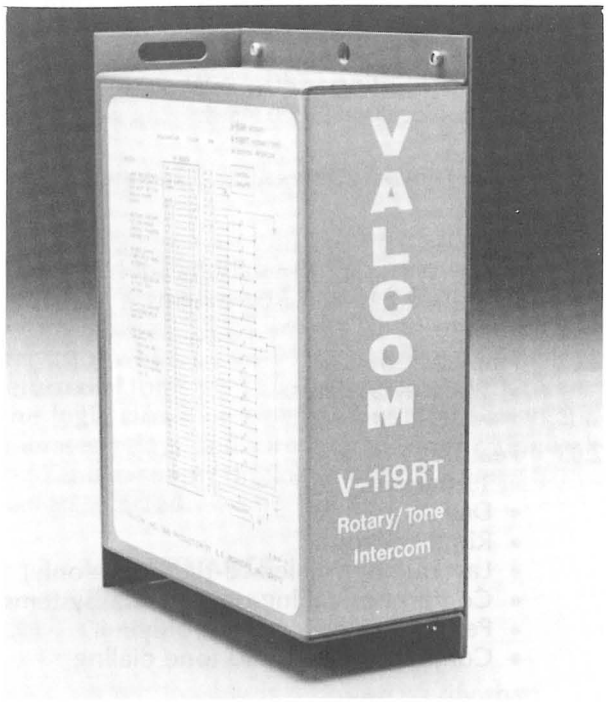
V-119RT
19 STATION
ROTARY-TONE INTERCOM

CONTENTS



1. GENERAL

1.01 These instructions provide identification, installation, operation, connection and maintenance information on the V-119RT intercom unit manufactured by Valcom, Inc., Roanoke, VA 24013.

1.02 This paragraph is reserved for changes and revisions of future issues of this manual. Issue 2 removed references to option switches which are no longer used. Issue 3 adds Lamp Ground terminal to drawings.

1.03 The V-119RT is a single-path dial select microprocessor controlled intercom unit to be used with a 1A2 key system.

1.04 This intercom unit has received an FCC type KX registration, it is designed to be used with FCC-registered key telephone systems, such as those marketed by Western Electric, GTE Automatic Electric, Stromberg-Carlson, ITT, Northern Telecom, etc. Such installations may be made by Valcom, Inc., telephone equipment manufacturers, telephone companies, registered telephone refurbishers, and those qualified for installation of FCC-registered systems under FCC Rules Section 68.215.

1.05 In accordance with FCC rules with applicable tariffs, this intercom may only be installed with the authorization of the owner of the host system.

1.06 The FCC Registration Number BAF-9I7-69366-KX-N will be listed in the affidavits filed with the telephone company and will also be recorded in the system log kept by installation and maintenance personnel. The local telephone company is to be notified of the FCC Registration Number when this intercom unit is installed.

1.07 This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio and television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Relocate the equipment with respect to the receiver.
- Move the equipment away from the receiver.
- Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, DC 20402. Stock No. 004-000-00345-4.

2. IDENTIFICATION

2.01 Purpose
- To provide 19 stations of intercom signaling to 1A2 key systems.

2.02 Applications
- 1A2 Key Systems

2.03 Features
- 19 stations
- Dial tone
- Ringback tone
- Last number dialed re-ring (tone only)
- Conference calling on tone dial systems
- Personal signaling (tone only)
- Combined rotary and tone dialing

2.04 Capacity
- The capacity of the V-119RT is 19 stations.
- The number of talkpaths is one.

2.05 Numbering Plan
- The dialing codes are: 0, 1, 3 - 9, 20 - 29.

2.06 Principal Dimensions
- The V-119 is designed for 7" KTU or wall mount
- The dimensions are 7 1/16" high, 5" long, and 2 3/16" wide.

2.07 Ordering Guide
- To order the 19 station control unit, specify (quantity) V-119RT.
- For additional information, contact:
  Valcom, Inc.
  1111 Industry Avenue
  Roanoke, VA 24013
  (703) 982-3900

2.08 Power Requirements

The principal power requirements are listed in Table 2-1.

2.09 Electrical Characteristics

The operating parameters of the intercom unit are listed in Table 2-2.

Table 2-1

VOLTAGE	WORKING LIMIT	CURRENT
Talk Battery	-21.5 to -26V dc	100 ma
Signal Battery	-21.5 to -26V dc	150 ma
Lamp Battery	9V to 11V ac	45 ma per lamp

Table 2-2 Electrical Characteristics

PARAMETERS	WORKING LIMITS
Input Imp. T and R	600 ohm (incl. inst.)
Signal Contacts	0.5 amps
Signaling Time	1.0 sec.
Dial Pulses	8-12 PPS 60-40 Break ratio ± 10%
Tone Signals	Industry Standard
FREQUENCY	
Bandwidth	3%
Twist	6 db
Detect	40 MS
Interdigital Time	40 MS
ENVIRONMENTAL	
Temperature	0° to 50°C
Humidity	0° to 85° non-precipitating

3. INSTALLATION

3.01 These instructions cover only the installation procedures for the Valcom V-119RT. Please consult practices for other equipment if any other equipment is used.

3.02 Precautions

All precautions have been taken at the

factory to insure that the equipment functions properly. To insure proper operation and to prevent equipment damage, please observe the following:

- Unplug the power supply before making any connections to the control unit.
- Do not locate the control unit closer than 18 inches or farther than 5 feet from the power supply.
- Do not use a lamp tester to check signals, use a voltmeter. A lamp tester when first applied is a short circuit to electronic circuits.
- Do not apply power to the control unit until all connections have been double checked.

3.03 Mount the V-119RT on a 7" KTU mounting, relay rack, or on the wall.

3.04 Fasten a 25 pair female amphenol ended cable to the unit and terminate all leads on a 66 type block.

3.05 Strap A ground, B ground, lamp ground and audible signal ground common at power supply.

3.06 Refer to Figure 1 for connecting block layout and connections.

3.07 Refer to Figure 2 for connections to 1A2 key systems.

4. OPERATION

4.01 To make an intercom call go off-hook, dial tone will be heard. Dial the number of the desired zone or station. Dial tone will be broken after the first number is dialed. A one second ringback tone will indicate that the called station is being signaled.

4.02 Last Number Dialed Rering

To rering the same station, depress the "*" button. The station will be signaled as long as the * button is depressed.

4.03 Personal Signaling

When initating a call, depress the "*" and then the station number. A double tone will be sent to the called station.

4.04 Conference Calling

To dial a new number (tone dial only) or to initiate a conference call, depress the "#" button. Dial tone will be returned to the calling party. Dial new number.

5. CIRCUIT DESCRIPTION

5.01 This circuit provides the common equipment necessary to supply 19 stations of dial select intercom when connected to 1A2 or equivalent telephone systems.

5.02 Detailed Description

When station user lifts handset to make an ICM call, the switchhook contacts in the telephone close the tip and ring to form a loop. This loop returns battery back to the unit to turn on a transistor which operates relay and logic circuits to return dial tone and lamp battery to telephone set. The logic circuit receives dialing information and operates relays and circuitry to supply ringback tone and to supply ringing or buzzer voltage to the station selected.

6. MAINTENANCE

6.01 General

When trouble is reported, verify that:

- All telephone sets are in proper working order
- Power is being supplied to the unit
- There are no broken connections
- The conductors of color-coded cables are terminated in the proper order.

6.02 Test Apparatus Required

If trouble still exists, the test equipment listed below shall be provided:

- Volt-ohm-milliameter
- Tone-dial single-line instrument (for tone-dial systems)
- Hand test telephone set
- Test leads with alligator clips
- Test lamps must not be used to check voltages. They can damage electronic circuits. A hand test set shall not be used to check voltages; the results will be misleading.

6.03 Voltage Check

Before proceeding check the voltages at the connecting block. An undetected blown fuse or low voltage will cause improper control operation. DC voltage measurements are made with respect to (+) ground.

6.04 Troubleshooting Chart

If the trouble has not been located, refer to Table 6-1. Identify the symptoms and perform the actions indicated.

6.05 Unit Substitution

If a spare unit is available, continue to troubleshoot by substituting the spare unit for the suspected unit.

6.06 Factory Assistance

If, after all the required tests have been performed, the trouble still exists, telephone Valcom, Inc. at (703) 982-3900 and ask for an applications engineer. Call from the job site with a multimeter and test telephone set.

TABLE 6-1 **TROUBLESHOOTING CHART**

PROBLEM	PROBABLE CAUSE AND CORRECTIONS
No side tone	Check "A" battery connections, polarity and voltage.
No dial tone	Check "B" battery connections, polarity and voltage.
No lamps	Check lamp supply voltage and input. Verify that grounds are common at power supply.
No audible signal at station dialed	Check signal voltage at supply and frame locations. Verify that grounds are common at power supply.

NOTES:

1) AUDIBLE SIGNAL:
   18VAC BUZZ OR
   105VAC RING
2) POWER SUPPLY:
   A BATT. -24VDC
   FILTERED
   B BATT. -24VDC
   UNFILTERED
3) AUDIBLE GND.,
   LAMP GND., A GND.
   AND B GND. MUST
   BE COMMON AT
   POWER SUPPLY
4) FOR TONE DIAL
   OPERATION:
   * PROVIDES RERING
   # PROVIDES RESET
   FOR CONFERENCE

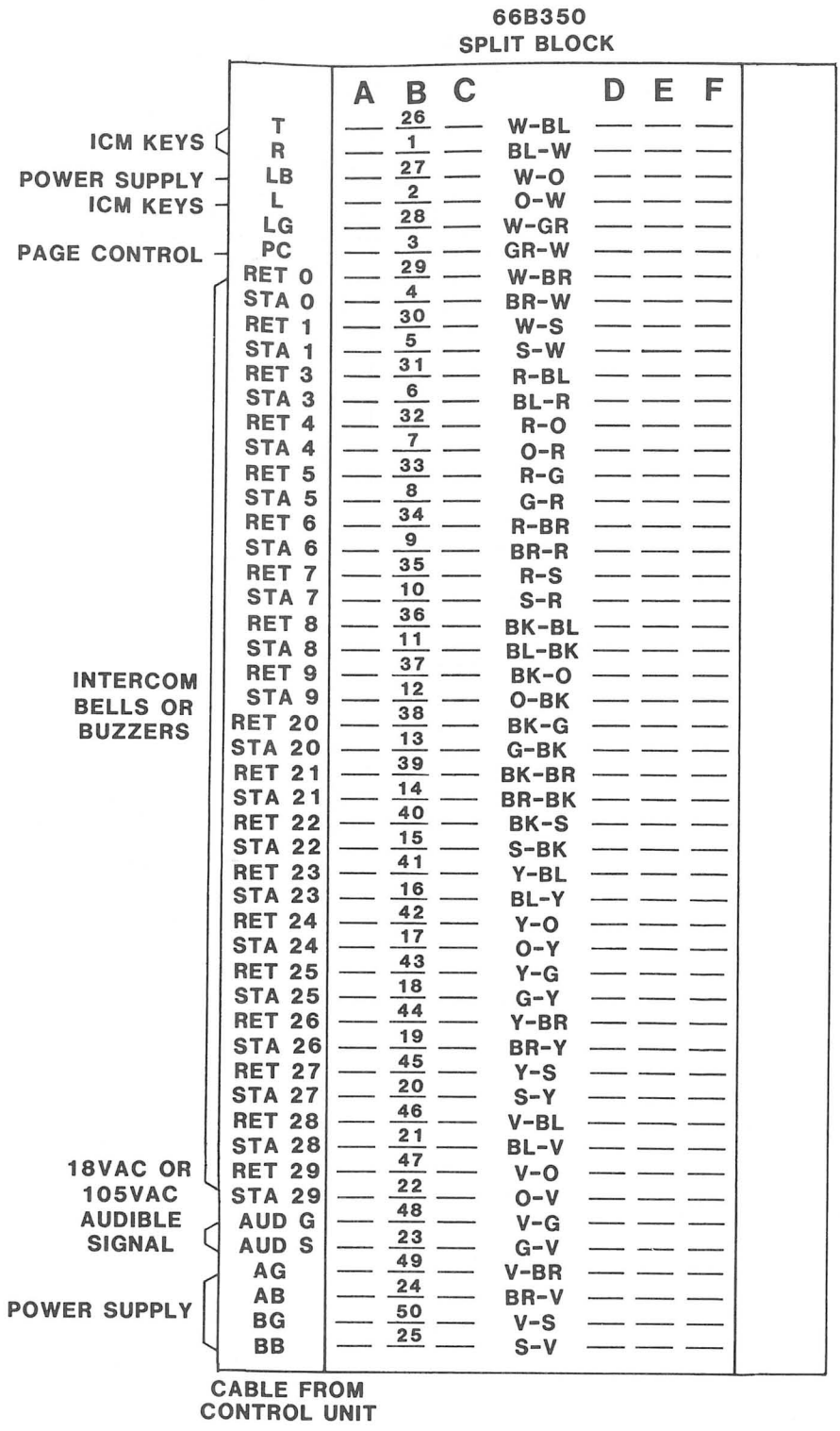


Figure 1: Connecting Block Arrangement for V-119RT

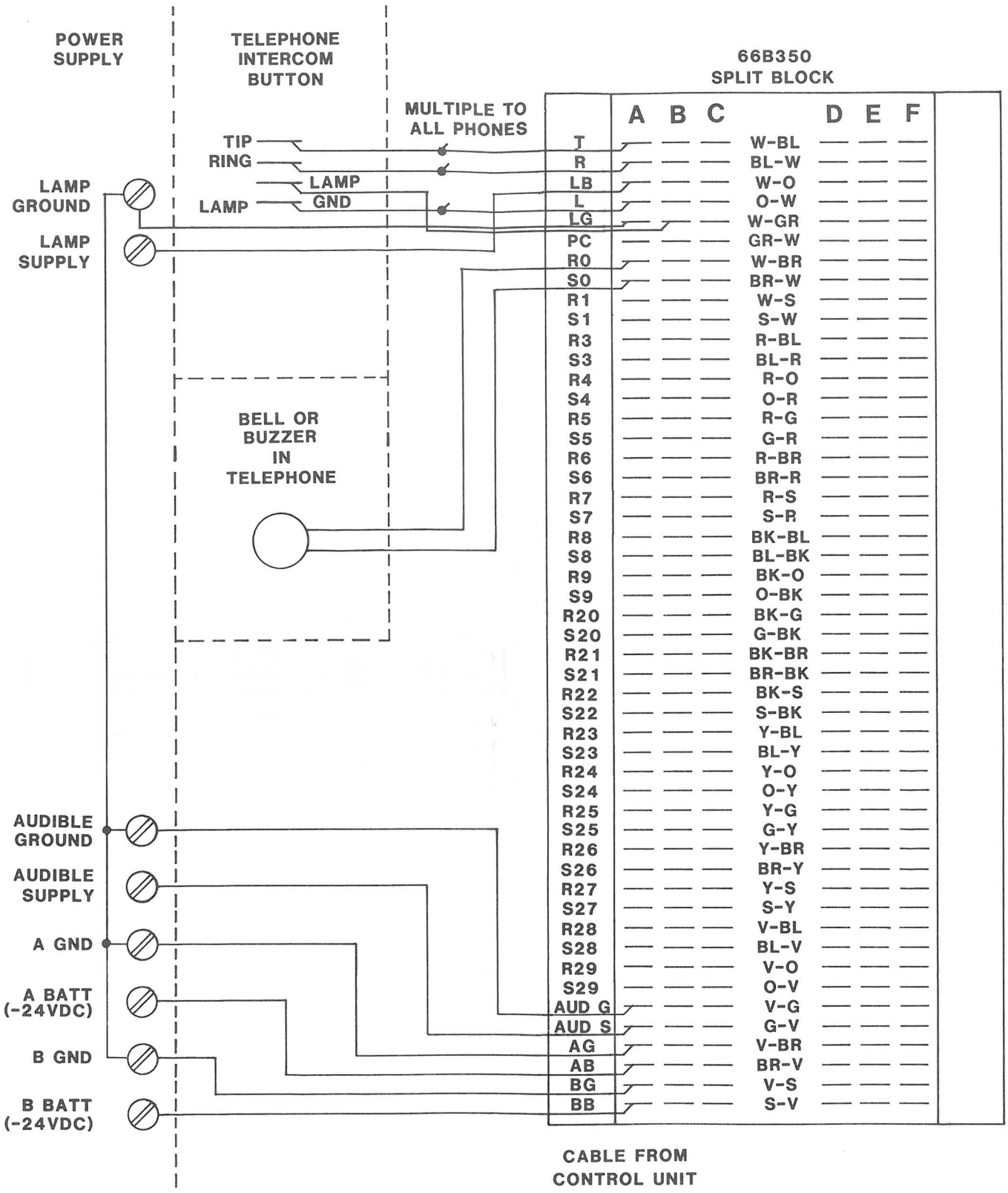
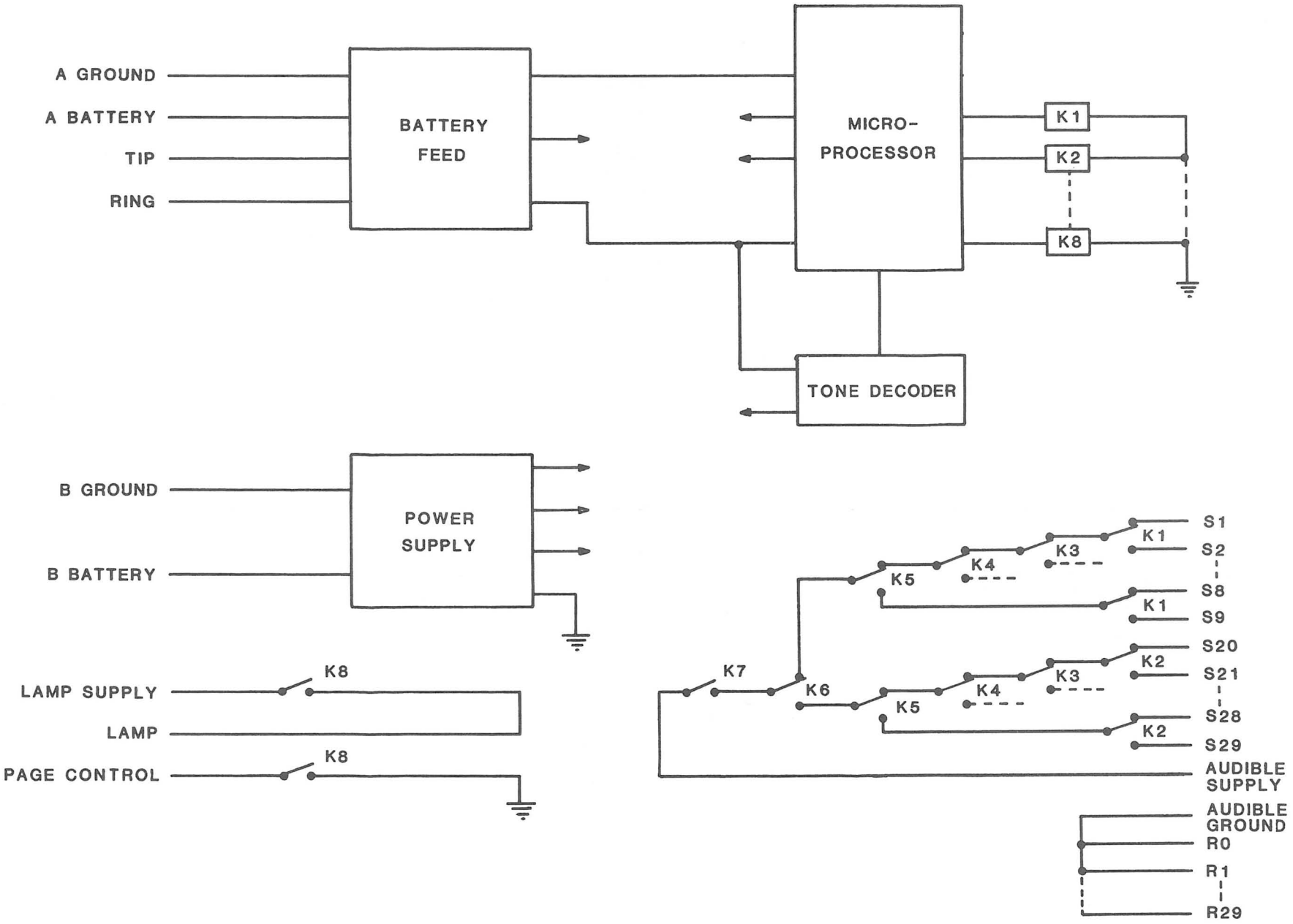


Figure 2: Connections to 1A2 Key System



7. V-119RT SIMPLIFIED SCHEMATIC