

0

، ڪيند ڪڏي ٿي وري ٿي ٿي. مسيد ڪڏين جي وري ٿي

OWNER'S OPERATING AND SERVICE INSTRUCTIONS



0

0

Table of Contents

1	OPERATION 1 1.1 Front Panel Connection and Controls 1 1.2 Back Panel Connections and Controls 2
2	POWER CONNECTIONS 2 2.1 For 115 Vac, 50/60 Hz Operation 2 2.2 For 230 Vac, 50/60 Hz Operation 3
3	INSTALLATION
4	SIGNAL CONNECTIONS 3 4.1 Input Signal Connections 3 4.2 Stacking Connections 4 4.3 Auxiliary Input Connection 4 4.4 Main Output Connections 4 4.5 Headphone Output Connection 5
5	EXTERNAL DC POWER SOURCE
6	CALIBRATION 5 6.1 Input Level Controls 5 6.2 Display 6 6.3 Limiter 6 6.4 Oscillator 7
7	IN CASE OF PROBLEMS
8	SPECIFICATIONS
9	SERVICE INFORMATION129.1To Remove the Display Board129.2To Service the Main Board129.3Change the Display Time Constants to Match Those of a VU Meter129.4To Change the Limiter Threshold129.5To Convert the Stacking Jack for Insert Patching129.6Ordering Replacement Parts129.7Technical Assistance12

i



Pictorial 1 Front Panel Diagram

7.

1. OPERATION

1.1 Front Panel Connection and Controls (Referring to Pictorial 1)

1. INPUT LEVEL CONTROLS

These level controls simultaneously adjust the preamplifier gain and mix the input channels to the output.

2. INPUT CLIP INDICATORS

These LEDs light when the preamplifier is clipping. The level control should be turned down in this situation.

3. LOW-CUT CONTROLS

These controls attenuate the low frequency response (at 100 Hz) of the input channels. Wind, handling and background noises may be reduced by switching the low-cut control at the appropriate input channel.

4. DISPLAY

This display indicates audio output levels. TO AVOID DISTORTION, DO NOT EXCEED "O dB". The display will show a bar graph when the AC power is used. When external DC is used, the display will switch to a dot mode, lighting just one segment at a time to conserve power.

5. LIMITER SWITCH

This switch activates the limiter which protects the output from clipping distortion that might otherwise occur during unexpected increases in program level.

6. LIMITER LED INDICATOR

This LED lights when the limiter has been enabled.

OSCILLATOR SWITCH

This switch activates the built-in oscillator which is used for level checks or verifying operation of a system. The output is a 1 kHz sine wave. The Output Level control sets the level, which is indicated on the display. The oscillator signal is also available at the Stack Output jack at a fixed level of -10 dBu.

8. POWER SWITCH

This switch turns the mixer on or off.

9. ELECTRO-PULSE[™] POWER STATUS INDICATOR

This LED will light steadily during AC operation. When external DC power is used, the LED will flash to indicate that the power is on. The flash rate corresponds to the supply voltage. The indication rate ranges from one second per flash to about five seconds per flash (low supply voltage). If the supply voltage drops to 18 volts or less, the Electro-Pulse LED will stop flashing.

10. OUTPUT LEVEL CONTROL

This control adjusts the level of the main output. The main output signal is available from two transformer windings, one connected to the Mic/line Output XLR-type connector and the other to the Line Output binding posts.

11. HEADPHONE LEVEL CONTROL

This control adjusts the gain for the device connected to the Headphone Output Connector independently from the Output Level Control. This allows an output to be cued or a mix to be adjusted before the master volume control is adjusted.

12. HEADPHONE OUTPUT CONNECTOR

This three-conductor jack is provided on the front panel to drive stereo headphones or a cue speaker.



Pictorial 2 Back Panel Diagram

1.2 Back Panel Connections and Controls (Referring to Pictorial 2)

1. AC POWER CONNECTOR

This receptacle is for an AC power cord (supplied with the unit).

2. FUSE HOLDER

This receptacle is for a T100 mA/250 V slow blow fuse (supplied with the unit).

3. AC VOLTAGE SELECTOR SWITCH

This switch selects AC line voltage from 115 Vac 50/60 Hz to 230 Vac 50/60 Hz. When using the unit at 230 Vac, the user must replace the fuse with the T50 mA/250 V slow blow fuse supplied with the unit in the shipping carton.

4. PHANTOM POWER SWITCH

This switch applies phantom power to the microphone level inputs. Pins 2 and 3 have 30 Vdc with a source resistance of 3600 ohms. Pin 1 is the ground reference.

5. MAIN OUTPUT CONNECTORS

The main transformer-isolated output has two different connections, each with its own secondary winding:

A. MIC/LINE OUTPUT CONNECTOR

This 3-pin male XLR-type connector is for both mic and line level outputs.

B. LINE OUTPUT CONNECTOR

This binding post connection is for a line-level output.

6. OUTPUT MIC/LINE LEVEL SELECT SWITCH

This switch selects either the mic or line output level

for the XLR Main Output Connector.

7. STACKING CONNECTORS

These 1/4-inch jacks are for the connection of additional mixers to increase the number of inputs available.

8. GROUND CONNECTOR

This jack is for grounding external devices.

9. EXTERNAL DC CONNECTOR

This power jack is for an external 30-volt DC supply to power the mixer.

10. AUXILIARY INPUT CONNECTOR

This 1/4-inch phone jack is for the output of another mixer or other audio equipment to mix with the four input channels. The input is line level (-10 to + 4 dBu) and buffered.

11. INPUT CONNECTORS

These 3-pin female XLR type connectors are for microphone and line-level inputs.

12. INPUT MIC/LINE LEVEL SELECT SWITCHES

These switches select either the mic or line input levels for each input channel. The line-level position should be used when the nominal input level is above -20 dBu.

2 POWER CONNECTIONS

The power transformer has two independent 115 Vac primary windings. The windings can be connected in series to achieve a 230 Vac, 50/60 Hz requirement.

2.1 For 115 Vac, 50/60 Hz Operation

The ELX-1A is normally selected for 115 Vac operation from the factory. However, it is always pru-



Figure 1 Possible Stacking Connections

dent to check the voltage selector switch and fuse size before powering the unit. The voltage selector switch must be in the 115 Vac position with a T100 mA/250 V fuse installed into the AC receptacle as shown in Pictorial 2, Number 3.

2.2 For 230 Vac, 50/60 Hz Operation

To connect the power transformer's primary windings for 230 Vac operation, move the voltage selector switch so the 230 label is fully visible. Replace the fuse in the AC receptacle with the T50 mA/250 V fuse supplied with the unit. Install the 230 Vac 50/-60Hz and the T50 mA/250 V decals in the proper positions.

3 INSTALLATION

3.1 Rack Mounting

The mixer may be installed in a standard 19 inch (48.3 cm) equipment rack. It requires 1.75 inches (4.45 cm) of vertical rack space and secures to the rack cabinet with the four rack mount screws and cup washers provided in the hardware kit.

3.2 Ventilation

The mixer must be adequately ventilated to avoid excessive temperature rise. It should not be used in areas where the ambient temperature exceeds $50^{\circ}C$ (122°F). To determine the ambient air temperature, operate the system in the rack until the temperature stabilizes. Measure the ambient air with a bulbtype thermometer held at the bottom of the uppermost unit (amplifier, EQ, mixer, etc.). Do not let the thermometer touch the metal chassis because the chassis will be hotter than the ambient air. If the air temperature exceeds $50^{\circ}C$ (122°F), the equipment should be spaced at least 1.75 inches apart or a blower installed to provide sufficient air movement within the cabinet.

4 SIGNAL CONNECTIONS

4.1 Input Signal Connections

Female XLR-type connectors are used for the balanced mic/line inputs. Pin 2 is +, pin 3 is -, and pin 1 is the shield-ground connection. Next to each input connector is a mic/line level select switch which



allows any input level to be accommodated. The line level position should be used when the nominal input level is above -20 dBu.

4.2 Stacking Connections

The two stacking jacks are wired at the factory for passive mix bus connections. The tip of the ¼inch phone jack is positive and the sleeve is ground (shield). Two ELX-1A's can be connected by patching a stacking jack on one mixer to a stacking jack on the other mixer; it makes no difference which jack is used. Additional ELX-1A's can be added using one extra patch cord per mixer (see Figure 1). Each Output Level will control only that mixer's output, which consists of the complete mix of all input channels. These jacks can also be used as fixed-level outputs; they are unaffected by the Output Level control.

The stacking jacks can be converted to normal or for inserting auxiliary equipment in the signal path. This modification is described in the SERVICE section, page 12. If this modification is performed, other connection possibilities will exist (see Figure 2). Standard ¼-inch, two-conductor (or three-conductor) patch cords can be used.

The connections in Figure 1 (unmodified stacking jacks) result in some drop in signal level, which is partially compensated by the use of more input channels. These connections use simple patch cords. In Figure 3, no level loss occurs. If three or more mixers are stacked and all outputs need to have the complete mix, some Y-connectors will be required.

4.3 Auxiliary Input Connection

This ¼-inch phone jack is for the output of another mixer or other audio equipment to mix with the four input channels (see Figure 4). The tip of the ¼-inch phone jack is the positive and the sleeve is the ground (shield). The input is line level (-10 to + 4 dBu) and buffered.

4.4 Main Output Connections

The main transformer isolated output has two different connections, each with its own secondary winding. The binding post connection can accom-



Figure 3 Modified Stacking Jack Connections

modate a telephone line. The telephone company may require an interface device between the telephone line and the mixer. The other winding has a 3-pin male XLR connector with a level switch for line or mic level. Like the inputs, pin 2 is +, pin 3 is -, and pin 1 is shield ground.

4.5 Headphone Output Connection

The Headphone Output jack can be used as a separate line-level output. Like the main output, the signal will be clean, with very-low distortion and noise. A tip/ring/sleeve 1/4-inch phone plug should be used with this jack. If a two-conductor plug is used, it should be inserted only part way (to the first detent).

EXTERNAL DC POWER SOURCE

5

1

For external DC power operation, use a Switchcraft S-760 or equivalent power plug to insert into the ¼-inch diameter pin-type jack. Place a 250 mA fuse in series with the power source. The external power supply voltage should be between 24 and 45 volts for optimum performance, although the mixer will operate at lower voltages.

6 CALIBRATION

(Before calibrating the mixer, connect it to the necessary external equipment as detailed in the INSTALLATION section, page 3.)

6.1 Input Level Controls

To optimize the input levels, apply the loudest signal that will be encountered to the input. Set the Input Level Control as high as possible without lighting the Input Clip Indicator. Then reduce the level if necessary to create the desired mix.



Figure 4 Using the Auxiliary Input

6.2 Display

A ten-segment LED bargraph shows the level at the main outputs. The meter respondsto peaks; its rise and fall times conform to the widely accepted Peak Program Master Standard, BS4297. By observing peak signal levels, one can make use of the available headroom in the mixer (or following equipment) without the risk of clipping the signal. In normal operation, signal peaks should reach into the yellow display range (+ 3 dB to + 12 dB). The 0 dB reference level is factory calibrated to read 0 dBu (sine wave).

To change the reference level (Refer to the Schematic in Figure 8, page 15):

- 1. Turn on the mixer with AC power.
- 2. Turn all level controls down.
- Press the oscillator switch on.
- Connect a 600-ohm (or desired) load and a voltmeter to the Main Output (either the binding posts or XLR-connector).
- Increase the Master Output Level Control until the output reaches 0 dBu (0.775 V) or the desired reference.
- Adjust VR223 until the 0 dB LED just lights. VR223 can be accessed through a hole in the PC board.

The last segment of the display is an LED clip indicator. It senses clipping at two places; the mix amplifier output, and the main output. If reducing the Output Level control does not affect the clip indication, then the mix amplifier is being overdriven. The actual clip threshold will drop if the supply voltage drops. The time constants of the display can be changed to match those of a VU meter (the clip indicator will still operate normally). The meter indication will then correlate more with perceived loudness than with actual signal voltage. This modification is described in the SERVICE section, page 12.

6.3 Limiter

The output level is limited to + 14 dBu. The yellow limit indicator above the Limiter switch will light whenever limiting (gain reduction) occurs (see Figure 5). If large amounts of limiting are anticipated, be sure that the Input Level controls are low enough so that the input preamps will not clip even with the lowest sound that might occur.

The limiter threshold (+ 14 dBu) can be changed to a different level. This modification is described in the SERVICE section, page 12.





Electro-Voice • a Mark IV Company

- 6.4 Oscillator To calibrate the oscillator:
- 1. Turn on the mixer with AC power.
- 2. Set all level controls down.
- Press the oscillator switch and measure the output voltage at the Stacking Output Jack.
- Adjust VR390 for -10 dBu (245 mV). The output should be a clean sine wave.
- 7 IN CASE OF PROBLEMS Please check the following items:
- Verify that the mixer is properly connected to an AC or DC power source and the source is active.
- Verify that the input connections are properly made.
- Verify that the output connections are properly made.
- Check the input and output cables for proper wiring and continuity.

5. Check the signal source.

8 · SPECIFICATIONS

Conditions:

- 1. 0 dBu = 0.775 Vrms
- 0 dBm = 1 mW = 0.775 Vrms across 600 Ω load.
- Measurements are referred to a 1 kHz, 0 dBu sine wave input unless noted.
- Measurement bandwidth is restricted to 30 kHz unless noted.

Frequency Response:

Any input to any output: 30 Hz-20 kHz +O, -1 dB (Ref. 1 kHz, 0 dBm output, 500 kHz measurement bandwidth)

%(THD+Noise):

Mic\Line output: < 0.15%, 20 Hz to 20 kHz at + 4 dBm < 0.15%, 50 Hz to 20 kHz at + 18 dBm Stack or Headphone Output: <0.1%, 20 Hz to 20 kHz at + 18 dBm

Noise:

EIN, MIC Input, Max Gain, 150-ohm Source: -130 dBm (typical, A-Weighted bandwidth)

Output Noise:

(A-Weighted bandwidth)	
Inputs Down, Master Down:	≤ -82 dBm
Inputs Down, Master at Nominal:	≤ -81 dBm
Inputs Down, Master at Full Up:	\leq -68 dBm

Maximum Voltage Gain:

$(\pm 2 \text{ dB})$	
Mic Input to Main Outputs:	91 dB
Mic Input to Headphone Output:	82 dB
Mic Input to Stack Output (modified):	63 dB

Common Mode Rejection: 60 dB, 20 Hz to 20 kHz (typ)

00 ab, 20 mil 10 20 mil (0,p)

Phantom Power: 30 Vdc, 3.6 KΩ Equivalent Source Resistance, Mic Input Only

Low-Cut Filter:

Slope:	6 db per octave
Corner Frequency:	100 Hz

Clip LED's: Light 1 dB below clipping, follow supply voltage	
Limiter Threshold:	
(Changeable, see page 12)	
+ 14 dBu, ± 0.5 dB (Ref. 17 dBm	
Line Output)	
Oscillator:	
Frequency: 1 kHz	
Sine Wave Distortion: < 1.5%	
Display:	
(Changeable to VU, see page 12)	
Range: -12 dBu to clipping-	
Rise Time: 10 Ms	
Fall Time: 3 s	-
Shorting Protection:	
Any output may be shorted indefinitely without	
causing damage.	
Operating Temperature Range:	
-200°C to +600°C (-40°F to +1400°F)	
Power Requirements:	
AC: 115 Vac, 50\60 Hz 12 watts	
230 Vac, 50\60 Hz 12 watts	
External DC:	
24 to 45 Vdc, 100 mA maximum	
Enclosure:	
Dark gray with white graphics	
Dimensions:	
Height: 1.75 in.(4.45 cm)	
Depth: 8.25 in. (20.96 cm)	
Width: 19.0 in. (48.26 cm)	
Net Weight: 7.4 lb (3.36 kg)	
Shipping Weight:	

 \bigcirc

0

				the second se
INPUT SPECIFICATIONS		Nominal Load Impo Main:	edance:	
Input Impedance:		Binding Posts:		
	3.5k Ω	XLR-Line Level:		600 Ω.·
Mic:		VTK-THE Fevel:		600 Ω
Line:	30k Ω	** 11		
Aux:	15k Ω	Headphone:		
Stacking:	2k Ω	Left Channel:		8 Ω to 600 Ω
Stacking, Modified:	22k Ω	Right Channel:		S Ω to 600 Ω
Nominal Source Impedance:		Stacking:		2k Ω
Mic:	300 Ω			2K 11
Stack:	2k Ω	Nominal Level:		
		Main:		
Nominal Level:		Binding Posts:		
Mic:	-50 dBu	XLR-Line Level:		+4 dBu
Line:	-10 dBu	XLR-Mic Level:		+4 dBu
Aux:	-10 dBu			-44 dBu
Stacking:	-10 dBu	Headphone:		
Stacking, Modified:	-10 dBu	8 Ω Load:		
budoning, mountour	10 0.50	600 Ω Load:		-11 dBu=
Maximum Level:				-4 dBu
Mic:	-5 dBu	Stacking:		
Line:	+35 dBu			-10 dBu
Aux:	+ 18 dBu	Maximum Level:		
Stacking:	+ 18 dBu	Main:		
Stacking, Modified:	+ 30 dBu	Binding Posts:		
Stacking, Modified.	+ 50 abu	XLR-Line Level:	1 1 25 of Store	
OUTPUT SPECIFICATIONS		XLR-Mic Level:	1 18 1111	
OUTFUT SPECIFICATIONS		ADIC-MIC Devel:	30 419.7	
Output Impedance:		Headphone:		
Main:		8Ω Load:		1 10
Binding Posts:	60 Ω	600 Ω Load:		-1 dBu
XLR-Line Level:	60 Ω			+18 dBu
XLR-Mic Level:	10 N	Stacking:		+12 dBu
Headphone:				
Left Channel:	43 Ω	Electro-Voice contin and performance. T	uallers	
Right Channel:	43 Ω	and performance T	Ture to	improve products
ingut ondernon	70 11	and performance. T subject to change wi	And the state s	specifications are
Stacking	21-0	paralece to chanke MI	unit, nuites.	384
Stacking:	2k Ω		1100 A.	

9

ELECTRO-VOICE LIMITED WARRANTY STATEMENT

Electro-Voice electronics are guaranteed against malfunction due to defects in materials or workmanship for a period of three (3) years from the date of original purchase. If such malfunction occurs during the specified period, the product will be repaired or replaced (at our option) without charge. The product will be returned to the customer prepaid. Exclusions and Limitations: The Limited Warranty does not apply to: (a) exterior finish or appearance; (b) certain specific items described in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual; (c) malfunction resulting from use or operation of the product other than as specified in the product data sheet or owner's manual; (d) malfunction resulting from misuse or abuse of the product; or (e) malfunction occurring at any time after repairs have been made to the product by anyone other than Electro-Voice or any of its authorized service representatives. Obtaining Warranty Service: To obtain warranty service, a customer must deliver the product, prepaid, to Electro-Voice or any of its authorized service representatives together with proof of purchase of the product in the form of a bill of sale or receipted invoice. A list of authorized service representatives is available from Electro-Voice at 600 Cecil Street, Buchanan, MI 49107 (800/685-2606) and/or Electro-Voice West at 8234 Doe Avenue, Visalia, CA 93291 (800/825-1242).

Incidental and Consequential Damages Excluded: Product repair or replacement and return to the customer are the only remedies provided to the customer. Electro-Voice shall not be liable for any incidental or consequential damages including, without limitation, injury to persons or property or loss of use. Some states do not allow the exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you. Other Rights: This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Ev

ELX-1A Broadcast Mixer

SERVICE INSTRUCTIONS

* * * CAUTION * * *

NO USER SERVICEABLE PARTS INSIDE. EXTREMELY HAZAR-DOUS VOLTAGES AND CURRENTS MAY BE ENCOUNTERED WITHIN THE CHASSIS. THE SERVICING INFORMATION CON-TAINED WITHIN THIS DOCUMENT IS ONLY FOR USE BY ELECTRO-VOICE'S AUTHORIZED WARRANTY REPAIR STATIONS AND QUALIFIED SERVICE PERSONNEL. TO AVOID ELECTRIC SHOCK, DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE OPERATING INSTRUCTIONS UNLESS YOU ARE QUALIFIED TO DO SO. OTHERWISE, REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL.

9 SERVICE INFORMATION

WARNING: No user serviceable parts inside. Extremely hazardous voltages and currents may be encountered within the chassis. The servicing information contained within this document is only for use by Electro-Voice authorized warranty repair stations and qualified service personnel. To avoid electric shock, DO NOT perform any servicing other than that contained in the Operating Instructions unless you are qualified to do so. Otherwise, refer all servicing to qualified service personnel.

NOTICE: Modifications to Electro-Voice products are not recommended. Such modifications shall be at the sole expense of the person(s) or company responsible, and any damage resulting therefrom shall not be covered under warranty or otherwise.

9.1 To Remove the Display Board

1. Remove the three philip screws from the top of the display board and pull upward at the back of the board until the connector is disengaged.

2. When reinstalling, be sure the bargraph and individual LEDs are properly placed on the front panel.

9.2 To Service the Main Board

1. Remove the nuts on the pots and the screws holding the printed circuit board.

2. If power is to be applied while servicing, be sure to ground the power supply to the chassis.

3. The rear board is held by three screws and five XLR-type connectors. The XLR-type connectors can be removed by rotating the screw in the small hole at the contact end of each connector. The board can then slide out toward the front.

- 9.3 Change the Display Time Constants to Match Those of a VU Meter (Refer to the schematic in Figure 8, page 15)
- 1. Replace C371 with a 10 µf capacitor.

2. Replace D333 with a shorting jumper.

3. Recalibrate the display with VR223. VR223 can be accessed through a hole in the PC board.

9.4 To Change the Limiter Threshold (Refer to the schematic in Figure 7, page 14)

The limiter threshold can be set for levels from + 4 dBm through -14 dBm.

1. To change the limiter threshold to + 8 dBm, install IN5226 or an equivalent Zener Diode in the location marked "Note 2" on the schematic.

2. For a + 4 dBu threshold, install a shorting jumper instead of IN5226.

9.5 To Convert the Stacking Jack for Insert Patching (Refer figure 7, page 14)

1. Remove the jumper JPI-1 and install it in JP1-2, then remove JP2-1 and install it in JP2-2.

9.6 Ordering Replacement Parts

To order replacement parts, look up the ordering number from the component parts listing and call E.S.T. (800) 685-2606, FAX (800) 955-6831, for P.S.T. call (800) 825-1242, FAX (800) 999-1243, or write:

> Electro-Voice Service 600 Cecil Street Buchanan, MI 49107 U.S.A.

9.7 Technical Assistance

For applications assistance or other technical information, contact the Technical Services Manager. You can call (800) 234-6831, FAX (616) 695-4743, or write:

> Electro-Voice Technical Services Manager 600 Cecil Street Buchanan, MI 49107 U.S.A.

د مد خان التي با تاري



Figure 6 Schematic of the Input Section

.



Electro-Voice • a Mark IV Company

0

Έ.

11. 100

1

Operating and Service Instructions for the Electro-Voice ELX-IA Broadcast Mixer



Figure 8 Schematic of the Display and Power Supply

Electro-Voice • a Mark IV Company

15

Operating and Service Instructions for the Electro-Voice ELX-1A Broadcast Mixer

Component Parts Listing for the ELX-1A

(m.m)

11-16

1

a di

Date Date Date MAIN P.C.B. MAIN P.C.B. IC1, IC2, IC3, IC4 17-01-124698 IC, TL072C IC6 17-01-029027 IC, TL062C IC6 17-01-029028 IC, LM324M Q300, Q301, Q303, Q304, 48-03-038462 Transistor, XTA 1268 GR, PNP Q325 48-03-028711 Transistor, MPS U55, PNP Q311, Q321, Q324 48-03-028713 Transistor, MPS U55, PNP Q312, Q323 48-03-028713 Transistor, PS U55, PNP Q314, Q322 48-03-028713 Transistor, PS 098, NPN Q325 48-03-028713 Transistor, MPS 099, NPN Q326 48-03-028715 Diode, IN4448, switching D300-303, D306-309, D312- 48-01-03727 Diode, IN4448, switching D325-331, D333, D340 48-01-03746 Zener Diode, UZ-35, 7.5 volt, 1 watt D300-305, LD311, LD317, LD 323 48-01-03746 Zener Diode, UZ-36, 30 volt, 1 watt D300 21-01-038465 Phone Jack, H13060N205, ¼ inch SW300-306 51-02-038467 Potentiometer, 18PN01 15SK A50KΩ VR339/449, VR357/367 YR39 47-06-	Reference Designator	Ordering Number N	ame and Description	
IC1, IC2, IC3, IC4 17-01-124688 IC, TL072C IC5 17-01-029027 IC, IL052C IC6 17-01-029028 IC, LM324M Q300, Q301, Q303, Q304, 48-03-038461 Transistor, KTA 1268 GR, PNP Q326, Q307, Q303, Q314, 48-03-038462 Transistor, NPS U55, PNP Q312, Q323, Q314, Q314, 48-03-028711 Transistor, MPS U55, PNP Q313, Q322, 48-03-028712 Transistor, MPS U55, PNP Q326 48-03-02816 Transistor, MPS U55, PNP Q314, Q322 48-03-028463 Transistor, MPS U55, PNP Q327 48-03-028463 Transistor, MPS U55, PNP Q326 48-03-028463 Transistor, MPS 098, NPN Q327 48-03-038463 Transistor, MPS 8098, NPN Q328, Q304, D310, D316, D322, 48-01-032163 Zener Diode, UZ-62B, 6.2 volt, 0.5 watt ZD324 48-01-028163 Zener Diode, UZ-75B, 7.5 volt, 1 watt ZD339 48-01-038464 Zenor Diode, UZ-75B, 7.5 volt, 1 watt ZD339 48-01-038464 Zenor Diode, UZ-75B, 7.5 volt, 1 watt ZD339 48-01-038467 Potentiometer, 18CN 15SK C10KD/50KD VR3303/313, VR321/33, VR321/33, 47-06-03846	Designator	inumber in		
IC5 17-01-029027 IC, TL082C IC6 17-01-029028 IC, LM324M Q300, Q301, Q303, Q304, 48-03-038461 Transistor, KTA 1268 GR, PNP Q302, Q305, Q305, Q305, Q311, 48-03-038462 Transistor, 2N6427, NPN Q312, Q313, Q314, Q315, 48-03-028711 Transistor, 2N4403, PNP Q316, Q322, Q324 48-03-028711 Transistor, PS U05, NPN Q317, Q321, Q324 48-03-028711 Transistor, PS U05, NPN Q318, Q322 48-03-028715 Transistor, PS 205, PNP Q318, Q322 48-03-028463 Transistor, PS 2058, NPN Q300-303, D306-300, D312 48-01-037367 Diode, IN4402, rectifier 315, D318-321, D334, D338 48-01-037462 Cener Diode, UZ-r5, F, 75 volt, 1 watt ZD322 48-01-028163 Cener Diode, UZ-r5, F, 75 volt, 1 watt ZD334 48-01-038464 Lenor Diode, UZ-r5, F, 75 volt, 1 watt ZD324 48-01-038464 Lenor Diode, UZ-r5, F, 75 volt, 1 watt ZD339 49-04-038470 Potentiometer, 18CP 155K C10Kf1/50Kf1 VR303/313, VR321/331, 47-06-038468 Potentiometer, 18SN 155K A500Kf1 VR339 <td></td> <td>N</td> <td>IAIN P.C.B.</td> <td></td>		N	IAIN P.C.B.	
IC5 17-01-029027 IC, TL082C IC6 17-01-029028 IC, LM324M Q300, Q301, Q303, Q304, 48-03-038461 Transistor, KTA 1268 GR, PNP Q302, Q305, Q305, Q305, Q311, 48-03-038462 Transistor, 2N6427, NPN Q312, Q313, Q314, Q315, 48-03-028711 Transistor, 2N4403, PNP Q316, Q322, Q324 48-03-028711 Transistor, PS U05, NPN Q317, Q321, Q324 48-03-028711 Transistor, PS U05, NPN Q318, Q322 48-03-028715 Transistor, PS 205, PNP Q318, Q322 48-03-028463 Transistor, PS 2058, NPN Q300-303, D306-300, D312 48-01-037367 Diode, IN4402, rectifier 315, D318-321, D334, D338 48-01-037462 Cener Diode, UZ-r5, F, 75 volt, 1 watt ZD322 48-01-028163 Cener Diode, UZ-r5, F, 75 volt, 1 watt ZD334 48-01-038464 Lenor Diode, UZ-r5, F, 75 volt, 1 watt ZD324 48-01-038464 Lenor Diode, UZ-r5, F, 75 volt, 1 watt ZD339 49-04-038470 Potentiometer, 18CP 155K C10Kf1/50Kf1 VR303/313, VR321/331, 47-06-038468 Potentiometer, 18SN 155K A500Kf1 VR339 <td>IC1, IC2, IC3, IC4</td> <td>17-01-124688</td> <td>IC, TL072C</td> <td></td>	IC1, IC2, IC3, IC4	17-01-124688	IC, TL072C	
IC6 17-01-020028 IC, LM324M Q300, Q301, Q303, Q304, 48-03-038461 Transistor, KTA 1268 GR, PNP Q302, Q305, Q308, Q311, 48-03-038462 Transistor, 2N6427, NPN Q325 Q316, Q321, Q314, Q315, 48-03-028311 Transistor, 2N6427, NPN Q316, Q320 48-03-028711 Transistor, MPS U05, NPN Yestor, MPS U05, NPN Q317, Q321, Q324 48-03-028711 Transistor, MPS U55, PNP Q318, Q322 48-03-028713 Transistor, MPS U05, NPN Q325 48-03-028716 Transistor, MPS 005, NPN Q326 48-01-037276 Diode, IN402, rectifier 316, D316-321, D334, D334 Transistor, MPS 005, NPN D300-303, D806-309, D312- 48-01-037468 Zener Diode, UZ-6.28, 6.2 volt, 0.5 watt ZD322 48-01-037468 Zener Diode, UZ-6.28, 6.2 volt, 0.5 watt ZD324 48-01-038464 Zener Diode, UZ-6.28, 6.2 volt, 0.5 watt ZD339 42-01-038465 Phone Jack, H13080N20S, ½ inch SW300-306 51-02-038466 Potentiometer, 18CN 15SK A50KΩ VR339/349, VR357/367 47-06-038467 Potentiometer, 18CN 15SK A50KΩ <tr< td=""><td></td><td></td><td></td><td></td></tr<>				
Q300, Q301, Q303, Q304, 48-03-038461 Transistor, KTA 1268 GR, PNP Q306, Q307, Q309, Q310, 48-03-038461 Transistor, 2N6427, NPN Q322, Q305, Q308, Q311, 48-03-038462 Transistor, 2N6427, NPN Q316, Q320, Q311, Q314, Q315, 48-03-028711 Transistor, 2N4403, PNP Q317, Q321, Q324 48-03-028711 Transistor, MPS U55, PNP Q318, Q322 48-03-028816 Transistor, MPS 005, NPN Q325 48-03-028816 Transistor, PP 005, NPN Q325 48-03-028736 Transistor, PP 005, NPN Q325 48-01-037276 Diode, IN4002, rectifier D300-303, D306-309, D312- 48-01-037276 Diode, IN4448, switching D325-331, D333, D340 Zener Diode, UZ-6.2B, 6.2 volt, 0.5 watt ZD324 ZD324 48-01-037465 Zener Diode, UZ-6.2B, 6.2 volt, 0.5 watt ZD339 48-01-038461 LE.D. KLR-124 3DIA ZD34 48-01-038465 Potentiometer, 1820 ISSK A50K0 VR390, VR357/367 VR399, VR357/367 Vr399 VR399, VR357/367 47-06-038463 Potentiometer, 182N 15SK A50K0 VR397				
Qaoe, Qaoor, Qaoo, Qaito 48-03-038462 Transistor, 2N6427, NPN Qazz Qaita,				
Qa02, Q305, Q308, Q311, 48-03-088462 Transistor, 2N6427, NPN Q325 Q325 Transistor, 2N4403, PNP Q312, Q313, Q314, Q315, 48-03-027334 Transistor, MPS U05, NPN Q319, Q323 48-03-028712 Transistor, 2N4403, PNP Q319, Q323 48-03-028712 Transistor, 2N4401, NPN Q318, Q324 48-03-028163 Transistor, 2N4401, NPN Q326 48-03-027336 Transistor, 2N4401, NPN Q327 48-01-037486 Transistor, 2N4402, rectifier 315, D318-321, D334, D338 B304, D310, D316, D322, 48-01-028163 Zb322 48-01-028163 Zener Diode, UZ-5.87, 7.5 volt, 1 watt ZD324 48-01-038464 Zenor Diode, UZ-308, 30 volt, 1 watt LD305, LD311, LD317, LD 323 48-04-038469 Potentiometer, 18CP 15SK C10KΩ/50KΩ VR390 Y1-06-038469 Potentiometer, 18CP 15SK C10KΩ/50KΩ VR390 47-04-038470 Potentiometer, 18SN 15S				
Q325 48-03-027334 Transistor, 2N4403, PNP Q312, Q313, Q314, Q315, 48-03-027334 Transistor, MPS U05, NPN Q319, Q321, Q324 48-03-028712 Transistor, MPS U55, PNP Q319, Q323 48-03-028816 Transistor, 2N 4401, NPN Q326 48-03-028816 Transistor, MPS U55, PNP Q327 48-03-038436 Transistor, MPS 8098, NPN D300-303, D306-309, D312- 48-01-037276 Diode, IN4002, rectifier 315, D318-321, D334, D338 B38 Transistor, MPS 0098, NPN D304, D310, D316, D322, 48-01-037466 Zener Diode, UZ-6.2B, 6.2 volt, 0.5 watt ZD324 48-01-038464 Zenor Diode, UZ-7.5B, 7.5 volt, 1 watt ZD324 48-01-038465 Phone Jack, H13080N205, ¼ inch SW300-306 51-02-038466 Phose Jack, H13080N205, ¼ inch SW300-306 51-02-038467 Potentiometer, 18CP 15SK C10KΩ/50KΩ VR339/419, VR357/367 VR397 47-06-038467 Potentiometer, 18CP 15SK C10KΩ/50KΩ VR390 47-04-038470 Semi Fixed Resistor, CER92 B5KΩ Neated film R36, R334, R354, R364 47-03-109437 Resistor, 13.3 KΩ		48-03-038462	Transistor, 2N6427, NPN	
Q312, Q313, Q314, Q315, Q316, Q320 48-03-027334 Transistor, 2M4403, PNP Q316, Q320 48-03-027334 Transistor, MPS U05, NPN Q317, Q321, Q324 Transistor, MPS U55, PNP Q318, Q322 48-03-028316 Transistor, MPS U55, PNP Q326 48-03-027336 Transistor, MPS 8098, NPN Q326 48-03-027366 Transistor, MPS 8098, NPN D300-303, D306-309, D312 48-01-03776 Diode, IN4402, rectifier D315, D318-321, D334, D838 D304, D310, D316, D322, 48-01-028163 Zener Diode, UZ-62B, 6.2 volt, 0.5 watt D322-331, D333, D340 Zener Diode, UZ-62B, 6.2 volt, 1.5 watt 20324 48-01-038464 ZD324 48-01-038465 Zener Diode, UZ-62B, 6.2 volt, 1. watt 2030 LD305, LD311, LD317, LD 323 48-04-038467 Potentiometer, 18CP 15SK C10KΩ/50KΩ VR303/313, VR321/331, 47-06-038467 Potentiometer, 18CP 15SK C10KΩ/50KΩ VR303/314, VR321/331, 47-04-038470 Semi Fixed Resistor, CER92 BSKΩ VR304, R306, R318, R326, 47-03-109437 Resistor, 3.3 kΩ 0.25 watt, 5%, carbon film R337, R341, R355, R359 47-01-102090 Resistor, 18.2 kΩ, 0.25 watt, 5%				
Q316, Q320 48-03-028711 Transistor, MPS U05, NPN Q317, Q321, Q324 48-03-028712 Transistor, MPS U55, PNP Q318, Q322 48-03-028816 Transistor, 2M 4401, NPN Q326 48-03-028816 Transistor, MPS U55, PNP Q327 48-03-028816 Transistor, MPS 009, NPN Q326 48-03-038463 Transistor, MPS 009, NPN Q304, D310, D316, D322, 48-01-037276 Diode, IN4402, rectifier D304, D310, D316, D322, 48-01-037466 Zener Diode, UZ-6.2B, 6.2 volt, 0.5 watt ZD324 48-01-037466 Zener Diode, UZ-7.5B, 7.5 volt, 1 watt ZD339 48-01-038464 Zenor Diode, UZ-7.5B, 7.5 volt, 1 watt ZD34 48-01-038464 Zenor Diode, UZ-7.5B, 7.5 volt, 1 watt ZD35 ZD314, LD317, LD 323 48-04-038018 L.E.D. KLR-124 3DIA J300 21-01-038465 Phone Jack, H13080N20S, 41 inch SW30-306 VR303/313, VR321/331, 47-06-038469 Potentiometer, 18CP 15SK C10KΩ/50KΩ VR390 47-04-038467 Semi Fixed Resistor, CER92 BSKΩ VR305, R318, R326, 47-01-102090 Resistor, 18.2 kΩ, 0.25 watt, 1%, met	· · · · · · · · · · · · · · · · · · ·	48-03-027334	Transistor, 2N4403, PNP	
Q317, Q321, Q32448-03-028712Transistor, MPS U55, PNPQ318, Q32248-03-028816Transistor, 2N 4401, NPNQ32648-03-028816Transistor, TP32C, PNPQ32748-03-038463Transistor, MPS 8098, NPND300-030, D306-309, D312-48-01-03776Diode, IN4002, rectifier315, D318-321, D334, D338B304, D310, D316, D322,48-01-03776D325-331, D333, D340Zener Diode, UZ-6.2B, 6.2 volt, 0.5 wattZD32248-01-037466Zener Diode, UZ-5.8F, 7.5 volt, 1 wattZD32448-01-038464Zenor Diode, UZ-3.0B, 30 volt, 1 wattLD305, LD311, LD317, LD 32348-04-038118LE.D. KLR-124 3DIAJ300SW300-30651-02-038466Puen Switch, JPB-21S-AVR303/13, VR321/31,47-06-038467Potentiometer, 18CP 155K C10KΩ/50KΩVR39547-04-038470Semi Fixed Resistor, CER92 B5KΩVR39547-06-038467Potentiometer, 18SN 155K A500KΩVR39547-01-102090Resistor, 10 kΩ, 0.25 watt, 1%, metal filmR332, R341, R355, R359R302, R306, R322, R324,47-03-109437Resistor, 10 kΩ, 0.25 watt, 1%, metal filmR340, R345, R363R307, R325, R361, R34347-01-02090Resistor, 100 kΩ, 0.25 watt, 5%, carbon filmR340, R345, R364, R352,R301, R325, R364, R363R307, R325, R361, R34347-01-02097Resistor, 6.2 kΩ, 0.25 watt, 5%, carbon filmR340, R345, R36647-01-102077Resistor, 6.2 kΩ, 0.25 watt, 5%, carbon filmR341, R		48-03-028711		
Q319, Q32348-03-028712Transistor, MPS U55, PNPQ318, Q32248-03-0287136Transistor, ZN 4401, NPNQ32648-03-028736Transistor, MPS 8098, NPND300-303, D306-309, D312-48-01-037276Diode, IN4002, rectifier315, D318-321, D334, D338Diode, IN4002, rectifierD325-331, D333, D340Zener Diode, UZ-6.2B, 6.2 volt, 0.5 wattZD32448-01-037466Zener Diode, UZ-7.5B, 7.5 volt, 1 wattZD32448-01-038467Zener Diode, UZ-7.5B, 7.5 volt, 1 wattZD32448-01-038467Zener Diode, UZ-30B, 30 volt, 1 wattZD33948-01-038465Phone Jack, H13080N20S, ¼ inchYR300, LD311, LD317, LD 32348-04-038018L.E.D. KLR-124 3DIAJ30021-01-038465Phone Jack, H13080N20S, ¼ inchYR303/313, VR321/331,47-06-038469Potentiometer, 18CP 15SK C10KΩ/50KΩVR30347-06-038467Potentiometer, 18CN 115SK A50KΩVR39047-06-038467Potentiometer, 18SN 15SK A500KΩVR39047-06-038467Potentiometer, 18SN 15SK A500KΩVR39047-06-038467Potentiometer, 18SN 15SK A500KΩVR39047-06-038468Potentiometer, 18SN 15SK A500KΩR300, R308, R318, R326, R300, R306, R319, R323, R301, R305, R319, R323, R304, R309, R322, R327, R302, R306, R320, R324, R307, R325, R361, R34347-01-102097Resistor, 10 kΩ, 0.25 watt, 1%, metal filmR342, R355, R363R307, R325, R361, R34347-01-02097R44, R346, R352, R364, R301, R317, R328, R351, R336, R364, R370-37347-01-102097R44, R346, R3				
Q318, Q322 48-03-028816 Transistor, 2N 4401, NPN Q326 48-03-028363 Transistor, TIP32C, PNP Q327 148-03-038463 Transistor, TIP32C, PNP Q327 248-01-037276 Diode, IN4002, rectifier 315, D318-321, D334, D338 D304, D310, D316, D322, 48-01-028163 Zener Diode, UZ-6.2B, 6.2 volt, 0.5 watt ZD322 48-01-028163 Zener Diode, UZ-7.5B, 7.5 volt, 1 watt ZD329 ZD324 48-01-038464 Zenor Diode, UZ-7.5B, 7.5 volt, 1 watt LD305, LD311, LD317, LD 323 48-04-038018 L.E.D. KLR-124 3DIA J300 21-01-038465 Puone Jack, H13080N20S, ¼ inch SW300-306 51-02-038466 Push Switch, JPB-21S-A VR303(313, VR321/331, 47-06-038467 Potentiometer, 18CP 15SK C10KΩ/50KΩ VR377 47-06-038467 Potentiometer, 18CN 15SK A500KΩ VR395 47-06-038467 Potentiometer, 18SN 15SK A500KΩ VR395 47-06-038467 Potentiometer, 18CN 15SK A50KΩ VR395 47-01-102090 Resistor, 15.2 kΩ, 0.25 watt, 1%, metal film R336, R334, R354, R352, 47-01-102090 Resistor, 16.2 kΩ, 0.25 watt, 5%, carbon film R304, R306, R319, R323,		48-03-028712	2 Transistor, MPS U55, PNP	
Q22648-03-027336Transistor, TIP32C, PNPQ32748-03-038463Transistor, MPS 8098, NPND300-303, D306-309, D312-48-01-037276Diode, IN4002, rectifier315, D318-321, D334, D338Diode, IN402, rectifierD325-331, D333, D340Zener Diode, UZ-6.2B, 6.2 volt, 0.5 wattZD32248-01-028163ZD32448-01-037466ZD33948-01-037466Zener Diode, UZ-7.5B, 7.5 volt, 1 wattLD305, LD311, LD317, LD 32348-04-038018L.E.D. KLR-124 3DIAJ30021-01-038465Phone Jack, H13060N205, ¼ inchSW300-30651-02-038467PvR303/313, VR321/331,47-06-038469Potentiometer, 18CP 155K C10KΩ/50KΩVR39047-04-038470Semi Fixed Resistor, CER92 B5KΩVR39047-04-038467Potentiometer, 18CN 155K A500KΩVR39047-04-038468Potentiometer, 18CN 155K A500KΩVR39047-04-038470Semi Fixed Resistor, CER92 B5KΩVR39547-01-102090Resistor, 18.2 kΩ, 0.25 watt, 1%, metal filmR337, R341, R355, R359R302, R306, R322, R324,47-01-102090R304, R309, R322, R327,47-03-029036R404, R306, R352, R361, R34347-01-029034Rasistor, 18 Ω, 0.25 watt, 1%, metal filmR340, R345, R358, R36447-01-102127Rasistor, 18 Ω, 0.25 watt, 5%, carbon filmR344, R335, R346, R368,47-01-10207Rasistor, 12 (Ω, 0.25 watt, 5%, carbon filmR344, R335, R346, R36847-01-10207R34				1.400 C.40
Q32748-03-038463Transistor, MPS 8098, NPND300-303, D306-309, D312-48-01-037276Diode, IN4002, rectifier315, D318-321, D334, D338D304Zoarer Diode, UZ-6.2B, 6.2 volt, 0.5 wattD225-331, D333, D340Zener Diode, UZ-7.5B, 7.5 volt, 1 wattZD32448-01-037486Zener Diode, UZ-7.5B, 7.5 volt, 1 wattLD305, LD311, LD317, LD 32348-04-038048L.E.D. KLR-124 3DIAJ30021-01-038465Phone Jack, H13080N20S, ¼ inchSW300-30651-02-038466Push Switch, JPB-21S-AVR309/349, VR357/3677-06-038467Potentiometer, 18CP 15SK C10KΩ/50KΩVR39947-04-03870Semi Fixed Resistor, CER9 25KΩVR30047-04-038470Semi Fixed Resistor, CER9 25KΩVR39547-01-102090Resistor, 3.3 kΩ. 0.25 watt, 1%, metal filmR336, R348, R354, R362R34, R355, R359Rasistor, 18.2 kΩ, 0.25 watt, 1%, metal filmR304, R309, R322, R324,47-01-102090Resistor, 5.2 kΩ, 0.25 watt, 1%, metal filmR340, R345, R358, R36347-01-029034Resistor, 18 Ω, 0.25 watt, 5%, carbon filmR341, R355, R35447-01-029034Resistor, 18 Ω, 0.25 watt, 5%, carbon filmR342, R356, R364, R352,47-01-10217Resistor, 18 Ω, 0.25 watt, 5%, carbon filmR344, R335, R346, R352,47-01-102077Resistor, 18 Ω, 0.25 watt, 5%, carbon filmR344, R335, R344, R365,47-01-102077Resistor, 18 Ω, 0.25 watt, 5%, carbon filmR344, R335, R344, R366,47-01-102077Resistor, 10 Ω, 0.25 watt, 5%, carbon filmR3414, R332, R350, R36847-01-102078Re		48-03-027336	5 Transistor, TIP32C, PNP	_
315, D318-321, D334, D338D304, D310, D316, D322, D225-331, D333, D340ZD32248-01-122601Diode, 1N4448, switchingZD32448-01-038463ZD32448-01-037486Zener Diode, UZ-6.2B, 7.5 volt, 1 wattZD33948-04-038018L.E.D. KLR-124 3DIAJ30021-01-038465SW300-30651-02-038466Pvr39/349, VR357/367VR37747-06-038467VR39347-04-038467Potentiometer, 18CP 15SK C10KΩ/50KΩVR39547-06-038468Potentiometer, 18CP 15SK C10KΩ/50KΩVR39547-04-038467Potentiometer, 18PN01 15SK A500KΩVR39547-04-038468Potentiometer, 18SN 15SK A500KΩVR39547-01-102090Resistor, 18.2 kΩ, 0.25 watt, 1%, metal filmR342, R354, R362R301, R305, R319, R322, R302, R306, R322, R327, R306, R306, R322, R324, R306, R322, R327, R306, R306, R325, R363R307, R325, R361, R343R307, R325, R361, R343R304, R326, R364, R302, R335, R364, R302, R324, R335, R364, R302, R344, R365, R304, R335, R364, R302, R344, R366, R304, R335, R364, R302, R324, R335, R364, R302, R344, R366, R306, R312, R345, R365R301, R316, R317, R328, R311, R328, R347, R365R301, R316, R317, R388, R311, R322, R347, R365A7-01-102197Resistor, 18 Ω , 0.25 watt, 5%, carbon filmR312, R330, R348, R366, R314, R332, R350, R368R314, R332, R350, R368R314, R332, R350, R368R314, R332, R350, R368R314, R332, R350, R368 <t< td=""><td></td><td>48-03-038463</td><td>3 Transistor, MPS 8098, NPN</td><td></td></t<>		48-03-038463	3 Transistor, MPS 8098, NPN	
D304, D310, D316, D322, D225-331, D333, D34048-01-122601Diode, 1N4448, switchingD32248-01-028163Zener Diode, UZ-6.2B, 6.2 volt, 0.5 wattZD32248-01-037486Zener Diode, UZ-7.5B, 7.5 volt, 1 wattZD33948-01-038464Zenor Diode, UZ-30B, 30 volt, 1 wattLD305, LD311, LD317, LD 32348-04-038465Phone Jack, H13080N20S, ¼ inchSW300-30621-01-038465Phone Jack, H13080N20S, ¼ inchSW300-30651-02-038466Postentiometer, 18CP 15SK C10KΩ/50KΩVR33747-06-038467Potentiometer, 18PN01 15SK A50KΩVR39047-04-038470Semi Fixed Resistor, CER92 B5KΩVR39047-06-038467Potentiometer, 18SN 15SK A500KΩVR39047-06-038467Potentiometer, 18SN 15SK A500KΩVR39547-06-038468Potentiometer, 18SN 15SK A500KΩR300, R308, R318, R326, R322, R306, R324, R356, R302, R306, R322, R324,47-01-102090Resistor, 18.2 kΩ, 0.25 watt, 1%, metal filmR342, R356, R363R307, R325, R361, R324, R307, R325, R361, R34347-01-029034Rasistor, 18 Ω, 0.25 watt, 5%, carbon filmR344, R335, R346, R352, Rasistor, 130 kΩ, 0.25 watt, 5%, carbon filmR341, R329, R342, R356, R36847-01-102107Rasistor, 12 kΩ, 0.25 watt, 5%, carbon filmR341, R322, R350, R36847-01-10207Rasistor, 12 kΩ, 0.25 watt, 5%, carbon filmR342, R336, R348, R366, R344, R370-37347-01-10207R311, R329, R347, R35547-01-10207Rasistor, 150 Ω, 0.25 watt, 5%, carbon filmR474, R386, R386, R351, R359, R356 <t< td=""><td></td><td>48-01-037276</td><td></td><td></td></t<>		48-01-037276		
D325-331, D333, D340ZD32248-01-028163Zener Diode, UZ-6.2B, 6.2 volt, 0.5 wattZD32448-01-037486Zener Diode, UZ-7.5B, 7.5 volt, 1 wattLD305, LD311, LD317, LD 32348-04-038018LE, D. KLR-124 3DIAJ30021-01-038466Potentioneter, 18CP 155K C10KΩ/50KΩVR303/313, VR321/331,47-06-038467Potentiometer, 18CP 155K C10KΩ/50KΩVR39047-04-038470Semi Fixed Resistor, CER92 B5KΩVR39547-06-038468Potentiometer, 18SN 155K A500KΩR300, R308, R318, R326, R302, R304, R324, R354, R362R301, R305, R319, R323, R322, R326, R364R302, R306, R320, R324, R320, R324, R355, R359R302, R306, R322, R324, R302, R306, R322, R327, R302, R306, R322, R327, R302, R306, R322, R324, R307, R325, R361, R343R307, R325, R361, R343 R307, R325, R364, R370-373 R311, R328, R346, R352, R353, R364, R370-373R311, R322, R350, R368 R312, R330, R348, R366, R314, R332, R350, R368R311, R332, R350, R368 R314, R332, R351, S69, R311, R328, R346, R355, R353, R364, R370-373R311, R322, R351, S69, R311, R328, R366, R314, R332, R350, R368R314, R332, R350, R368 R314, R332, R350, R36	315, D318-321, D334, D338			
ZD32248-01-023163Zener Diode, UZ-6.2B, 6.2 volt, 0.5 wattZD32448-01-037486Zener Diode, UZ-7.5B, 7.5 volt, 1 wattZD33948-01-038464Zener Diode, UZ-7.5B, 7.5 volt, 1 wattLD305, LD311, LD317, LD 32348-04-038018L.E.D. KLR-124 3DLAJ30021-01-038465Phone Jack, H13080N20S, ¼ inchSW300-30651-02-038466Push Switch, JPB-21S-AVR303/313, VR321/331,47-06-038467Potentiometer, 18CP 15SK C10KΩ/50KΩVR393/349, VR357/36747-06-038467Potentiometer, 18CP 15SK A500KΩVR39047-04-038470Semi Fixed Resistor, CER92 B5KΩVR39547-06-038468Potentiometer, 18SN 15SK A500KΩR300, R308, R318, R326,47-06-038468Potentiometer, 18CN 15SK A500KΩR300, R308, R318, R326,47-01-102090Resistor, 18.2 kΩ, 0.25 watt, 1%, metal filmR336, R334, R354, R36247-01-102090Resistor, 10 kΩ, 0.25 watt, 1%, metal filmR337, R341, R355, R359R307, R322, R327,47-03-029036R304, R309, R322, R327,47-03-029036Resistor, 56.2 kΩ, 0.25 watt, 1%, metal filmR340, R345, R358, R363R307, R325, R361, R34347-01-102107R310, R316, R317, R328,47-01-102107Resistor, 10 kΩ, 0.25 watt, 5%, carbon filmR311, R329, R344, R356,47-01-102097Resistor, 6.2 kΩ, 0.25 watt, 5%, carbon filmR312, R330, R348, R366,47-01-102077Resistor, 22 kΩ, 0.25 watt, 5%, carbon filmR312, R330, R348, R366,47-01-102077Resistor, 22 kΩ, 0.25 watt, 5%, carbon filmR314, R332, R350, R36847-01-102078 <td>D304, D310, D316, D322,</td> <td>48-01-122601</td> <td>Diode, 1N4448, switching</td> <td></td>	D304, D310, D316, D322,	48-01-122601	Diode, 1N4448, switching	
ZD32448-01-037486Zener Diode, UZ-7.5B, 7.5 volt, 1 wattZD33948-01-038464Zenor Diode, UZ-30B, 30 volt, 1 wattLD305, LD311, LD317, LD 32348-04-038018L.E.D. KLR-124 3DIAJ30021-01-038465Phone Jack, H13080N20S, ¼ inchSW300-30651-02-038466Push Switch, JPB-21S-AVR303/313, VR321/331,47-06-038469Potentiometer, 18CP 15SK C10KΩ/50KΩVR339/349, VR357/367YR39047-04-038470VR39047-04-038470Semi Fixed Resistor, CER92 B5KΩVR39047-06-038468Potentiometer, 18SN 15SK A500KΩR300, R308, R318, R326,47-03-029035R334, R354, R35447-01-102090R337, R341, R355, R359R334, R354, R362R300, R302, R322, R324,47-01-102090Resistor, 10 kΩ, 0.25 watt, 5%, carbon filmR344, R355, R35847-01-029034R307, R325, R361, R34347-01-029034R307, R325, R361, R34347-01-102127R301, R316, R317, R328,47-01-102127R311, R329, R347, R36547-01-102097Rasistor, 6.2 kΩ, 0.25 watt, 5%, carbon filmR312, R330, R348, R366,47-01-102077R311, R322, R350, R38847-01-102078R311, R322, R351, S6947-01-102078R311, R322, R351, S6947-01-102078R311, R328, R36647-01-102077R45Resistor, 6.2 kΩ, 0.25 watt, 5%, carbon filmR312, R330, R348, R366,47-01-102077R47Resistor, 150 Ω, 0.25 watt, 5%, carbon filmR474, R386, R38847-01-102078R414, R416	D325-331, D333, D340			
ZD33948-01-038464Zenor Diode, UZ-30B, 30 volt, 1 wattLD305, LD311, LD317, LD 32348-04-038018L.E. D. KLR-124 3DIAJ30021-01-038465Phone Jack, H13080N20S, ¼ inchSW300-30651-02-038466Push Switch, JPB-21S-AVR303/313, VR321/331,47-06-038469Potentiometer, 18CP 15SK C10KΩ/50KΩVR339/349, VR357/36747-06-038467Potentiometer, 18CP 15SK A50KΩVR37747-06-038467Potentiometer, 18PN01 15SK A50KΩVR39047-04-038470Semi Fixed Resistor, CER92 B5KΩVR39547-06-038468Potentiometer, 18SN 15SK A500KΩR300, R308, R318, R326, R334, R354, R36247-01-102090R301, R305, R319, R323, R321, R355, R35947-01-102090R302, R306, R320, R324, R304, R346, R356, R36047-01-102090R304, R345, R358, R363Resistor, 56.2 kΩ, 0.25 watt, 1%, metal filmR340, R345, R358, R36347-01-029034R301, R325, R361, R34347-01-029034R301, R326, R370-373Resistor, 18 Ω, 0.25 watt, 5%, carbon filmR310, R316, R317, R328, R351, R364, R370-37347-01-102097R311, R329, R347, R365 R351, R358, R36847-01-102097R311, R329, R348, R366, R314, R335, R36847-01-102097R413, R414, R41647-01-102272	ZD322	48-01-028163	Zener Diode, UZ-6.2B, 6.2 volt, 0.5 watt	
LD305, LD311, LD317, LD 32348-04-038018L.E.D. KLR-124 3DIAJ30021-01-038465Phone Jack, H13080N20S, ¼ inchSW300-30651-02-038466Push Switch, JPB-21S-AVR309/313, VR321/331,47-06-038469Potentiometer, 18CP 15SK C10KΩ/50KΩVR339/349, VR357/3677VR37747-06-038467Potentiometer, 18CP 15SK A50KΩVR39047-04-038470Semi Fixed Resistor, CER92 B5KΩVR39547-06-038468Potentiometer, 18SN 15SK A500KΩR300, R308, R318, R326, R334, R354, R362R301, R305, R319, R323, R302, R306, R320, R324, R302, R306, R320, R324, R302, R306, R320, R324, R302, R306, R320, R324, R307, R325, R361, R343R307, R325, R361, R343 R307, R325, R364, R370-373R311, R329, R347, R365 R311, R329, R347, R365 R314, R386, R388R314, R327, R368, R384 R314, R336, R346, R388 R314, R336, R346, R388 R314, R332, R350, R368 R314, R344, R416R413, R414, R416	ZD324	48-01-037486	5 Zener Diode, UZ-7.5B, 7.5 volt, 1 watt	S. C
J30021-01-038465Phone Jack, H13080N20S, ¼ inchSW300-30651-02-038466Push Switch, JPB-21S-AVR308/313, VR321/331,47-06-038469Potentiometer, 18CP 15SK C10KΩ/50KΩVR339/349, VR357/36747-06-038467Potentiometer, 18CP 15SK C10KΩ/50KΩVR39047-04-038470Semi Fixed Resistor, CER92 B5KΩVR39547-06-038468Potentiometer, 18SN 15SK A500KΩR300, R308, R318, R326,47-06-038468Potentiometer, 18SN 15SK A500KΩR301, R305, R319, R323,47-01-0209035Resistor, 18.2 kΩ, 0.25 watt, 1%, metal filmR337, R341, R355, R35947-01-102090Resistor, 10 kΩ, 0.25 watt, 5%, carbon filmR342, R356, R36047-03-029036Resistor, 10 kΩ, 0.25 watt, 1%, metal filmR340, R345, R358, R36347-01-029036Resistor, 18 Ω, 0.25 watt, 1%, metal filmR340, R345, R358, R36347-01-029036Resistor, 18 Ω, 0.25 watt, 5%, carbon filmR310, R316, R317, R328, R353, R364, R370-37347-01-102127Resistor, 6.2 kΩ, 0.25 watt, 5%, carbon filmR312, R330, R348, R366, R314, R322, R350, R36847-01-102097Resistor, 6.2 kΩ, 0.25 watt, 5%, carbon filmR312, R330, R348, R366, R314, R322, R350, R36847-01-102097Resistor, 150 Ω, 0.25 watt, 5%, carbon filmR312, R333, R351, 369, R413, R414, R41647-01-102072Resistor, 150 Ω, 0.25 watt, 5%, carbon film	ZD339	48-01-038464	Zenor Diode, UZ-30B, 30 volt, 1 watt	
SW300-30651-02-038466Push Switch, JPB-21S-AVR303/313, VR321/331, VR339/349, VR357/36751-02-038466Push Switch, JPB-21S-APotentiometer, 18CP 15SK C10KΩ/50KΩVR39047-06-038467Potentiometer, 18PN01 15SK A50KΩVR39047-04-038470Semi Fixed Resistor, CER92 B5KΩVR39547-06-038468Potentiometer, 18SN 15SK A500KΩR300, R308, R318, R326, R334, R354, R364, R36247-03-029035Resistor, 18.2 kΩ, 0.25 watt, 1%, metal filmR337, R341, R355, R35947-01-102090Resistor, 3.3 kΩ. 0.25 watt, 5%, carbon filmR342, R356, R36047-03-029036Resistor, 10 kΩ, 0.25 watt, 1%, metal filmR342, R356, R36047-03-029036Resistor, 56.2 kΩ, 0.25 watt, 1%, metal filmR342, R356, R36347-01-029034Resistor, 18 Ω, 0.25 watt, 5%, carbon filmR310, R316, R317, R328, R353, R364, R370-37347-01-102127Resistor, 6.2 kΩ, 0.25 watt, 5%, carbon filmR311, R229, R347, R36547-01-102097Resistor, 6.2 kΩ, 0.25 watt, 5%, carbon filmR312, R330, R348, R366, R314, R332, R351, 369, R413, R414, R41647-01-102272Resistor, 150 Ω, 0.25 watt, 5%, carbon film	LD305, LD311, LD317, LD 323	48-04-038018	3 L.E.D. KLR-124 3DIA	
VR303/313, VR321/331, VR339/349, VR357/36747-06-038469Potentiometer, 18CP 15SK C10KΩ/50KΩVR37747-06-038467Potentiometer, 18PN01 15SK A50KΩVR39047-04-038470Semi Fixed Resistor, CER92 B5KΩVR39547-06-038468Potentiometer, 18SN 15SK A500KΩR300, R308, R318, R326, R300, R305, R319, R323, R341, R355, R35947-01-102090R301, R305, R319, R323, R337, R341, R355, R35947-01-102090R302, R306, R220, R324, R309, R322, R327, R340, R345, R36847-03-029036R304, R309, R322, R327, R344, R355, R36347-03-029036R307, R325, R361, R343 R3310, R316, R317, R328, R333, R351, R364, R370-37347-01-029034R311, R329, R347, R365 R312, R330, R348, R366, R314, R332, R350, R36847-01-102097R312, R330, R348, R366, R314, R332, R350, R36847-01-102097R312, R333, R351, 369, R413, R414, R41647-01-102272R413, R414, R41647-01-102272		21-01-038468	5 Phone Jack, H13080N20S, ¼ inch	
VR339/349, VR357/367VR37747-06-038467Potentiometer, 18PN01 15SK A50KΩVR39047-04-038470Semi Fixed Resistor, CER92 B5KΩVR39547-06-038468R300, R308, R318, R326,47-06-038468R334, R354, R36447-03-029035R301, R305, R319, R323,47-01-102090R302, R306, R320, R324,47-01-102090R302, R306, R320, R324,47-03-109437R342, R356, R36047-03-029036R307, R225, R361, R34347-01-029036R307, R225, R361, R34347-01-029034R310, R316, R317, R328,47-01-029034R331, R329, R347, R36547-01-102127R311, R329, R347, R36547-01-102097R311, R329, R347, R36547-01-102097R311, R329, R347, R36547-01-102107R311, R329, R347, R36547-01-102107R413, R344, R351, 369,47-01-102128R413, R414, R41647-01-102272		51-02-038466		
VR39047-04-038470Semi Fixed Resistor, CER92 B5KΩVR39547-06-038468Potentiometer, 18SN 15SK A500KΩR300, R308, R318, R326, R334, R354, R36247-03-029035Resistor, 18.2 kΩ, 0.25 watt, 1%, metal filmR336, R334, R355, R319, R323, R301, R305, R319, R323, R302, R306, R320, R324, R302, R306, R320, R324, R309, R322, R327, R307, R325, R361, R34347-01-102090Resistor, 3.3 kΩ. 0.25 watt, 5%, carbon filmR340, R345, R358, R363 R307, R325, R361, R34347-03-029036Resistor, 56.2 kΩ, 0.25 watt, 1%, metal filmR310, R316, R317, R328, R353, R364, R370-37347-01-029034Resistor, 18 Ω, 0.25 watt, 5%, carbon filmR311, R329, R347, R365 R311, R329, R347, R36547-01-102097Resistor, 6.2 kΩ, 0.25 watt, 5%, carbon filmR312, R330, R348, R366, R314, R332, R350, R368 R314, R332, R350, R36847-01-102088Resistor, 150 Ω, 0.25 watt, 5%, carbon filmR314, R332, R351, 369, R413, R414, R41647-01-102272Resistor, 2.2 kΩ, 0.25 watt, 5%, carbon film		47-06-038469	Potentiometer, 18CP 15SK C10KΩ/50KΩ	
VR39547-06-038468Potentiometer, 18SN 15SK A500KΩR300, R308, R318, R326, R334, R354, R36247-03-029035Resistor, 18.2 kΩ, 0.25 watt, 1%, metal filmR336, R334, R354, R36247-01-102090Resistor, 3.3 kΩ. 0.25 watt, 5%, carbon filmR337, R341, R355, R35947-01-102090Resistor, 3.3 kΩ. 0.25 watt, 5%, carbon filmR342, R356, R36047-03-029036Resistor, 56.2 kΩ, 0.25 watt, 1%, metal filmR342, R356, R36047-01-029034Resistor, 56.2 kΩ, 0.25 watt, 1%, metal filmR340, R345, R358, R36347-01-029034Resistor, 18 Ω, 0.25 watt, 5%, carbon filmR310, R316, R317, R328, R353, R364, R370-37347-01-102127Resistor, 18 Ω, 0.25 watt, 5%, carbon filmR312, R330, R348, R366, R314, R332, R350, R36847-01-102097Resistor, 6.2 kΩ, 0.25 watt, 5%, carbon filmR314, R332, R350, R36847-01-102088Resistor, 150 Ω, 0.25 watt, 5%, carbon filmR315, R333, R351, 369, R413, R414, R41647-01-102272Resistor, 2.2 kΩ, 0.25 watt, 5%, carbon film	VR377	47-06-03846	7 Potentiometer, 18PN01 15SK A50KΩ	
R300, R308, R318, R326, R336, R334, R354, R36247-03-029035Resistor, $18.2 k\Omega$, $0.25 watt$, 1% , metal filmR336, R334, R354, R36247-01-102090Resistor, $3.3 k\Omega$. $0.25 watt$, 5% , carbon filmR337, R341, R355, R35947-01-102090Resistor, $3.3 k\Omega$. $0.25 watt$, 5% , carbon filmR322, R366, R320, R324, R342, R356, R36047-03-109437Resistor, $10 k\Omega$, $0.25 watt$, 1% , metal filmR342, R356, R36047-03-029036Resistor, $56.2 k\Omega$, $0.25 watt$, 1% , metal filmR340, R345, R358, R36347-01-029034Resistor, 18Ω , $0.25 watt$, 5% , carbon filmR310, R316, R317, R328, R353, R364, R370-37347-01-102127Resistor, $100 k\Omega$, $0.25 watt$, 5% , carbon filmR312, R330, R348, R366, R314, R332, R350, R36847-01-102097Resistor, $6.2 k\Omega$, $0.25 watt$, 5% , carbon filmR314, R332, R350, R36847-01-102107Resistor, 150Ω , $0.25 watt$, 5% , carbon filmR314, R332, R350, R36847-01-102058Resistor, 150Ω , $0.25 watt$, 5% , carbon filmR315, R333, R351, 369, R413, R414, R41647-01-102272Resistor, $2.2 k\Omega$, $0.25 watt$, 5% , carbon film	VR390	47-04-038470) Semi Fixed Resistor, CER92 B5KΩ	
R336, R334, R354, R36247-01-102090Resistor, 3.3 kΩ. 0.25 watt, 5%, carbon filmR337, R341, R355, R35947-01-102090Resistor, 3.3 kΩ. 0.25 watt, 5%, carbon filmR337, R341, R355, R35947-03-109437Resistor, 10 kΩ, 0.25 watt, 1%, metal filmR342, R356, R36047-03-029036Resistor, 56.2 kΩ, 0.25 watt, 1%, metal filmR340, R345, R358, R36347-01-029034Resistor, 18 Ω, 0.25 watt, 5%, carbon filmR310, R316, R317, R328,47-01-029034Resistor, 18 Ω, 0.25 watt, 5%, carbon filmR353, R364, R370-37347-01-102127Resistor, 6.2 kΩ, 0.25 watt, 5%, carbon filmR311, R329, R347, R36547-01-102097Resistor, 6.2 kΩ, 0.25 watt, 5%, carbon filmR312, R330, R348, R366,47-01-102107Resistor, 22 kΩ, 0.25 watt, 5%, carbon filmR414, R332, R351, 369,47-01-102058Resistor, 150 Ω, 0.25 watt, 5%, carbon filmR413, R414, R41647-01-102272Resistor, 2.2 kΩ, 0.25 watt, 5%, carbon film	The second se	47-06-038468	8 Potentiometer, 18SN 15SK A500KΩ	
R337, R341, R355, R359R302, R306, R320, R324, R342, R356, R36047-03-109437Resistor, 10 kΩ, 0.25 watt, 1%, metal filmR342, R356, R36047-03-029036Resistor, 56.2 kΩ, 0.25 watt, 1%, metal filmR340, R345, R358, R36347-01-029034Resistor, 18 Ω, 0.25 watt, 5%, carbon filmR310, R316, R317, R328, R334, R335, R364, R370-37347-01-102107Resistor, 100 kΩ, 0.25 watt, 5%, carbon filmR311, R329, R347, R36547-01-102097Resistor, 6.2 kΩ, 0.25 watt, 5%, carbon filmR312, R330, R348, R366, R474, R386, R38847-01-102107Resistor, 22 kΩ, 0.25 watt, 5%, carbon filmR314, R332, R350, R36847-01-102058Resistor, 150 Ω, 0.25 watt, 5%, carbon filmR315, R333, R351, 369, R413, R414, R41647-01-102272Resistor, 2.2 kΩ, 0.25 watt, 5%, carbon film		47-03-02903	5 Resistor, 18.2 k Ω , 0.25 watt, 1%, metal film	S
R302, R306, R320, R324, R342, R356, R36047-03-109437Resistor, 10 kΩ, 0.25 watt, 1%, metal filmR342, R356, R36047-03-029036Resistor, 56.2 kΩ, 0.25 watt, 1%, metal filmR340, R345, R358, R36347-01-029034Resistor, 18 Ω, 0.25 watt, 5%, carbon filmR310, R316, R317, R328, R353, R364, R370-37347-01-102127Resistor, 100 kΩ, 0.25 watt, 5%, carbon filmR311, R329, R347, R36547-01-102097Resistor, 6.2 kΩ, 0.25 watt, 5%, carbon filmR312, R330, R348, R366, R474, R386, R38847-01-102107Resistor, 22 kΩ, 0.25 watt, 5%, carbon filmR314, R332, R350, R36847-01-102058Resistor, 150 Ω, 0.25 watt, 5%, carbon filmR315, R333, R351, 369, R413, R414, R41647-01-102272Resistor, 2.2 kΩ, 0.25 watt, 5%, carbon film	R301, R305, R319, R323,	47-01-10209	Resistor, 3.3 kΩ. 0.25 watt, 5%, carbon film	
R342, R356, R36047-03-029036Resistor, 56.2 kΩ, 0.25 watt, 1%, metal filmR340, R345, R358, R36347-01-029034Resistor, 18 Ω, 0.25 watt, 5%, carbon filmR307, R325, R361, R34347-01-029034Resistor, 18 Ω, 0.25 watt, 5%, carbon filmR310, R316, R317, R328,47-01-102127Resistor, 100 kΩ, 0.25 watt, 5%, carbon filmR334, R335, R364, R370-37347-01-102097Resistor, 6.2 kΩ, 0.25 watt, 5%, carbon filmR311, R329, R347, R36547-01-102097Resistor, 6.2 kΩ, 0.25 watt, 5%, carbon filmR312, R330, R348, R366,47-01-102110Resistor, 22 kΩ, 0.25 watt, 5%, carbon filmR474, R386, R38847-01-102058Resistor, 150 Ω, 0.25 watt, 5%, carbon filmR315, R333, R351, 369,47-01-102272Resistor, 2.2 kΩ, 0.25 watt, 5%, carbon filmR413, R414, R41647-01-102272Resistor, 2.2 kΩ, 0.25 watt, 5%, carbon film	R337, R341, R355, R359			
R304, R309, R322, R327, R340, R345, R358, R36347-03-029036Resistor, 56.2 kΩ, 0.25 watt, 1%, metal filmR307, R325, R361, R34347-01-029034Resistor, 18 Ω, 0.25 watt, 5%, carbon filmR310, R316, R317, R328, R334, R335, R364, R370-37347-01-102127Resistor, 100 kΩ, 0.25 watt, 5%, carbon filmR311, R329, R347, R36547-01-102097Resistor, 6.2 kΩ, 0.25 watt, 5%, carbon filmR312, R330, R348, R366, R474, R386, R38847-01-102110Resistor, 22 kΩ, 0.25 watt, 5%, carbon filmR314, R332, R350, R36847-01-102058Resistor, 150 Ω, 0.25 watt, 5%, carbon filmR315, R333, R351, 369, R413, R414, R41647-01-102272Resistor, 2.2 kΩ, 0.25 watt, 5%, carbon film	R302, R306, R320, R324,	47-03-10943	7 Resistor, 10 kΩ, 0.25 watt, 1%, metal film	
R340, R345, R358, R363R307, R325, R361, R343R310, R316, R317, R328,R334, R335, R346, R352,R353, R364, R370-373R311, R329, R347, R365R312, R330, R348, R366,R474, R386, R388R314, R332, R350, R368R315, R333, R351, 369,R413, R414, R416	R342, R356, R360			
R307, R325, R361, R34347-01-029034Resistor, 18 Ω, 0.25 watt, 5%, carbon filmR310, R316, R317, R328, R334, R335, R346, R352, R353, R364, R370-37347-01-102127Resistor, 100 kΩ, 0.25 watt, 5%, carbon filmR311, R329, R347, R36547-01-102097Resistor, 6.2 kΩ, 0.25 watt, 5%, carbon filmR312, R330, R348, R366, R474, R386, R38847-01-102110Resistor, 22 kΩ, 0.25 watt, 5%, carbon filmR314, R332, R350, R36847-01-102058Resistor, 150 Ω, 0.25 watt, 5%, carbon filmR315, R333, R351, 369, R413, R414, R41647-01-102272Resistor, 2.2 kΩ, 0.25 watt, 5%, carbon film	R304, R309, R322, R327,	47-03-02903	6 Resistor, 56.2 k Ω , 0.25 watt, 1%, metal film	
R310, R316, R317, R328, R334, R335, R346, R352, R353, R364, R370-37347-01-102127Resistor, 100 kΩ, 0.25 watt, 5%, carbon filmR311, R329, R347, R365 R312, R330, R348, R366, R474, R386, R38847-01-102097Resistor, $6.2 k\Omega$, $0.25 watt$, 5%, carbon filmR314, R332, R350, R368 R315, R333, R351, 369, R413, R414, R41647-01-102058Resistor, 150 Ω, 0.25 watt, 5%, carbon film	R340, R345, R358, R363			
R334, R335, R346, R352, R353, R364, R370-373R311, R329, R347, R365R312, R330, R348, R366, R474, R386, R388R314, R332, R350, R368R315, R333, R351, 369, R413, R414, R416R413, R414, R416	R307, R325, R361, R343	47-01-02903	4 Resistor, 18 Ω , 0.25 watt, 5%, carbon film	
R353, R364, R370-373R311, R329, R347, R365R312, R330, R348, R366,R474, R386, R388R314, R332, R350, R368R315, R333, R351, 369,R413, R414, R416	R310, R316, R317, R328,	47-01-10212	7 Resistor, 100 k Ω , 0.25 watt, 5%, carbon film	
R311, R329, R347, R36547-01-102097Resistor, 6.2 kΩ, 0.25 watt, 5%, carbon filmR312, R330, R348, R366,47-01-102110Resistor, 22 kΩ, 0.25 watt, 5%, carbon filmR474, R386, R38847-01-102110Resistor, 150 Ω, 0.25 watt, 5%, carbon filmR314, R332, R350, R36847-01-102058Resistor, 150 Ω, 0.25 watt, 5%, carbon filmR315, R333, R351, 369,47-01-102272Resistor, 2.2 kΩ, 0.25 watt, 5%, carbon filmR413, R414, R41647-01-102272Resistor, 2.2 kΩ, 0.25 watt, 5%, carbon film	R334, R335, R346, R352,			
R312, R330, R348, R366, R474, R386, R38847-01-102110Resistor, 22 k Ω , 0.25 watt, 5%, carbon filmR314, R332, R350, R36847-01-102058Resistor, 150 Ω , 0.25 watt, 5%, carbon filmR315, R333, R351, 369, R413, R414, R41647-01-102272Resistor, 2.2 k Ω , 0.25 watt, 5%, carbon film	R353, R364, R370-373			
R474, R386, R388 R314, R332, R350, R368 R315, R333, R351, 369, R474, R416	R311, R329, R347, R365	47-01-10209	7 Resistor, 6.2 kΩ, 0.25 watt, 5%, carbon film	
R314, R332, R350, R368 47-01-102058 Resistor, 150 Ω, 0.25 watt, 5%, carbon film R315, R333, R351, 369, 47-01-102272 Resistor, 2.2 kΩ, 0.25 watt, 5%, carbon film R413, R414, R416 47-01-102272 Resistor, 2.2 kΩ, 0.25 watt, 5%, carbon film		47-01-10211	0 Resistor, 22 k Ω , 0.25 watt, 5%, carbon film	
R315, R333, R351, 369, 47-01-102272 Resistor, 2.2 kΩ, 0.25 watt, 5%, carbon film R413, R414, R416 47-01-102272 Resistor, 2.2 kΩ, 0.25 watt, 5%, carbon film				
R413, R414, R416				
		47-01-10227	2 Resistor, 2.2 k Ω , 0.25 watt, 5%, carbon film	
R338, R384, R400, R401 47-01-122803 Resistor, 10 Ω, 0.25 watt, 1%, metal film				
	R338, R384, R400, R401	47-01-12280	3 Resistor, 10 Ω, 0.25 watt, 1%, metal film	

Electro-Voice • a Mark IV Company

Reference	Ordering		
Designator	Number Name	e and Description	
R375, R423, R426, R429	47-01-102046 F	Resistor, 47 Ω , 0.25 watt, 5%, carbon film	
R376, R398, R407, R410, R419, R427	47-01-102102 F	Resistor, 10 k Ω , 0.25 watt, 5%, carbon film	
R378, R391, R396, R397	47-01-102078 F	Resistor, 1 k Ω , 0.25 watt, 5%, carbon film	
R380	47-01-102063 F	Resistor, 240 Ω , 0.25 watt, 5%, carbon film	
R381	47-01-102098 F	Resistor, 6.8 kΩ, 0.25 watt, 5%, carbon film	
R382, R385, R389, R421		Resistor, 15 k Ω , 0.25 watt, 5%, carbon film	
R387	47-01-102886 F	Resistor, 390 k Ω , 0.25 watt, 5%, carbon film \cdot	
R392, R393, R408, R411 R418	47-01-109204 I	Resistor, 470 k Ω , 0.25 watt, 5%, carbon film	
R399, R402	47-01-102113 H	Resistor, 30 kΩ, 0.25 watt, 5%, carbon film	
R403, R404		Resistor, 43 Ω , 0.5 watt, 5%, metal film	2
R405, R409		Resistor, 47 kΩ, 0.25 watt, 5%, carbon film -	
R406		Resistor, 9.1 k Ω , 0.25 watt, 5% carbon film	47 TU-1
R415,		Resistor, 1.8 k Ω , 0.25 watt, 5%, carbon film	1
R420		Resistor, 1 M Ω , 0.25 watt, 5%, carbon film	
R424, R425		Resistor, 20 k Ω , 0.25 watt, 5%, carbon film	
R431		Resistor, 47 k Ω . 0.25 watt, 5%, carbon film	12
R422, R428		Resistor, 10 Ω , 0.25 watt, 5%, carbon film	*
R430		Resistor, 5.1 kΩ. 0.25 watt, 5%, carbon film	
C300, C304, C312, C316,		Capacitor, 47 µF, 25 Vdc, electrolytic (B.P.)	24
C324, C328, C336, C350,			
C355, C357, C363, C366			
C301, C305, C313, C317,	15-02-037911 (Capacitor, 220 pF, 50 volt, 5%, ceramic	
C325, C329, C337, C341,			
C380		24	
C303, C308, C315, C320,	15-02-029032	Capacitor, 15 pF, 50 volt, 5%, ceramic	
C327, C332, C339, C344			1 E
C306, C318, C380, C342		Capacitor, 470 µF, 6.3 Vdc, electrolytic	
C307, C319, C331, C343, C365	15-02-026625	Capacitor, 5 pF, 50 volt, 5%, ceramic	
C309, C321, C333, C345,	15-01-028379	Capacitor, 10 μ F, 50 Vdc, electrolytic	
C348, C382 C310, C322, C334, C346	15 00 000/00		
C311, C323, C335, C347,		Capacitor, 0.33 µF, 250 volt, polypropylene	
C368, C369, C377, C381,	10-02-020030	Capacitor, 0.01 µF, 50 volt 5%, ceramic	3.
C386, C397		Ē	
C349, C354, C362	15-02-026830	Canacitor 30 nF 50 welt 50 anonis	
C351		Capacitor, 39 pF, 50 volt, 5%, ceramic	
C352, C356, C375, C378		Capacitor, 1 µF, 50 Vdc, electrolytic	1
C353		Capacitor, 100 µF, 35 Vdc, electrolytic Capacitor, 20 pF, 50 volt, 5%, ceramic	
C358, C376, C379		Capacitor, 20 pr, 50 volt, 5%, ceramic Capacitor, 1000 µF, 35 Vdc, electrolytic	
C359		Capacitor, 1000 pF, 50 volt, 5%, ceramic	
C360, C361		Capacitor, 0.001 μ F, 50 volt, 5%, ceramic Capacitor, 0.001 μ F, 50 volt, 5%, mylar	
C367		Capacitor, 330 µF, 35 Vdc, electrolytic	×
C370		Capacitor, 0.1 µF, 50 volt, 5%, mylar	
C371			
C372, C373		Capacitor, 1 µF, 35 volt, tantalum	
C383		Capacitor, 0.022 µF, 250 volt, polypropylene	
L300-307		Capacitor, 150 pF, 50 volt, 5%, ceramic	
1000-007	56-01-038476	Ferrite, RI-3.5-7-1.2, core	

1

Reference	Ordering		
Designator	Number	Name and Description .	· .
L308	56-01-038475	Inductor, BL03B010, bead	
L309, L310	56-010038474	Inductor, TP0206-180K, coil	
	L	ED P.C.B.	÷.,
IC7	17-01-124463	IC, LM339N	
IC8	17-01-028723		. 2
Q200, Q202		Transistor, 2N-4403, PNP	
Q201	48-03-028816		2 ×
D200, D201, D205, D208,	48-01-122601		2
D209	•	• • • •	-
ZD206	48-01-029026		
ZD207	48-01-028045		. Lawrence
LD204	39-01-038478		
LD202/203		L.E.D., AR-RS102, bar	
LD210	39-01-038479	L.E.D., KLG-124 3DIA, green	
VR223	47-04-038481	Semi Fixed Resistor, CER92 B50K	
R200		Resistor, 15 kΩ, 0.25 watt, 5%, carbon film	
R201, R211	47-01-102272	Resistor, 2.2 kΩ, 0.25 watt, 5%, carbon film	1
R202, R209, R212, R213,	47-01-100479	Resistor, 680 k Ω , 0.25 watt, 5%, carbon film	
R230	47 01 100110	Bariston 47 1-0 0.95 meth 5% sank on 61m	
R203, R210	47-01-102119		
R204	47-01-027462		•
R205	47-01-102104		
R206, R207, R208, R216	47-01-104541		
R215, R237	47-01-107043		
R217, R219	47-01-102042		
R218, R229, R234	47-01-102078		
R220	47-01-102102		200
R221	47-01-108491		
R222, 231	47-01-102127		
R224	47-01-102094		
R225	47-01-102054		-
R226 R227		Resistor, 3 kΩ, 0.25 watt, 5%, carbon film	- *
R228	47-01-102114	Resistor, 33 k Ω , 0.25 watt, 5%, carbon film	
R232	47-01-109204		
R233	47-01-102109		
R235	47-01-102125		1
R236	47-01-102068		
	47-01-028708		· ·
C200, C206, C211, C212	15-02-026630		he:
C201	15-01-028690	Capacitor, 47 µF, 35 Vdc, electrolytic) ((at 1 (
C202, C203, C208, C210	15-01-028379		
C204	15-02-026625	* · · · · · · · · · · · · · · · · · · ·	
C205, C209	15-12-028006	1	
C207	15-01-028924		
L200	56-01-038482	Inductor, TPF0410-271K, coil	

N.

()

Reference	Ordering	
Designator	Number Nar	ne and Description
	In/	Out P.C.B.
J107	21-01-038495	XLR Jack, E3MRAM3
J100-103	21-01-038496	XLR Jack, E3FRAM3
J104-106	21-01-038497	Phone Jack, H10380N10S, ¼ inch
SW100-105	51-02-038466	Push Switch, JPB-21S-A
D100	48-01-037276	Diode, 1N4002, rectifier
L100-102, L104, L106, L108, L110, L112, L114	56-01-038475	Inductor, BL03B010, Bead
R134	47-03-123111	Resistor, 1.2 k Ω , 2 watt, 5%, metal oxide
R138	47-01-102208	Resistor, 4.7 kΩ, 0.5 watt, 5%, metal film
R100, R104, R108, R112,	47-03-028238	Resistor, 15 k Ω , 0.25 watt, 1%, metal, film
R116, R120, R124, R128		
R101, R105, R109, R113, R117, R121, R125, R129	47-01-102127	Resistor, 100 k Ω , 0.25 watt, 5%, carbon film
R102, R106, R110, R114, R118, R122, R126, R130	47-03-028694	Resistor, 150 Ω , 0.25 watt, 1%, metal film
R103, R107, R111, R115, R119, R123, R127, R131	47-03-028695	Resistor, 5.11 k Ω , 0.25 watt, 1%, metal film
R132	47-01-102078	Resistor, 1 kΩ, 0.25 watt, 5%, carbon film
R133	47-01-102272	Resistor, 2.2 kΩ, 0.25 watt, 5%, carbon film
R135	47-01-102088	Resistor, 2.7 kΩ, 0.25 watt, 5%, carbon film
R136	47-01-102030	Resistor, 10 Ω, 0.25 watt, 5%, carbon film
R137	47-01-102119	Resistor, 47 k Ω , 0.25 watt, 5%, carbon film
C100, C104, C108, C112, C116, C120, C124, C128	15-02-027454	Capacitor, 68 pF, 50 volt, 5%, ceramic
C101, C105, C109, C113, C117, C121, C125, C129,	15-02-038498	Capacitor, 0.0015 $\mu F,$ 50 volt, 5%, ceramic
C135, C136 C102, C106, C110, C114,	15-01-037222	Capacitor, 10 µF, 50 Vdc, electrolytic
C118, C122, C126, C130, C137		
C103, C107, C111, C115, C119, C123, C127, C131	15-01-028918	Capacitor, 0.0047 µF, 50 volt, 5%, ceramic
C132	15-01-027317	Capacitor, 1000 µF, 35 Vdc, electrolytic
C133		Capacitor, 0.001 µF, 50 volt, 5%, ceramic
C134	15-01-038472	
L101, L103, L105, L107, L109, L111, L113, L115,	56-01-038482	
T100	15560A	Output Transformer, 600 Ω to 600 Ω
		Chassis
C1, C2	15-01-038499	Capacitor, 0.01 µF, 50 volt
C3	15-01-038500	
	51-02-038501	
	56-08-038502	
	21-02-038504	
	51-04-038505	
	51-04-038506	

Electro-Voice • a Mark IV Company