

**DX1500**  
**POWER AMPLIFIER**  
**OWNER'S MANUAL**

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Thank you for choosing a Hill Audio power amplifier. We are sure it will give you many years of trouble free service: to help you achieve this, please read the following advice before turning on your amplifier.

Due to our policy of continuous development, we reserve the right to alter any specification without notice.

### WARNING

**To prevent shock or fire hazard  
DO NOT EXPOSE to rain or moisture!**

### CAUTION

**There are no user servicable parts inside the  
amplifier.**

**Any and all controls needed for operation of the  
amplifier are accessible from outside the  
amplifier.**

### RACK MOUNTING YOUR AMPLIFIER

It is recommended by Hill Audio that you support the back of the amplifier when mounting in a rack. Hill Audio will not be responsible for any damage (electronic or structural) caused from insufficient structural support when mounted.

## BACK PANEL

POWER:	20 amp attached AC cord.
INPUT:	XLR - transformerless, balanced <b>pin #3 +, #2 -</b> 1/4" jack balanced <b>tip +, ring -</b> unbalanced <b>tip +</b> Terminal block for installations
OUTPUT:	8 banana sockets on 3/4" centres Terminal block for installations
FANS:	2 x 3" fans, thermal-servo controlled
GROUND:	Ground isolation switch
BRIDGE:	switch to turn on the MONO bridging circuit

## FRONT PANEL

INPUT LEVEL:	Sensitivity control per channel Green LED indicating signal present Red LED indicating onset of clip per channel
ON/OFF:	power on circuit breaker LED indicating power on
PROTECTION:	LED indicating protect circuit on
BRIDGE:	LED indicating MONO BRIDGE active

## SPECIFICATIONS

<b>Size</b>	19" rack mount, 3-1/2" high (2 rack spaces) 13" behind back panel	
<b>Weight</b>	34 lbs (15Kg)	
<b>AC Supply</b> 50/60Hz	240/220 VAC - 5 amps - music power 240/220 VAC - 10 amps - full power sine wave 120/110 VAC - 10 amps - music power 120/110 VAC - 20 amps - full power sine wave The supply voltage is NOT switchable, so verify the voltage of your amplifier BEFORE you switch it on.	
<b>AC Breaker</b>	240/220 - 10amp	120/110 - 20 amp
<b>Noise</b>	-100dB	
<b>Power</b>	r.m.s. per channel, both channels driven <b>300</b> watts into 8 ohms, <b>500</b> watts into 4 ohms <b>750</b> watts into 2 ohms bridged MONO: <b>1000</b> watts into 8 ohms <b>1500</b> watts into 4 ohms	
<b>IMD SMPTE</b>	250mW to rated power 60Hz/7kHz 4:1 better than 0.015% at 8 and 4 ohms better than 0.02% at 2 ohms	
<b>THD DIN</b> 1kHz:	within rated power better than 0.01% at 8 and 4 ohms better than 0.02% at 2 ohms	
20Hz - 20kHz:	within 0.5dB of rated power better than 0.02% at 8 ohms better than 0.04% at 4 ohms better than 0.1% at 2 ohms	
<b>Slew rate</b>	greater than 40V/microsecond	
<b>Damping</b>	600 at 8 ohms < 1 kHz 300 at 8 ohms 1kHz-20kHz	
<b>Rise time</b>	3 microseconds	
<b>Frequency Response</b>	20Hz - 20kHz, +0dB, -0.5dB	
<b>Phase Response</b>	18° @ 10khz	
<b>Input Impedance</b>	10k unbalanced, 20k balanced	
<b>Load Impedance</b>	2 - 16 ohms	
<b>Input sensitivity</b>	1.55v, +6dBm centre detent at 3.1v, +12dBm	

## OPERATION

### CIRCUITRY - TOTAL SYMMETRY:

Using a unique transformer coupled driver stage, the DX1500 features identical ultra-linear NPN output devices connected in a 'Super A' sliding bias configuration exhibiting a much more linear response than conventional amplifiers using NPN and PNP devices. The negative feedback is a very low 26dB and, in addition, the transformer coupled drive interrupts the DC voltage chain - **eliminating all the circumstances in which a conventional amplifier can introduce DC voltage onto the speaker.**

### INPUT SENSITIVITY - 1.55V (+6dBm):

This multi-position, centre detent control is graduated in volts to signify the input signal voltage needed to produce the rated power at the output connectors. The centre detent is at 3.1V (+12dBm)

Your DX1500 amplifier will develop rated output power as long as the signal input is at least 1.55 volts.

So as not to overdrive the amplifier, set the input sensitivity control to a setting that matches the output level of the device driving the amplifier.

**For example :** if you are wiring your system such that your crossover is driving your amplifier, and your crossover has a 3 volt maximum output, set the sensitivity control of your amplifier to the 3 volt position so that when your crossover develops rated output (3volts) your amplifier will develop rated output (rated power) without clipping.

### CONNECTING AN INPUT SIGNAL:

The DX1500 will accept balanced and/or unbalanced signals using 3 pin XLRs, stereo 1/4" jacks and mono 1/4" jacks. The connector not being used for signal input can be used to link input channels of different amplifiers to the same signal - e.g. with signal into the LEFT channel using an XLR connector, the 1/4" jack can be used to feed signal to the right channel input of the same amplifier, or one or both inputs of any other DX1500 amplifier by using a 1/4" to 1/4" cord (stereo or mono), or a 1/4" to XLR cord (balanced or unbalanced).

A terminal block is provided on the rear panel to allow users to permanently wire the amplifier into an installation. All the outputs and inputs are available on this block.

### BRIDGE:

When the mono bridging switch is depressed, the amplifier is in the BRIDGE (MONO) mode: both channels are now internally connected, so only the left channel signal input is needed to drive the amplifier.

The output connections should be between the RED terminals of the output sockets (one Left+ and one Right-).

**AC SWITCH:** The AC circuit breaker is ON in the down position

**GROUND:** some ground-loop hum problems may require isolating the audio [technical] ground from the AC ground: moving the switch provided achieves this  
N.B.-the AC ground remains permanently connected to chassis.

## COOLING

### FANS:

The speed of the fans is servo-controlled by an automatic temperature sensitive circuit, which will automatically start the fans when your amplifier reaches a temperature of 40°C, gradually speeding up to full airflow at 70°C

It is recommended that the fan covers are cleaned of dust periodically.

### RUNNING TEMPERATURE:

Unlike other power amplifier manufacturers, Hill Audio constructs amplifiers out of custom aluminium heatsink extrusion that is not 'hidden' inside the amplifier's outer box (in fact the whole amplifier casing acts as a heatsink).

Because of this, your amplifier will give the **appearance** of running hotter than other amplifiers, as the front panel and sides can be hot to the touch after continuous full power operation. This is normal.

One problem encountered by all power amplifiers is one of heat dissipation - and to protect amplifiers from overheating, a thermal switch to shut down the amp when it reaches a specific temperature is standard on most amplifiers. In the DX1500 the thermal sensing circuit will activate the protection relay when the heatsink temperature reaches 80°C

If an amplifier is driven at high output with a different signal in each channel (such as one channel driving bass frequencies at low impedances and the other channel driving high frequencies) it is possible for one side of the amplifier to reach 'shut down' temperature before the other - which is a waste of the thermal dissipation capacity of that amplifier.

To eliminate this problem, the DX1500 has all the positive driven devices on one heat sink and all the negative driven devices on the other, which allows any heat developed by either channel of the DX1500 to be uniformly distributed throughout the whole amplifier, such that in the above mentioned situation, the DX1500 will NOT shut down until the whole amplifier reaches 'shut down' temperature - NOT just one channel - maximizing the DX1500 thermal dissipation characteristics.

## PROTECTION

The DC isolation transformer coupling technique allows the amplifier circuitry to perform perfectly safely and reliably without any protection devices whatsoever in the audio signal path - with significant sonic benefit particularly at or beyond clipping.

There are no internal fuses in the amplifier as all circuits are relay protected and the AC line is protected by the on/off circuit breaker.

### RELAY:

Persistent overdriving, short circuit, component malfunction etc., will activate a protection relay, shutting down the entire amplifier.

If the relay does trip, for example, after sensing continuous high level, high frequency feedback (to protect your high frequency drivers), it will automatically re-set within 3 seconds.

If it still senses a problem it will trip and try to re-set again.

After 3 attempts the relay will turn off the amplifier.

To reset the amplifier at this stage, you will have to turn the on/off breaker off and back on.

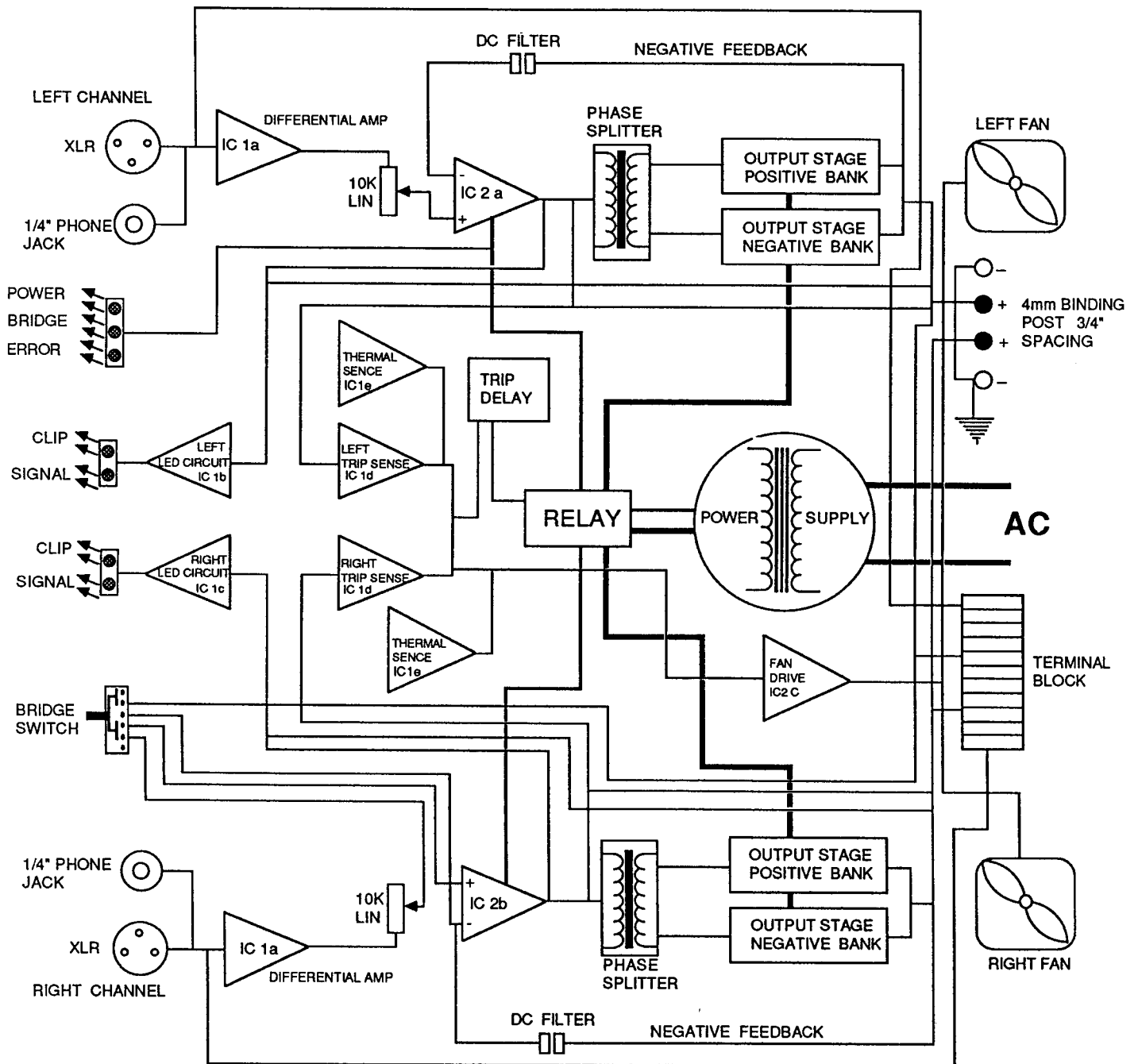
If the relay re-trips immediately when switched on, check that:

1. the DX1500 is not being overdriven or being driven with ultra high frequencies (such as an oscillating crossover) by turning down the input level controls before trying again.
2. the DX1500 is not driving a shorted speaker or speaker cable by removing the speaker cables before trying again.
3. the DX1500 is within normal operating temperature. If the amplifier has thermally tripped, it will stay off until it has cooled down to operating temperature.

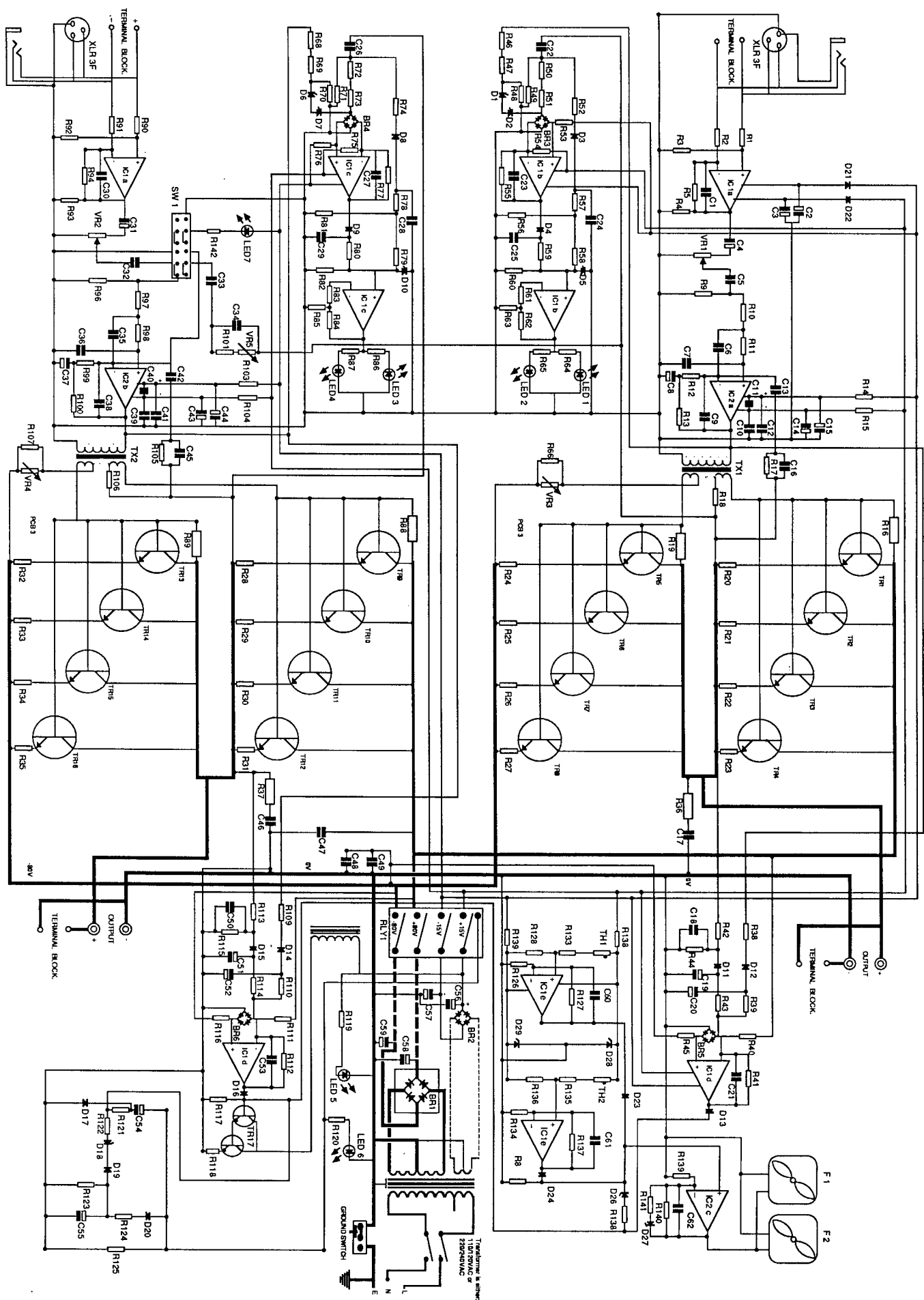
If after trying all the above you still cannot turn on your DX1500, or the AC breaker continually trips, you should consult your Hill Audio authorized dealer.

# BLOCK DIAGRAM

## DX1500







R 1	10K	5 %	0.25 W	R 84	15K	5 %	0.25 W	C 1	33p F	PC	D 1	2v7	Zener
R 2	10K	5 %	0.25 W	R 85	100R	5 %	0.25 W	C 2	470u F	EL 16V	D 2	2v7	Zener
R 3	10K	5 %	0.25 W	R 86	1K	5 %	0.25 W	C 3	470u F	EL 16V	D 3	1N4148	Diode
R 4	560R	5 %	0.25 W	R 87	1K	5 %	0.25 W	C 4	22u F	ST 16V	D 4	1N4148	Diode
R 5	10K	5 %	0.25 W	R 88	820R	5 %	25 W	C 5	1u F	PL	D 5	2V7	Zener
R 6	####	5 %	0.25 W	R 89	820R	5 %	25 W	C 6	47p F	PC	D 6	2V7	Zener
R 7	####	5 %	0.25 W	R 90	10K	5 %	0.25 W	C 7	22p F	PC	D 7	2V7	Zener
R 8	100K	5 %	0.25 W	R 91	10K	5 %	0.25 W	C 8	100u F	ST 3V	D 8	1N4148	Diode
R 9	100K	5 %	0.25 W	R 92	10K	5 %	0.25 W	C 9	22p F	PC	D 9	1N4148	Diode
R 10	39K	5 %	0.25 W	R 93	560R	5 %	0.25 W	C 10	0.22u F	PL	D 10	2V7	Zener
R 11	39K	5 %	0.25 W	R 94	10K	5 %	0.25 W	C 11	0.22u F	PL	D 11	1N4148	Diode
R 12	820R	5 %	0.25 W	R 95	####	5 %	0.25 W	C 12	0.22u F	PL	D 12	1N4148	Diode
R 13	10K	5 %	0.25 W	R 96	100K	5 %	0.25 W	C 13	4u7 F	100V DC	D 13	1N4148	Diode
R 14	4R7	5 %	2.5 W	R 97	39K	5 %	0.25 W	C 14	470u F	EL 16V	D 14	1N4148	Diode
R 15	6R8	5 %	2.5 W	R 98	39K	5 %	0.25 W	C 15	470u F	EL 16V	D 15	1N4148	Diode
R 16	820R	5 %	25 W	R 99	820R	5 %	0.25 W	C 16	150p F	SM	D 16	1N4148	Diode
R 17	22K	5 %	0.25 W	R 100	10K	5 %	0.25 W	C 17	1u F	PL	D 17	1N4148	Diode
R 18	4R7	5 %	2.5 W	R 101	15K	5 %	0.25 W	C 18	6n8 F	PL	D 18	10V	Zener
R 19	820R	5 %	25 W	R 102	####	5 %	0.25 W	C 19	22u F	ST 16V	D 19	1N4148	Diode
R 20	R33	5 %	5 W	R 103	4R7	5 %	2.5 W	C 20	22u F	ST 16V	D 20	1N4148	Diode
R 21	R33	5 %	5 W	R 104	6R8	5 %	2.5 W	C 21	1Op F	PC	D 21	1N4002	Diode
R 22	R33	5 %	5 W	R 105	22K	5 %	0.25 W	C 22	1u F	PL	D 22	1N4002	Diode
R 23	R33	5 %	5 W	R 106	4R7	5 %	2.5 W	C 23	1Op F	PC	D 23	1N4148	Diode
R 24	R33	5 %	5 W	R 107	5R6	5 %	2.5 W	C 24	0.22u F	PL	D 24	1N4148	Diode
R 25	R33	5 %	5 W	R 108	####	5 %	0.25 W	C 25	1u F	PL	D 25	1N4148	Diode
R 26	R33	5 %	5 W	R 109	1K	5 %	0.25 W	C 26	1u F	PL	D 26	4.7V	Zener
R 27	R33	5 %	5 W	R 110	8K2	5 %	0.25 W	C 27	1Op F	PC	D 27	4.7V	Zener
R 28	R33	5 %	5 W	R 111	22K	5 %	0.25 W	C 28	0.22u F	PL	D 28	10V	Zener
R 29	R33	5 %	5 W	R 112	10K	5 %	0.25 W	C 29	1u F	PL	D 29	10V	Zener
R 30	R33	5 %	5 W	R 113	10K	5 %	0.25 W	C 30	33p F	PC			
R 31	R33	5 %	5 W	R 114	8K2	5 %	0.25 W	C 31	22u F	ST 16V			
R 32	R33	5 %	5 W	R 115	2K2	5 %	0.25 W	C 32	1u F	PL	BR 1	15A	Bridge
R 33	R33	5 %	5 W	R 116	22K	5 %	0.25 W	C 33	4u7 F	100V DC	BR 2	1.0A	Bridge
R 34	R33	5 %	5 W	R 117	22K	5 %	0.25 W	C 34	####		BR 3	1.0A	Bridge
R 35	R33	5 %	5 W	R 118	15R	5 %	2.5 W	C 35	47p F	PC	BR 4	1.0A	Bridge
R 36	R47	5 %	15 W	R 119	2K2	5 %							

