AMIS120XL Series Service Manual

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AMIS120XL
Circuit Description

The ACM120XL is a 120 watt mixer amplifier designed for commercial installations. It features 8 microphone/line input channels and can be used for either low impedance (4 or 8 ohm) or [70v/100v] (240V version)/[25v/70v] (115V version) line speaker systems. A host of unique features including multiple levels of muting, a VOX relay output, 24 VDC operation and VCA master level control make the AMIS120XL a very flexible amplifier. The unit can be mounted in a standard 19" equipment rack (rack ears supplied) or it can be located on a shelf or table. [The 115V version also has a transformer balanced, 600 ohm telephone input] (115V version).

Power Switch

This switch controls the switching of AC power to the amplifier. A blue 'On' LED will indicate whether the amplifier is switched on or off. This switch will not switch DC power on or off in DC operation. In DC operation mode, the amplifier is always on and the blue power LED will always be illuminated.

Signal LED

The green "Signal" LED indicates that the AMIS120XL is passing audio. It is connected to the output of the power amp/primary side output transformer and begins to eliminate dimly at approximately -20dB (ref 100V).

AC Power Inlet

The operating voltage is [230/240 VAC @ 50 Hz] (240V version)/[115 VAC @ 60Hz] (115V version). The 3 pin IEC power inlet is located on the bottom left of the rear panel and accepts a standard mains power lead fitted with an IEC connector. Before plugging in a power lead, please check the rear panel of the amplifier to ensure that the voltage switch is set correctly for your part of the world.

The inlet is equipped with an in-built AC fuse holder fitted with a [3.15 amp] (240V version)/[4 amp] (115V version) fuse plus a spare within the holder. Power consumption is 250 VA.

24 Volt DC Power Inlet

The AMIS250 features optional 24VDC power to run off a battery supply if required. This is connected via the rear terminal strip. The front panel Power Switch will not switch DC power 'on' or 'off' in DC operation. In this mode the amplifier is always 'on'.

[230V/240V Slide Switch] (240V version)

The operating voltage of the amplifier is user selectable between 230V and 240V via a slide switch located on the right of the AC inlet. This switch should be set to match the AC voltage of your country. The mains transformer is wound with a 230V winding plus a 10V winding internally connected.

Power Amp

The power amp is a push pull single supply amplifier driving a centre tapped transformer. The amplifier has an overall gain of approximately x10 and the transformer has a turns ratio of approximately [x7] (240V version)/[x5] (115V version). The sensitivity of the amp is approximately 2.7V.

A particularly good aspect of this amplifier is the current limiting circuit. The sensing circuit is a standard rail load line limiting circuit but it is the drive circuit that is important. As transistors V12 & V14 (BC640) turn on transistor V11 (BC639), it pulls bias current away from the amp through diodes D1 & D4 (BAV21) and pulls drive away from the op amp IC1 (LM1458) through the diode/resistor pair D2/R12 (BAV21/2k2) & D3/R23. Individually each topology acts to limit the current in the amp but it is the combination of the two and the fine tuning of there interaction that produces the characteristic soft limiting without the harsh crossover distortion. It is not until the amp is in hard clip does the amp produce the high freq crossover

distortion. This makes for nice sounding current limit that allows for soft distorted peaks to get through but limits continuous excessive current while maintaining thermal stability.

Speaker Output Terminal Strip

(240V version)

The screw terminals on the left hand side of the strip allow access to the direct speaker outputs of the amplifier. Reading from left to right the terminals are:

COM	Common or "-" for low impedance speaker loads (4 ohms)
4	Positive "+" for 4 ohm speaker loads (use with common)
8	Positive "+" for 8 ohm speaker loads (use with common)
COM	Common or "-" for 70v or100v speaker loads (maximum load of 80 ohms at 100v)
70	Positive "+" for 70v line speaker loads (use with common)
100	Positive "+" for 100v line speaker loads (use with common)

Please ensure that the correct "Common" is used. Low impedance and 70/100v loads can be used simultaneously but please pay careful attention to the overall speaker load.
Note: The minimum impedance (or maximum load) at 100 volt line should be no less than 80 Ohms.

(115V version)

The screw terminals on the left hand side of the strip allow access to the direct speaker outputs of the amplifier. Reading from left to right the terminals are:

COM	Common or "-" for low impedance speaker loads (4 ohms).
4	Positive "+" for 4 ohm speaker loads (use with common)
8	Positive "+" for 8 ohm speaker loads (use with common)
COM	Common or "-" for 25v or 70v speaker loads (maximum load of 40 ohms at 70v)
25	Positive "+" for 25v line speaker loads (use with common)
70	Positive "+" for 70v line speaker loads (use with common)

Please ensure that the correct "Common" is used. Low impedance and 25/70v loads can be used simultaneously but please pay careful attention to the overall speaker load.
Note: The minimum impedance (or maximum load) at 70 volt line should be no less than 40.

Terminal Strip

The remaining terminals read as:

[600 Ohm Telephone Input] (115V version)

Vox Relay Out
VCA
24 volt DC
Tone Generator Common (use with one of the 4 tones listed below)
Pre-Announce Chime
Alert Tone
Bell Chime
Evacuation Tone

Line Output

The balanced XLR line level output provides a maximum of 700mV to allow for the connection of up to 6 power amplifiers. Pin connections are: pin 1-earth; pin 2-signal (hot +); pin 3-signal (cold -).

The output is electronically balanced with an inverting op-amp and buffered with voltage follower op amps. Neither hot nor cold output should be grounded when connecting as unbalanced.

Tape Output

Dual RCA output connectors provide a line level output with a maximum of 350mV into 10k Ohms. This output is sourced before the master gain control so the tape output level is not influenced by the operation of the master gain control.

Phantom Power

The 15 volts DC phantom power to all microphone inputs XLR's is individually switchable by Dip switch 3. Do not plug an unbalanced microphone in any amplifier or mixer when phantom power is switched on. The phantom voltage is connected through 4k7 1/4W resistors. The maximum current draw available per microphone is approximately 3mA.

Microphone Inputs

All four inputs are dual mic/line with microphone inputs being via a 3 pin XLR connector per channel. The mic input sensitivity is 1mV @ 200 ohms. Pin connections are: pin 1-earth; pin 2-signal (hot +); pin 3-signal (cold -). Phantom power of +15 volts is switchable on all microphone inputs. Reading from left to right across the rear panel, the connections are for inputs 8, 7, 6, 5 on the bottom and 4, 3, 2, & 1 on the top.

Line Inputs

Line inputs 1, 2, 3, 4, 5, 6, 7, & 8 have an input sensitivity of 180mV @ 100K ohms with switchable attentuation. Reading from left to right across the rear panel, the connections are for inputs 8, 7, 6, 5 on the bottom and 4, 3, 2, & 1 on the top.

Dip Switches

Dip Switch 1 off, 2 off	-	180mV at 100K ohm
Dip Switch 1on, 2 off	-	9dB pad (cut)
Dip Switch 1off, 2 on	-	12dB pad (cut)
Dip Switch 1on, 2 on	-	15dB pad (cut)
Dip Switch 3 on	-	Phantom Power On

[600 Ohm Telephone Input] (115V version)

The 600 ohm transformer balanced Telephone Input is summed with input 2 through 100k ohms.

The input sensitivity is 150mV (driving the amp to full power)

Insert Point

The Insert Point is located electronically after the master volume pot and before the balancing circuit for the power amp and line output.

The Insert Point is a 3 conductor (Tip, Ring, Sleeve) phone socket which accepts a standard stereo 6.35mm (1/4") jack. The connections are:

Tip	Amplifier in.
Ring	Mix Output.
Sleeve	Ground

The switched contacts are used to break the signal internally.

When an external processor is used via the insert point, it only affects the power amplifier section and line output of the AMIS120XL. The tape output remains unprocessed.

VOX Relay Output

The terminal strip to the immediate right of the AC inlet features a relay output. This relay is deactivated when signal becomes present at any of the priority inputs. This would normally be inputs 1, 2 or 3, however these channels can be removed from the priority bus via internal links. The unit is shipped from the factory with inputs 1, 2 and 3 having priority. The emergency tones also deactivate the relay. The relay can also be removed from the priority bus allowing muting to occur without operation of the relay.

The relay outputs are C (Common), NO (Normally Open) and NC (Normally Closed). The NO or NC selection provides the installer with the option of the relay either opening or closing a contact. This feature is normally used in conjunction with relay override attenuators (volume controls). In this application, the relay output could trigger an accessory power supply which in turn bypasses the remote attenuators. The result is that priority inputs will always be heard irrespective of the attenuator setting. The relay contacts are 3 amps at 125VAC/30VDC.

The relay outputs are marked in the fail safe position, i.e. power off. When power is applied and no signal is present the relay energizes through transistor V3 (BC546). This transistor is turned on by IC7A (LM1458 or equivalent). This output is normally high. Switch on and switch off times are controlled by the time constants of the RC network of C19 and R33. The switch off time is determined by the current sinking capabilities of the LM358 through diode D4 (BAV21 or equivalent). This time can be considered instant. The on time is determined by the charge time of C19 (22uF) through R33 (22k). This is approximately 2 seconds. It must be remember that the relay circuit is designed to be fail safe so that when power is on the relay is on and therefore the relay must turn off quickly (when priority is on) and on slowly (when priority is off). This is to avoid chatter of the relay.

VCA Control

An external pot (500K) can be connected to the AMIS120XL for remote control of the master level. The external pot is governed by the master level of the amplifier allowing the installer to set the volume, then lock the amplifier in a rack, leaving the user with just a master volume control that cannot go beyond the level set on the master (front panel) control. Connection is via a 2 wire terminal strip on the rear panel of the amplifier. Shorting this input will mute the amp.

The VCA IC has a Voltage/Gain ratio of approximately -3mV/dB. That is a voltage difference of approximately 300mV below the reference voltage (pin3, ~7.5V) will provide full mute (-80dB). The need to have the remote pot on two wire connection means that there is a small amount of attenuation (approx 1dB) when the pot is connected. For the best audio control a log pot should be used. The control circuitry is a DC attenuator and an inverter. When a pot is connected, the current through R16 (10k) and the pot resistance generated from the 1/2Vcc bias voltage flows through R21 (330R). This generates a voltage increase on the output if op amp IC16B (LM1458 or equivalent) above the reference voltage (1/2Vcc). The second op amp IC16A (LM1458 or equivalent) inverts this voltage to a voltage difference below the reference voltage. Thus if the pot is turned to S/C the voltage difference below the reference voltage is:

$$7.5(V) / 10(kohm) * 330(ohm) = 248(mV) = 248(mV) / -3(mV/dB) = -82(dB)$$

From this you can see that when a 500k pot is attached the initial attenuation is:

$$7.5(V) / 510(kohm) * 330(ohm) = 4.85(mV) = 4.85(mV) / -3(mV/dB) = -1.62(dB)$$

These calculations are only approximate and are used to show operation of the circuit.

Tone Generators

Four separate tones are available from the in-built tone generator board. All four tones can be activated individually via a contact closure connected to the screw terminals on the rear of the amplifier. When any tone is activated, all inputs (except for inputs 1, 2 and 3) will automatically mute. The level of the tone generator is controlled by the pot labeled R63 (located behind the Bass adjustment pot). This pot adjusts the level for all 4 tones.

Tones available on the AMIS250 include:

- Evacuation Tone
- Alert Tone
- Bell Tone
- Pre-Announce Chime

Theses inputs are pulled up to 5VDC internally through 1k resistors.

The tones are generated through a combination of digital frequency modulation and analogue amplitude modulation. The output of the microcontroller IC6 (PIC16C54A) on pin 17 is a 0-5V square wave of varying frequency (depending on the tone selected). This signal is amplitude modulated using a VCA IC18 (M5222P). The envelope is controlled by the charging and discharging of the electrolytic capacitor C22 with the sink and sourcing of current on the microcontroller outputs pins 1, 2 & 13.

VOX Muting

The AMIS120XL includes a priority/muting system which is installer adjustable. When shipped, the AMIS120XL has three priority inputs. From the factory, Input 1 has overall priority and mutes inputs 2-8 when signal is present. Input 2 has secondary priority and mutes inputs 3-8 when signal is present. Input 3 has a third level of priority and mutes inputs 4-8 when signal is present. Inputs 4-8 have no priority and are mixed. All muting in the AMIS120XL is activated by signal (VOX) whether it be on the XLR or RCA inputs.

A number of muting options are available and can be altered via a series of internal links located on the front mixer board behind inputs 1and 2.

Muting for any of the first three inputs can be disabled. The jumpers are located on the front mixer PCB behind input 1 and 2's level controls.

To disable muting from input 1, move jumper JP1 towards the back of the chassis.
To disable muting from input 2, move jumper JP2 towards the back of the chassis.
To disable muting from input 3, move jumper JP3 towards the back of the chassis.

Another feature of the muting circuit of the AMIS120XL is the ability to have inputs 1 and 2 on the same priority level. In this mode, both inputs can be used at the same time and both will mute all remaining channels. To set inputs 1 and 2 to the same priority level, move jumper JP4 towards the front of the chassis and remove and discard jumper J6. Please note that both jumpers (J4 moved and J6 removed) need to be adjusted for this feature to work.

Channels 4, 5, 6, 7 & 8 are summed through IC7B (LM1458 or equivalent) to the VCA IC13 (M5222P) which does the muting. The VCA is held on (i.e. no attenuation) by R90 (33k) pulled to the reference voltage and the reverse biasing of diodes D14 (BAV21 or equivalent), D15 and D16. This is to eliminate any attenuation by the op amp IC1B (LM1458 or equivalent) and its ½ supply which may be different to the internal reference voltage of the VCA. Channel 2 signal passes through IC2B and VCA IC10. Channel 3 passes through IC3B and VCA IC5. These operate in a similar manner.
The control pin of the VCAs are pulled down by either op amp IC1A, IC2A or IC3A. These op amp runs at very high gain to activate on even very small signal. The jumper shorts out the feedback resistor thus removing the sensitivity. The attack of the muting circuit for channel 1 is controlled by the charging of C4

(47uF) through R69 (100k) and the release by the discharge if C4 through R92 (2k2). The other channels operate in a similar manner. Note that VCA will mute at 250mV (-80dB) below the reference voltage so the muting will occur only over the range of approximately (depends on VCA production batch) 7.2V to 7.5V. The charging of the capacitor occurs from approximately 1V to 8.1V.

VCA M5222P pin out
1 – Output1
2 – Input1
3 – Reference voltage (½ Vcc)
4 – Gnd
5 – Control
6 – Input2
7 – Output2

Note: The M5222P is a current in, current out device. Voltage conversion is done through resistors. The maximum input current is 50uA rms. Current gain is 0.5.

Fuse Sizes

(240V version)
Mains: 230 VAC 3.15 Amperes Slow Blow
DC: 10 Amperes Slow Blow

(115V version)
Mains: 230 VAC 4 Amperes Slow Blow
DC: 10 Amperes Slow Blow

TEST PROCEDURE MODEL - AMIS 120

1. Perform physical inspection (Visual Inspection stage).

1.1 Check:

- Earth connection for good contact (XLR GND to AC earth),
- All wiring points for good contacts (soldering and crimping)

PRETESTING

PRE TESTING SETUP REQUIREMENT

a Oscilloscope.
b Variac.
c Multimeter.
d Load [4Ω]
e Signal generator.

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1.1. Connect amplifier to:

- Variac (0Vac),
- Signal generator (mic1, no signal),
- Resistive load (4Ω on 4Ω terminal).

1.2. Reset controls:

- Volume controls to minimum,
- Bass/treble control to center,
- Phantom power switch to off,
- R33 & R34 (Bias adjustment pots) on the amplifier PCB fully anticlockwise.

2. Power up :

3.1 Turn on power switch and adjust voltage to 115VAC/230VAC . Watch current meter for excess current draw. Current should not exceed 0.5A.
3.2 Check DC power supply at fuses. Should be approx. +34V (±1.5V)
3.4 Check DC voltage on mixer board. Should be approx. 15V(±0.5V)
3.5 Check 1/2 VCC on mixer board should be 8. VDC (± 0.5)
3.6 Measure DC voltages on IC of mixer & input PCB's, p8 15V (±5%), p4 0V (±100mV), pl 8V (± 5%) but on power it should be P8 18V (± 5%) other remain same.

3.7 Put a multimeter across R30 the meter should read 1.0mV (± 5%) then slowly adjust the preset R33 so that you get 3mV additional to the base reading.
3.8 Repeat 3.7 for R39 adjusting preset R34.
3.9 Un do step 3.1

3. AC Check :

4.1 Set signal generator to 1mV. Turn up Mic1 volume control to full. Watch for irregularities with output.
4.2 Set output to 35V using master volume control. Check voltage across Emitter resistors (on power devices)
4.3 Voltage should be between 150 – 200mV. Min and max values should be between 33% of the average value (i.e. min/max=0.5).
4.4 Turn master up to full. Check sensitivity of input. – MIC 1mV (± 10%) 22V in 4Ω load.

4.5 Check the output of all channels.
4.6 Measure 25V line 70V LINE, 8ohm (32Vac) tol.5%.
4.7 Check tape outputs (L and R) 250mV (±50mV) (Measure on RCA socket).
4.8 Check line outputs. Approx. (2.7V ± 1.5V).

5 Function Checks :

5.1 Check that you have the header link's on to
   a) Vox muting enabled (Right Side).
   b) VCA Con. Disabled (Back Side).
   c) Vox relay enabled (Right Side).

5.2 Check speaker selector outputs, both individual and All Call (Check for the reverse action of the switches).

5.3 Keep signal in CH1 insert 'INSERT-PLUG' having external signal of different frequency the out put should cut off and switch over to applied insert signal, check signal on inset plugs ring terminal with respective ground should be 300mV. Remove insert plug .

5.4 Keep signal in CH1 short V/C terminals, out put should mute .

5.5 Check Phantom Switch for on/off operation. Measure Phantom voltage on an XLR inputs (should be 14.5VDC)
(Reset the phantom switch) (Phantom power on each XLR can be checked with the LED jig).

5.6 Switch off the set connect battery (24V) check for rated out put power (out put signal will clip up to 2%)

FINAL TESTING

Requirements for final testing :

a. Load 40Ω.
b. Multimeter
c. Oscilloscope
d. Microphone
e. Variac

6 Check sensitivity of all channel. (Optional)

6.1 Mic input (CH1-CH4) = 1mV out put =70V (± 5V)
6.2 AUX input (CH1-CH3)= 150mV out put =70V (± 5V)
6.3 AUX input (CH4) =150mV out put = 32.5V (± 1.5V)
6.4 Check the Power bandwidth – (68Hz ±5Hz – 15KHz ± 2KHz).

6.5 Check Bass control @ 100HZ = ±12dB (TOL ±1dB) and treble @ 10kHz = ±10dB (tol.±1dB)
6.6 Check that input signal and output signal are in same phase by comparing CH 1 AUX Input and all other Outputs (25V, 70v, 4Ω , 8Ω)

7 Priority check : (optional)

7.1 Plug microphone into input 1 and oscillator to input 3. Check for muting of channel 3.
7.2 Plug microphone into input 2. Check for muting of channel 3.
7.3 Check 'mute disable' function. Insert Disable/Enable link (Factory set – ENABLE).

8 Check 4 tone switched inputs. Set output level of tones to approx. 14Vrms (± 2V) using evac tone. Check Page chime button for operation. Make sure channel 3 & 4 mutes with any of the tone's.

9 Check telephone input sensitivity for CH2 (US models only)
Tel input =150 mV out put =70V.

10 Increase the signal such that you get 76V & you can see the overload protection coming on with a kink

on the sine wave if it is there then reduce the voltage to 35V out and then short output. Release the shorting and check for the output.

11 Remove input signal and check for Hum & Noise (<20mVrms).

12 Reset volumes to minimum.

13 Disconnect from test bench and inspect for scratches on external paint.

14 Check the thermal cut off. It should be between (95 – 105 C). Allowable up to 115C. (If the sets show thermal trip above 115 then charge (R49) to 3K9 or so).

14a Factory setting of links :

a. VOX Muting : Enable
b. VCA Con : Disable
c. VOX Relay : Enable

LISTENING TEST

Requirements for Listening Test Setup :

a. A CD Player
b. Speaker
c. Microphone

15 Connect amplifier to the signal source and the speaker

15.1 Set all tone pots at center position, switch on the amplifier and check for any turn on thump.

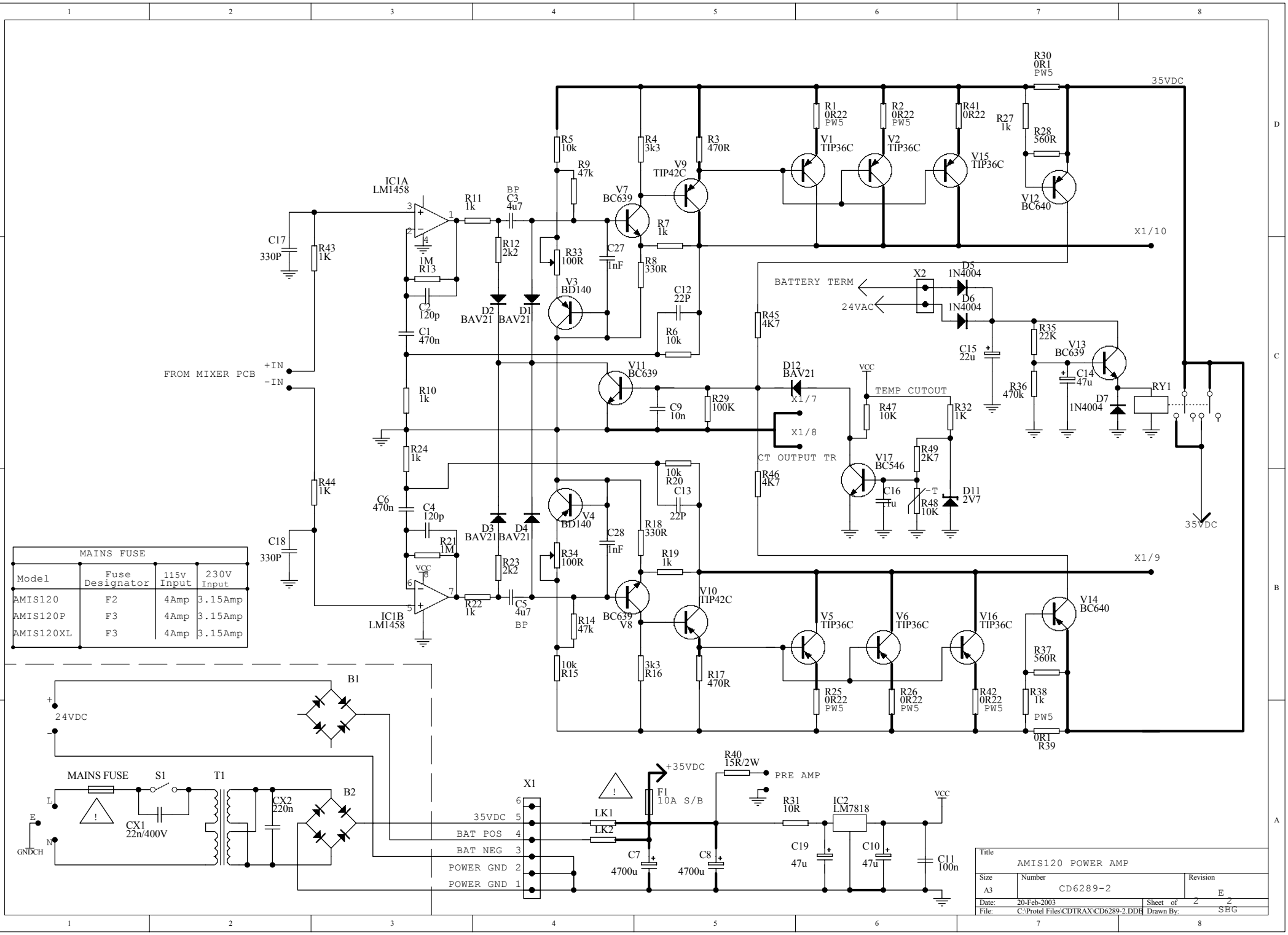
15.2 Connect the CD Player to an Auxiliary input (channel 4)

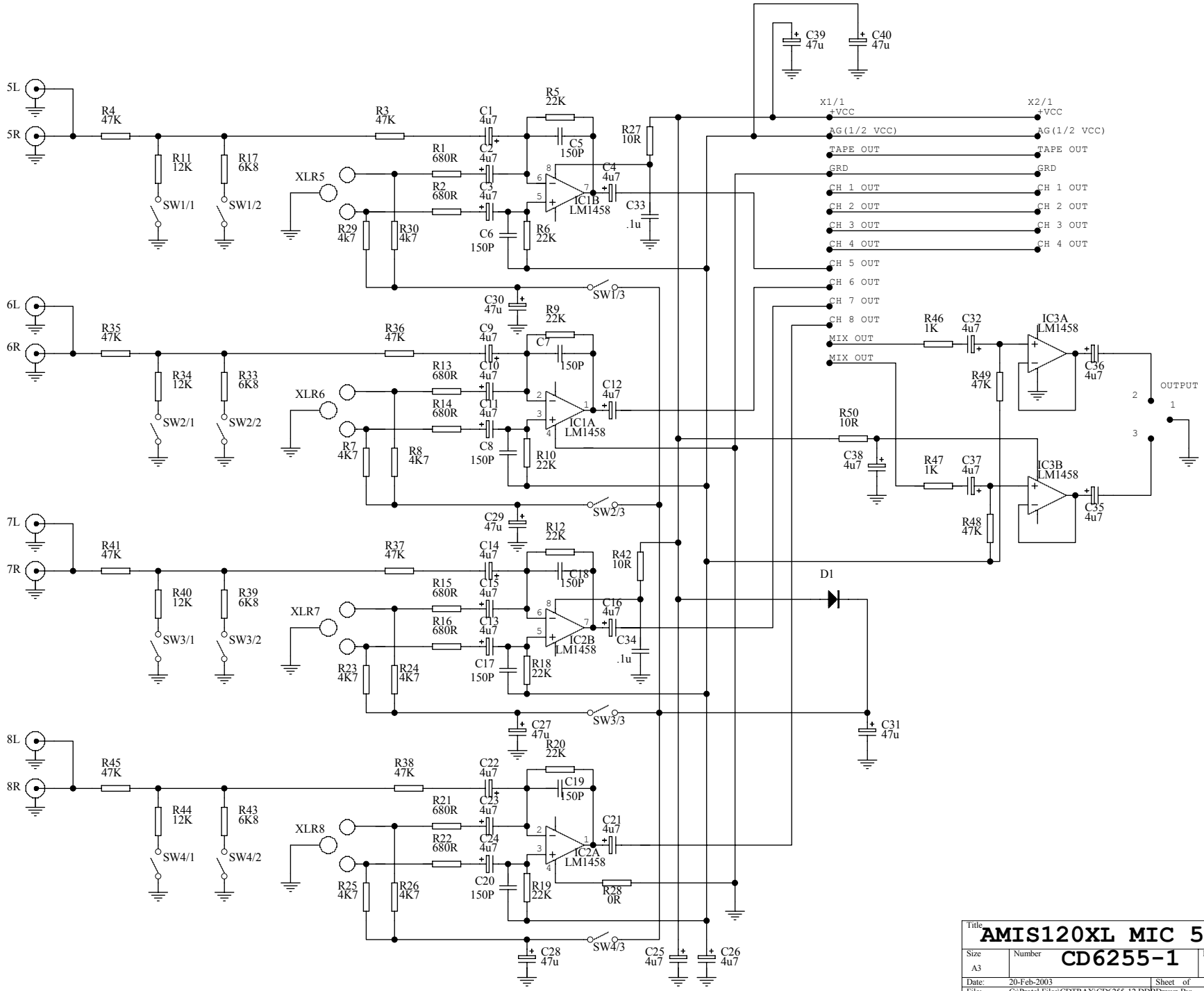
15.3 Set all Channel Pots at the minimum (fully counter clockwise) position.

15.4 Increase the level on the channel that has the program source connected and listen for audible problems.

15.5 Check Priority function: CH 1 over CH 3 & 4, CH 2 over CH 3 & 4 by connecting a Microphone to Channel 1. An audio signal presented to the microphone should cause the CD player to mute

Check generated tones. With a jump wire, short one of the tone connections to the tone common connector (rear panel) and check to ensure that the tone selected activates


35VDC
X1/10
X1/9
X1/7
X1/8
R30 0R1 PW5
R1 0R22 PW5
R2 0R22 PW5
R41 0R22
R27 1k
R28 560R
V1 TIP36C
V2 TIP36C
V15 TIP36C
V12 BC640
R5 10k
R4 3k3
R3 470R
R9 47k
V9 TIP42C
V7 BC639
IC1A LM1458
R11 1k
C3 4u7 BP
R7 1k
C17 330P
R43 1K
R12 2k2
R33 100R
C27 1nF
R8 330R
1M R13
C2 120p
V3 BD140
D2 BAV21
D1 BAV21
C12 22P
C1 470n
R6 10k
BATTERY TERM
24VAC
X2
D5 1N4004
D6 1N4004
R45 4K7
C15 22u
R35 22K
V13 BC639
R36 470k
C14 47u
D7 1N4004
RY1
FROM MIXER PCB
+IN
-IN
V11 BC639
C9 10n
R29 100K
D12 BAV21
VCC
TEMP CUTOUT
R47 10K
R32 1K
R10 1k
R24 1k
CT OUTPUT TR
V17 BC546
R49 2K7
R46 4K7
C16 1u
-T
R48 10K
D11 2V7
R44 1K
C6 470n
C4 120p
10k R20
C13 22P
D3 BAV21
D4 BAV21
V4 BD140
C28 1nF
R18 330R
C18 330P
R21 1M
R34 100R
R23 2k2
R19 1k
VCC
IC1B LM1458
R22 1k
C5 4u7 BP
V10 TIP42C
BC639 V8
R14 47k
V5 TIP36C
V6 TIP36C
V16 TIP36C
V14 BC640
R37 560R
10k R15
3k3 R16
R17 470R
R25 0R22 PW5
R26 0R22 PW5
R42 0R22 PW5
R38 1k PW5
0R1 R39
MAINS FUSE
Model | Fuse Designator | 115V Input | 230V Input
AMIS120 | F2 | 4Amp | 3.15Amp
AMIS120P | F3 | 4Amp | 3.15Amp
AMIS120XL | F3 | 4Amp | 3.15Amp
B1
24VDC
MAINS FUSE
S1
T1
B2
L
E
N
GNDCH
CX1 22n/400V
CX2 220n
X1
35VDC 5
BAT POS 4
BAT NEG 3
POWER GND 2
POWER GND 1
+35VDC
F1 10A S/B
LK1
LK2
R40 15R/2W
PRE AMP
R31 10R
IC2 LM7818
VCC
C7 4700u
C8 4700u
C19 47u
C10 47u
C11 100n
Title
AMIS120 POWER AMP
Size A3
Number CD6289-2
Revision E
Date: 20-Feb-2003
Sheet of 2 2
File: C:\Protel Files\CDTRAX\CD6289-2.DDB
Drawn By: SBG


5L
5R
R4 47K
R11 12K
R17 6K8
SW1/1
SW1/2
R3 47K
C1 4u7
R5 22K
C5 150P
R1 680R
C2 4u7
R27 10R
XLR5
R2 680R
C3 4u7
C4 4u7
IC1B LM1458
C33 .1u
R29 4k7
R30 4k7
C6 150P
R6 22K
SW1/3
C30 47u
6L
6R
R35 47K
R34 12K
R33 6K8
SW2/1
SW2/2
R36 47K
C9 4u7
R9 22K
C7 150P
R13 680R
C10 4u7
XLR6
R14 680R
C11 4u7
C12 4u7
IC1A LM1458
R7 4K7
R8 4K7
C8 150P
R10 22K
SW2/3
C29 47u
7L
7R
R41 47K
R40 12K
R39 6K8
SW3/1
SW3/2
R37 47K
C14 4u7
R12 22K
C18 150P
R15 680R
C15 4u7
R42 10R
XLR7
R16 680R
C13 4u7
C16 4u7
IC2B LM1458
C34 .1u
R23 4K7
R24 4K7
C17 150P
R18 22K
SW3/3
C27 47u
8L
8R
R45 47K
R44 12K
R43 6K8
SW4/1
SW4/2
R38 47K
C22 4u7
R20 22K
C19 150P
R21 680R
C23 4u7
XLR8
R22 680R
C24 4u7
C21 4u7
IC2A LM1458
R25 4K7
R26 4K7
C20 150P
R19 22K
R28 0R
SW4/3
C28 47u
C25 4u7
C26 4u7
C39 47u
C40 47u
X1/1
+VCC
AG(1/2 VCC)
TAPE OUT
GRD
CH 1 OUT
CH 2 OUT
CH 3 OUT
CH 4 OUT
CH 5 OUT
CH 6 OUT
CH 7 OUT
CH 8 OUT
MIX OUT
MIX OUT
X2/1
+VCC
AG(1/2 VCC)
TAPE OUT
GRD
CH 1 OUT
CH 2 OUT
CH 3 OUT
CH 4 OUT
R46 1K
C32 4u7
IC3A LM1458
R49 47K
C36 4u7
OUTPUT
R50 10R
C38 4u7
R47 1K
C37 4u7
IC3B LM1458
R48 47K
C35 4u7
D1
C31 47u
Title
AMIS120XL MIC 5-8 IN
Size
A3
Number
CD6255-1
Revision
B
Date: 20-Feb-2003
Sheet of
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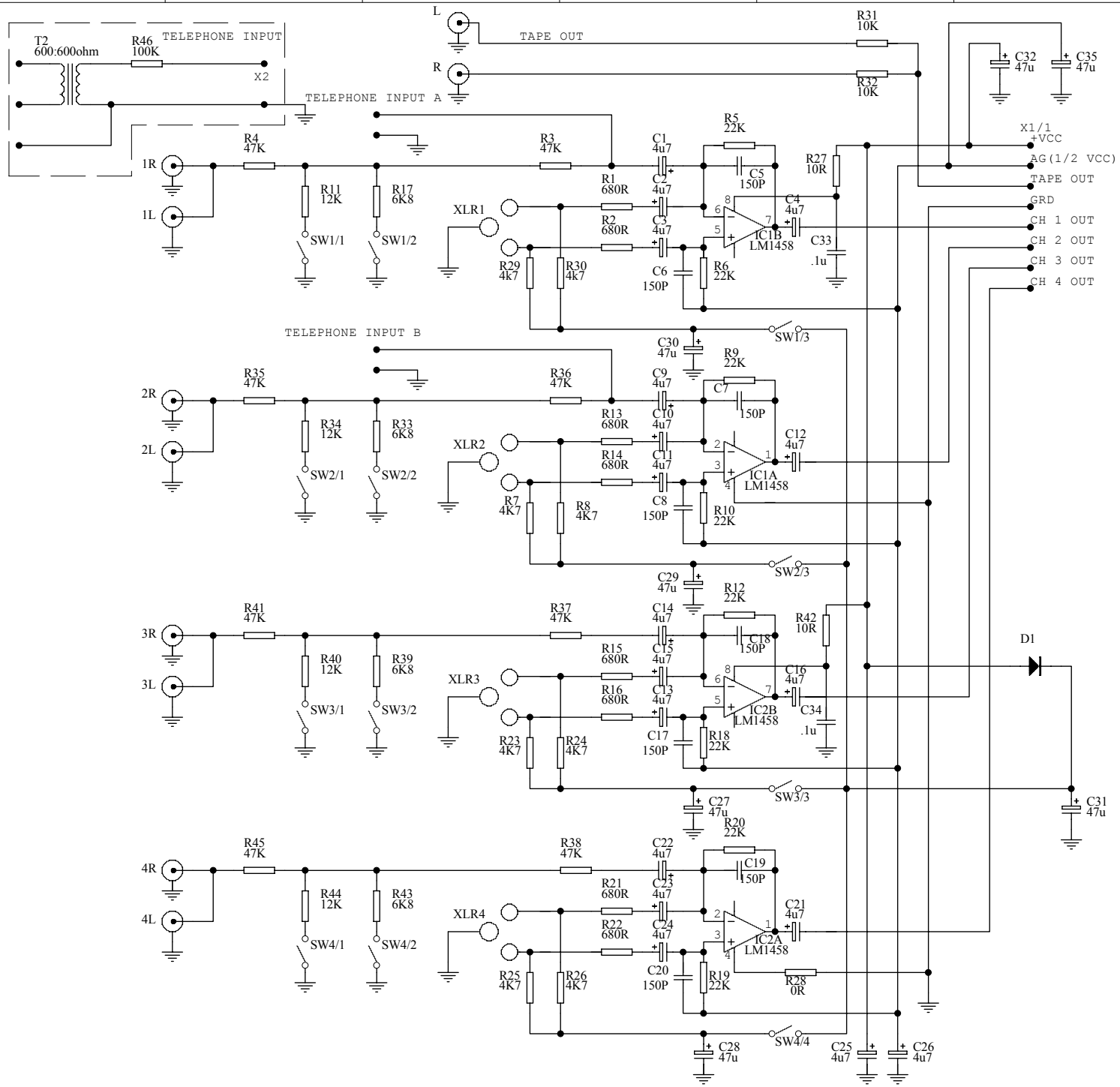

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Size: A3	Number: CD6256-1	Revision: D	
Date: 20-Feb-2003	Sheet of		
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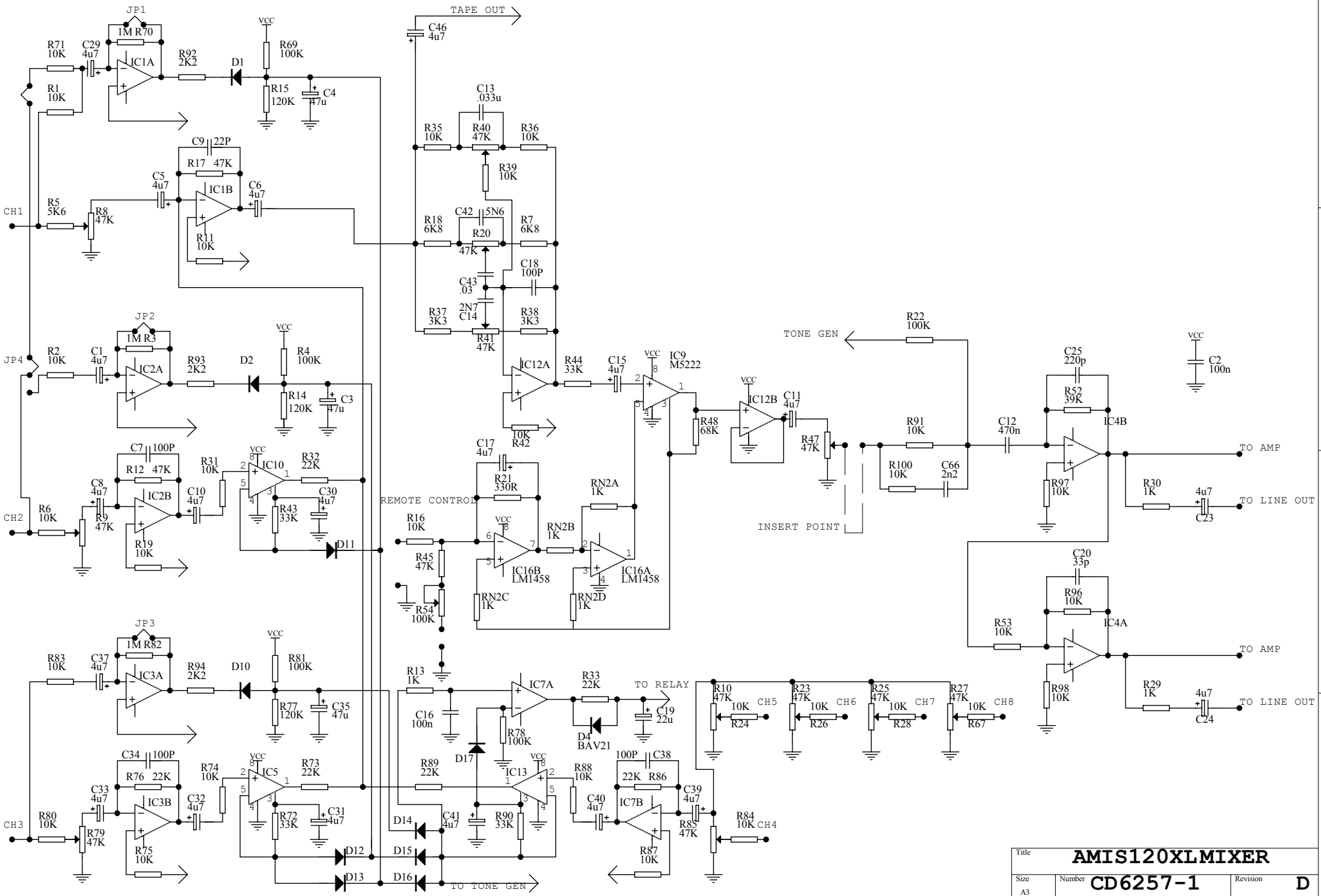
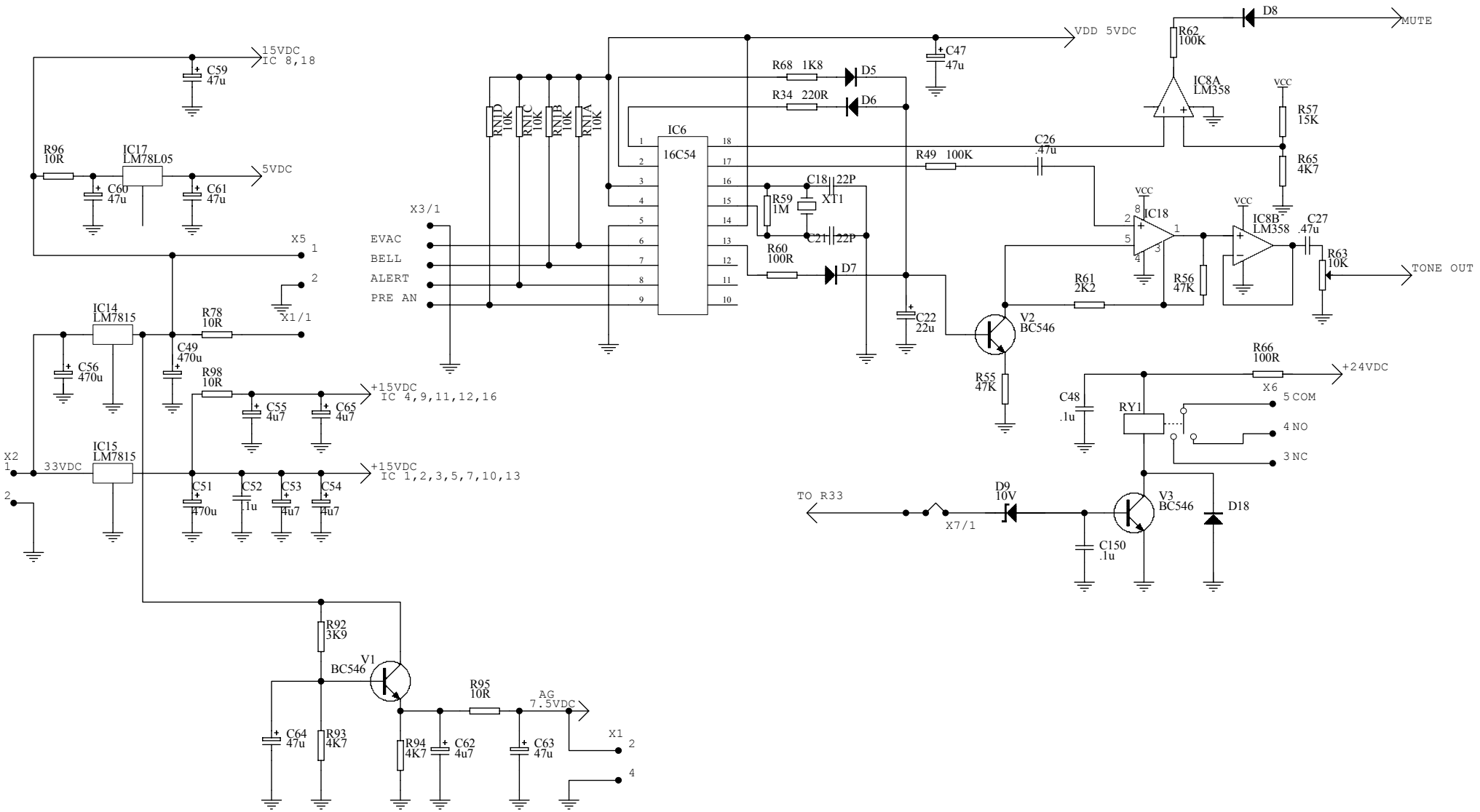

JP1
1M R70
R71 10K
C29 4u7
IC1A
R92 2K2
D1
VCC
R69 100K
R15 120K
C4 47u
R1 10K
TAPE OUT
C46 4u7
C13 .033u
R35 10K
R40 47K
R36 10K
R39 10K
C9 22P
R17 47K
C5 4u7
IC1B
C6 4u7
CH1
R5 5K6
R8 47K
R11 10K
R18 6K8
C42 5N6
R20 47K
R7 6K8
C18 100P
C43 .03
R37 3K3
2N7 C14
R38 3K3
R41 47K
JP2
1M R3
JP4
R2 10K
C1 4u7
IC2A
R93 2K2
D2
R4 100K
R14 120K
C3 47u
IC12A
R44 33K
C15 4u7
IC9 M5222
R22 100K
TONE GEN
R48 68K
IC12B
C11 4u7
R47 47K
R91 10K
C12 470n
C25 220p
R52 39K
IC4B
C2 100n
TO AMP
R30 1K
4u7 C23
TO LINE OUT
R10 10K
C7 100P
R12 47K
R31 10K
IC10
R32 22K
C8 4u7
IC2B
C10 4u7
CH2
R6 10K
R9 47K
R19 10K
R43 33K
C30 4u7
D11
C17 4u7
R21 330R
REMOTE CONTROL
R16 10K
RN2A 1K
RN2B 1K
IC16B LM1458
IC16A LM1458
R45 47K
R54 100K
RN2C 1K
RN2D 1K
R100 10K
C66 2n2
INSERT POINT
C20 33p
R96 10K
R53 10K
IC4A
R97 10K
R98 10K
R29 1K
4u7 C24
JP3
1M R82
R83 10K
C37 4u7
IC3A
R94 2K2
D10
R81 100K
R77 120K
C35 47u
R13 1K
C16 100n
IC7A
R33 22K
TO RELAY
C19 22u
D4 BAV21
R78 100K
D17
R10 47K
10K CH5
R24
R23 47K
10K CH6
R26
R25 47K
10K CH7
R28
R27 47K
10K CH8
R67
C34 100P
R76 22K
R74 10K
IC5
R73 22K
C33 4u7
IC3B
C32 4u7
CH3
R80 10K
R79 47K
R75 10K
R72 33K
C31 4u7
R89 22K
IC13
R88 10K
100P C38
22K R86
C40 4u7
IC7B
C39 4u7
R85 47K
R84 10K CH4
R87 10K
D14
D15
D16
D12
D13
C41 4u7
R90 33K
TO TONE GEN
Title
AMIS120XLMIXER
Size
A3
Number
CD6257-1
Revision
D
Date:
20-Feb-2003
Sheet of
1 2
File:
C:\Protel Files\CDTRAX\CD6257-11.DDB
Drawn By:
CKW



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Size A3	Number **CD6257-2**	Revision **D**	
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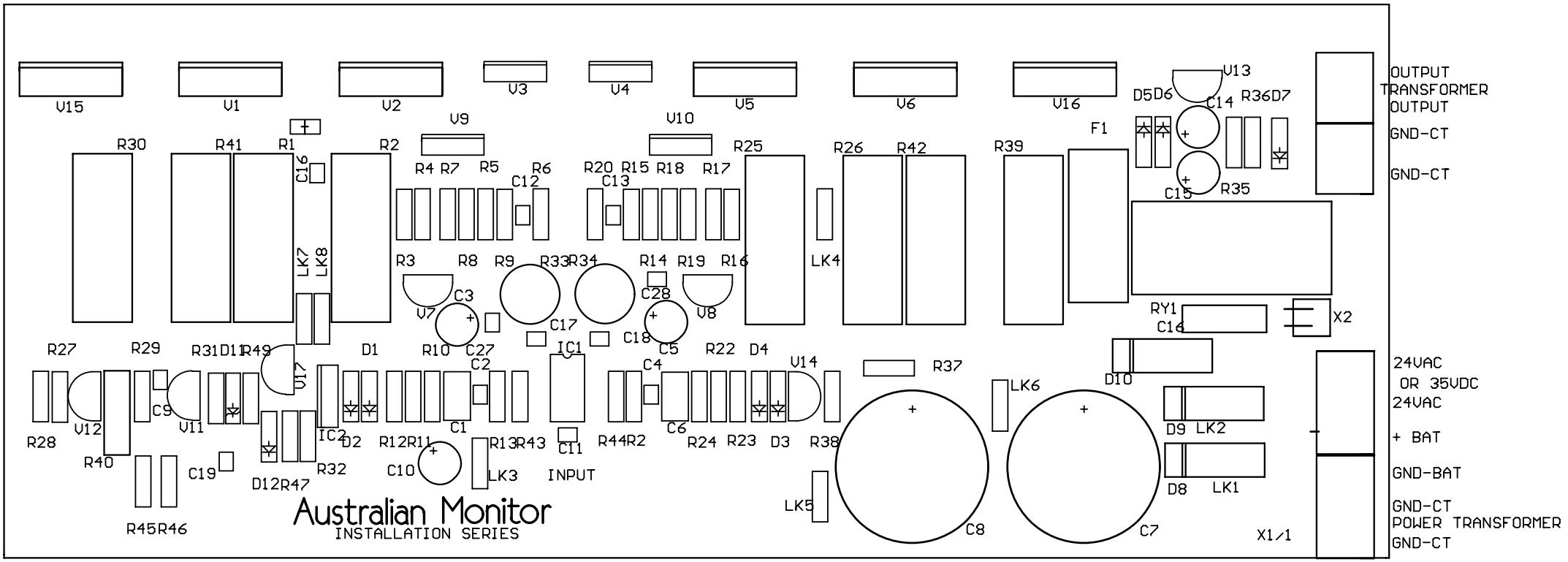
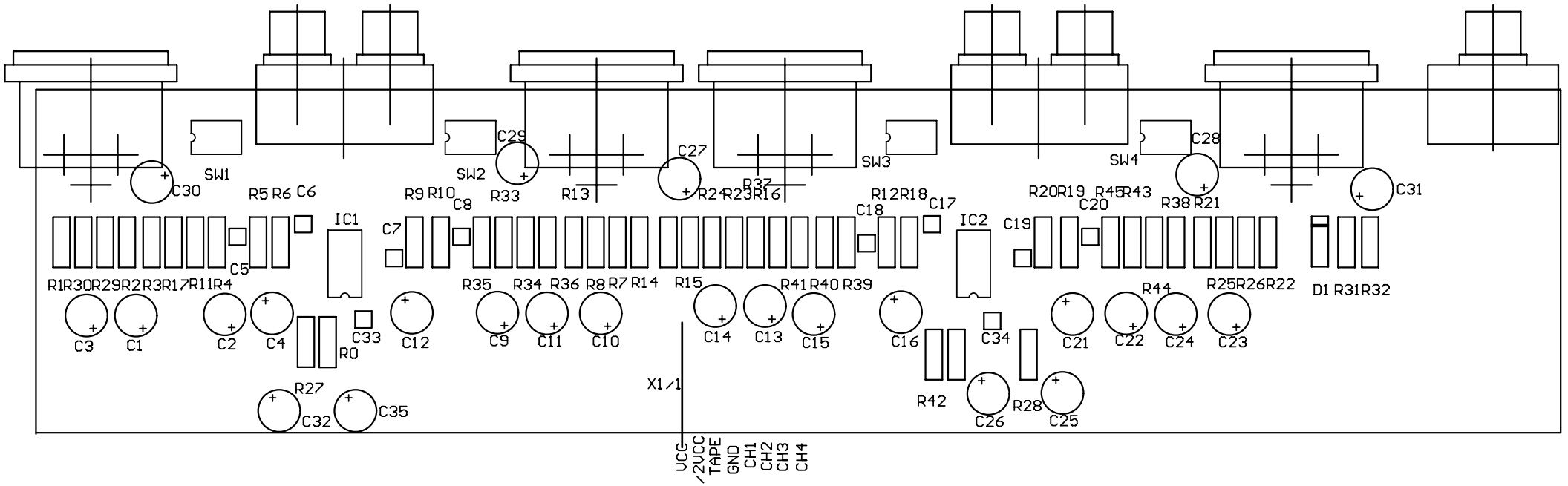
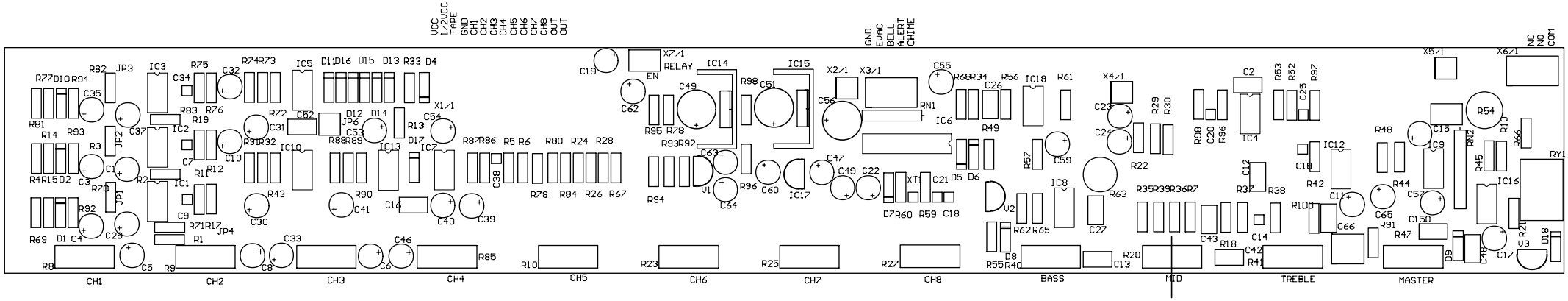
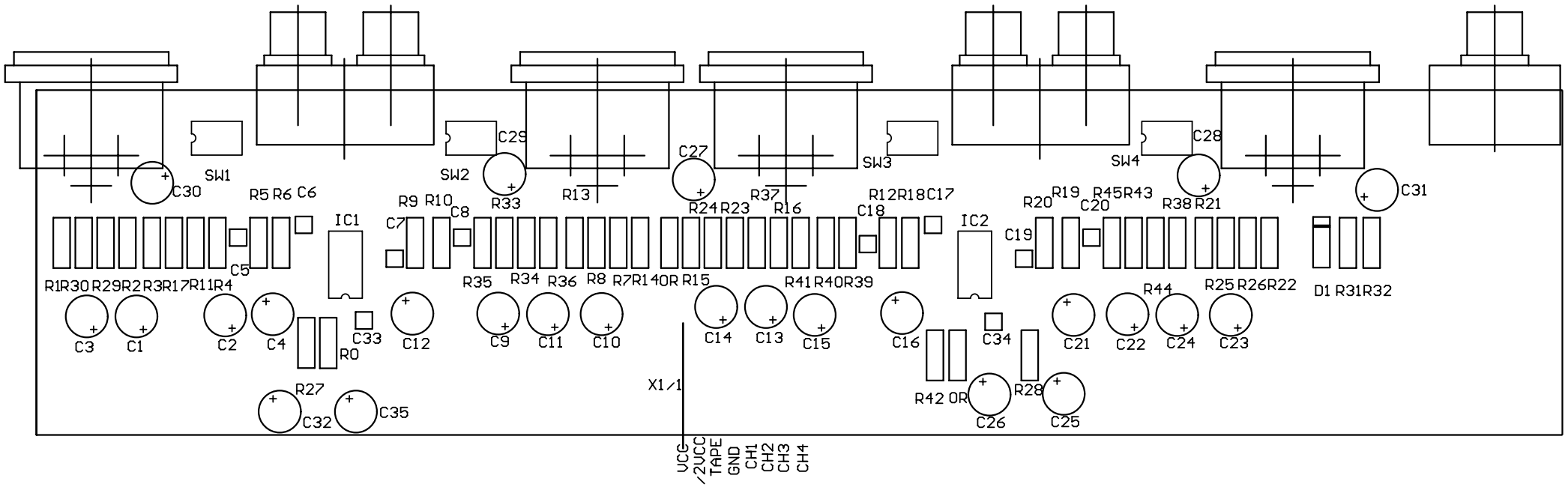

V15
V1
V2
V3
V4
V5
V6
V16
V13
D5
D6
C14
R36
D7
F1
V9
V10
R30
R41
R1
R2
R25
R26
R42
R39
C16
R4
R7
R5
R6
C12
R20
R15
R18
R17
C13
C15
R35
LK7
LK8
R3
R8
R9
R33
R34
R14
R19
R16
LK4
C3
C28
V7
V8
C17
C18
RY1
C16
X2
R27
R29
R31
D11
R49
D1
R10
C27
IC1
C5
R22
D4
V14
R37
C2
C4
V17
D10
LK6
C9
V12
V11
IC2
D2
R12
R11
C1
R13
R43
C11
R44
R2
C6
R24
R23
D3
R38
D9
LK2
R28
R40
C19
D12
R47
R32
C10
LK3
INPUT
D8
LK1
LK5
C8
C7
R45
R46
Australian Monitor
INSTALLATION SERIES
X1/1
OUTPUT TRANSFORMER OUTPUT
GND-CT
GND-CT
24VAC OR 35VDC
24VAC
+ BAT
GND-BAT
GND-CT
POWER TRANSFORMER
GND-CT


SW1
SW2
SW3
SW4
C30
C29
C27
C28
C31
R5 R6 C6
R9 R10
C8
R33
R13
R24 R23 R16
R37
R12 R18
C18
C17
R20 R19
R45 R43
C20
R38 R21
IC1
IC2
C7
C19
R1 R30 R29 R2 R3 R17 R11 R4
C5
R35 R34 R36 R8 R7 R14
R15
R41 R40 R39
R44
R25 R26 R22
D1 R31 R32
C3
C1
C2
C4
C33
C12
C9
C11
C10
C14
C13
C15
C16
C34
C21
C22
C24
C23
R0
R27
C32
C35
X1/1
R42
R28
C26
C25
VCC
1/2VCC
TAPE
GND
CH1
CH2
CH3
CH4


VCC
1/2VCC
TAPE
GND
CH1
CH2
CH3
CH4
CH5
CH6
CH7
CH8
OUT
OUT
GND
EVAC
BELL
ALERT
CHIME
NC
NO
COM
RELAY
EN
CH1
CH2
CH3
CH4
CH5
CH6
CH7
CH8
BASS
MID
TREBLE
MASTER


SW1
SW2
SW3
SW4
C30
C29
C27
C28
C31
R5 R6 C6
R9 R10
C8
R33
R13
R24 R23
R37
R16
R12 R18 C17
C18
R20
R19
R45 R43
C20
R38 R21
IC1
C7
IC2
C19
C5
R1 R30 R29 R2 R3 R17 R11 R4
R35
R34
R36
R8
R7 R14 0R
R15
R41 R40 R39
D1 R31 R32
R44
R25 R26 R22
C3
C1
C2
C4
C33
C12
C9
C11
C10
C14
C13
C15
C16
C34
C21
C22
C24
C23
R0
R27
C32
C35
X1/1
R42 0R
R28
C26
C25
VCC
1/2VCC
TAPE
GND
CH1
CH2
CH3
CH4

		AMIS120 Power amplifier Component list		
Designator	Part Type	Description	Manufacture code	Order code
B1				
B2				
C1	470n	Metalised Polyproplyene 63V	2125270477	
C10	47u	47uF electrolytic 35V	2121230470	
C11	100n	100n Metalised Polyester 100v	2124282101	
C12	22P	Multi layer ceramic 100V	2127181220	
C13	22P	Multi layer ceramic 100V	2127181220	
C14	47u	47uF electrolytic 35V	2121230470	
C15	47u	47uF electrolytic 35V	2121230470	
C16	.1u	Metalised Polyproplyene 63V	2124282101	
C17	330P	Multi layer ceramic 100V	2127280336	
C18	330P	Multi layer ceramic 100V	2127280336	
C19	.1u	Metalised Polyproplyene 63V	2124282101	
C2	120p	Multi layer ceramic 100V	2127180121	
C27	1nF	Metalised Polyproplyene 63V	2124182100	
C28	1nF	Metalised Polyproplyene 63V	2124182100	
C3	4u7	4.7uF NPE electrolytic 50V	2120250479	
C4	120p	Multi layer ceramic 100V	2127180121	
C5	4u7	4.7uF NPE electrolytic 50V	2120250479	
C6	470n	Metalised Polyproplyene 63V	2125270477	
C7	4700u	4700uF electrolytic 40V	2121240472	
C8	4700u	4700uF electrolytic 40V	2121240472	
C9	10n	Metalised Polyproplyene 63V	2124282101	
CX1	22n/400V	metalised Polyproplyene 275V	2124192022	
CX2	220n	metalised Polypropylene 275v		
D1	BAV21	Small signal diode	2133400201	
D11	2V7	Diode, zener 1/2w 2V7	2136090279	
D12	BAV21	Small signal diode	2133400201	
D2	BAV21	Small signal diode	2133400201	
D3	BAV21	Small signal diode	2133400201	
D4	BAV21	Small signal diode	2133400201	
D5	1N4004	Rectifier Diode 400V/1A	2133440004	
D6	1N4004	Rectifier Diode 400V/1A	2133440004	
D7	1N4004	Rectifier Diode 400V/1A	2133440004	
F1				
F2	4amp			
IC1A	LM1458	I.C. Dual op-amp	2152810458	
IC1B	LM1458	I.C. Dual op-amp	2152810458	
IC2	LM7818	Regulator 18V To-220	2151378018	
LK1	0R	1/2 w Metal film resistor 0R	9111590000	
LK2	0R	1/2 w Metal film resistor 0R	9111590000	
R1	0R22	PW5 5W wire wound resistor	2111450228	PW5-R1
R10	1k	1/2 W Metal film resistor	9111590102	
R11	1k	1/2 W Metal film resistor	9111590102	
R12	2k2	1/2 W Metal film resistor	9111590222	
R13	1M	1/2 W Metal film resistor	9111590105	
R14	47k	1/2 W Metal film resistor	9111590473	
R15	10k	1/2 W Metal film resistor	9111590103	
R16	3k3	1/2 W Metal film resistor	9111590332	
R17	470R	1/2 W Metal film resistor	9111590471	
R18	330R	1/2 W Metal film resistor	9111590331	
R19	1k	1/2 W Metal film resistor	9111590102	
R2	0R22	PW5 5W wire wound resistor	2111450228	PW5-R22

R20	10k	1/2 W Metal film resistor	9111590103	
R21	1M	1/2 W Metal film resistor	9111590105	
R22	1k	1/2 W Metal film resistor	9111590102	
R23	2k2	1/2 W Metal film resistor	9111590222	
R24	1k	1/2 W Metal film resistor	9111590102	
R25	0R22	PW5 5W wire wound resistor	2111450228	
R26	0R22	PW5 5W wire wound resistor	2111450228	
R27	1k	1/2 W Metal film resistor	9111590102	
R28	560R	1/2 W Metal film resistor	9111590561	
R29	100K	1/2 W Metal film resistor	9111590104	
R3	470R	1/2 W Metal film resistor	9111590471	
R30	0R1	PW5 5W wire wound resistor	2111450108	PW5-R22
R31	10R	1/2 W Metal film resistor	9111590100	
R32	1K	1/2 W Metal film resistor	9111590102	
R33	100R	Cermet horizontal	2002211101	
R34	100R	Cermet horizontal	2002211101	
R35	22K	1/2 W Metal film resistor	9111590223	
R36	470k	1/2 W Metal film resistor	9111590474	
R37	560R	1/2 W Metal film resistor	9111560561	
R38	1k	1/2 W Metal film resistor	9111590102	
R39	0R1	PW5 5W wire wound resistor	2111450108	
R4	3k3	1/2 W Metal film resistor	9111590332	
R40	15R/2W	2 W Metal oxide resistor	2111220150	
R41	0R22	PW5 5W wire wound resistor	2111450228	PW5-R22
R42	0R22	PW5 5W wire wound resistor	2111450228	PW5-R22
R43	1K	1/2 W Metal film resistor	9111590102	
R44	1K	1/2 W Metal film resistor	9111590102	
R45	4K7	1/2 W Metal film resistor	9111590472	
R46	4K7	1/2 W Metal film resistor	9111590472	
R47	10K	1/2 W Metal film resistor	9111590103	
R48	10K	10k NTC thermistor	2111911103	
R49	2K7	1/2 W Metal film resistor	9111590272	
R5	10k	1/2 W Metal film resistor	9111590103	
R6	10k	1/2 W Metal film resistor	9111590103	
R7	1k	1/2 W Metal film resistor	9111590102	
R8	330R	1/2 W Metal film resistor	9111590331	
R9	47k	1/2 W Metal film resistor	9111590473	
RY1		Relay DPCO	2523220845	
S1		Rocker switch (round)	2511213112	
T1		Mains Transformer		X1104
V1	TIP36C	Transistor	2141600036	TIP36C
V10	TIP42C	Transistor	2141300042	TIP42C
V11	BC639	Transistor	2144200639	
V12	BC640	Transistor	2144200640	
V13	BC639	Transistor	2144200639	
V14	BC640	Transistor	2144200640	
V15	TIP36C	Transistor	2141600036	TIP36C
V16	TIP36C	Transistor	2141600036	TIP36C
V17	BC546	Transistor	2144200546	
V2	TIP36C	Transistor	2141600036	TIP36C
V3	BD140	Transistor	2141400140	
V4	BD140	Transistor	2141400140	
V5	TIP36C	Transistor	2141600036	TIP36C
V6	TIP36C	Transistor	2141600036	TIP36C
V7	BC639	Transistor	2144200639	
V8	BC639	Transistor	2144200639	

V9	TIP42C	Transistor	2141300042	TIP42C
X1	SIL6			
X2	SIL2			

AMIS120XL Mixer Component List

Designator	Part Type	Description	Manufacturer's Code
C1	4u7	Electrolytic capacitor 35V	2121230479
C10	4u7	Electrolytic capacitor 35V	2121230479
C11	4u7	Electrolytic capacitor 35V	2121230479
C12	470n	Metalised Poly Capacitor 100V	2124262472
C13	.033u	Metalised Poly Capacitor 100V	2124282330
C14	2N7	Multi layer ceramic 100V	2127181279
C15	4u7	Electrolytic capacitor 35V	2121230479
C16	100n	Metalised Poly Capacitor 100V	2124282101
C17	4u7	Electrolytic capacitor 35V	2121230479
C18	100P	Multi layer ceramic 100V	2127181101
C19	22u	Electrolytic capacitor 35V	2121250220
C2	100n	Metalised Poly Capacitor 100V	2124282101
C20	33p	Multi layer ceramic 100V	2127280336
C23	4u7	Electrolytic capacitor 35V	2121230479
C24	4u7	Electrolytic capacitor 35V	2121230479
C25	220p	Multi layer ceramic 100V	2127181221
C29	4u7	Electrolytic capacitor 35V	2121230479
C3	47u	Electrolytic capacitor 35V	2121230479
C30	4u7	Electrolytic capacitor 35V	2121230479
C31	4u7	Electrolytic capacitor 35V	2121230479
C32	4u7	Electrolytic capacitor 35V	2121230479
C33	4u7	Electrolytic capacitor 35V	2121230479
C34	100P	Multi layer ceramic 100V	2127181101
C35	47u	Electrolytic capacitor 35V	2121230470
C37	4u7	Electrolytic capacitor 35V	2121230470
C38	100P	Multi layer ceramic 100V	2127181101
C39	4u7	Electrolytic capacitor 35V	2121230479
C4	47u	Electrolytic capacitor 35V	2121230479
C40	4u7	Electrolytic capacitor 35V	2121230479
C41	4u7	Electrolytic capacitor 35V	2121230479
C42	5N6	Metalised Poly Capacitor 100V	2124180562
C43	.033U	Metalised Poly Capacitor 100V	2124282330
C46	4u7	Electrolytic capacitor 35V	2121230479
C5	4u7	Electrolytic capacitor 35V	2121230479
C6	4u7	Electrolytic capacitor 35V	2121230479
C66	2n2	Multi layer ceramic 100V	2127181229
C7	100P	Multi layer ceramic 100V	2127181101
C8	4u7	Electrolytic capacitor 35V	2121230479
C9	22P	Multi layer ceramic 100V	2127181220
D1	BAV21	Small Signal Diode	2133400201
D10	BAV21	Small Signal Diode	2133400201
D11	BAV21	Small Signal Diode	2133400201
D12	BAV21	Small Signal Diode	2133400201
D13	BAV21	Small Signal Diode	2133400201
D14	BAV21	Small Signal Diode	2133400201
D15	BAV21	Small Signal Diode	2133400201
D16	BAV21	Small Signal Diode	2133400201
D17	BAV21	Small Signal Diode	2133400201
D2	BAV21	Small Signal Diode	2133400201
D4	BAV21	Small Signal Diode	2133400201
IC10	LM1458	Dual op amp DIP8	2152810458
IC12A	LM1458	Dual op amp DIP8	2152810458
IC12B	LM1458	Dual op amp DIP8	2152810458

IC13	LM1458	Dual op amp DIP8	2152810458
IC16A	LM1458	Dual op amp DIP8	2152810458
IC16B	LM1458	Dual op amp DIP8	2152810458
IC1A	LM1458	Dual op amp DIP8	2152810458
IC1B	LM1458	Dual op amp DIP8	2152810458
IC2A	LM1458	Dual op amp DIP8	2152810458
IC2B	LM1458	Dual op amp DIP8	2152810458
IC3A	LM1458	Dual op amp DIP8	2152810458
IC3B	LM1458	Dual op amp DIP8	2152810458
IC4A	LM1458	Dual op amp DIP8	2152810458
IC4B	LM1458	Dual op amp DIP8	2152810458
IC5	LM1458	Dual op amp DIP8	2152810458
IC7A	LM1458	Dual op amp DIP8	2152810458
IC7B	LM1458	Dual op amp DIP8	2152810458
IC9	M5222	VCA op amp	2153850222
R1	10K	Resistor Metal film 1/2W	9111590103
R10	47K	Potentiometer linear	2021000503
R100	10K	Resistor Metal film 1/2W	9111590103
R11	10K	Resistor Metal film 1/2W	9111590103
R12	47K	Resistor Metal film 1/2W	9111590473
R13	1K	Resistor Metal film 1/2W	9111590102
R14	120K	Resistor Metal film 1/2W	9111590124
R15	120K	Resistor Metal film 1/2W	9111590124
R16	10K	Resistor Metal film 1/2W	9111590103
R17	47K	Resistor Metal film 1/2W	9111590473
R18	6K8	Resistor Metal film 1/2W	9111590682
R19	10K	Resistor Metal film 1/2W	9111590103
R2	10K	Resistor Metal film 1/2W	9111590103
R20	47K	Potentiometer linear	2021000503
R21	330R	Resistor Metal film 1/2W	9111590331
R22	100K	Resistor Metal film 1/2W	9111590104
R23	47K	Potentiometer linear	2021000503
R24	10K	Resistor Metal film 1/2W	9111590103
R25	47K	Potentiometer linear	2021000503
R26	10K	Resistor Metal film 1/2W	9111590103
R27	47K	Potentiometer linear	2021000503
R28	10K	Resistor Metal film 1/2W	9111590103
R29	1K	Resistor Metal film 1/2W	9111590102
R3	1M	Resistor Metal film 1/2W	9111590105
R30	1K	Resistor Metal film 1/2W	9111590102
R31	10K	Resistor Metal film 1/2W	9111590103
R32	22K	Resistor Metal film 1/2W	9111590223
R33	22K	Resistor Metal film 1/2W	9111590223
R35	10K	Resistor Metal film 1/2W	9111590103
R36	10K	Resistor Metal film 1/2W	9111590103
R37	3K3	Resistor Metal film 1/2W	9111590332
R38	3K3	Resistor Metal film 1/2W	9111590332
R39	10K	Resistor Metal film 1/2W	9111590103
R4	100K	Resistor Metal film 1/2W	9111590104
R40	47K	Potentiometer linear	2021000503
R41	47K	Potentiometer linear	2021000503
R42	10K	Resistor Metal film 1/2W	9111590103
R43	33K	Resistor Metal film 1/2W	9111590333
R44	33K	Resistor Metal film 1/2W	9111590333
R45	47K	Resistor Metal film 1/2W	9111590473

R47	47K	Potentiometer linear	2021000503
R48	68K	Resistor Metal film 1/2W	2021000503
R5	5K6	Resistor Metal film 1/2W	9111590562
R52	39K	Resistor Metal film 1/2W	9111590393
R53	10K	Resistor Metal film 1/2W	9111590103
R54	100K	Cermet Horizontal	2002211104
R6	10K	Resistor Metal film 1/2W	9111590103
R67	10K	Resistor Metal film 1/2W	9111590103
R69	100K	Resistor Metal film 1/2W	9111590104
R7	6K8	Resistor Metal film 1/2W	9111590682
R70	1M	Resistor Metal film 1/2W	9111590105
R71	10K	Resistor Metal film 1/2W	9111590103
R72	33K	Resistor Metal film 1/2W	9111590332
R73	22K	Resistor Metal film 1/2W	9111590223
R74	10K	Resistor Metal film 1/2W	9111590103
R75	10K	Resistor Metal film 1/2W	9111590103
R76	22K	Resistor Metal film 1/2W	9111590223
R77	120K	Resistor Metal film 1/2W	9111590124
R78	100K	Resistor Metal film 1/2W	9111590104
R79	47K	Potentiometer linear	2021000503
R8	47K	Potentiometer linear	2021000503
R80	10K	Resistor Metal film 1/2W	9111590103
R81	100K	Resistor Metal film 1/2W	9111590104
R82	1M	Resistor Metal film 1/2W	9111590105
R83	10K	Resistor Metal film 1/2W	9111590103
R84	10K	Resistor Metal film 1/2W	9111590103
R85	47K	Potentiometer linear	2021000503
R86	22K	Resistor Metal film 1/2W	9111590223
R87	10K	Resistor Metal film 1/2W	9111590103
R88	10K	Resistor Metal film 1/2W	9111590103
R89	22K	Resistor Metal film 1/2W	9111590223
R9	47K	Potentiometer linear	2021000503
R90	33K	Resistor Metal film 1/2W	9111590333
R91	10K	Resistor Metal film 1/2W	9111590103
R92	2K2	Resistor Metal film 1/2W	9111590222
R93	2K2	Resistor Metal film 1/2W	9111590222
R94	2K2	Resistor Metal film 1/2W	9111590222
R96	10K	Resistor Metal film 1/2W	9111590103
R97	10K	Resistor Metal film 1/2W	9111590103
R98	10K	Resistor Metal film 1/2W	9111590103
RN2A	1K	Resistor Network	2111888102
RN2B	1K	Resistor Network	2111888102
RN2C	1K	Resistor Network	2111888102
RN2D	1K	Resistor Network	2111888102

AMIS120 Mic input Component List			
Designator	**Part Type**	**Description**	**Manufacturer's Code**
1	XLR	XLR Socket female PCB mount	2587210266
2	XLR	XLR Socket female PCB mount	2587210266
3	XLR	XLR Socket female PCB mount	2587210266
4	XLR	XLR Socket female PCB mount	2587210266
1L	Dual RCA	Dual RCA socket PCB mount	2581210102
1R	Dual RCA	Dual RCA socket PCB mount	2581210102
2L	Dual RCA	Dual RCA socket PCB mount	2581210102
2R	Dual RCA	Dual RCA socket PCB mount	2581210102
3L	Dual RCA	Dual RCA socket PCB mount	2581210102
3R	Dual RCA	Dual RCA socket PCB mount	2581210102
4L	Dual RCA	Dual RCA socket PCB mount	2581210102
4R	Dual RCA	Dual RCA socket PCB mount	2581210102
C1	4u7	NPE Capacitor 35V	2120250479
C10	4u7	NPE Capacitor 35V	2120250479
C11	4u7	NPE Capacitor 35V	2120250479
C12	4u7	NPE Capacitor 35V	2120250479
C13	4u7	NPE Capacitor 35V	2120250479
C14	4u7	NPE Capacitor 35V	2121230479
C15	4u7	NPE Capacitor 35V	2120250479
C16	4u7	NPE Capacitor 35V	2121230479
C17	120P	Multi layer ceramic capacitor	2127180121
C18	120P	Multi layer ceramic capacitor	2127180121
C19	120P	Multi layer ceramic capacitor	2127180121
C2	4u7	NPE Capacitor 35V	2120250479
C20	120P	Multi layer ceramic capacitor	2127180121
C21	4u7	NPE Capacitor 35V	2121230479
C22	4u7	NPE Capacitor 35V	2120250479
C23	4u7	NPE Capacitor 35V	2120250479
C24	4u7	NPE Capacitor 35V	2120250479
C25	4u7	Electrolytic Capacitor 35V	2121230479
C26	4u7	Electrolytic Capacitor 35V	2121230479
C27	47u	Electrolytic Capacitor 35V	2121230479
C28	47u	Electrolytic Capacitor 35V	2121230471
C29	47u	Electrolytic Capacitor 35V	2121230471
C3	4u7	NPE Capacitor 35V	2120250479
C30	47u	Electrolytic Capacitor 35V	2121230471
C31	47u	Electrolytic Capacitor 35V	2121230471
C32	47u	Electrolytic Capacitor 35V	2121230471
C33	.1u	Metalised Poly capacitor 100v	2124282101
C34	.1u	Metalised Poly capacitor 100v	2124282101
C35	47u	Electrolytic Capacitor 35V	2121230471
C4	4u7	Electrolytic Capacitor 35V	2121230479
C5	120P	Multi layer ceramic capacitor	2127180121
C6	120P	Multi layer ceramic capacitor	2127180121
C7	120P	Multi layer ceramic capacitor	2127180121
C8	120P	Multi layer ceramic capacitor	2127180121
C9	4u7	NPE Capacitor 35V	2120250479
D1	1N4004	Rectifier diode 400V 1A	2133440004
IC1A	LM1458	I.C Dual op-amp DIP8	2152810458
IC1B	LM1458	I.C Dual op-amp DIP8	2152810458
IC2A	LM1458	I.C Dual op-amp DIP8	2152810458
IC2B	LM1458	I.C Dual op-amp DIP8	2152810458
L	Dual RCA	Dual RCA socket PCB mount	2581210102

R	Dual RCA	Dual RCA socket PCB mount	2581210102
R1	680R	Metal film resistor 1/2w	9111590681
R10	22K	Metal film resistor 1/2w	9111590223
R11	12K	Metal film resistor 1/2w	9111590123
R12	22K	Metal film resistor 1/2w	9111590223
R13	680R	Metal film resistor 1/2w	9111590681
R14	680R	Metal film resistor 1/2w	9111590681
R15	680R	Metal film resistor 1/2w	9111590681
R16	680R	Metal film resistor 1/2w	9111590681
R17	6K8	Metal film resistor 1/2w	9111590682
R18	22K	Metal film resistor 1/2w	9111590223
R19	22K	Metal film resistor 1/2w	9111590223
R2	680R	Metal film resistor 1/2w	9111590681
R20	22K	Metal film resistor 1/2w	9111590223
R21	680R	Metal film resistor 1/2w	9111590681
R22	680R	Metal film resistor 1/2w	9111590681
R23	4K7	Metal film resistor 1/2w	9111590472
R24	4K7	Metal film resistor 1/2w	9111590472
R25	4K7	Metal film resistor 1/2w	9111590472
R26	4K7	Metal film resistor 1/2w	9111590472
R27	10R	Metal film resistor 1/2w	9111590100
R28	0R	Metal film resistor 1/2w	9111590000
R29	4k7	Metal film resistor 1/2w	9111590472
R3	47K	Metal film resistor 1/2w	9111590473
R30	4k7	Metal film resistor 1/2w	9111590472
R31	10K	Metal film resistor 1/2w	9111590103
R32	10K	Metal film resistor 1/2w	9111590103
R33	6K8	Metal film resistor 1/2w	9111590682
R34	12K	Metal film resistor 1/2w	9111590123
R35	47K	Metal film resistor 1/2w	9111590473
R36	47K	Metal film resistor 1/2w	9111590473
R37	47K	Metal film resistor 1/2w	9111590473
R38	47K	Metal film resistor 1/2w	9111590473
R39	6K8	Metal film resistor 1/2w	9111590683
R4	47K	Metal film resistor 1/2w	9111590473
R40	12K	Metal film resistor 1/2w	9111590123
R41	47K	Metal film resistor 1/2w	9111590473
R42	10R	Metal film resistor 1/2w	9111590100
R43	6K8	Metal film resistor 1/2w	9111590682
R44	12K	Metal film resistor 1/2w	9111590123
R45	47K	Metal film resistor 1/2w	9111590473
R46	100K	Metal film resistor 1/2w	9111590103
R5	22K	Metal film resistor 1/2w	9111590223
R6	22K	Metal film resistor 1/2w	9111590223
R7	4K7	Metal film resistor 1/2w	9111590472
R8	4K7	Metal film resistor 1/2w	9111590472
R9	22K	Metal film resistor 1/2w	9111590223
SW1/1		Dip Switch 3 position	2510315003
SW1/2		Dip Switch 3 position	2510315003
SW1/3		Dip Switch 3 position	2510315003
SW2/1		Dip Switch 3 position	2510315003
SW2/2		Dip Switch 3 position	2510315003
SW2/3		Dip Switch 3 position	2510315003
SW3/1		Dip Switch 3 position	2510315003
SW3/2		Dip Switch 3 position	2510315003
SW3/3		Dip Switch 3 position	2510315003

SW4/1		Dip Switch 3 position	2510315003
SW4/2		Dip Switch 3 position	2510315003
SW4/4		Dip Switch 3 position	2510315003
T2	600:600Ω	Telephone isolation transformer	2651280253

AMIS120 Mic input Component List			
Designator	**Part Type**	**Description**	**Manufacturer's Code**
1	XLR	XLR Socket female PCB mount	2587210266
2	XLR	XLR Socket female PCB mount	2587210266
3	XLR	XLR Socket female PCB mount	2587210266
4	XLR	XLR Socket female PCB mount	2587210266
1L	Dual RCA	Dual RCA socket PCB mount	2581210102
1R	Dual RCA	Dual RCA socket PCB mount	2581210102
2L	Dual RCA	Dual RCA socket PCB mount	2581210102
2R	Dual RCA	Dual RCA socket PCB mount	2581210102
3L	Dual RCA	Dual RCA socket PCB mount	2581210102
3R	Dual RCA	Dual RCA socket PCB mount	2581210102
4L	Dual RCA	Dual RCA socket PCB mount	2581210102
4R	Dual RCA	Dual RCA socket PCB mount	2581210102
C1	4u7	NPE Capacitor 35V	2120250479
C10	4u7	NPE Capacitor 35V	2120250479
C11	4u7	NPE Capacitor 35V	2120250479
C12	4u7	NPE Capacitor 35V	2120250479
C13	4u7	NPE Capacitor 35V	2120250479
C14	4u7	NPE Capacitor 35V	2121230479
C15	4u7	NPE Capacitor 35V	2120250479
C16	4u7	NPE Capacitor 35V	2121230479
C17	120P	Multi layer ceramic capacitor	2127180121
C18	120P	Multi layer ceramic capacitor	2127180121
C19	120P	Multi layer ceramic capacitor	2127180121
C2	4u7	NPE Capacitor 35V	2120250479
C20	120P	Multi layer ceramic capacitor	2127180121
C21	4u7	NPE Capacitor 35V	2121230479
C22	4u7	NPE Capacitor 35V	2120250479
C23	4u7	NPE Capacitor 35V	2120250479
C24	4u7	NPE Capacitor 35V	2120250479
C25	4u7	Electrolytic Capacitor 35V	2121230479
C26	4u7	Electrolytic Capacitor 35V	2121230479
C27	47u	Electrolytic Capacitor 35V	2121230479
C28	47u	Electrolytic Capacitor 35V	2121230471
C29	47u	Electrolytic Capacitor 35V	2121230471
C3	4u7	NPE Capacitor 35V	2120250479
C30	47u	Electrolytic Capacitor 35V	2121230471
C31	47u	Electrolytic Capacitor 35V	2121230471
C32	47u	Electrolytic Capacitor 35V	2121230471
C33	.1u	Metalised Poly capacitor 100v	2124282101
C34	.1u	Metalised Poly capacitor 100v	2124282101
C35	47u	Electrolytic Capacitor 35V	2121230471
C4	4u7	Electrolytic Capacitor 35V	2121230479
C5	120P	Multi layer ceramic capacitor	2127180121
C6	120P	Multi layer ceramic capacitor	2127180121
C7	120P	Multi layer ceramic capacitor	2127180121
C8	120P	Multi layer ceramic capacitor	2127180121
C9	4u7	NPE Capacitor 35V	2120250479
D1	1N4004	Rectifier diode 400V 1A	2133440004
IC1A	LM1458	I.C Dual op-amp DIP8	2152810458
IC1B	LM1458	I.C Dual op-amp DIP8	2152810458
IC2A	LM1458	I.C Dual op-amp DIP8	2152810458
IC2B	LM1458	I.C Dual op-amp DIP8	2152810458
L	Dual RCA	Dual RCA socket PCB mount	2581210102

R	Dual RCA	Dual RCA socket PCB mount	2581210102
R1	680R	Metal film resistor 1/2w	9111590681
R10	22K	Metal film resistor 1/2w	9111590223
R11	12K	Metal film resistor 1/2w	9111590123
R12	22K	Metal film resistor 1/2w	9111590223
R13	680R	Metal film resistor 1/2w	9111590681
R14	680R	Metal film resistor 1/2w	9111590681
R15	680R	Metal film resistor 1/2w	9111590681
R16	680R	Metal film resistor 1/2w	9111590681
R17	6K8	Metal film resistor 1/2w	9111590682
R18	22K	Metal film resistor 1/2w	9111590223
R19	22K	Metal film resistor 1/2w	9111590223
R2	680R	Metal film resistor 1/2w	9111590681
R20	22K	Metal film resistor 1/2w	9111590223
R21	680R	Metal film resistor 1/2w	9111590681
R22	680R	Metal film resistor 1/2w	9111590681
R23	4K7	Metal film resistor 1/2w	9111590472
R24	4K7	Metal film resistor 1/2w	9111590472
R25	4K7	Metal film resistor 1/2w	9111590472
R26	4K7	Metal film resistor 1/2w	9111590472
R27	10R	Metal film resistor 1/2w	9111590100
R28	0R	Metal film resistor 1/2w	9111590000
R29	4k7	Metal film resistor 1/2w	9111590472
R3	47K	Metal film resistor 1/2w	9111590473
R30	4k7	Metal film resistor 1/2w	9111590472
R31	10K	Metal film resistor 1/2w	9111590103
R32	10K	Metal film resistor 1/2w	9111590103
R33	6K8	Metal film resistor 1/2w	9111590682
R34	12K	Metal film resistor 1/2w	9111590123
R35	47K	Metal film resistor 1/2w	9111590473
R36	47K	Metal film resistor 1/2w	9111590473
R37	47K	Metal film resistor 1/2w	9111590473
R38	47K	Metal film resistor 1/2w	9111590473
R39	6K8	Metal film resistor 1/2w	9111590683
R4	47K	Metal film resistor 1/2w	9111590473
R40	12K	Metal film resistor 1/2w	9111590123
R41	47K	Metal film resistor 1/2w	9111590473
R42	10R	Metal film resistor 1/2w	9111590100
R43	6K8	Metal film resistor 1/2w	9111590682
R44	12K	Metal film resistor 1/2w	9111590123
R45	47K	Metal film resistor 1/2w	9111590473
R46	100K	Metal film resistor 1/2w	9111590103
R5	22K	Metal film resistor 1/2w	9111590223
R6	22K	Metal film resistor 1/2w	9111590223
R7	4K7	Metal film resistor 1/2w	9111590472
R8	4K7	Metal film resistor 1/2w	9111590472
R9	22K	Metal film resistor 1/2w	9111590223
SW1/1		Dip Switch 3 position	2510315003
SW1/2		Dip Switch 3 position	2510315003
SW1/3		Dip Switch 3 position	2510315003
SW2/1		Dip Switch 3 position	2510315003
SW2/2		Dip Switch 3 position	2510315003
SW2/3		Dip Switch 3 position	2510315003
SW3/1		Dip Switch 3 position	2510315003
SW3/2		Dip Switch 3 position	2510315003
SW3/3		Dip Switch 3 position	2510315003

SW4/1		Dip Switch 3 position	2510315003
SW4/2		Dip Switch 3 position	2510315003
SW4/4		Dip Switch 3 position	2510315003
T2	600:600Ω	Telephone isolation transformer	2651280253

AMIS120XL Tone Generator Component List

Designator	Part Type	Description	Manufacturer's Code
C150	.1u	Metalised Poly 100V	2124282101
C18	22P	Multilayer Ceramic 100V	2127181220
C21	22P	Multilayer Ceramic 100V	2127181220
C22	22u	Electrolytic 50V	2121250220
C26	.47u	Metalised Poly 100V	2124262472
C27	.47u	Metalised Poly 100V	2124262472
C47	47u	Electrolytic 35V	2121230470
C48	.1u	Metalised Poly 100V	2124282101
C49	470u	Electrolytic 35V	2121240472
C51	470u	Electrolytic 35V	2121240472
C52	.1u	Metalised Poly 100V	2124282101
C53	4u7	Electrolytic 35V	2121230479
C54	4u7	Electrolytic 35V	2121230479
C55	4u7	Electrolytic 35V	2121230479
C56	470u	Electrolytic 35V	2121240472
C59	47u	Electrolytic 35V	2121230470
C60	47u	Electrolytic 35V	2121230470
C61	47u	Electrolytic 35V	2121230470
C62	4u7	Electrolytic 35V	2121230479
C63	47u	Electrolytic 35V	2121230470
C64	47u	Electrolytic 35V	2121230470
C65	4u7	Electrolytic 35V	2121230479
D18	BAV21	Small signal diode	2133400201
D5	BAV21	Small signal diode	2133400201
D6	BAV21	Small signal diode	2133400201
D7	BAV21	Small signal diode	2133400201
D8	BAV21	Small signal diode	2133400201
D9	10V	Zener diode 9V1 (IN5239BTR)	2136090919
IC14	LM7815	I.C. Regulator TO220	2151370815
IC15	LM7815	I.C. Regulator TO220	2151370815
IC17	LM78L05	I.C. Regulator TO92	2151270805
IC18	M5222	VCA	2153850222
IC6	16C54	PIC 16C54-XT/P 18 pin DIP	2159601654
IC8A	LM358	Dual op-amp 8 pin DIP	2152800358
IC8B	LM358	Dual op-amp 8 pin DIP	2152800358
R34	220R	Resistor Metal film 1/2w	9111590221
R49	100K	Resistor Metal film 1/2w	9111590104
R55	47K	Resistor Metal film 1/2w	9111590473
R56	47K	Resistor Metal film 1/2w	9111590473
R57	15K	Resistor Metal film 1/2w	9111590153
R59	1M	Resistor Metal film 1/2w	9111590105
R60	100R	Resistor Metal film 1/2w	9111590101
R61	2K2	Resistor Metal film 1/2w	9111590222
R62	100K	Resistor Metal film 1/2w	9111590104
R63	10K	Resistor Metal film 1/2w	9111590103
R65	4K7	Resistor Metal film 1/2w	9111590472
R66	100R	Resistor Metal film 1/2w	9111590101
R68	1K8	Resistor Metal film 1/2w	9111590182
R78	10R	Resistor Metal film 1/2w	9111590100
R92	3K9	Resistor Metal film 1/2w	9111590392
R93	4K7	Resistor Metal film 1/2w	9111590472
R94	4K7	Resistor Metal film 1/2w	9111590472
R95	10R	Resistor Metal film 1/2w	9111590100

R96	10R	Resistor Metal film 1/2w	9111590100
R98	10R	Resistor Metal film 1/2w	9111590100
RN1A	10K	Resistor Metal film 1/2w	9111590103
RN1B	10K	Resistor Metal film 1/2w	9111590103
RN1C	10K	Resistor Metal film 1/2w	9111590103
RN1D	10K	Resistor Metal film 1/2w	9111590103
RY1		Relay single pole double throw	2522240842
V1	BC546	Transistor TO92	2144200546
V2	BC546	Transistor TO92	2144200546
V3	BC546	Transistor TO92	2144200546
XT1		Resonator 4.0mHz	2171400000