



MCZ300 Director III Series Master Control Panel Installation, Troubleshooting, and Drawings

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General Information

Description

This Director III Master Control Panel offers dependable program distribution and two-way intercom communications. Its ease of operation can be gauged by the three-step instructions on the front panel. To further simplify the operation, the knobs and push buttons are color-coded to match the "Follow-the-Color" channel markings on the associated switch panels: orange for intercom, green for the "A" Channel program-distribution, and blue for the optional "B" Channel program distribution.

The control panel has a fifteen-watt intercom amplifier and five program inputs: one dedicated to the built-in Console microphone and four that can be set for either microphones or program sources (e.g., phono, tape, tuner).

The panel is compatible with the Rauland SW25, SWL25, SWT425, and SWL425 Room-Selector Panels and the newer Director III Series equipment (MCB300, etc.). The attached system wiring diagram (KM0952) shows the connection of the standard and optional equipment. For more detailed information, see the "Back-Panel Connections, Controls, and Indicator" section of this manual.

Both normal and emergency announcements can be made without resetting individual room switches. Controls

trols for all-call and emergency announcements are standard on the MCZ300, and an MTG100 Tone Generator can easily be interconnected to provide a variety of alerting and emergency tones.

Unpacking

The MCZ300 comes assembled. The only separate items packed with the unit are the screws, washers, and Tinnerman nuts for fastening the chassis to the rack:

Supplied Rack-Mounting Parts

Qty.	Description	Rauland Part No.
4	Black #10 flat washers.	WJ0305
4	Black fiber washers.	WL0315
4	Tinnerman #10-32 speed nuts.	AB3640
4	Black machine screws (#10-32 x 5/8" panhead Phillips).	B0439

Equipment Damaged in Transit

The MCZ300 was carefully inspected and tested at the factory before it was shipped. If the equipment has been damaged in transit, notify the transportation company at once to place your claim.

Specifications

<p>Rated Output:</p> <p>Program: 0.5 V (into 10 KΩ).</p> <p>Intercom: 15 watts RMS (balanced, 25-V line).</p> <p>Inputs:</p> <p>1 internal Console microphone</p> <p>4 mics (balanced, 150 Ω) convertible to auxiliary (unbalanced, 150 KΩ).</p> <p>Frequency Response:</p> <p>Program: +0, -3 dB, 40 Hz to 15 KHz (1-KHz reference).</p> <p>Intercom: Shaped for maximum intelligibility.</p> <p>Distortion: Less than 1%.</p> <p>Noise Levels (below RPO)</p> <p>Microphone: -56 dB.</p> <p>Auxiliary: -56 dB.</p> <p>Intercom: -55 dB.</p> <p>Input Sensitivity for RPO:</p> <p>Microphone: 0.3 mv.</p> <p>Auxiliary: 150 mv.</p>	<p>Controls and Indicators:</p> <p>5 Program-select push buttons.</p> <p>4 Push-button controls: <i>Tone</i>, <i>All-Call</i>, <i>Emergency</i>, and <i>Press-to-Talk</i>.</p> <p>2 Level controls: <i>Program Volume</i> (green), and <i>Listen/Monitor</i> (orange).</p> <p>3 level-indicator LEDs.</p> <p>Terminations (on the back):</p> <p>24 screw terminals and 40 wire-wrap terminals.</p> <p>Power Required:</p> <p>24 to 28 VDC, 1.5 A max. (MCZ300 only); 1.7 A max. with both MCZ300 and MCB300.</p> <p>Dimensions:</p> <p>19" wide (front panel), 3 1/2" high, 7 1/2" deep (48.3 cm x 8.9 cm x 19.0 cm); 9" (22.9 cm) deep with the heat sink.</p> <p>Finish:</p> <p>Black matte finish screened with white.</p>
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Note: These specifications are subject to change without notice.

Installation

Mechanical

The MCZ300 is designed for mounting in a standard 19-inch rack or in a turret (Rauland Model T1600 or T2600); it requires 30 inches of vertical space. Whatever the site, a well-planned equipment installation will save time and assure optimum equipment performance. The following factors should be considered:

- ✓ The location of the equipment and the type of mounting.
- ✓ The number of inputs.
- ✓ The field conversions for such options as a tone generator and input switches, and the advisability of completing them before mounting the MCZ300.
- ✓ The addition of associated equipment, such as the MCB300 Program Control Panel.
- ✓ The system wiring to and from each amplifier used.

Rack- or Turret-Mounting

Other than the normal precautions for (a) avoiding hot spots or areas with severely restricted air flow and (b) allowing sufficient clearance at the rear for accessing the equipment, the only location restriction is that the MCZ300 not be placed directly above or below a large power transformer (e.g., one in a power amplifier), which could cause hum. The procedures for installing the control panel are the same for both rack- and turret-mounting.

Note: The unit should not be mounted until the field conversions for any options have been completed.

Mounting: At the selected mounting position, follow the appropriate procedures (depending upon whether the mounting holes are untapped or tapped):

Step 1. *If the rack's holes are not tapped*, insert the #10 speed nuts over the four holes that you will use.

Step 2. Prepare the four supplied machine screws by placing a black metal washer and then a fiber washer over each one.

Step 3. Insert the MCZ300 in the rack and fasten it with the four prepared screws.

Electrical

Power and Grounding

The MCZ300 receives its power via the "+28V" and "COM" terminals on its back panel. To make full use of the unit's 15-watt intercom amplifier, select a power source that can supply at least 1.5 amperes for the MCZ300 itself (at least 1.7 amperes if the system includes an MCB300). Rauland's PSX300 DC Power Supply, rated at 2 amperes, can comfortably handle either requirement and is the recommended choice. Alternatively, Rauland's school amplifiers, such as the DAX60 and DAX120, can supply 1.2 amperes of 28-VDC power, but would limit the intercom power to less than 15 watts. Both of these Rauland power sources provide circuit protection.

The MCZ300 is grounded to the rack via the room-selector panels; hence, it is important that the rack have a

reliable earth ground, either through a three-connector AC power cord belonging to other equipment sharing the rack, or through a direct connection to the earth.

Do not turn on power to the MCZ300 until all of the system wiring has been completed and checked.

Field Wiring

If the MCZ300 is to be field-installed, refer to the "Back-Panel Connections, Controls, and Indicator" section of this manual and complete the system wiring as shown in the attached wiring diagram, KM0952. If the MCZ300 is part of a factory-wired system, use the wiring diagram to verify that the wiring is intact.

If the system does not have an MCB300, make the following provisions:

- Connect a jumper between the "Mon In/Out" terminals (J2-3 and J2-4), to enable the panel to monitor "A" Channel programs.
- Connect the 28-VDC supply directly to the panel.

When there is a Telecenter[®] system, use the MCZ300's "Emer" terminal (J2-22) to provide a logic ground to control the Telecenter's Emergency Page and "S" Bus relays.

For information about wiring optional equipment, such as the MTG100, see the "Options" section, further on in this manual.

Talk-Level Adjustment

The intercom talk-level potentiometer (RP3) is accessible through a hole marked "Talk Level," which is near the right end of the back panel (as viewed from the rear). This pot is set at the factory and does not normally need readjusting. However, should readjustment be necessary, perform the following:

Step 1. Have an assistant go to a distant room. If there is a privacy switch there, it should be set to the *Normal* position.

Step 2. Set the room-selector switch for that room to the *C* position.

Step 3. Hold in the *Press-to-Talk* push button and talk into the MCZ300's microphone (left side of the front panel) in a normal voice. Release the push button to hear the assistant's suggestions for the level adjustment.

Step 4. Using a small flat-blade screwdriver or similar tool, adjust the *Talk Level* control in keeping with the assistant's suggestions.

Step 5. Repeat Steps 3 and 4 until the level is satisfactory.

Step 6. Reset the room's selector switch to *Off*.

Emergency Talk-Level Adjustment

The Emergency talk-level potentiometer (RP4) is accessible through a hole marked "Emerg Level," which is near the right end of the back panel (as viewed from the rear). This pot is set at the factory and does not normally need readjusting. However, should readjustment be necessary, perform the following:

MCZ300 Master Control Panel: Installation

Step 1. Have an assistant go to a distant room. If there is a privacy switch there, it should be set to the *Normal* position.

Step 2. Set the room-selector switch for that room to the *C* position.

Step 3. Hold in the *Emerg* push button and talk into the MCZ300's front-panel microphone in a normal voice. Release the push button to hear the assistant's suggestions for the level adjustment.

Step 4. Using a small flat-blade screwdriver or similar tool, adjust the *Emerg Level* control in keeping with the assistant's suggestions.

Step 5. Repeat Steps 3 and 4 until the level is satisfactory.

Step 6. Reset the room's selector switch to *Off*.

Options

Important: Options that entail work on the MCZ300's printed circuit board or on a "Mic/Aux" input should be installed before the unit is mounted in a rack or turret.

Disabling the Periodic Supervisory Tone

The periodic tone that normally sounds in a room while the Console is in the listening mode may be objectionable in some systems. To defeat the transmission of this tone as well as the first "beep" when a room is switched onto the "C" Bus, connect Terminal *J2-15* ("St. Tn."—"Stop Tone") to *J2-20* ("Com").

Disabling the Repeating Call-in Tone

As it comes wired from the factory, the MCZ300 will continue to "beep" every 12 seconds until a call-in is answered. To limit the tone to a single "beep," when a call-in first occurs, solder a jumper across *JU2*. Its holes are in the main PC board, about half-way between the *Program Volume* control and the rear edge of the board, alongside Hybrid EH1.

MTG100 Emergency Tone Generator

The MTG100 provides four alerting and emergency tone signals: interrupted tone, chime, siren, and European police car. The tone generator mounts easily in the top cover of the MCZ300 chassis, and the wiring connections are to screw terminals. In a typical installation, the chime tone is activated by a master clock, and the other three tones are activated by push buttons on a separate panel, such as the Rauland RX1027 Alarm Signal Control Panel. The dedicated audio output for the chime tone allows it to be fed into a separate system; it can also be jumpered with the other tones so that all four can be fed into the MCZ300.

Step 1. Remove and set aside the two hex-head screws that secure the top cover to the MCZ300, then remove the cover and place it top-side-down on a suitable work surface.

Step 2. Pop out the two canoe clips that secure the cover plate to the center of the back panel of the MCZ300. Discard the cover plate and the canoe clips.

Step 3. Orient the MTG100 board with the component side up and the barrier terminal strip facing left. Find the screening for Jumper *J1* on the lower left part of the board and install a jumper there. This will make the unit compatible with the 15-volt power supplied by the MCZ300.

Step 4. Orient the MTG100 with its component side down. Align its terminal strip with the inside of the opening

in the chassis cover: the terminal strip should protrude from the rear of the cover, and its rear bracket holes should align with the larger, oblong holes near the opening in the cover.

Step 5. Use the two #6-32 x 1/4" (WA57) screws supplied with the MTG100 to secure it to the back of the cover.

Step 6. Carefully reinstall the top cover on the MCZ300, using the two hex-head screws removed in Step 1; be sure to insert the front edge of the cover under the top flange of the dress panel.

Step 7. Wire the MTG100 to the MCZ300 as shown in the table below:

Note: Terminal *10* on the MTG100 is the chime-tone output; Terminal *1* is the output for the three other tones. Jumpering these two terminals together will enable any of the four tones to be fed into the MCZ300 (or other device).

MTG100 Terminal	MCZ300 Terminal	MTG100 Function
2	J1-18 (Gnd)	Connection to circuit common.
9	J1-17 (+15V)	Connection to power source.
3	J1-16 (R)	Input for control voltage.
10 or 1	J1-19 (Audio)	Output for audio voltage.

Step 8. Complete the wiring between the MTG100 and the device that is to activate the tones (e.g., a master clock and the RX1027 panel); refer to KC1309, the schematic of the MTG100 (attached to this manual), and to the documentation for the appropriate device.

HS246 Emergency Telephone

When connected to the MCZ300, the HS246 Emergency Telephone can be used to send an alerting tone or an announcement throughout the system. Refer to the attached telephone wiring diagram (KM0992) and the MCZ300 system wiring diagram (KM0952) while performing the following steps:

Step 1. Connect the audio lead of the telephone transmitter to Terminal *J2-7* ("Ph+").

Step 2. Connect the telephone's hook-switch lead to Terminal *J2-6* ("Ph-").

Step 3. Connect the telephone's ground wire to Terminal *J2-8* ("Ph. Act.").

In system operation, lifting the HS246 off-hook places a ground on the "Ph. Act." ("Phone Activate") terminal; this, in turn, causes the bus-gathering relay to connect the "A," "Off," "B," and "C" Buses for an all-call function. Depressing the phone's alerting tone switch causes the tone oscillator in the MCZ300 to generate a 1.2-kilohertz tone.

Connection to a Clock System

The MCZ300 will generate and distribute single-channel time signals when a master clock's contact closure is connected to Wire-wrap Terminal *J2-5* ("Clock"). When this terminal is grounded, two events occur: (1) the MCZ300's tone circuitry generates a 1.2-kilohertz signal, and (2) the bus-gathering relay interconnects the program, "C," and "Off" buses to distribute the tone via the all-call function.

ChronoCom™ Jumper

When a Rauland 2524 ChronoCom Master Clock and Intercom Controller is used with the MCZ300 to control intercom functions, you must set Jumper *JU9* to its "2524" position. The jumper is on the main PC board of the MCZ300, in line with the red *Emergency* push button, about

two-thirds of the distance between the switch and the rear edge of the board. Simply pull up the sleeve jumper and place it over the middle pin and the pin next to the "2524" designation. Unless the 2524 is used for control functions (not merely as a master clock), leave the jumper in its factory-default ("Norm") position.

Back-Panel Connections, Controls, and Indicator

This section describes both the MCZ300 inputs and the equipment that is connected to them. Refer as necessary to the attached system wiring diagram, KM0952.

"Options" section of this manual for further information about this installation.

Screw Terminals (J-1)

"Input 1" (Screw Terminals 1, 2 ["Com"], and 3): For the connection of a low-impedance microphone (balanced 150-ohm): use Terminals 1 and 3 for the balanced connections, and Terminal 2 for the shield.

"Output" and "Com" (Screw Terminals 20 and 21): This output of the MCZ300's program preamplifier (the Channel A program signal) should be connected to the input of the A amplifier, for distribution via the room-selector panels.

Alternatively, this input can be converted to an auxiliary (unbalanced) input by selecting the "Aux" position of the internal *Mic/Aux* Switch. Connect the audio source to Terminals 1 (hot) and 2 ("Com").

Wire-Wrap Terminals (J-2)

"Inputs 2-4" (Screw Terminals 4-12): For the connection of additional low-impedance microphones or auxiliary inputs. The wiring follows the same pattern as that for "Input 1"—for example, a microphone for "Input 2" would be connected to Terminals 4 and 6, and its shield would be connected to Terminal 5 ("Com"). An unbalanced audio source would use only Terminals 4 (hot) and 5 ("Com").

"Mic Prec" (Wire-Wrap Terminal 1): This and a common terminal (e.g., J1-23) are used for the Microphone Precedence function, which enables a Desk Paging microphone to turn all "Aux" program sources on or off.

Note: Only low-impedance microphones should be used with the MCZ300. The Rauland Model 1295 is recommended.

"Mute" (Wire-Wrap Terminal 2): Grounding this terminal will mute the MCZ300's built-in speaker. The primary application for this would be to connect it to the push-bar switch of a nearby external paging microphone, to prevent acoustic feedback (howling).

"Mic/Aux" Switches: These switches are inside, on the PC board. Each switch must be set to "Mic" if the corresponding input is connected to a microphone, or "Aux" if the input is connected to an unbalanced audio signal.

"Mon In/Out" (Wire-Wrap Terminals 3 and 4): When these are connected to the corresponding terminals on an MCB300, the latter's *Monitor* push button will control which program is heard on the MCZ300's speaker: pushing it in selects the "B" program; leaving it out selects the "A" program.

"Exp" (Screw Terminal 13): This "Expander" terminal can be connected to the output of a Microphone Expander Chassis or an MCB300 to increase the number of microphone or auxiliary inputs. Note that all of these inputs would be connected to the "A" Channel.

Important: If an MCB300 is not supplied, Terminals J2-3 and J2-4 must be jumpered together to enable "A" program monitoring.

"+28V" (Screw Terminal 14): This input is used to connect the positive side of a +28-VDC power supply to the MCZ300. The power can be supplied by a Rauland school amplifier or by a PSX300 Power Supply.

"Clock" (Wire-Wrap Terminal 5): This can be connected to a single-channel clock system. When the master clock grounds this terminal, the MCZ300's bus-gathering relay sends a 1.2-KHz tone to all of the room stations.

"Com" (Screw Terminal 15): This input is used for the connections to the circuit common.

"Phone" (Wire-Wrap Terminals 6, 7, and 8): To connect an HS246 Emergency Telephone, wire its modular phone jack as follows:

"MTG100" (Screw Terminals 16 through 19): Connections for an optional MTG100 Emergency Tone Generator. Terminal 18 ("Com") should be connected to MTG100 Terminal 2, for connection to the circuit common. Terminal 17 ("+15") should be connected to MTG100 Terminal 9, to provide power to the tone generator. Terminal 19 ("Audio"), the audio output, should be connected to MTG100 Terminal 1 or 10, or both. Terminal 16 ("Control") should be connected to MTG100 Terminal 3. Refer to the

MCZ300 Terminal 1	Phone Jack Wire
J2-6	Green (L1)
J2-7	Red (L2)
J2-8	Yellow (RR)

To provide power to the HS246, add a jumper from Screw Terminal J1-17 ("+15") to Wire-Wrap Terminal J2-32 ("+V Ph").

MCZ300 Master Control Panel: Installation

Taking the phone off-hook causes the MCZ300 to connect the "A," "Off," "B," and "C" buses in an all-call function.

"Priority" (Wire-Wrap Terminals 9-14): "Emer" (9) affects the front-panel *Emerg* push button, "MTG" (10) an optional MTG100 Multi-Zone Generator, and "Phn" (11) an optional HS246 Emergency Phone. "P1" through "P3" assign priority levels, in descending order. Whichever of the three functions whose terminal is jumpered to "P1" will override any other function that may be in progress (see "Multi-Channel Functions," further on, for a more detailed explanation of priority levels).

"St.Tn." (Wire-Wrap Terminal 15): Grounding this "Stop Tone" terminal will prevent any tones—the first "beep" and supervisory beeps—from being sent to any room speaker when it is called or is in communication with the control panel.

"Call-in" (Wire-Wrap Terminal 16-20): With the important exception noted in the box below, these terminals are designed to work with external equipment.

"Out" (16): This can control an optional signaling device (a loud bell, buzzer, visual device, etc.) to provide a remote or more emphatic call-in signal. You would also need a connection to a "Com" terminal.

"Sen" (17): This is the "LED Sense" input for an SWL25 or SWL425 Switch Panel. It triggers a call-in tone in the MCZ300 when a room's call-in switch is pressed. Connect this terminal to the "L" terminal of an LED switch panel (a "Common" connection is already provided in the other wiring between the MCZ300 and the switch panel: the power supply's +6 VDC lead (white stripe) is wired to the switch panel's "L" terminal, and its 06 VDC lead to "K.")

"Ext" (18): A 6- to 15-VDC input from another control panel would register a call-in signal at the MCZ300 whenever that other panel received a call-in (special applications only).

"Com" (19) and "Gnd" (20): The call-in "Common" is a return path for the LED and "Ground" connections.

Important

Unless a special application calls for other arrangements, you must jumper together these "Com" and "Gnd" terminals. Without this jumper, a call-in tone will continuously sound in the panel's built-in speaker, and any optional external signaling device connected to "Ext" (Wire-Wrap Terminal 18) will always be activated.

"Emer" (Wire-Wrap Terminals 21, 22, and 23 [common]): These terminals are wired to an extra set of contacts on the *Emergency* switch. When Terminal 22 is wired to Terminal 60 of a Telecenter® IV system's MIO "A" connector, pressing the MCZ300 *Emergency* switch will cause the

Telecenter system to pull in all of its relays and send out the announcement; the MCZ300 bus-gathering relay is not used.

Note: This application also requires a connection between Terminal 23 (common) and Terminal 72 of the MIO "A" connector (ground).

Terminals 21 and 22 may also be used to control an external relay, which would be activated whenever the *Emergency* switch is held in. One application is wiring a multi-channel clock system to such a relay. Thus, when the *Emergency* switch is depressed, any in-progress clock signals will be over-ridden, and the rooms will receive the emergency announcement. If both a relay and a Telecenter IV system are to be connected, the relay must have a 12-volt coil.

"A Amp" (Wire-Wrap Terminals 24 and 25): This is where the output of the power amplifier for the "A" channel is connected directly to the MCZ300's "A" bus, for program distribution to selected rooms. That external amplifier (a Rauland school amplifier, such as the DAX60 or DAX120, is recommended) receives its audio signals from the MCZ300 program preamplifier via the "Output" terminals.

"A Bus" (Wire-Wrap Terminals 26 and 27): Connect this output to the "A" bus terminals ("A1" and "A2," respectively) on the room-selector panel for "A" program distribution.

"B Amp" (Wire-Wrap Terminals 28 and 29): This is where the output of the power amplifier for the "B" channel is connected to the "B" bus via the MCZ300's bus-gathering relay. That external amplifier (a Rauland school amplifier is recommended) receives its audio signals from an MCB300 program preamplifier. When a "B" program channel is to be provided, the Rauland SWT425 or SWL425 Room Selector Panels must be used, together with an MCB300 Control Panel.

"B Bus" (Wire-Wrap Terminals 30 and 31): Connect this output to the "B Bus" terminals of a four-position room-selector panel (the Rauland SWT425 or SWL425) for "B" program distribution.

"Gnd" (Wire-Wrap Terminal 33): Use this for connections to the circuit common.

"C Bus" (Wire-Wrap Terminals 34 ["Com"], 35, and 36): These connect to Terminals CZ, C1, and C2, respectively, on the room-selector panel, for two-way intercom communications. Terminal 34 provides a ground, while Terminals 35 and 36 carry the intercom amplifier's input and output (depending upon the position of the *Listen/Talk* Relay).

"Off Bus" (Wire-Wrap Terminals 37 and 38): Connect this output to the "Off Bus" terminals ("Off1" and "Off2," respectively) on the room-selector panel. When a station-selector switch is set to the "Off" position, the station is connected to this bus; under normal conditions, this disconnects the station from all program and intercom signals.

However, audio signals are sent via this bus when the *All-Call* or the *Emergency* switch is used (see "Bus-Gathering Relay," further on in this manual).

"Rly 2" (Wire-Wrap Terminal 39): An external switch (e.g., on a microphone) connected here can activate the bus-gathering relay by going low.

"Rly 1" (Wire-Wrap Terminal 40): This goes low during any bus-gathering operation, to control an external relay or a sensing circuit such as the MCT300 "All-Call In" terminal. This terminal should not be used for Emergency Announcements with Telecenter IV systems; use Terminal J2-22 instead.

"Talk Level:" Potentiometer *RP3*, on the printed circuit board, can be accessed with a small, flat-blade screwdriver via this opening in the back panel. Normally, this is used during the installation to adjust the MCZ300's intercom talk level and does not need to be readjusted thereafter.

"Emerg Level:" Potentiometer *RP4*, on the printed circuit board, can be accessed with a small, flat-blade screwdriver via this opening in the back panel. Normally, this is used during installation to adjust the Emergency talk level and does not need to be readjusted thereafter.

Multi-Channel Functions

This section gives a more technical description of what happens during all-call and other functions when a signal is distributed over several channels. It also gives the priority levels of these functions.

Independent Mode

The system may have up to four buses: "A" (for Channel-A programs), "B" (for Channel-B programs via the optional MCB300), "C" (for intercom communications), and "Off" (the stations connected here are usually in an idle or "off" state, but this bus can be used to distribute signals).

Normally, these four buses function independently; this is their lowest-priority level.

Bus-Gathering Mode

However, their independent functions can be overridden by the bus-gathering relay, which connects the "B," "C," and "Off" buses to the "A" bus. When this happens, all four buses carry the signal from the "A" amplifier; thus, the "B" and "C" Channels are no longer connected to the "B" and "C" amplifiers, and the "Off" bus is no longer "off."

Middle-Priority Level

Two functions, All-Call and clock, are factory-set to override any of the single-channel functions. This middle-priority level cannot be altered. These functions will be described in the order of ascending priority (i.e., the all-call function will override any single-channel function in progress, and clock signals will override the all-call function).

- a. The *All-Call* push button will activate the bus-gathering relay and send out either an "A" program source or a tone generated by the *Press to Send Tone* push button.
- b. When a Master Clock places a ground on the "Clock" terminal, this activates the bus-gathering relay and

activates the MCZ300 tone oscillator, causing a 1.2-KHz tone to be sent over the "A," "B," "C," and "Off" buses.

Adjustable High-Priority Levels

Three functions—Emergency Telephone, Tones, and Emergency—will override any other function in progress. For example, pressing the *Emergency* push button would immediately suspend an all-call function; it would not be necessary to release the *All-Call* button first.

The order of precedence among these three functions is set by jumpers among the "Priority" Wire-Wrap Terminals (9-14). Whichever function's terminal is jumpered to "P1" will have the highest priority. For example, if "Emer" (9) is jumpered to "P1" (12), the front-panel *Emerg* push button will seize all the buses no matter what other functions may be operating at that time. The function whose terminal is wired to "P3" (14) could be overridden by the other two high-level functions but would take precedence over the all-call, clock, and single-channel functions.

Since their priority levels are set by jumpers, these functions cannot be listed according to any absolute order of precedence. However the following list does represent the standard order of ascendancy in factory-wired systems:

- Taking an optional HS246 Emergency Telephone off-hook activates the bus-gathering relay, disables the tone oscillator (unless the phone's tone switch is pressed), and sends the phone's voice signal for distribution.
- A "high" from an optional MTG100's "R" terminal activates the bus-gathering relay and inputs the signal from this tone generator.
- The emergency function is controlled by the front-panel *Emerg* push button, which activates the bus-gathering relay and the panel's built-in microphone.

Troubleshooting

1. The Program Monitor does not work:

- a. If there is no MCB300, make sure that Wire-Wrap Terminals 3 and 4 are jumpered.
- b. Check for a short between the "C" Bus wires (refer to KC1627 and KM0952). Such a short will switch the MCZ300 to the intercom mode, which disables the program monitor.

2. Can talk but can't listen to intercom communications:

Check for a short between one of the "C" Bus wires and ground; if there are voice-origination wires, also check them for a short. Such shorts have the same effect as the privacy function, in which the center tap on

3. Can't listen or talk for intercom communications:

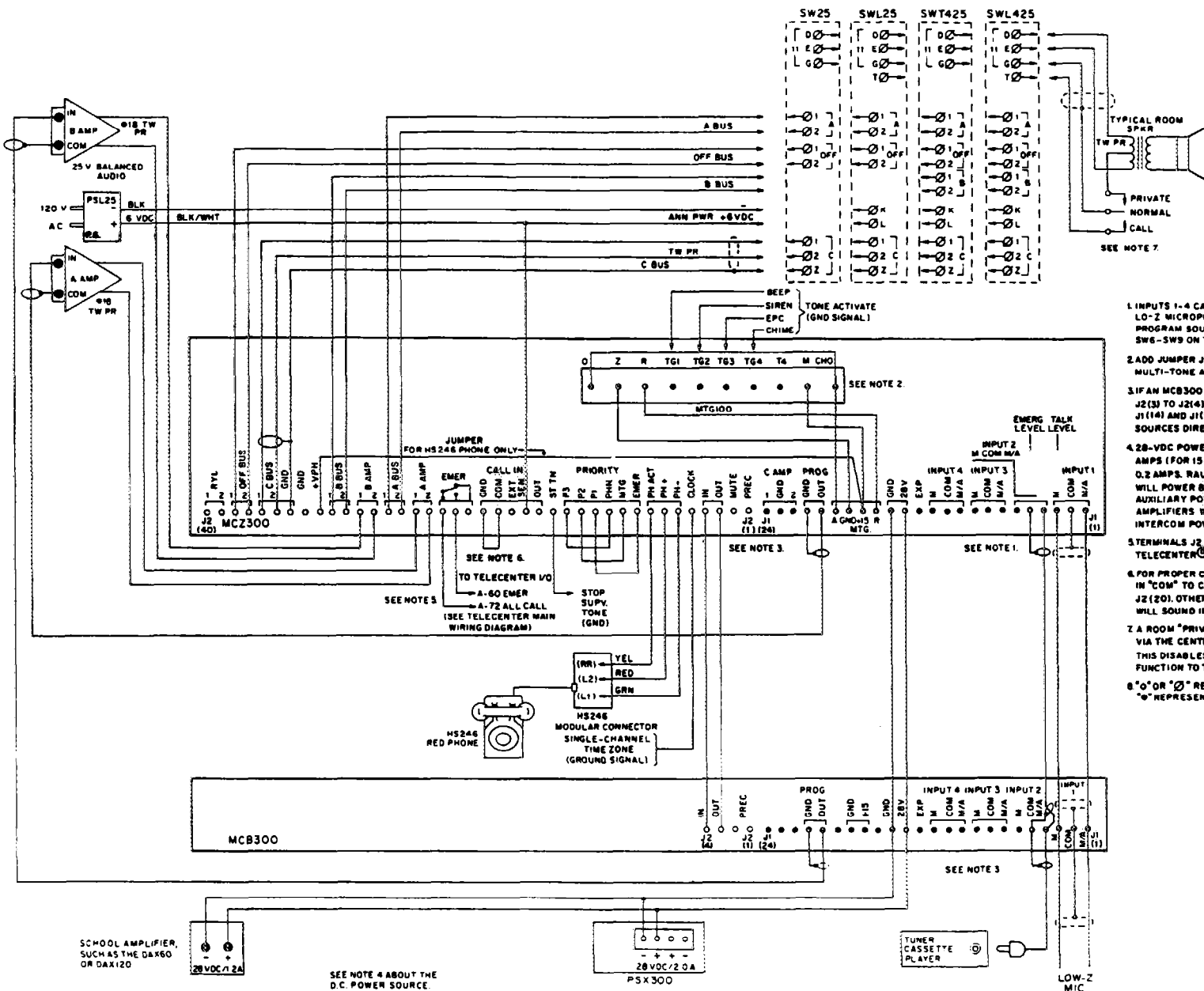
the speaker transformer is grounded; this temporarily disables the MCZ300's sensing circuit and, thus, prevents the Console from switching into the "listen" mode.

- a. Check for a short between the two wires of the "C" Bus cable.
- b. Check for a short between the voice-origination wires (if provided).

4. The call-in tone is always on.

Make sure that there is a jumper between Wire-Wrap Terminals 19 ("Com") and 20 ("Gnd").

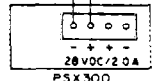
ORG. NO.	KM0952	A
DATE	1-19-90	
ISSUE	CHANGE	
A	JUMPER FOR HS246 PHONE WAS FROM +VPH TO R	
	Z-28-91	



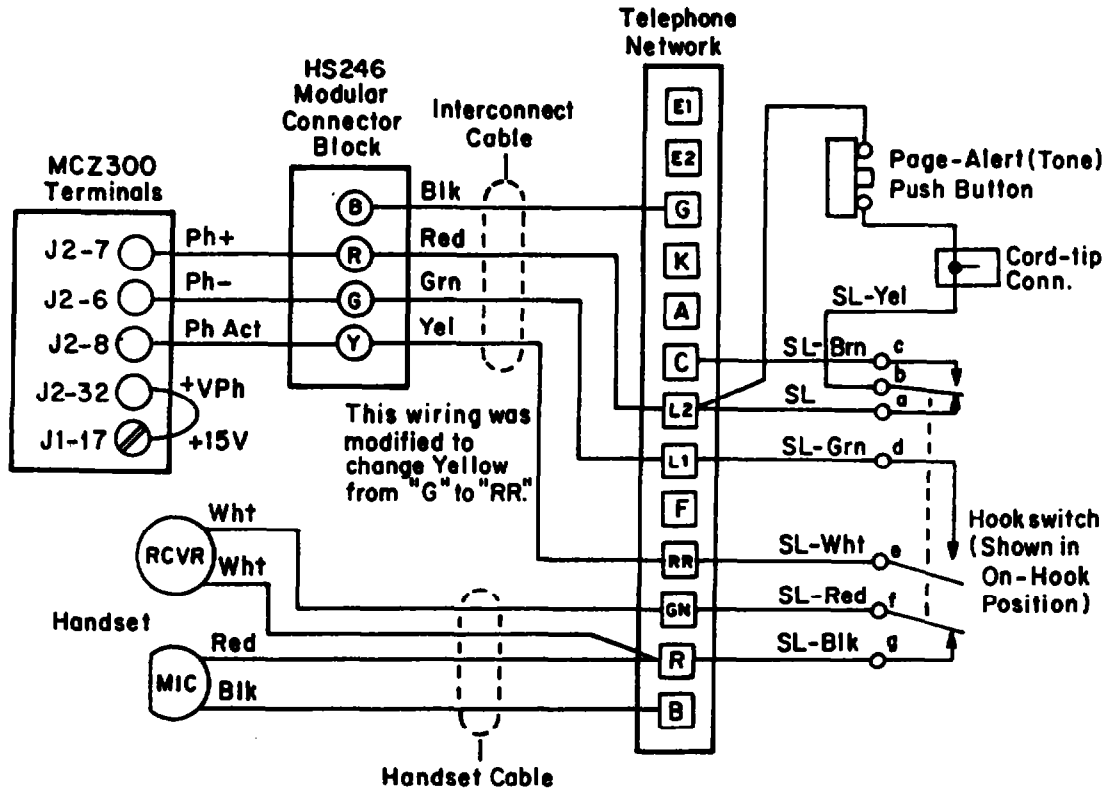
- NOTES**
- INPUTS 1-4 CAN BE INDIVIDUALLY SET FOR EITHER LO-Z MICROPHONES ("MIC") OR HIGH-LEVEL PROGRAM SOURCES ("AUX") BY SWITCHES SW6-SW9 ON THE MAIN PC BOARD.
 - ADD JUMPER J1 TO THE PC BOARD OF THE MTG100 MULTI-TONE ADDER MODULE.
 - IF AN MCB300 IS NOT USED, CONNECT TERMINAL J2(3) TO J2(4), THE POWER SUPPLY DIRECTLY TO J1(14) AND J1(15), AND THE "MIC" AND "AUX" SOURCES DIRECTLY TO THE MCZ300.
 - 28-VDC POWER REQUIREMENTS: MCZ300-1.5 AMPS (FOR 15-WATT INTERCOM LOAD); MCB300-0.2 AMPS. RAULAND'S PSX300 POWER SUPPLY WILL POWER BOTH UNITS. THE 1.2-AMP, 28-VDC AUXILIARY POWER SUPPLY OF RAULAND'S SCHOOL AMPLIFIERS WILL DRIVE THE MCZ300 (WITH THE INTERCOM POWER REDUCED TO 12 WATTS).
 - TERMINALS J2 (22) AND J2 (23) CAN BE WIRED TO A TELECENTER SYSTEM FOR EMERGENCY ALL-CALL.
 - FOR PROPER CALL-IN OPERATION, JUMPER CALL-IN "COM" TO CALL-IN "GND" TERMINAL, J2 (19) TO J2 (20). OTHERWISE, A STEADY CALL-IN TONE WILL SOUND IN THE MCZ300'S SPEAKER.
 - A ROOM "PRIVACY" SWITCH GOUNDS THE "C" BUS VIA THE CENTER TAP OF THE ROOM'S "LISTEN" FUNCTION TO THAT ROOM.
 - "O" OR "Ø" REPRESENTS A WIRE-WRAP TERMINAL. "•" REPRESENTS A SCREW TERMINAL.

SCHOOL AMPLIFIER, SUCH AS THE DAX60 OR DAX120

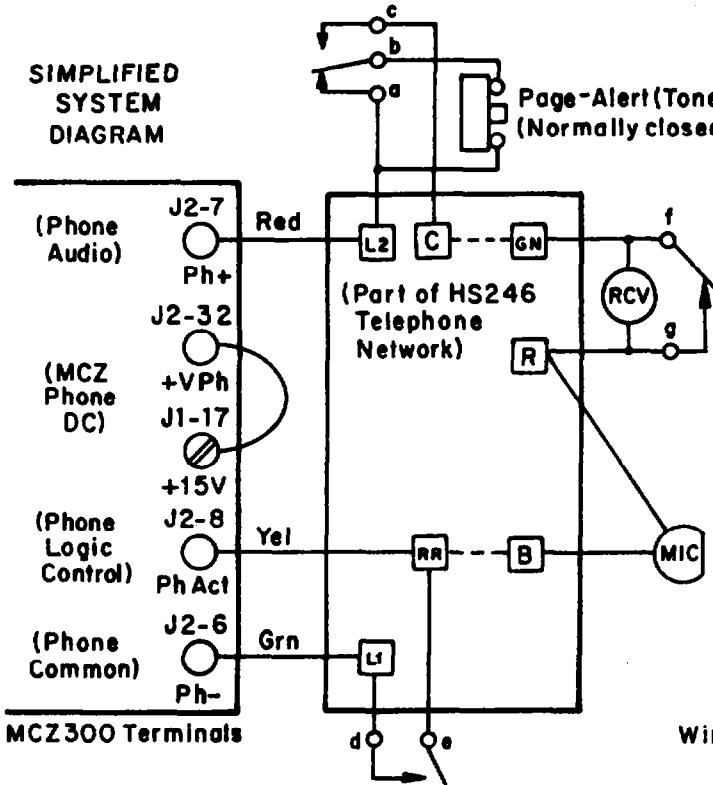
SEE NOTE 4 ABOUT THE D.C. POWER SOURCE



MODELS MCZ300 AND MCB300
DIRECTOR III CONTROL PANELS
RAULAND-BORG CORP
SKOKIE, ILL.
MADE IN U.S.A.
KM0952 [A]

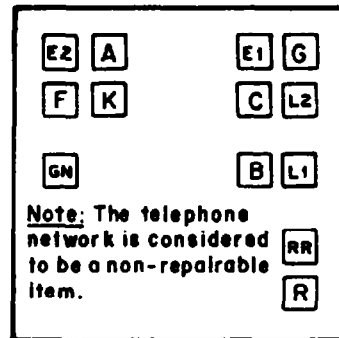


SIMPLIFIED SYSTEM DIAGRAM



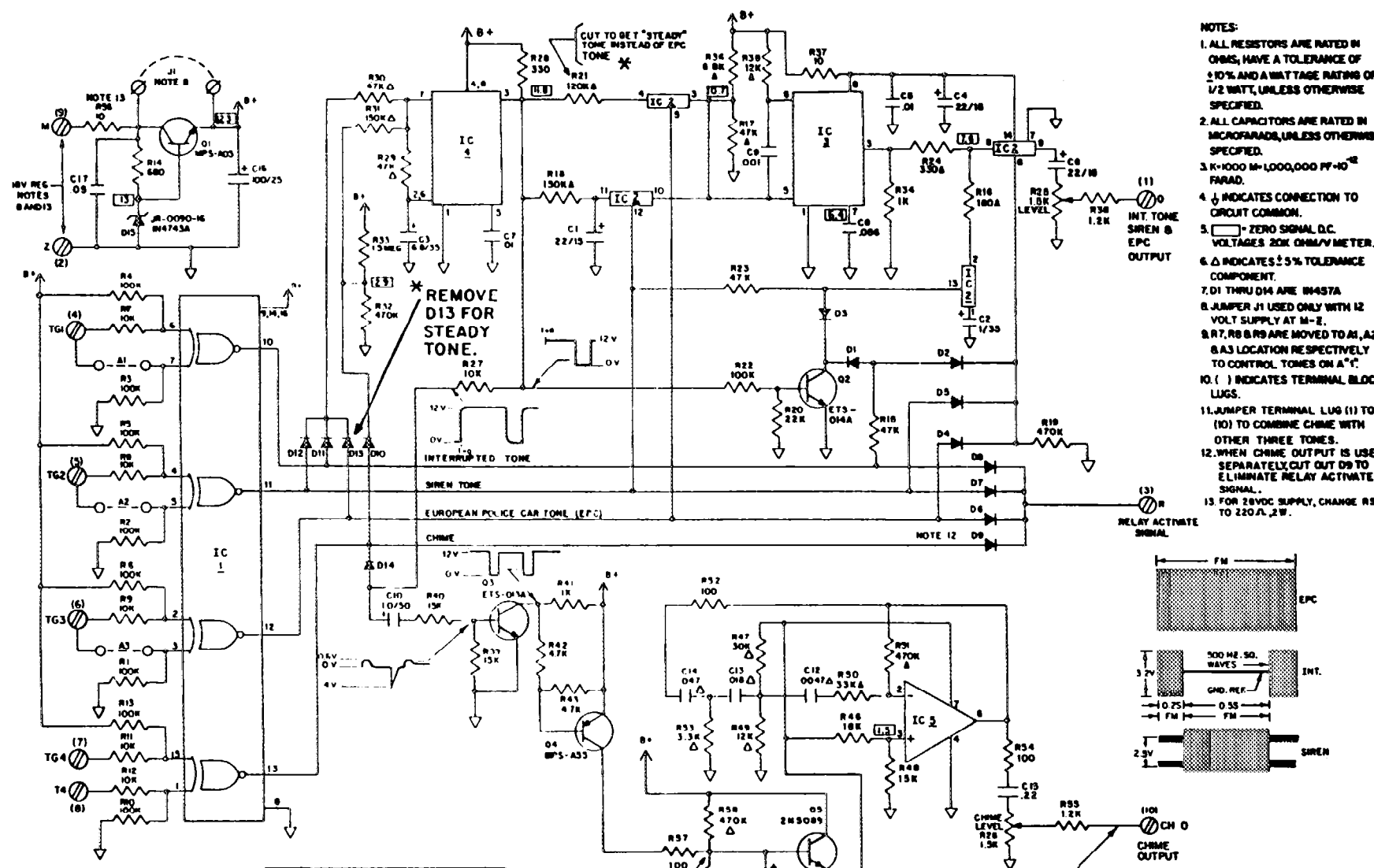
The three hook-switch contacts are shown in the on-hook position.

Terminal Locations on the Telephone Network



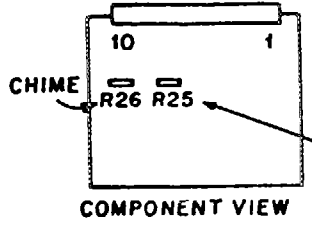
**MODEL HS246
EMERGENCY TELEPHONE:
Wiring to an MCZ300 Control Panel
KM0992**

DATE	KC-1309 C
ISSUE	8-16-77
CHANGE	A ADDED C17, AND NOTE 13. 3-10-78
	B DELETED D16, R44, R45, C11, ADDED R57, R58, R59, C18, Q5. MODEL NO. WAS MTG100. 3-4-81
	C ADDED COMPONENT VIEW, NOTE ABOUT D13. 9-1-88

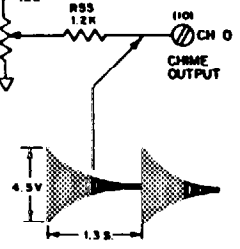
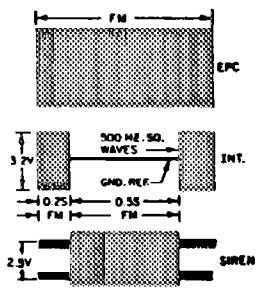


- NOTES:
1. ALL RESISTORS ARE RATED IN OHMS, HAVE A TOLERANCE OF 5% AND A WATTAGE RATING OF 1/2 WATT, UNLESS OTHERWISE SPECIFIED.
 2. ALL CAPACITORS ARE RATED IN MICROFARADS, UNLESS OTHERWISE SPECIFIED.
 3. K=1000 M=1,000,000 PF=10⁻¹² FARAD.
 4. Δ INDICATES CONNECTION TO CIRCUIT COMMON.
 5. □ ZERO SIGNAL D.C. VOLTAGES 20K OHM/V METER.
 6. Δ INDICATES 5% TOLERANCE COMPONENT.
 7. D1 THRU D14 ARE IN457A
 8. JUMPER J1 USED ONLY WITH 12 VOLT SUPPLY AT M-2.
 9. R7, R8 & R9 ARE MOVED TO A1, A2 & A3 LOCATION RESPECTIVELY TO CONTROL TONES ON A "C".
 10. () INDICATES TERMINAL BLOCK LUGS.
 11. JUMPER TERMINAL LUG (11) TO (10) TO COMBINE CHIME WITH OTHER THREE TONES.
 12. WHEN CHIME OUTPUT IS USED SEPARATELY, CUT OUT D9 TO ELIMINATE RELAY ACTIVATE SIGNAL.
 13. FOR 28VDC SUPPLY, CHANGE R58 TO 220Ω, 2W.

IC NO.	RAIL AND P/N	TYPE	DESCRIPTION
1	FC-0046	4519	4 BIT AND/OR SELECT
2	EC-0052	4016	QUAD ANALOG SWITCH
3	EC-0056	566	VOLT CONT OSCILLATOR
4	EC-0004	555	TIMER
5	EC-0013	741	OPERATIONAL AMPLIFIER



INT. TONE, SIREN, EPC (STEADY) TONE



MTG-100-A
MULTITONE GENERATOR
 RAIL AND-BORG CORP.
 SKOKIE, ILL.
 MADE IN U.S.A.
 KC-1309 C



Printed on recycled paper using soy ink.