's Console is included in the CM-8 Technical Practice (Document No. 490137).*

3.03 A line accessed for observation is easily released by simply restoring the handset at the observing station. Lines or stations may be successively accessed by going on-hook, then off-hook and dialing the next code.

3.04 If the talk assist feature is connected, an observer can enter the conversation on a line or station accessed for observation by momentarily depressing the assigned talk assist button on the observer's telephone or console. When the observer speaks, the conversation will be heard by both of the observed parties on the line. The talk assist connection is terminated when the handset of the observer's telephone or console is restored.

### 4. INSTALLATION

- 4.01 No special tools are required.
- 4.02 Mount the KMC-308M in an apparatus cabinet, a relay rack or on a wall.

#### GROUNDING

**NOTE:** *A good grounding system which allows desirable voltages and currents to be held safely constant while destructive power surges, commercial power imbalances, and lightning strikes are carried off to earth ground is a necessary part of the installation of a good communications system.*

4.03 To provide an adequate grounding system, connect the ground terminal on the bottom side of the KMC-308M (chassis ground) and the protectors for any line entering the system in common to the chassis ground terminal, which must be strapped to all external grounds. Continue the KMC-308M chassis ground to a metal cold water pipe. Connect ground wire with clamps to a clean area of the pipe. If a cold water pipe is inaccessible, install a standard eight-foot ground rod near the equipment.

#### STATION OR LINE CONNECTIONS

4.04 Make connections between the KMC-308M and the lines or stations to be observed using modular cords with 6-position, 4 conductor RJ-11 jacks. Plug the cords into the modular STATION or LINE receptacles on the KMC-308M (designated 10-17) which correspond to the desired two-digit access codes. See Figure 2 for location of receptacles on the KMC-308M, and Figure 3 for pin designations of the STATION or LINE receptacles. Connections from the KMC-308M to the stations or lines to be observed are made in one of the following manners:

1. *Connections to CO lines when customer's telephone system is a modular PBX or key system:* Using T-adapters, connect the applicable modular cords from the KMC-308M and from the PBX or KSU into 6-position, 2- or 4-conductor jacks (625), then connect to CO lines as shown in Figure 4.
2. *Connections to CO lines when connections to customer's telephone system are made through a connecting block:* Connect the applicable modular cords from the KMC-308M into 6-position, 2- or

4-conductor jacks (625), then make connections to CO lines at the connecting block as shown in Figure 5.

3. *Connections to stations when customer's telephone system is a modular PBX or key system:* Using T-adapters, connect the applicable modular cords from the KMC-308M into the corresponding station receptacles on the PBX or KSU as shown in Figure 6.
4. *Connections to stations when connections to customer's telephone system are made through a connecting block:* Connect the applicable modular cords from the KMC-308M into 6-position, 2- or 4-conductor jacks (625), then connect to stations at the connecting block as shown in Figure 7.

4.05 When using the CM-8 console, the STATION SWITCHES on the KMC-308M must be set in accordance with the two-digit code of the lines or stations connected to the KMC-308M modular receptacles. For each line or station connected, set the corresponding switch to the IN USE position. For each station or line not connected, set the corresponding switch to the NOT IN USE position. It is important to ensure that these switches are set correctly, so that proper indication of line status appears at the CM-8 console. Refer to Figure 2 for location of STATION SWITCHES on the KMC-308M, and to Figure 8 for assignments of the switches.

**NOTE:** *When the CM-8 console is not used, these switches do not apply and their position does not matter. The CM-8 is NOT compatible with the KMC-308M.*

#### OBSERVER'S STATION CONNECTIONS

4.06 Make connections between the KMC-308M and the observer's telephone or console using modular cords with 6-position, 6-conductor RJ-11 jacks. Plug one end of the cord into the OBSERVER'S STA modular receptacle on the KMC-308M. (See Figure 2 for location of the receptacle on the KMC-308M, and Figure 9 for pin designations.) Make connections to the observer's station in one of the following manners:

1. *Connections to CM-8 Console—KMC-308M installations only (see Figure 10):* Connect the modular cord directly into

the line receptacle on the console. (A talk assist button is provided on the console and the talk assist feature is activated through the modular cord connection.)

2. *Connections to a single-line telephone:*
  - a. Connect the modular cord either directly into the line receptacle on the telephone (Figure 10), or into a 6-position, 6-conductor jack (625). When connections are made to a jack, connect the TIP and RING leads from the modular cord connection at the jack to the telephone as shown in Figure 11.
  - b. If the talk assist feature is desired, the observer's telephone must be equipped with a switch dedicated to the talk assist function. Any two position switch or pushbutton may be used but a locking pushbutton (push-on/push-off) with mechanical indicator is recommended. Follow the manufacturer's instructions for attaching the switch to the telephone. If the modular cord from the KMC-308M OBSERVER'S STA receptacle is connected directly to the telephone's line receptacle, connect one side of the talk assist switch to the instrument's YELLOW lead and the other side to the instrument's BLACK lead. If the modular cord from the KMC-308M OBSERVER'S STA receptacle is connected to a modular jack (625), connect the TA RTN lead from the modular cord connection at the jack to one side of the talk assist switch and the TA CTL lead to the other side.
3. *Connections to a multi-line key system telephone (see Figure 12):*
  - a. Connect the modular cord from the KMC-308M OBSERVER'S STA receptacle to a 6-position, 6-conductor jack (625), then connect the TIP and RING leads from the modular cord connection at the jack to the station TIP and RING leads through the connecting block.
  - b. If the talk assist feature is desired, ensure that the observer's telephone is

equipped with a switch dedicated for the talk assist function as described in Paragraph b, number 2, above. Connect the TA RTN and TA CTL leads to the station through a spare pair of leads at the connecting block.

- c. If lamp control is desired to indicate seizure of a line or station for observation, connect a modular cord with 4-position, 4-conductor RJ-11 jacks into the AUX OUTPUTS modular receptacle on the KMC-308M. (See Figure 2 for location of the receptacle on the KMC-308M, and Figure 13 for pin designations.) Connect the modular cord into a 4-position, 4-conductor jack (625), then connect the L lead from the modular cord connection at the jack to the station's lamp lead, and the LB lead to the station's lamp supply lead, through the connecting block. If A and A1 control are required, connect the EC1 lead to the station's A lead, and the EC 2 lead to the station's A1 lead, through the connecting block.

4.07 Extra contacts (EC1 and EC2) are available through the AUX OUTPUTS receptacle on the KMC-308M. These can be used for control of auxiliary equipment as required. A relay contact closure is provided between EC1 and EC2 when the observer's station seizes the KMC-308M.

4.08 After all modular connections are completed, plug the KMC-308M power cord into a standard 120V AC grounded outlet. The KMC-308M PWR ON LED should light.

4.09 Test for proper operation on all lines or stations assigned for service observation. From the service observer's telephone or console, dial each access code and verify that the access code number and the line or station number agree as assigned. If the talk assist feature is used, check to ensure that voice can be heard over each line or station accessed. Be certain that all talking paths are secure.

4.10 A volume control adjustment is provided on the KMC-308M to allow for increasing or decreasing the level heard over the lines assigned for observation. Adjust to the desired level through the volume control potentiometer.

## 5. MAINTENANCE

5.01 No provision is made for field adjustment or repair. If the unit does not function properly, verify connections and the fuse. Inspect all plugs for adequate seating and cleanliness.

5.02 If the optional CM-8 Console is used (KMC-308M installations only), and the digital indicators do not correctly correspond to the lines or stations assigned for observation, verify that the KMC-308M switch settings are properly set. Verify adequate connection seatings and wire continuity.

5.03 If the KMC-308M fuse should blow, replace it with one of the same type and value (.75 amp, slow blow). Be sure to remove system power before removing or replacing fuses.

5.04 Technical assistance on the KMC-308M or CM-8 is available through Melco's Technical Assistance Department.

5.05 The KMC-308M, KM-308M and CM-8 are warranted against manufacturing and material defects. If one becomes defective within the warranty period, it will be repaired or replaced at no charge. See the Melco Warranty Service Policy for return and repair details.

## 6. SPECIFICATIONS

Input power requirements:

operating voltage . . . . . 80V AC to 135V AC  
120V AC nom  
frequency . . . . . 60 Hz  $\pm$  2 Hz  
current consumption . . . . . 40 watts

Fuse rating . . . . . 0.75 amp, slow blow

Operating temperature . . . . . 0° to 50°C  
32° to 122°F

Operating humidity . . . . 0 to 95% noncondensing

Rotary dialing parameters:

loop length . . . . . 750 ohms  
dial speed . . . . . 10 pps  $\pm$  15%  
pulse ratio . . . . . 60%  $\pm$  20%  
interdigital time . . . . . 200 msec min

Tone dialing parameters:

loop length . . . . . 580 ohms  
interdigital time . . . . . 40 msec min  
input signal level . . . . . - 7.5dB to + 4dB  
bandwidth . . . . .  $\pm$  2%  
recognition time . . . . . 40 msec

Relay contact ratings:  
 lamp ..... 2 amps at 10V AC  
 EC1 and EC2 ..... 2 amps at 28V DC  
 Max volts—  
 observed lines to ground ..... 500 V DC  
 Connections ..... 4- and 6-wire standard  
 modular telephone cords  
 Mounting ..... apparatus cabinet, relay  
 rack or backboard  
 Housing ..... epoxy coated aluminum  
 Dimensions ..... 9.2" x 2.4" x 14.6"  
 Weight ..... 6.0 lbs.

(QTY) 120365 KMC-308M MODULAR SER-  
 VICE OBSERVING SYSTEM  
 (CM-8 CONSOLE COMPATIBLE)  
 (QTY) 120358 KM-308M MODULAR SERVICE  
 OBSERVING SYSTEM  
 OPTIONAL:  
 (QTY) 120359 CM-8 OBSERVER'S CONSOLE  
 from your local supplier or distributor.

7.02 Further information or technical assistance  
 on the KMC-308M, KM-308M, CM-8 or any  
 Melco product is available from:

Melco  
 P.O. Box 6909  
 Bellevue, WA 98008-0909  
 (206) 462-6700  
 TWX:910-443-3040

**7. ORDERING INFORMATION**

7.01 Order as follows:

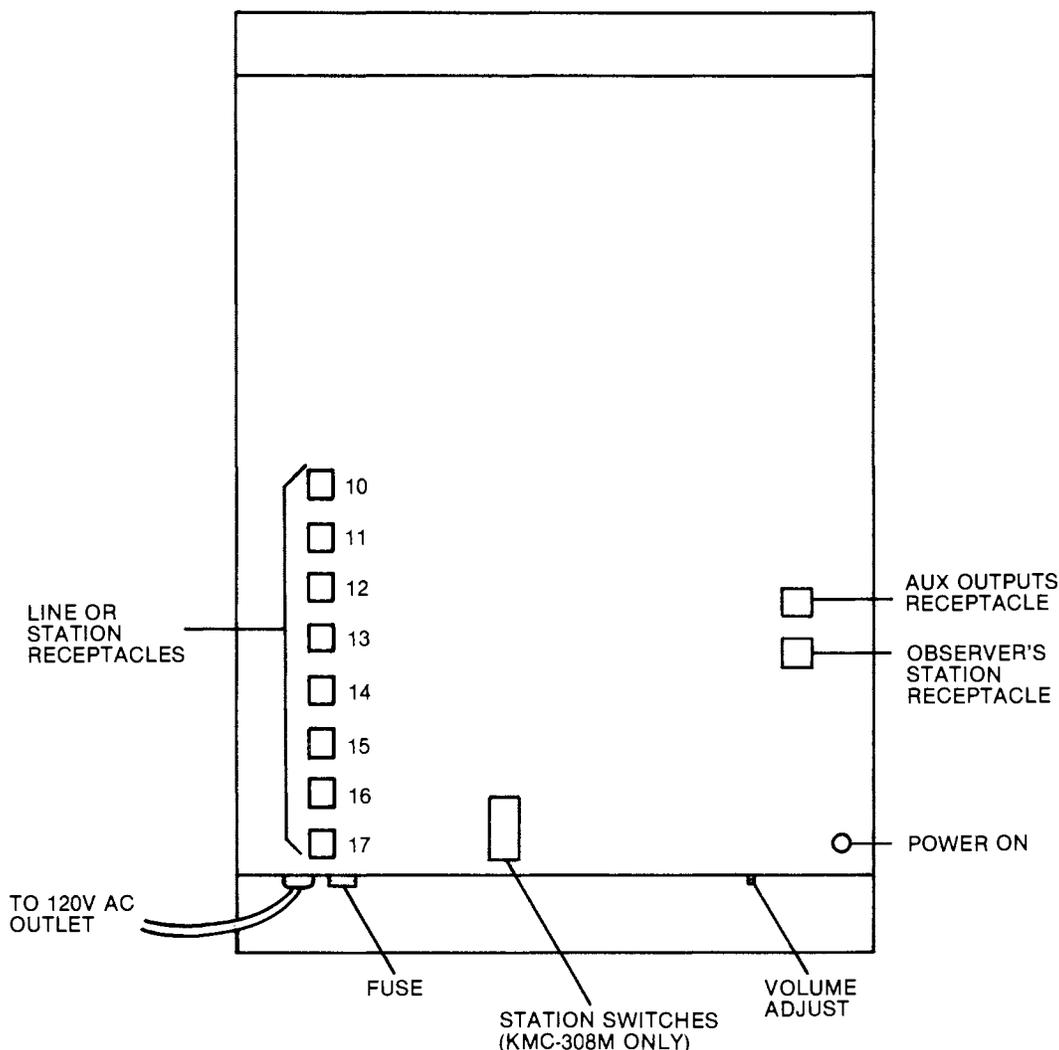


Fig. 2 — Panel Arrangement.

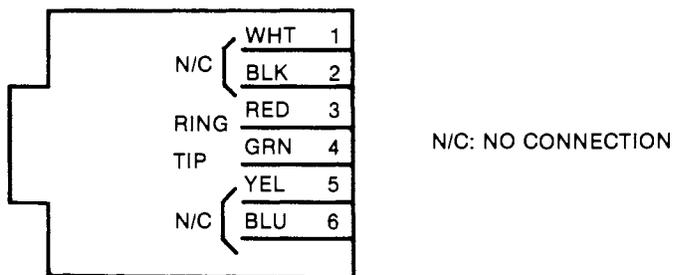


Fig. 3 — Station or Line Receptacle Assignment.

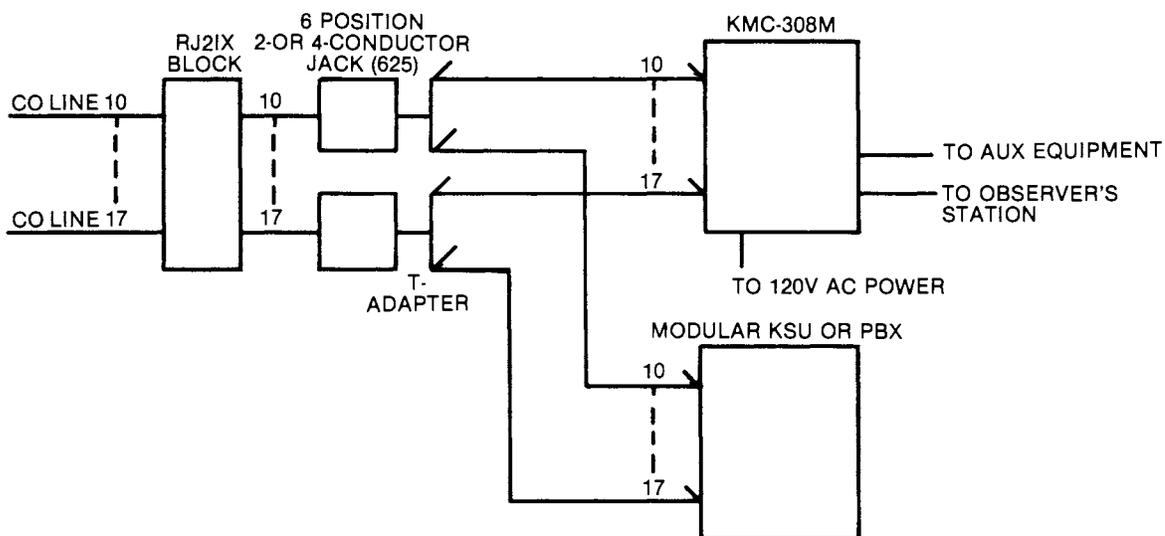


Fig. 4 — Connections to CO Lines with Modular KSU or PBX Telephone System.

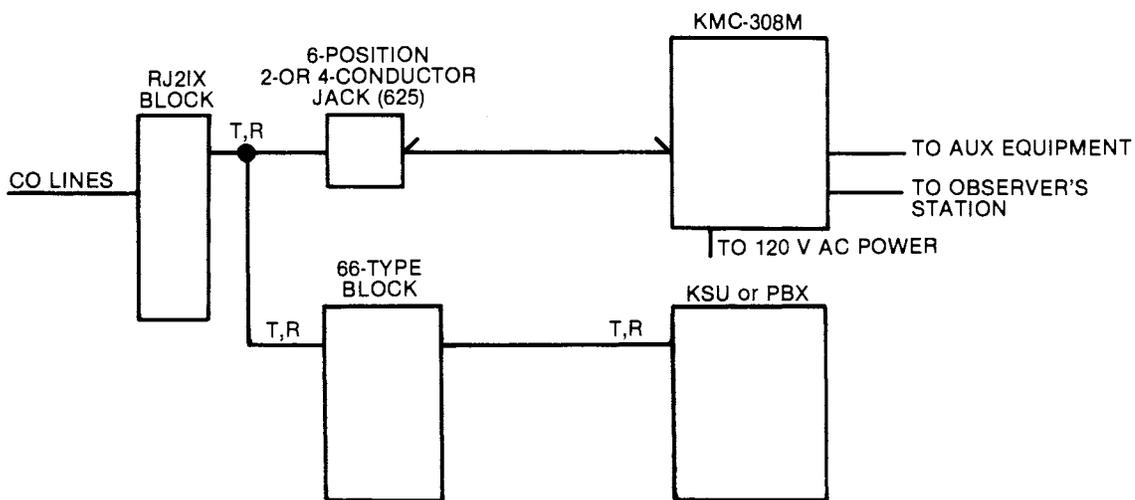


Fig. 5 — Connections to CO Lines Through 66-Type Connecting Block (Typical for Each Line).

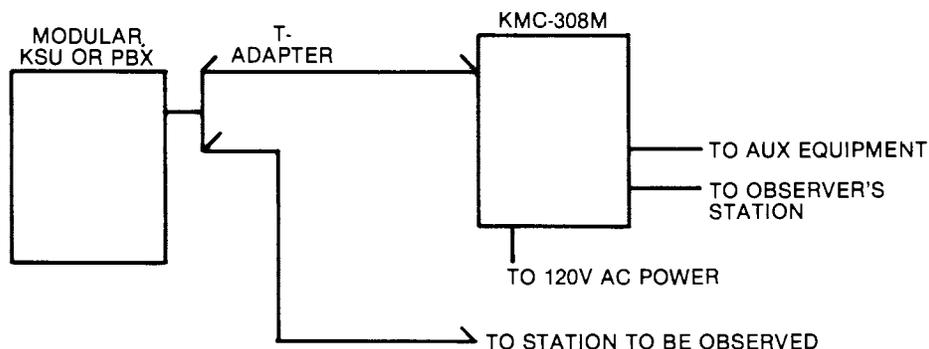


Fig. 6 — Connections to Stations with Modular KSU or PBX Telephone System (Typical for Each Station).

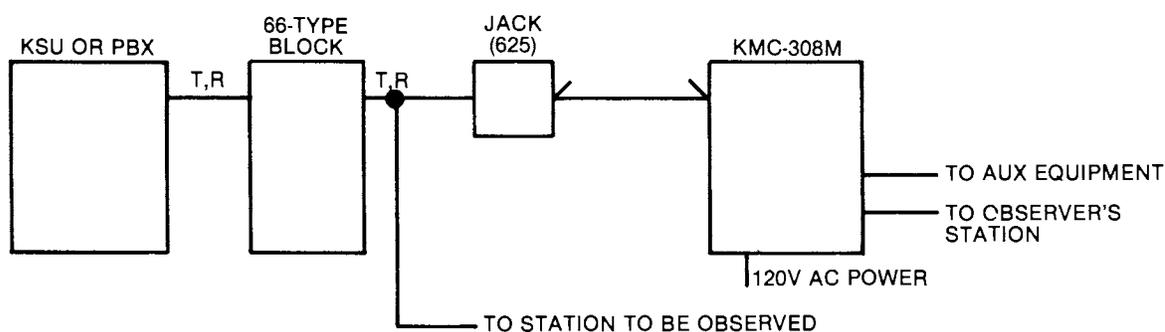


Fig. 7 — Connections to Stations Through 66-Type Connecting Block (Typical for Each Station).

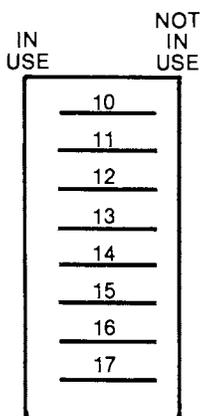


Fig. 8 — Station Switches Assignments (Applicable on KMC-308M Systems only).

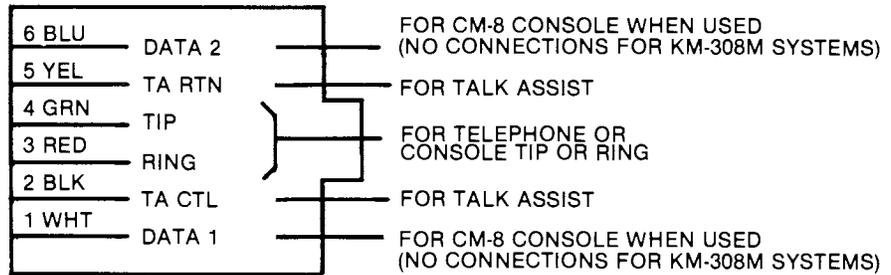


Fig. 9 — Observer's Station Receptacle Assignments.

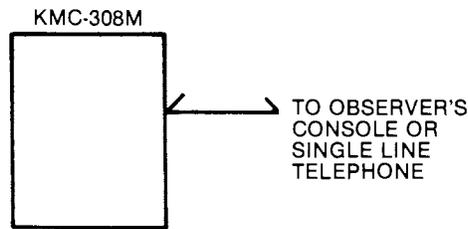


Fig. 10 — Connections to Observer's Console or Single-Line Telephone.

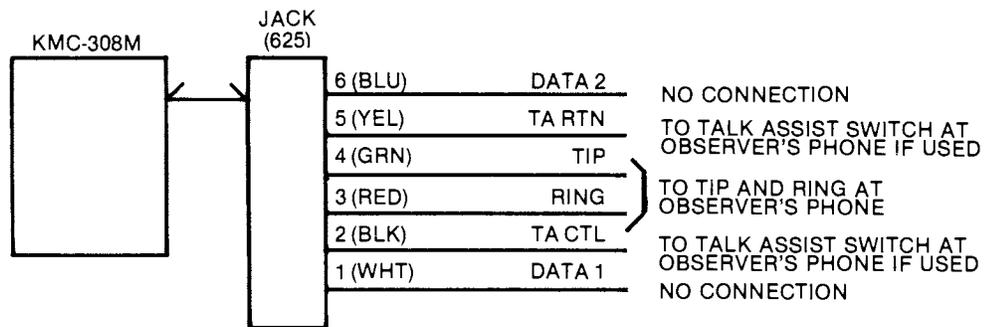


Fig. 11 — Connection to Observer's Single-Line Telephone.

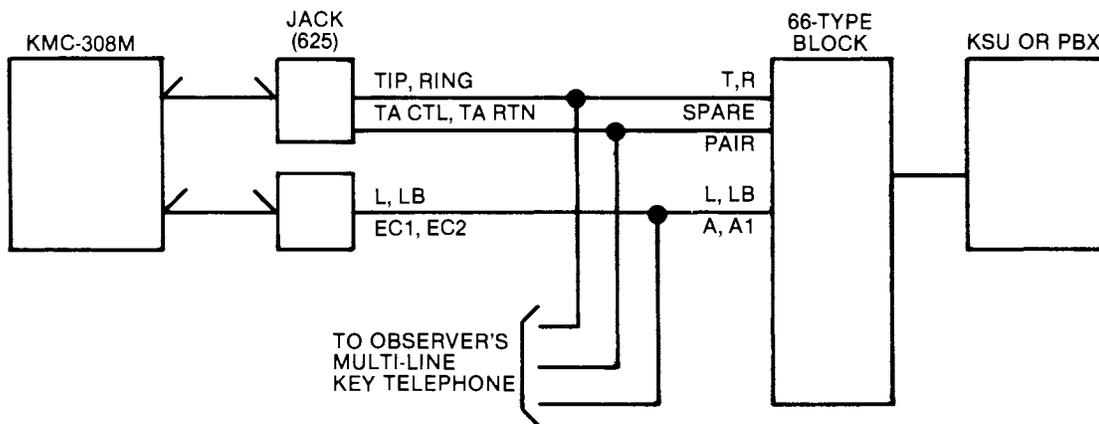


Fig. 12 — Connections to Observer's Multi-Line Key Telephone.

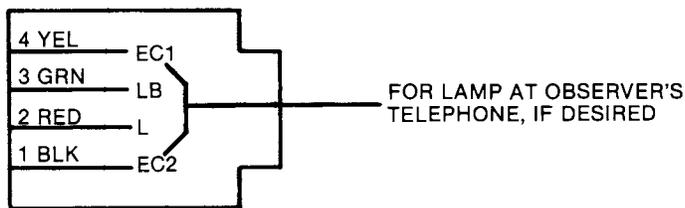


Fig. 13 — Auxiliary Outputs Receptacle Assignments.

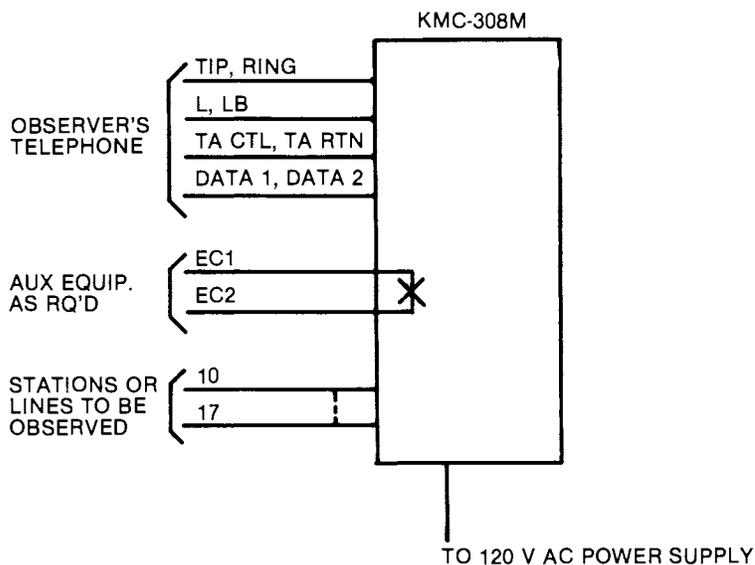


Fig. 14 — KMC-308M Connections.

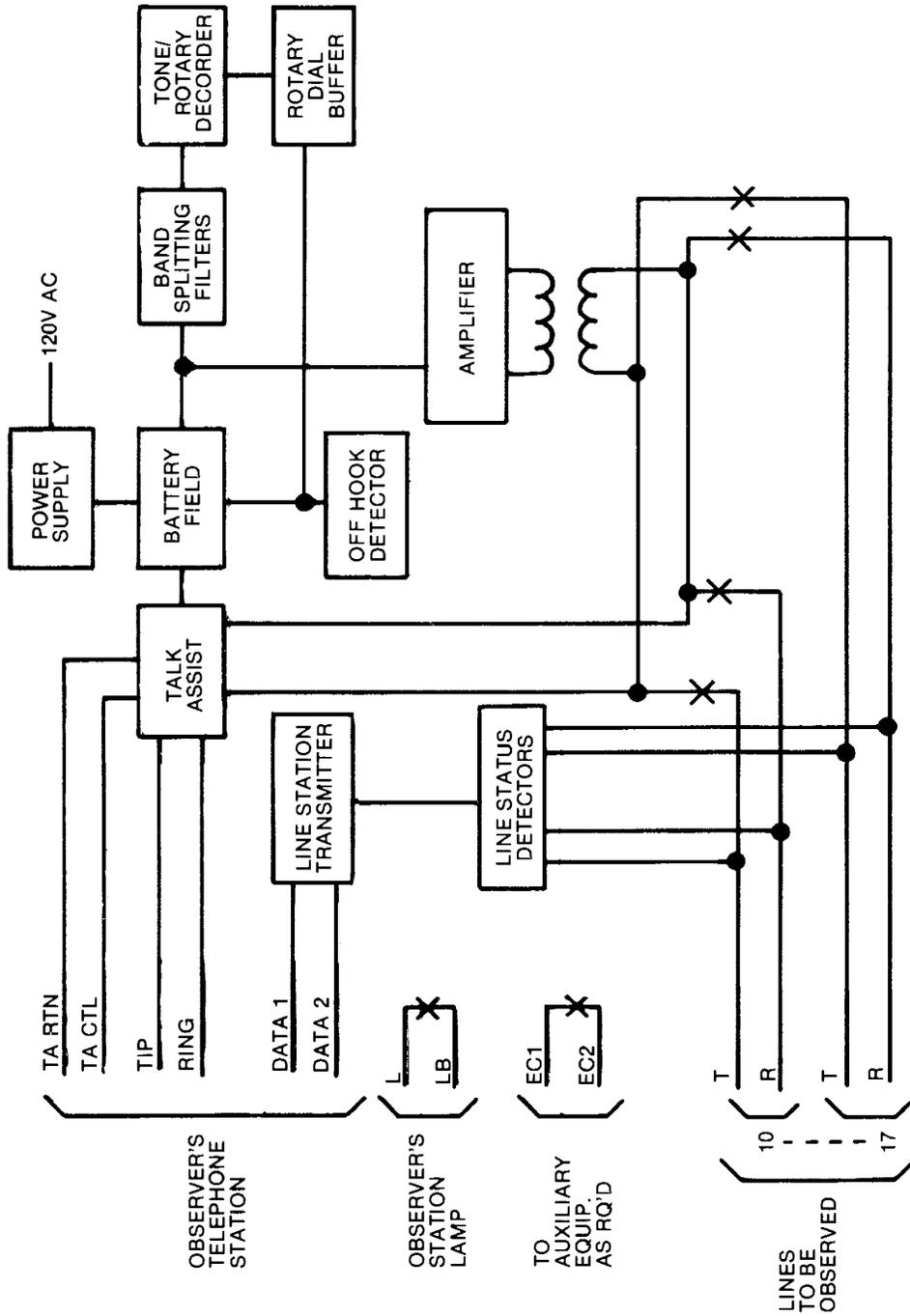


Fig. 15 — Condensed Functional Schematic.

## MPS-120 POWER SUPPLY

### 1. GENERAL

1.01 The MPS-120 is a general purpose, high performance power supply designed for use with the Melco KM-330B Service Observing System or systems with similar power requirements. The MPS-120 is U.L. listed and provides filtered and regulated 24 volts DC power at a maximum of one Ampere. It is designed to operate from 60 Hertz, 115 volts AC power.

### 2. DESIGN FEATURES

2.01 The MPS-120 Power Supply:

- is U.L. listed
- has regulated 24V DC output at 1.0 Ampere current
- is internal current limiting
- provides inherent power line noise filtering and regulation

### 3. INSTALLATION

**CAUTION:** Operate the MPS-120 only on 60 Hertz input power.

3.01 The MPS-120 has three usable power connections designated "+", "-", and AC GRD. Make connections to these terminals as follows:

1. Connect the "+" terminal to either B GRD or the positive side of the load.
2. Connect the "-" terminal to either B BAT or the negative side of the load.

**NOTE:** The AC GRD terminal is internally connected to 60 Hz power ground. The "-" and "+" terminals are not internally connected to any ground. It is recommended that the AC GRD terminal be strapped to the desired ground reference at the supply.

3. At the power supply terminals, connect the AC GRD terminal to the proper grounded side of the supply which, in most cases, will be B GRD. If it is desired that neither polarity be refer-

enced to ground, the AC GRD terminal may be left unconnected.

3.02 After all connections have been completed, plug the MPS-120 into a 120V AC grounded three wire outlet.

3.03 Test the voltage at the load. If not correct, immediately unplug the MPS-120 and attempt to locate the cause.



Fig. 1

### 4. MAINTENANCE

4.01 No routine maintenance is required. If the MPS-120 fails to function properly, verify the power source and inspect all connections. Do not attempt field repair or adjustment. If the unit appears to be defective, return it to your supplier.

4.02 The MPS-120 is warranted against manufacturing and material defects. If it becomes defective within the warranty period it will be repaired or replaced at no charge. See the Melco Warranty Service Policy for return and repair details.



## CP-6 CONNECTING PANEL

### 1. GENERAL

1.01 The CP-6 is a self-contained, pre-wired connecting panel for rapid installation of Melco KMT-330 or KM-330B Service Observing Systems. It provides for a completely modular installation when connecting a Melco Service Observing System to a modular PABX or key telephone system. The CP-6 has 6-conductor modular line or station receptacles, and can be used with any modular telephone system that has 6-pin connectors. Another version, the CP-8, has 8-conductor modular line or station receptacles, and is primarily designed for Merlin systems or others that have 8-pin connectors.

### 2. DESIGN FEATURES

2.01 The CP-6 Connecting Panel:

- mounts on a wall or backboard.
- is pre-wired for quick connection to the Melco KMT-330 Service Observing/Talk Assist System or the Melco KM-330B Service Observing System.
- has a 25-pair connector which provides convenient connections to an RJ-21X block when using the CP-6 to connect to lines for observation. The connector is designed to reduce the amount of hardware and wiring required to convert from 25-pair connections to modular connections.
- is equipped with 30 modular receptacle pairs for connections to up to 30 lines or stations to be observed. Each pair is wired in parallel, essentially providing a built-in "T adapter" at each modular receptacle.
- has two modular receptacles for connections to the observer's station.
- provides screw terminals for quick connection to the Melco MPS-120 or equivalent power supply.
- has installation instructions, as well as identification of all receptacles and terminals, conveniently silkscreened on the unit.

### 3. INSTALLATION

**NOTE:** For complete installation instructions, refer also to the technical practice for the KMT-330 or KM-330B. A comprehensive schematic of all connections is shown in Figure 3.

3.01 Mount the CP-6 on a wall or backboard.

3.02 When making connections to lines to be observed, connect the first 25 lines to the CP-6 by connecting a 25-pair cable between the RJ-21X block and the CP-6 connector. See Figure 3. The first 25 lines or stations are assigned codes 10-34. All interconnections to the RJ-21X are provided through the CP-6 connector.

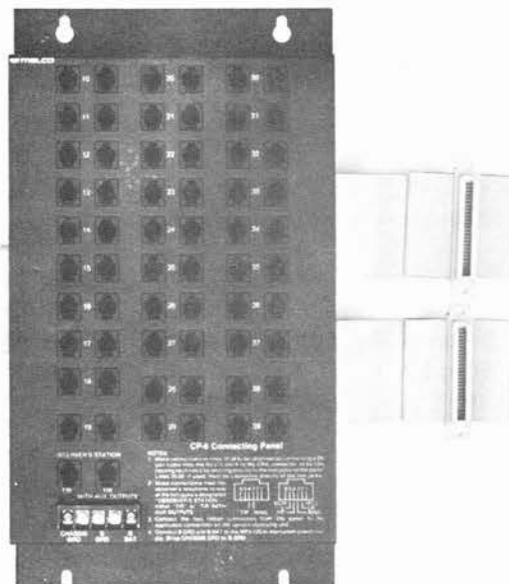


Fig. 1

3.03 Connect the modular cords for lines 35 through 39, if used, into one side of each applicable modular receptacle pair.

**NOTE:** If lines from the Central Office are not terminated on an RJ-21X block, all line connections can be made directly to one side of each modular receptacle pair. Likewise, when making connections to stations to be observed, connect the modular cords from each station into one side of each applicable modular receptacle pair. Refer to Figure 4.

3.04 Make connections from the CP-6 to the modular KSU or PABX using modular cords with 6-position, 2, 4 or 6-conductor RJ-11 plugs. Plug one end of each modular cord into the line or station receptacle on the CP-6 (designated 10-39) which corresponds to the desired two-digit access code. Connect the other end of each modular cord into the corresponding receptacle on the KSU or PABX. If the CP-6 is used in a Centrex installation, connect the modular cord directly to the corresponding telephone set.

3.05 Observer's station connections can be made to one of two receptacles on the CP-6 panel. The receptacle designated "T/R" provides outputs for tip and ring, and the receptacle designated "T/R with auxiliary outputs" provides outputs for EC1, EC2, L and LB in addition to tip and ring. The extra outputs are for control of lamps and other auxiliary equipment at the observer's station. See Figure 5 for pin assignments. Make modular connections from the observer's station to the desired receptacle on the CP-6, using modular cords with 6-position, 6-conductor RJ-11 plugs. Refer to the KMT-330 or KM-330B Technical Practice, as applicable, for connections to auxiliary equipment if used.

3.06 Connect the KMT-330 or KM-330B to the CP-6 by connecting the CP-6's two ribbon connectors to the applicable cable plugs on the KM-330B or KMT-330. Secure with the clamps provided with the KM-330B or KMT-330.

3.07 Connect the B GRD and B BAT terminals from the CP-6 to the MPS-120 or equivalent power supply. Strap CHASSIS GRD to B GRD. Connect B GRD to earth ground at the power supply.

#### 4. MAINTENANCE

4.01 No provision is made for field adjustment or repair. If the system does not function properly, verify all connections. Inspect all plugs for adequate seating and cleanliness.

4.02 Technical assistance on the CP-6, or any Melco product, is available through Melco's Technical Assistance Department.

4.03 The CP-6 is warranted against manufacturing and material defects. If it becomes defective within the warranty period, it will be repaired or replaced at no charge. See the Melco Warranty Service Policy for return and repair details.

#### 5. ORDERING INFORMATION

5.01 Order as follows:

(QTY) 120363 CP-6 CONNECTING PANEL  
from your local supplier or distributor.

5.02 Compatible Melco equipment includes the following:

KMT-330 (120364) SERVICE OBSERVING/  
TALK ASSIST UNIT

KM-330B (120290) SERVICE OBSERVING  
UNIT

5.03 Further information or technical assistance on the CP-6, KMT-330, KM-330B or any Melco product is available from:

Melco  
P.O. Box 6909  
Bellevue, WA 98008-0909  
(206) 462-6700  
TWX: 910-443-3040

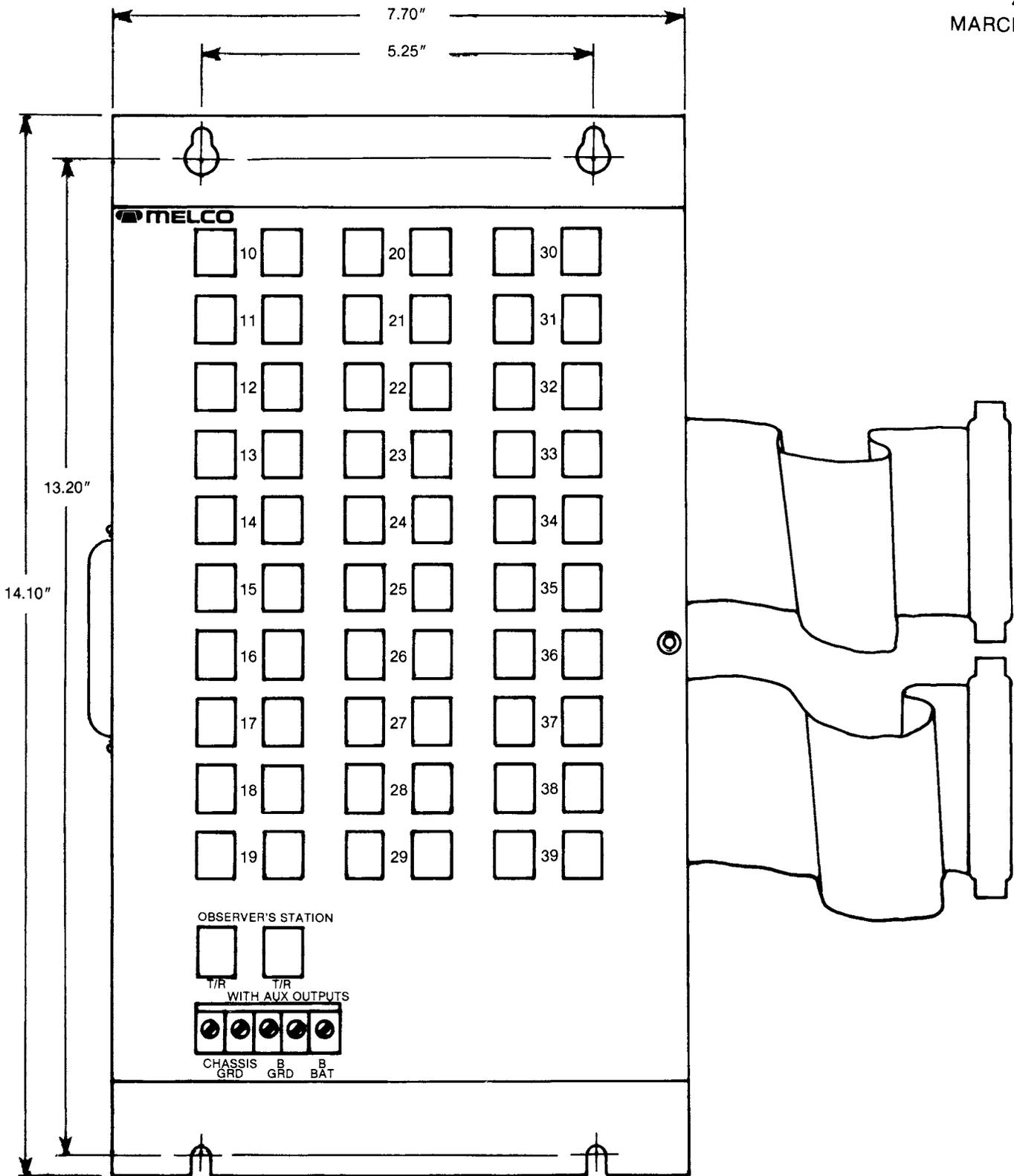
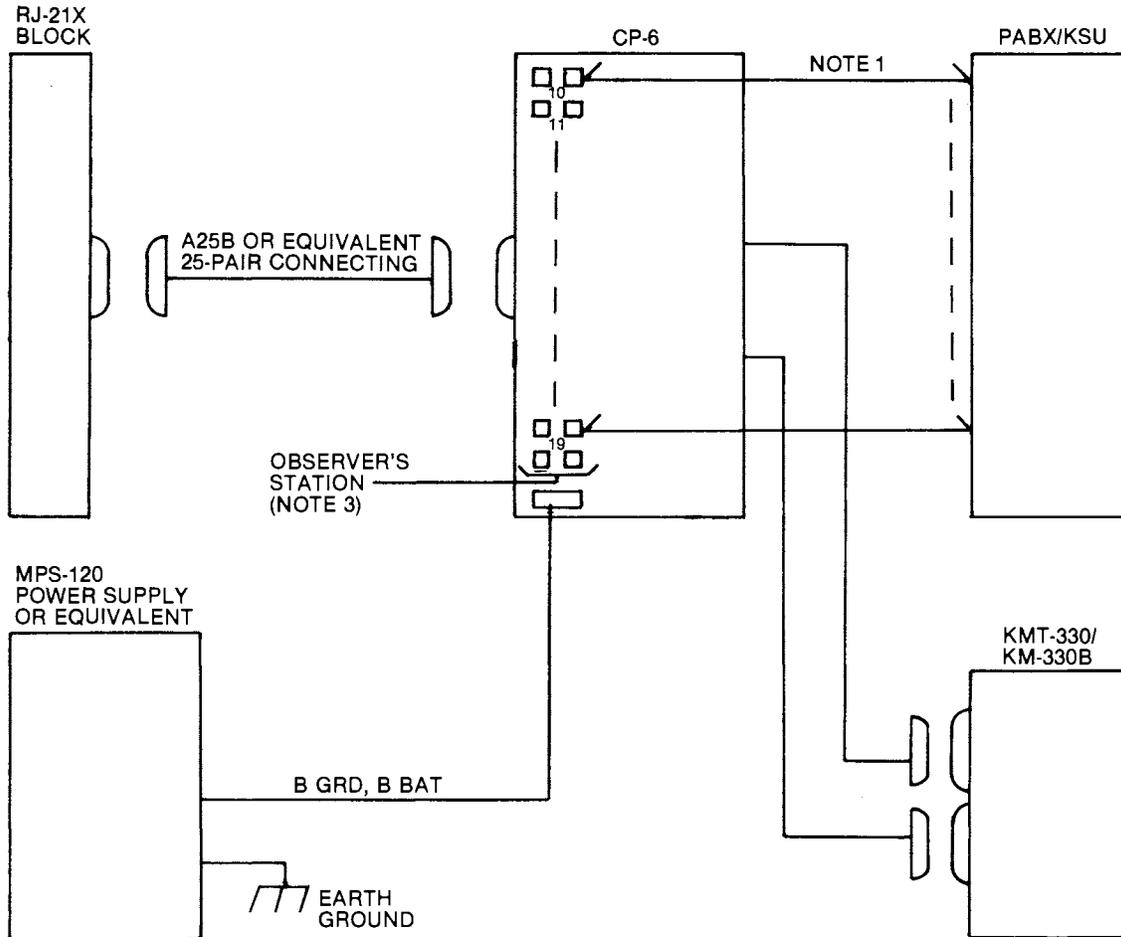


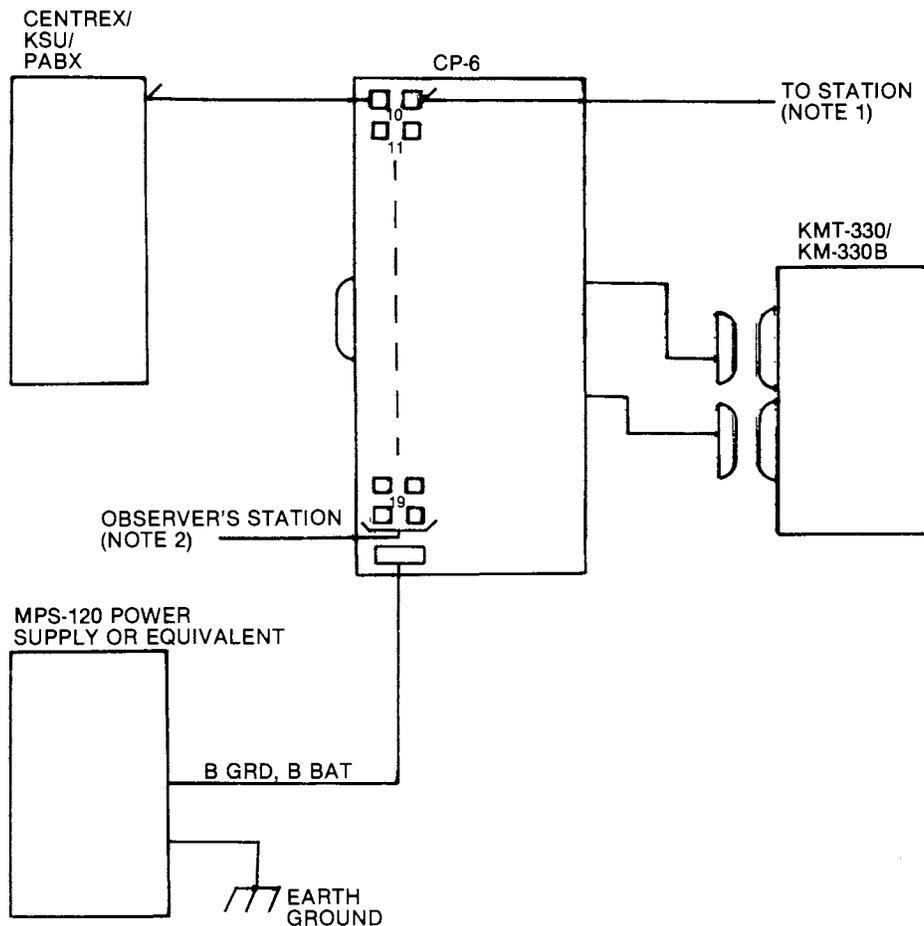
Fig. 2 — CP-6 Panel Arrangement.



NOTES:

1. MODULAR CONNECTIONS BETWEEN CP-6 AND PABX/KSU, FOR STATION 10 ARE TYPICAL FOR ALL STATIONS. IF CONNECTING TO CENTREX LINES, MAKE CONNECTIONS BETWEEN THE STATION OR LINE RECEPTACLE AND THE TELEPHONE SET.
2. RECEPTACLES 35-39 ARE NOT INTERNALLY CONNECTED TO THE CP-6 CONNECTOR. IF THESE LINES OR STATIONS ARE USED, MAKE CONNECTIONS DIRECTLY TO THE APPLICABLE RECEPTACLES.
3. SEE FIGURE 5 FOR PIN ASSIGNMENTS OF OBSERVER'S STATION RECEPTACLES.

Fig. 3 — Applications Schematic of CP-6 Used to Observe Lines.



- NOTES:  
 1. CONNECTIONS FOR STATION 10 TYPICAL FOR ALL STATIONS.  
 2. SEE FIGURE 5 FOR PIN ASSIGNMENTS OF OBSERVER'S STATION RECEPTACLES.  
 3. CP-6 CONNECTOR TO RJ-21X BLOCK NOT USED IN THIS APPLICATION.

Fig. 4 — Applications Schematic of CP-6 Used to Observe Stations.

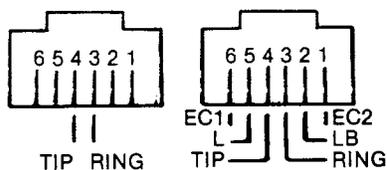
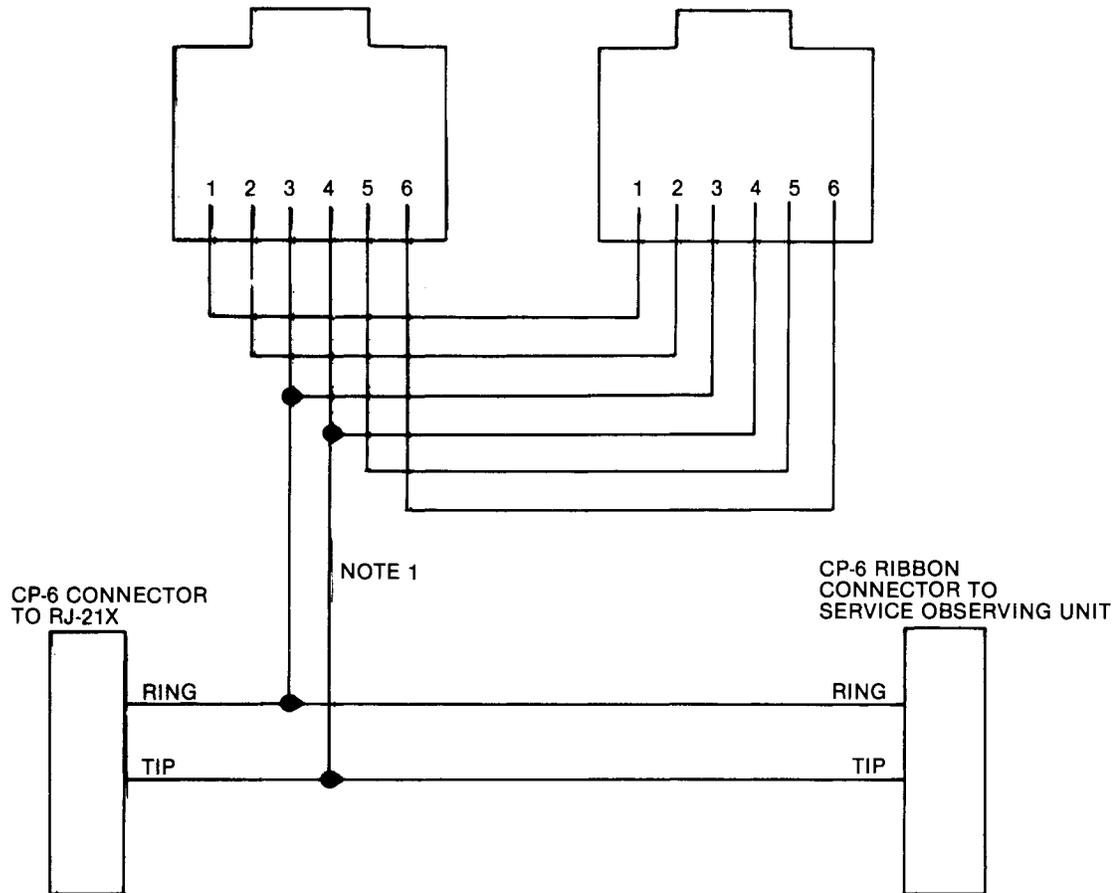


Fig. 5 — Pin Assignments of Observer's Station Receptacles (Front View).



1. CONNECTIONS SHOWN ARE TYPICAL FOR RECEPTACLES 10-34. RECEPTACLES 35-39 HAVE THE SAME ASSIGNMENTS BUT ARE NOT INTERNALLY CONNECTED TO THE CP-6 CONNECTOR FOR THE RJ-21X BLOCK.

Fig. 6 — Pin Assignments and Connections of Station or Line Receptacle Pair (Front View).

## CP-8 CONNECTING PANEL

### 1. GENERAL

1.01 The CP-8 is a self-contained, pre-wired connecting panel for rapid installation of Melco KMT-330 or KM-330B Service Observing Systems. It provides for a completely modular installation when connecting a Melco Service Observing System to a modular PABX or key telephone system. The CP-8 has 8-conductor modular line or station receptacles, and is primarily designed for connecting to the audio talk path of stations to be observed in Merlin Systems or others that have 8-pin connectors. Another version, the CP-6, has 6-conductor modular line or station receptacles, for connections to modular telephone systems that have 6-pin connectors.

### 2. DESIGN FEATURES

2.01 The CP-8 Connecting Panel:

- mounts on a wall or backboard.
- is pre-wired for quick connection to the Melco KMT-330 Service Observing/Talk Assist System or the Melco KM-330B Service Observing System.
- is equipped with 30 modular receptacle pairs for connections to up to 30 lines or stations to be observed. Each pair is wired in parallel, essentially providing a built-in "T adapter" at each modular receptacle.
- has two modular receptacles for connections to the observer's station.
- provides screw terminals for quick connection to the Melco MPS-120 or equivalent power supply.
- has installation instructions, as well as identification of all receptacles and terminals, conveniently silkscreened on the unit.

### 3. INSTALLATION

**NOTE:** For complete installation instructions, refer also to the technical practice for the KMT-330 or KM-330B. A comprehensive schematic of all connections is shown in Figure 2.

3.01 Mount the CP-8 on a wall or backboard.

3.02 Connect the modular cords for lines or stations 10-39, as necessary, into one side of each applicable modular receptacle pair. Refer to Figure 2.

3.03 Make connections from the CP-8 to the modular KSU or PABX using modular cords with 8-position plugs. Plug one end of each modular cord into the line or station receptacle on the CP-8 (designated 10-39) which corresponds to the desired two-digit access code. Connect the other end of each modular cord into the corresponding receptacle on the KSU or PABX.

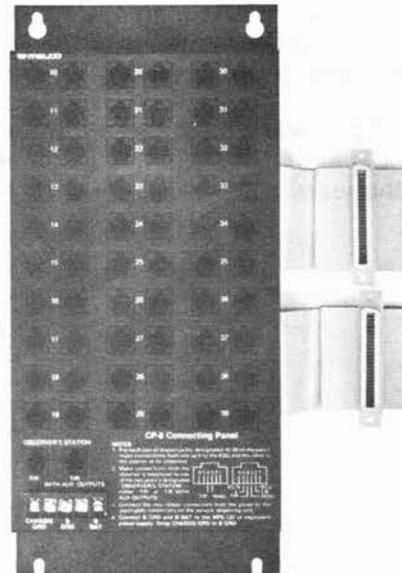


Fig. 1

3.04 Observer's station connections can be made to one of two receptacles on the CP-8 panel. The receptacle designated "T/R" provides outputs for tip and ring, and the receptacle designated "T/R with auxiliary outputs" provides outputs for EC1, EC2, L and LB in addition to tip and ring. The extra outputs are for control of lamps and other auxiliary equipment at the observer's station. See Figure 4 for pin assignments. Made modular connections from the observer's station to the desired receptacle on the CP-8, using modular cords with 6-position, 6-conductor RJ-11 plugs. Refer to the KMT-330 or KM-330B Technical Practice, as applicable, for connections to auxiliary equipment if used.

3.05 Connect the KMT-330 or KM-330B to the CP-8 by connecting the CP-8's ribbon connectors to the applicable cable plugs on the KM-330B or KMT-330. Secure with the clamps provided with the KM-330B or KMT-330.

3.06 Connect the B GRD and B BAT terminals from the CP-8 to the MPS-120 or equivalent power supply. Strap CHASSIS GRD to B GRD. Connect B GRD to earth ground at the power supply.

**4. MAINTENANCE**

4.01 No provision is made for field adjustment or repair. If the system does not function properly, verify all connections. Inspect all plugs for adequate seating and cleanliness.

4.02 Technical assistance on the CP-8, or any Melco product, is available through Melco's Technical Assistance Department.

4.03 The CP-8 is warranted against manufacturing and material defects. If it becomes defective within the warranty period, it will be repaired

or replaced at no charge. See the Melco Warranty Service Policy for return and repair details.

**5. ORDERING INFORMATION**

5.01 Order as follows:

(QTY) 120362 CP-8 CONNECTING PANEL  
 from your local supplier or distributor.

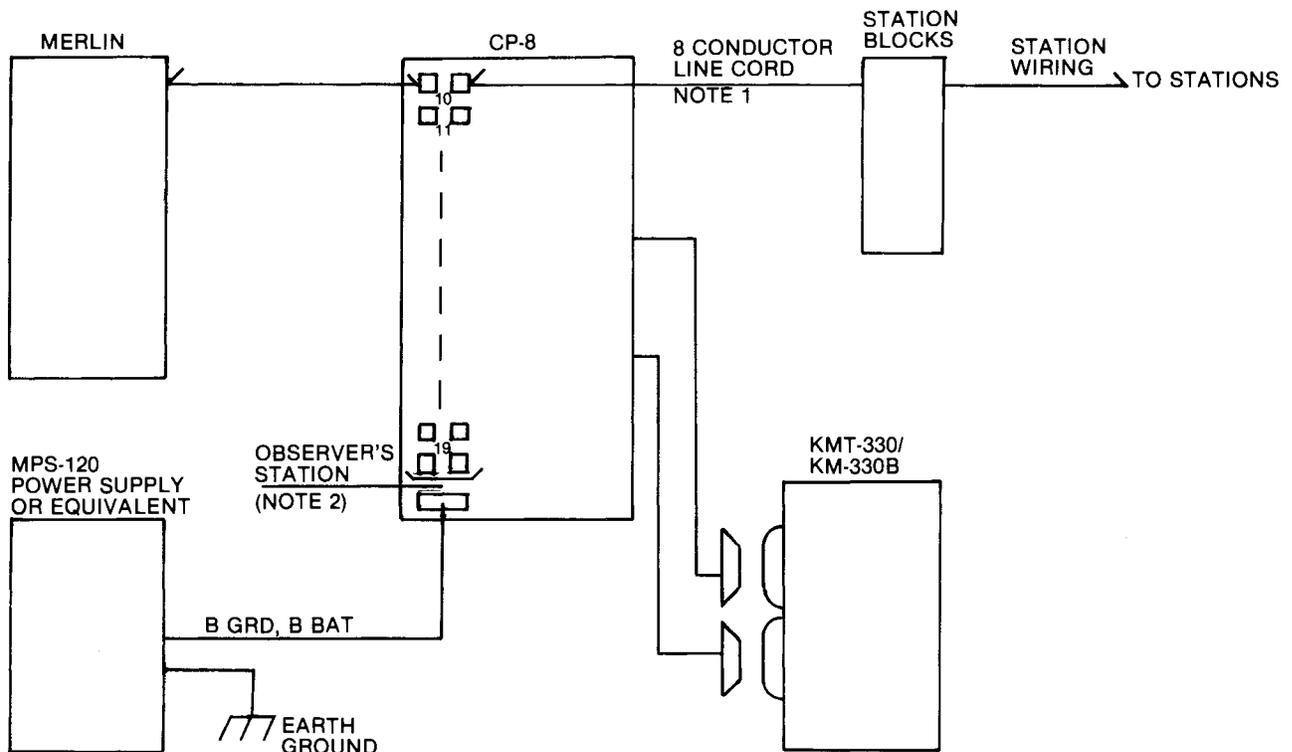
5.02 Compatible Melco equipment includes the following:

KMT-330 (120364) SERVICE OBSERVING/  
 TALK ASSIST UNIT

KM-330B (120290) SERVICE OBSERVING  
 UNIT

5.03 Further information or technical assistance on the CP-8, KMT-330, KM-330B or any Melco product is available from:

Melco  
 P.O. Box 6909  
 Bellevue, WA 98008-0909  
 (206) 462-6700  
 TWX: 910-443-3040



NOTES:  
 1. CONNECTIONS FOR STATION 10 TYPICAL FOR ALL STATIONS.  
 2. SEE FIGURE 4 FOR PIN ASSIGNMENTS OF OBSERVER'S STATION RECEPTACLES.

Fig. 2 — Applications Schematic of CP-8 Used to Observe Stations in a Merlin System Installation.

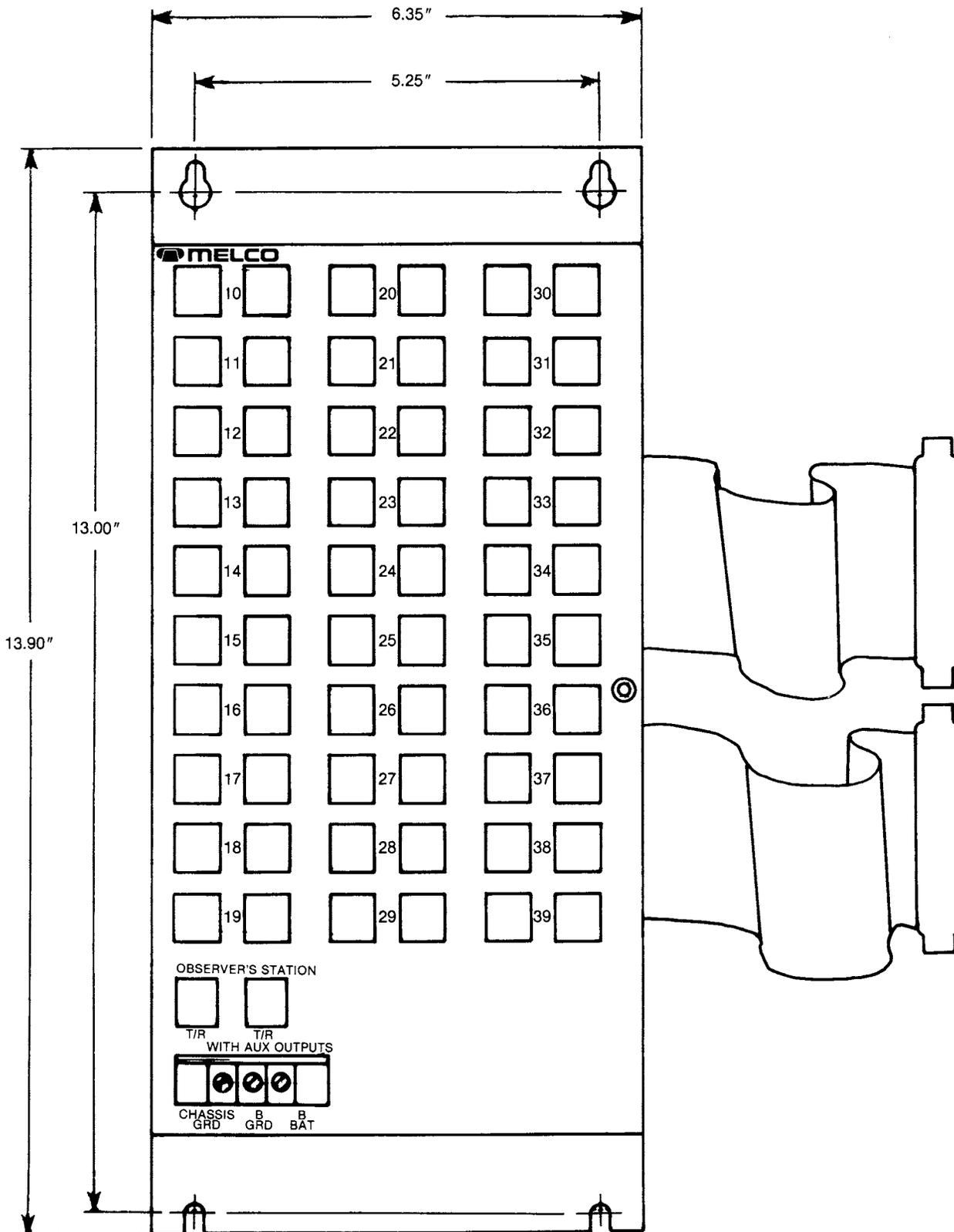


Fig. 3 — CP-8 Panel Arrangement.

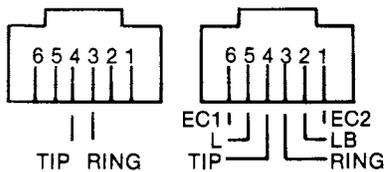


Fig. 4 — Pin Assignments of Observer's Station Receptacles (Front View).

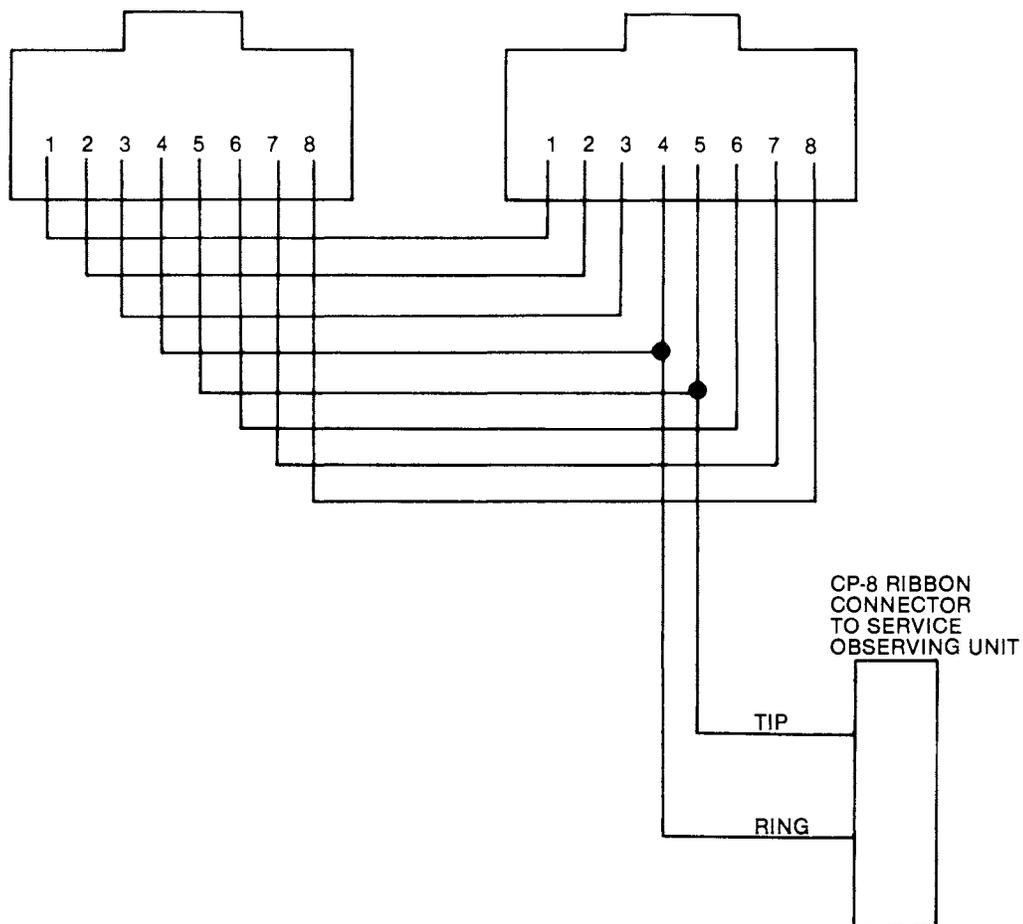
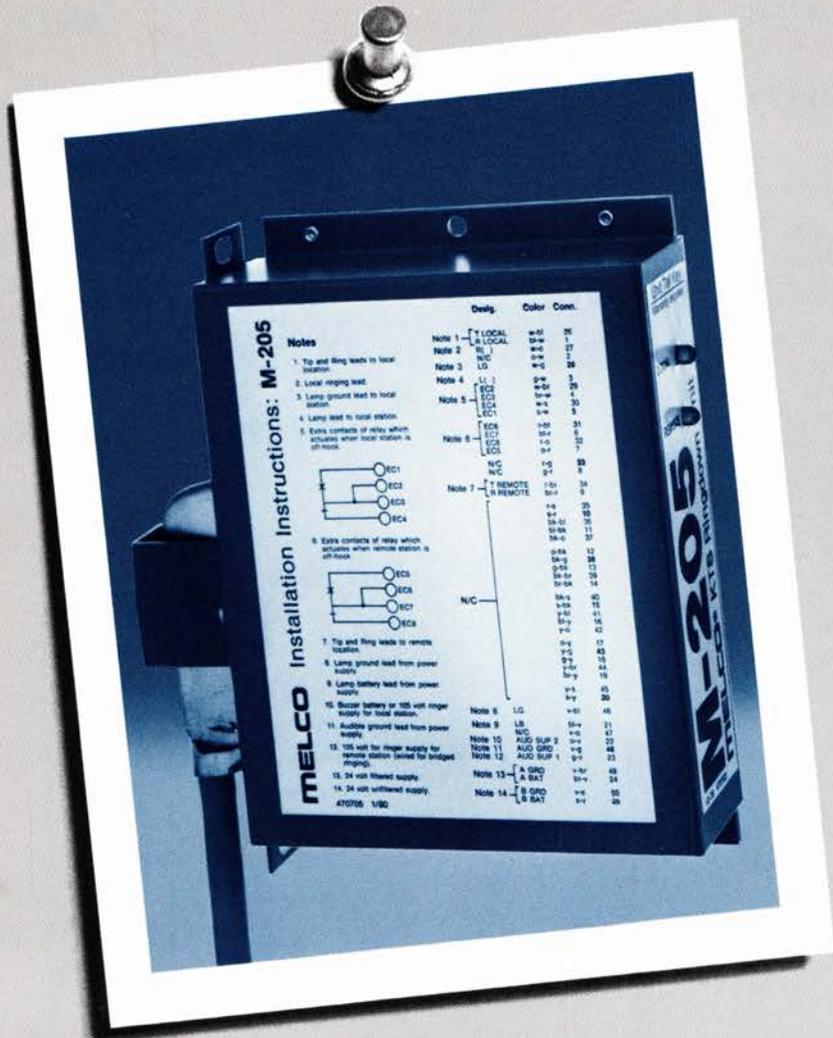


Fig. 5 — Pin Assignments and Connections of Station or Line Receptacle Pair (Front View).

# MELCO PRODUCT BULLETIN ... M-205 Ringdown Circuit



## DESCRIPTION

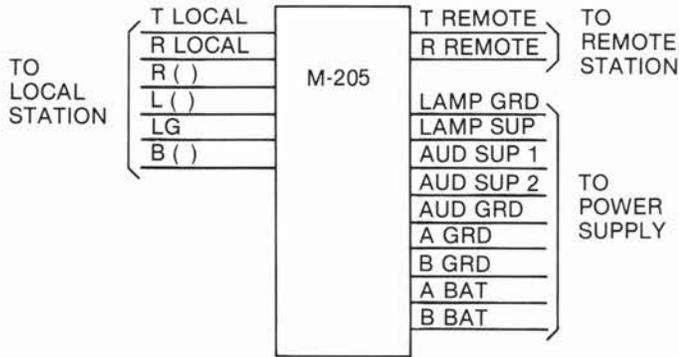
The Melco M-205 Ringdown Circuit provides a direct line between two stations — one near and one far. It is useful when one or more persons on a key system need to communicate with one or more remote stations which may or may not have other lines on the key system. When one station lifts the receiver the M-205 provides ringing to the other station. The key system power supply furnishes power for talking, ringing and lamp signaling.

## DESIGN FEATURES

- permits either station to be called when the other station lifts the handset.
- provides interrupted ringing and ring-back for both stations.
- provides a flashing lamp when being called, and a steady lamp when answered for the near station.
- permits more than one station at each end.
- uses bridged ringing to the far station, and needs only one cable pair for connection.

- mounts in an apparatus cabinet, on a relay rack or on a backboard.
- connects through attached plug to a standard 25-pair connector cable.
- operates from a standard key system power supply.

### APPLICATION SCHEMATIC



### MAINTENANCE

The M-205 is covered by a two-year warranty against manufacturing and material defects.

### SPECIFICATIONS

Operating voltage range (A and B Bat) . . . . . -18 to -28V DC  
 -24V DC nom

Current at -24V DC (B Bat) . . . . . idle: 10 ma ± 25%  
 operated: 380 ma ± 25%

Audible supply<sub>1</sub> . . . . . 105V AC/30 Hz

Audible supply<sub>2</sub> . . . . . 10V AC/60 Hz to  
 105V AC/30 Hz

Lamp battery . . . . . 10V AC/60 Hz

Lamp flash rate . . . . . 0.5 sec on, 0.5 sec off  
 ±20%

Interrupted ringing and ringback . . . . . 1 sec on, 2 secs off  
 ±20%

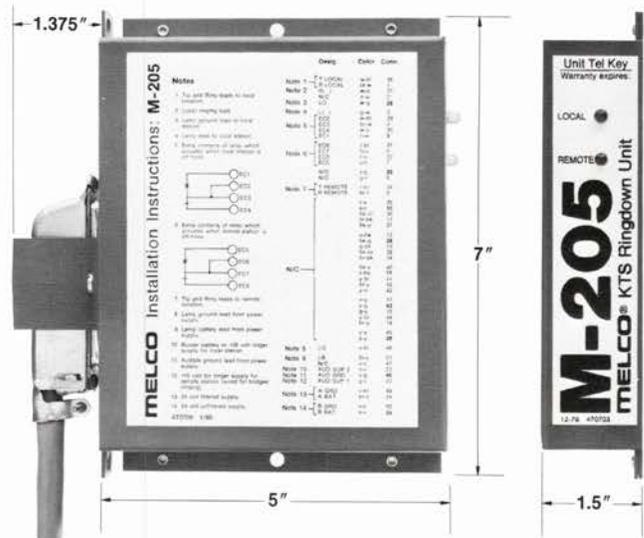
Loop limits:  
 local . . . . . 750 ohms  
 remote . . . . . 2000 ohms

Operating temperature range . . . . . 0° to 50°C  
 32° to 122°F

Weight . . . . . 2 lbs.

Housing . . . . . epoxy coated aluminum

Dimensions:



### HOW TO ORDER

Order the M-205 Ringdown Circuit through your local supplier or distributor. For more information, call or write:

**MELCO LABS**  
 14408 N.E 20th  
 P.O. Box 4026  
 Bellevue, WA 98007  
 206/643-3400

**M-205™ RINGDOWN CIRCUIT****1. GENERAL**

1.01 The M-205 provides direct line service between two telephones. When one station lifts the receiver the other rings. The key system power supply is used to furnish power for talking, ringing and lamp signaling.

1.02 The M-205 is useful where one or more persons on a key system need to communicate with one or more remote stations which may or may not have other lines on the key system.

**2. DESIGN FEATURES**

2.01 The M-205:

- provides a direct line between two stations, one near and one far.
- signals one end when the other station lifts the handset.
- uses bridged ringing to the far station, thus requiring one cable pair for connection.
- permits more than one station at each end.
- provides interrupted ringing and ring-back tone (internal interrupter).
- provides a flashing lamp when being called, and a steady lamp when answered from the near station.

**3. OPERATION**

3.01 When one station comes off-hook the other rings. No dialing is required. If the originating telephone is associated with a key system, the pick up key will light and the far station will ring. If the key telephone is called, the lamp will flash until the call is answered, then light steadily. There are no provisions for lamps for the remote end. The equipment will release when all telephones are on hook.

3.02 Relay contacts EC1 through EC4 operate when the local station comes off-hook. Relay contacts EC5 through EC8 operate when the remote station comes off-hook.

**4. INSTALLATION**

4.01 Mount the M-205 in an apparatus cabinet with a 7" x 1½" mounting space, in a relay rack or on a backboard.

4.02 Connect with an A25B or equivalent 25 pair connector cable. Secure with the clamp provided. Terminate the cable on a 66 type connecting block.

**Cross Connections**

4.03 Cross connect T LOCAL, R LOCAL, L, R ( ), and LG to the near station. Connect LG to the local station B lead.

4.04 Connect T REMOTE and R REMOTE to the far station.

4.05 Connect LB, AUD SUP 1, AUD SUP 2, A BAT, B BAT, A GRD, B GRD, AUD GRD, and GRD to the power supply.

4.06 Connect EC1 through EC8 to auxiliary equipment as required.

4.07 Common all grounds.

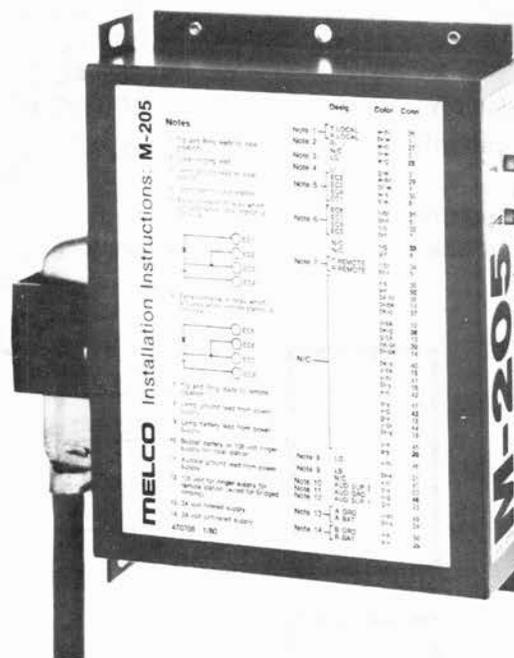


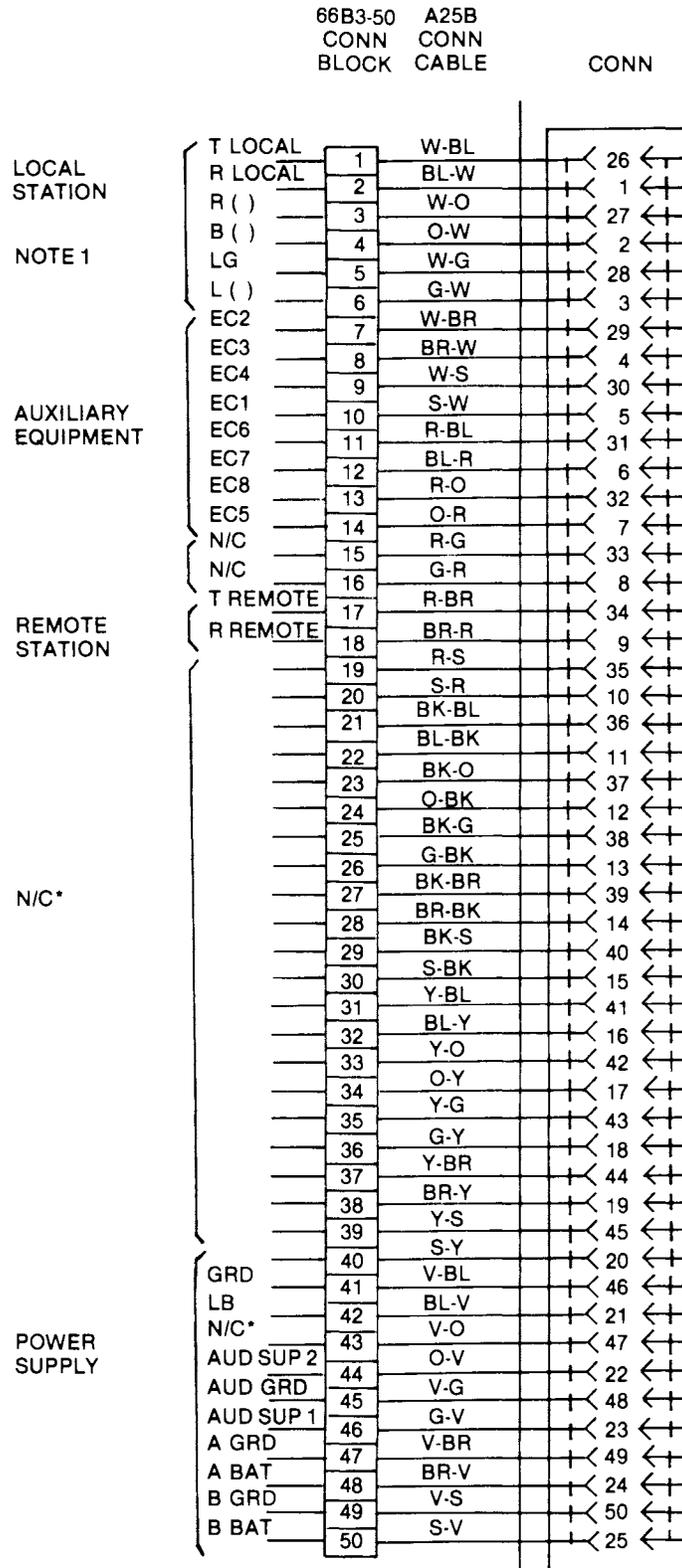
Fig. 1

**5. MAINTENANCE**

5.01 No provision is made for field adjustment or repair.

5.02 If the unit does not function verify all connections and fuses. Check cable plug and connector for dirt, corrosion and damage.



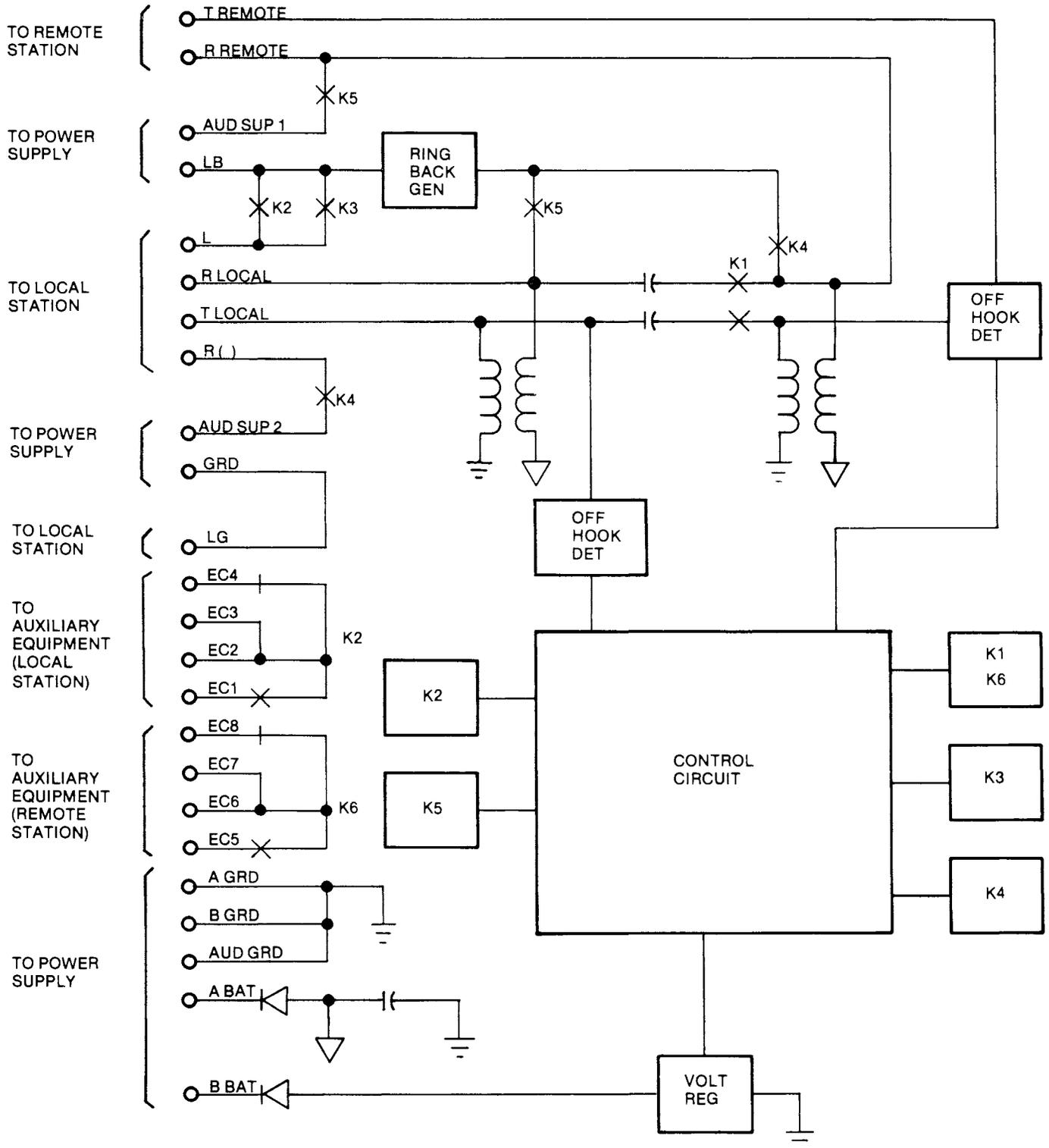


→ Fig. 3 — M-205 Connections, A25B Connector Cable to 66B3-50 Connecting Blocks.

NOTES:

1. STRAP TERMS 4 & 5 TO DERIVE B LEAD.

\*N/C: NO CONNECTIONS



→ Fig. 4 — M-205 Condensed Functional Schematic.

## MBP-25™ BATTERY PACK

### 1. GENERAL

1.01 The MBP-25 Battery Pack is designed for use with Melco MPS-350 and MPS-360 Power Supplies. It provides uninterruptable B battery and audible supply for Melco MAX series or similar small communications systems and auxiliary equipment. All battery charging and transferring functions are automatic.

1.02 For detailed information on the MPS-350 and MPS-360 see the Melco Technical Practice.

### 2. DESIGN FEATURES

2.01 The MBP-25:

- has sealed lead-acid batteries which eliminate leakage and gas discharge.
- requires no battery maintenance.
- battery charger is temperature compensated.
- battery charger is automatic.
- has built-in protection against over-charge and over-discharge.
- LED indicates battery discharge.

### 3. INSTALLATION

3.01 Mount the MBP-25 in a relay rack, on a backboard or directly to the wall using the mounting bracket furnished. If the battery pack is being installed first, allow a minimum of 7 inches directly above the MBP-25 for installation of the MPS-350 or MPS-360 Power Supply to which the battery pack will be connected. Choose a location away from high heat sources. Allow free air circulation around the unit.

3.02 Connect the MBP-25 as shown in Figure 3.

3.03 Connect input power to the power supply.

3.04 Test all voltages at the terminal block to the power supply or at the communications system.

3.05 Although the batteries are shipped at full charge, it is recommended that the MBP-25 be connected and charged for 24 hours before testing.

3.06 Battery operation may be tested by temporarily disconnecting the power supply line cord and reading the B battery voltage at the power supply terminal block. Voltages should be within the tolerances shown in the Specifications section of this Practice. Reconnect the line cord after testing.



Fig. 1

3.07 Operation of the ac power switch on the power supply disconnects both the ac input power to the power supply AND the output power from the MBP-25 to the communications system. When it is necessary to remove and replace circuit packs or otherwise service the communications system, operation of the ac switch is the simplest method of removing power from the system. Do not remove or replace circuit packs from MAX systems without removing the input power to them.

**NOTE:** When power connections are made with the Melco CA-8 and CA-15 Power Cable Assemblies to the MBP-25 Battery Pack and the MAX-824 Communications System, audible signal supply can be read at the AUD SUP screw terminal of the MAX-824 only when a station has been dialed and not answered. When the power supply is energized but its output is not connected, audible supply can be read at the power supply screw terminals. These conditions are coincident to the energy saving feature of the MPS-350 and MPS-360 power supplies. With this standard feature, a power failure and resultant transfer of the MAX-824 to the MBP-25 will deenergize the

*ringing generator through the MAX RS lead, until ringing power is needed for a call. This does not apply to the MAX-424.*

3.08 Battery operation is normally initiated automatically at the loss of ac input power.

3.09 If it is desired to manually start the battery operation when ac power is not available, push the battery reset button on the front panel of the MBP-25. The ON/OFF switch on the power supply must be in the ON position to initiate battery operation.

#### 4. MAINTENANCE

4.01 To assure continued power back-up protection, test the battery back-up function every 6 months by disconnecting the power supply line cord and reading the B battery voltages at the power supply terminal block. See the Specifications section for voltage tolerances.

4.02 No battery maintenance is required.

4.03 No provision is made for field adjustments, repair or battery replacement. Return a defective unit to the supplier for servicing.

4.04 The MBP-25 is warranted against defects in material and workmanship. If it fails from such defects within the warranty period, it will be repaired or replaced without charge. See the Melco Warranty Service Policy for additional warranty and service information.

#### 5. SPECIFICATIONS

Input power requirements . . . . . supplied by  
 MPS-350, MPS-360

#### Battery:

type . . . . . sealed lead acid  
 voltage . . . . . -24V nom ± 3V

Capacity . . . . . 2.5 amp hrs

#### Charger:

type . . . . . auto temp. compensated  
 recharge time . . . . . 8 hrs max

#### Environmental requirements:

operating temperature . . . . . 0° to 50°C  
 storage temperature . . . . . 0° to 50°C  
 operating humidity . . . . . 0 to 95%  
 noncondensing

#### Dimensions:

height . . . . . 6.25"/15.88cm  
 length . . . . . 13.50"/34.29cm  
 depth . . . . . 7.50"/19.05cm

Weight . . . . . 10 lbs/4.5kg

Housing . . . . . epoxy coated aluminum

Mounting . . . . . cabinet, rack or backboard  
 w/furnished mounting bracket

#### 6. ORDERING GUIDE

6.01 Order as follows:

(QTY) MBP-25 BATTERY PACK  
 from your local supplier or distributor.

6.02 Additional information or assistance with this or any Melco product is available from:

MELCO LABS, INC.  
 14408 N.E. 20th Street  
 Bellevue, WA 98007  
 (206) 643-3400  
 TWX: 910-443-3040

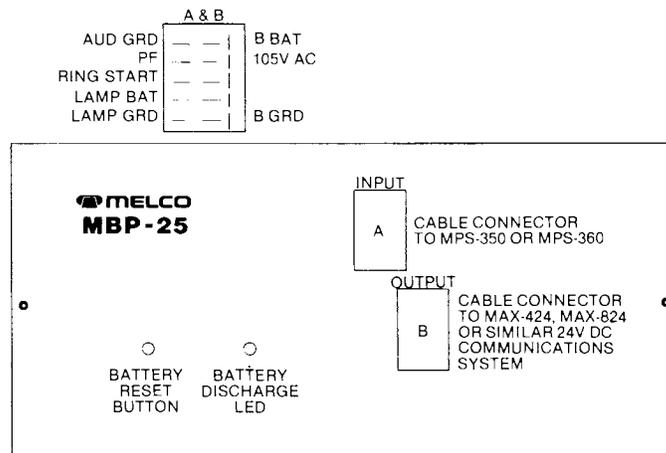


Fig. 2 — Front Panel of MBP-25.

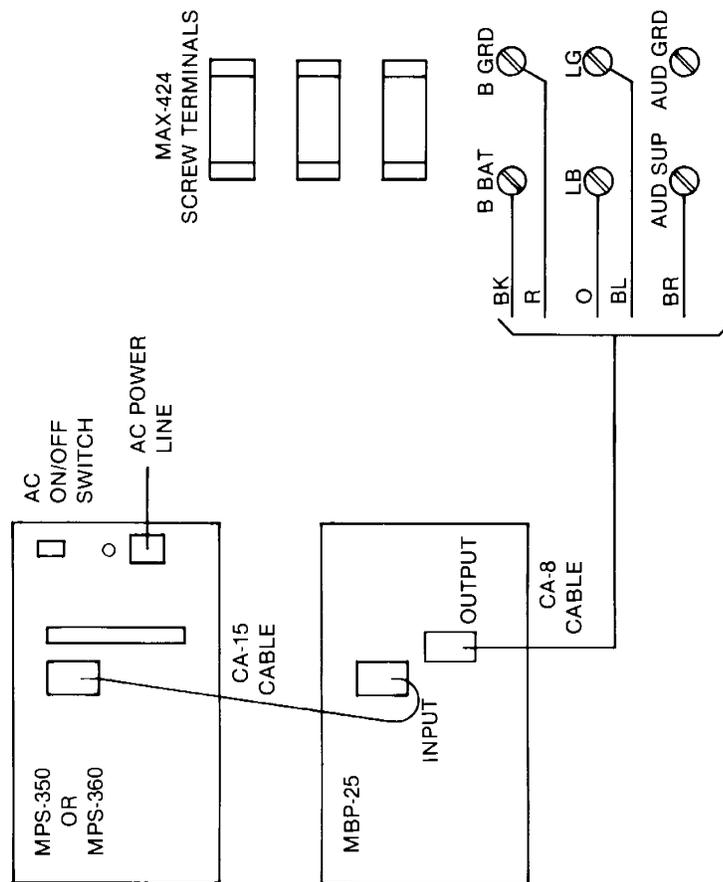


Fig. 3 — Power Connections to MAX-824.

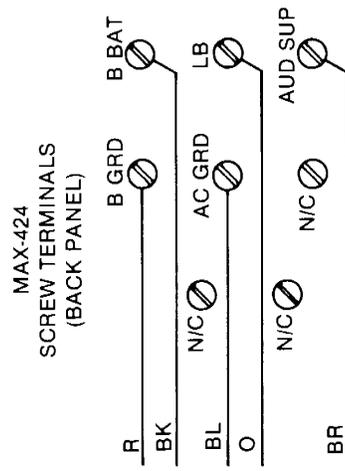


Fig. 4 — MAX-424 Screw Terminals, Rear Panel.

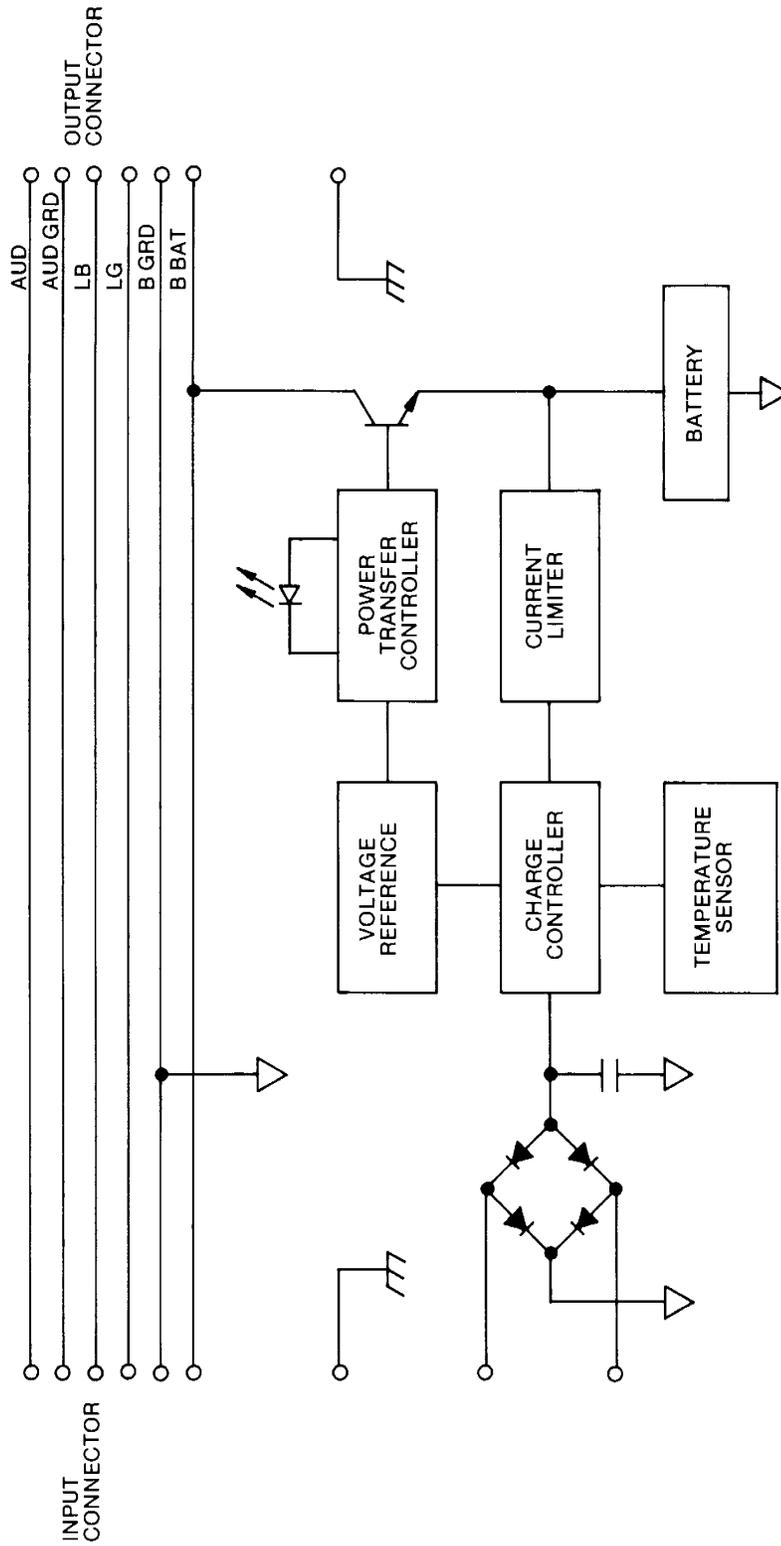


Fig. 5 — Functional Schematic.

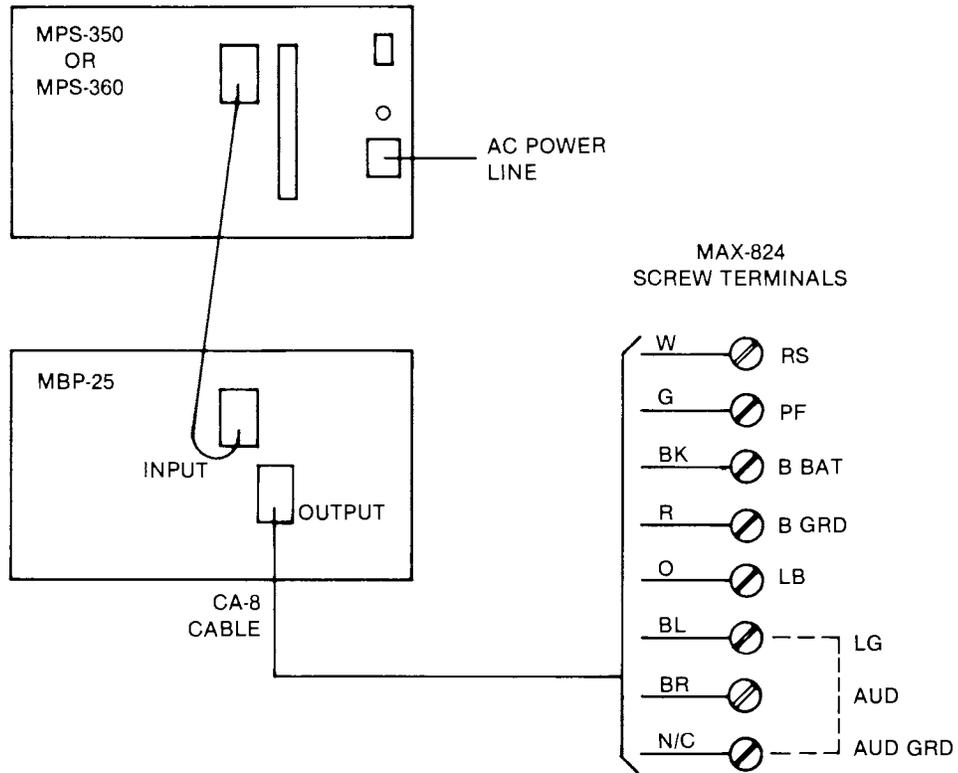


Fig. 6 — Power Connections to MAX-824.

## MELCO POWER SUPPLIES MPS-350™ AND MPS-360™ 50 OR 60 HERTZ, 120 OR 240 VOLTS INPUT

### 1. GENERAL

1.01 The MPS-350 and MPS-360 are high performance power supplies for Melco MAX-824 and similar communications systems. They provide filtered B battery, audible signal supply and message waiting lamp battery. Provision is made for mounting on a backboard or in a relay rack. The MPS-350 is designed to operate with 50 Hertz input power; the MPS-360 is designed for 60 Hertz operation.

1.02 The optional automatic battery back-up module, MBP-25, is packaged separately for add-on installation. For further information, see the MBP-25 Practice.

### 2. DESIGN FEATURES

2.01 The MPS-350 and MPS-360 have:

- high reliability.
- regulated 24V DC output with wide input voltage parameters, without jumpers or clips.
- 120/220 volt operation, switch selectable.
- inherent power line noise filtering.
- all individual connections are covered or enclosed.
- optional automatic battery back-up for B battery and audible supply.
- fuse holders compatible with both North American and European standard fuses.

### 3. INSTALLATION

3.01 Move the voltage selector switch, located on the back panel to match the commercial ac input voltage. On the MPS-350 the switch is factory set for 220-volt operation and a 1 amp slow blow fuse is installed. The MPS-360 switch is factory set at 120 volts and a 2 amp slow blow fuse is in place. If a change is required in the switch position, be certain the appropriate fuse is in place. See Table A for power line voltage and fuse information.

**CAUTION:** Operate the MPS-350 only on 50 Hertz input power and the MPS-360 only on 60 Hertz input power.

3.02 Mount the power supply in a relay rack, on a backboard or directly to the wall using the included mounting bracket. Leave a minimum of 7 inches underneath for installation of the battery back-up pack option, MBP-25. Choose a location away from high heat sources. Allow for free air circulation around the unit.

3.03 A six-foot power cord is furnished for connection to a grounded three-wire outlet.



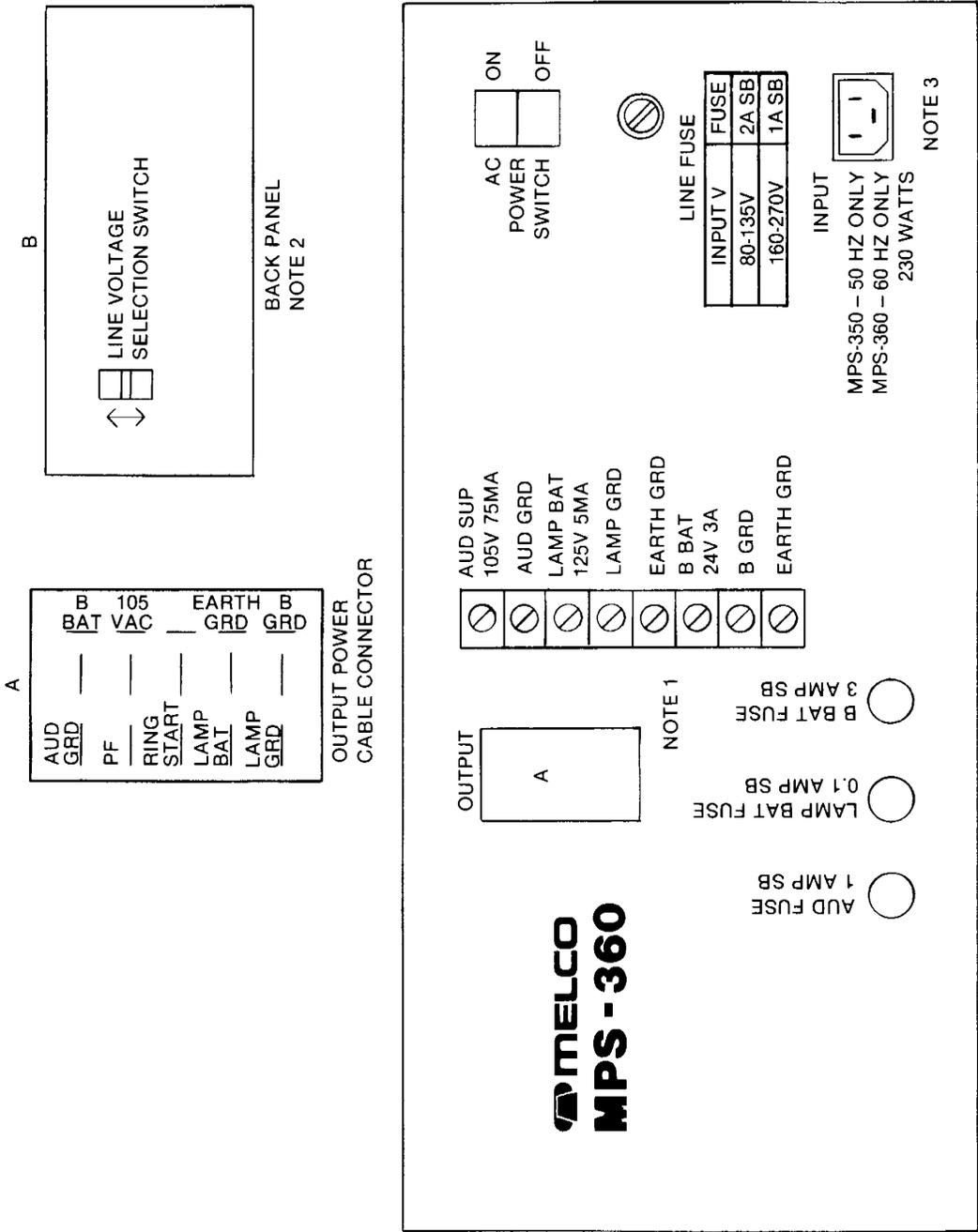
Fig. 1

3.04 The power supply may be connected to the communications system with either the connector on the front panel and a Melco CA-8 Cable Assembly or with conductors to the screw terminals. See Figure 2. When the CA-8 cable is used, the screw terminals may be used to connect power to other equipment.

3.05 If the optional MBP-25 Battery Pack is to be used, connect the output cable, CA-8 to the MBP-25 as shown in Figure 5.

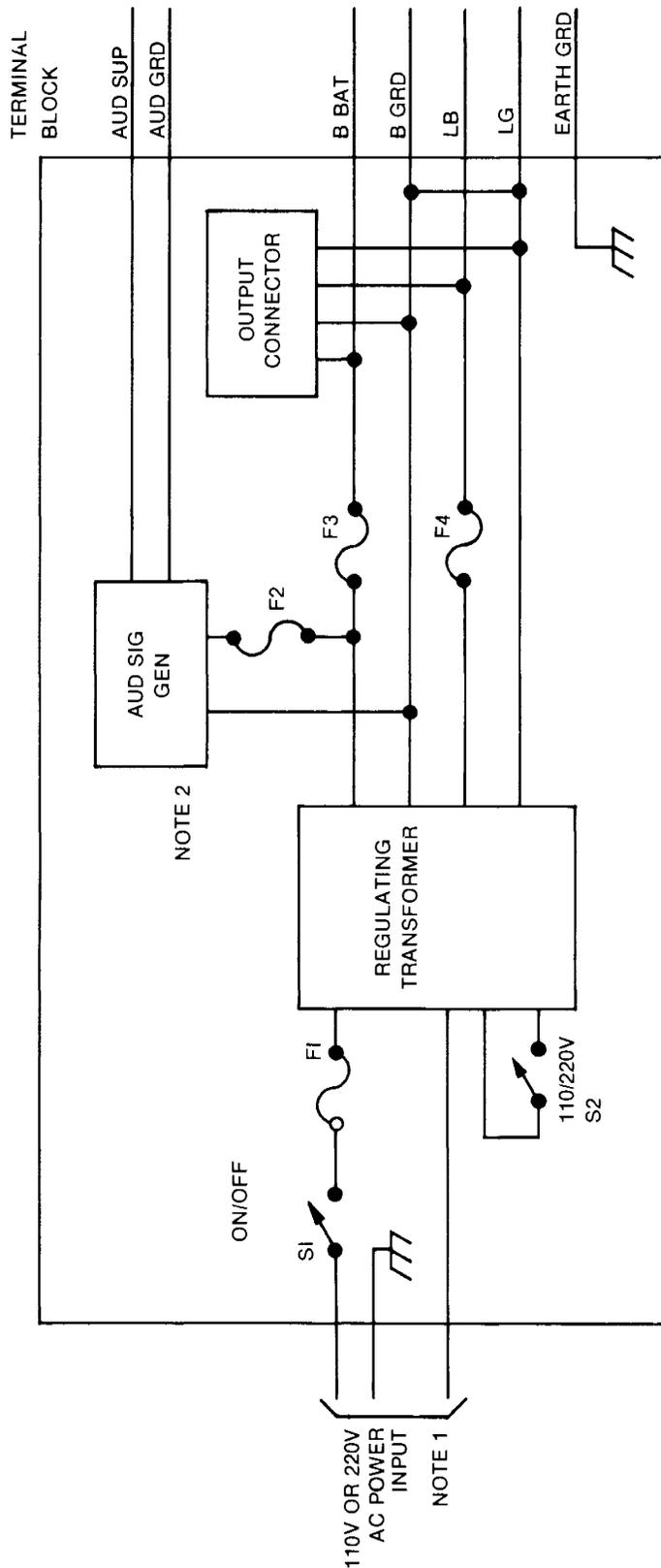
**NOTE:** When power connections are made with the Melco CA-8 and CA-15 power cable assemblies to the MBP-25 Battery Pack and the MAX-824 Communications System, audible signal supply can be read at the AUD SUP screw terminal of the MAX-824 only when a station has been dialed and not answered. When the power supply





- NOTES:**
1. WHEN MBP-25 BATTERY PACK IS NOT USED, CONNECT POWER TO COMMUNICATIONS SYSTEM WITH MELCO CA-8 POWER CABLE OR THROUGH SCREW TERMINALS. WHEN MBP-25 IS USED, CONNECT POWER SUPPLY TO MBP-25 WITH CA-15 POWER CABLE AND POWER COMMUNICATIONS SYSTEM WITH CA-8 CABLE FROM MBP-25.
  2. SELECT LINE VOLTAGE SWITCH POSITION ON BACK PANEL AND LINE FUSE APPROPRIATE TO INPUT VOLTAGE BEFORE CONNECTING INPUT POWER.
  3. POWER INPUT CONNECTOR.

Fig. 2 - Front and Back Panels and Cable Connector, MPS-350 or MPS-360.



NOTES:

1. INPUT POWER TO MPS-350 MUST BE 50 HERTZ; INPUT TO MPS-360 MUST BE 60 HERTZ.
2. AUDIBLE SIGNAL SUPPLY IS 25 HERTZ WITH MPS-350 AND 30 HERTZ WITH MPS-360.

Fig. 3 – Functional Schematic.

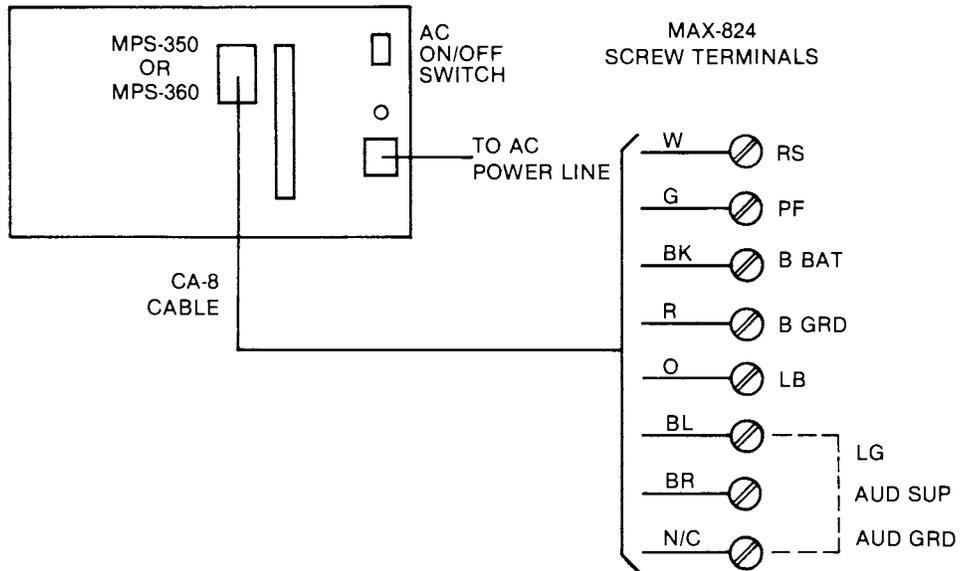


Fig. 4 — Power Connections to MAX-824.

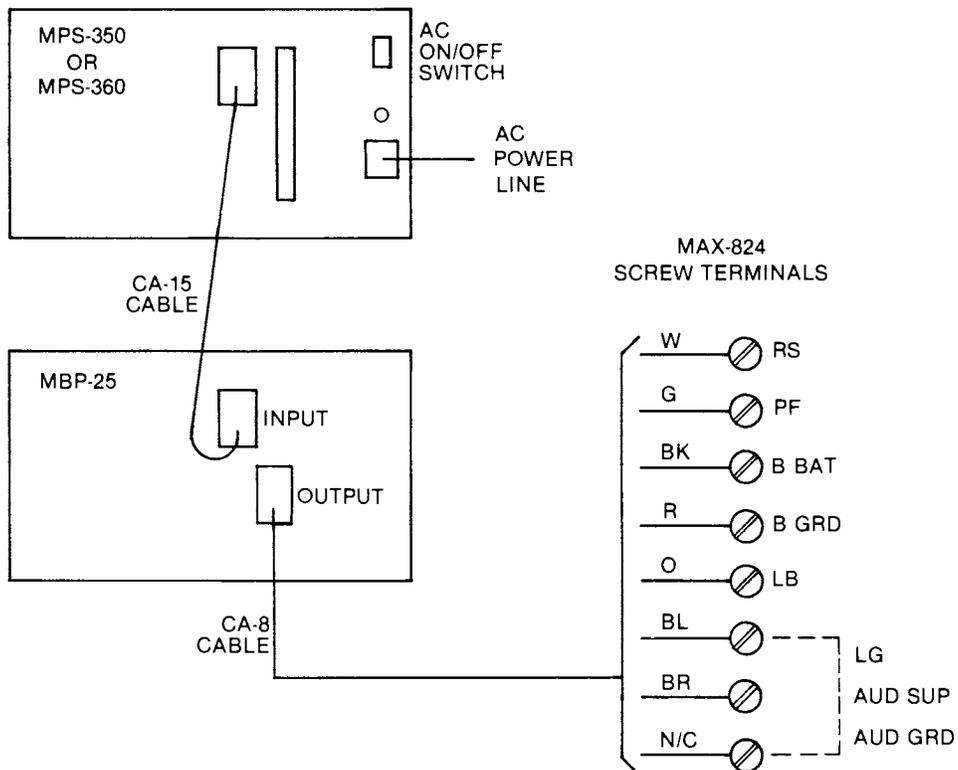


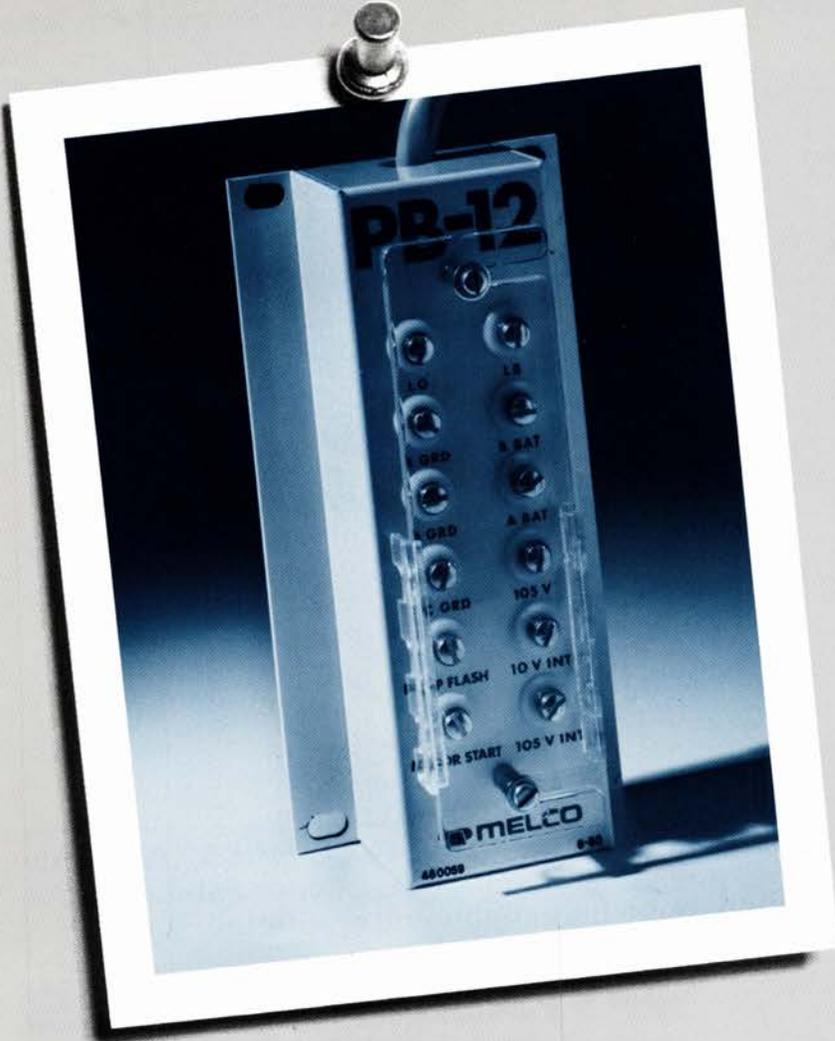
Fig. 5 — Power Connections to MAX-824.

**NEW**

## MELCO PRODUCT BULLETIN . . .

# PB-12

## Power Block Assembly



### **DESCRIPTION**

Melco's PB-12 Power Block Assembly is designed for use at key system installations where a modular power supply is in place and power distribution by individual conductors is required. The Power Block Assembly consists of a connector, a 12-conductor cable and a terminal block with 12 screw terminals.

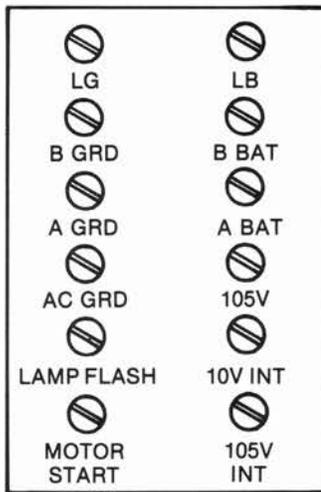
### **DESIGN FEATURES**

- connector is of the type used with Western Electric Company 79B and 90B modular power supplies.
- cable conductors connect securely with spade lugs to screw terminals on the back side of the terminal block.
- up to six individual conductors can be connected to front side terminals which are appropriately stenciled and are protected by a clear plastic shield.
- mounts easily in an apparatus cabinet, on a relay rack or on a backboard.

## MAINTENANCE

The PB-12 is covered by a two-year warranty against manufacturing and material defects.

## CONNECTIONS



## SPECIFICATIONS

Cable . . . . . 12 conductor  
18 AWG stranded 4 ft. long

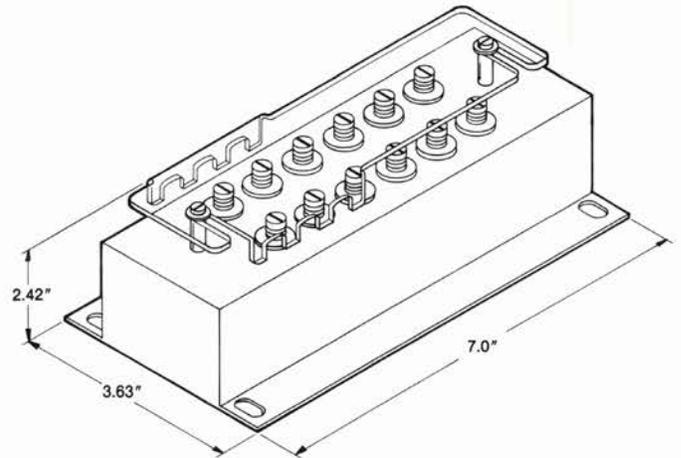
Connector . . . . . Burndy QUICKMATE

Block assembly:

material . . . . . aluminum

finish . . . . . yellow epoxy enamel

dimensions:



## HOW TO ORDER

Order the PB-12 Power Block Assembly through your local supplier or distributor. For more information call or write:



14408 N.E. 20th Street  
P.O. Box 4026  
Bellevue, WA 98009  
206/643-3400

**PB-12™ POWER BLOCK ASSEMBLY**

**1. GENERAL**

1.01 The Melco PB-12 Power Block Assembly is useful at key system installations where a modular power supply is in place and power distribution by individual conductors is required.

**2. DESCRIPTION**

2.01 The Power Block Assembly consists of a Burndy QUIKMATE connector, a 12-conductor cable and a terminal block with 12 screw terminals.

2.02 The connector is of the type used with Western Electric Company 79B and 90B modular power supplies. Conductors connect securely with spade lugs to screw terminals on the back side of the terminal block. Front side screw terminals are appropriately stenciled and are protected by a clear plastic shield.

**3. SPECIFICATIONS**

- Cable ..... 12 conductor  
18 AWG stranded 4 ft. long
- Connector ..... Burndy QUIKMATE
- Block assembly
  - Material ..... Aluminum
  - Finish ..... Yellow epoxy enamel
  - Dimensions ..... 7.0" high, 3.63" wide
  - Mounting ..... Backboard, rack or cabinet

**4. WARRANTY**

4.01 The PB-12 is warranted against manufacturing and material defects for two years. If it fails within that time it will be repaired or replaced at no charge. See the Melco Warranty Service Policy.

**5. ORDERING GUIDE**

5.01 Order the PB-12 as follows:  
(QTY) PB-12 POWER BLOCK ASSEMBLY  
from your local supplier or distributor.



Fig. 1

5.02 Technical assistance on the PB-12 or any Melco product is available from:

MELCO LABS  
14408 N.E. 20th St.  
P.O. Box 4026  
Bellevue, Washington 98009  
(206) 643-3400

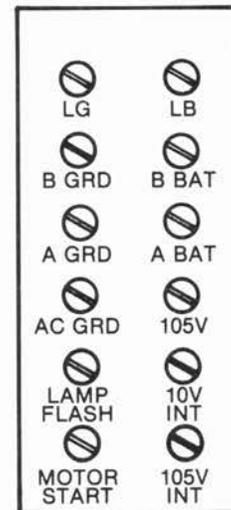


Fig. 2 — Screw Terminal Positions and Designations.

## MELCO PRODUCT BULLETIN . . .

# S-11 Telephone Amplifier



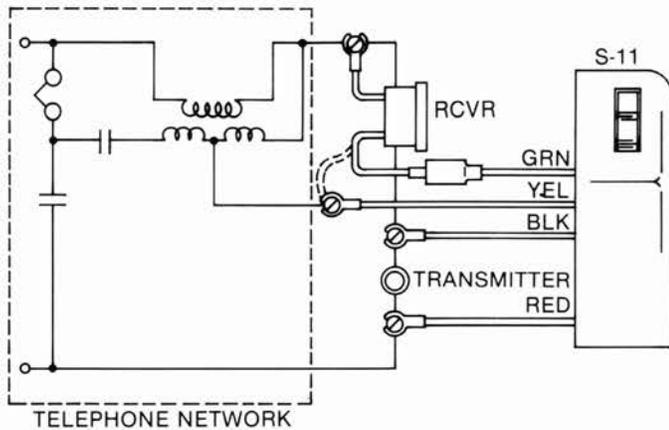
### **DESCRIPTION**

The Melco S-11 amplifies voice signals at the receiver of a telephone. It is most widely used for persons who normally have a hearing problem or who use telephones in a noisy area.

### **DESIGN FEATURES**

- attaches easily to the telephone base with a tempered plastic bracket.
- provides up to 21 dBm of gain to receiver voice signals in most commonly used telephones.
- a gain control knob at the top of the S-11 housing allows for convenient volume adjustment.
- provides full gain over normal loop current ranges and is not sensitive to tip and ring polarity.

## APPLICATION SCHEMATIC



## MAINTENANCE

The S-11 is warranted for 90 days against manufacturing and material defects.

## SPECIFICATIONS

Gain . . . . . 0 to 21 dB  
Frequency range . . . . . 300 to 3000 Hz  
Distortion . . . . . 10% max  
Power . . . . . from CO line  
Operating temperature  
range . . . . . 0° to 50°C  
32° to 122°F  
Dimensions . . . . . 1.5" wide, 1.625" high,  
0.69" deep

## HOW TO ORDER

Order the S-11 Telephone Amplifier through your local supplier or distributor. For more information call or write:

  
14408 N.E. 20th  
Bellevue, WA 98007  
206/643-3400

## S-11™ TELEPHONE AMPLIFIER

### 1. GENERAL

1.01 The S-11 provides amplification of voice signals at the receiver of a telephone. It is useful to persons who normally have a hearing problem or who use telephones in a noisy area.

### 2. DESIGN FEATURES

2.01 The S-11 provides up to 21dB of gain to receiver voice signals in most commonly used telephones.

2.02 The amplifier mounts on the lower right side of the telephone and attaches firmly to the instrument base with a tempered plastic bracket. No modifications of the telephone are required.

2.03 The device is not sensitive to tip and ring polarity. It provides full gain over normal loop current ranges.

2.04 The gain control knob is at the top of the S-11 housing. Finger tip rotation of the knob increases or decreases the volume of the voice signals at the receiver.

2.05 The device has received Registration Number AQT9PZ-69884-KX-N under FCC Rules and Regulations, Part 68. Ringer Equivalence is 0.0B.

### 3. INSTALLATION

3.01 Remove the instrument cover and connect the S-11 to the telephone circuit. Specific wiring instructions for some commonly used telephone sets and general instructions for others to which the S-11 mounting bracket and circuits are applicable are shown in Figures 2 and 3.

3.02 When the connections are complete, arrange the wires so they will not interfere with the mechanical operation of the instrument. Press the S-11 bracket over the edge of the instrument base and slide it down as far as it will go. Replace the instrument cover.

### 4. MAINTENANCE

4.01 No provision is made for field repair. Return defective units to the supplier.

### 5. SPECIFICATIONS

Gain.....0 to 21dB  
Frequency range.....300 to 3000 Hz  
Distortion.....10% max  
Power.....from CO line  
Dimensions.....1-1/2" x 1-5/8" x 11/16"

**NOTE:** When volume is set high and the input level is above -18dBm, the receiver varistor can cause voice distortion.

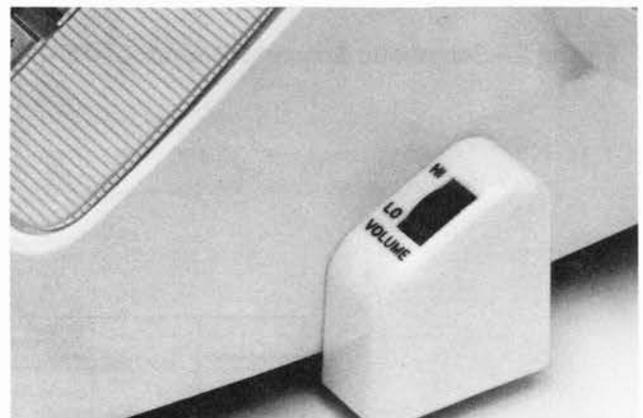


Fig. 1

### 6. ORDERING GUIDE

6.01 Order as follows:

(QTY) S-11 TELEPHONE AMPLIFIER

from your local supplier or distributor.

6.02 The S-11 is warranted against manufacturing and material defects. If one should fail within the warranty period, it will be repaired or replaced without charge. See the Melco Warranty Service Policy for repair and return details.

6.03 Further information on the S-11 or any Melco product is available from:

MELCO LABS, INC.  
14408 N.E. 20th Street  
Bellevue, WA 98007  
(206) 643-3400  
TWX: 910-443-3040

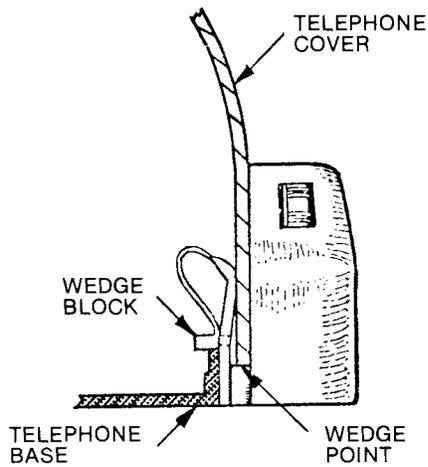


Figure 2—Schematic Showing Mounting of S-11.

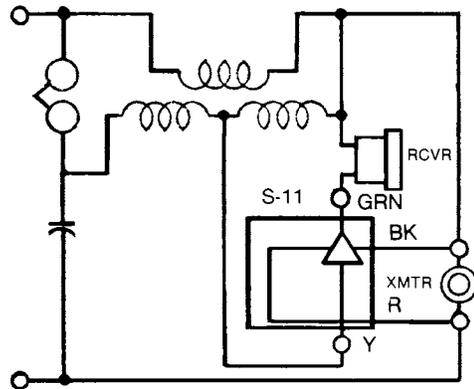


Figure 3—Application Schematic of Telephone with S-11.

TELEPHONE	DIALING	REMOVE TELEPHONE WIRE	S-11 CONNECTIONS			
			RCVR		XMTR	
			YELLOW	GREEN	RED	BLACK
W.E. 2500D N.E. 2500D ITT 576	TONE	WHITE FROM GN	TO GN	TO WHITE TELSET WIRE	TO NETWORK B	TO NETWORK R
ITT 2575					TO TERM BOARD PIN 11	TO NETWORK B
GTE AE 80E		YELLOW FROM 12	TO 12	TO YELLOW TELSET WIRE	TO 2 OR 15	TO 5
GTE AE 80E	ROTARY	YELLOW FROM 4	TO 4	TO YELLOW TELSET WIRE	TO 23	TO 5
S.C.C.O. 1800 3A3 1800 3B3		WHITE FROM TERM BOARD 23	TO 23	TO WHITE TELSET WIRE	TO 22	TO 3
OTHER APPLICATIONS			IN SERIES W/RCVR THRU S-11 YELLOW & GREEN WIRES		IN PARALLEL W/XMTR WITH S-11 RED AND BLACK WIRES	

Figure 4—S-11 Connections to Telephones.

## S-11M™ TELEPHONE AMPLIFIER

### 1. GENERAL

1.01 The S-11M provides amplification of voice signals at the receiver of a telephone. It is useful to persons who normally have a hearing problem or who use telephones in a noisy area.

### 2. DESIGN FEATURES

2.01 The S-11M provides up to 21dB of gain to receiver voice signals in most commonly used telephones.

2.02 The amplifier mounts on the lower left side of the telephone and attaches firmly to the instrument base with the Velcro strips provided. No modifications of the telephone are required. The telephone need not be opened.

2.03 The device is not sensitive to tip and ring polarity. It provides full gain over normal loop current ranges.

2.04 The gain control knob is at the top of the S-11M housing. Finger tip rotation of the knob increases or decreases the volume of the voice signals at the receiver.

2.05 The device has received Registration Number AQT9PZ-69884-KX-N under FCC Rules and Regulations, Part 68. Ringer Equivalence is 0.0B.

### 3. INSTALLATION

3.01 Unplug the handset cord from the modular jack on the telephone (see Figure 3a).

3.02 Insert the modular plug on the handset cord into the modular jack on the S-11M (Figure 3b).

3.03 Insert the modular plug on the S-11M into the modular jack on the telephone (see Figure 3c).

3.04 Attach the S-11M to the telephone using the Velcro strips furnished (see Figure 3d).

**NOTE:** Since not all telephones are wired alike, the S-11M provides a switch with two positions to ensure that it will work with any phone. If it does

not operate after being connected to the phone, slide the switch on the face of the S-11M to the other position (left or right) using a small screwdriver. The switch is recessed to prevent it from being moved inadvertently.



Fig. 1

### 4. MAINTENANCE

4.01 No provision is made for field repair. Return defective units to the supplier.

4.02 The S-11M is warranted against defects in material and workmanship. If it fails from such defects within the warranty period, the unit will be repaired or replaced without charge. See the Melco Warranty Service Policy for additional warranty and service information.

### 5. SPECIFICATIONS

Gain . . . . . 0 to 21dB  
Frequency range . . . . . 300 to 3000 Hz  
Distortion . . . . . 10% max  
Power . . . . . from CO line  
Dimensions . . . . . 2.75" x 1.0" x 1.0"

**NOTE:** When volume is set high and the input level is above -18dBm, the receiver varistor can cause voice distortion.

**6. ORDERING GUIDE**

6.01 Order as follows:  
 (QTY) 120308 S-11M TELEPHONE AMPLIFIER  
 from your local supplier or distributor.

6.03 Further information on the S-11M or any  
 Melco product is available from:

MELCO LABS, INC.  
 14408 N.E. 20th Street  
 Bellevue, WA 98007  
 (206) 643-3400  
 TWX: 910-443-3040

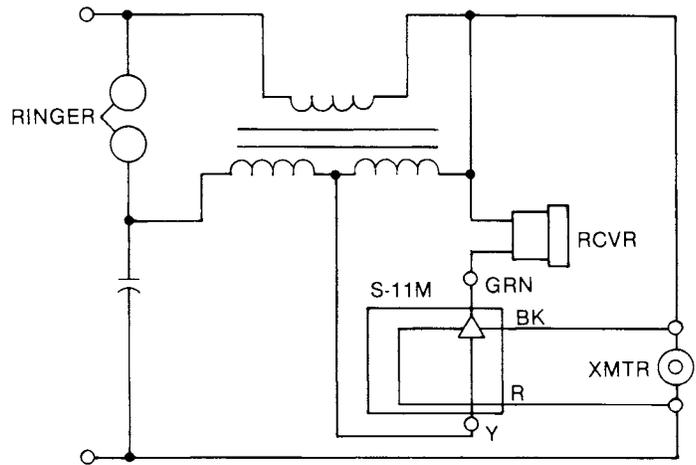


Fig. 2 — Application Schematic of Telephone with S-11M.

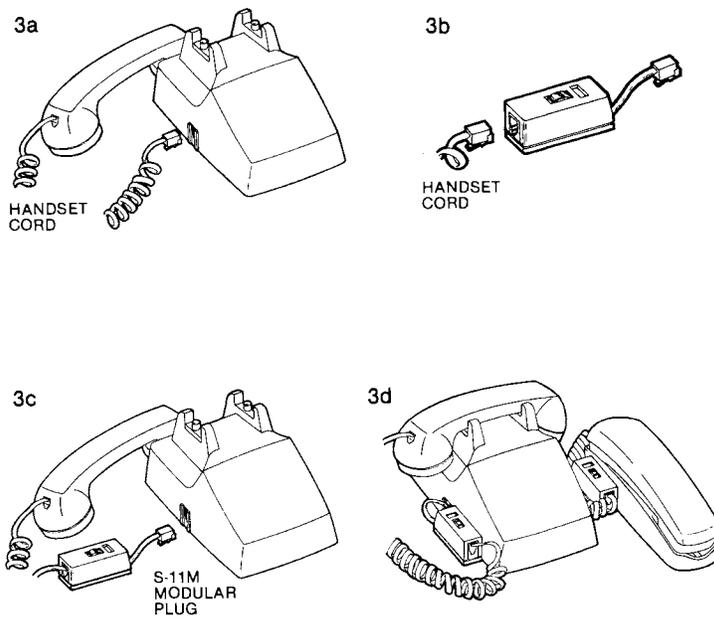


Fig. 3a-d — S-11M Connections.

## S65-1 VOICE OPERATED RELAY

### 1. GENERAL

1.01 The S65-1, connected across a telephone system talking path, provides relay closure (or open) when voice currents are present in the talking path.

1.02 Applications include PBX or key paging systems which rely on voice currents to keep the talk path closed during use, in talk-back and other two-way systems to switch the transmission direction, and in other applications where the presence or end of voice signals requires a change in equipment mode.

### 2. DESIGN FEATURES

2.01 The S65-1 bridges the line with greater than 20K ohms input impedance.

2.02 Sensitivity and release time are independently adjustable.

2.03 The S65-1 operates from 24 volts d.c.

2.04 Mounting can be on any flat surface or on the mounting bars of a relay rack. Vertical mounting centers are 4.77 in.

2.05 Connections are made to screw terminals on the printed circuit board.

### 3. OPERATION

3.01 The S65-1, when connected across the talking path, will operate its Form C contacts within 20 milliseconds after the beginning of voice signals on the line and will remain operated until it does not detect voice for 0.5 to 2.5 seconds.

### 4. INSTALLATION

4.01 After the S65-1 is mounted, make the following connections:

- a. Connect tip and ring of the communications system talking path to TIP and RING of the S65-1.
- b. Connect 24 volt battery and ground from the power supply to BAT and GRD of the S65-1.
- c. Connect the contact terminals of the S65-1 to the external equipment as required.

### CALIBRATION

4.02 Connect test ground or battery to terminal COM and a voltmeter or lamp from battery or ground to terminal NO. Apply a signal of voice frequency to the talking path (or talk at normal level with a test telephone across the line, adjust the sensitivity control to maintain an output signal during the desired level of voice frequency. The S65-1 is adjusted at the factory to a sensitivity of -15 dBm at 1000 Hz ( $\pm 1$  dBm) and a time out of 1 sec ( $\pm 10\%$ ).

4.03 Adjust the release time within 0.5 to 2.5 seconds as desired so that the output signal is maintained during normal pauses in conversations and is discontinued at the end of conversation.



Fig. 1

### 5. MAINTENANCE

5.01 No provision is made for field maintenance or repair. If no output is detected, verify all connections.

5.02 The S65-1 is warranted against manufacturing & material defects. If it fails within the warranty period, it will be repaired or replaced at no charge. See the Melco Warranty Service Policy for return and replacement details.

**6. SPECIFICATIONS**

- Operating voltage ..... -18 to -28V DC  
 -24V DC nom
- Current at -24V DC ..... 20 ma idle  
 85 ma operated, max.
- Input impedance ..... 20K ohms bridging
- Dynamic input range ..... -25dBm to + 20dBm  
 (detect level adjustable)
- Attack time ..... 15 msec (nom.)
- Release time (adjustable) ..... 0.5 sec to 2.5 sec
- Relay contacts rating ..... 1 amp. max.
- Longitudinal balance ..... better than -60db  
 200 to 1000 Hz
- Mounting ..... plastic housing mounts on wall  
 or backboard
- Dimensions ..... 5.25" x 3.13" x 1.0"
- Operating temperature ..... 0°C to + 50°C  
 + 32°F to + 122°F
- Operating humidity ..... 0 to 95%

**7. FCC REQUIREMENTS**

7.01 The S65-1 Voice Operated Relay is compatible with, and may be installed in various 1A2 type key telephone systems. Systems, such as those marketed by: Western Electric, GTE Automatic Electric, Stromberg-Carlson, ITT, Nor-

thern Telecom, etc., which have received FCC KN registrations are examples of systems in which the S65-1 may be used.

7.02 The S65-1 Voice Operated Relay may be installed by Melco, an authorized agent of Melco, the telephone company or those qualified for installation of 'KN' systems under FCC Rules, Section 68.215. Installation may be made only with the authorization of the owner of the host system.

7.03 At the time of installation, the telephone company should be notified of the FCC Registration Number AQT9PZ-69478-KX-N. This number should be listed in the affidavits filed with the telephone company and in the system log kept by installation and maintenance personnel.

**8. ORDERING**

8.01 Order as follows:  
 (QTY) S65-1 120024 VOICE OPERATED RELAY  
 from your local supplier.

8.02 Further information and assistance on the S65-1 or any other Melco product is available from:

MELCO  
 P.O. Box 6909  
 Bellevue, WA 98008-0909  
 (206) 643-3400  
 TWX: 910-443-3040

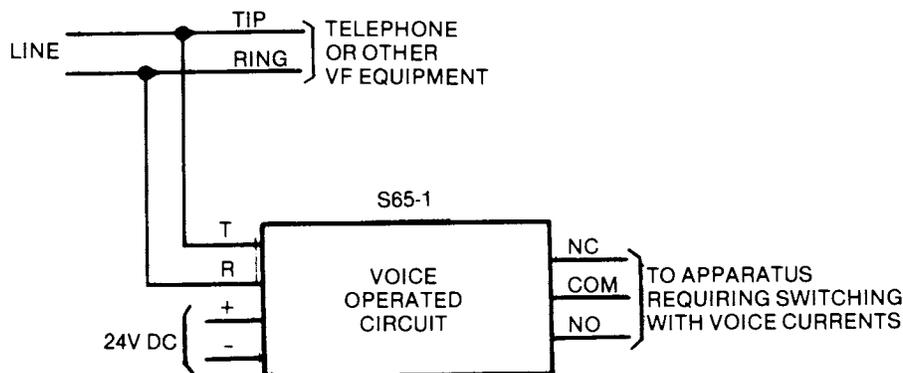


Fig. 2 — S65-1 Connections.

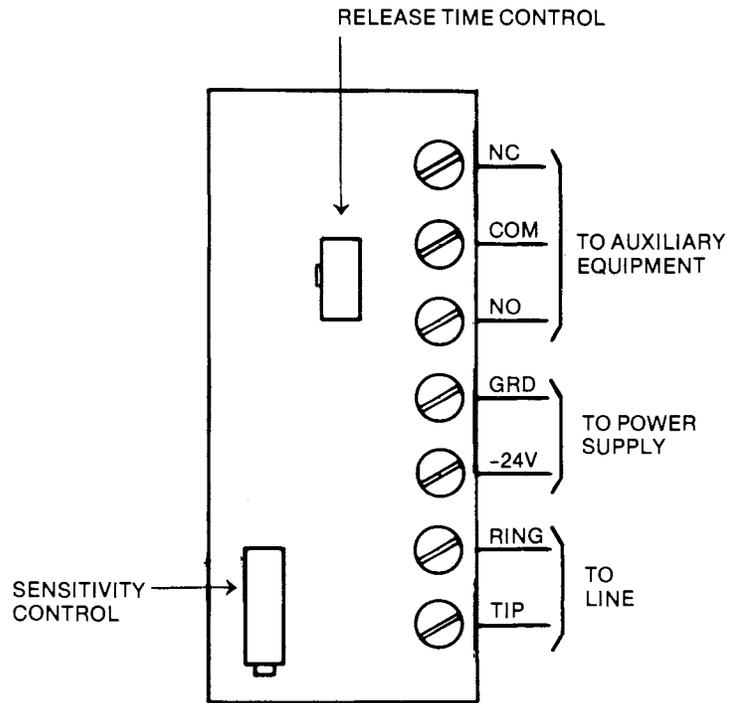


Fig. 3 — S65-1 Printed Circuit Board with Screw Terminals and Adjustments.

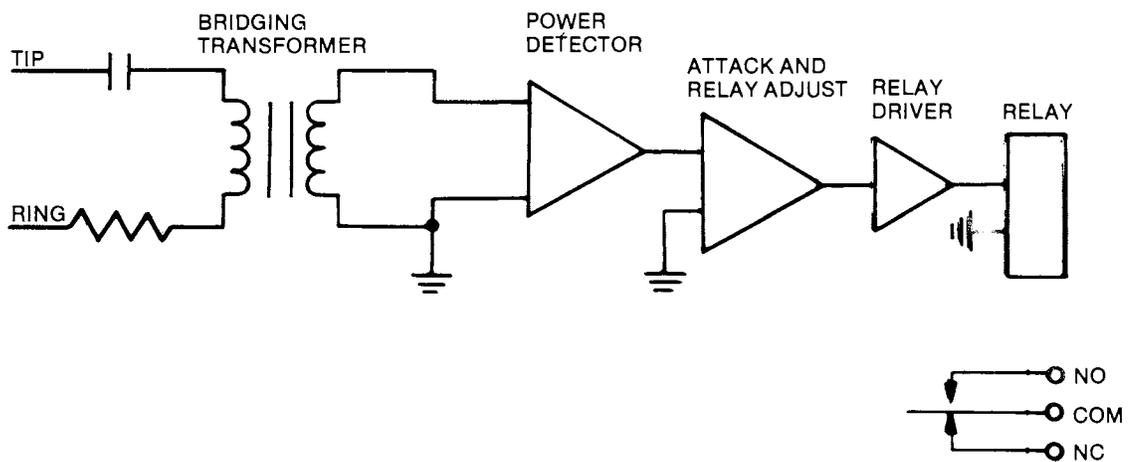


Fig. 4 — S65-1 Condensed Functional Schematic.



## S-74 RINGING DETECTOR

### 1. GENERAL

1.01 The S-74 is a multi-application ringing detector that operates a relay circuit when ringing voltage is present. It can be used to activate auxiliary equipment upon detection of ringing voltage or to provide bridged ringing for an off-premise extension. The S-74 works in conjunction with any 105 volt ringer.

1.02 This device is pending FCC registration under Part 68 of FCC Rules and Regulations.

### 2. DESIGN FEATURES

2.01 The S-74 provides a 2 Form C relay circuit that is activated by incoming ringing. The relay operates with application of ringing voltage, within a specified range, to the tip and ring input of the S-74. The relay remains operated until the ringing voltage is removed. Relay drop-out delay after ringing current removal is minimal (less than 100 ms.).

2.02 A strappable option on the S-74 printed circuit board allows the tip and ring input at the S-74 to be configured for one of the following four types of audible signaling: standard bridged, divided (grounded tip or grounded ring) or single ended—R-Lead.

2.03 The S-74:

- may be used to activate an auxiliary visual or audible device, or to provide bridged ringing.
- is not polarity sensitive.
- mounts on a backboard or suitable flat surface.
- connects from screw terminals on the S-74 printed circuit board.
- operates from either a 15 to 18 V AC wall pack or a standard key system power supply, - 18 to - 28 V DC.

### 3. INSTALLATION

3.01 Mount the S-74 on a backboard or other suitable flat surface using two screws placed through the upper and lower slotted flange holes.

3.02 Remove the S-74 cover.

3.03 Connect the output of the 15 to 18 V AC wall pack or 24 V DC power supply to the B BAT and B GRD screw terminals of the S-74. Polarity need not be observed.

3.04 Make the remaining screw terminal connections as shown in Figure 2.

3.05 Place the appropriate strap jumpers according to the type of incoming ringing present at the installation site. See Table A.

3.06 Replace the cover and test to ensure that the S-74 is activated when an incoming call is received.



Fig. 1

### 4. MAINTENANCE

4.01 No provision is made for field adjustment or repair. If the S-74 does not activate when incoming ringing is received, verify connections and fuses. Check to ensure that all screw terminals are connected properly.

4.02 The S-74 is warranted against defects in material and workmanship. If it becomes defective within the warranty period, it will be repaired or replaced without charge. See the Melco Warranty Service Policy for repair and return details.



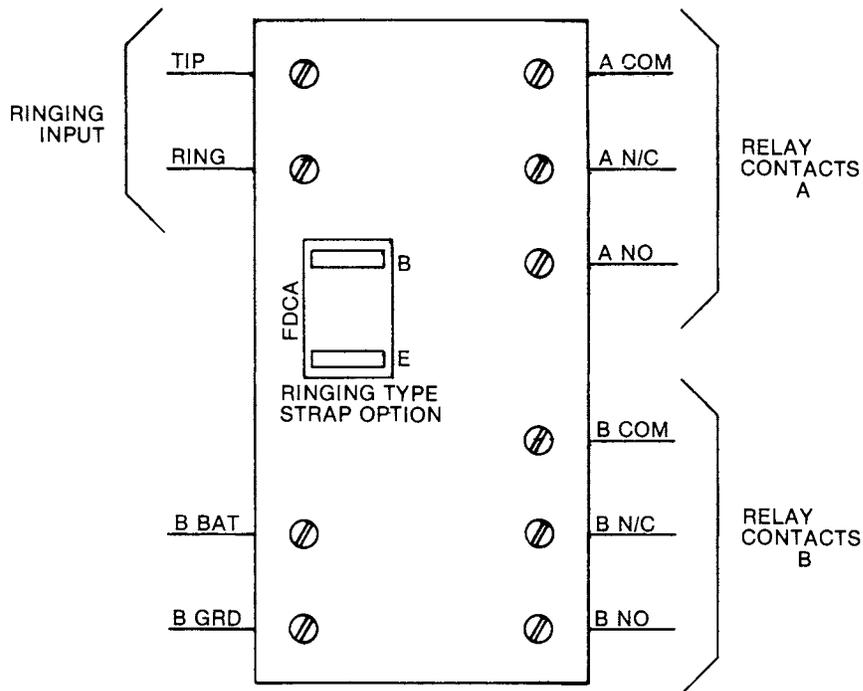


Fig. 2 — Printed Circuit Board with Screw Terminals and Strap Option.

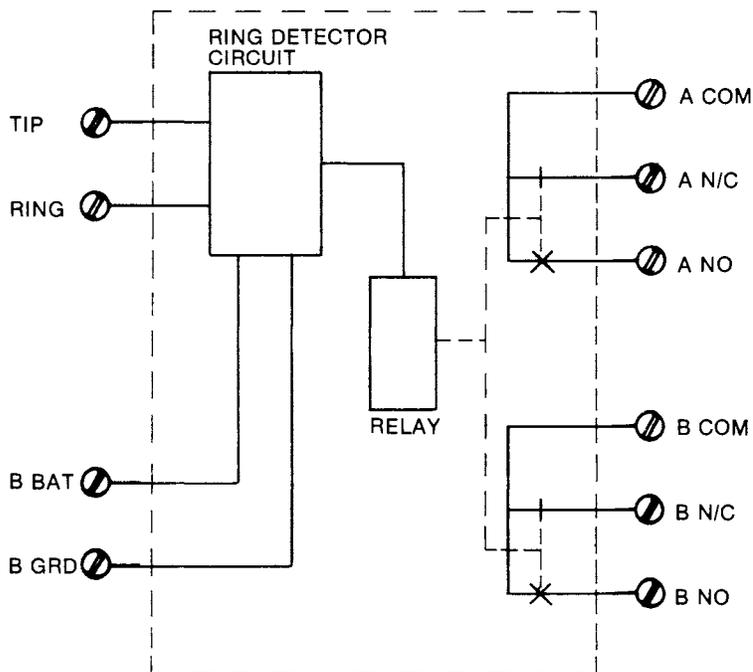


Fig. 3 — Functional Schematic of S-74.

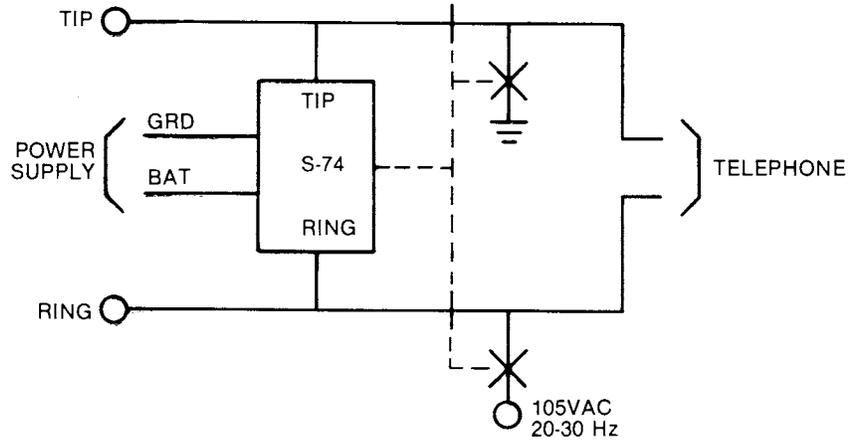


Fig. 4 — Application Schematic of Bridged Ringing Repeater.

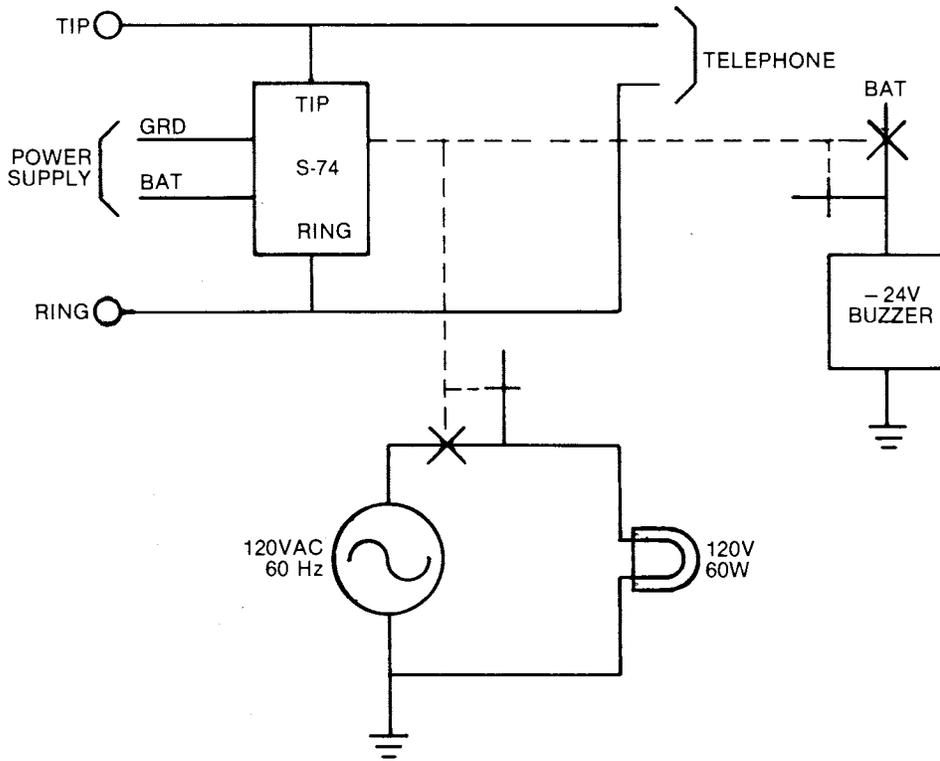


Fig. 5 — Application Schematic Using S-74 for an Auxiliary Audible and Visual Ringing Signal.

## S-78 RELAY CIRCUIT

### 1. GENERAL

1.01 The S-78 is multi-application relay circuit that operates with a 10V AC or 12V DC signal. The relay contacts are made when the signal is present and are broken when the signal ceases. The circuit can be used for a variety of transfer functions, and is specifically designed to enable a 105V AC common audible source to be used with an Electronic Key Telephone system which provides a 10V AC output such as a Horizon Key System.

1.02 This device is pending FCC registration under Part 68 of the FCC Rules and Regulations.

### 2. DESIGN FEATURES

2.01 The S-78:

- has two Form C (break and make) contact combinations, providing two normally open outputs.
- operates with a 10V AC or 12V DC signal.
- mounts on a backboard or suitable flat surface.
- connects from screw terminals on the S-78 printed circuit card.

### 3. INSTALLATION

2.01 Mount the S-78 on a backboard or other suitable flat surface using two screws placed through the upper and lower slotted flange holes.

3.02 Remove the S-78 cover.

3.03 Connect the 10V AC or 12V DC signal source to the AC IN terminals on the S-78. (See Figure 2.) If a 12 V DC source is used, polarity need not be observed.

3.04 Make connections to the appropriate S-78 screw terminals for the desired relay contact connections. (See Figures 2 and 3.)

3.05 Replace cover and test activation of unit with incoming signal.

### 4. MAINTENANCE

4.01 No provision is made for field adjustment or repair. If the S-78 does not activate when incoming signaling is received, verify connections and fuses. Check to ensure that all screw terminals are connected properly.

4.02 The S-78 is warranted against defects in material and workmanship. If it becomes defective within the warranty period, it will be repaired or replaced without charge. See the Melco Warranty Service Policy for repair and return details.

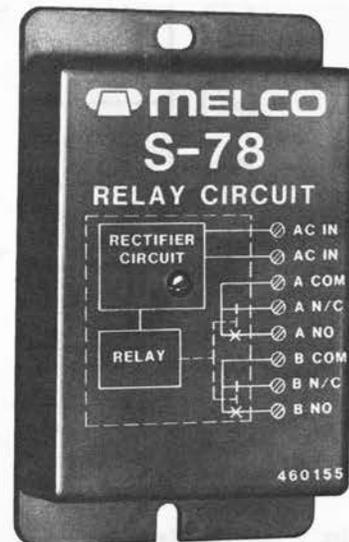


Fig. 1

### 5. SPECIFICATIONS

Power supply requirements:

operating voltage ..... 10V AC  $\pm$  10%  
operating current ..... 40ma at 10V AC

Relay contact rating ..... 2 amps max (60 VA)

Operating temperature range ..... 0° to 50° C  
32° to 122° F

Operating humidity ..... 0 to 95%  
noncondensing

Storage temperature ..... - 30° to 70° C  
- 22° to 158° F

Dimensions ..... 5.25" x 3.125" x 1.00"

Connections ..... screw terminals

Housing ..... plastic, blue

Weight ..... 3.5 oz

**5. ORDERING GUIDE**

5.01 Order as follows:  
 (QTY) 120326 S-78 RELAY CIRCUIT  
 from your local supplier or distributor.

5.02 Technical assistance on the S-78 or any

Melco product is available from:

MELCO LABS, INC.  
 P.O. Box 6909  
 Bellevue, WA 98008-0909  
 (206) 643-3400  
 TWX: 910-443-3040

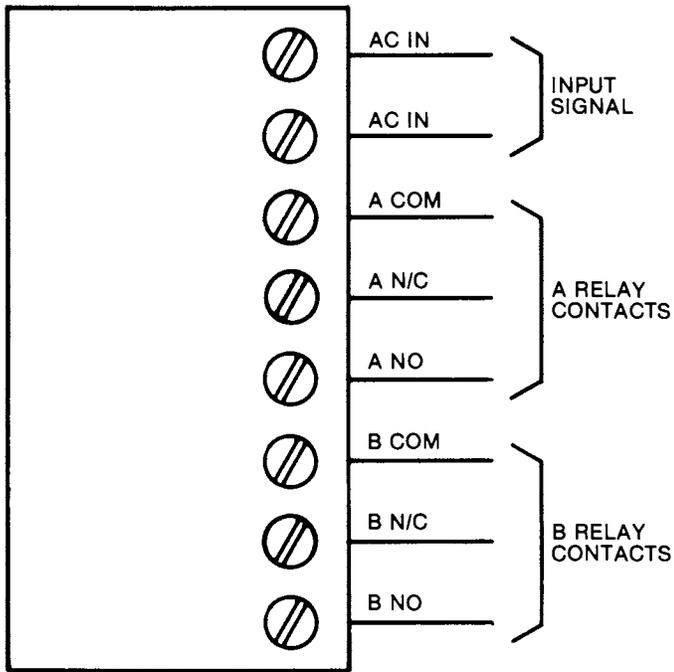


Fig. 2 — S-78 Connections.

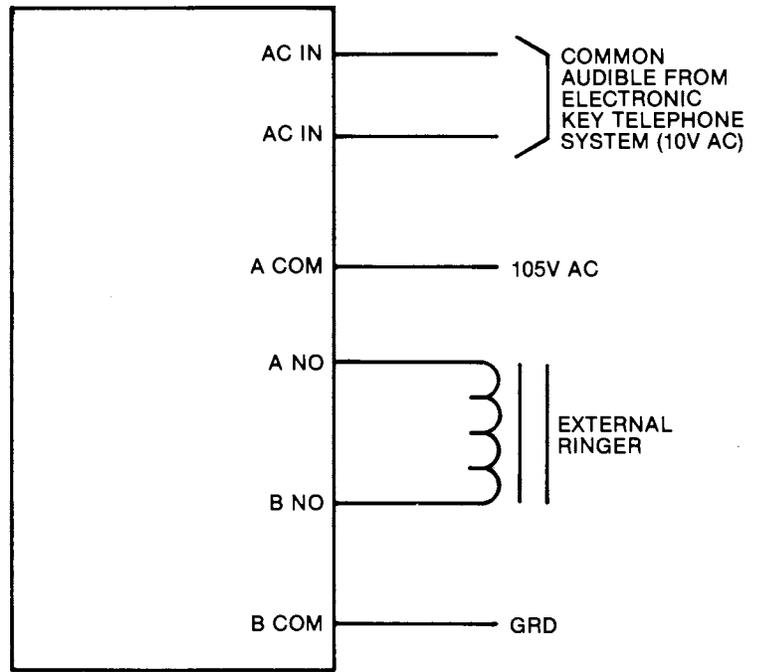


Fig. 3 — Application Schematic of S-78 Used with Electronic Key Telephone System.

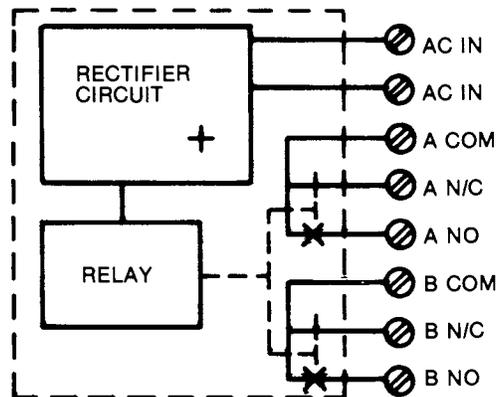


Fig. 4 — Functional Schematic of S-78.