

ALLEN&HEATH

GL2200

Dual Function Audio Mixing Console

SERVICE MANUAL

PUBLICATION: AP3389

CONTENTS

Introduction	3
Service and Technical Support.....	3
Safety Warning & General Precautions.....	3
The GL2200 Range & Options	4
Flightcasing the Console	4
Dimensions	4
Specifications & Connections	5
Ordering a GL2200 Console, Options and Documentation	6
Ordering an Assembly	7
Ordering a Spares Kit	8 - 9
Front Panel Layout	10
Rear Panel Layout.....	11
Block Diagram	12
GL2200 INPUT Circuit Board component Ident.....	AG3395
GL2200 INPUT Circuit Diagram	C3395
GL2200 STEREO Circuit Board component Ident.....	AG3428
GL2200 STEREO Circuit Diagram (Page 1 of 2).....	C3428
GL2200 STEREO Circuit Diagram (Page 2 of 2).....	C3428
GL2200 GROUP Circuit Board component Ident.....	AG3425
GL2200 GROUP Circuit Diagram (Page 1 of 2).....	C3425
GL2200 GROUP Circuit Diagram (Page 2 of 2).....	C3425
GL2200 LEFT Circuit Board component Ident.....	AG3426
GL2200 LEFT Circuit Diagram (Page 1 of 3).....	C3426
GL2200 LEFT Circuit Diagram (Page 2 of 3).....	C3426
GL2200 LEFT Circuit Diagram (Page 3 of 3).....	C3426
GL2200 RIGHT Circuit Board component Ident.....	AG3427
GL2200 RIGHT Circuit Diagram (Page 1 of 2).....	C3427
GL2200 RIGHT Circuit Diagram (Page 2 of 2).....	C3427
GL2200 OSC/NOISE Circuit Board component Ident.....	AG3519
GL2200 OSC/NOISE Circuit Diagram.....	C3519
GL2200 PSU Circuit Board component Ident	AG3504
GL2200 PSU Circuit Diagram	C3504

Warning to the Service Engineer

Allen & Heath warns that any unauthorised changes or modifications to the **GL2200** unit may invalidate the legal compliance of the unit and could void the user's authority to operate the equipment.

GL2200 Service Manual AP3389 Issue 3. Copyright © 2001 Allen & Heath. All rights reserved

MANUFACTURED IN ENGLAND BY:

Allen & Heath Limited
Kernick Industrial Estate
Penryn, Cornwall, TR10 9LU. UK
<http://www.allen-heath.com>

ALLEN & HEATH AGENT:



Introduction

The information presented in this manual is intended for competent technical personnel to carry out service and product support for the **GL2200** range of consoles. We assume that the reader is familiar with the related electronic theory and audio terminology, and is able to carry out servicing, faultfinding and repair of audio equipment of this type. Service personnel should also be familiar with audio systems, mains earthing and power requirements, as well as handling precautions.

For information on the configuration, operation and application of the GL2200 range, please refer to GL2200 User Guide (A&H Part no: AP3388).

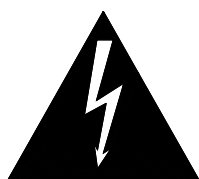
Whilst we believe the information in this manual to be reliable we do not assume responsibility for inaccuracies. We also reserve the right to make changes in the interest of further product development.

Service and Technical Support

Under normal conditions the **GL2200** does not require user maintenance or internal calibration. Any service work required should be carried out by qualified service personnel only.

We are able to offer further product support through our world-wide network of approved dealers and service agents. You can also access our Web site on the Internet for information on our product range, assistance with your technical queries or simply to chat about audio matters. To help us provide the most efficient service please keep a record of the console serial number, the date and place of purchase to be quoted in any communication regarding this product.

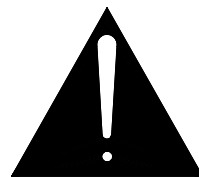
SAFETY WARNING!



Mains electricity is dangerous and can kill. Mains voltage is present within the console power supply unit.

Do not remove the power supply cover with mains electricity connected. To ensure your safety, mains earth is connected to the chassis through the power lead. Do not remove this mains earth connection.

To avoid the risk of fire, replace the mains fuse only with the correct value and type as indicated on the power supply unit.



The internal power supply unit contains no serviceable components and must be replaced as a complete unit if a failure occurs.

General Precautions

Your **GL2200** is ruggedly constructed to give many years of reliable operation. However, you will extend the life of the console and preserve its cosmetics by applying these simple common sense precautions.

- Avoid storing or using the mixing console in conditions of excessive heat or cold, or in positions where it is likely to be subject to vibration, dust, dirt or moisture.
- Do not use any liquids to clean the control surface of the console, a soft dry brush or dry lint-free cloth is ideal.
- Use only water or ethyl alcohol to clean the trim and scribble strips. Other solvents may cause damage to paint or plastic parts.
- The faders, switches and potentiometers are lubricated for life. The use of electrical lubricants on these parts is not recommended.
- Avoid using the console close to strong sources of electromagnetic radiation (e.g. video monitors, high power electric cabling): this may cause degradation of the audio quality due to induced voltages in connecting leads and chassis. For the same reason, always site any external power supply away from the unit.

The GL2200 Range

12, 16, 24 and 32 channel models

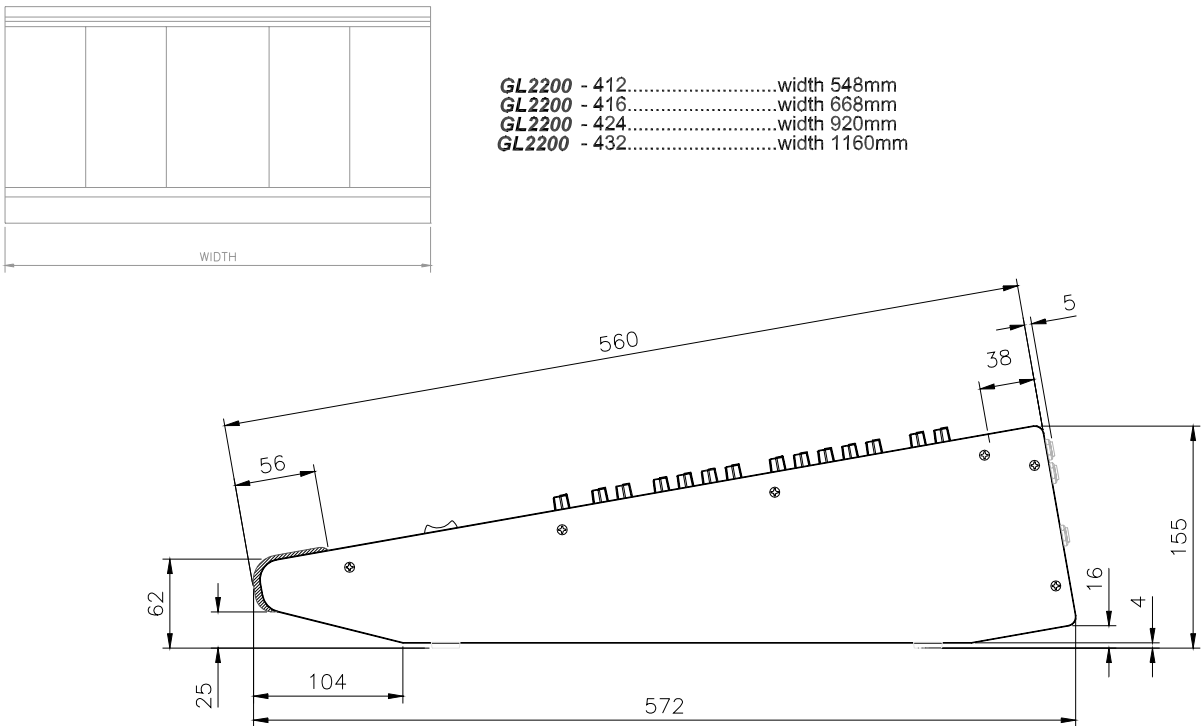
GL2200-412	10 mono, 2 stereo, 4 groups, 6 aux, 2 stereo returns, L, R, Mono sum
GL2200-416	14 mono, 2 stereo, 4 groups, 6 aux, 2 stereo returns, L, R, Mono sum
GL2200-424	22 mono, 2 stereo, 4 groups, 6 aux, 2 stereo returns, L, R, Mono sum
GL2200-432	30 mono, 2 stereo, 4 groups, 6 aux, 2 stereo returns, L, R, Mono sum

Options

GL2200-SL1	Sys-link buss expander, one kit per console
RPS9	2U rack mount power supply for backup
RPS11	3U rack mount power supply for backup

Flightcasing The Console

If the console is to be regularly moved we recommend that it is installed in a foam-lined flightcase. At all times avoid applying excessive force to any knobs, switches or connectors. Dimensions for flightcasing the console are shown below:



Dimensions

	Unpacked				Packed			
	Width	depth	height	weight(kg)	Width	depth	height	weight(kg)
GL2200-412	548	572	155	16	700	750	280	20
GL2200-416	668	572	155	18	815	750	280	23
GL2200-424	920	572	155	24	1065	750	280	29
GL2200-432	1160	572	155	30	1325	750	280	35
RPS9 power supply	483	140	96	6	540	270	180	8

Specifications

0 dBu = 0.775 Volts rms 0 dBV = 1 Volt rms

HEADROOM: +21dB

MAX OUTPUT:XLR +25dBu 2kohm max load
..... JACK +21dBu 2kohm max load

METERS: L, R.....peak reading 12 bar LED
Groups 1-4.....peak reading 4 segment LED
Channels.....peak reading 4 segment LED

PEAK LEDs: Turn on 5dB before clipping

FREQUENCY RESPONSE referred to 1kHz @ +4dBu:
Any input to any output 20Hz to 30kHz +0/-1dB

DISTORTION: THD+Noise @ +14dBu 1kHz
Mic in to L-R output, 40dB gain..... 0.010%
Line in to L-R output, 0dB gain..... 0.008%

CMRR
Mic in, 40dB gain @ 1kHz..... >88dB

CROSSTALK: Referred to driven channel @ 1kHz

Adjacent channel < -94dB
Channel fader off < -90dB
Channel mute on < -90dB
Channel Pan pot isolation..... < -80dB

NOISE: Measured rms, 22kHz bandwidth

Mic input EIN (150 ohm source) < -128dB
Line preamp, 0dB gain < -90dBu
L-R output residual noise..... < -94dBu (98dB S/N)
L-R faders '0', nothing routed < -90dBu (94dB S/N)
L-R mix noise (16 channels routed)..... < -84dBu (88dB S/N)
Group, faders '0', nothing routed < -91dBu (95dB S/N)
Group mix noise (16 channels routed). < -84dBu (88dB S/N)

POWER SUPPLY:.....100 to 240V AC @ 47/63Hz
..... Internal, autosensing AC mains input
Power consumption: 60W max
Mains Fuse rating 100-240VAC: T1A 250V 20mm

Connections

INPUTS:

Mic in	XLR	pin 2 hot, 3 cold, balanced	>2k Ohm	variable -60 to -20dBu
Line in	XLR	pin 2 hot, 3 cold, balanced	>10k Ohm	variable -30 to +10dBu
	or TRS jack	tip hot, ring cold, balanced	>10k Ohm	variable -30 to +10dBu
Stereo Ch Line in	TRS jack	tip hot, unbalanced	>8k Ohm	-20dBu min
Stereo Return	TRS jack	tip hot, unbalanced	>6k Ohm	-10dBV min
2-Track Return	RCA PHONO	unbalanced	>10k Ohm	-10dBV min
Insert Return	TRS jack	tip send, ring return, unbalanced	>6k Ohm	0dBu (chan), -2dBu (out)

OUTPUTS:

L-R, Group out	XLR	pin 2 hot, 3 cold, balanced	<75 Ohm	+4dBu, +27dBu max
Direct out	TRS jack	tip hot, impedance balanced	<75 Ohm	0dBu
2-Track sends	RCA PHONO	unbalanced	<75 Ohm	variable +21dBu max
Aux out	TRS jack	tip hot, impedance balanced	<75 Ohm	variable +21dBu max
Mono out	XLR	pin 2 hot, 3 cold, balanced	<75 Ohm	+4dBu, +27dBu max
Insert send	TRS jack	tip send, ring return, unbalanced	<75 Ohm	0dBu (chan), -2dBu (out)
Monitor out	TRS jack	tip left, ring right, unbalanced	<75 Ohm	variable +21dBu max
Phones out	TRS jack	tip left, ring right	for stereo headphones 30 to 600 Ohms	

Ordering a **GL2200** Console

To order a new console please specify the model number and AC mains voltage required.

MODEL	DESCRIPTION	ORDER CODE
GL2200 12 Channel	10 mono + 2 stereo input channels	GL2200-412/volts
GL2200 16 Channel	14 mono + 2 stereo inputs channels	GL2200-416/volts
GL2200 24 Channel	22 mono + 2 stereo inputs channels	GL2200-424/volts
GL2200 32 Channel	30 mono + 2 stereo inputs channels	GL2200-432/volts

Ordering an Option

To order an option please specify the serial number of the console that is to have the option fitted.

MODEL	DESCRIPTION	ORDER CODE
GL2200-SL1	GL2200 SYS-LINK KIT	GL2200-SL1
	GL2200 Balanced Output IC option	AE0302
RPS9	2U external linear power supply	RPS9/volts
RPS11	3U external linear power supply	RPS11/volts

Manuals and Support Documentation

	DESCRIPTION	ORDER CODE
	GL2200 User Guide	AP3388
	GL2200 Service Manual	AP3389
	GL2200 Brochure	AP3390
	GL2200 SYS-LINK Fitting Instructions	AP3622
	GL2200 SYS-LINK Application Note	AP3623
	RPS9 User Guide	AP0334
	RPS11 User Guide	AP2725

Service Tools

The tools required to service the **GL2200** are standard to an electronic service workshop and are easily obtainable. The following items are necessary for disassembly and service access:

1-point Crosshead screwdriver (M3, 4AB)	AT0004
2-point Crosshead screwdriver (M4, 6AB)	AT0002
11mm AF Nutdriver (potentiometer nuts)	
12mm AF Nutdriver (jack nuts)	

Ordering an Assembly

The following assemblies are supplied fully tested. Please note that several of these need to be assigned according to their position in the console. This is achieved by soldering wire links or assignment pads. It is best to check the assignment settings of the assembly you are replacing before removing it from the console. Please quote the description and order code for the part required.

Printed Circuit Board (PCB) Assemblies:

* specify position of PCB assembly

	Mono Input & Connector PCB assembly	002-412
	Stereo Input & Connector PCB assembly	002-442
	* Group PCB assembly	002-439
	OSC/Noise PCB assembly	002-453
	Left PCB assembly	002-440
	Right PCB assembly	002-441
	Switch Mode PSU assembly (12 & 16)	002-456
	Switch Mode PSU assembly (24 & 32)	002-457

IDC connector harnesses:

GL2200-412	20 way Main harness	AL3535
GL2200-416	20 way Main harness	AL3536
GL2200-424	20 way Main harness	AL3537
GL2200-432	20 way Main harness	AL3538

The Chassis Trim

GL2200 (all formats)	Left & Right Chassis side trims	AA2539-L/R
	Write-on strip (specify console size)	AK0327

Ordering a Spares Kit

It is recommended that the spares kit order code **002-481** is held and maintained by the service agent to enable in-field service repairs to the **GL2200** independent of the ALLEN & HEATH factory. Commonly available items such as resistors, capacitors, tools and soldering equipment are not included. The contents of the kit are listed below and are supplied in a cabinet of drawers. Individual spare parts may be ordered. Please quote the description and order code for the part required.

DESCRIPTION	ORDER CODE	QTY
-------------	------------	-----

Fixings:

Screw 4AB x 5/16 CSK Pozi Black	AB0059	5
Screw 6AB x 3/8 Pan Pozi Black	AB0062	10
Screw M3 x 6mm Pan Pozi Black	AB0072	5
Screw M3 x 8mm Pan Pozi Black	AB0073	10
Screw M3 x 12mm Pan Pozi Black	AB0078	5
Screw M3 x 16mm Pan Pozi Black	AB0079	5
Nylock Nut M3	AB0102	5
Screw M3 x 4mm Pan Pozi Black	AB0233	10
Screw 4AB x 1/4 Pan Pozi Plated	AB0252	4
Screw 6B x 1/4 Trunc Pozi Zinc	AB2083	10
Screw 4 x 5/16 Pan Pozi Plastite	AB2771	5
Screw 6B x 5/16 Pan Pozi Black	AB2809	5
Screw 4 x 5/16 Poly Pan Pozi	AB2810	10

Knobs and caps:

Knob Red & Grey 11mm D	AJ2074	10
Knob Blue & Grey 11mm D	AJ2075	10
Knob Light Blue & Grey 11mm D	AJ2076	10
Knob Green & Grey 11mm D	AJ2077	10
Knob Dark Grey & Grey 11mm D	AJ2078	10
Knob Yellow & Grey 11mm D	AJ2079	10
Knob Brown & Grey 11mm D	AJ2080	10
Button 5.5mm Square Grey	AJ2864	10
Button 10 x 5mm Rectangular Grey	AJ2865	10
Button Round Black	AJ2887	1
Button 5.5mm Square White	AJ2960	10
Button 5.5mm Square Red	AJ2961	10
Button 10 x 5mm Rectangular White	AJ2962	10
Button 10 x 5mm Rectangular Black	AJ3228	3
Fader Knob 11mm White+Black Line	AJ8078	10
Fader Knob 11mm Red+Black Line	AJ8079	5
Fader Knob 11mm Yellow+Black Line	AJ8080	5
Fader Knob 11mm Blue+Black Line	AJ8081	5

Faders, Potentiometers, Switches and connectors:

Pot 10KC x 2 (103C 14mm wide)	AI0150	5
Pot 20KK (203K 11mm wide)	AI8003	5
Pot 20KB centre click (203B 11mm wide)	AI8004	5
Pot 200KC x 2 (204C 11mm wide)	AI8005	5
Pot 20KB x 2 centre click (14mm wide)	AI8006	5
Pot 20KK x 2 (203K 14mm wide)	AI8007	5

Pot 10K centre click (103AC 14mm wide)	AI8008	5
Pot 5K (502RD 11mm wide)	AI8111	5
Fader 10KA x 2 60mm	AI8051	5
Fader 10KD 100mm	AI8117	10
Fader 10KD x 2 100mm	AI8118	5
Switch 2PCO Latching 90 Deg	AL0162	5
Switch 4PCO Latching	AL0333	5
Switch 2PCO Momentary	AL0374	5
Jack Socket Headphone	AL0328	1
XLR 3 Pin Female Vertical PCB Mount	AL2410	5
XLR 3 Pin Male Vertical PCB Mount	AL2411	5
Molex 0.1" Male 10 Pin 90 Deg	AL2572	3
Molex 0.1" Female 10 way Straight	AL2573	3
Jack Socket ¼" Stereo Unswitched	AL3407	5
Jack Socket ¼" Stereo Switched	AL3410	5
Pot Nut 9mm	AB8050	10

LEDs and Semiconductors:

Transistor BC549 NPN	AE0020	3
Transistor BC638 PNP	AE0037	2
Transistor BC637 NPN	AE0068	2
Transistor 2N4403 PNP	AE0273	5
Transistor BC556B PNP	AE3001	2
Transistor 2SB737 PNP	AE8069	5
IC Op-Amp TL072	AE0046	5
IC LM339N Quad Comparator	AE0071	2
IC CMOS 4053B	AE0117	1
IC Op-Amp NE5532N	AE0221	5
LED 3mm T1 Yellow	AE0084	5
LED 3mm T1 Green	AE0085	5
LED 3mm T1 Red	AE0086	5
LED Bar Rectangular 12 Way	AE2701	1
LED 5 x 2mm Rectangular Red Flat Top	AE3502	10

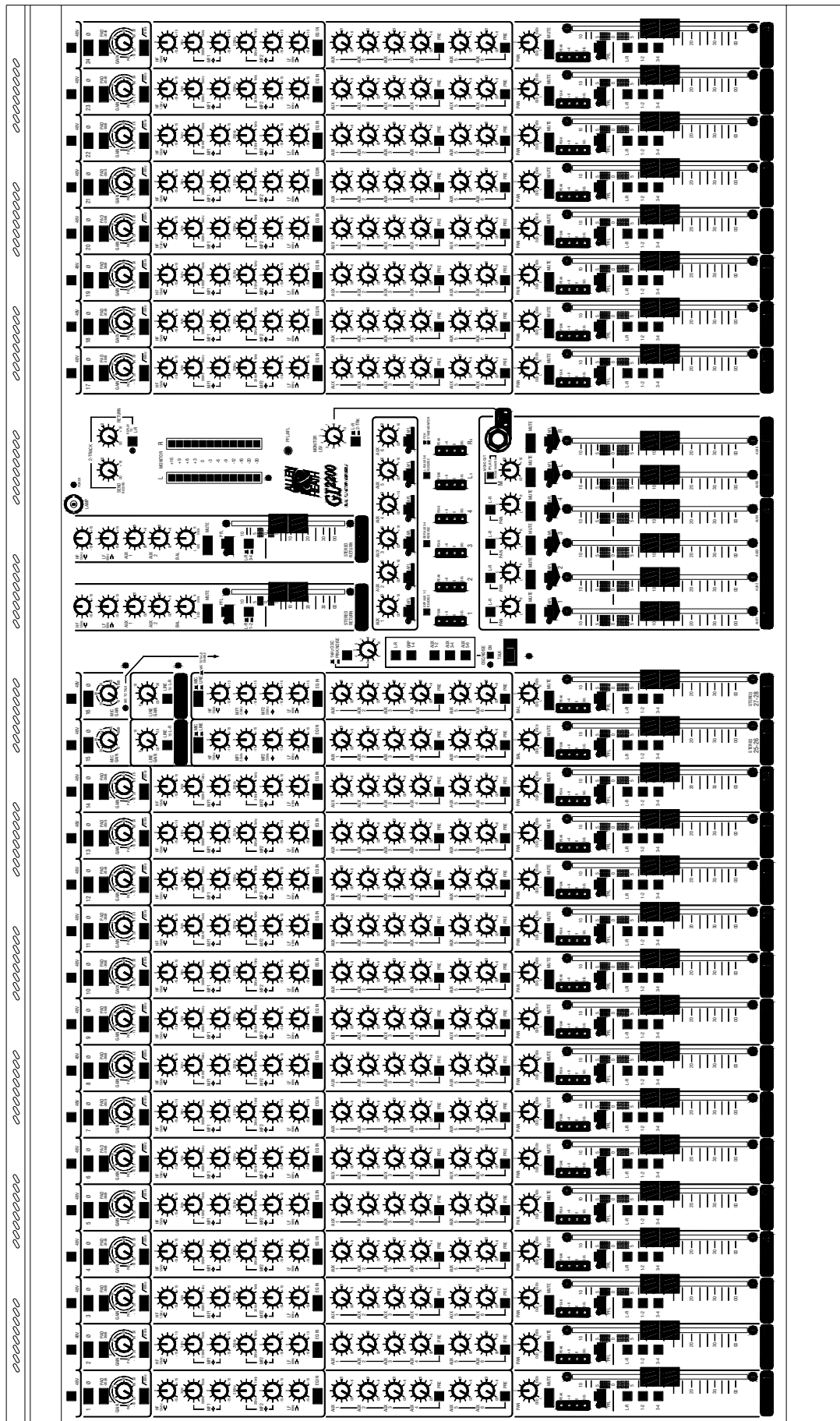
Power Supply:

Mains Lead IEC-2pin EURO	AH0205	-
Mains Lead IEC-3pin UK	AH0206	-
Mains Lead IEC-3pin US (C33)	AH0323	-
Mains Fuse 20mm 1A Anti-Surge	AL0305	10

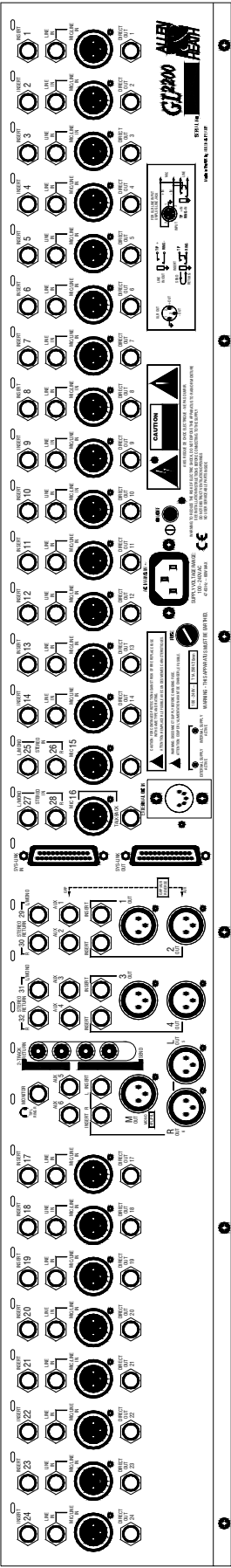
Miscellaneous:

GL2200-412 Packing Assembly	002-435	-
GL2200-416 Packing Assembly	002-436	-
GL2200-424 Packing Assembly	002-437	-
GL2200-432 Packing Assembly	002-438	-
Flex Cable 12 Way 90mm	AH2228	5

GL2200 FRONT PANEL

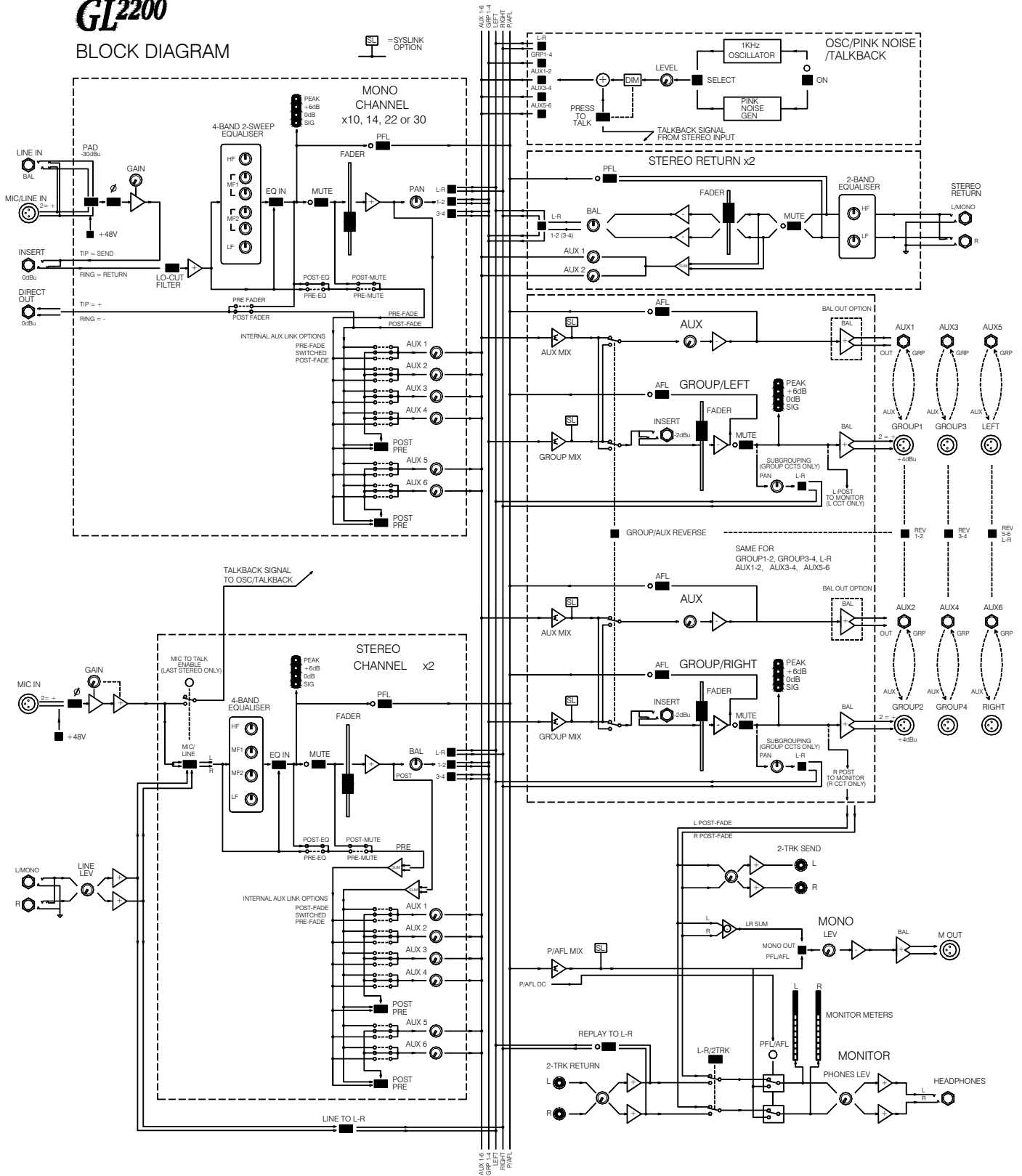


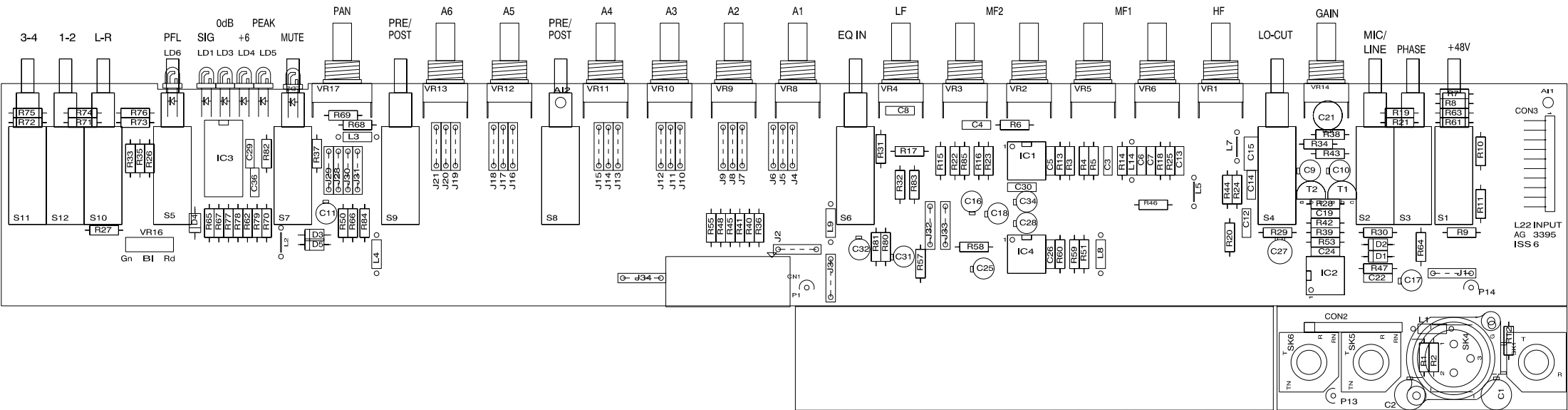
GL2200 REAR PANEL

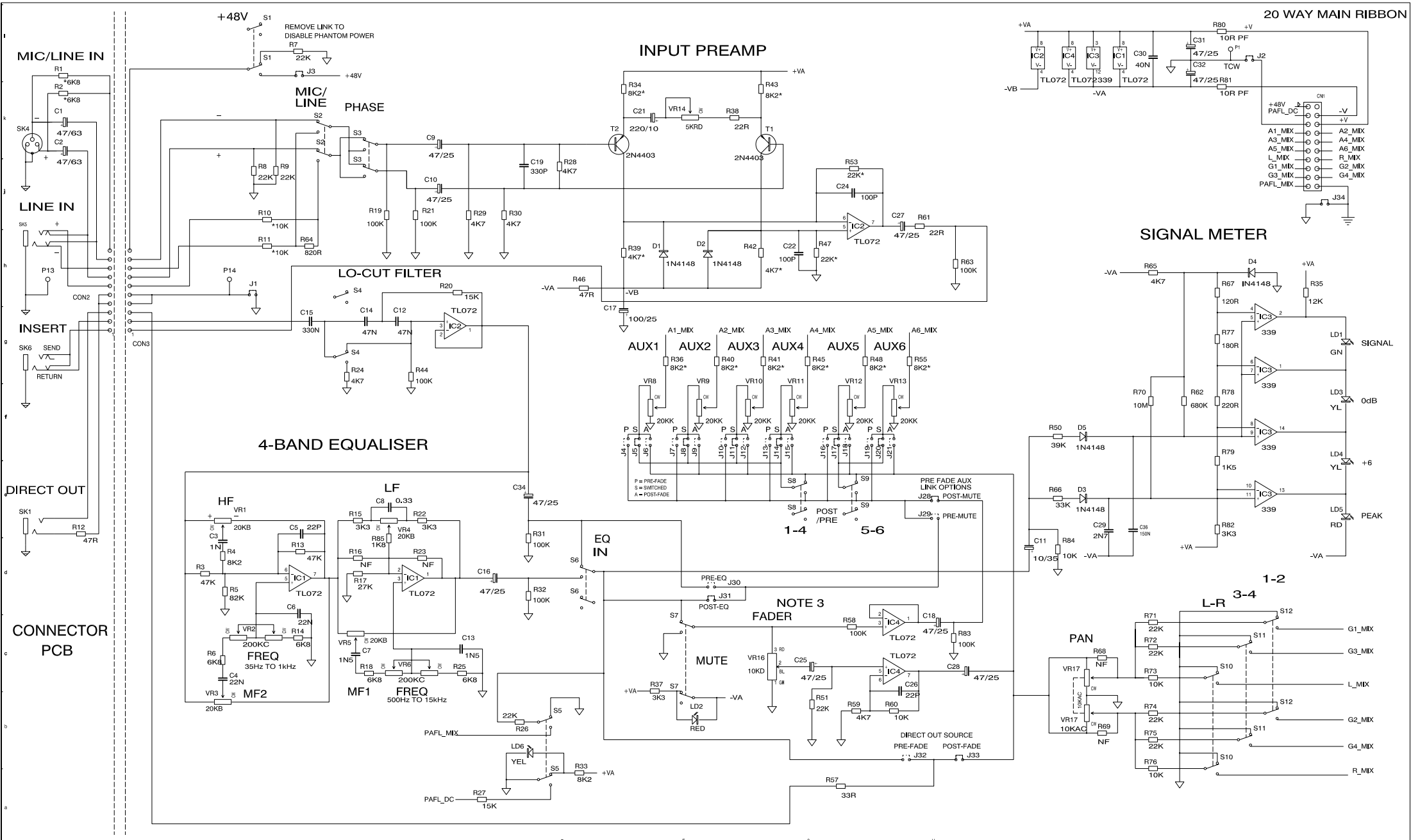


GL2200

BLOCK DIAGRAM

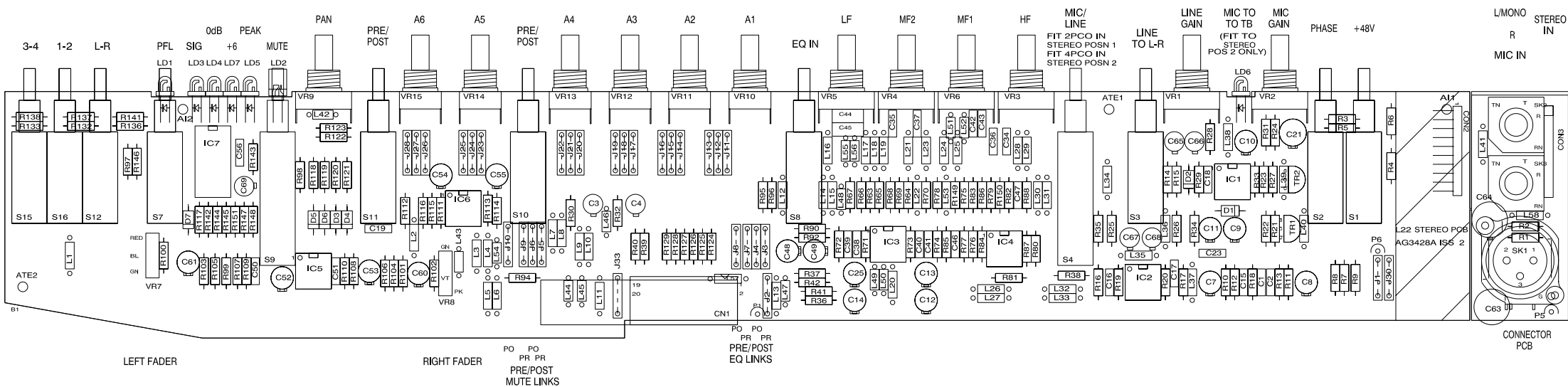


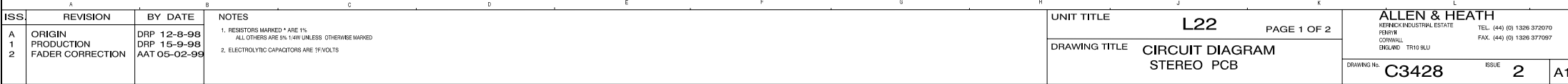


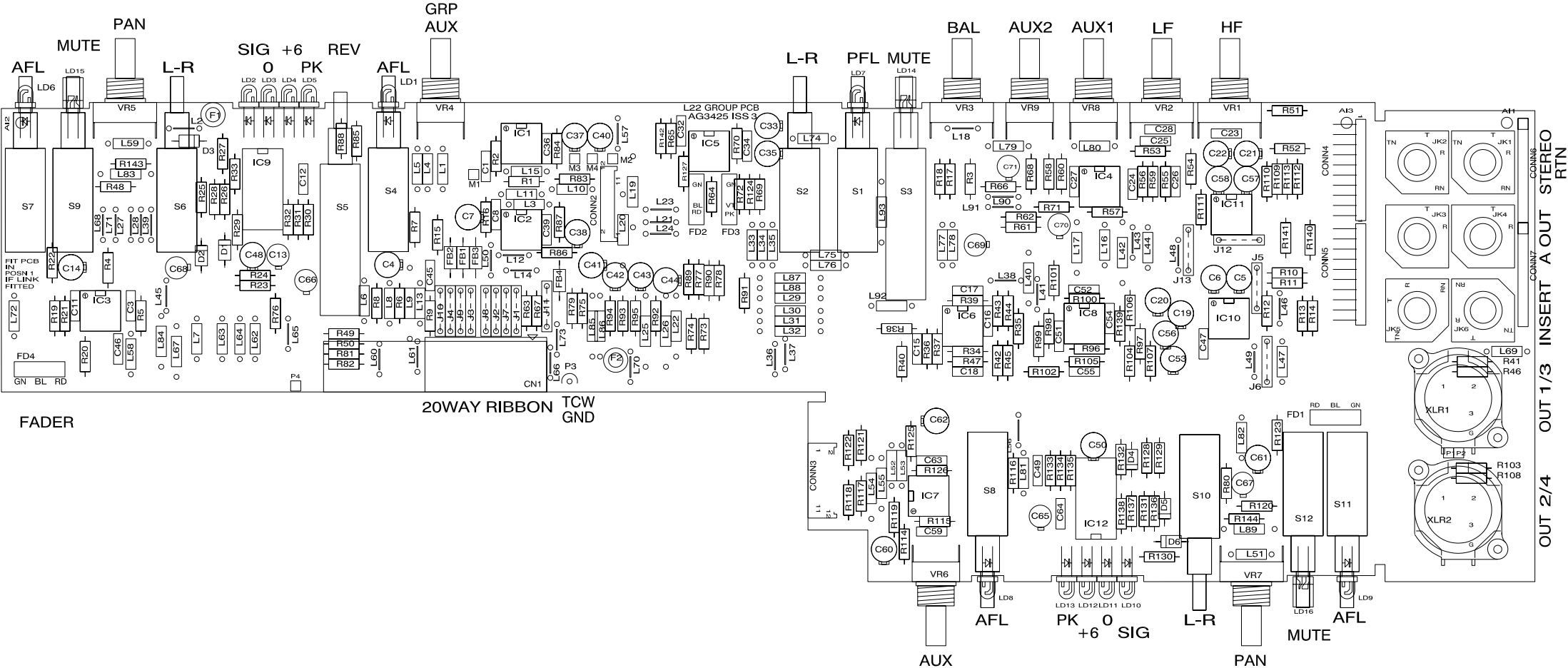


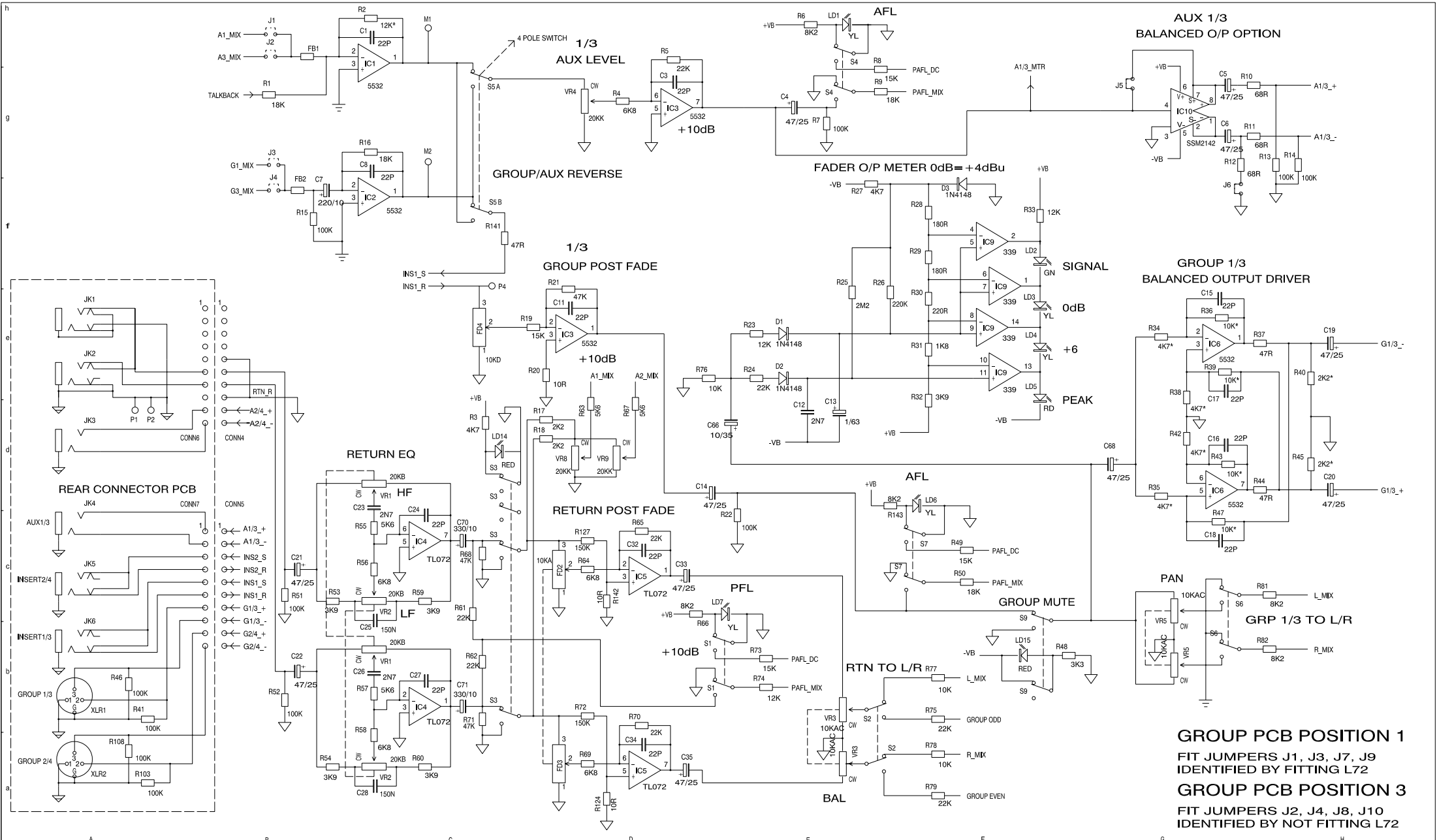
ISS	REVISION	BY DATE	NOTES	UNIT TITLE	DRAWING TITLE	DRAWING No.	ISSUE	
5	REVISED CCT	ARJ 24-02-99	1. RESISTORS MARKED * ARE 1% ALL OTHERS ARE 5% 1/4W UNLESS OTHERWISE MARKED	L22	CIRCUIT DIAGRAM	C3395	6	A1
6	LAYOUT CHANGES	AAT 22-10-01	2. ELECTROLYTIC CAPACITORS ARE 7F/VOLTS 3. R49 100K IF 10KA FADER FITTED R51 8K2 IF 10KA FADER FITTED		INPUT PCB			

ALLEN & HEATH
 KERNICK INDUSTRIAL ESTATE
 PENRYN CORNWALL
 ENGLAND TR10 9LU
 TEL(44) (0) 1326 372070
 FAX(44) (0) 1326 377097





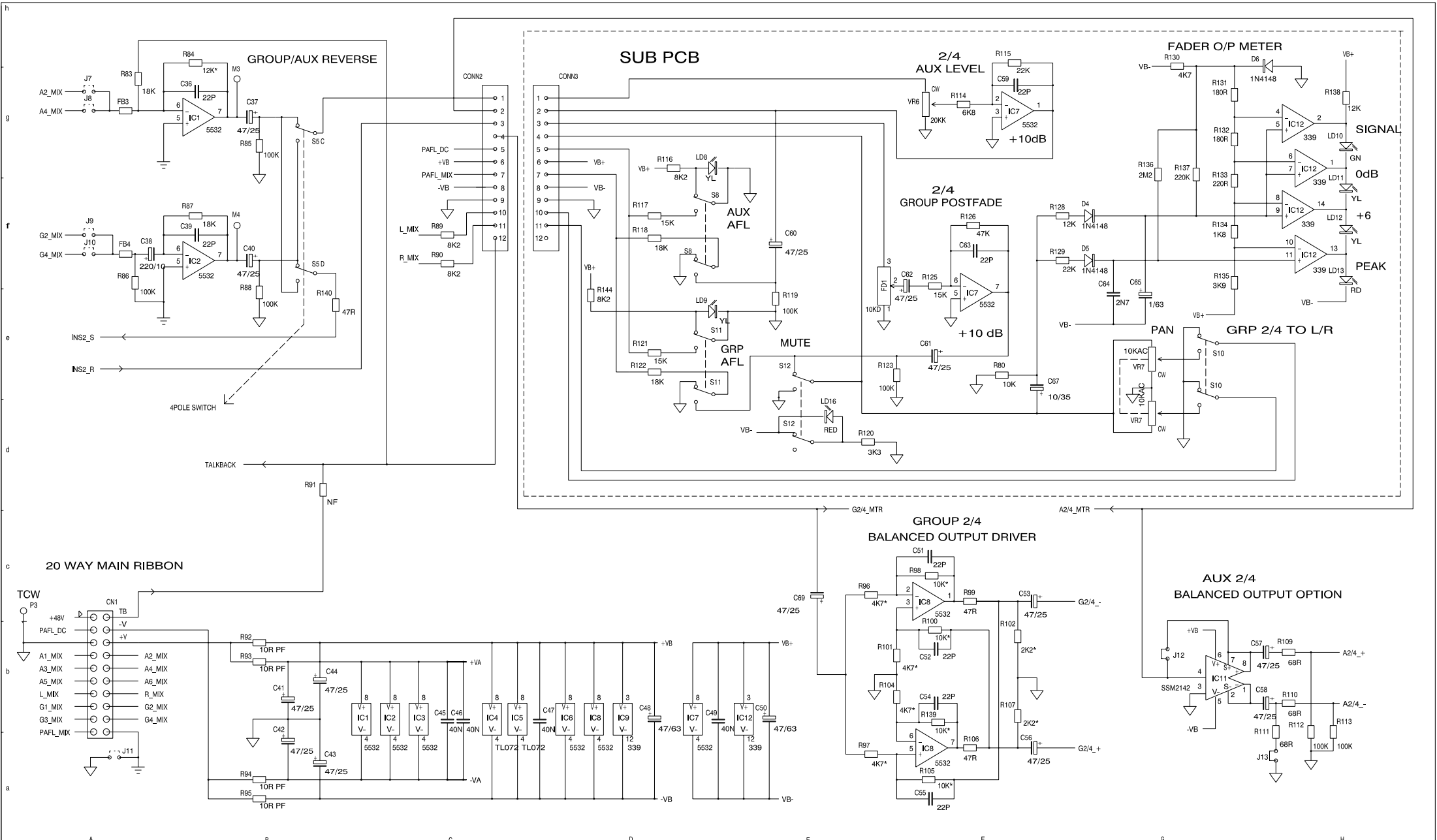




ISS	REVISION	BY DATE	NOTES	UNIT TITLE	DRAWING TITLE	DRAWING No.	ISSUE	
A	ORIGIN	DRP 24-8-98	1. RESISTORS MARKED * ARE 1%	L22	CIRCUIT DIAGRAM	AG3425	3.1	A2
1	PRODUCTION	AAT 21-09-98	ALL OTHERS ARE 5% 1/4W UNLESS OTHERWISE MARKED	PAGE 1 OF 2	GROUP PCB			
2	REVISION	DWD 25-02-99						
3	PCB JUMPER SPACING	AAT 24-06-99	2. ELECTROLYTIC CAPACITORS ARE 7F/VOLTS					
3.1	METER GLOW MODS.	DWD 20-06-00						

GROUP PCB POSITION 1
FIT JUMPERS J1, J3, J7, J9
IDENTIFIED BY FITTING L72
GROUP PCB POSITION 3
FIT JUMPERS J2, J4, J8, J10
IDENTIFIED BY NOT FITTING L72

ALLEN & HEATH
KERNICK INDUSTRIAL ESTATE
PENRYN
CORNWALL
ENGLAND TR10 9LU
TEL (44) (0) 1326 372070
FAX (44) (0) 1326 377097



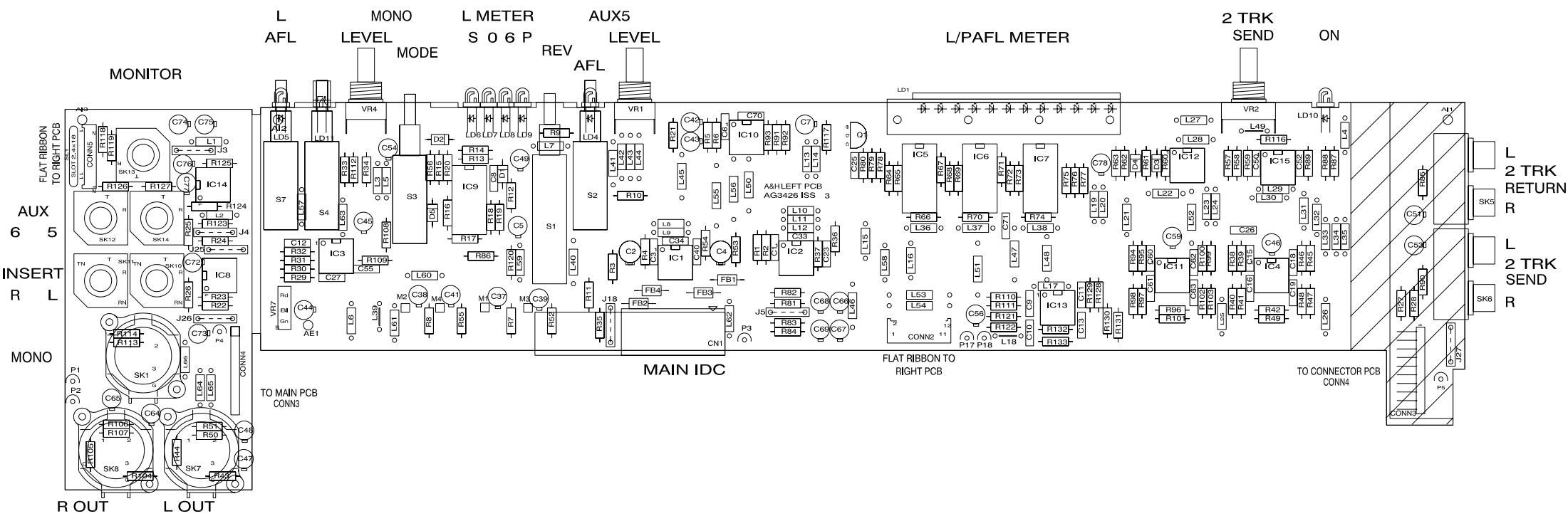
ISS	REVISION	BY DATE	NOTES	UNIT TITLE	DRAWING TITLE	DRAWING No.	ISSUE	
A	ORIGIN	DRP 24-8-98	1. RESISTORS MARKED * ARE 1% ALL OTHERS ARE 5% 1/4W UNLESS OTHERWISE MARKED	L22	CIRCUIT DIAGRAM	AG3425	3.1	A2
1	PRODUCTION	AAT 21-09-98	2. ELECTROLYTIC CAPACITORS ARE 7F/VOLTS		GROUP PCB			
2	REVISION	DWD 25-02-99						
3	PCB JUMPER SPACING	AAT 24-06-99						
3.1	METER GLOW MODS.	DWD 20-06-00						

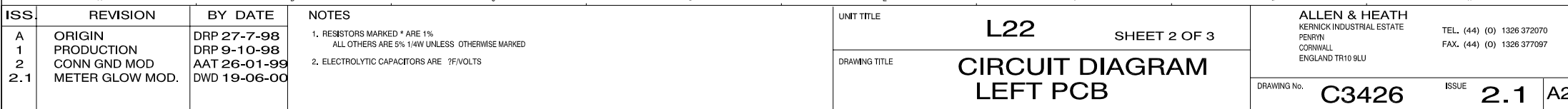
AG3425

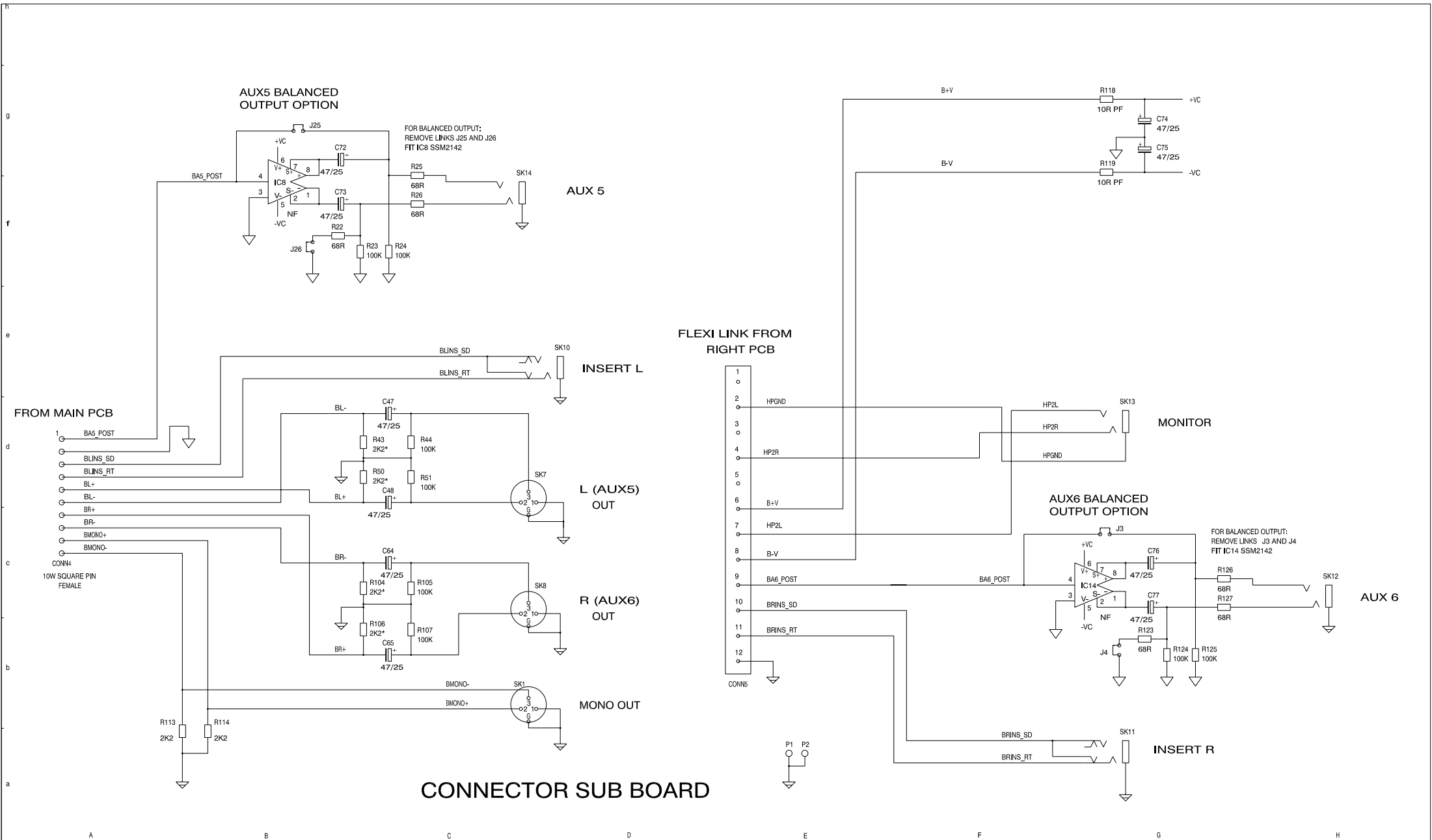
PAGE 2 OF 2

ALLEN & HEATH
KERNICK INDUSTRIAL ESTATE
PENRYN
CORNWALL
ENGLAND TR10 9LU

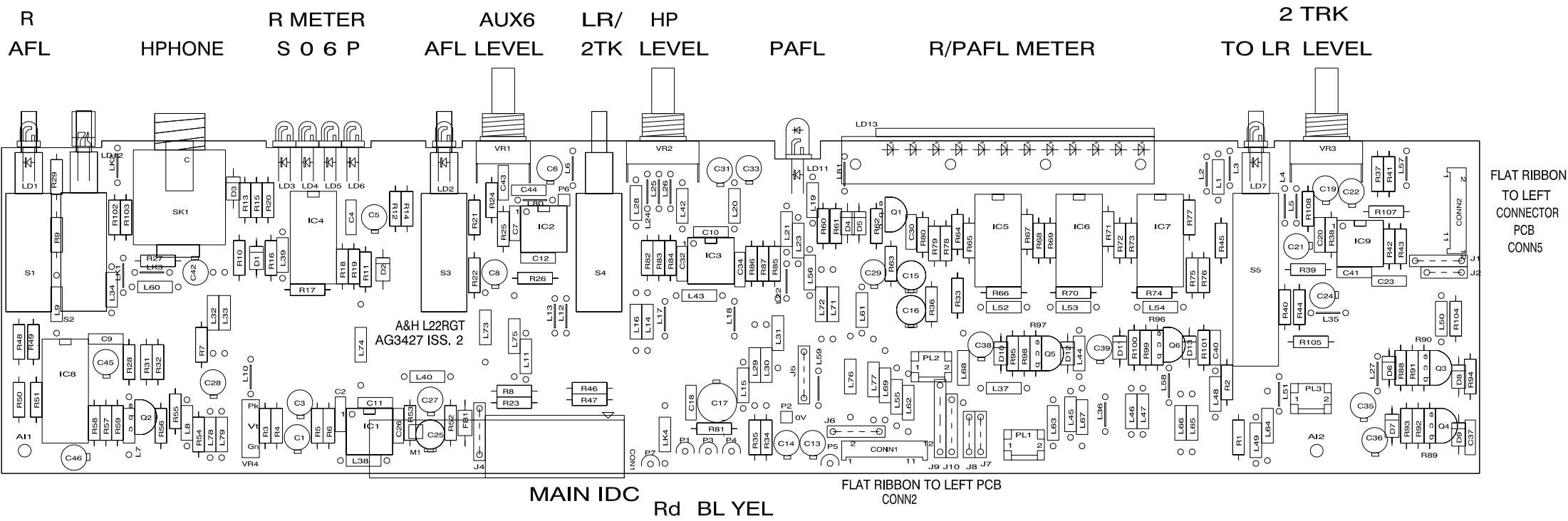
TEL (44) (0) 1326 372070
FAX (44) (0) 1326 377097

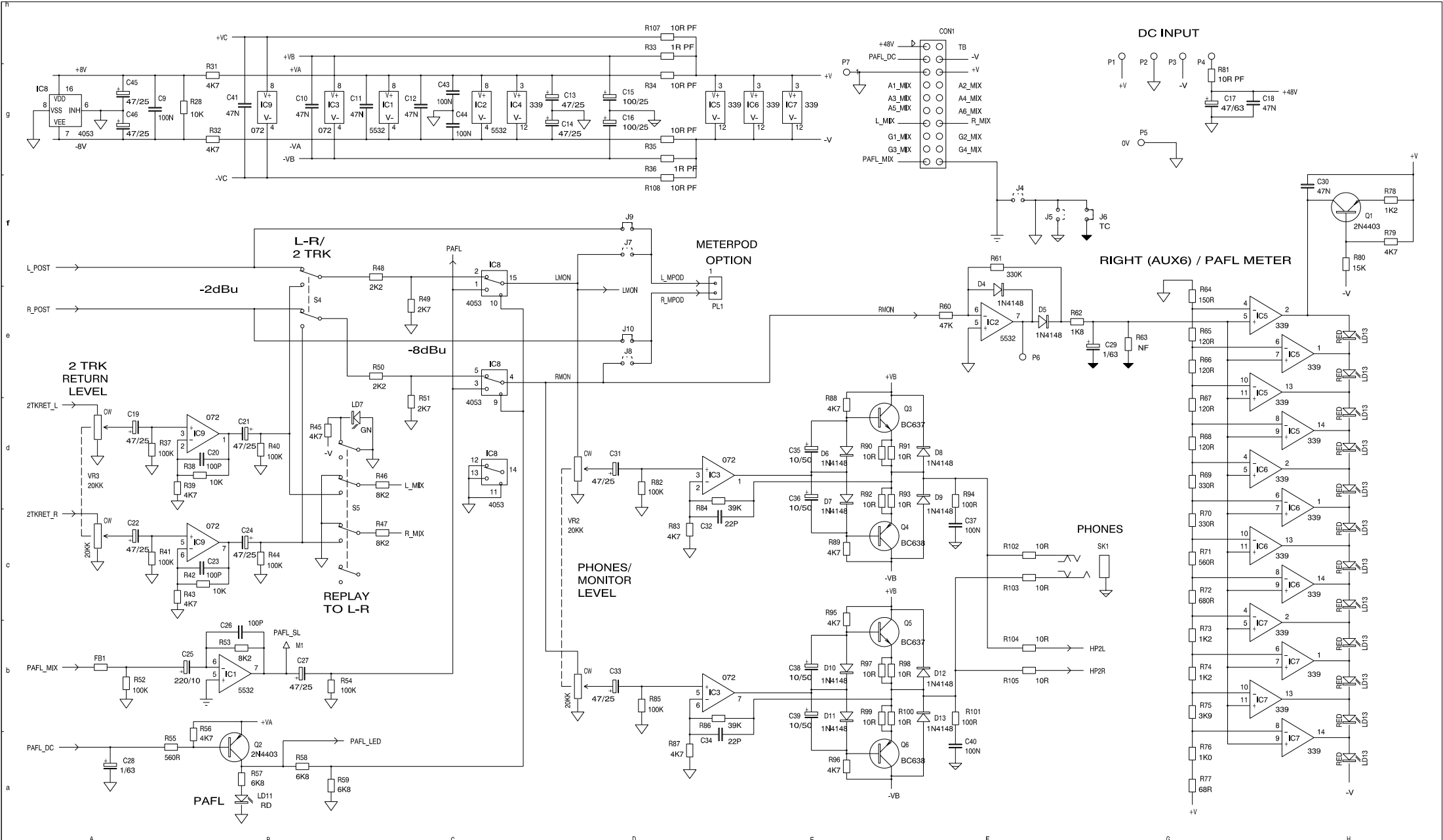




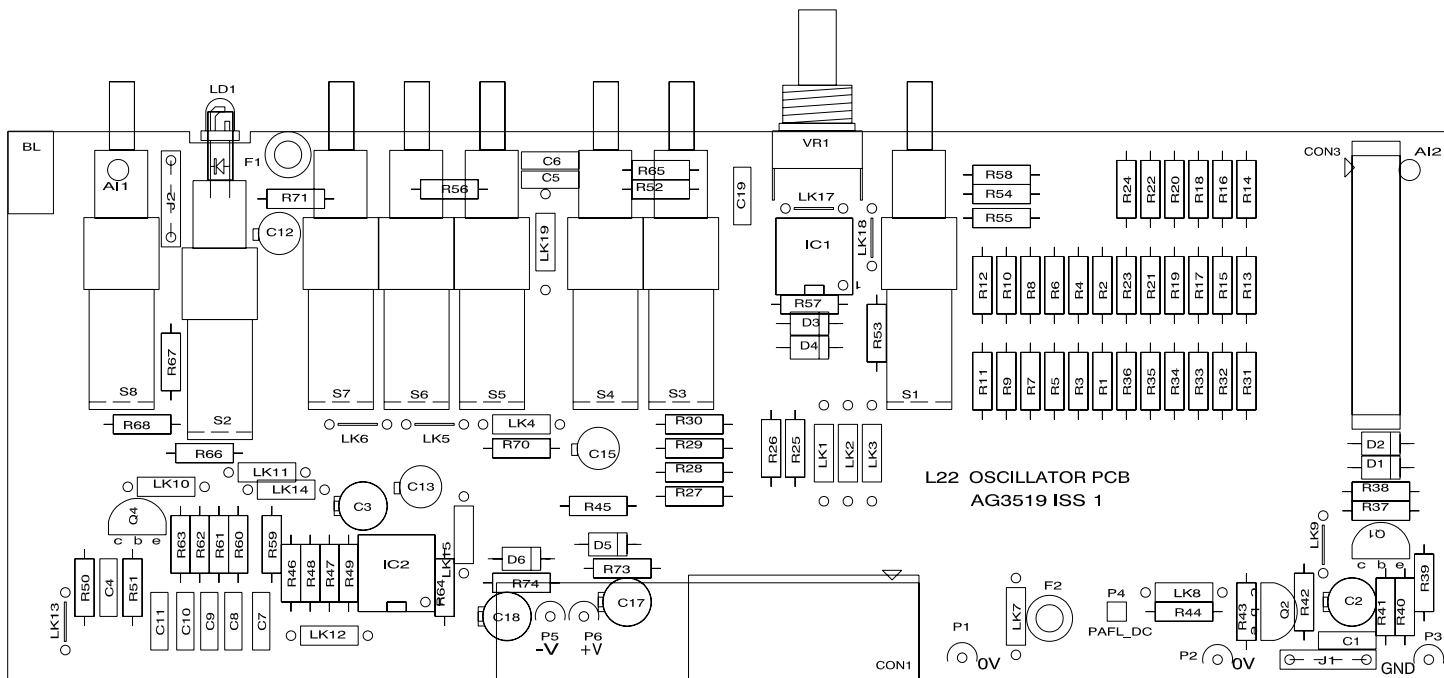


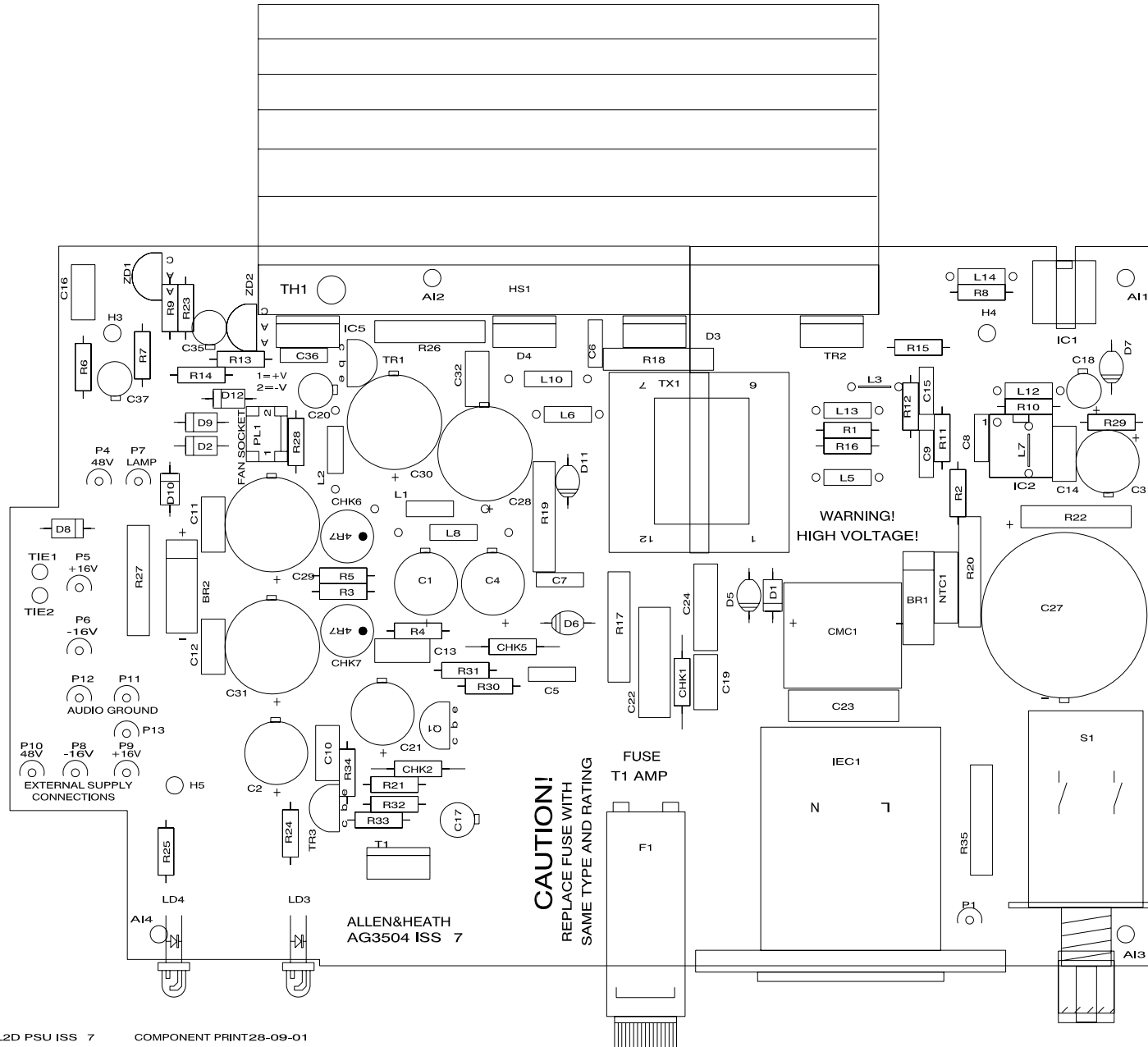
ISS	REVISION	BY DATE	NOTES	UNIT TITLE		ALLEN & HEATH KERNICK INDUSTRIAL ESTATE PENRYN CORNWALL ENGLAND TR10 9LU		
A	ORIGIN	DRP 27-7-98		L22				
1	PRODUCTION	DRP 9-10-98		SHEET 3 OF 3				
2	CONN GND MOD	AAT 26-01-99		CIRCUIT DIAGRAM LEFT PCB				
2.1	METER GLOW MOD.	DWD 19-06-00	DRAWING TITLE			C3426	ISSUE	2.1



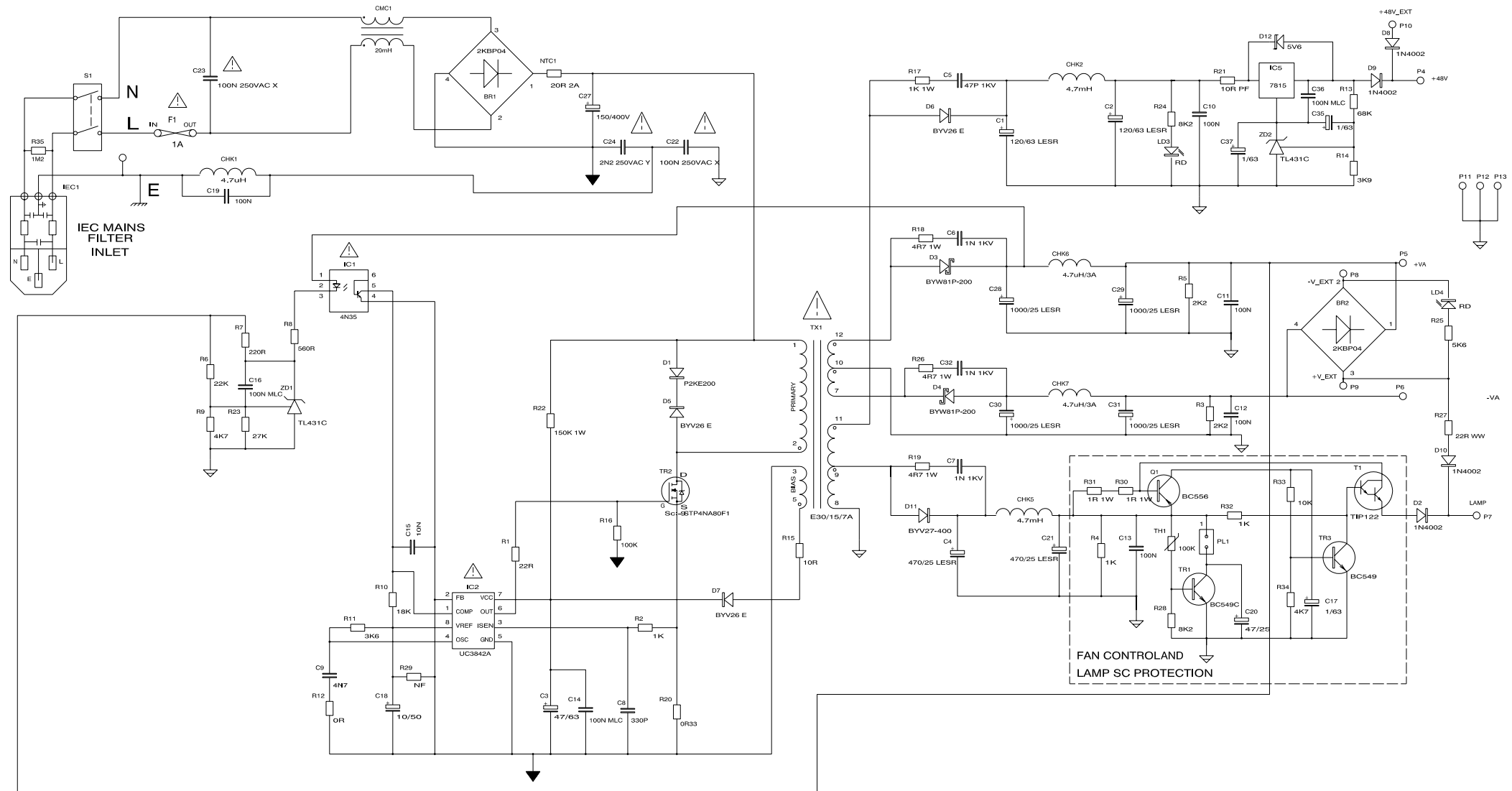


ISS.		REVISION	BY DATE	NOTES		UNIT TITLE	SHT 2 OF 2		MANUFACTURED IN ENGLAND BY	
A		ORIGIN	AAT 12-08-98	1. RESISTORS MARKED * ARE 1% ALL OTHERS ARE 5% 1/4W UNLESS OTHERWISE MARKED		L22			ALLEN & HEATH	
1		PRODUCTION	AAT 9-10-98	2. ELECTROLYTIC CAPACITORS ARE 7F/VOLTS		DRAWING TITLE			DRAWING No. C3427	
2		UPDATES	ARJ 13-1-99			RIGHT PCB			ISSUE 2.1	
2.1		METER GLOW MOD.	DWD 20-06-00			PCB TYPE AG3427			A2	





DANGER - HIGH VOLTAGE
DISCONNECT POWER BEFORE REMOVING PSU
REFER SERVICE WORK TO QUALIFIED SERVICE PERSONNEL ONLY



A		B	C	D	E	F	G	H
ISS.	REVISION	BY DATE	NOTES		UNIT TITLE	MANUFACTURED IN ENGLAND BY		
5 5.1 5.2 5.3 5.4 7	IEC FILTER PSU NOISE MODS. R1 & R16 PRE-FORMED CAPACITORS C8 FROM 680PF TO 470PF IEC BLEED RESISTOR ADDED IEC BLEED RES ADDED TO LAYOUT	ARJ 22-3-99 DWD 15-11-99 DWD 28-11-00 DWD 25-01-01 DWD 18-04-01 AAT 27-09-01	1. RESISTORS MARKED * ARE 1% ALL OTHERS ARE 5% 1/4W UNLESS OTHERWISE MARKED 2. ELECTROLYTIC CAPACITORS ARE 2F/VOLTS		60W PSU	ALLEN & HEATH		
					DRAWING TITLE	DRAWING No. ISSUE		
					GL2200	C3504 7		
					PCB AG3504	A2		