

ALLEN & HEATH



WARNING – HIGH VOLTAGES

Power Supply Unit (PSU) work should only be carried out by qualified personnel.

We recommend that you use an approved Allen & Heath service centre for all power supply work.

Please contact your local Allen & Heath distributor for more details.

<http://www.allen-heath.com/>

ALLEN&HEATH

RPS14

Linear Console Power Supply

SERVICE INFORMATION

Publication AP5717

Introduction

This publication provides technical information on servicing the Allen & Heath **RPS14** Linear Console Power Supply. Included are internal layout drawing and circuit schematics with board layouts and spare parts information. Whilst we believe this information 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.

Additional Resources

Allen & Heath web site	www.allen-heath.com	Product information Technical downloads Distribution contacts Company contacts
Technical support	support@allen-heath.com	See web for local contact
RPS14 User Guide	AP5716	Operating instructions Performance specification

RPS14 Service Information

Issue status: rps14_ap5717_1.doc

Print date: 07 January 2005

Copyright © 2005 Allen & Heath. All rights reserved

ALLEN&HEATH

Manufactured in the United Kingdom by Allen & Heath

Kernick Industrial Estate, Penryn, Cornwall, TR10 9LU, UK

<http://www.allen-heath.com>



Servicing Precautions – General Notes

- Service personnel:** Service work should be carried out by technically qualified service personnel only. Mains power is dangerous and can kill. Do not attempt to work on a linear or switched mode power supply if you are not suitably qualified to do so. Do not attempt to repair surface mount circuit assemblies unless you are suitably qualified and have the necessary facilities to do so. Replacement circuit assemblies can be ordered.
- Service facilities:** Ensure a suitably sized work surface is available. Ensure this is clear of dirt, debris and obstructions which may damage the equipment surfaces. Ensure adequate lighting. Use the correct tools for the job and ensure they are in good working order. Ensure all workshop safety requirements are adhered to.
- Service information:** Check that you have all the information you need before starting the service job. Refer to the Allen & Heath web site or contact Allen & Heath technical support for details on the latest information. Full technical information can be downloaded from the web site Distributor Zone (password required).
- Mains power:** Connect the equipment to mains power only of the type described in the user guide and marked on the rear panel. The power source must provide a good ground connection. Ensure you always use an isolation transformer when working on any mains power supply unit.
- Mains cord and fuse:** Use the correct power cord as supplied with the equipment. Do not remove or tamper with the ground connection in the power cord. Heed the Important Mains Plug Wiring Instructions printed in the user guide if it is necessary to rewire the mains cord. Always replace the equipment mains fuse with the correct type and rating as described in the user guide and marked on the equipment panel.
- Opening the unit:** Switch off and remove the mains power cord before opening the equipment. Ensure all power supply covers and safety shields are in place before applying power with the unit open for diagnostic fault finding.
- Closing the unit:** Before finishing, check the quality and accuracy of the service work carried out. Remove any dirt or debris as this may cause equipment failure in the future. Ensure all assemblies, harnesses and connectors are correctly aligned and plugged in. Ensure that jumper settings and control configurations are correctly set according to the requirements of the customer.
- Testing the unit:** Before operating the equipment, read and adhere to the Important Safety Instructions printed in the user guide. Test that the service work has been successfully carried out.
- Shipping the unit:** Use adequate packing such as the original packaging or purpose designed flight case if you need to ship the unit. To avoid injury to yourself or damage to the equipment take care when lifting, moving or carrying the equipment.



Servicing Notes – RPS14

User maintenance: There are no user serviceable parts inside the unit. It should be serviced by suitably qualified personnel only.

Technology: The **RPS14** uses conventional thru-hole PCB technology.

Operation: To test the Power Supply Unit, make sure it is connected as described in the user guide. Check that the voltage setting marked on the rear panel is correct for the local mains supply.

The **RPS14** can be set to operate at a different mains voltage by performing an internal wiring modification.

See document [rps14_mains_voltage_setting.pdf](#) for details.

Fault Finding

Should the Power Supply Unit fail to work correctly, check the following components first:

Mains Fuse

The AC mains fuse is located on the rear of the **RPS14** unit next to the AC mains connector. In the event of a mains surge or under-rated fuse value, the fuse will rupture. Switch off the power supply and remove the mains lead plug from the “MAINS INPUT” socket on the rear of the unit. Check the fuse and replace if necessary.



TO AVOID THE RISK OF FIRE REPLACE FUSE WITH THE CORRECT TYPE ONLY, AS INDICATED ON THE UNIT.

AC~ mains input voltage	Fuse type
100V – 120V ± 10%	T 10A 250V 20mm
220V – 240V ± 10%	T 8A 250V 20mm

Internal DC Rail Fuses

Each DC supply rail (+17V, -17V, +12V and +48V) is protected by its own fuse. These fuses are mounted on the main PCB. See the internal layout drawing for the locations, values and part numbers of these fuses. Check these fuses to see if any have blown.

Cooling Fan

Check that the cooling fan is operating correctly, and that the ventilation holes are not blocked with dust or other debris which could cause the unit to overheat and stop working. Note that if the **RPS14** is suffering an overheating problem, firstly the “HI TEMP” LED on the front panel will illuminate, then the unit will enter “protect” mode and shut off the supply. Clear any dust from the ventilation holes using a vacuum cleaner and dry, lint free cloth. Do not use liquid cleaners or compressed air to clean the unit. If the fan is not operating correctly or if it becomes noisy it must be replaced.

Transformer

A non-functioning power supply unit may be caused by a failed transformer. Refer the transformer wiring information in document [rps14_transformer_2.pdf](#) and check that the correct secondary voltages are reaching the main PCB.

Contents Log

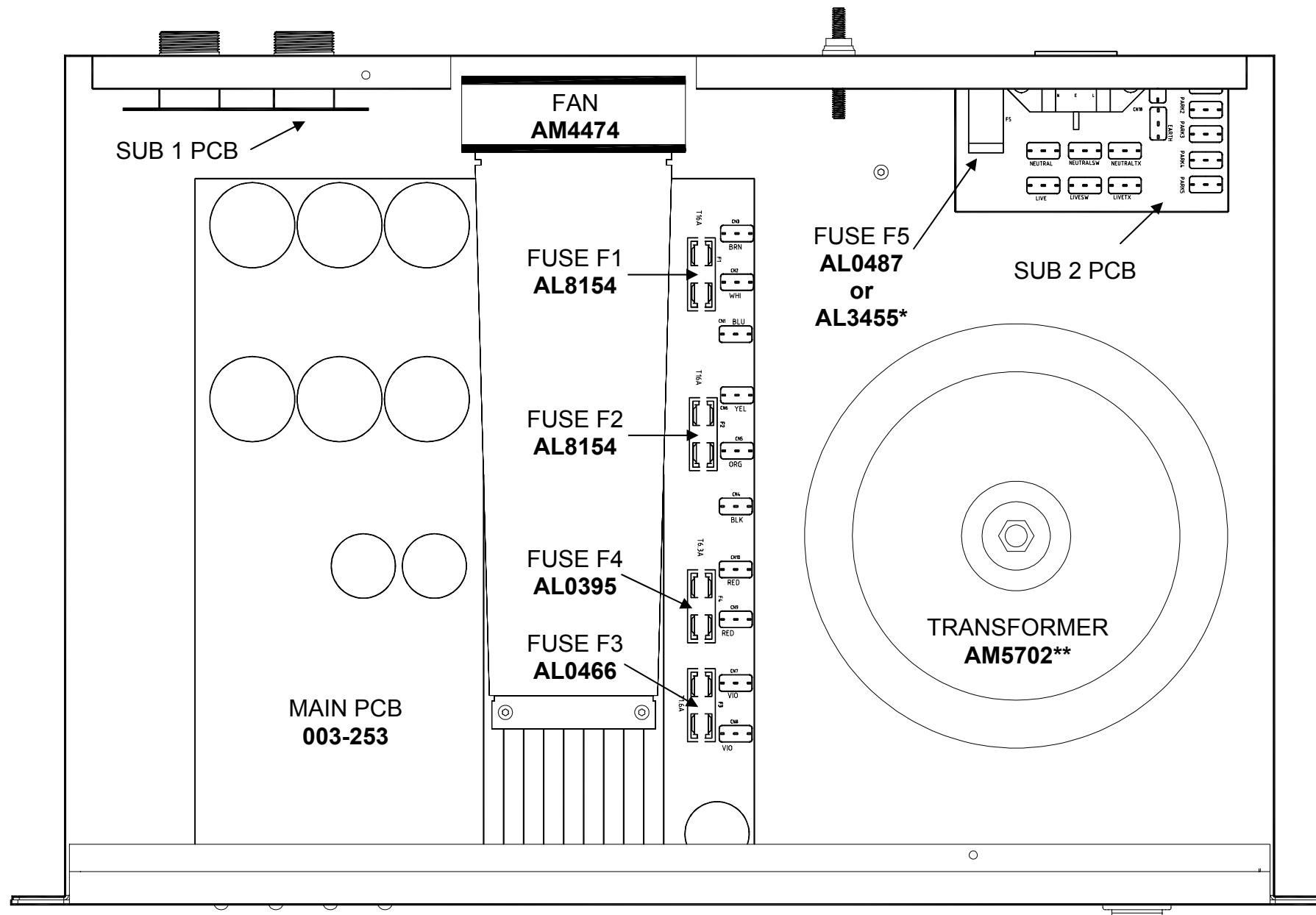
Internal Layout drawing	rps14_layout_1.pdf
Surface and Main Parts.....	rps14_parts_1.pdf
Main PCB	rps14_003-253_main_c.pdf
.....	rps14_003-253_main_1.1.pdf
Transformer Wiring Information.....	rps14_transformer_2.pdf
Mains Voltage Setting	rps14_mains_voltage_setting.pdf
Engineering Change Notes	rps14_ecns_1.pdf

RPS14 – Historical Change Log

The following list identifies historical changes to the **RPS14**. The effective dates, serial numbers and related change note documentation are included for reference to help identify the correct issue circuit boards and components. Whilst we believe this information 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.

Assembly	Description	From Serial Number	Date	Change Note Number
003-253	Main PCB up-issue + transformer change	-	-	-
003-253	Resistor value changes	001033	05/07/04	1049
003-253	Diode hole size change, PCB now lss 1.1	-	02/12/04	1102

RPS14 Internal Layout

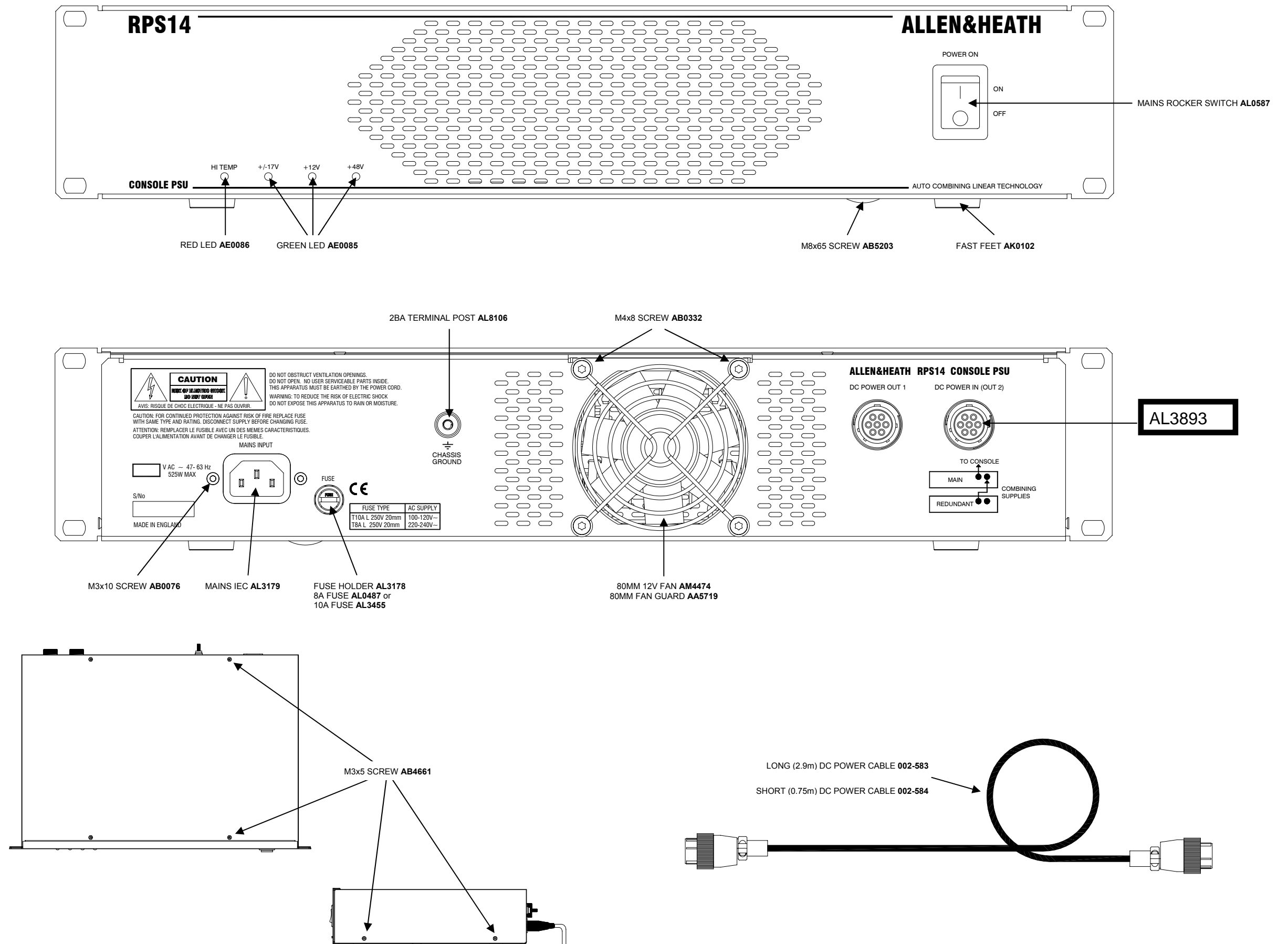


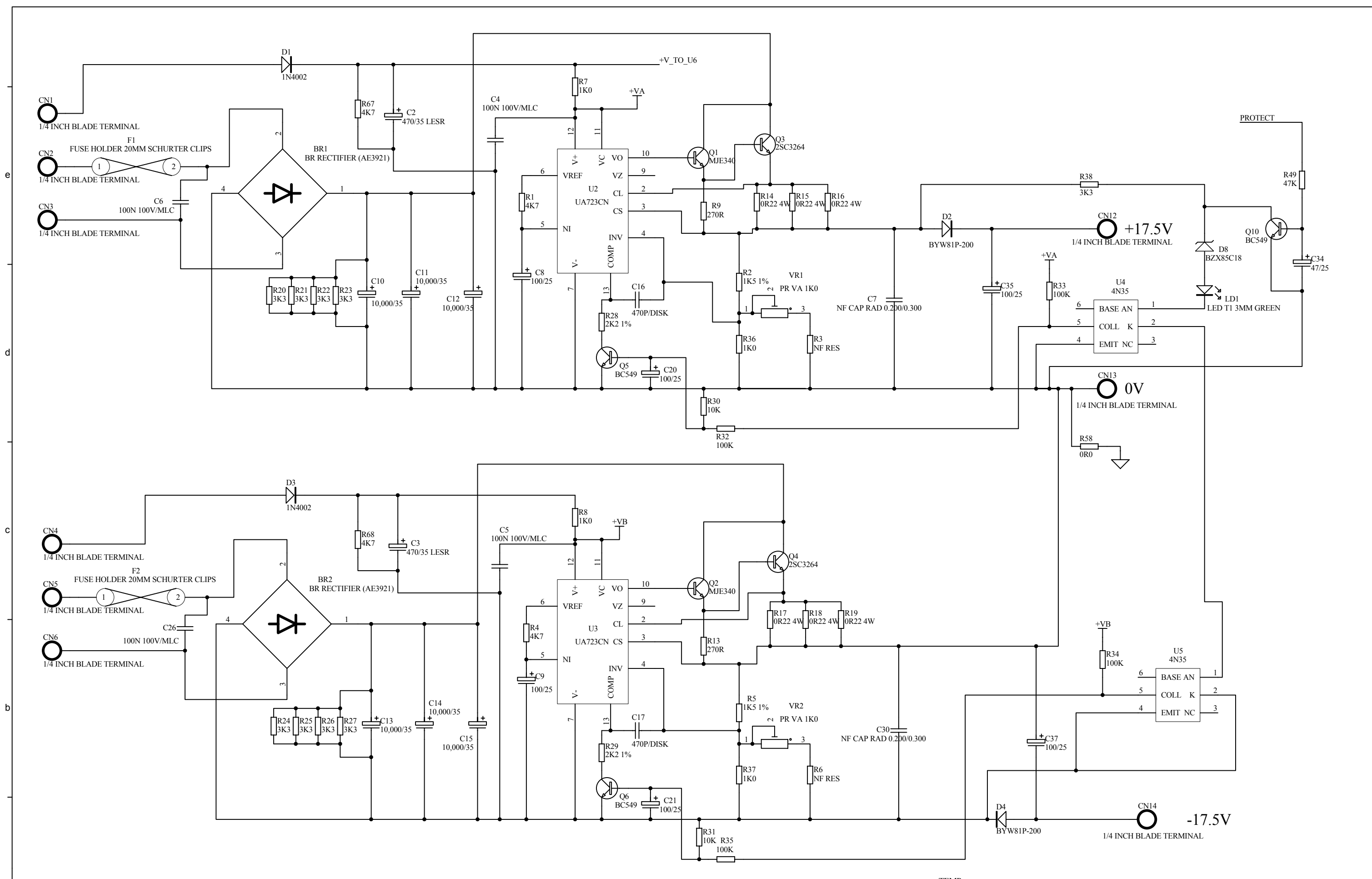
Product.....	RPS14/100
.....	RPS14/120
.....	RPS14/220
.....	RPS14/240
.....	
Main Assembly	003-251
Pack Assembly	003-252
PCB Assembly	003-253
.....	
Fuse 20mm 6.3A A/Surge	AL0395
Fuse 20mm 1.6A A/Surge	AL0466
Fuse 20mm 8A A/Surge	AL0487
Fuse 20mm 10A A/Surge	AL3455
Fuse 20mm 16A A/Surge	AL8154
Cooling Fan 80mm 12V.....	AM4474
Transformer.....	AM5702

* Fuse F5 = 10A for 100-120V AC operation, 8A for 220-240V AC operation

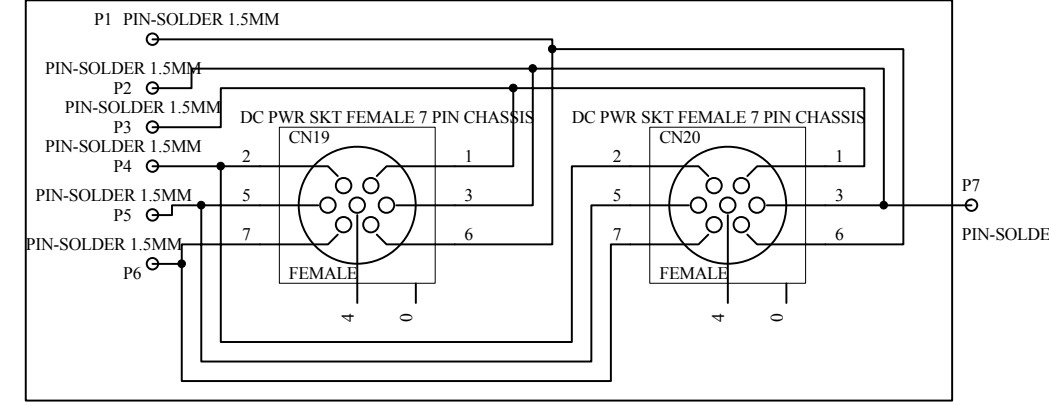
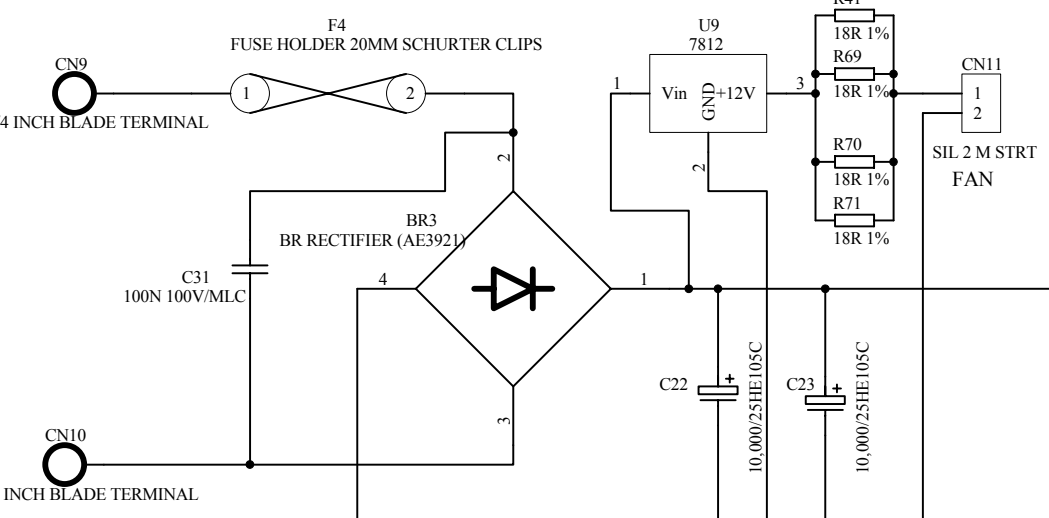
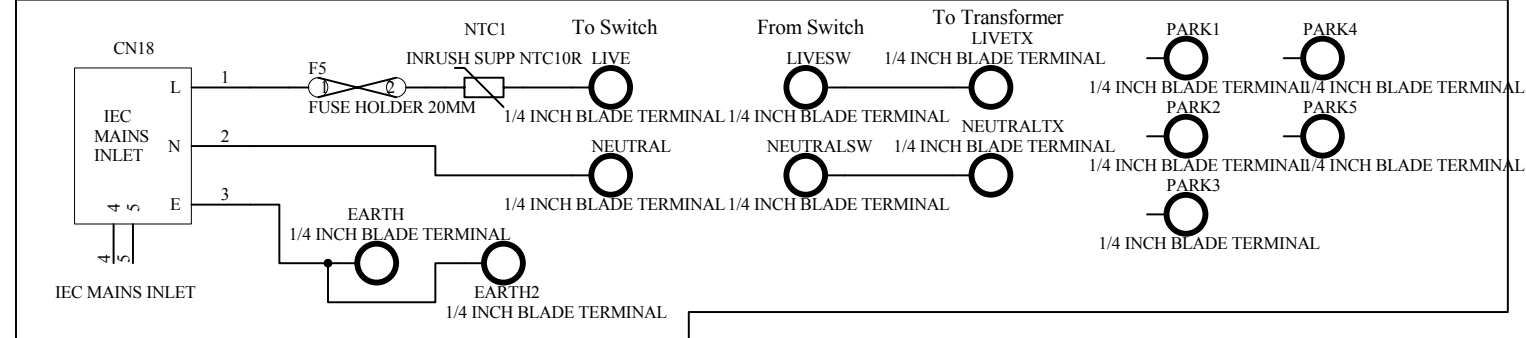
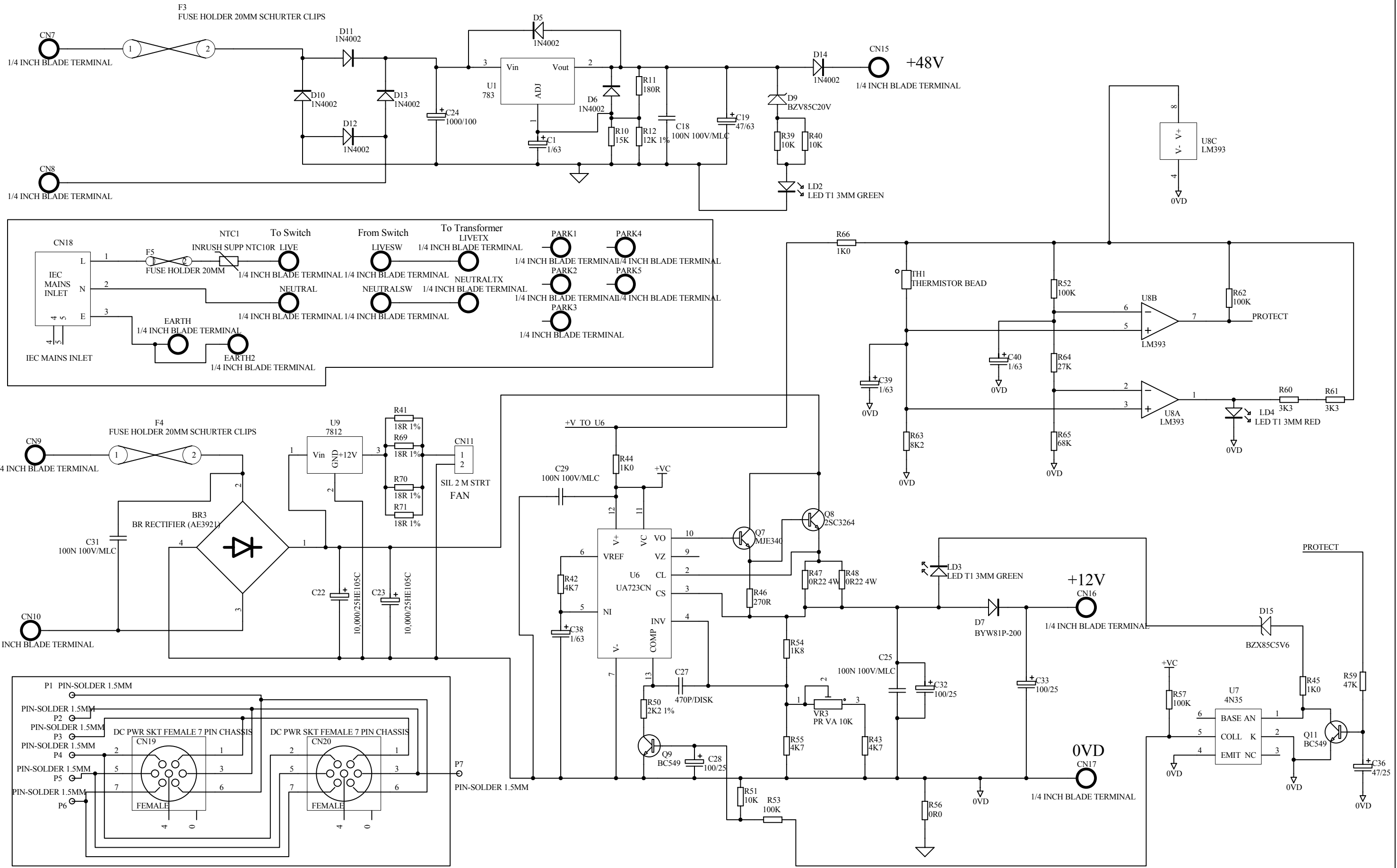
** Changes to the transformer wiring were made when the main PCB was up-issued from AG5554_C to AG5554_1. If ordering a replacement transformer, be sure to check and quote the PCB issue number (printed on the board).

RPS14 Surface Parts

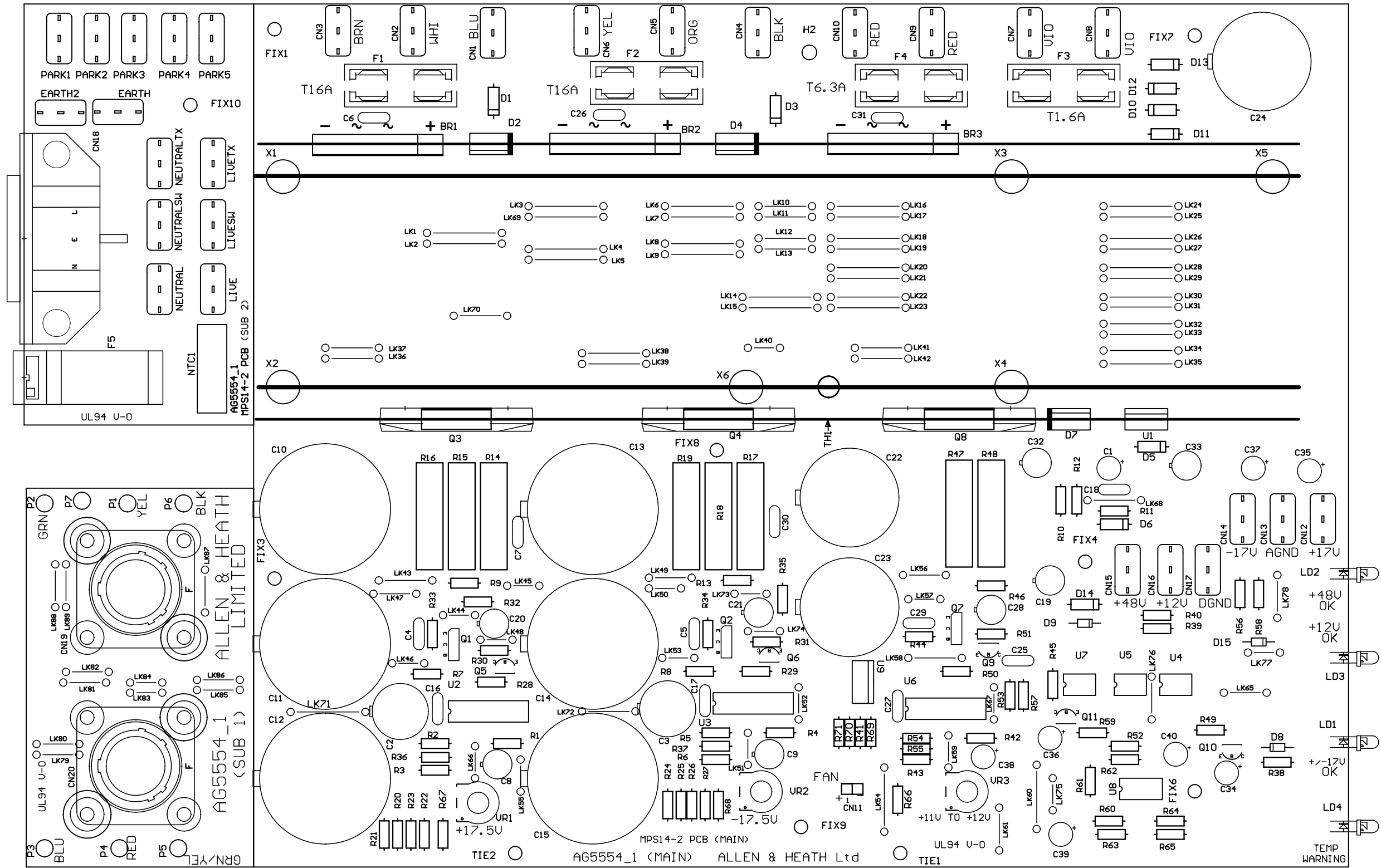


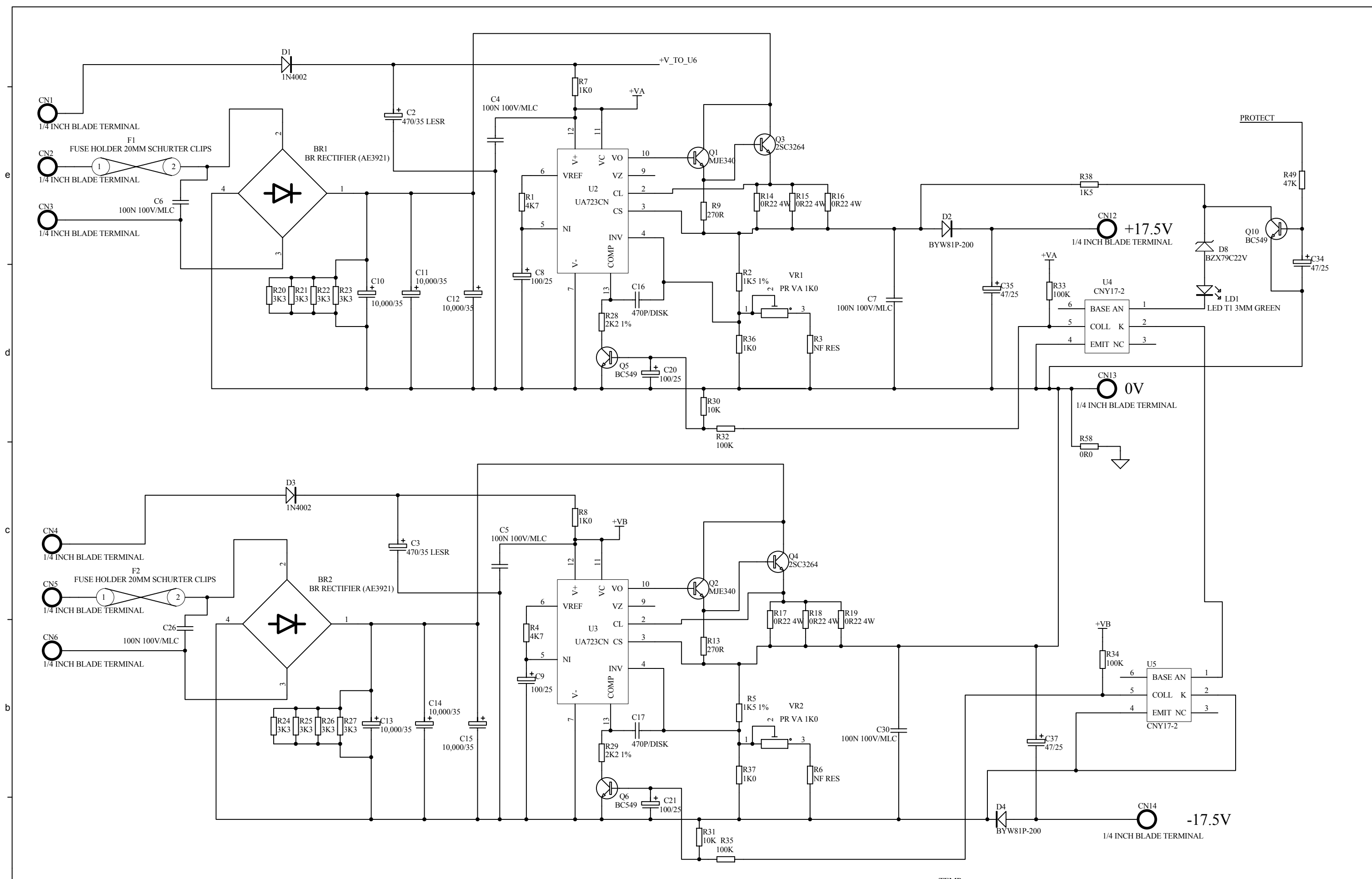


ALLEN&HEATH Kernick Industrial Estate, Penryn, Cornwall, England. TR10 9LU Tel: +44 (0)8707 556250 Fax: +44 (0)8707 556251	ISSUE	BY	DATE	CHK BY	TITLE: RPS14 MAIN PCB CIRCUIT PAGE:	
	C	MG	17-3-04			DRG No: 5554 ISSUE: 1 SHEET: 1 OF 2
FILE: AG5554_1P1.Sch					PRINTED: 13:41:04 16-Dec-2004	

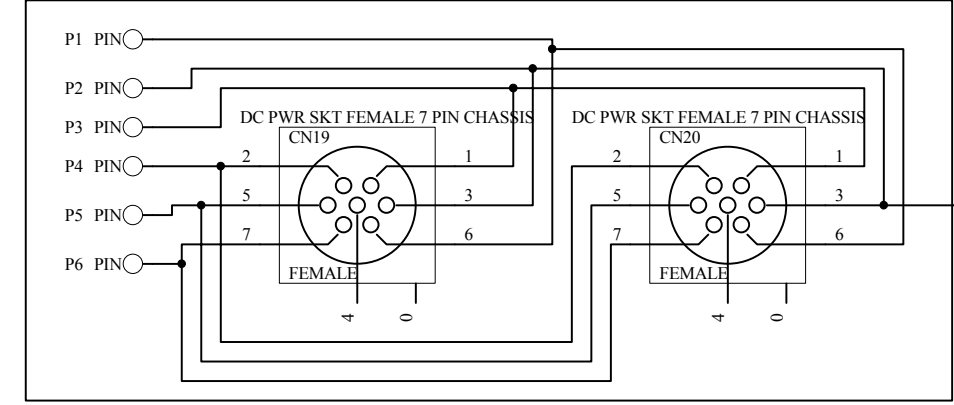
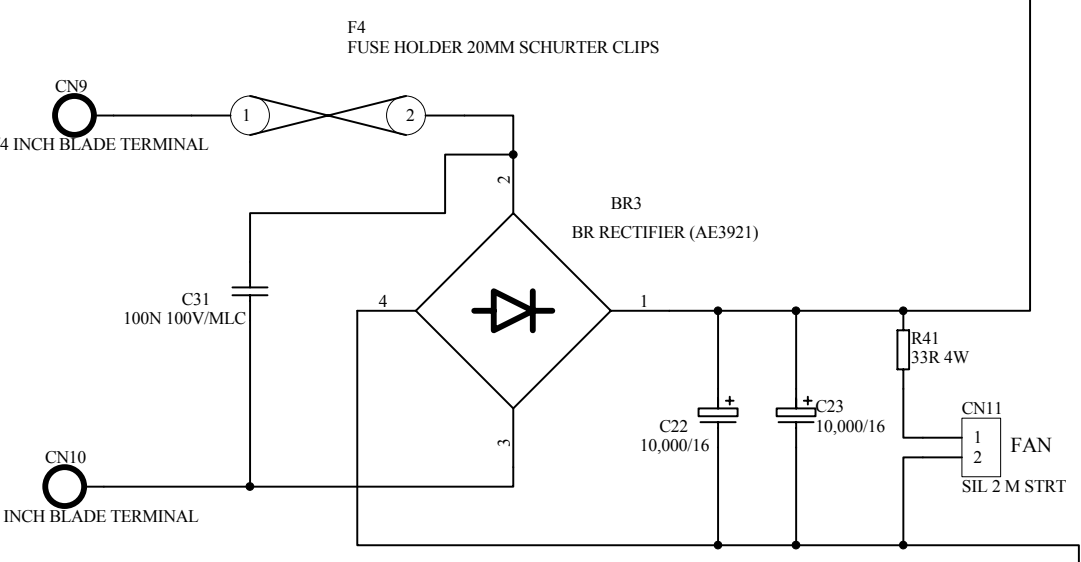
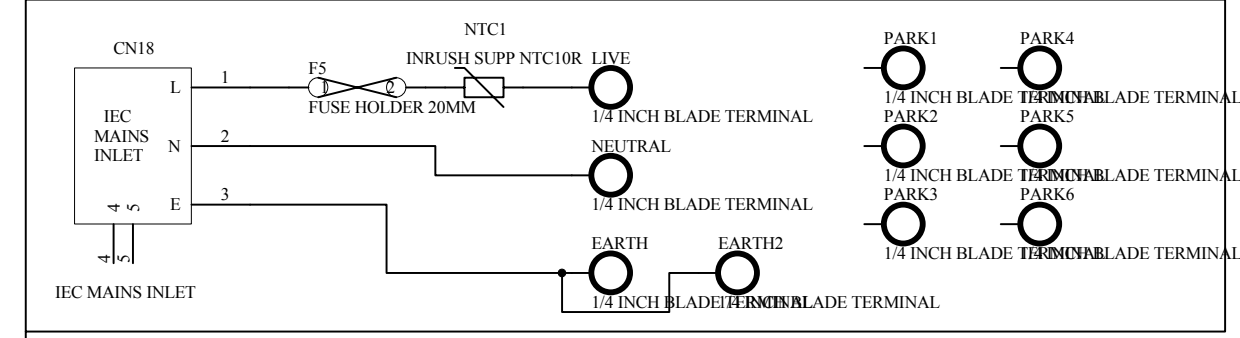
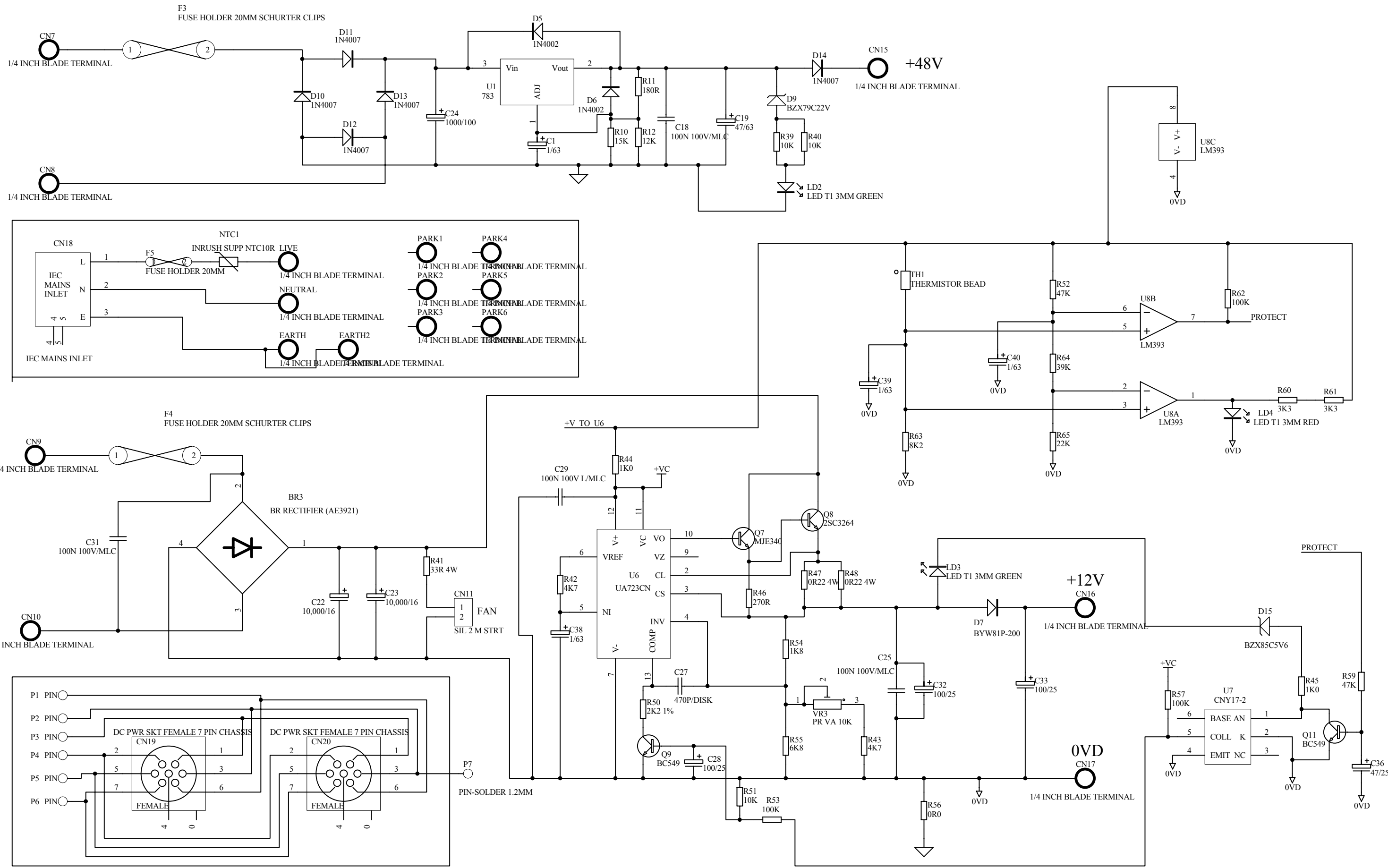


ALLEN&HEATH Kernick Industrial Estate, Penryn, Cornwall, England. TR10 9LU Tel: +44 (0)8707 556250 Fax: +44 (0)8707 556251	ISSUE	BY	DATE	CHK BY	TITLE: RPS14 MAIN PCB CIRCUIT PAGE:	
	C	MG	17-3-04			DRG No: 5554
FILE: AG5554_1P2.Sch					PRINTED: 13:41:04 16-Dec-2004	ISSUE: 1 SHEET: 2 OF 2

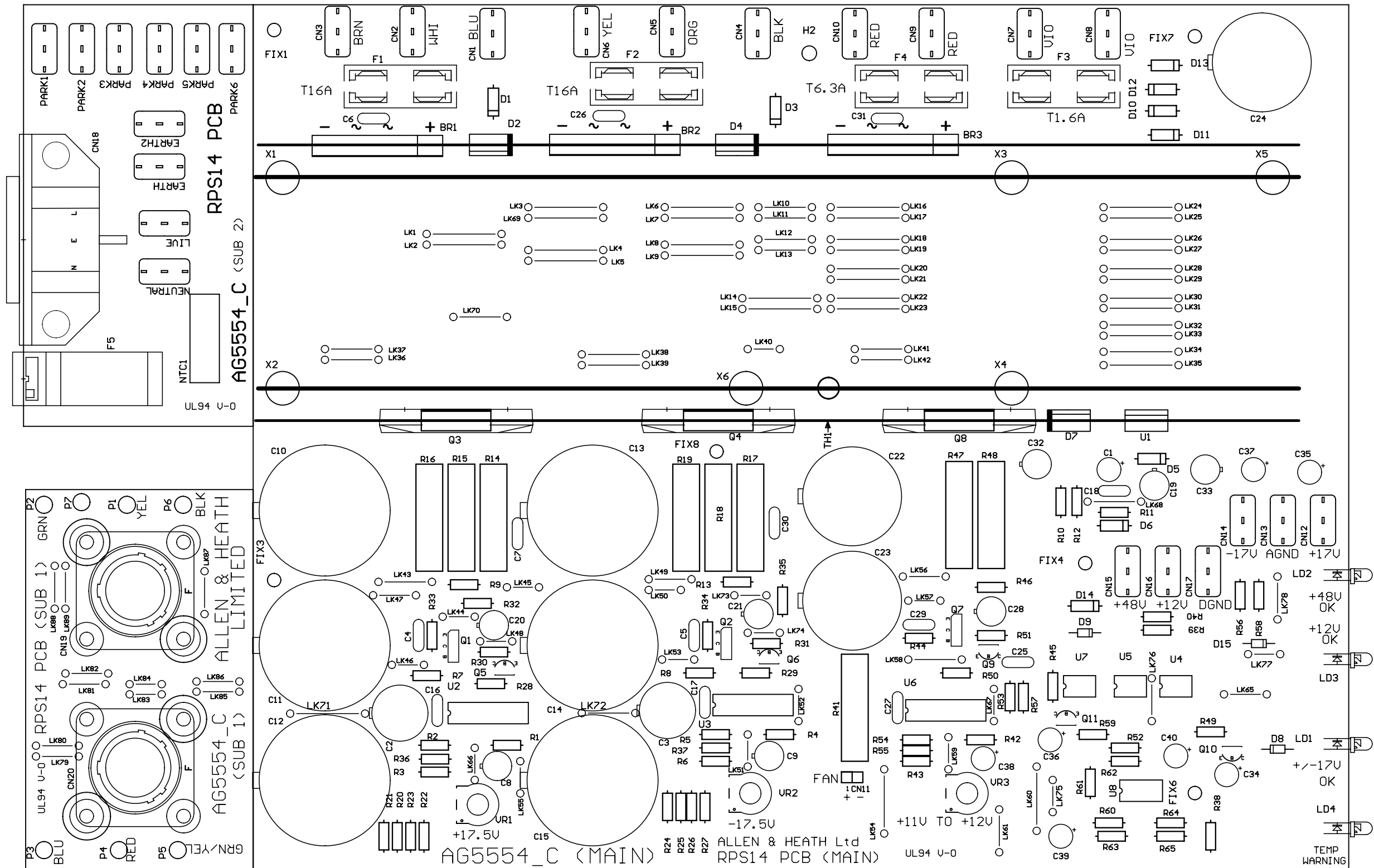




ALLEN&HEATH Kernick Industrial Estate, Penryn, Cornwall, England. TR10 9LU Tel: +44 (0)8707 556250 Fax: +44 (0)8707 556251	ISSUE	BY	DATE	CHK BY	TITLE: RPS14 MAIN PCB CIRCUIT PAGE:
	C	MG	17-3-04		
FILE: AG5554_CP1.Sch					PRINTED: 14:37:32 16-Dec-2004



ALLEN&HEATH Kernick Industrial Estate, Penryn, Cornwall, England. TR10 9LU Tel: +44 (0)8707 556250 Fax: +44 (0)8707 556251	ISSUE	BY	DATE	CHK BY	TITLE: RPS14 MAIN PCB CIRCUIT PAGE:	
	C	MG	17-3-04			DRG No: 5554
FILE: AG5554_CP2.Sch					PRINTED: 14:37:32 16-Dec-2004	ISSUE: C SHEET: 2 OF 2



For RPS14 units fitted with an Issue 1 Main PCB

On leaving the factory, the **RPS14** power supply unit will be wired to operate at one of four different mains voltage ranges, depending on its destination:

Mains Input Voltage Range:

100V AC +/- 10%	50/60Hz
120V AC +/- 10%	50/60Hz
220V AC +/- 10%	50/60Hz
240V AC +/- 10%	50/60Hz

It is possible to reconfigure the **RPS14** to operate from a different voltage range. It may be necessary to do this if the unit is to be used in a different part of the world. See overleaf for the possible settings.

The procedure involves removing the unit's cover and re-positioning leads connected to the transformer's primary winding.

Due to the hazardous nature of the mains voltages exposed when opening the unit, this work should be carried out only by technically competent personnel. If you are not sure or require further assistance, please contact Allen & Heath technical support (see www.allen-heath.com for contact details).

IMPORTANT: Any changes or modifications to the equipment not approved by Allen & Heath could void the compliance of the equipment. Whilst we believe the information in these instructions 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.

Copyright© 2004 Allen & Heath Limited. All rights reserved. www.allen-heath.com

▲ This work should be carried out only by qualified technical personnel authorised by Allen & Heath.

▲ Disconnect the mains power cord before opening the unit.

▲ Take care not to damage the panels or internal assemblies during fitting. Prevent loose parts or dirt from entering the unit as this may cause equipment failure.

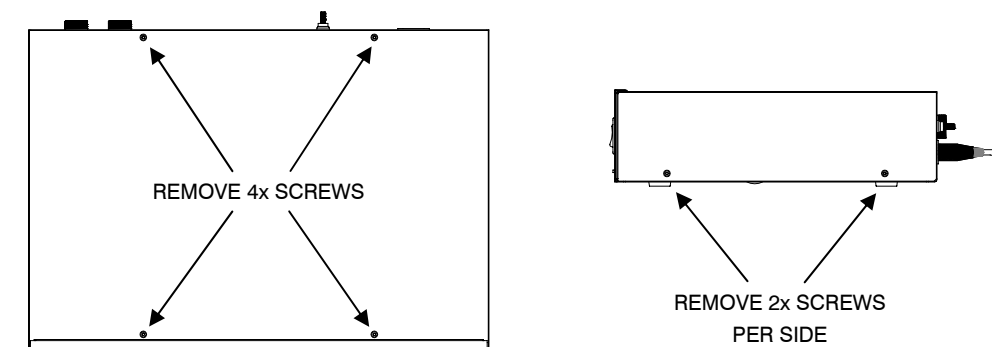
Procedure

Step 1: Preparation

Ensure the unit is powered off. Disconnect the mains power lead and console DC cables. Remove the unit from its rack or other furniture and place on the work surface.

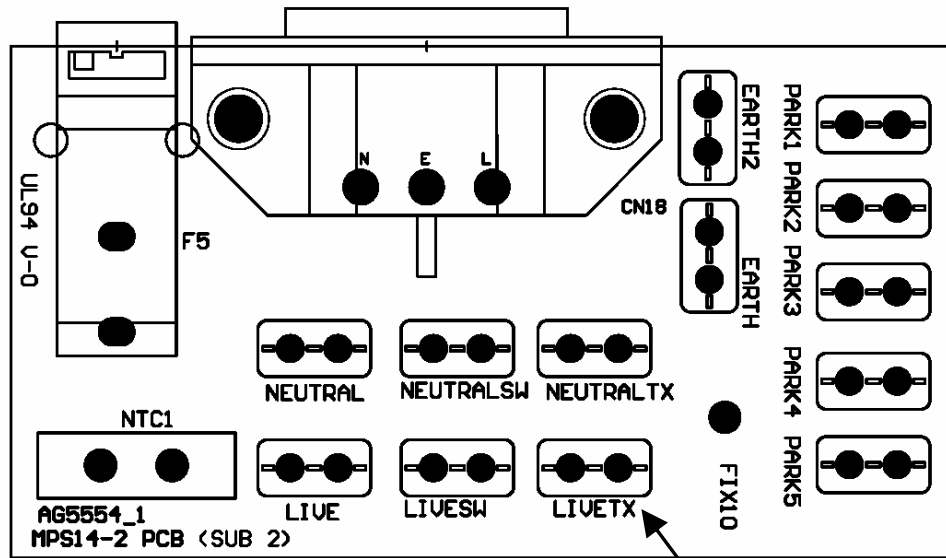
Step 2: Remove the cover

Remove the eight T10 Torx (star head) screws and lift off the cover.



Step 3: Change the voltage setting

Locate the mains inlet PCB. An issue 1 board is shown here – some early **RPS14s** were fitted with an issue C PCB – please consult Allen & Heath technical support for information on changing the voltage setting for the issue C units.



The mains voltage setting is selected by connecting the appropriate transformer primary lead to the LIVETX terminal on the PCB. The terminals PARK1 to PARK5 are not connected to any circuits – they are simply used to store the unused leads safely.

Select the correct lead for your required mains voltage by referring to the table, and then swap its position with the lead currently connected to the LIVETX terminal. The unit is now set to operate at the new mains voltage, and the previously used primary lead is safely stored on a PARK terminal. If in any doubt about the mains voltage for your area, contact your electricity supplier.

AC Mains Voltage	Lead Colour
240	Brown
230	Violet
220	Red
120	Black
100	Grey
90	Orange

Step 4: Check the fuse rating

It may be necessary to change the mains fuse to suit the new mains voltage – see the following table:

AC~ mains input voltage	Fuse type
100V – 120V ± 10%	T 10A L 250V 20mm
220V – 240V ± 10%	T 8A L 250V 20mm

The mains fuse is located on the rear of the **RPS14** unit next to the MAINS INPUT connector. Switch off the power supply and remove the mains lead plug from the MAINS INPUT socket. Check the fuse and replace with one of the correct type if necessary

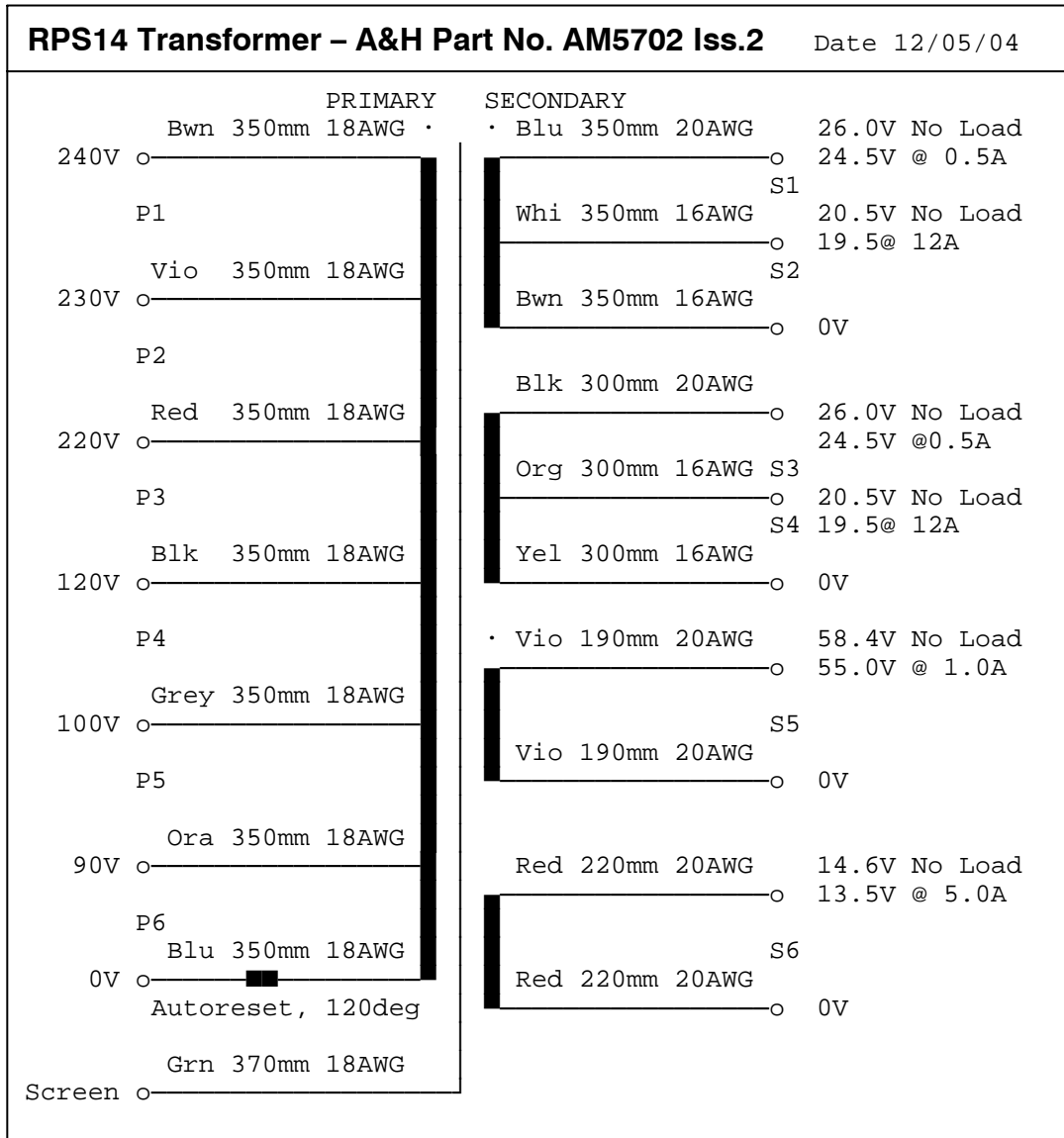
Step 5: Refit the cover

Check your work carefully, making sure the leads are properly seated on the terminals. Ensure that there is no dirt or debris inside the unit. Replace the cover and secure with the 8x Torx screws.

The unit should be clearly re-labelled with the new operating voltage.

Step 6: Test

Connect the unit to a mains supply at the new voltage. Power up and check for correct operation.



Note:

This transformer (Allen & Heath part no. AM5702, iss.2) is suitable for use with **RPS14** units using issue 1 / 1.1 main PCBs. Some early **RPS14s** were produced using an issue C main PCB. The AM5702 iss.2 may be adapted for use with an issue C unit should a replacement be needed. Please contact Allen & Heath technical support for advice on this matter.