

IC-S

GENERAL DESCRIPTION

The IC-S is a single-channel speaker station designed for use with an external microphone. There are four versions of the IC-S; all identified by the same model name, but distinguished from one another by certain features. For purposes of documentation, the four versions will be designated according to features as follows:

1. IC-SF: Wall-mounted station without light signal (no indicator light on front panel).
2. IC-S: An IC-SF mounted in a carrying case with rear panel audio connectors.
3. IC-SF/LS: Wall-mounted station with light signal (has indicator light on front panel).
4. IC-S/LS: An IC-SF/LS mounted in a carrying case with rear panel audio connectors.

SPECIFICATIONS

Frequency Response:

Transmit: 150-7,000 Hz +1, -3 dB.
Receive: 180-6,000 Hz +1, -3 dB for phones.
200-5,000 Hz usable for speaker.

Equivalent Input Noise:

Mic Input: 2 microvolts (-116 dBV)
150-7,000 Hz.

Input Level:

Mic: 5 millivolts nominal, 12 millivolts maximum.
Line: 1 volt (0 dBm) nominal, 4 volts (12 dBm) maximum.

Input Impedance:

Mic: Greater than 5,000 ohms. (Designed for use with 50-600 ohm microphones).
Line: Greater than 10,000 ohms. Transformer coupled.

Output Impedance:

Phones: 60 ohms (Designed for use with 150-600 ohm phones.)

Output Power:

Phones: 75 milliwatts into 150 ohms.
Speaker: 2 watts into 8 ohms.
Line: 10 milliwatts (+10 dBm).

Speaker Acoustic Output:

100 dB SPL at 1 meter on axis at full power.

Total Harmonic Distortion:

Mic to line: 1% at 10 milliwatts.
Line to phones: 1% at 75 milliwatts.

Common Mode Rejection:

Line: 40 dB at 60 Hz.

Voltage Gain:

Mic to line: 200 (46 dB).
Line to phones: 24 (28 dB) adjustable to zero.

Speaker Attenuation:

With mic only connected: 0 dB.
With headset connected (mic + phones): 6 dB.
With -10 switch: 10 dB (non-LS units only).
With headset and -10 switch: 16 dB (non-LS units only).

Power Requirements:

Voltage: 24 Vdc nominal. Will operate on 12-30 Vdc.
Current: No signal - 25 milliamps.
Average talk - 60 milliamps.
Signalling (LS units only) - 60 milliamps.

Dimensions (connectors not included):

IC-S, IC-S/LS: 10.25 inches (260.35 mm) wide x 7.7 inches (195.6 mm) high x 3.75 inches (95.25 mm) deep.
IC-SF, IC-SF/LS: 9 inches (228.6 mm) wide x 7 inches (177.8 mm) high x 2.75 inches (69.85 mm) deep behind front panel. If unit is installed using screw-clamp terminals, wire wrap pin may be cut off; depth reduces to 2.38 inches (60.45 mm).

Connectors:

IC-S, IC-S/LS: Mic/headset - one XLR-4M.
Line - one XLR-3M and one XLR-3F wired in parallel.

IC-SF, IC-SF/LS: Mic/headset - one XLR-4M.
Line - three combination screw-clamp, wire-wrap terminals (screw-clamps will accept No. 22 - No. 14 AWG stranded or solid wire).

External power -three combination screw-clamp, wire-wrap terminals (use optional).

3. Remove the jumper between the +24 and PH terminals.
4. Connect the "+" lead of the supply to the +24 terminal.
5. Connect the "-" lead of the supply to the COM terminal.

When all connections are completed, mount unit in electrical box using the four screws supplied.

INSTALLATION

IC-S and IC-S/LS

These stations may be connected to the intercom line using prefabricated cables with XLR-3 end connectors, or cables may be made to lengths as required and terminated with XLR-3 cable connectors.

IC-SF and IC-SF/LS

When powering from the intercom line:

1. Refer to the label on the rear cover.
2. Connect the two intercom line wires to the LINE terminals.
3. Connect the dc return wire to the SHLD terminal.
4. Connect a jumper between the +24 and PH terminals (disregard this step with factory-fresh units - jumper should already be in place).

When powering from a separate dc supply:

1. Refer to the label on the rear cover.
2. Connect the two intercom line wires to the LINE terminals.

OPERATION

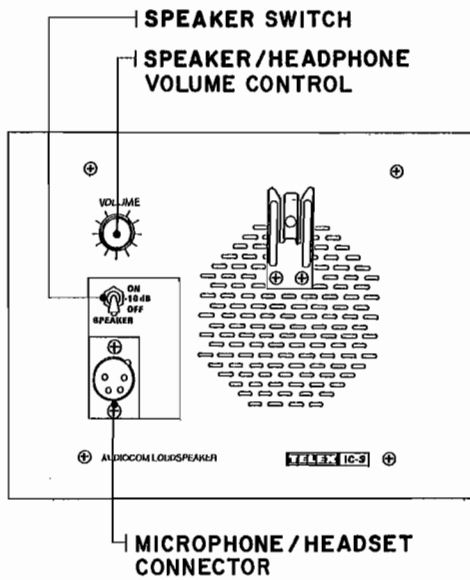
Speaker/Headphone VOLUME Control: Adjusts listen level only. Does not affect mic level.

SPEAKER Switch (IC-S, IC-SF): This is a three-position switch. In the ON position, the speaker has normal volume output. In the -10 dB position, speaker output is reduced. In the OFF position, there is no speaker output. The - 10 dB and OFF positions do not affect the headphone or microphone levels.

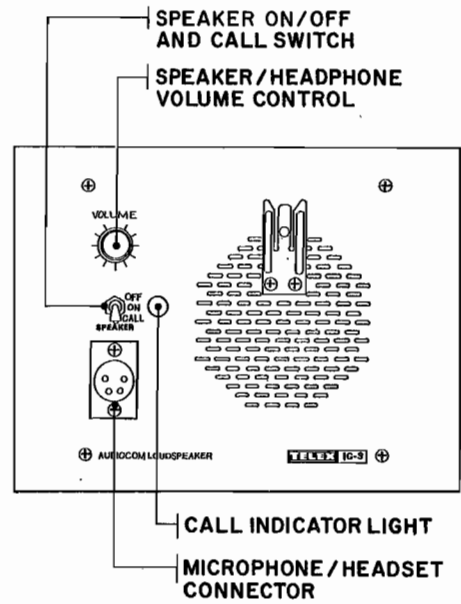
SPEAKER ON/OFF and CALL Switch (IC-S/LS, IC-SF/LS): This is a three-position switch. The ON and OFF positions turn the speaker on and off but do not affect the headphone output or microphone level when using a headset. The CALL position is used for light signalling. In the CALL position, with the switch held continuously, an inaudible signal is sent to all other stations on the line. On those stations with light signalling the Call Indicator lights will illuminate. When another station responds verbally, release the switch and it will automatically return to the ON position for two-way voice communication.

Mic/Headset Connector: Accepts a push-to-talk microphone or a headset with dynamic microphone and headphones.

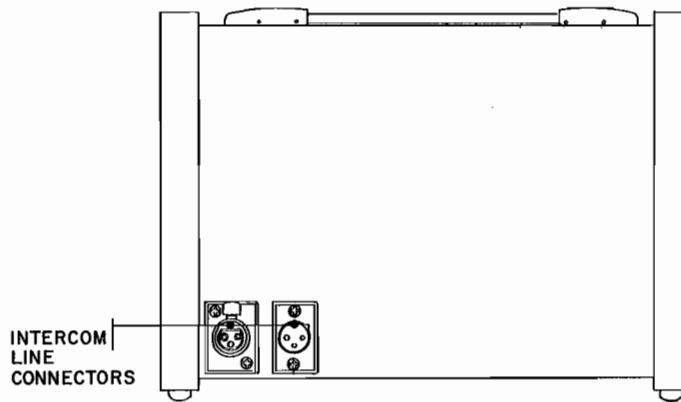
Call Indicator Light (IC-S/LS, IC-SF/LS): Provides a visual indication when the station is being called.



IC-S, IC-SF FRONT PANEL



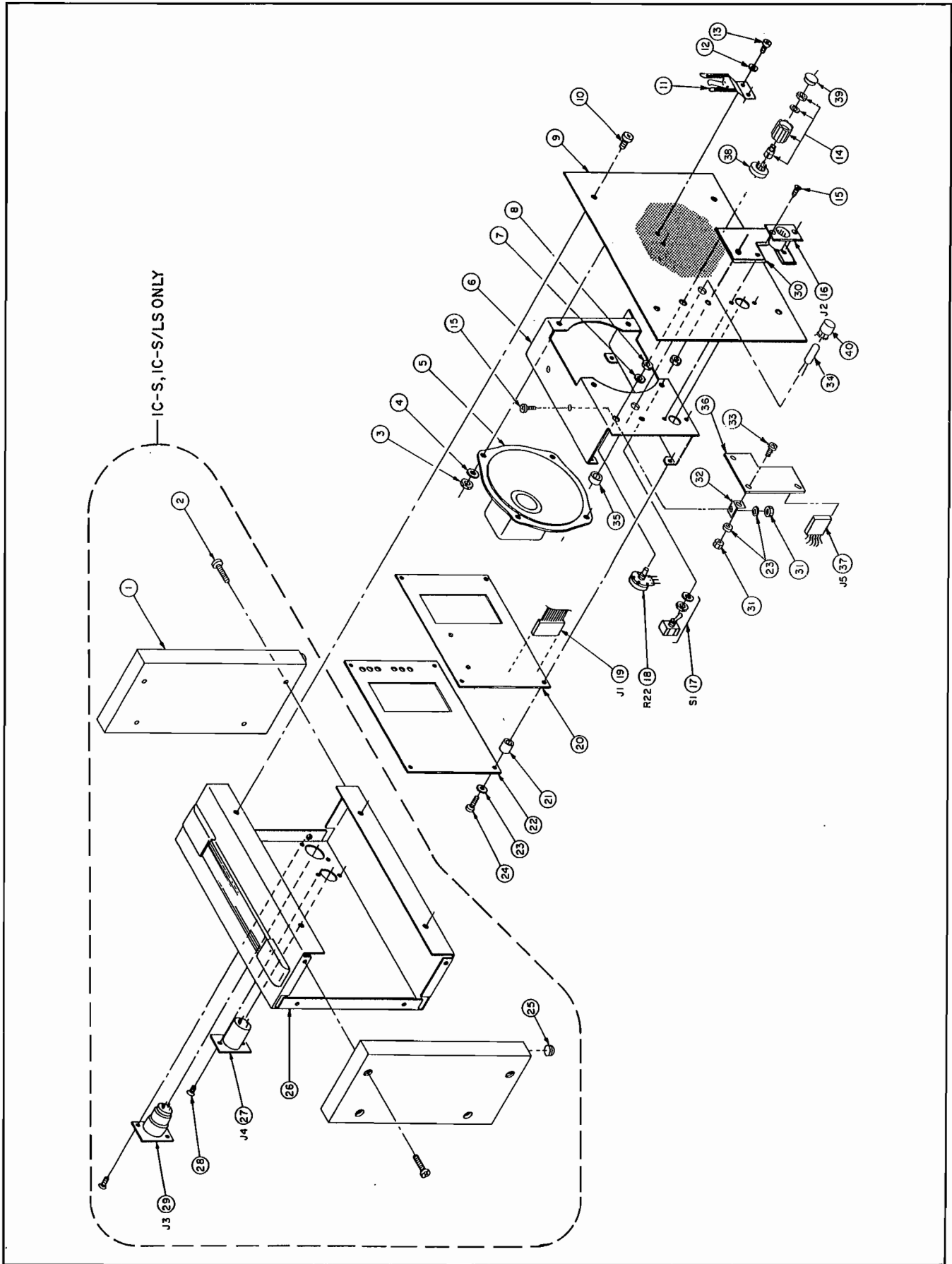
IC-S/LS, IC-SF/LS FRONT PANEL



IC-S, IC-S/LS REAR PANEL

IC-S Reference Guide

MAINTENANCE

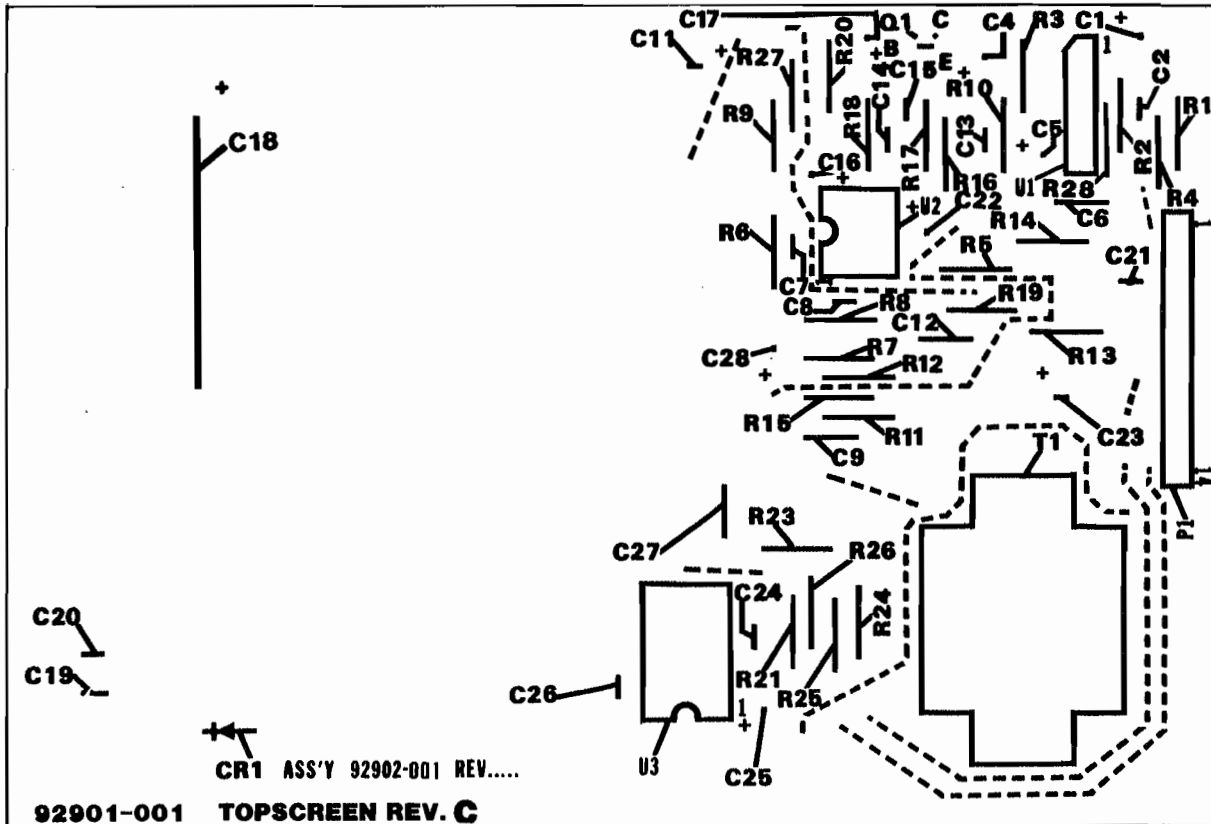


IC-S Mechanical Exploded View

IC-S Mechanical Parts List

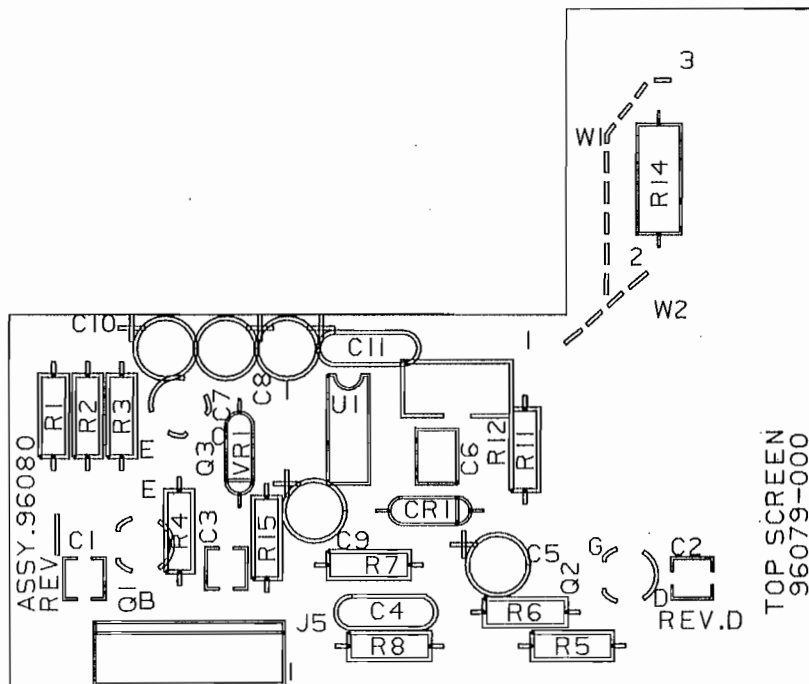
All parts used on all versions unless otherwise specified *

ITEM NO.	DESCRIPTION	PART NO.
1	Cover, End (IC-S, IC-S/LS)	92913-000
2	Screw, 6-32 x 3/4 (IC-S, IC-S/LS)	54993-097
3	Nut, Hex, No. 6	52188-008
4	Washer, Lock, No. 6	50014-001
5	Speaker, 5-Inch, 8-Ohm	57823-000
6	Chassis	92906-000
7	Washer, Lock	50014-004
8	Nut, Hex	50033-001
9	Panel, Front	92904-000
10	Screw, 6-32 x 1 (IC-S, IC-S/LS)	51845-098
11	Microphone Hanger	63356-001
12	Washer, Lock	50014-103
13	Screw, 8-32 x 1/4	51845-128
14	Knob	53432-116
15	Screw, 4-40 x 3/8	51847-112
16	Connector, XLR-4M (J2)	50994-004
17	Switch, Toggle, DPDT (IC-S, IC-SF)	57483-000
	Switch, Toggle, SPDT (IC-S/LS, IC-SF/LS)	57481-003
18	Potentiometer, 100K, 1/8W, ±20% (R22)	57145-002
19	Connector, 14-Position (J1)	52264-014
	Terminal (For item 19)	54460-001
20	PCB Assembly, Audio	92902-001
21	Spacer	57798-000
22	Cover, Rear	92908-000
23	Washer, Lock	50014-002
24	Screw, 4-40 x 1/2	51845-041
25	Foot, Self-Adhesive (IC-S, IC-S/LS)	56471-000
26	Housing (IC-S, IC-S/LS)	92933-000
27	Connector, XLR-3M (J4 - IC-S, IC-S/LS)	50994-000
28	Screw, (J3 - IC-S, IC-S/LS)	51847-011
29	Connector, XLR-3F (IC-S, IC-S/LS)	50995-000
30	Bezel (IC-S, IC-SF)	95219-000
31	Nut, Hex, No. 4 (IC-S/LS, IC-SF/LS)	52188-006
32	Angle Bracket	95215-000
33	Screw, 4-40 x 1/4 (IC-S/LS, IC-SF/LS)	51845-038
34	LED (IC-S/LS, IC-SF/LS) (DS1)	58683-000
35	Clip, LED Mtg. (IC-S/LS, IC-SF/LS)	53627-002
36	PCB Assy, 20 kHz Light Signal (IC-S/LS, IC-SF/LS)	96080-000
37	Connector (IC-S/LS, IC-SF/LS)	52264-006
	Terminal (For item 37)	54460-001
38	Collet	53434-101
39	Cap	53433-115
40	Lens, LED (IC-S/LS, IC-SF/LS)	59739-000
	<p>* IC-S: Portable station, no light signal. IC-SF: Flush-mount station, no light signal. IC-S/LS: Portable station, light signal. IC-SF/LS: Flush-mount station, light signal.</p>	



92901, Rev R

IC-S Audio PCB Assembly Component Layout



IC-S 20 KHz Light Signal PCB Assembly Component Layout

96079, Rev H

IC-S Audio PCB Assembly Parts List

All parts used in all versions.

Capacitors are in microfarads unless otherwise specified.

Resistors are in ohms, carbon, 1/4W, ±5% unless otherwise specified.

REFERENCE NO.	DESCRIPTION	PART NO.
C1	Capacitor, 1, 35V, Tantalum	52257-049
C2,21,26	Capacitor, 0.01, 100V	52157-251
C5,16	Capacitor, 10, 25V, Electrolytic	51821-020
C6,9,27	Capacitor, 0.1	52708-024
C7	Capacitor, 47 pF, 100V	52157-004
C8,14	Capacitor, 100 pF, 100V	52157-008
C11	Capacitor, 47, 35V, Electrolytic	51821-010
C12	Capacitor, .1, 50V, Ceramic	52676-113
C13,24	Capacitor, 0.001	52157-022
C15	Capacitor, 220 pF	52157-012
C17	Capacitor, 10, 10V, Electrolytic	51821-045
C18	Capacitor, 220, 35V	52160-092
C22	Capacitor, 1, 50V	51821-106
C23	Capacitor, 100, 35V, Electrolytic	51821-011
C25,28	Capacitor, 4.7, 25V, Electrolytic	51821-079
CR1	Diode, 1N4003	50745-002
P1	Pin Assembly	52263-014
Q1	Transistor, 2N2925	51547-000
R1	Resistor, 470	52154-289
R2	Resistor, 390	52154-291
R3,4,5,7,14	Resistor, 68K	52154-237
R6,8	Resistor, 150K	52154-229
R9	Resistor, 330	52154-293
R10	Resistor, 2.7K	52154-271
R11,12,15,16	Resistor, 1 Meg	52154-209
R13,20	Resistor, 47K	52154-241
R17	Resistor, 1.8K	52154-275
R18,19	Resistor, 100K	52154-233
R21,R28	Resistor, 15K	52154-253
R23	Resistor, 22K	52154-249
R24	Resistor, 22	52154-321
R25,26	Resistor, 1K	52154-281
R27	Resistor, 180	52154-299
T1	Transformer	52444-001
U1	IC, Low Noise Preamplifier, AN360	53270-000
U2	IC, Dual Low Noise Op Amp, NE5532	53295-000
U3	IC, Amplifier, Audio Power, ULN2280B	53236-000
	Terminal Block	57703-000

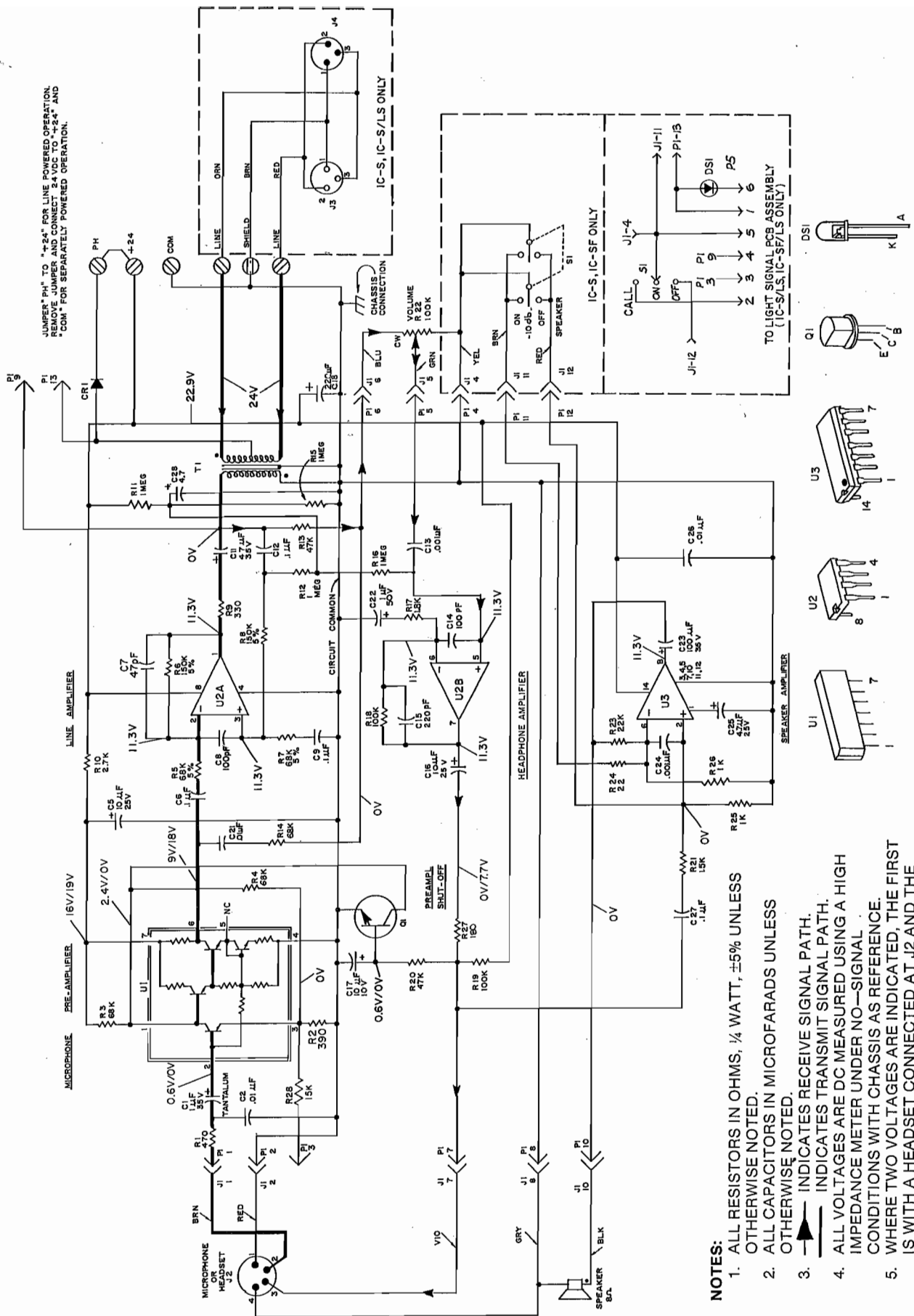
IC-S 20 KHz Light Signal PCB Assembly Parts List

All resistors in ohms, $\frac{1}{4}W$, $\pm 5\%$ unless otherwise noted.

All capacitors in microfarads unless otherwise noted.

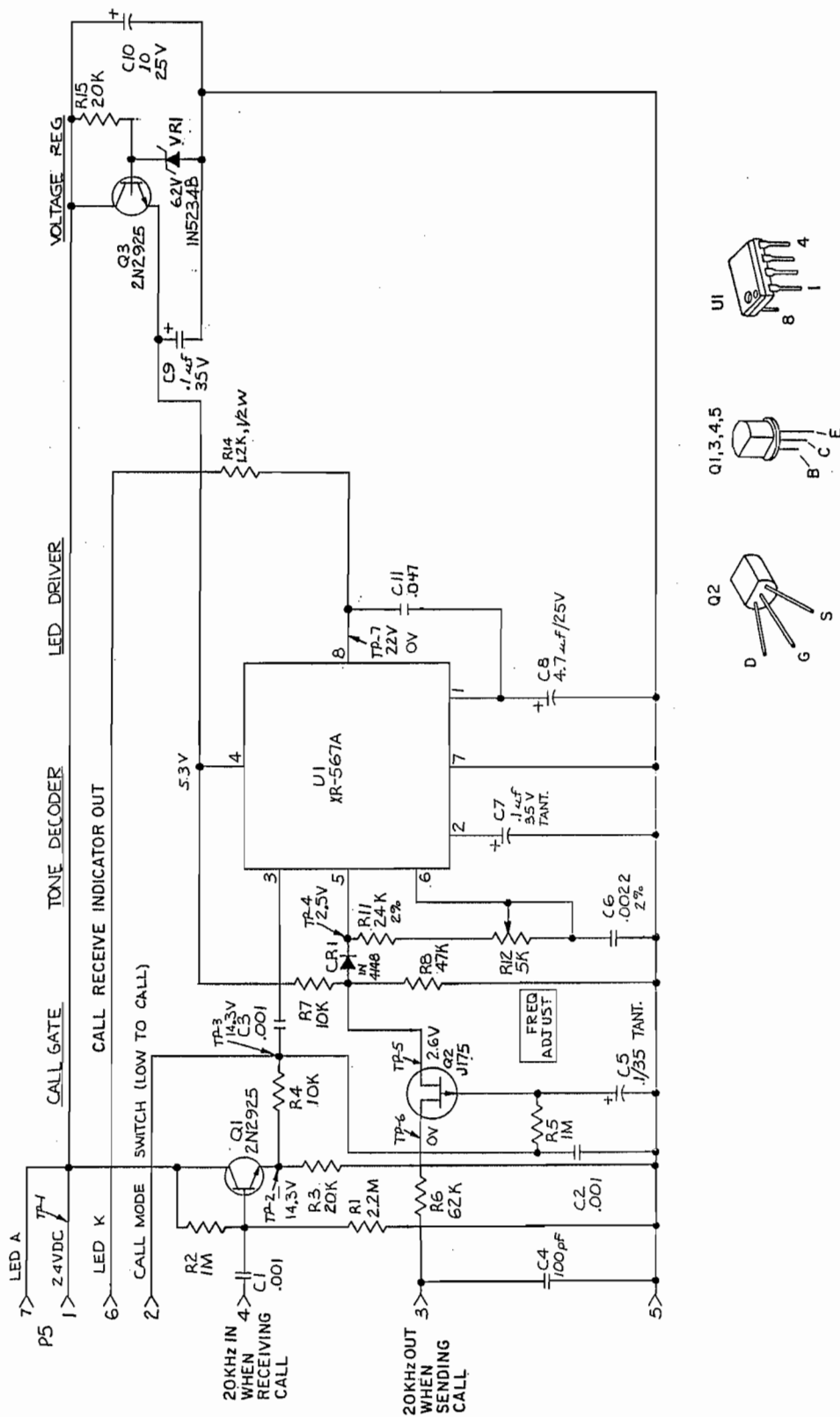
REFERENCE NO.	DESCRIPTION	PART NO.
C1,2,3	Capacitor, Ceramic, 0.001, 50V, $\pm 10\%$	52676-101
C4	Capacitor, Ceramic, 100 pF, 500V, $\pm 10\%$	52157-008
C5,7,9	Capacitor, Tantalum, 0.1, 35V, $\pm 20\%$	52257-065
C6	Capacitor NPO, Ceramic, 0.0022, 50V, $\pm 2\%$	35694-034
C8	Capacitor, Electrolytic, 4.7, 25V, $\pm 20\%$	52723-013
C10	Capacitor, Electrolytic, 10, 25V, $\pm 20\%$	52723-014
C11	Capacitor, Ceramic, 0.047, 25V, +80 -20%	52158-033
CR1	Diode, 1N4148	52228-000
J5	Connector, 7-Position	57721-007
Q1,3	Transistor, 2N2925	51547-000
Q2	Transistor, J175	54687-001
R1	Resistor, 2.2M	52154-201
R2,5	Resistor, 1M	52154-209
R3,15	Resistor, 20K	52154-250
R4	Resistor, 10K	52154-257
R6	Resistor, 62K	52154-238
R7	Resistor, 10K	52154-257
R8	Resistor, 47K	52154-241
R11	Resistor, 24K, $\frac{1}{4}W$, $\pm 2\%$	52155-248
R12	Resistor, Variable, 5K, $\frac{1}{2}W$, $\pm 10\%$	57148-048
R14	Resistor, 1.2K, $\frac{1}{2}W$, $\pm 5\%$	52154-456
U1	IC, Tone Decoder, XR567	53258-000
VR1	Diode, Zener, 6.2V, $\frac{1}{2}W$, $\pm 5\%$	51302-017
	Socket, 8-Pin	53041-002

IC-S Audio Schematic Diagram



NOTES:

1. ALL RESISTORS IN OHMS, 1/4 WATT, ±5% UNLESS OTHERWISE NOTED.
2. ALL CAPACITORS IN MICROFARADS UNLESS OTHERWISE NOTED.
3. —▶ INDICATES RECEIVE SIGNAL PATH.
4. ALL VOLTAGES ARE DC MEASURED USING A HIGH IMPEDANCE METER UNDER NO-SIGNAL CONDITIONS WITH CHASSIS AS REFERENCE.
5. WHERE TWO VOLTAGES ARE INDICATED, THE FIRST IS WITH A HEADSET CONNECTED AT J2 AND THE SECOND IS WITHOUT.
6. THIS SCHEMATIC SUBJECT TO CHANGE TO ACCOMMODATE DESIGN IMPROVEMENTS.



- NOTES:**
1. ALL RESISTORS IN OHMS, 1/4 WATT, ±5% UNLESS OTHERWISE NOTED.
 2. ALL CAPACITORS IN MICROFARADS UNLESS OTHERWISE NOTED.
 3. ALL VOLTAGES ARE DC MEASURED USING A HIGH IMPEDANCE METER WITH CHASSIS AS REFERENCE.
 4. WHERE TWO VOLTAGES ARE INDICATED, THE UPPER IS WITH NO SIGNAL AT P5-4 AND THE LOWER IS WITH 20 KHz AT 100 MV (CALL SIGNAL IN) AT P5-4.
 5. ALL SINGLE VOLTAGES REPRESENT NO-SIGNAL CONDITIONS.
 6. 20 KHz ADJUSTMENT: CONNECT FREQUENCY METER BETWEEN ANODE OF CR1 AND CHASSIS. ADJUST R12 FOR A READING OF 20 KHz ±100 Hz.
 7. THIS SCHEMATIC SUBJECT TO CHANGE TO ACCOMMODATE DESIGN IMPROVEMENTS.

IC-S 20 KHz Light Signal Schematic Diagram