CS8

Service Manual

Klark Teknik Building
Walter Nash Road
Kidderminster
Worcestershire
DY11 7HJ

Tel: +44 (0) 1562 741515
Fax: +44 (0) 1562 745371

Email: info@uk.telex.com
Website: www.ddaconsoles.com

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INTRODUCTION

The CS8 console has been designed to provide the consultant, contractor, installer and user with a cost effective system which will perform to accepted professional standards, be simple for the untrained user to operate, and be tolerant of wiring and installation problems. There can be no excuse for a system which is over sensitive to the wiring and installation conventions used, and hums at every opportunity.

High quality balanced inputs and outputs are only part of the story. Equally important is the way in which the console grounding system works, because it is through the console ground that all the noisy ground currents from the cable screens will flow. Any part of the audio signal path which shares the cable screen to console ground path within the console will effectively have the cable screen noise added to that signal path. The current flowing in cable shields in typical installations has be shown to be substantial (in the order of 100mA and above) and is caused by the difference in potential between the ground connection at each end of the cable screens.

Of comparable importance to any system performance is the power supply. Internal linear power supplies may be less expensive, but are usually responsible for inducing noise into the audio and generating substantial amounts of heat, making it uncomfortable for the operator. Internal switch mode supplies may be cool running, but are usually even more of a problem with regard to noise. Another often overlooked point with internal power supplies is how to provide auto-switchover between 2 supplies without extensive modification thereby nullifying the warranty. Internal supplies are also a potential problem from a maintenance point of view.

Most service technicians can easily fault find and repair a linear supply with commonly found components, but a switch mode supply does not make use of common off the shelf components. Although more expensive, a separate and generously rated linear power supply is used with the CS8 keeping heat and noise away from the console. Rack mounting ears are available for permanent installations, and the supply is UL and CSA approved.

At this point it is useful to look at some of the features of the CS8.

PAN AND ROUTING

The pan pot can be switched between stereo panning mode, and left/centre/right panning mode. Left-centre-right panning to the master outputs provides much improved spatial positioning. The technique has been used for many years in the film industry where its benefits are well known.

In music systems the centre channel generates a more solid centre image, especially for the “star” of the show, and helps to maintain a stereo image across a wider sound stage. In mixed media productions and in church applications the use of a speech optimised centre cluster can improve intelligibility without compromising the music system performance.

If only a stereo system is being run, and the pan pot is switched to stereo mode, then the centre output is individually assignable from each input or the from a sum of the left/right mix to provide a separate mono output for broadcast/film feeds etc.

Another unique feature for a mixer in this class is individual sub group routing instead of the inconvenient and inflexible paired routing which always requires the use of the pan pot to route a channel to a single sub group. There is always a crosstalk performance compromise involved and it is done solely for economic rather than for operational reasons, as it halves the number of routing switches and removes the need for a pan in/out switch. The CS8 allows routing to the sub groups either individually or in pairs via the pan pot.

EQUALISATION

The CS8 input module has a 4 band equaliser with high and low frequency boost/cut controls and two swept frequency middle sections. There is more than two octaves of overlap between the frequency ranges of the mid equalisers while the frequency span extends to from 70Hz to 10kHz.

AUXILIARIES

The CS8 has 8 full time auxiliary send controls allowing easy session setup. These are normally post fade but can be switched pre fade. Normally the pre fade signal is pre fade post cut but byusing internal links it can be changed to the pre equaliser signal. Auxiliaries 7 and 8 can be used in stereo where stereo foldback, for example, is required.

CHANNEL CUT

The channel cut is a silent FET switch which can be remotely controlled through a connector on the rear of each channel by a simple connection to ground. In addition, when the channel cut switch is pressed, another contact is grounded on the Mute Remote connector. This can be used to control a Midi Mute controller, cue lights, or even to control another channel on the mixer by linking the mute out pin of one channel to the mute in pin of any other channel(s). Such an application could be a podium switch which would allow the speaker to override other channels for example.

SOLO/PFL MONITORING

While it is normal to find PFL/AFL on almost all mixers, the CS8 goes a step further. The input solo is arranged to have priority over the output solo. This means that there is no need to de-select an output solo when selecting one or more input solo controls, and when the input solo is released, the output solo is re-established. A master solo level trim control is located on the master module for level matching, and the level of the solo signal is displayed on the left mix bargraph.

An additional solo feature provided is Solo In Place. In this mode, soloing any input channel will cause all other input channels to be cut, thereby allowing only itself to be heard in the mix, correctly panned and at the right level, along with any stereo effect return channels. This is of great benefit during set-up and rehearsal and is much more useful than the standard PFL. A switch on the master module selects Solo In Place mode.

SIGNAL LED's

The value of effective metering of signal levels throughout the signal path cannot be overestimated. Signal present and 0dB LED's on all input channels give confidence to the operator while peak overload LED's indicate when the channel is being driven close to clipping. However, it is unusual to find a peak overload LED at the very place where it is most needed, at the summing bus mix amplifiers, operating independently of the output meters. If the mix amplifier is overloaded and starts to clip, the only thing that can be done to rectify the situation is to pull down all input faders. On the CS8, there are overload warning LED's on each of the sub group mix amplifiers as well as on the left, centre and right mix amplifiers. When the output meters are switched to observe the matrix outputs the bus peak leds also monitor the matrix bus.

INSERTS

Inserts are used to patch in external pieces of equipment such as equalisers, limiters etc. and are provided on all channels, group outputs, mix outputs and auxiliary outputs. To be useful and useable, the inserts should be at a level which is compatible with this external equipment. Sadly, this is often not the case. Some mixers have inserts at odd levels which will preclude their efficient use because of the noise penalty. All inserts on the CS8 are at a consistent level which is at the internal operating level of 0dBu.

AUXILIARY INSERTS

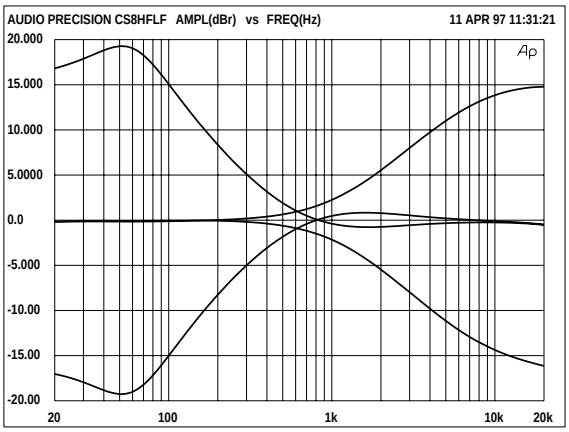
In most installations, it is quite normal to place an equaliser in the stage monitor sends, but this is normally external to the mixer. This of course means that the only way of listening to the monitor sends (internal to the mixer) is via the solo system.

Herein lies a problem. The operator does not hear the effect of the external equalisation. Also, any noise introduced by the external device is constant and not proportional to the setting of the send control. The ideal place to insert an external device is pre the send master control and this is the case in the CS8.

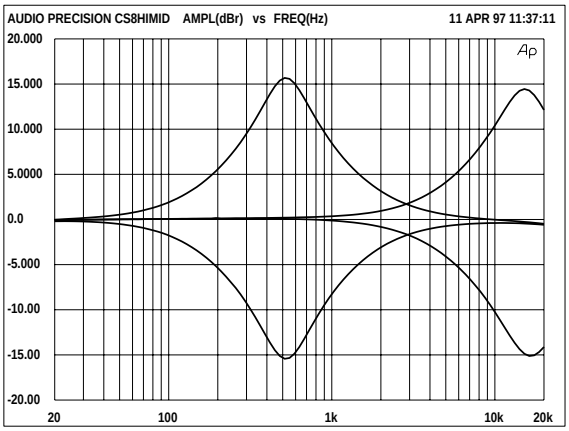
EQUALISER CURVES

The following graphs illustrate the equalisation and filtering responses of the CS8 console.

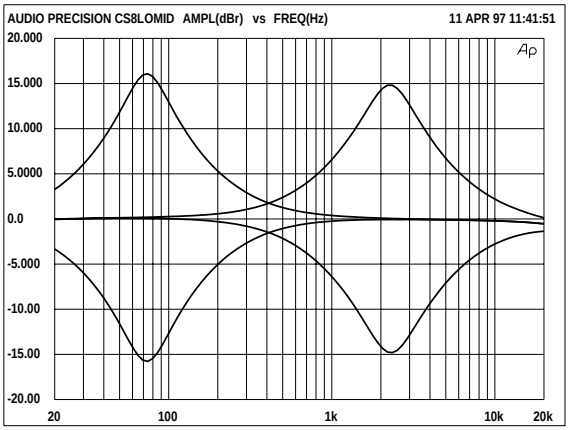
CS8HFLF	HF/LF EQUALISER RESPONSE
CS8MID	MID FREQUENCY EQUALISER BANDWIDTH ADJUSTMENT
CS8MID1	MID FREQUENCY EQUALISER AMPLITUDE ADJUSTMENT
CS8MID2	MID FREQUENCY EQUALISER FREQUENCY ADJUSTMENT
CS8HP	HIGH PASS FILTER RESPONSE



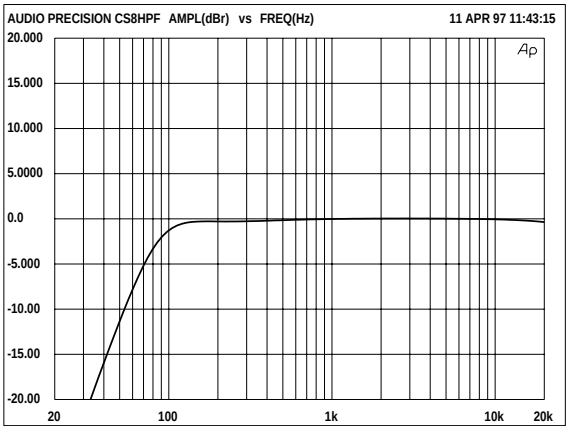
THE HIGH AND LOW FREQUENCY EQUALISER RESPONSE



THE HI-MID FREQUENCY EQUALISER RESPONSE SHOWING FREQUENCY RANGE



THE LO-MID FREQUENCY EQUALISER RESPONSE SHOWING FREQUENCY RANGE



THE HIGH PASS FILTER RESPONSE.

CS8 SPECIFICATIONS

Nominal Operating Level +4dBu with a unity gain structure.

Frequency Response 20Hz - 20kHz +/-0.5dB any input to any output at a gain < 50dB.

EQ range
HF +/-15dB @ 10kHz shelving
LF +/-15dB @ 100Hz shelving
Hi Mid +/-15dB 470Hz - 15kHz, Q = 1.4
Lo Mid +/-15dB 70Hz - 2.2kHz, Q = 1.4

Channel Routing Attenuation	> 90dB @ 1kHz
Channel Mute Attenuation	> 95dB @ 1kHz
Channel Fader Attenuation	> 85dB @ 1kHz

Distortion
0.005% @1kHz any input to any output at a gain < 50dB.

Noise:	-82dBu (24 channels routed and cut)
EIN:	-127.5dBu ref 200 ohms
EIN:	-128.7dBu ref 150 ohms

Maximum output level:	+20dBu into a bridging load
Output impedance:	<75R
Maximum input level:	+30dBu
Phono connector levels:	Nominal -10dBV

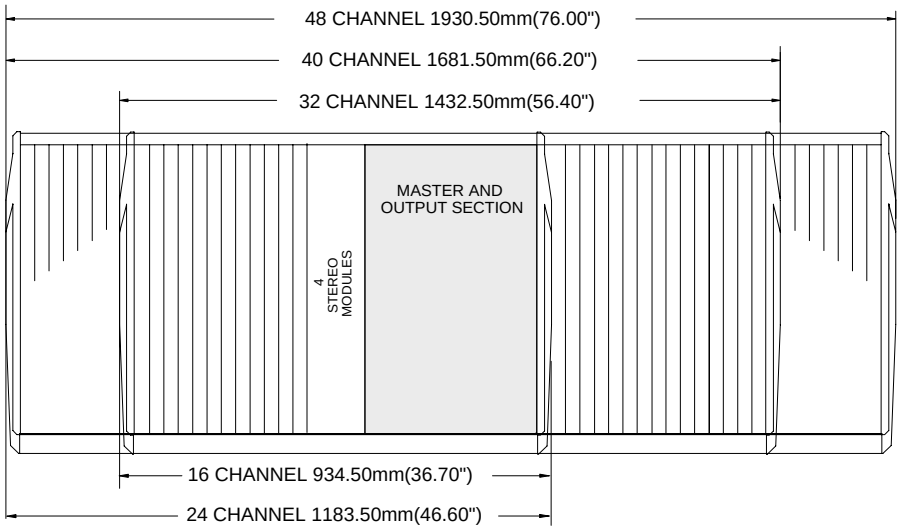
Signal present threshold:	-21dBu
Peak led threshold:	3dB below clipping

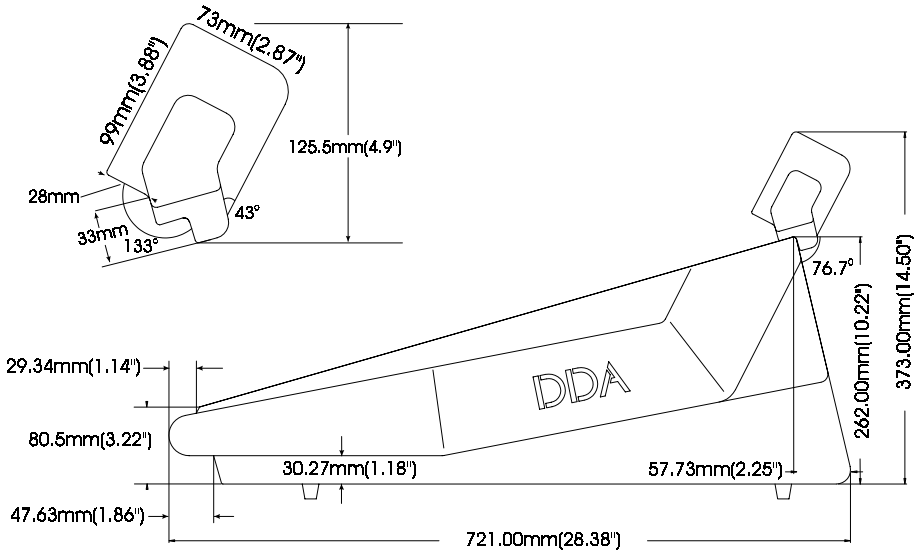
Power consumption: < 600 Watts

OPTIONS

Input transformers
Output transformers
LED Meterbridge
VU Meterbridge
Flight Case
Multipole connectors
Bus linking cable
Flight case
Spare power supply with auto switchover

CS8 DIMENSIONS AND WEIGHTS





Meterbridge Widths:
VU 46.6 inches/1183.5mm (This cannot be fitted to a 16 input console)
LED As per corresponding console width.

Console weights (packed):

16	26.4kg/58lbs	LED m/b 4.7kg/10.4lbs	Combined 31.1kg/68.4lbs
24	36kg/80lbs	LED m/b 6.0kg/13.3lbs	Combined 42.0kg/93.3lbs
32	45.6kg/100lbs	LED m/b 7.4kg/16.3lbs	Combined 53.0kg/116.3lbs
40	55.2kg/122lbs	LED m/b 8.6kg/19.0lbs	Combined 63.8kg/141lbs
48	64.8kg/143lbs	LED m/b 10.0kg/22.0lbs	Combined 74.8kg/165lbs

VU Meterbridge 6.5kg/14.5lbs (Add to weight without LED meterbridge)

These weights assume a fully fitted console. Meterbridges are shipped in with the console but not mounted on the console.

Power Supply Weight (packed): 7.8kg(17.2lbs)
Dimensions: 2U Rack Mounting with a depth of 265mm(10.43")

Declaration of Conformity

The Manufacturer of the Products covered by this Declaration is

EVI AUDIO

Klark Teknik Building, Walter Nash Road, Kidderminster,
Worcestershire, DY11 7HJ.

The Directives Covered by this Declaration.

89/336/EEC Electromagnetic Compatibility Directive, amended by 92/31/EEC & 93/68/EEC

73/23/EEC Low Voltage Equipment Directive, amended by 93/68/EEC.

The Products Covered by this Declaration.

Model CS3 Mixing Console.

Model CS8 Mixing Console.

Model CS12M Mixing Console.

The Basis on which Conformity is being Declared

The products identified above comply with the protection requirements of the EMC Directive and with the principal elements of the safety objectives of the Low Voltage Directive, and the manufacturer has applied the following standards:

EN 55013 : 1990

Limits and methods of measurement of radio disturbance characteristics of Broadcast Receivers and Associated Equipment.

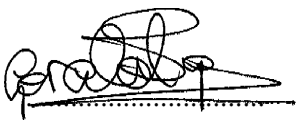
EN55020 : 1988

Sound and Television Broadcast Receivers and Associated Equipment, Electromagnetic Compatibility.

EN 60065 : 1994

Safety requirements for mains operated electronic related apparatus for household and similar general use.

The technical documentation required to demonstrate that the products meet the requirements of the Low Voltage Directive has been compiled by the signatory below and is available for inspection by the relevant enforcement authorities. The CE mark was first applied in 1996

Signed:  G.M.Squires

Authority: Product Support Manager.

Date: 1st, January 1997.

Attention

The attention of the specifier, purchaser, installer, or user is drawn to special measures and limitations to use which must be observed when these products are taken into service to maintain compliance with the above directives. Details of these special measures and limitations to use are available on request, and are also contained in product manuals.

INSTALLATION GUIDE

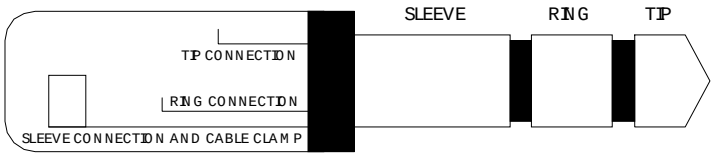
There are a number of points to consider when installing a mixing console. Many of these points will have been addressed before the console is even unpacked but it is worth repeating them again.

POSITION

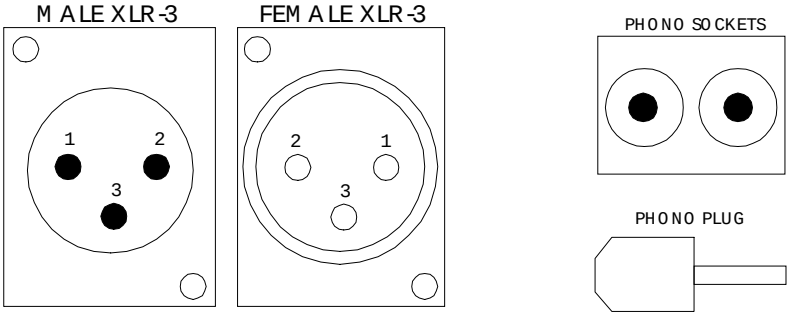
The console should be located in a convenient space commensurate with the use to which the console is being put. Ideally a cool area is preferred not in close proximity to power distribution equipment or other potential sources of interference. Provision should be made for some flat surface surrounding the console to prevent people using it as a table top. One of the worst fates that can befall a console is for a cup of coffee to be tipped into it by someone resting it on the control surface!

POWER

The power supply should be located as far from the console as the connecting cable will allow, a 5 metre power cable is supplied with the console. It should be set for the appropriate line voltage and plugged into the mains outlet using the supplied cable. If the power supply is rack mounted then be sure to leave space above for ventilation - 2U is suggested.



1/4 INCH TRS 'A' GAUGE JACK PLUG



WIRING

The console uses four different connector styles:-
TRS jack sockets, XLR male connectors, XLR female connectors and phono connectors.

The cables used should be of as high a quality as possible. Many installation problems can be traced back to poor or faulty cables and connectors.

There are two different conventions for the wiring of XLR connectors. The international convention uses pin 2 as the hot pin while the older American convention uses pin 3 as the hot pin. When going from balanced input to balanced output this is of little consequence but when unbalanced signals such as those found on the insert points are used then phase reversal can result. The CS8 and all DDA products are wired PIN 2 HOT.

ATTENTION

CABLES

This product should only be used with high quality, screened twisted pair audio cables, terminated with metal bodied 3-pin XLR connectors. The cable shield should be connected to Pin 1. Any other cable type or configuration for the audio signals may result in degraded performance due to electromagnetic interference.

ELECTRIC FIELDS

Should this product be used in an electromagnetic field that is amplitude modulated by an audio frequency signal (20Hz - 20kHz), the signal to noise ratio may be degraded. Degradation of up to 60dB at a frequency corresponding to the modulation signal may be experienced under extreme conditions (3V/m, 90% modulation).

No permanent damage or degradation of performance will be caused by these conditions.

CIRCUIT DESCRIPTIONS

The following gives a brief description of each module as an aide to understanding the signal flow within the console. Many references are made to the circuit diagrams with the reference number for the appropriate diagram being given at the beginning of each module. The master module uses two circuit boards requiring four circuit diagrams.

INPUT MODULE (CD1279)

The input module contains eight input channels mounted on a common set of metalwork. The channels are identical and a console is constructed by using 2 or more input modules together with an output module and a master module within a frame.

THE INPUT STAGE (CD1279)

The same input stage is used for both the microphone and the line input. CON2, an XLR style connector, is used for the microphone input which is wired to the inner contacts of CON3, the line input TRS jack. With nothing inserted into the jack socket the signal connects to the normal contacts and is then fed to an attenuator which is activated by selection of the line input. Resistors R2 and R3 feed phantom power to the microphone input and this is DC blocked from the line input amplifier by C2 and C3. SP1, SP2 and SP6 are filters providing protection from high frequency signals entering the inputs. Additional filtering is carried out by capacitors C37, C38, C39 and C40. CON9 (optional) is wired in parallel with the XLR which allows for wiring the input to a multipole connector mounted on the console frame.

Resistors R7, R8 and R9 form an attenuator when the line input is selected, reducing the input signal by 30dB. C45 and C46 again provide DC isolation and there is provision at this point for the insertion of an input balancing transformer. Note that if a transformer is fitted R14 should be changed to 1k. Where a transformer is not fitted two 10R resistors (R10, R11) carry the signal through to the input amplifier. D1, D2, D3 and D4 provide clamping for excessive input voltages and the signal is applied to the bases of transistors Tr5 and Tr7. VR1 is the front panel gain control and this is connected through the MIC/LINE switch such that in the MIC position the gain range is 20 to 70dB while in the LINE position it is -10 to 20dB.

Signal is taken from the collectors of Trs 5 and 7 and applied differentially to the input of IC1A. The output from here is fed back to the emitters of the input transistors through 56k resistors with one side being phase inverted by IC1B. The phase reverse

switch, SW3, selects either the normal or the phase inverted signal and feeds it to the high pass filter stage. This is a three pole high pass filter operating at 80Hz giving a roll off of 18dB per octave. When not required this can be completely bypassed by SW4. The output of SW4 after buffering by IC8B is known as PRE1 and is the pre equaliser signal. PRE1 is a source for the auxiliary sends which will be referred to later.

THE EQUALISER

The signal is presented to the equaliser which is a four band design. The high and low frequency sections are built around IC2B with VR7 providing low frequency boost and cut while VR2 provides high frequency boost and cut. The middle frequency sections are built around IC3 and use a Wein bridge as the frequency determining network. VR3 selects the frequency of operation and VR4 determines the amount of boost or cut given to the hi mid signals while VR5 alters the frequency and VR6 the boost or cut for the lo mid signals. The output from the equaliser connects to SW5 the EQ IN/OUT switch where either the pre equaliser sinal or the equalised signal can be selected to be passed to the insert send.

CON5, a Tip, Ring and Sleeve jack, is used for the insert point with the Tip being used as the send. SP3 and SP4 are filters preventing noise from entering the console. The insert return signal is buffered by IC7A and is then presented to the channel fader. The output from the fader feeds the channel cut circuit.

The pre fader signal feeds the auxiliary cut circuit, the solo bus when a solo is requested and finally the 3 led signal meter which is driven from IC6, a quad comparator. There are SIGNAL PRESENT, 0dB and PEAK indicators which are powered from a current source built around Tr8. The auxiliary cut allows the creation of a PRE FADE POST MUTE signal, which can be defeated if required, in addition to the POST FADE POST MUTE signal.

THE MUTE CIRCUIT

Tr1 is the CHANNEL MUTE fet which is buffered by IC4A and following this the signal is known as POST. This signal routes to the groups when panning is not used and also feeds the auxiliary sends when selected as POST. The pre fade signal goes through a second AUXILIARY MUTE circuit built around Tr2 to give a PRE FADE POST MUTE signal called PRE2. LK1 is normally installed allowing the PRE FADE signal to be muted when the channel mute is operated. By removing LK1 and installing LK2 the PRE FADE signal will not mute with operation of the channel mute switch.

In order to improve the attenuation of the mute circuits a small amount of signal is fed forward to cancel with any residual from the output of the fets. Resistors R140, R141 and R142 perform the feed forward for the channel signal while R99, R100 and R101 are used for the auxiliary cut circuit.

The mute circuit can be remotely controlled either through the external remote connector or from the four mute groups provided. A SAFE button allows the mute groups to be disabled on the module. When the local mute button is pressed a ground is placed onto the remote control connector. This can be used to operate external equipment such as a midi sequencer or it could be connected to other channels so that when one channel is muted others will also mute. Led 1 indicates a MUTE whether it is local or remote. In every case a MUTE request grounds the base of Tr6 causing it to switch off and hence its collector to go high. This is applied to the gates of Tr1 and Tr2 causing them to switch off since they are P channel fets. Tr4 will also turn off causing Tr3 to turn off allowing led 1 to indicate the mute condition.

THE PAN CIRCUIT

The POST signal next goes to the pan circuit. This circuit can be switched between stereo (L/R) and left/centre/right (LCR) modes using SW15. The output of the pan pot can be routed to the mix or the groups. If panning to groups is not selected then the groups receive the POST signal while, with panning selected, they receive the output of the pan pot (PANL and PANR). If LCR panning is selected then assigning to mix (SW13) will send signal to the left centre and right buses.

If L/R mode is selected no signal will appear on the centre output except by pressing the MONO button (SW27) when the POST signal will be routed to the centre bus. The groups can only use the left and right pan pot outputs and therefore if LCR panning is selected, panning to groups will not function in the expected manner.

The pan pot is built around VR16, a dual pot, and IC5. When in L/R mode only one section of the pot (VR16A) is used and it simply reduces the resistance to ground of the left or right signal depending upon the direction of rotation. This reduces the amplitude of the signal on one side while increasing it on the other to create the panning effect.

When LCR mode is selected the input signal is fed to a centre tap on VR16A. Signal can thus only appear on the left or right output of this section of the pan circuit (but not both together) with the amplitude depending again on the rotation of the pan pot.

The centre output is derived from the same input signal and VR16B is used to control its amplitude by decreasing the resistance to ground when the pot is rotated away from its central position. IC5B buffers the centre signal.

THE AUXILIARY SENDS

The auxiliary sends can use the following three signals :-
PRE1, PRE2 and POST.

PRE1 is the pre equaliser signal, PRE2 is the pre fader post mute signal and POST is the post fader post mute signal.

All auxiliaries will normally receive the POST signal, however, there are PRE switches associated with the auxiliaries allowing the pre fader signal to be selected. The default condition is that PR2 shall be the pre signal although links allow this to be changed to the PRE1 signal. Only one link of a pair should ever be inserted.

Auxiliaries 1, 2, 3
Link 4 PRE1
Link 3 PRE2

Auxiliaries 4, 5, 6
Link 5 PRE1
Link 6 PRE2

Auxiliaries 7, 8
Link 7 PRE1
Link 8 PRE 2

THE SOLO FUNCTION

SW22 is the solo or PFL switch. When operated it places DC onto the IPCUEDC bus which is detected by the master module. The audio signal INS_RET is fed onto the IPCUE bus and fed to the monitoring system on the master module. If Solo In Place mode is selected then the module initiating the solo will have its solo switch depressed and the incoming SIP signal will have no effect. If the module did not originate the solo in place the solo switch will not be depressed and the SIP signal will cause the channel to mute.

THE DIRECT OUTPUT

The direct output is available at CON5, a jack connector. The signal is unbalanced, at a nominal level of 0dBu and by default is the POST signal. SW28 allows the PRE1 signal to be used.

Switches 9, 10, 11, 12, 23, 24, 25 and 26 route the signal to the groups. Switch 27 routes signal to the MONO (CENTRE) bus and SW13 routes to the stereo MIX bus.

ROUTING AND MUTE GROUPS

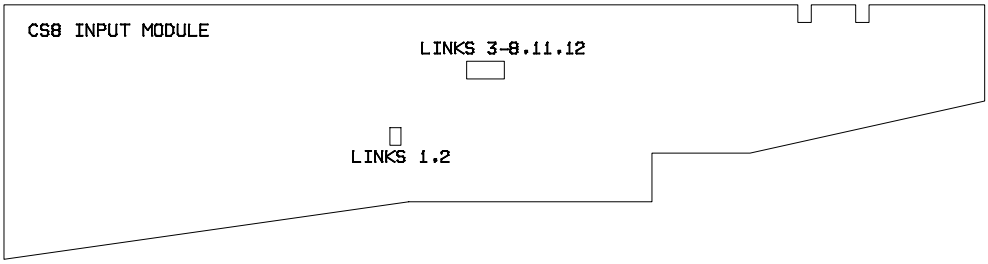
Switches 18, 19, 20 and 21 select the mute group buses. They are combined through diodes D11 through D14 and then go to the SAFE switch SW17 before combining with the local and remote MUTE signals.

GROUNDING

All routing to buses is through 10k resistors. All connectors are grounded to the metalwork (chassis) ground. This is connected to 0V by a 100R resistor in parallel with a 10n capacitor. BUSREF is taken from 0V through a 10k resistor.

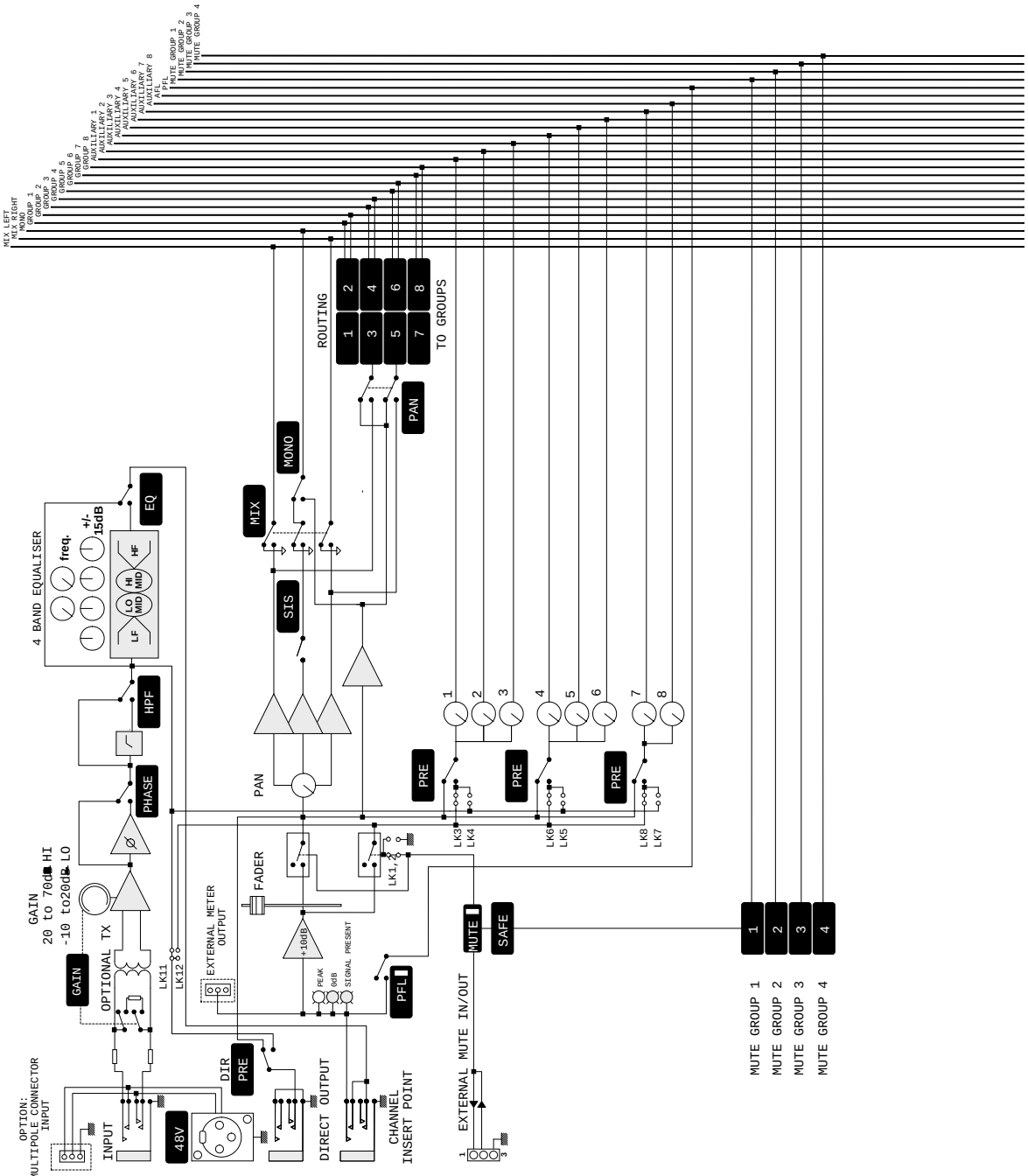
There is provision for an external meter output on CON8 (option).

INPUT MODULE LINKS



INPUT MODULE PC1394			
LINK	FUNCTION	FITTED AS SUPPLIED	NOTES
1	AUXILIARY CUT ENABLE	YES	INSTALL ONLY ONE LINK
2	AUXILIARY CUT DISABLE		
3	PRE FADER TO AUX 1-3	YES	INSTALL ONLY ONE LINK
4	PRE EQ TO AUX 1-3		
5	PRE EQ TO AUX 4-6		INSTALL ONLY ONE LINK
6	PRE FADER TO AUX 4-6	YES	
7	PRE EQ TO AUX 7-8		INSTALL ONLY ONE LINK
8	PRE FADER TO AUX 7-8	YES	
9	N/A		
10	N/A		
11	PRE EQ TO DIR OUT	YES	INSTALL ONLY ONE LINK
12	POST EQ TO DIR OUT		

INPUT MODULE BLOCK DIAGRAM



THE STEREO INPUT MODULE (CD1302/3)

THE INPUT STAGE

The same input stage is used for both microphone and line inputs. Looking at the left signal path, CON2, an XLR style connector, is used for the microphone input which is wired to the inner contacts of CON3, the line input TRS jack. With nothing inserted into the jack socket the signal connects to the normal contacts and is then fed to an attenuator which is activated by selection of the line input. Resistors R2 and R3 feed phantom power to the microphone input and this is DC blocked from the line input amplifier by C2 and C3. SP1, SP2 and SP3 are filters providing protection from high frequency signals entering the inputs. Additional filtering is carried out by capacitors C37, C38, C39 and C40.

Resistors R7, R8 and R9 form an attenuator when the line input is selected, reducing the input signal by 30dB. C45 and C46 again provide DC isolation and there is provision at this point for the insertion of an input balancing transformer. Note that if a transformer is fitted R14 (R214) should be changed to 1k. Where a transformer is not fitted two 10R resistors (R10, R11) carry the signal through to the input amplifier. D1, D2, D3 and D4 provide clamping for excessive input voltages and the signal is applied to the bases of transistors Tr4 and Tr5. VR1A is the front panel gain control and this is connected through the MIC/LINE switch such that in the MIC position the gain range is 20 to 70dB while in the LINE position it is -10 to 20dB.

Signal is taken from the collectors of Trs 4 and 5 and applied differentially to the input of IC1A. The output of IC1A is fed back to the emitters of the input transistors through 27k resistors with one side being phase inverted by IC1B. The phase reverse switch SW28 (located in the left signal path only) selects the normal or phase inverted signal and passes it to the high pass filter formed around IC2A. This is a three pole high pass filter operating at 80Hz giving a roll off of 18dB per octave. When not required this can be completely by-passed by SW3. The output of SW3 passes through SW19, the MONO R switch to become PRE-L1 which is the pre equaliser signal (left). It is a source for the auxiliary sends which will be referred to later.

SUMMING AMPLIFIER

IC11A sums the left and right signals together to create a mono signal which has its polarity restored by IC11B before being presented to switches SW19 and SW20 (the left and right signal cut switches). When Mono R (switch 19) is pressed the left signal is cut and replace by the right signal. Similarly when Mono L (switch 20) is pressed the right signal is cut and replaced by the left signal. If both switches are pressed the output of IC11B (a mono signal) is fed to both left and right signal paths.

THE EQUALISER

PRE1 L1 is presented to the equaliser which is a four band design. The high and low frequency sections are built around IC9A with VR6 providing low frequency boost and cut while VR2 provides high frequency boost and cut. The lo middle frequency section is built around IC8/IC202A. VR15 selects the frequency of operation and VR14 determines the amount of boost or cut given to a signal. The hi middle frequncy section is built around IC15B and IC16A. VR17 determines the frequency of operation while VR18 determines the amount of boost or cut. The equaliser output feeds the EQ IN/ OUT switch, SW29 allowing the pre or post equaliser signal to be selected.

IC7A buffers the equaliser output and feeds it to the fader. The equaliser output is also used to derive the PFL signal and to drive the SIGNAL PRESENT, 0dB and PEAK indicators.

THE CUT CIRCUIT

The signal path splits at this point to go through two cut circuits. This allows the creation of a PRE FADE POST MUTE signal (which can be defeated if required) in addition to the POST FADE POST MUTE signal. Tr1 is the CHANNEL MUTE fet and the post cut signal is buffered by IC4A. The signal leaving IC4A is the POST FADE signal which is then fed through a pan pot that can be routed to the groups or the L/R mix. The pre fade signal goes through an AUXILIARY MUTE circuit built around Tr2 to give a PRE FADE POST MUTE signal called PRE2. LK1 is normally installed allowing the PRE FADE signal to be muted when the channel mute is operated. By removing LK1 and installing LK2 the PRE FADE signal will be unaffected by operation of the channel mute switch. IC12A is used to combine the left and right post fade signals for sending to the auxiliaries. IC12B is used to combine the left and right pre fade signals for sending to the auxiliaries.

As with the input module a small amount of signal is fed forward to cancel any residual from the fets to improve the mute attenuation.

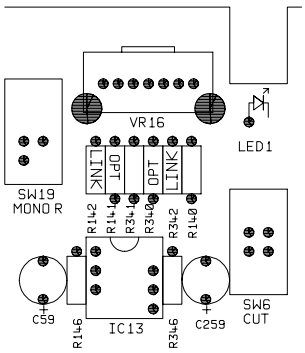
THE BALANCE CIRCUIT

The post fade signal next goes to the balance circuit. The output of the balance pot can be routed to the mix or the groups. The groups normally receive the mono post fade signal but with the PAN switch depressed they will receive the outputs of the balance pot built around VR16. By default the balance control works as a pan pot with full attenuation of the unwanted side. A more limited range of adjustment can be obtained by changing the circuit as follows :-

Move R140 to R141 and R341 to R340 leaving the positions for R140 and R341 blank.

Make R142 and R342 both 10k (they are 0R links).

This will then give a balance range of +3/-6dB.



PEAK AND SIGNAL PRESENT LEDS

A PEAK indicator and a SIGNAL PRESENT indicator are driven from the post equaliser signal. IC14 is used as a voltage comparator and directly drives leds 5 and 6. A reference voltage is applied to pins 5 and 7 while audio is applied to pins 3 and 5. The PEAK led comes on 3dB before clipping while the SIGNAL PRESENT led comes on with a signal level higher than -18dBu.

THE AUXILIARIES

With the exception of auxiliaries 7 and 8 the auxiliaries work in mono using mixed left and right signals which are derived either pre or post fade. The following three signals are available :-
PRE1, PRE2 and POST.

PRE1 is the pre equaliser signal, PRE2 is the pre fader post cut signal and POST is the post fader post cut signal.

When PRE is selected the PRE2 signal is the factory default setting. Links enable the default settings to be changed.

AUX 1-3
Remove link 3 and install link 4 for PRE1.

AUX 4-6
Remove link 6 and install link 7 for PRE1.

AUX 7-8
Remove link 11 and install link 12 for PRE1.
Auxiliaries 7 and 8 may be used as a stereo pair by depressing SW22, the STEREO switch.

THE CUT CIRCUIT LOGIC

SW6 is the mechanically latching CUT switch which when operated places a ground on the cathode of D15 causing the base of Tr3 to go low and therefore the collector to go high. D9 will now stop conducting enabling LED1 to illuminate indicating a cut. The collector of Tr3 is applied via R118 and R98 to the gate of Tr1, an P channel FET, causing it to stop conducting hence muting the signal. D10 is used to create different on and off switching times for the FET.

As the attenuation of the FET is not perfect a feedforward technique is used to cancel any residual signal. A small fraction of the channel signal is fed to the non inverting input of IC4A where it will sum with the residual but in anti-phase to it thus cancelling it completely. The operation of the AUXILIARY CUT is similar to that of the CHANNEL CUT. Links 1 and 2 exist to disable the auxiliary cut if required. In this case Link 1 should be removed and Link 2 installed.

An external input and output are available for the CUT function. The external cut output simply extends a ground onto the connector when the cut switch is depressed. The external cut input requires to ground the cathode of D7 which then has the same effect as the cut switch grounding D6. A simple latching switch contact is sufficient.

THE SOLO FUNCTION

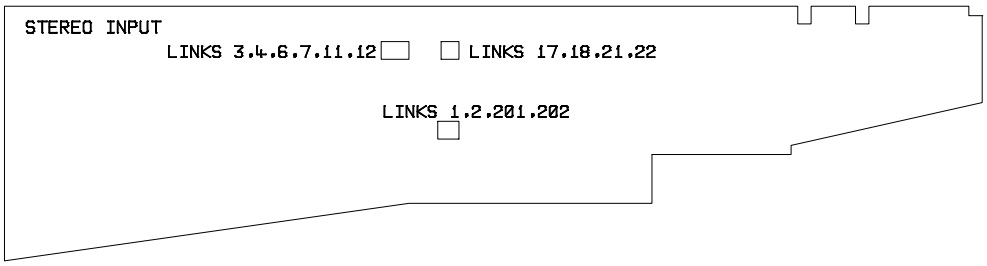
SW18 is the solo or PFL switch. When operated it places DC onto the IPCUEDC bus which is detected by the master module enabling it to replace the selected monitor signal with signal from the solo bus (IPCUE). The equaliser outputs are mixed to mono for use as the solo signal. If Solo In Place mode is selected then the module initiating the solo will have its solo switch depressed and the returned SIP signal from the master module will have no effect. If the module did not originate the solo in place the solo switch will not be depressed and the SIP signal will cause the channel to mute. Thus only the module initiating the solo will be left uncut. In this mode no change takes place on the master module and only the module initiating the solo in place will be heard through the monitoring system.

There is provision for an external meter on connector CON4 (option).

ROUTING AND GROUNDING

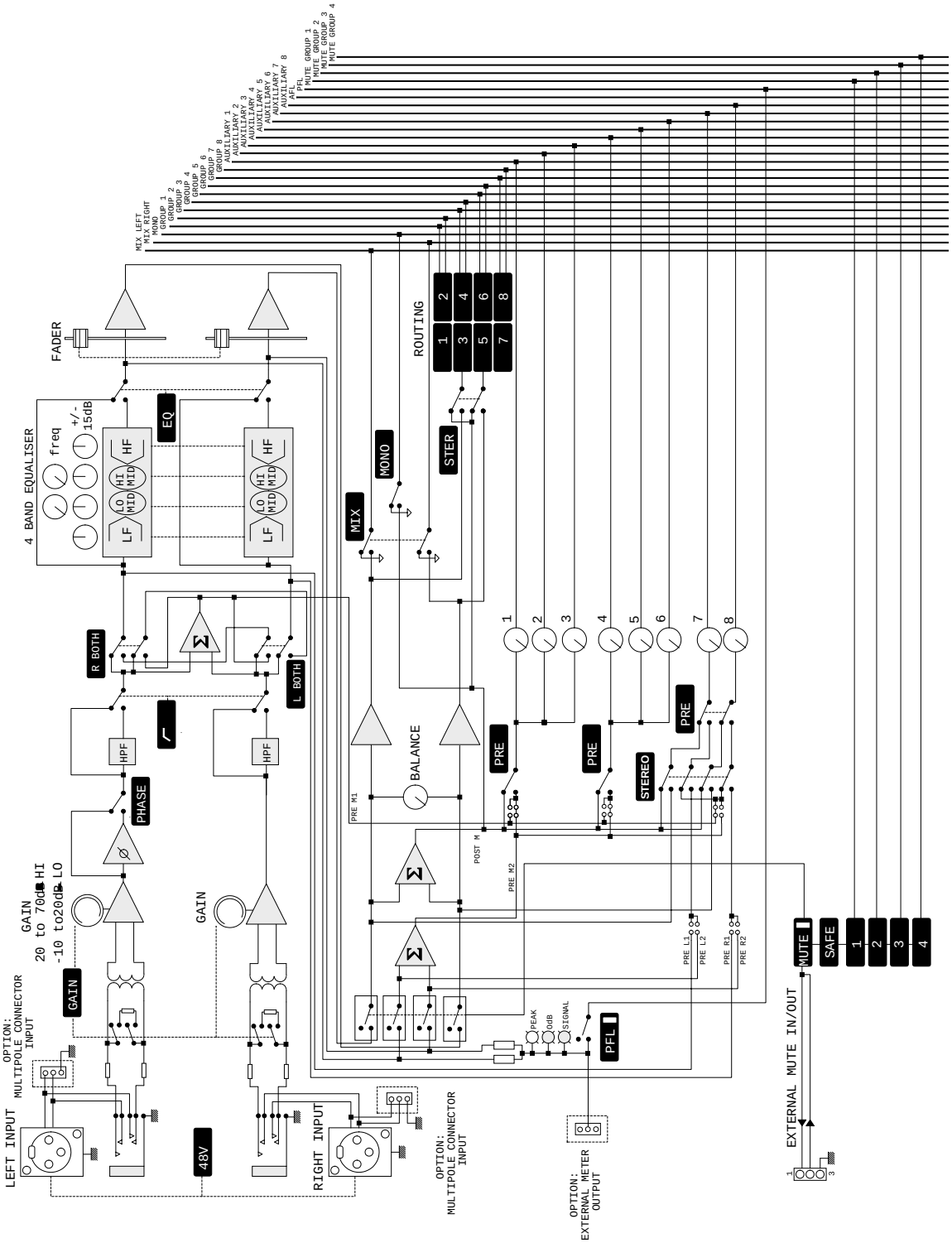
All routing to buses is through 10k resistors. All connectors are grounded to the metalwork (chassis) ground. This is connected to 0V by a 100R resistor in parallel with a 10n capacitor. BUSREF is taken from 0V through a 10k resistor.

STEREO INPUT LINKS



STEREO INPUT MODULE PC1418			
LINK	FUNCTION	FITTED AS SUPPLIED	NOTES
1	AUXILIARY CUT ENABLE (LEFT)	YES	INSTALL ONLY ONE LINK
2	AUXILIARY CUT DISABLE (LEFT)		
3	PRE FADER MONO TO AUX 1-3	YES	INSTALL ONLY ONE LINK
4	PRE EQ MONO TO AUX 1-3		
6	PRE FADER MONO TO AUX 4-6	YES	INSTALL ONLY ONE LINK
7	PRE EQ MONO TO AUX 4-6		
11	PRE FADER MONO TO AUX 7-8	YES	INSTALL ONLY ONE LINK
12	PRE EQ MONO TO AUX 7-8		
17	PRE EQ LEFT TO AUX 7-8		FIT AS A PAIR
18	PRE EQ RIGHT TO AUX 7-8		
21	PRE FADER LEFT TO AUX 7-8	YES	FIT AS A PAIR
22	PRE FADER RIGHT TO AUX 7-8	YES	
201	AUXILIARY CUT ENABLE (RIGHT)	YES	INSTALL ONLY ONE LINK
202	AUXILIARY CUT DISABLE (RIGHT)		

STEREO INPUT MODULE BLOCK DIAGRAM



THE GROUP OUTPUTS (CD1280/CD1286)

There are two different kinds of output module. Numbers 1 - 6 carry a matrix section and auxiliary output while numbers 7 and 8 carry a stereo return section and an auxiliary output in addition to the group output stage.

THE GROUP OUTPUT (CD1286)
Links 1, 2, 3, 4, 14, 15, 24 and 25 determine which of the group buses will be assigned to the output. Only one link should ever be installed. IC7B mixes the bus signals and presents them to IC7A which simply phase inverts the signal before feeding the group insert point, CON4. This is unbalanced and the send signal is applied to the tip of the jack. When no plug is inserted the signal is normalled through the RING contact and sent to the group fader. This is followed by a buffer (IC8A) with 10dB of gain in order that the fader can be run with 10dB of gain in hand.

A BUS PEAK indicator is fed from the pre insert signal to give warning of high signals on the group bus. D5 half wave rectifies the audio signal which is then presented to IC11B. This is used as a voltage comparator and drives LED13 when the signal exceeds the voltage on pin 6 of IC11B. Any signal greater than 3dB below clipping level will cause an indication.

An AFL feed to the solo system is taken from the output of the fader buffer. It is fed to the OPCUE bus through switch SW9 which also applies DC to the OPCUEDC bus.

The group signal goes to the MUTE switch, SW8, from where it splits off to the meter, the group output, and the sub mix circuitry.

The balanced output stage built around IC10 will simulate a transformer so that it may be used into unbalanced loads without any ill effect. Links 7 and 8 are used to bypass the output transformer connector (CON10) and must be removed if a transformer is used. CON15 may optionally be fitted where the output is to be wired to a multipole connector.

The meter is built around IC12, a BA683A, giving a 12 segment display with a range of +12dB to -21dB. PR1 is used to calibrate the 0dB point while PR2 is used to set the DC offset for the low end of the scale. SW1 selects the group or the matrix signal to the meter. Note that the BUS PEAK indicator is also switched between the group and the matrix.

CON17 may optionally be fitted to provide signals for a meterbridge. CON17 is switched by SW1 to carry the group or the matrix meter signals.

There is a feed to an matrix connector (CON7) and links 5 and 6 determine whether the signal is pre or post fade. Link 5 is normally installed giving a POST FADER signal to the matrix. Link 13 is used to select the matrix bus.

The group can be sub mixed onto the main L/R and centre buses of the console. A pan control is required to pan the mono group signal onto the L/R and centre buses and this is constructed around VR15, a dual pot, and IC9. When in L/R mode only one section of the pot is used and it simply reduces the resistance to ground of the left or right signal depending upon the direction of rotation. This reduces the amplitude of the signal on one side while increasing it on the other to create the panning effect. When LCR mode is selected the input signal is fed to a centre tap on the pot. Signal will thus only appear on the left or right output of this section of the pan circuit with the amplitude depending again on the rotation of the pan pot.

The centre output is derived from the same input signal as the left and right outputs. VR15B is used to control the amplitude of the centre signal and it is buffered by IC8B. The output of IC8B is fed to the centre bus of the console when LCR mode is selected and the MIX switch, SW6, is pressed. The POST signal may be fed to the centre output of the console by pressing SW5 (MONO) which will over ride the centre output of the pan pot in LCR mode.

AUXILIARY MASTER (CD1286)

Links 9, 10, 11, 12, 20, 21, 22 and 23 determine which of the auxiliary buses will be sent to the output. Only one link should ever be installed. IC4B mixes the bus signals and presents them to IC4A which simply phase inverts the signal before feeding the auxiliary insert point CON11. This is unbalanced and the send signal is applied to the TIP of the jack through SUP11. With no plug inserted the signal is normalled through the RING contact and sent to the auxiliary master level control, VR1. This is followed by a buffer (IC11A) with 10dB of gain in order that the level control can be run with 10dB of gain in hand. An AFL feed to the solo system is taken from the output of the buffer. It is fed to the OPCUE bus through switch SW2 and DC is applied to the OPCUEDC bus.

The buffer output feeds the balanced output stage built around IC6. This stage will simulate a transformer so that it may be used into unbalanced loads without any ill effect. Links 18 and 19 are used to bypass the output transformer connector (CON2) and must be removed if a transformer is used. Components labelled SUP are provided for the purposes of interference suppression and are fitted to all input and output connections.

CON16 may be optionally fitted to feed a meterbridge.

THE MATRIX SECTION (CD1286)

A 12 by 6 matrix is formed by output modules 3 through 8. The groups account for eight of the inputs with remainder being used by the left, centre and right mixes and an external input.

CON12, a TRS jack, is used as the external input feeding IC1A which unbalances the signal and feeds VR2, the level control. The output of VR2 is combined with the group and mix inputs to the matrix at IC2A with IC2B being used to phase invert the group/mix signals which are simply brought in through level control pots VR3-VR10.

The combined signal goes to the matrix insert point, CON3, before going through the matrix output level control, VR14. This is followed by a buffer with 10dB of gain allowing the fader to be used with 10dB of gain in hand. The output of the MUTE switch is used to feed the AFL switch, SW4, in addition to feeding the balanced output stage built around IC3.

This stage will simulate a transformer so that it may be used into unbalanced loads without any ill effect. Links 16 and 17 are used to bypass the output transformer connector (CON9) and must be removed if a transformer is used. Components labelled SUP are provided for the purposes of interference suppression and are fitted to all input and output connections.

STEREO INPUT (CD1280)

The stereo input is a line level stereo input which can be routed to the group, auxiliary and mix outputs of the console. Note that if a mono input is available then only the left input need be used as it will be normalled to the right signal path if no jack is inserted into the right input. IC1 forms the stereo balanced input from where the signal goes through a gain control stage using IC2 and VR1 followed by the two band equaliser using IC3. The output of the equaliser is summed to mono to create the PRE-M signal used to feed PFL through SW8 and the auxiliaries. When SW8 is operated DC is fed onto the IPCUEDC bus to signal the master module that a solo has been requested and audio is placed on the IPCUE bus.

The equaliser is followed by the MUTE switch, SW14, and from there the signal goes through a stereo fader. This is followed by a buffer stage with 10dB of gain in order that the fader can work with 10dB of gain in hand.

The post fader stage is presented to a balance control constructed around VR4 and is mixed to mono to create the POST-M signal used to feed the auxiliaries. The balance control is buffered by IC5 giving unity gain with the control in its central position. With the control rotated to the right, for example, the right signal will increase by 3dB while the left signal will be fully attenuated.

The output of the buffer is fed to the MIX switch, SW2 and the group routing switches, SW4 through SW7. The feed to the mono bus is through SW3 using the POST-M signal. Auxiliaries 5 through 8 can be accessed by the stereo input.

The PRE switch, SW1, allows the auxiliaries to be sent pre fade mono signal rather than the post fade mono signal. The STEREO switch, SW13, allows auxiliaries 7 and 8 to be used as a stereo auxiliary using either the pre or post fade stereo signals.

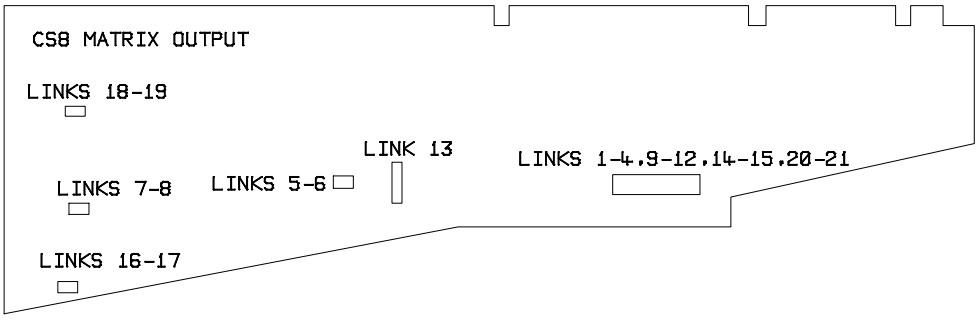
THE GROUP OUTPUT (CD1280)

Links 1 and 2 determine which of the group buses will be assigned to the output. Only one link should ever be installed. IC7B mixes the bus signals and presents them to IC7A which simply phase inverts the signal before feeding the group insert point. This is unbalanced and the send signal is applied to the TIP of the jack. When no plug is inserted the signal is normalled through the RING contact and sent to the group fader. This is followed by a buffer with 10dB of gain in order that the fader can be run with 10dB of gain in hand. A BUS PEAK indicator is fed from the pre insert signal to give warning of high signals on the group bus. D5 half wave rectifies the audio signal which is then presented to IC11B. This is used as a voltage comparator and drives LED18 when the signal exceeds the voltage on pin 6 of IC11B. Any signal greater than 3dB below clipping level will cause an indication.

An AFL feed to the solo system is taken from the output of the fader buffer. It is fed to the OPCUE bus through switch SW12 which also applies DC to the OPCUEDC bus. The group signal then goes to the CUT switch SW10 from where it splits off to the meter, the group output, and the sub mix circuitry.

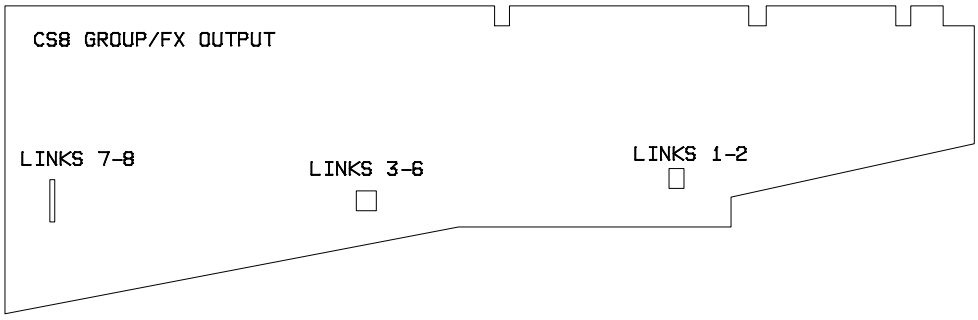
The balanced output stage built around IC10 will simulate a transformer so that it may be used into unbalanced loads without any ill effect. Links 7 and 8 are used to bypass the output transformer connector (CON5) and must be removed if a transformer is used.

GROUP OUTPUT LINKS (MATRIX)



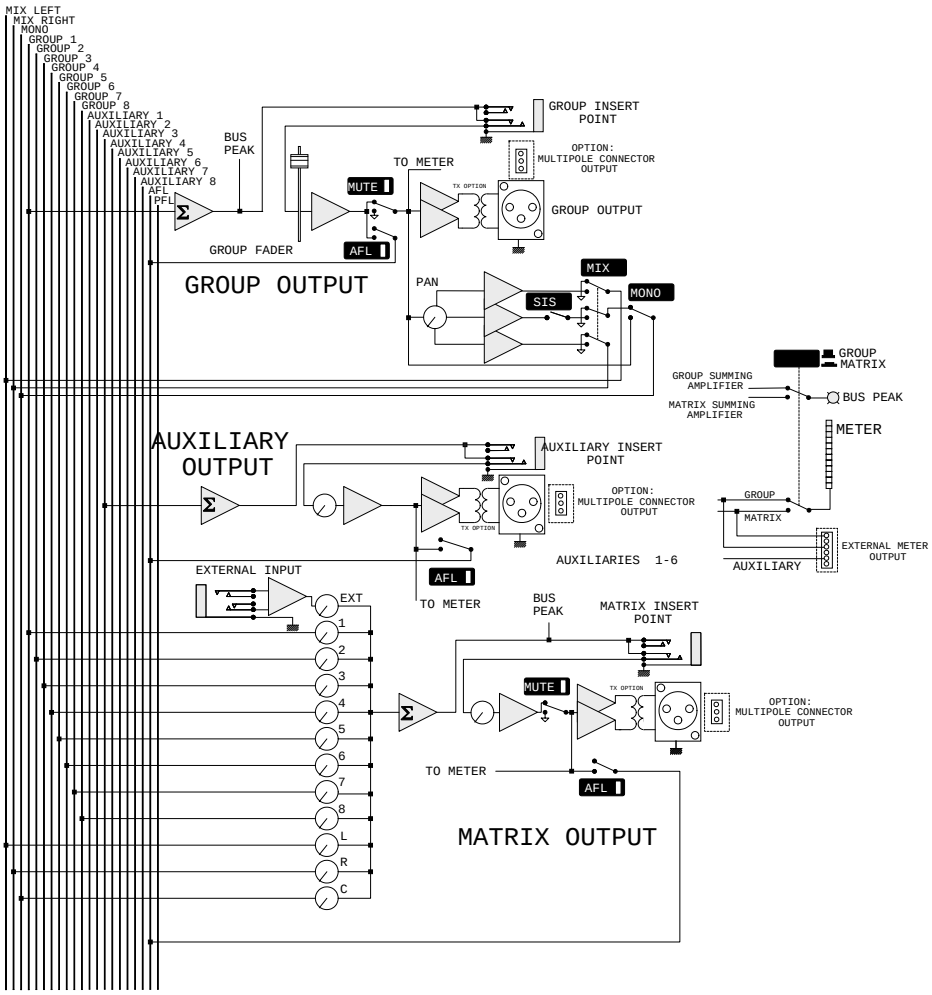
GROUP MODULE 1-6 PC1398			
LINK	FUNCTION	FITTED AS SUPPLIED	NOTES
1	BUS 3 SELECT		MODULE POSITION DEPENDENT
2	BUS 4 SELECT		
3	BUS 5 SELECT		
4	BUS 6 SELECT		
5	MATRIX POST FADER	YES	
6	MATRIX PRE FADER		
7	GROUP OUTPUT TRANSFORMER BYPASS	YES	REMOVE IF AN OUTPUT TRANSFORMER IS FITTED
8	GROUP OUTPUT TRANSFORMER BYPASS	YES	
9	AUX 3 SELECT		MODULE POSITION DEPENDENT
10	AUX 4 SELECT		
11	AUX 5 SELECT		
12	AUX 6 SELECT		
13	MATRIX ASSIGN		
14	N/A		
15	N/A		
16	MATRIX OUTPUT TRANSFORMER BYPASS	YES	REMOVE IF TRANSFORMERS ARE USED
17	MATRIX OUTPUT TRANSFORMER BYPASS	YES	
18	AUXILIARY OUTPUT TRANSFORMER BYPASS	YES	
19	AUXILIARY OUTPUT TRANSFORMER BYPASS	YES	
20	AUX 1 SELECT		MODULE POSITION DEPENDENT
21	AUX 2 SELECT		
22	AUX 7 SELECT		
23	AUX 8 SELECT		
24	BUS 1 SELECT		
25	BUS 2 SELECT		

GROUP OUTPUT LINKS (RETURN)

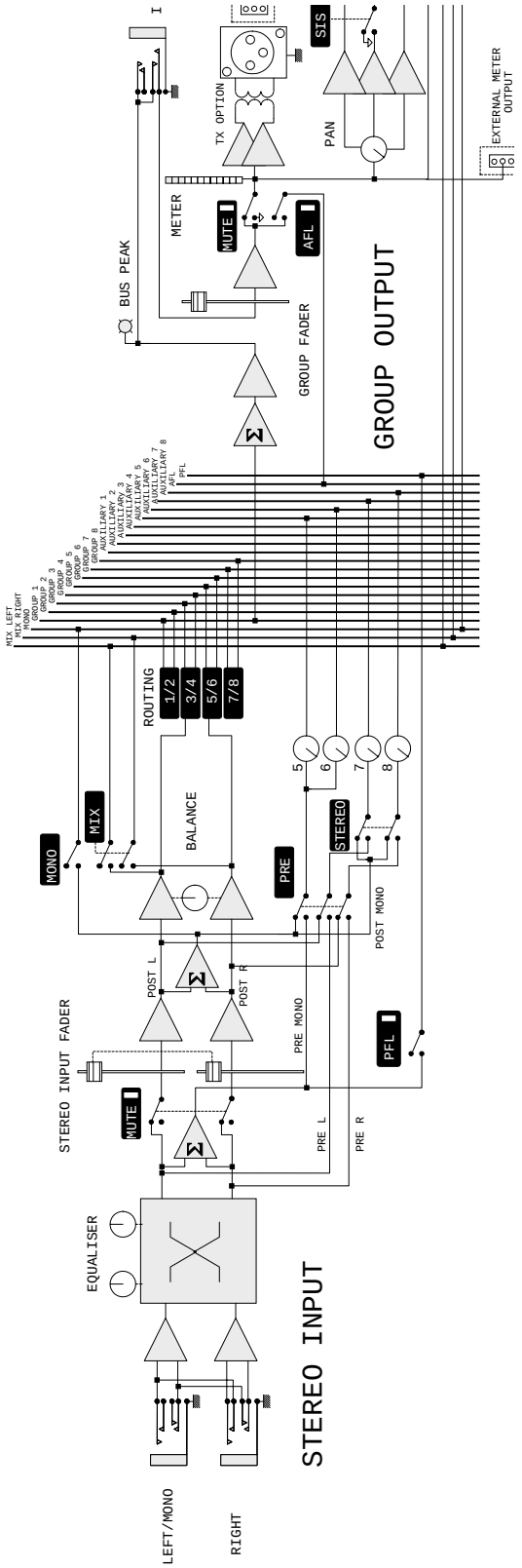


GROUP MODULE 7-8 PC1395			
LINK	FUNCTION	FITTED AS SUPPLIED	NOTES
1	BUS 7 SELECT		MODULE POSITION DEPENDENT
2	BUS 8 SELECT		
3	MATRIX GROUP 7 ASSIGN		MODULE POSITION DEPENDENT
4	MATRIX GROUP 8 ASSIGN		
5	MATRIX POST	YES	INSTALL ONLY ONE LINK
6	MATRIX PRE		
7	TRANSFORMER BYPASS	YES	REMOVE BOTH WHEN AN OUTPUT TRANSFORMER IS USED
8	TRANSFORMER BYPASS	YES	

GROUP OUTPUTS 1-6 BLOCK DIAGRAM



GROUP OUTPUTS 7-8 BLOCK DIAGRAM



THE MASTER MODULE

The Master Module supports a number of functions including the main mix outputs, two auxiliary outputs, a tape return input and the monitoring system. Two circuit boards are used with signals passing between them when required.

AUXILIARY SENDS (CD1281)

Auxiliaries 7 and 8 are located on the master module and their function is identical to the auxiliary masters located on the group modules.

Looking at Auxiliary 7 IC1A mixes the auxiliary 7 bus signals and presents them to IC1B which simply phase inverts the signal before feeding the auxiliary insert point. This is unbalanced and the send signal is applied to the TIP of the jack. When no plug is inserted the signal is normalled through the RING contact and sent to the auxiliary master level control, VR1. This is followed by a buffer with 10dB of gain in order that the level control can be run with 10dB of gain in hand. An AFL feed to the solo system is taken from the output of the buffer. This is fed to the OPCUE bus through switch SW1 and DC is applied to the OPCUEDC bus.

The output of the buffer feeds the balanced output stage built around IC3. This stage will simulate a transformer so that it may be used into unbalanced loads without any ill effect. Links 1 and 2 are used to bypass the output transformer connector (CON13) and must be removed if a transformer is used.

LEFT, CENTRE AND RIGHT MIX (CD1281/2)

IC4A mixes the left bus signals and presents them to IC4B which simply phase inverts the signal before feeding the auxiliary insert point. This is unbalanced and the send signal is applied to the TIP of the jack. An unbalanced feed to a tape recorder is also taken from this point and is suitable for machines operating at -10dBV. A feed of the CENTRE or MONO mix is also summed with the left and right signals for sending to the tape recorder outputs. When no plug is inserted in the insert jack the signal is normalled through the RING contact and sent to the master fader. A BUS PEAK indicator is fed from the pre insert signal to give warning of high signals on the master bus. D11 half wave rectifies the audio signal which is then presented to IC7A used as a voltage comparator to drive LED13. Any signal greater than 3dB below clipping level will cause an indication.

The master fader is followed by a buffer with 10dB of gain in order that the fader can be run with 10dB of gain in hand. The output of the buffer feeds the balanced output stage built around IC8. This stage will simulate a transformer so that it may be used into unbalanced loads without any ill effect. Links 3 and 4 are used to bypass the output transformer connector (CON14) and must be removed if a transformer is used. A feed of the fader buffer output is also used to feed the centre output of the console when SW8 is depressed.

The signal paths for the RIGHT and CENTRE signals are identical to that described for the left signal.

MONITORING

There are left, centre and right outputs for speakers, a stereo headphone output and 3 master meters. Solo audio is automatically switched on to the monitor outputs when a solo is active and there is an external tape input which can be assigned as a monitor source or to the left and right outputs of the console.

TAPE PLAY INPUT (CD1283)

The external tape input is unbalanced and buffered by IC5 having a non inverting gain of 5.5dB. The signal passes through CON11 (CD1283) to CON10 (CD1282) and from there to the level control VR2. The inputs to the level control are also taken to the TAPE switch SW6. The outputs of the level control feed IC13 which has 6dB of gain before being presented to switches SW2 and SW3 which route it the L/R and MONO outputs of the console. The signals are applied to the fader buffers and hence the master faders will not affect the level of the tape signal when assigned to the mix outputs of the console. This means that a tape can be played through the console outputs with the main faders closed to suppress other signal sources and is known as an intermission playback facility.

In addition to the TAPE switch the monitor path has a MIX TO MON switch (SW4) and a CENTRE TO MON switch (SW5). The selected source is applied to fets Tr1, Tr2 and T18 which will normally pass the signal. If a solo is active then Tr1, Tr2 and Tr18 will cease to conduct and Tr3, Tr4 and Tr19 will conduct to allow the solo bus to be fed to the monitor outputs of the console. LMON, RMON and CMON are the signals presented to the monitor outputs.

SOLO LOGIC (CD1282)

There are two solo DC buses, IPCUEDC and OPCUEDC which allow input and output solos to be treated differently.

If an input solo is requested the IPCUEDC bus will go high causing Tr7 to turn on and hence its collector to go low.

This switches off Tr8 which allows Led 16 to turn on indicating an input solo. The collector of Tr7 is connected through SW7 (the SIP switch) to the gate of Tr6, causing Tr6 to switch off.
The effect of this is to disable any output solo audio that is active, giving the console input solo priority. The cathode of D7 is now low causing Trs 1, 2, 12 and 18 to turn off. Tr11 inverts the output of Tr7 causing Trs 3, 4, 13 and 19 to turn on.

Thus the normal monitor source is silenced while the solo audio is allowed onto the monitor outputs in addition to the left meter now showing solo audio level instead of the left mix signal. The operation of an output solo is very similar other than for the fact that it cannot disable input solos. During a solo the centre and right meters are muted by fets Trs 5 and 6 (CD1283). Solo audio is mixed by IC11B and this is where the solo meter feed is derived. Signal can be adjusted in level by VR3 before going to the monitor system without affecting the meter readings.

A Solo In Place mode can also be selected and when this is the case the output of Tr7 feeds Tr14 causing it to turn on and therefore Tr15 to turn on. This causes a logic low to be placed on the SIP bus which mutes any input module not having its solo switch depressed.

The master meters are built around BA683A ICs, giving a 12 segment display with a range of +12dB to -21dB.

Auxiliary 8 and the centre output are as for auxiliary 7 and the left output description previously given.

THE MONITOR OUTPUTS (CD1284)
The selected monitor signals LMON, RMON and CMON are fed to a volume control VR4 which is buffered by IC10/11. A PHONES switch (SW14) selects the headphone or loudspeaker outputs. The loudspeaker outputs are built around IC12, IC13 and IC14 and are similar to the balanced outputs used for the main outputs of the console. Transformer balancing is not available for the monitor outputs.

The headphones outputs are designed to feed a low impedance load and have a transistor output stage. IC17, transistors 1 through 4 and associated components form the stereo headphone amplifier.

TALKBACK
IC15 is the talkback microphone amplifier with gain being adjustable by VR3. Link 1 may be installed if a phantom powered microphone is to be used. When the talkback key is pressed Rs 114, 115 and 116 connect with the monitor signals to form a DIM circuit of around 15dB.

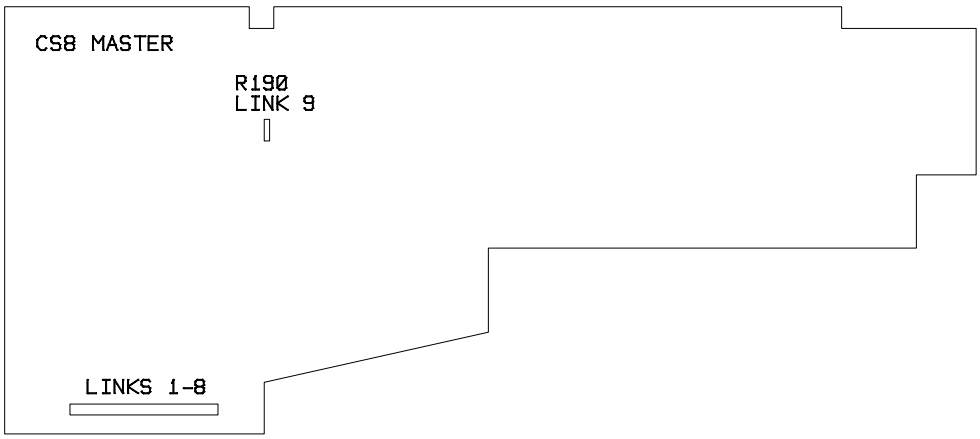
Talkback can be routed to the auxiliaries, the mix or the groups. There are also sine and pink noise generators. They can be switched on using SW7 and the appropriate source selected by SW6. The routing for these generators is as for the talkback. VR2 is a level control for the selected oscillator.

Pink noise is generated from diodes D16 and D17 which are differentially applied to IC7A. The output from IC7 is taken through the ON switch, SW7, and then applied to IC7B for amplification before filtering by resistors R86—R91 and capacitors C45—C49. The output of the filter is buffered and amplified by IC6B from where it goes to the SINE/PINK selector switch, SW6.

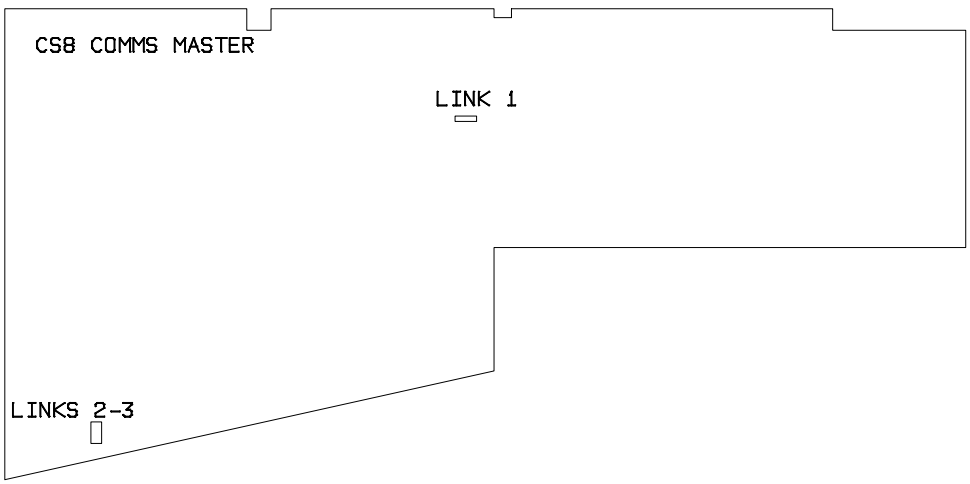
A 1kHz sine wave is generated by IC16 with D18 and D19 being used to stabilise the amplitude.

IC16A along with C53, C54 and R97 form a bandpass filter determining the frequency of oscillation.

MASTER MODULE LINKS

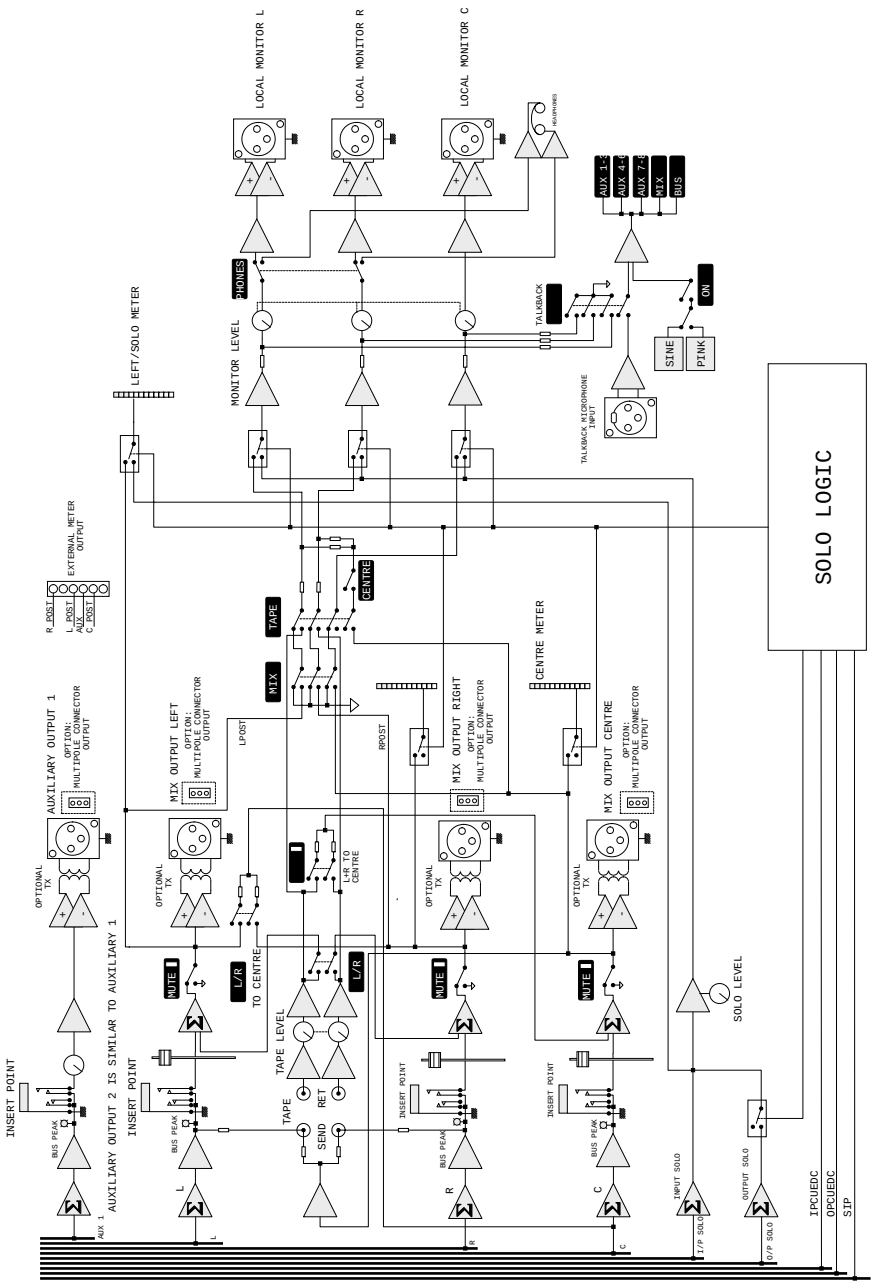


MASTER MODULE PC1396			
LINK	FUNCTION	FITTED AS SUPPLIED	NOTES
1	AUXILIARY 1 TRANSFORMER BYPASS	YES	REMOVE WHEN FITTING AN OUTUT TRANSFORMER
2	AUXILIARY 1 TRANSFORMER BYPASS	YES	
3	LEFT MIX TRANSFORMER BYPASS	YES	REMOVE WHEN FITTING AN OUTUT TRANSFORMER
4	LEFT MIX TRANSFORMER BYPASS	YES	
5	RIGHT MIX TRANSFORMER BYPASS	YES	REMOVE WHEN FITTING AN OUTUT TRANSFORMER
6	RIGHT MIX TRANSFORMER BYPASS	YES	
7	CENTRE MIX TRANSFORMER BYPASS	YES	REMOVE WHEN FITTING AN OUTUT TRANSFORMER
8	CENTRE MIX TRANSFORMER BYPASS	YES	
9	METER ENABLE	YES	REMOVE WHEN METERBRIDGE IS FITTED



COMMS MODULE PC1397			
LINK	FUNCTION	FITTED AS SUPPLIED	NOTES
1	TALKBACK MICROPHONE PHANTOM POWER		
2	AUXILIARY 2 TRANSFORMER BYPASS	YES	REMOVE WHEN FITTING OUTPUT TRANSFORMERS
3	AUXILIARY 2 TRANSFORMER BYPASS	YES	

MASTER MODULE BLOCK DIAGRAM



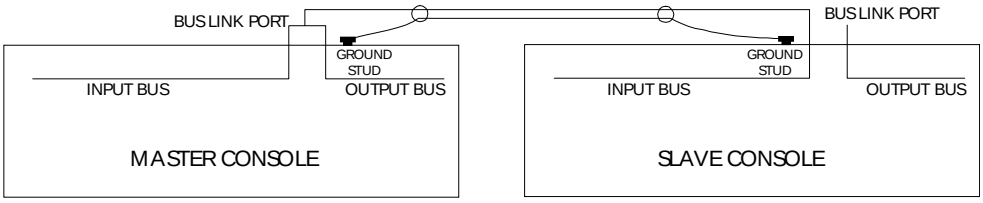
THE BUS LINKING PORT

The bus linking port enables two consoles to be used together in a master slave configuration. The bus structure is broken between the input modules and the group modules although in normal use a shielded connector is used to join the two sections. If the console is to be used as a master the connector is removed and the master end of a link cable put in its place. This retains the link between the buses and connects the input modules of the slave console to the buses of the master console. If the console is to be used as a slave the slave end of the link cable is used which breaks the link between the buses and feeds the input modules over to the master console. This of course means that the group and master modules of the slave console are not used as only one master per function can be allowed access to the bus.

During unlinked operation a blanking plug must be inserted to connect the input and output buses.

CD1308
This shows the Bus Link Blanking Plug.

CD1306
This shows the Bus Link PCB. There are two input connectors to allow consoles where the master modules are located in the centre. and one output connector. The output and input connectors are connected by the blanking plug during normal (unlinked) operation.



THE METERBRIDGE

VU METERBRIDGE (CD1310)

The VU Meterbridge carries 11 meters indicating the three main console outputs in addition to either the matrix, group or auxiliary outputs of the console.

Signal selection is carried out by switches SW1 — SW3 while C1 ensures that on power up the GROUP signals will be displayed.

IC1 is a dual SR Flip Flop and normally the Reset input will be held low by the pull down resitor R3. The Set input is wired to Vss and is thus always low. When SW1 is pressed, or C1 is charging immediately after switch on, Vdd is connected through D1 and R3 to Vss. Current therefore flows and a voltage is created across R3 which is enought to make the Reset input if IC1a see a logic high. The Q output is thus set to a logic low while the Qbar output will be a logic high. A similar situation will arise on IC1b and therefore the A and B control inputs of the 4052 multiplexers will both be low allowing the X0 and Y0 input signals through which are the group signals. IC12a also reads the control lines. As both are low and the IC is connected as an invertor the output will go high causing LED1 to illuminate. If neither or only one of the control lines is low the output will not go high enough to turn on LED1.

If the matrix output is required then SW2 should be pressed. This will cause C2 to charge through R1 creating a +ve pulse on the clock input of IC1A. Assuming that we are in GROUP mode the Data input will see the logic high from the Qbar output and this will be clocked through to the Q output. The A control line now goes high while the B control line stays low causing the multiplexers to allow through the signals on the X1 and Y1 inputs which are the matrix signals.

If the auxiliary outputs are required then SW3 should be pressed. IC1B is clocked by a +ve going pulse from C3. Again the Data input which is high will be clocked through to the Q output causing the B control line to go high. The multiplexers will now allow through signals connected to the X3 and Y3 inputs which are the auxiliary output signals. The B control line is connected through to the RESET pin of IC1A and when the auxiliary signal is selected a pulse will be created through C6 causing IC1A to reset. When the auxiliary signals are deselected the B control line will go low causing a -ve going pulse. To prevent this from causing damage to the circuit components it is clamped by D3 and thus prevented from driving the reset pin more than 0.6V below ground. C7 and D4 perform similar functions on IC1B.

When the A control line is high the output of IC11b will go low causing the MATRIX indicator to illuminate while if the B control line is high the output of IC12b will go low causing the Auxiliary indicator to illuminate.

The outputs of the multiplexers are fed through buffer amplifiers with some gain adjustment to allow for calibration of the meters. Resistors attenuate the signal input to the multiplexers when a signal is not selected in order to prevent breakthrough of any high level audio signals. The signals for the left, centre and right mixes do not travel through any multiplexers and are permanently selected. There are of course only 6 matrix outputs and meters 7 and 8 will therefore not indicate during the period that the meterbridge is being used to indicate MATRIX signals.

LED METERBRIDGE OUTPUT SIGNAL PROCESSING (CD1312)

The signal input to the led meterbridge output section is identical to that of the VU meterbridge. Selection can be made between the group, matrix and auxiliary signals. In this case the outputs from the multiplexers are fed to quad comparator ICs of the type LM2901. These rectify the audio signals and define the ballistics of the resulting signal that is fed to the display board (CD1311).

LED METERBRIDGE OUTPUT DISPLAY BOARD (CD1311)

Each meter is identical and is constructed from 3 quad comparator ICs of the type LM2901 creating a 12 segment meter. A resistor chain is used to set the threshold voltage for each comparator and this determines the point at which an led will switch on. The leds are driven from constant current sources formed from transistors TR1 through TR8.

LED METERBRIDGE INPUT DISPLAY BOARD (CD1307)

The meteres are identical to those used on the output display board (CD1311). There is no need for a ballistics and rectifier section in the meterbridge as the signal is taken from after the ballistics and rectifier section of the meter driver on the module. Further LM2901 ICs (IC25 and IC26) are used to buffer the module signals before being presented to the meters.

THE POWER SUPPLY

The power supply is a linear type supplying +/-18 volts and +48 volts DC to the console. It may be rack mounted and a space of 2U above the unit is recommended for ventilation.

The positive and negative rail regulators are identical in operation thus only the positive rail is described.

Diodes D11 through D14 rectify the incoming AC from the transformer and feed the main reservoir capacitors C9 and C10. A small plug in module contains the series pass transistor and associated regulating circuit. Q002 is the series pass transistor and is driven from Q001 which in turn receives a control signal from IC001, a 723. The output from the series pass transistor is passed directly to the power supply output. D15 indicates that the supply is functioning.

Diodes D1 through D4 rectify the AC used for the phantom voltage supply. This is smoothed by C1, C2 and C4 from where it is fed to a TL783C, the regulator. R1, R2 and R4 are used to derive a programming voltage which is applied to the TL783C. D5 and D6 will protect the regulator from inverse voltages that may be applied to it. C5 and C15 smooth the regulated output which is applied to the output connector of the power supply. D7 indicates that the phantom supply is working.

There is a delayed output from the power supply which may be used to activate relays in a console. This facility is not used when connected to the CS8 console.

There is no connection within the power supply between 0V and mains earth (chassis). There is a ground lift switch which, when operated, will allow the console to float completely free from ground. If the ground is lifted then the console chassis is connected to 0V Audio in the power supply.

DC Pinout

1 Not connected
2 +18 Volts
3 -18 Volts
4 0 Volts
5 +48 Volts
6 Chassis

The PSI2860 power supply is completely tested in accordance with IEC65, 5th edition 1985 amendment number 1 and EMKO-TUE(12B-SEC) 205/91.

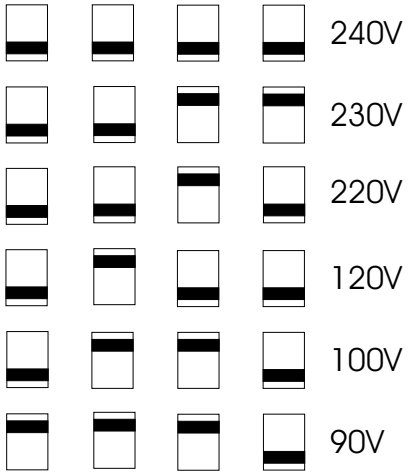
Always connect the power supply to the console and the electricity supply before switching on.

Fusing:	240/230/220V	CSM02-0006	T3.15A
	120/100/90V	CSM02-0007	T6.3A

IMPORTANT: ALWAYS DISCONNECT THE POWER SUPPLY FROM THE MAINS SUPPLY BEFORE OPENING.

REFER SERVICING TO A QUALIFIED PERSON OR DEALER

The PSI2860 will be factory set to the correct line voltage although it may be changed altering the switches within the unit.



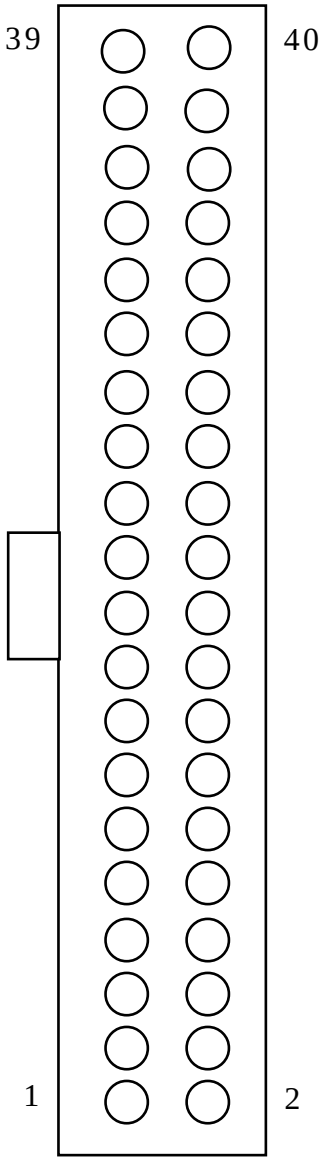
POWER WIRING ONTO THE MASTER MODULE

1	BROWN	+18v
2	N/C	
3	GREEN	0V
4	BLUE	-18v
5	GREEN/YELLOW	CHASSIS
6	ORANGE	PHANTOM

The chassis wire is bonded to the frame and also to a large ground post on the rear panel of the console. In accordance with current good practice pin 1 of the XLR connectors is taken to chassis ground as is the sleeve connection from jack sockets.

BUS CONNECTOR PIN OUT

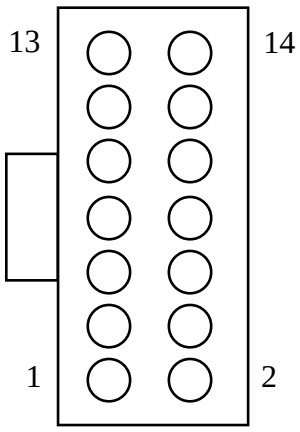
PIN	SIGNAL	DESCRIPTION
1	BUS 8	GROUP 8 BUS
2	MUTE 1	MUTE GROUP 1 BUS
3	BUS 7	GROUP 7 BUS
4	MUTE 2	MUTE GROUP 2 BUS
5	BUS 6	GROUP 6 BUS
6	MUTE 3	MUTE GROUP 3 BUS
7	BUS 5	GROUP 5 BUS
8	MUTE 4	MUTE GROUP 4 BUS
9	BUS 4	GROUP 4 BUS
10	IPCUE	INPUT CUE AUDIO
11	BUS 3	GROUP 3 BUS
12	IPCUEDC	INPUT CUE CONTROL
13	BUS 2	GROUP 2 BUS
14	OPCUE	OUTPUT CUE AUDIO
15	BUS 1	GROUP 1 BUS
16	OPCUEDC	OUTPUT CUE CONTROL
17	MIX R	MIX RIGHT BUS
18	SIP	SOLO IN PLACE
19	MIX C	CENTRE OR MONO MIX BUS
20	BUSREF	BUS REFERENCE
21	MIX L	LEFT MIX BUS
22	+18V	+18 VOLTS
23	AUX 8	AUXILIARY 8 BUS
24	+18V	+18 VOLTS
25	AUX 7	AUXILIARY 7 BUS
26	+18V	+18 VOLTS
27	AUX 6	AUXILIARY 6 BUS
28	0V	AUDIO GROUND
29	AUX 5	AUXILIARY 5 BUS
30	0V	AUDIO GROUND
31	AUX 4	AUXILIARY 4 BUS
32	0V	AUDIO GROUND
33	AUX 3	AUXILIARY 3 BUS
34	-18V	-18 VOLTS
35	AUX 2	AUXILIARY 2 BUS
36	-18V	-18 VOLTS
37	AUX 1	AUXILIARY 1 BUS
38	-18V	-18 VOLTS
39	MWKGROUND	CHASSIS
40	+48V	PHANTOM POWER



VIEW OF BUS RIBBON CONNECTOR LOOKING INTO THE CONSOLE

CS8 MATRIX CONNECTOR

PIN	SIGNAL	DESCRIPTION
1	MTX 4	MATRIX 4 BUS
2	MYX 5	MATRIX 5 BUS
3	MTX 3	MATRIX 3 BUS
4	MTX 6	MATRIX 6 BUS
5	MTX 2	MATRIX 2 BUS
6	MTX 7	MATRIX 7 BUS
7	MTX 1	MATRIX 1 BUS
8	MTX 8	MATRIX 8 BUS
9	MTX R	MATRIX RIGHT BUS
10	REC-C	CENTRE RECORD FEED
11	MTX C	MATRIX CENTRE BUS
12	CMON	CENTRE MONITOR FEED
13	MTX L	MATRIX LEFT BUS
14	GND	AUDIO GROUND



VIEW OF BUS RIBBON CONNECTOR LOOKING INTO THE CONSOLE

BUS LINK CONNECTOR

DIN 41612 CONNECTOR			
SIGNAL	A	B	SIGNAL
BUS 8	1	1	BUS 8
BUS 7	2	2	BUS 7
BUS 6	3	3	BUS 6
BUS 5	4	4	BUS 5
BUS 4	5	5	BUS 4
BUS 3	6	6	BUS 3
BUS 2	7	7	BUS 2
BUS 1	8	8	BUS 1
MIX R	9	9	MIX R
MIX C	10	10	MIX C
MIX L	11	11	MIX L
AUX 8	12	12	AUX 8
AUX 7	13	13	AUX 7
AUX 6	14	14	AUX 6
AUX 5	15	15	AUX 5
AUX 4	16	16	AUX 4
AUX 3	17	17	AUX 3
AUX 2	18	18	AUX 2
AUX 1	19	19	AUX 1
IPCUE	20	20	IPCUE
IPCUE DC	21	21	IPCUE DC
SIP	22	22	SIP
BUS REF	23	23	BUS REF
0V	24	24	0V
0V	25	25	0V
0V	26	26	0V
0V	27	27	0V
MUTE 1	28	28	MUTE 1
MUTE 2	29	29	MUTE 2
MUTE 3	30	30	MUTE 3
MUTE 4	31	31	MUTE 4
MWK	32	32	MWK

CS8 PARTS LISTING

This listing contains all the parts used in the assembley of a CS8 console. Where possible both a DDA part number and an EVI part number are given and ultimately all part numbers should be of the EVI type.

DDA No.	DESCRIPTION	EVI AUDIO PART NUMBER
ACBL17-005	.EARTH LOOM	ACBL17-1446-3
ACBL17-006	.EARTH LOOM	ACBL17-1447-3
ACBL17-009	.MASTER/COMMS WFM	ACBL17-1450-3
ACBL17-010	.PSU XLR WFM	ACBL17-1437-3
ACBL17-011	.LITTLITE XLR WFM	ACBL17-1438-2
ACBL17-012	.HEADPHONE WFM	ACBL17-1439-2
ACBL17-017	..FADER W F M	ACBL17-017-3
ACBL24-006	.MATRIX LOOM	ACBL24-1479-1
ACBL24-007	.MASTER/COMMS LINK WFM	ACBL24-1440
ACBL24-008	.LITTLITE XLR'S WFM	ACBL24-1504
ACBL24-010	..FADER W F M	ACBL24-555
ACBL24-011	..FADER W F M	ACBL24-485
ACBL24-012	..FADER W F M	ACBL24-250
ACBL24-013	..FADER W F M	ACBL24-300
ACBL24-020	.O/P LED MTR WFM	ACBL24-1480-1
ACBL24-021	.16CH L/H LED MTR WFM	ACBL24-1481-1
ACBL24-025	.O/P VU MTR WFM	ACBL24-1485-1
ACBL24-026	.VU METERBRIDGE WFM	ACBL24-1486-1
ACBL24-030	.LOOM I/P 16CH LH	ACBL24-1505-1
ACBL24-031	.LOOM I/P 24CH LH	ACBL24-1506-1
ACBL24-032	.LOOM I/P 16CH RH	ACBL24-1507-1
ACBL24-034	.LOOM I/P 24CH RH	ACBL24-1509-1
ACBL24-035	.LOOM O/P	ACBL24-1510-1
AMDL24-001	.STD I/P	
AMDL24-004	.4+4 MONO/STEREO	
AMDL24-012	.O/P & MASTER	
APCB24-420	.CS8 BUS LINK - BLKG.PLUG	
APCB24-421	.CS8 BUS LINK	
CAP01-5002	..33PF 50V 10%(5MM PITCH)	CAP02-GK233050
CAP01-5003	..100PF 50V 10%(5MM PITCH)	CAP02-GK310050
CAP01-5004	..470PF 50V 10%(5MM PTCH)	CAP02-GK347050
CAP01-5005	..680PF 50V 10%(5MM PITCH)	CAP02-GK368050
CAP01-5009	..10PF 50V 5% (5MM PITCH)	CAP02-GK210050
CAP01-5013	..220PF 50V 10%(5MM PITCH)	CAP02-GK322050
CAP01-5014	..150PF 50V 10%(5MM PTCH)	CAP02-GK315050
CAP04-0010	..220U 25V 20% (5MM PITCH)	CAP43-322025
CAP04-0016	..1000U 10V 20%(5MM PITCH)	CAP43-410010
CAP04-0017	..1000U 25V 20%(5MM PITCH)	CAP43-410016
CAP04-5003	..2U2 63V 20%(5MM PITCH)	CAP43-122063
CAP04-5005	..100U 16V 20%(5MM PITCH)	CAP43-310016
CAP04-5006	..22U 25V 20%(5MM PITCH)	CAP43-222025
CAP04-5012	..33U 63V 20%(5MM PITCH)	CAP43-233063
CAP04-5026	..2U2 50V 20%(5MM PITCH)LP	CAP43-122050LP

DDA No.	DESCRIPTION	EVI AUDIO PART NUMBER
CAP04-5028	..22U 25V 20%(5MM PITCH)LP	CAP43-222025LP
CAP04-5031	..1000U 10V 20%(5mmPTCH)LP	CAP43-410010LP
CAP06-0001	..1N	CAP12-J110100
CAP06-0003	..2N2	CAP12-J122100
CAP06-0005	..4N7	CAP12-K147100
CAP06-0006	..6N8	CAP12-J168100
CAP06-0007	..10N 100V 5%	CAP12-K210100
CAP06-0008	..15N	CAP12-J215100
CAP06-0010	..33N	CAP12-J233100
CAP06-0011	..47N	CAP12-J247100
CAP06-0012	..68N	CAP12-J268100
CAP06-0013	..100N 63V 5%	CAP12-J310100
CAP06-0015	..220N 63V 5%	CAP12-J322100
CAP06-0017	..470N	CAP12-J347100
CAP06-0025	..330N 63V 10% 5MM	CAP12-J333100
CON01-0008	.3 WAY METWAY	CON24-03MET
CON01-0027	.0.1" 10 WAY FML PCB MNT	CON01-10SFV
CON01-0049	..0.1" 3WY LKG ML HDR	CON01-03SMVL
CON01-0055	..0.1" 10WY VERT EXT M/HDR	CON01-10SMVX
CON01-0069	..0.1" 2 WAY ML MOLEX	CON01-02SMV
CON01-0069	..0.1" 2 WAY ML MOLEX	CON01-06SMVL
CON01-0075	..0.1" 3WY R/A LKG MALE	CON01-03SMRL
CON01-0079	..0.156 3WY VERT LK ML HDR	CON02-03SMVL
CON01-0087	..0.1" 6WY VERT FML HDR	CON01-06SFV
CON01-0116	..0.156" 6WAY VERT ML HDR	CON02-06SMVL
CON01-0123	..0.1 6WAY VERT ML HDR(EX)	CON01-06SMVX
CON01-0124	..0.1 12WY R/A LKG ML HDR	CON01-12SMRL
CON02-0016	.PLASTIC VERT FML XLR	CON31-X90203
CON02-0022	..STEREO R/A PCB SLIM JACK	CON32-S253-84
CON02-0029	..DUAL PC PHONO VERT	CON32-FC68405
CON02-0030	..NC3 MAHL PLAS R/A ML PC	CON31-3MAHL
CON02-0031	..NC3 FAHL PLAS R/A FML PC	CON31-3FAHL
CON02-0032	..NC3 FAHR PLAS R/A FML PC	CON31-3FAHR
CON02-0034	.NC4 FDL FML XLR	CON31-4FDL1
CON03-0003	..40WY R/A ML HDR	CON11-40MHS
CON03-0051	..16WY VERT DIL ML HDR	CON11-16MD
CON03-0064	..14WAY R/A ML HDR	CON11-14MHS
CON99-0015	..0.25" R/A PCB BLADE	CON84-025BLR
CON99-0016	.GROUND POST	CON81-EFT51
CSM01-0008	..24SWG LINKS	WIR82-24SWG65
FRN04-0031	.REAN P&G KNOB - YELLOW	FRN63-YEL11BLK
FRN04-0032	.REAN P&G KNOB - RED	FRN63-RED11WHT
FRN04-0033	.REAN P&G KNOB - WHITE	FRN63—WHT11BLK
FRN04-0034	.REAN P&G KNOB - BLACK	FRN63-BLK11WHT
FRN04-0035	.REAN P&G KNOB - BLUE	FRN63-BLU11WHT
FRN04-0036	.REAN P&G KNOB - GREEN	FRN63-GRN11WHT
FRN06-0103	.REAN BLK/RED	FRN32-BLK/RED
FRN06-0104	.REAN BLK/DK.GREY	FRN32-BLK/GRY
FRN06-0106	.REAN LT.GREY/RED	FRN32-GRY/RED

DDA No.	DESCRIPTION	EVI AUDIO PART NUMBER
FRN06-0107	.REAN LT.GREY/BLUE	FRN32-GRY/BLU
FRN06-0108	.REAN LT. GREY/GRN	FRN32-GRY/GRN
FRN06-0109	.REAN LT.GREY/BLK	FRN32-GRY/BLK
FRN06-0110	.REAN LT.GREY/LT.GRN	FRN32-GRY/LGN
FRN06-0111	.REAN BLK/LT GRN	FRN32-BLK/LGN
FRN06-0113	.REAN LT.GREY/YELLOW	FRN32-LGY/YEL
FRN06-0114	.REAN LT.GREY/DK.GREY	FRN32-LGY/DGY
FRN06-0115	.REAN BLK/WHT	FRN32-BLK/WHT
FRN07-0001	.SUJ GREY BLNK	FRN41-PLGY
FRN07-0002	.SUJ GREY BLNK LED	FRN41-LLGY
FRN07-0018	.SUJ GREY 'DIR'	FRN41-PLGYDIR
FRN07-0019	.SUJ GREY '1-2'	FRN41-PLGY1-2
FRN07-0020	.SUJ GREY '3-4'	FRN41-PLGY3-4
FRN07-0021	.SUJ GREY '5-6'	FRN41-PLGY5-6
FRN07-0022	.SUJ GREY '7-8'	FRN41-PLGY7-8
FRN07-0030	.SUJ GREY '5'	FRN41-PLGY5
FRN07-0031	.SUJ GREY '6'	FRN41-PLGY6
FRN07-0033	.SUJ GREY 'EQ'	FRN41-PLGYEQ
FRN07-0034	.SUJ GREY 'MIX'	FRN41-PLGYMIX
FRN07-0097	.SUJ GREY 'AFL' LED	FRN41-LLGYAFL
FRN07-0109	.SUJ GREY "ON"	FRN41-PLGYON
FRN07-0112	.SUJ GREY "PFL" LED	FRN41-LLGYPFL
FRN07-0121	.SUJ RED 'MUTE' LED	FRN41-LREDMUTE
FRN07-0122	.SUJ RED 'MUTE' LED(REV)	FRN41-RREDMUTE
FRN07-0130	.SUJ GREY 'PAN'	FRN41-PLGYPAN
FRN07-0131	.SUJ GREY '1'	FRN41-PLGY1
FRN07-0132	.SUJ GREY '2'	FRN41-PLGY2
FRN07-0133	.SUJ GREY '3'	FRN41-PLGY3
FRN07-0134	.SUJ GREY '4'	FRN41-PLGY4
FRN07-0135	.SUJ RED BLANK	FRN41-PRED
FRN07-0136	.SUJ RED 'CUT' LED	FRN41-LREDCUT
FRN07-0137	.SUJ RED LED BLANK	FRN41-LRED
FRN07-0138	.SUJ GREY 'MONO'	FRN41-PLGYMONO
FRN07-0139	.SUJ GREY 'L/R'	FRN41-PLGYL/R
FRN07-0140	.SUJ GREY '7'	FRN41-PLGY7
FRN07-0141	.SUJ GREY '8'	FRN41-PLGY8
FRN07-0142	.SUJ GREY 'STER'	FRN41-PLGYSTER
FRN07-0145	.SUJ GREY 'L'	FRN41-PLGYL
FRN07-0146	.SUJ GREY 'R'	FRN41-PLGYR
FRN07-0147	.SUJ GREY 'AFL' LED(REV)	FRN41-RLGYAFL
FRN07-0157	.SUJ GREY 'SIS'	FRN41-PLGYSIS
FRN07-0159	.SUJ GREY 'GAIN'	FRN41-PLGYGAIN
HWR01-0001	.M3 X 6 P/POZI BLK	FAS01-M3006PPB
HWR01-0015	.M3 X 8 P/POZI BLK	FAS01-M3008PPB
HWR01-0026	.NO6 X 21 MM FLANGE S/TAP	FAS01-T0621FPZ
HWR01-0053	.M3 X 8 CSNK POZI BLK	FAS01-M3008CPB
HWR01-0063	.NO4 X 3/8 P/POZI BLK	FAS01-N0410PPB
HWR01-0081	.NO4 X 1/4 PAN BLK P/TITE	FAS01-T0406PPB
HWR01-0083	.NO4 X 3/8 CSK POZI BLK	FAS01-N0410CPB

DDA No.	DESCRIPTION	EVI AUDIO PART NUMBER
HWR01-0086	.M3 x 5mm PAN POZI BLK	FAS01-M3005PPB
HWR01-0090	.2.5MM X 6 PAN BLK P/TECH	FAS01-M2506PPB
HWR01-0091	.M4 X 8 PN.HD.SLTD.NYLON	FAS01-M4008PSN
HWR02-0001	.M3 NYLOC	FAS02-M30NZ
HWR02-0011	.M4 NYLOC	FAS02-M40NZ
HWR02-0021	.M4 PLAIN WASHER	FAS03-M40FZ
HWR02-0022	.M4 S/PROOF WASHER	FAS03-M40SZ
HWR02-0034	.M4 NUT	FAS02-M40FZ
HWR02-0036	.M5 S/PROOF WASHER	FAS03-M50SZ
HWR02-0041	.CHROME JACK NUT	FAS02-REANJACK
HWR02-0043	.M3 NYLON WASHER - BLACK	FAS03-M30PB
HWR02-0044	.11MM NYLON WASHER-BLACK	FAS03-U11FN
HWR99-0010	.RS H15 SLEEVE 397-720	WIR92-S H15x20
HWR99-0011	.RS H20 SLEEVE 397-736	WIR92-S H20x20
HWR99-0072	.MODL MOUNTING CLIP (SML)	FAS41-SNU1812
HWR99-0080	.METERBRIDGE FIXING CLIP	FAS41-335106
HWR99-0092	..LED HOLDER 8 WAY	HWR99-DUH368
HWR99-0093	..LED HOLDER 4 WAY	HWR99-DUH364
HWR99-0099	.FOOT (21MM DIA)	HWR42-FF-000P4
HWR99-0100	.M3 X 14MM PILLAR	HWR12-M3014CPN
HWR99-0113	.M3 X 18MM PILLAR(M/FM)	HWR12-M3018BP
HWR99-0115	.DOME PLUG(6MM)-BLACK	HWR06-DP250
MTR01-0005	.AL29 METER	MTR11-AL29
MTR99-0010	.LIGHT BOX FOR AL29	MTR19-AL29BOXA
MWK24-0004	.O/P & CONN PANEL	
MWK24-0006	.MASTER & CONN PANEL	
MWK24-0008	.16CH FRAME	MWK24-2328-1
MWK24-0009	.24CH FRAME	MWK24-2329-1
MWK24-0010	.32CH FRAME	MWK24-2330-1
MWK24-0011	.40CH FRAME	MWK24-2331-1
MWK24-0012	.48CH FRAME	MWK24-2332-1
MWK24-0013	.L/H CLADDING	MWK24-2333-1
MWK24-0014	.R/H CLADDING	MWK24-2334-1
MWK24-0015	.16CH ARMREST	MWK24-2335-1
MWK24-0016	.24CH ARMREST	MWK24-2336-1
MWK24-0017	.32CH ARMREST	MWK24-2337-1
MWK24-0018	.40CH ARMREST	MWK24-2338-1
MWK24-0019	.48CH ARMREST	MWK24-2339-1
MWK24-0020	.4+4 MONO/STEREO PANEL	MWK24-2342-1
MWK24-0024	.VU O/P M/BRIDGE PANEL	MWK24-2349-1
MWK24-0026	.VU O/P M/BRIDGE FACIA	MWK24-2351-1
MWK24-0027	.16CH LED M/BRIDGE	MWK24-2357-1
MWK24-0028	.16CH M/BRIDGE COVER	MWK24-2359-2
MWK24-0029	.16CH LED M/BRIDGE FACIA	MWK24-2372-1
MWK24-0030	.24CH LED M/BRIDGE	MWK24-2360-1
MWK24-0031	.24CH M/BRIDGE COVER	MWK24-2362-2
MWK24-0032	.24CH LED M/BRIDGE FACIA	MWK24-2373-1
MWK24-0033	.32CH LED M/BRIDGE	MWK24-2363-1
MWK24-0034	.32CH LED M/BRIDGE COVER	MWK24-2365-2

DDA No.	DESCRIPTION	EVI AUDIO PART NUMBER
MWK24-0035	.32CH LED M/BRIDGE FACIA	MWK24-2374-1
MWK24-0036	.40CH LED M/BRIDGE	MWK24-2366-1
MWK24-0037	.40CH LED M/BRIDGE COVER	MWK24-2368-2
MWK24-0038	.40CH LED M/BRIDGE FACIA	MWK24-2375-1
MWK24-0039	.48CH LED M/BRIDGE	MWK24-2369-1
MWK24-0040	.48CH LED M/BRIDGE COVER	MWK24-2371-2
MWK24-0041	.48CH LED M/BRIDGE FACIA	MWK24-2376-1
MWK24-0042	..SWITCH CAP(TP2301)	FRN58-2301BLK
MWK24-0043	.L/H CLADDING - M/BRIDGE	MWK24-2352-1
MWK24-0044	.R/H CLADDING - M/BRIDGE	MWK24-2353-1
MWK24-0045	.O/P & MASTER CONN PNL	MWK24-2380-1
MWK24-0046	.2CH BLANK PANEL	MWK24-2381-1
MWK24-0048	.METER I/FACE BLANK PNL	
MWK99-0040	.LOCATING PCB MTG BRKT	MWK99-2273-4
MWK99-0049	.PCB MOUNTING BRKT	MWK99-2379-1
MWK99-0050	.MULTICORE BLANKING PLUG	MWK99-2346-1
MWK99-0051	.BUS LINK COVER PNL	MWK99-2378
PCB17-1385	..METER	
PCB24-1394	..CS8 STD INPUT	
PCB24-1395	..CS8 STD OUTPUT	
PCB24-1396	..CS8 MASTER	
PCB24-1397	..CS8 COMMS	
PCB24-1398	..CS8 MATRIX	
PCB24-1413	..CS8 STD INPUT SUB	
PCB24-1418	..CS8 STEREO INPUT	
PCB24-1419	..CS8 STEREO INPUT SUB	
PCB24-1423	..CS8 INPUT METERBRIDGE	
PCB24-1424	..CS8 OUTPUT LED MB	
PCB24-1425	..CS8 OUTPUT LED MB SUB	
PCB24-1426	..CS8 VU METER DRIVER	
POT02-0006	..1/4" 5K HORIZ. TRIMMER	POT32-503H
POT02-0010	.1/4" 500R HORIZ. TRIMMER	POT32-502H
POT02-0012	.1/4" 500R VERT.TRIMMER	POT32-502V
POT02-0013	.1/4" 5K VERT.TRIMMER	POT32-503V
POT03-0021	.ALPS N 100MM R/A MONO	POT2N-10M14JR
POT03-0022	.ALPS N 100MM R/A STEREO	POT2N-10S14JRA
POT04-0013	.ALPS 10KA X 3	POT93-414A01
POT05-0001	.5KRD X 2 REV LOG	POT14-653D02
POT05-0002	.10KB LIN C/D	POT11-614B01D
POT05-0003	.10KB X 2 LIN C/D	POT14-614B01D
POT05-0004	.20KA LOG	POT11-624A01
POT05-0005	.100KC X 2 INV LOG	POT14-615C01
POT05-0006	.10KA LOG	POT11-614A01
POT05-0007	.10KA X 2 LOG	POT14-614A01
POT05-0008	.10KRD REV LOG	POT11-614RD
POT05-0009	.5KB X 2 LIN C/D C/T	POT14-653Z26C
POT05-0101	.5KRD X 2 REV LOG(N/B)	POT14-653D02N
POT05-0102	.10KB LIN C/D(N/B)	POT11-614B01DN
POT05-0103	.10KB X 2 LIN C/D(N/B)	POT14-614B01DN

DDA No.	DESCRIPTION	EVI AUDIO PART NUMBER
POT05-0104	.20KA LOG(N/B)	POT11-624A01N
POT05-0105	.100KC X 2 INV LOG(N/B)	POT14-615C01N
POT05-0106	.10KA LOG(N/B)	POT11-614A01N
POT05-0107	.10KA X 2 LOG(N/B)	POT14-614A01N
POT05-0108	.10KRD REV LOG(N/B)	POT11-614RDN
POT05-0109	.5KB X 2 LIN C/D C/T(N/B)	POT14-653Z26CN
POT05-0110	.20KB LIN (N/B)	POT11-624B01N
POT05-0111	.20KB X 2 LIN (N/B)	POT14-624B01N
RES01-0001	..1OR	RES01-1E1R00
RES01-0025	..100R	RES01-2E1R00
RES01-9997	..1R5	RES01-0E1R50
RES01-9999	..1R	RES01-0E1R00
RES03-0006	..100R 4W W/W	RES11-040310
RES03-0013	..22R 4W 5% CERAMIC	RES11-040222
RES04-0002	..1OR	RES04-1E1R00
RES04-0010	..22R	RES04-1E2R20
RES04-0011	..27R	RES04-1E2R70
RES04-0013	..33R	RES04-1E3R30
RES04-0017	..47R	RES04-1E4R70
RES04-0021	..68R	RES04-1E6R80
RES04-0022	..75R	RES04-1E7R50
RES04-0025	..100R	RES04-2E1R00
RES04-0026	..120R	RES04-2E1R20
RES04-0027	..150R	RES04-2E1R50
RES04-0029	..180R	RES04-2E1R80
RES04-0033	..240R	RES04-2E2R40
RES04-0035	..270R	RES04-2E2R70
RES04-0036	..300R	RES04-2E3R00
RES04-0037	..330R	RES04-2E3R30
RES04-0038	..360R	RES04-2E3R60
RES04-0041	..470R	RES04-2E4R70
RES04-0042	..510R	RES04-2E5R10
RES04-0047	..820R	RES04-2E8R20
RES04-0048	..910R	RES04-2E9R10
RES04-0049	..1K	RES04-3E1R00
RES04-0051	..1K2	RES04-3E1R20
RES04-0053	..1K5	RES04-3E1R50
RES04-0054	..1K6	RES04-3E1R60
RES04-0055	..1K8	RES04-3E1R80
RES04-0056	..2K	RES04-3E2R00
RES04-0057	..2K2	RES04-3E2R20
RES04-0059	..2K7	RES04-3E2R70
RES04-0060	..3K	RES04-3E3R00
RES04-0061	..3K3	RES04-3E3R30
RES04-0062	..3K6	RES04-3E3R60
RES04-0063	..3K9	RES04-3E3R90
RES04-0065	..4K7	RES04-3E4R70
RES04-0066	..5K1	RES04-3E5R10
RES04-0067	..5K6	RES04-3E5R60

DDA No.	DESCRIPTION	EVI AUDIO PART NUMBER
RES04-0068	..6K2	RES04-3E6R20
RES04-0069	..6K8	RES04-3E6R80
RES04-0070	..7K5	RES04-3E7R50
RES04-0072	..9K1	RES04-3E9R10
RES04-0073	..10K	RES04-4E1R00
RES04-0074	..11K	RES04-4E1R10
RES04-0075	..12K	RES04-4E1R20
RES04-0077	..15K	RES04-4E1R50
RES04-0079	..18K	RES04-4E1R80
RES04-0080	..20K	RES04-4E2R00
RES04-0081	..22K	RES04-4E2R20
RES04-0082	..24K	RES02-3E2R40
RES04-0083	..27K	RES04-4E2R70
RES04-0085	..33K	RES04-4E3R30
RES04-0089	..47K	RES04-4E4R70
RES04-0091	..56K	RES04-4E5R60
RES04-0093	..68K	RES04-4E6R80
RES04-0097	..100K	RES04-5E1R00
RES04-0101	..150K	RES04-5E1R50
RES04-0103	..180K	RES04-5E1R80
RES04-0105	..220K	RES04-5E2R20
RES04-0106	..240K	RES04-5E2R40
RES04-0107	..270K	RES04-5E2R70
RES04-0109	..330K	RES04-5E3R30
RES04-0113	..470K	RES04-5E4R70
RES04-0116	..1M	RES04-6E1R00
RES04-0117	..2M2	RES04-6E2R20
RES04-0118	..680K	RES04-5E6R80
RES04-0122	..1M5	RES04-6E1R50
RES04-0123	..4M7	RES04-6E4R70
RES04-0124	..4R7 0.4W 1%	RES04-0E4R70
RES04-0128	..820K	RES04-5E8R20
RES04-9999	..'0'R LINK	RES04-0E0R00
SEM01-0001	.STD 3MM GREEN	SEM01-5130GDA
SEM01-0002	.STD 3MM RED	SEM01-5129RDA
SEM01-0012	.STD 3MM YELLOW	SEM01-5131YDA
SEM01-0031	.LED LIGHT BAR RED	SEM02-KB2685EW
SEM02-0001	.1N4148	SEM11-1N4148
SEM02-0002	.1N4002	SEM11-1N4002
SEM02-0007	.6.8V ZENER	SEM12-ZX79V068
SEM02-0008	.9.1V ZENER	SEM12-ZX55V091
SEM02-0009	.22V ZENER	SEM12-ZX79V220
SEM02-0014	.5.1V ZENER	SEM12-ZX79V051
SEM02-0016	.16V ZENER	SEM12-ZX79V160
SEM02-0018	.18V ZENER	SEM12-ZX55V180
SEM02-0028	.8V2 ZENER (1.3 W ATTS)	SEM12-ZX85V082
SEM03-0007	.8A 100V BRIDGE	SEM21-KBU802
SEM04-0004	.BC182/547	SEM31-BC182
SEM04-0005	.BC212/557	SEM31-BC212

DDA No.	DESCRIPTION	EVI AUDIO PART NUMBER
SEM04-0010	.J111 N JFET	SEM33-J111
SEM04-0015	.TIP32C(TO220)	SEM32-TIP32C
SEM04-0021	.ZTX453	SEM32-ZTX453AI
SEM04-0022	.ZTX553	SEM32-ZTX553AI
SEM04-0023	.TIP31C	SEM32-TIP31C
SEM04-0024	.BC182(TO92 TAPE)5MM PTCH	SEM31-BC182AI
SEM04-0025	.2SB737(TO92 TAPE)5MM PCH	SEM31-2SB737AI
SEM04-0026	.J176(TO92 TAPE)5MM PITCH	SEM33-J176AI
SEM04-0027	.BC212(TO92 TAPE)5MM PTCH	SEM31-BC212AI
SEM04-0028	.J111(T092 TAPE)5MM PITCH	SEM33-J111AI
SEM06-0002	.TL072CN	SEM41-TLO72CN
SEM06-0004	.NE5534	SEM41-NE5534
SEM06-0009	.NE5532P	SEM41-NE5532
SEM06-0038	.CD4013BCN	SEM42-CD4013
SEM06-0074	.SSM2017 MIC AMP	SEM41-SSM-2017
SEM06-0076	.BA683A 12 LED MTR DRIVER	SEM41-BA683A
SEM06-0103	.LM2901 QUAD COMPARATO R	SEM41-2901
SEM06-0169	.4052	SEM42-CD4052
SWT01-0004	.2 POLE SUJ	SWT01-SUJ2LC
SWT01-0005	.4 POLE SUJ	SWT01-SUJ4LC
SWT01-0006	..6 POLE SUJ	SWT01-SUJ6LC
SWT01-0031	..SUJ 4 POLE (MOM)	SWT01-SUJ4MC
SWT01-0033	..TP2301	SWT04-TP23MOV
SWT02-0004	.MAINS SWITCH (UL)	SWT32-2B10
SWT99-0020	.THERMAL SWITCH (100/85C)	SWT81-100CNO
TMR99-0002	..FERRITE BEAD INDUCTOR	TMR21-BEADLINK
WIR02-0010	..WHITE	WIR01-WHITE

SERVICE INFORMATION

With the exception of the meters there are no adjustments within the CS8 console.

SAFETY

Always switch off the console before carrying out any work on it.

TOOLS

No special tools are required in order to service the CS8. An oscilloscope and multimeter will allow fault finding to component level in the unlikely event of a fault. A module extension cable, ACBL99-023, is supplied with the console to enable individual channels to be powered when removed from the frame. If a complete block of 8 channels is to be serviced then ACBL99-024, an 8 way extension cable, should be used.

MODULE REMOVAL

Remove the twelve screws retaining a module and ease it out of the frame. There are four screws at the bottom of the module, four screws at the top of the module and four screws at the rear of the console at the base of the connector panel. The recommended method is to raise the front of the module and to push the module a little towards the front of the console from the rear connector panel. Lift the module, holding it at the front edge and rear connector panel. Keep it parallel to the front plane of the console and disconnect the ribbon cable from each of the 8 boards before pulling the module completely clear.

MODULE DISASSEMBLY

Remove the screws mounting the XLR to the connector panel. Remove the screws holding the circuit board to the top panel and pull the circuit board clear.

MODULE REASSEMBLY

This is a reverse of the disassembly process and care must be taken that leds are not damaged through misalignment with their panel holes.

MODULE REPLACEMENT

Place the module over its final position and reconnect the ribbon cable to all the boards. Gently ease the module back into the frame taking care not to crush or otherwise damage the ribbon cable. Insert the 12 retaining screws.

STATIC PRECAUTIONS

Electronic equipment can be very sensitive to static discharges and care should be taken to avoid static in the work area. Where possible work on a bench where you can be grounded through a wrist strap.

If boards have to be shipped then they should be wrapped in conductive plastic bags or conductive plastic sheeting.

PARTS

In the interests of safety always use genuine replacement parts. Safety approvals will be invalidated by use of non standard components.

METER ALIGNMENT

An audio test set is required to accurately measure the level of the output for which the meter is being adjusted.

Master Left and Right Meters

With 0dBu at the console outputs adjust PR1 to read 0dB and with -21dBu at the console output adjust PR2 such that the bottom led is just on. These adjustments should be repeated until both readings are accurate as they are interactive to some extent.

Centre Meter

PR15 should be used to set the 0dB point while PR25 should be used to set the -21dB point following the above procedure.

Group Meters

PR2 should be used to set the 0dB point while PR3 should be used to set the -21dB point following the above procedure.

If a meterbridge is fitted then some additional calibration work will be required as follows:-

VU Bridge

Calibrate the console meters as above and then use PR1 through PR7 to calibrate the VU meters. The adjustment is the same for whichever signal source is selected and it is therfore probably easiest to set the meters to read GROUP. Set the group outputs to +4dBu (0VU) and adjust PR1 for group 1 so that the meter reads 0VU. Calibrate the remaining meters using PR2 through PR8.

The master meters can be set in the same fashion having set the output levels to +4dBu. PR9 will calibrate the left meter while PR10 and PR11 will calibrate the centre and right meters respectively.

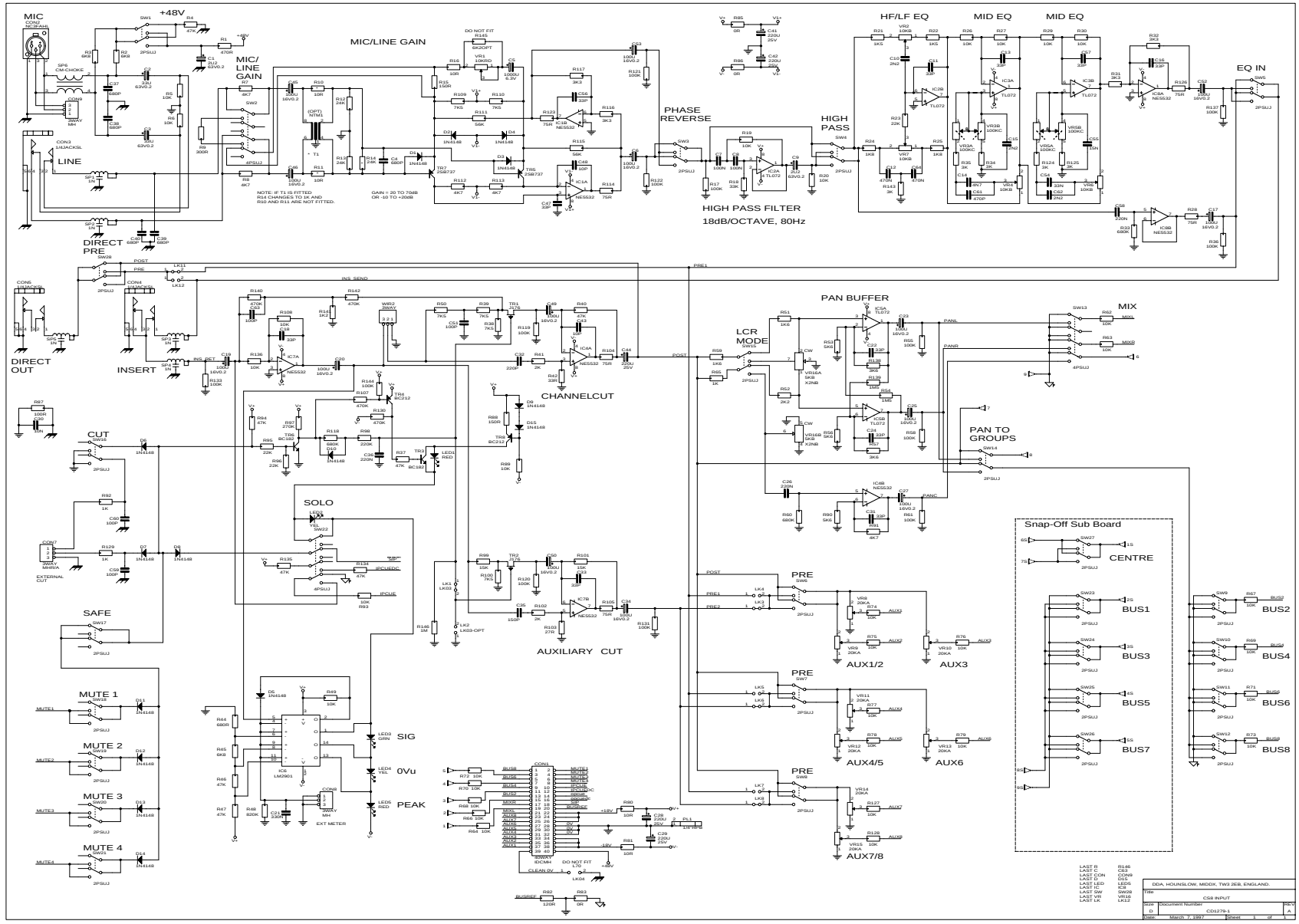
LED Bridge

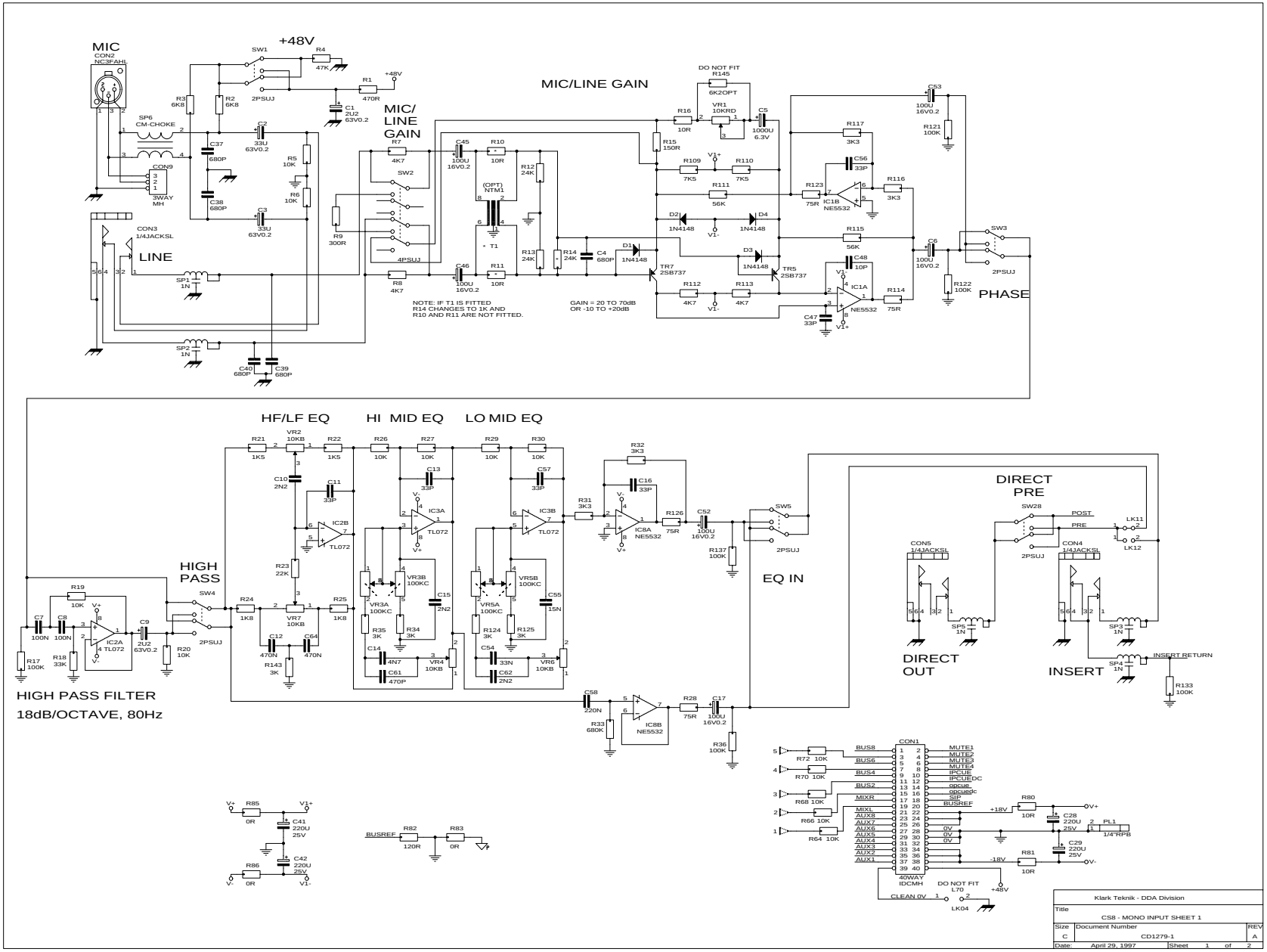
There are no adjustments in the led meterbridge.

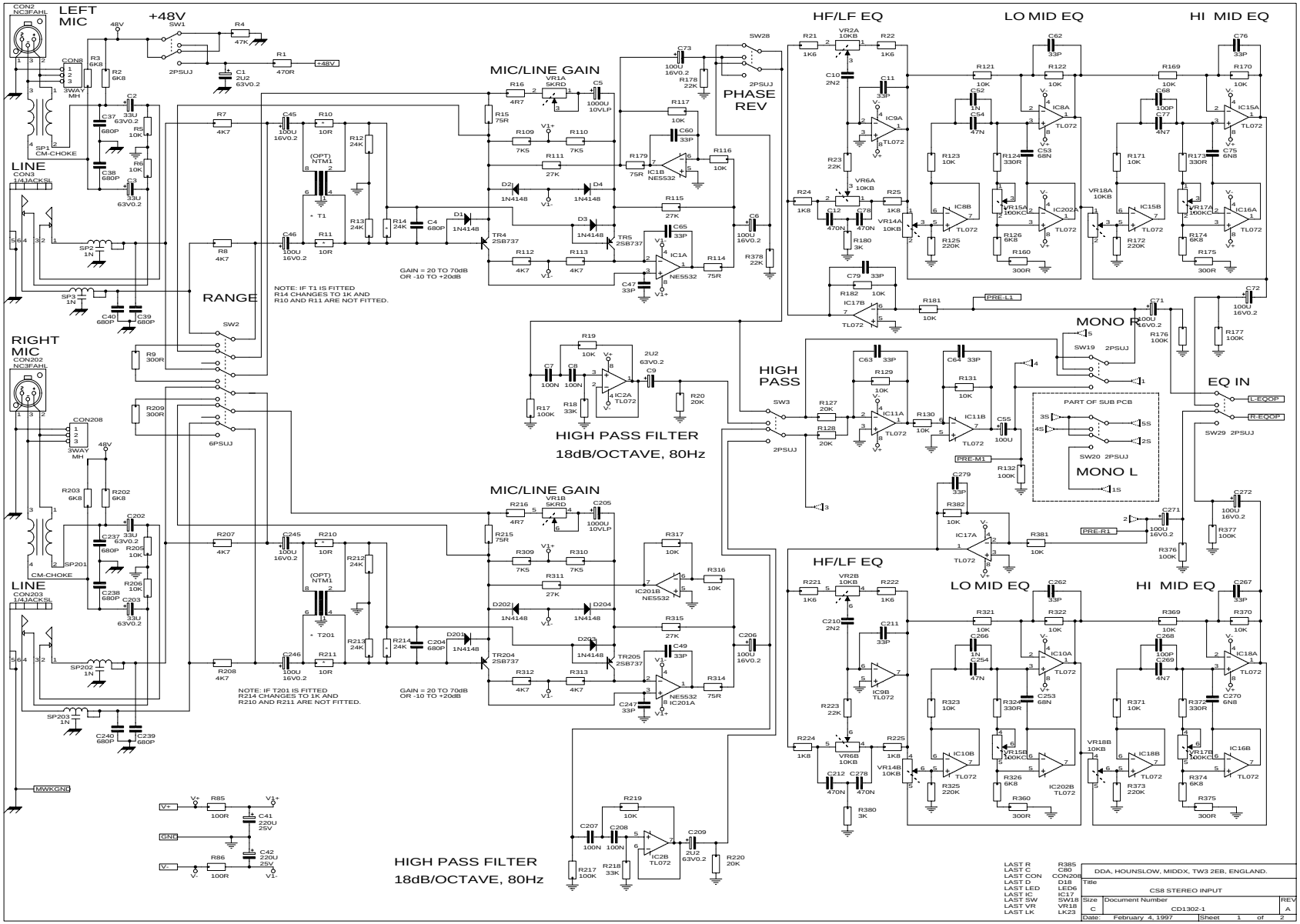
CS8 CIRCUIT DIAGRAMS

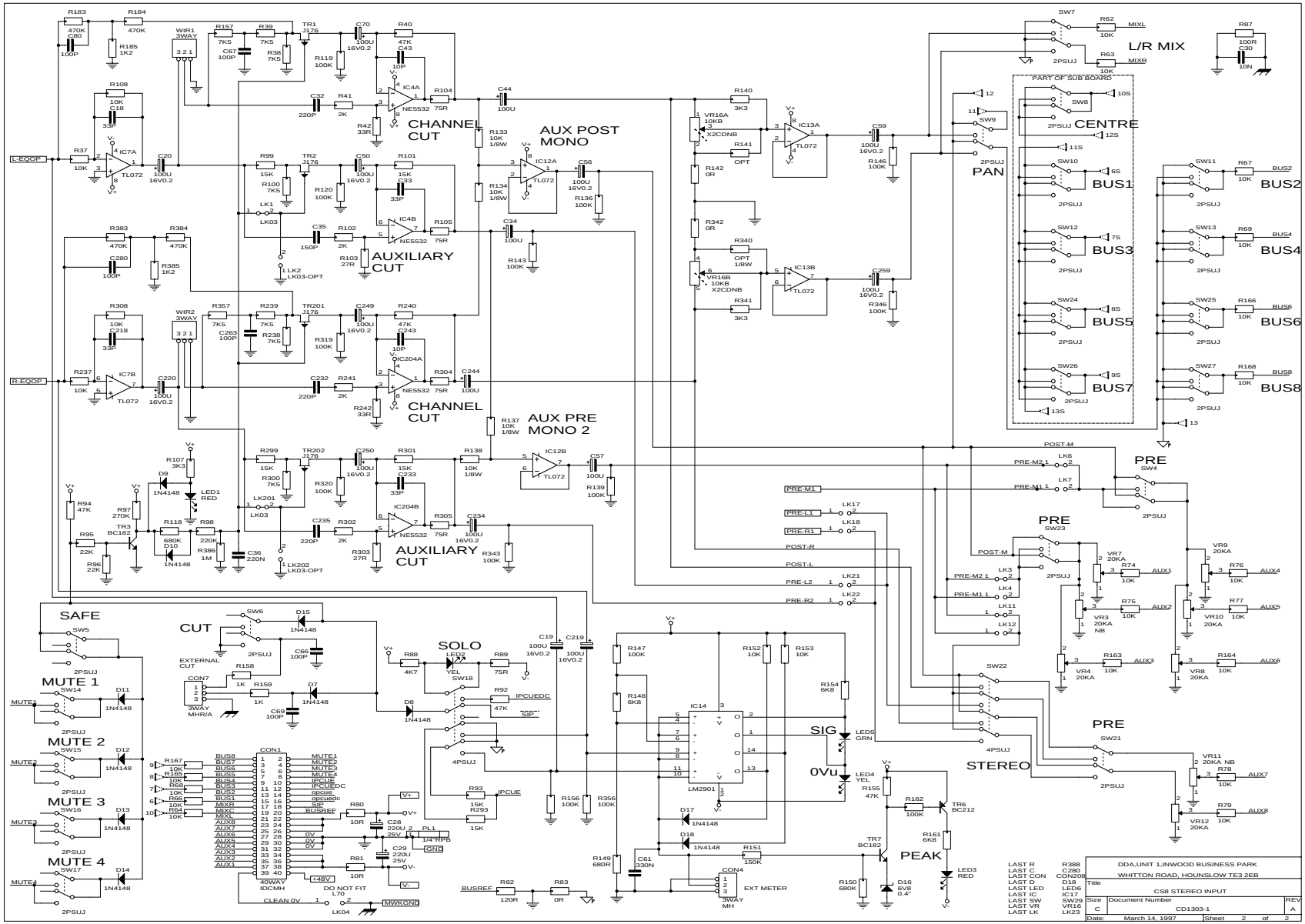
MODULE		CIRCUIT	PCB
INPUT MODULE		CD1279	PC1394/PC1413
STEREO INPUT MODULE		CD1302	PC1418/19
		CD1303	PC1418/19
GROUP MODULE	(1-6)	CD1286	PC1395
GROUP MODULE	(7-8)	CD1280	PC1398
MASTER MODULE	(MASTER MIX)	CD1281	PC1396
MASTER MODULE	(TAPE/SOLO)	CD1282	PC1396
MASTER MODULE	(CENTRE MIX)	CD1283	PC1397
MASTER MODULE	(T/B MONITOR)	CD1284	PC1397
CENTRE METER		CD1273	PC1385
POWER SUPPLY		CD1271	PC1386
BUS LINK		CD1306	PC1421
BUS LINK BLANKING PLUG		CD1308	PC1420
LED INPUT METER		CD1307	PC1423
LED OUTPUT METER		CD1311	PC1424
LED OUTPUT METER SUB PCB		CD1312	PC1425
VU METER		CD1310	PC1426
METER CONNECTOR		CD1309	PC1422

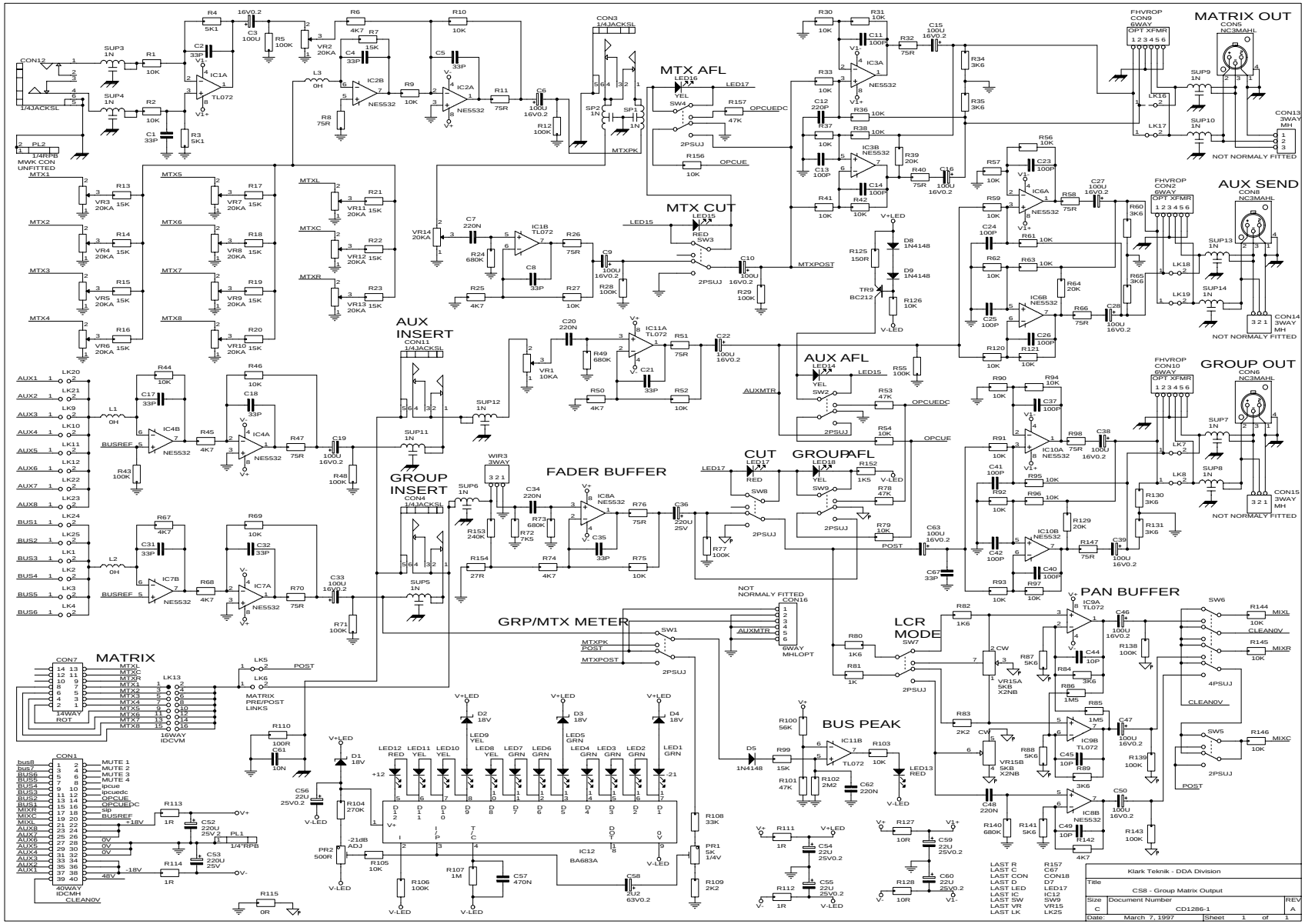
This drawing is split across the following two pages to aid readability.

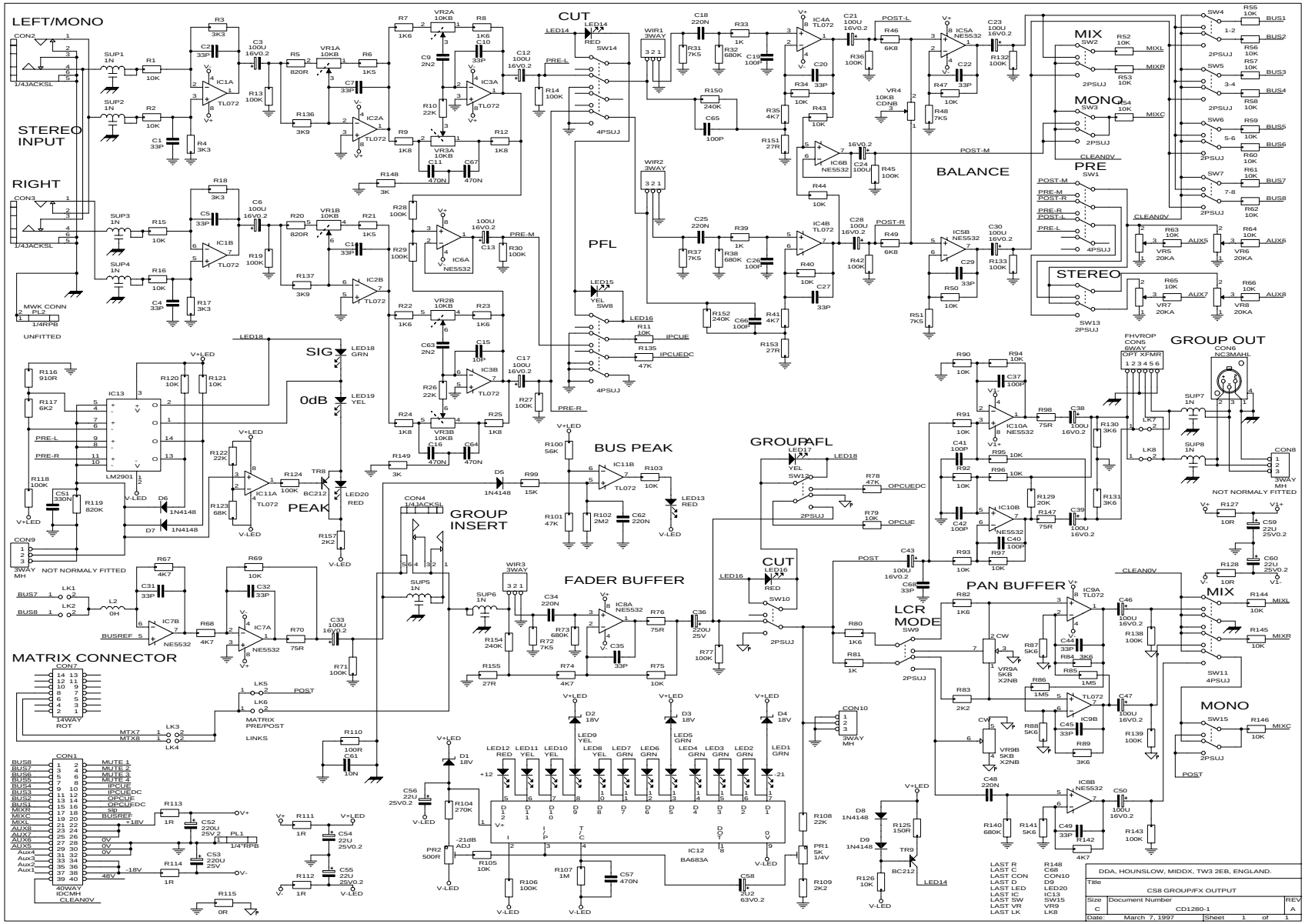


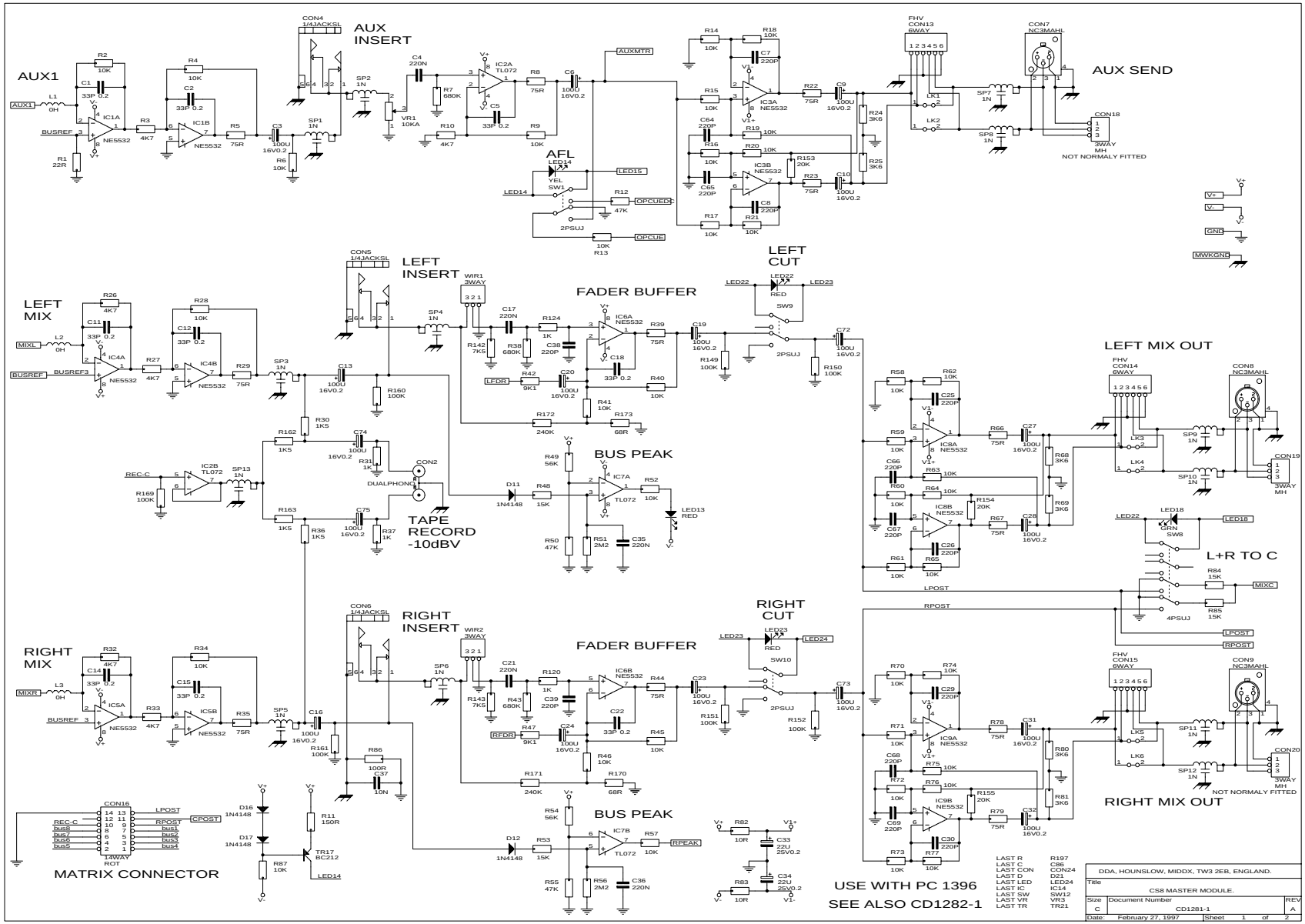

MIC
CON2
NC3FAHL
+48V
SW1
R4
47K
R1
470R
+48V
2PSUJ
R3
6K8
R2
6K8
C1
2U2
63V0.2
SP6
CM-CHOKE
C2
33U
63V0.2
C37
680P
CON9
3WAY
MH
C38
680P
C3
33U
63V0.2
R5
10K
R6
10K
CON3
1/4JACKSL
LINE
SP1
1N
SP2
1N
C40
680P
C39
680P
R9
300R
MIC/
LINE
GAIN
R7
4K7
SW2
4PSUJ
R8
4K7
C45
100U
16V0.2
R10
10R
(OPT)
NTM1
T1
R12
24K
R13
24K
R14
24K
C4
680P
C46
100U
16V0.2
R11
10R
NOTE: IF T1 IS FITTED
R14 CHANGES TO 1K AND
R10 AND R11 ARE NOT FITTED.
MIC/LINE GAIN
DO NOT FIT
R145
6K2OPT
VR1
10KRD
R16
10R
C5
1000U
6.3V
R15
150R
D1
1N4148
D2
1N4148
D3
1N4148
D4
1N4148
TR7
2SB737
TR5
2SB737
R109
7K5
R110
7K5
R111
56K
R112
4K7
R113
4K7
V1+
V1-
IC1B
NE5532
IC1A
NE5532
R123
75R
R114
75R
R115
56K
R116
3K3
R117
3K3
C56
33P
C48
10P
C47
33P
C53
100U
16V0.2
R121
100K
C6
100U
16V0.2
R122
100K
SW3
2PSUJ
PHASE
GAIN = 20 TO 70dB
OR -10 TO +20dB
HF/LF EQ
HI MID EQ
LO MID EQ
VR2
10KB
R21
1K5
R22
1K5
C10
2N2
C11
33P
IC2B
TL072
R23
22K
R24
1K8
VR7
10KB
R25
1K8
C12
470N
C64
470N
R143
3K
R26
10K
R27
10K
C13
33P
IC3A
TL072
VR3B
100KC
VR3A
100KC
C15
2N2
R35
3K
R34
3K
C14
4N7
C61
470P
VR4
10KB
R29
10K
R30
10K
C57
33P
IC3B
TL072
VR5B
100KC
VR5A
100KC
C55
15N
R124
3K
R125
3K
C54
33N
C62
2N2
VR6
10KB
R32
3K3
C16
33P
IC8A
NE5532
R31
3K3
R126
75R
C52
100U
16V0.2
R137
100K
SW5
2PSUJ
EQ IN
HIGH
PASS
SW4
2PSUJ
R19
10K
C7
100N
C8
100N
IC2A
TL072
C9
2U2
63V0.2
R17
100K
R18
33K
R20
10K
HIGH PASS FILTER
18dB/OCTAVE, 80Hz
C58
220N
R33
680K
IC8B
NE5532
R28
75R
C17
100U
16V0.2
R36
100K
DIRECT
PRE
SW28
POST
PRE
2PSUJ
LK11
LK12
CON5
1/4JACKSL
CON4
1/4JACKSL
SP5
1N
SP3
1N
DIRECT
OUT
INSERT
SP4
1N
INSERT RETURN
R133
100K
CON1
40WAY
IDCMH
BUS8
BUS6
BUS4
BUS2
MIXR
MIXL
AUX8
AUX7
AUX6
AUX5
AUX4
AUX3
AUX2
AUX1
MUTE1
MUTE2
MUTE3
MUTE4
IPCUE
IPCUEDC
opcue
opcuedc
SIP
BUSREF
0V
0V
0V
+18V
-18V
R72 10K
R70 10K
R68 10K
R66 10K
R64 10K
R80
10R
R81
10R
C29
220U
25V
C29
220U
25V
PL1
1/4"RPB
DO NOT FIT
L70
LK04
CLEAN 0V
+48V
R85
0R
C41
220U
25V
C42
220U
25V
R86
0R
BUSREF
R82
120R
R83
0R
Klark Teknik - DDA Division
Title
CS8 - MONO INPUT SHEET 1
Size
C
Document Number
CD1279-1
REV
A
Date:
April 29, 1997
Sheet
1
of
2

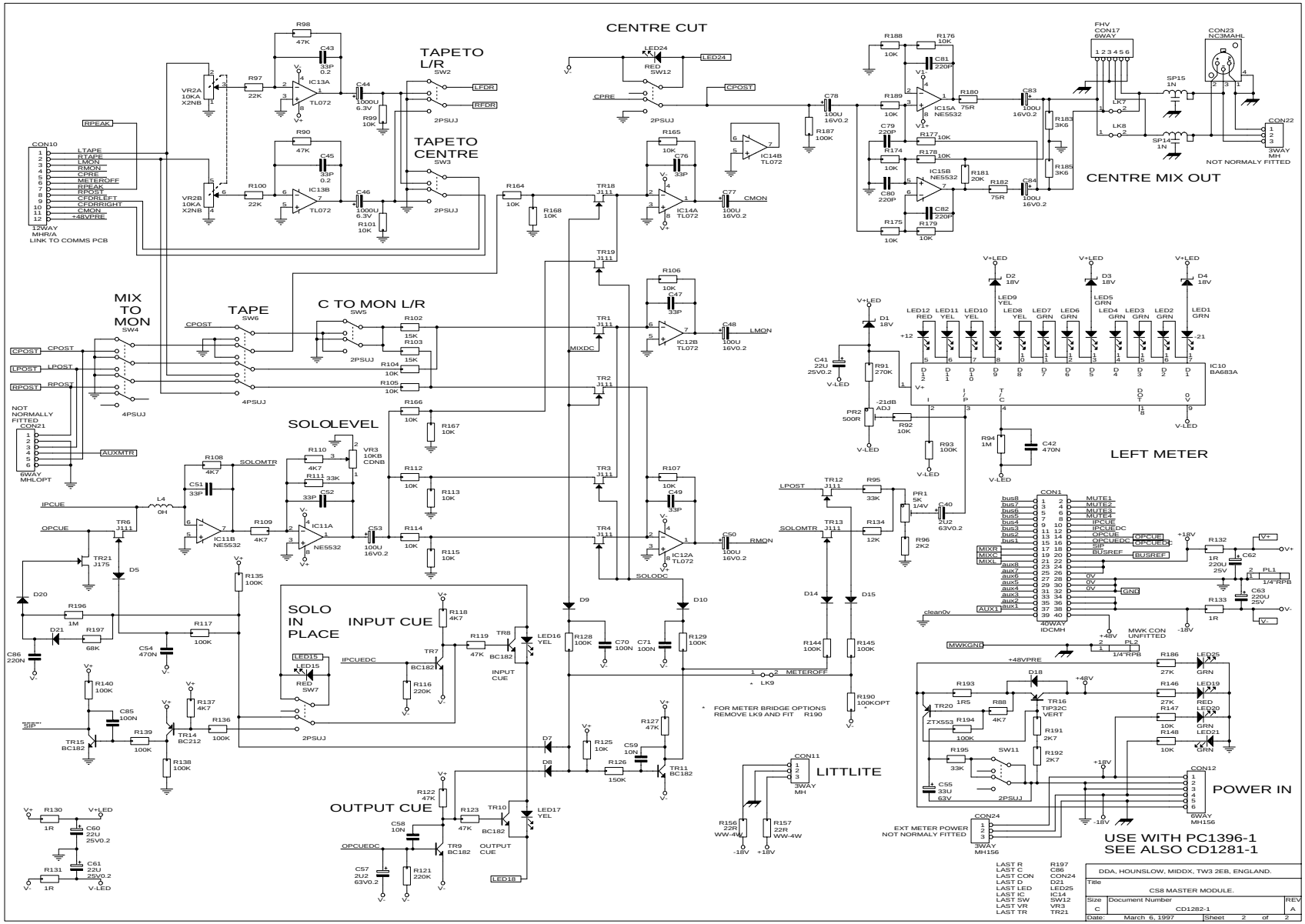

LEFT MIC
RIGHT MIC
LINE
+48V
RANGE
MIC/LINE GAIN
PHASE REV
HF/LF EQ
LO MID EQ
HI MID EQ
HIGH PASS
HIGH PASS FILTER
18dB/OCTAVE, 80Hz
MONO R
MONO L
EQ IN
NOTE: IF T1 IS FITTED
R14 CHANGES TO 1K AND
R10 AND R11 ARE NOT FITTED.
NOTE: IF T201 IS FITTED
R214 CHANGES TO 1K AND
R210 AND R211 ARE NOT FITTED.
GAIN = 20 TO 70dB
OR -10 TO +20dB
PART OF SUB PCB
DDA, HOUNSLOW, MIDDX, TW3 2EB, ENGLAND.
CS8 STEREO INPUT
CD1302-1
Date: February 4, 1997
Sheet 1 of 2

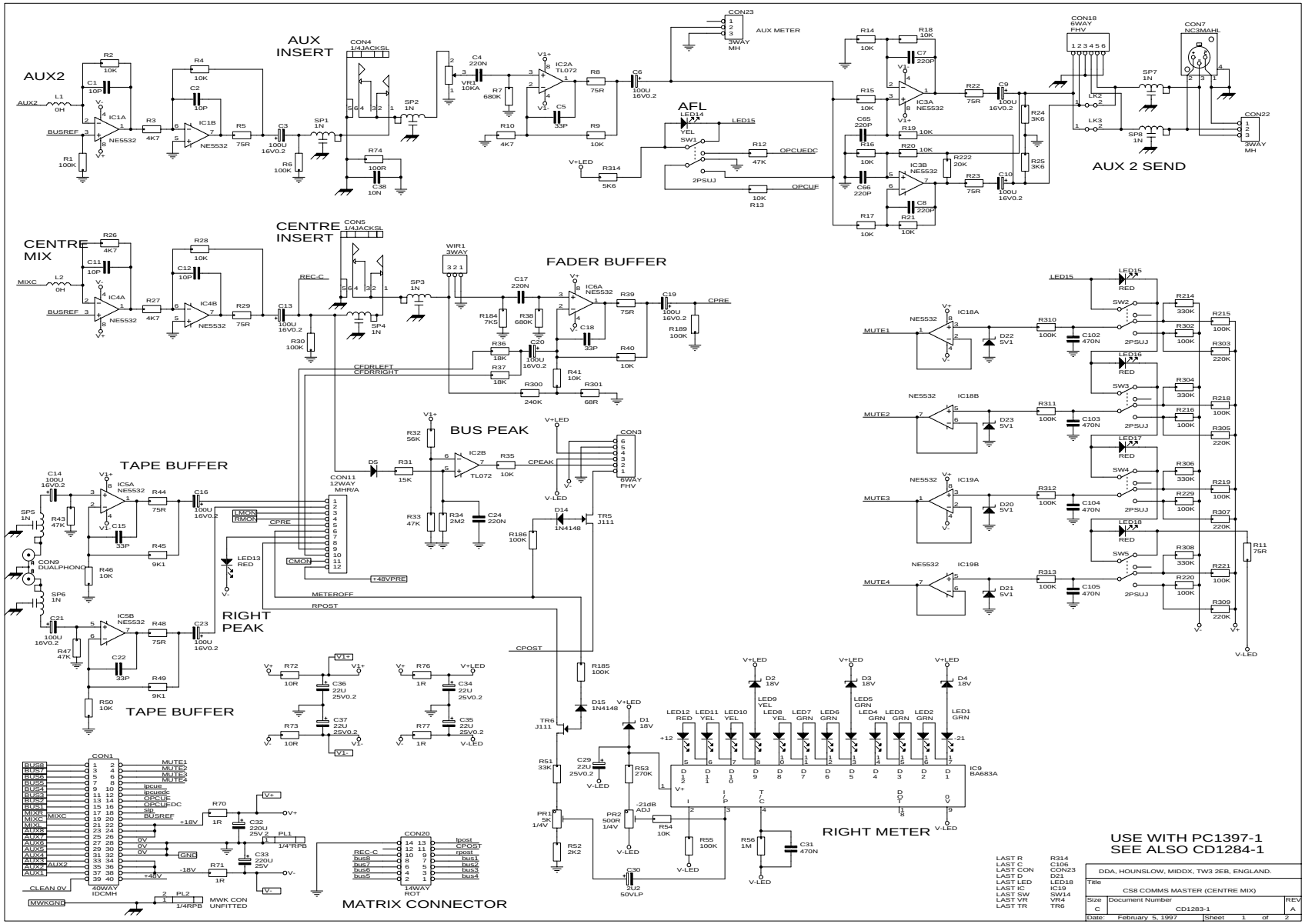

L-EQOP
R-EQOP
CHANNEL CUT
AUXILIARY CUT
AUX POST MONO
AUX PRE MONO 2
L/R MIX
PAN
CENTRE
BUS1
BUS2
BUS3
BUS4
BUS5
BUS6
BUS7
BUS8
PRE
SAFE
CUT
SOLO
SIG
0Vu
PEAK
STEREO
MUTE 1
MUTE 2
MUTE 3
MUTE 4
EXTERNAL CUT
PART OF SUB BOARD
DDA,UNIT 1,INWOOD BUSINESS PARK
WHITTON ROAD, HOUNSLOW TE3 2EB
CS8 STEREO INPUT
CD1303-1
March 14, 1997

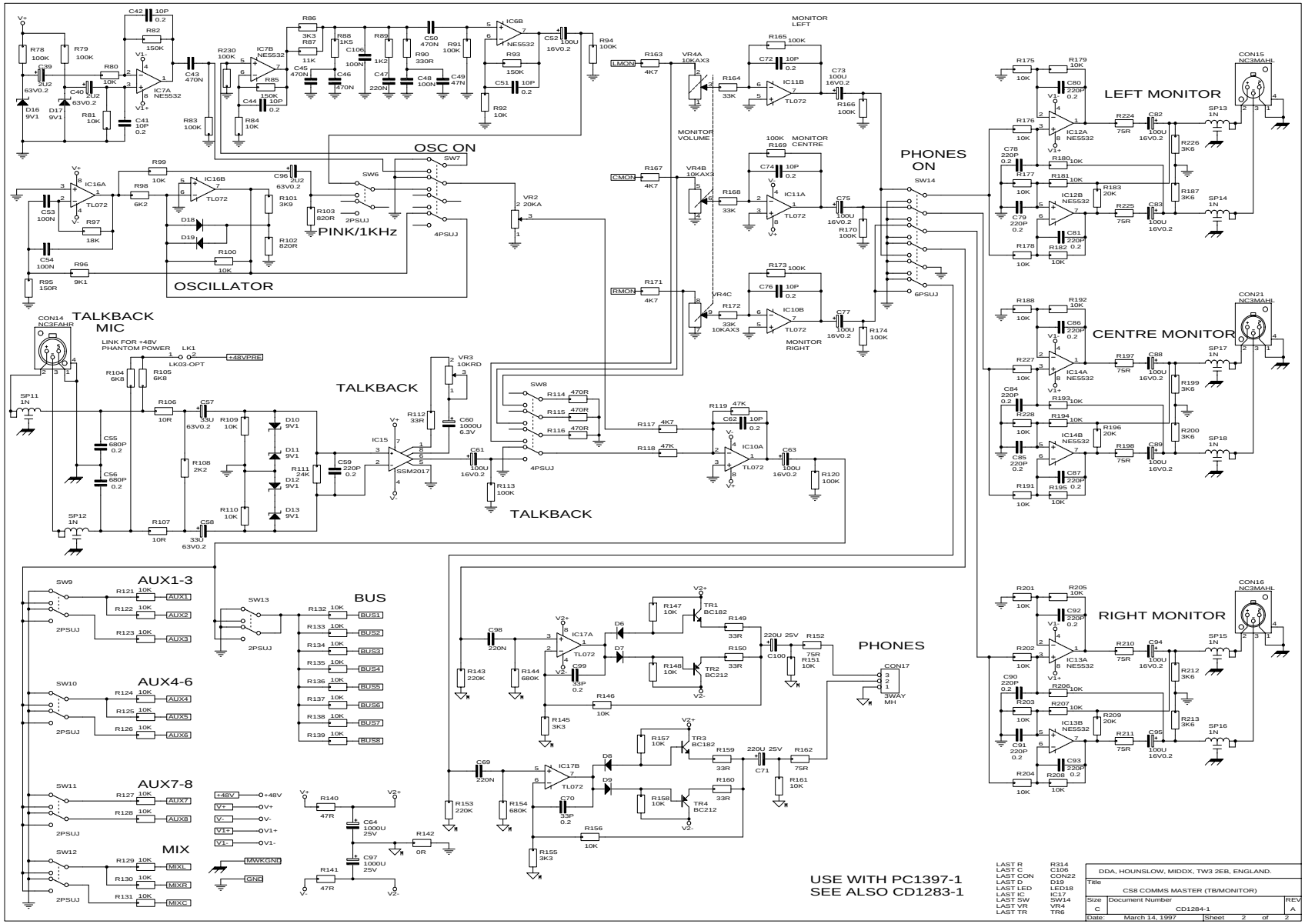

MATRIX OUT
AUX SEND
GROUP OUT
MTX CUT
MTX AFL
AUX INSERT
AUX AFL
CUT GROUP AFL
GROUP INSERT
FADER BUFFER
GRP/MTX METER
PAN BUFFER
LCR MODE
BUS PEAK
MATRIX
NOT NORMALLY FITTED
Klark Teknik - DDA Division
CS8 - Group Matrix Output
CD1286-1
March 7, 1997


LEFT/MONO
STEREO INPUT
RIGHT
UNFITTED
MATRIX CONNECTOR
CUT
PFL
BALANCE
MIX
MONO
PRE
STEREO
GROUP OUT
SIG
0dB
PEAK
BUS PEAK
GROUP INSERT
FADER BUFFER
GROUP AFL
PAN BUFFER
LCR MODE
MATRIX PRE/POST LINKS
DDA, HOUNSLOW, MIDDX, TW3 2EB, ENGLAND.
CS8 GROUP/FX OUTPUT
CD1280-1
March 7, 1997

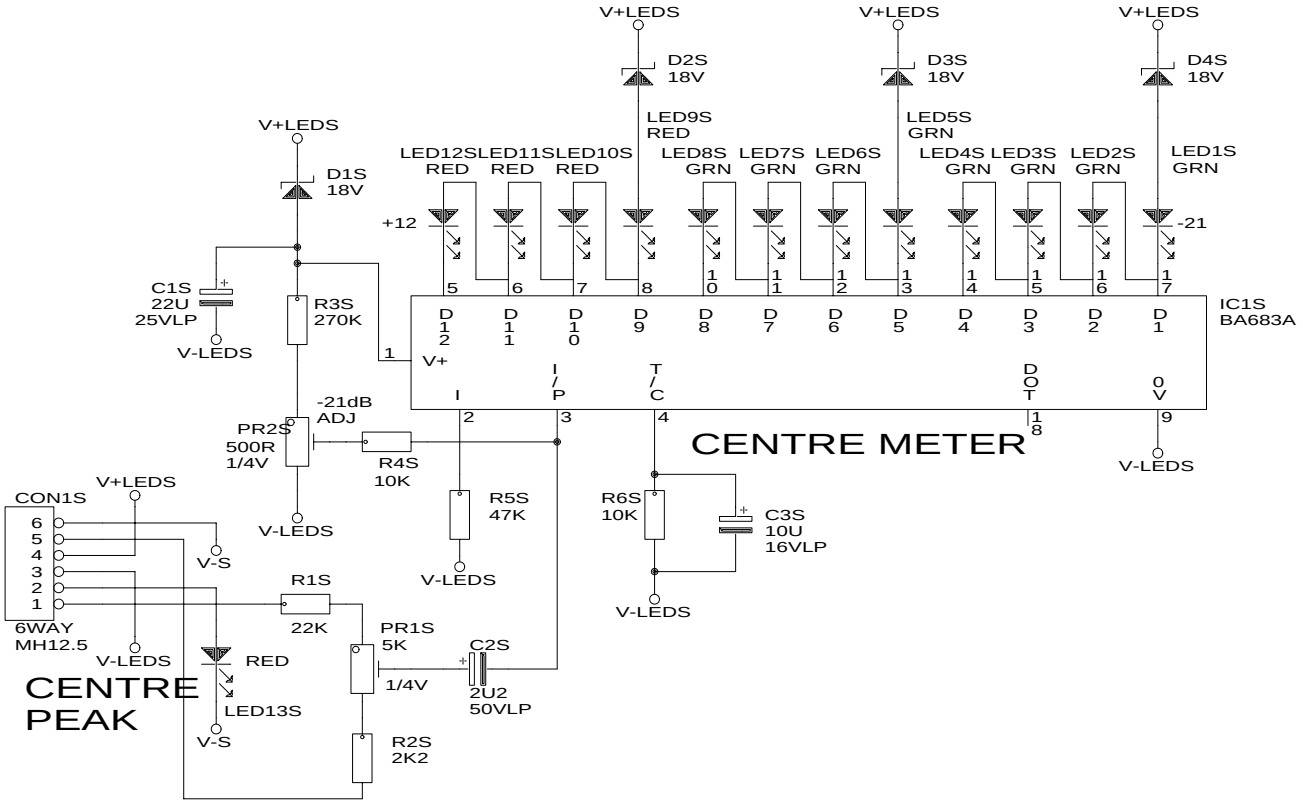

AUX1
AUX INSERT
AUX SEND
AUX MIX
AFL
LEFT MIX
LEFT INSERT
LEFT CUT
FADER BUFFER
LEFT MIX OUT
BUS PEAK
TAPE RECORD -10dBV
RIGHT MIX
RIGHT INSERT
RIGHT CUT
RIGHT MIX OUT
L+R TO C
MATRIX CONNECTOR
USE WITH PC 1396
SEE ALSO CD1282-1
NOT NORMALLY FITTED
DDA, HOUNSLOW, MIDDX, TW3 2EB, ENGLAND.
CS8 MASTER MODULE.
CD1281-1
February 27, 1997


CENTRE CUT
TAPETO L/R
TAPETO CENTRE
CENTRE MIX OUT
MIX TO MON
TAPE
C TO MON L/R
SOLOLEVEL
SOLO IN PLACE
INPUT CUE
OUTPUT CUE
LITTLITE
LEFT METER
POWER IN
CON10
LTAPE
RTAPE
LMON
RMON
CPRE
METEROFF
RPEAK
RPOST
CFDRLEFT
CFDRRIGHT
CMON
+48VPRE
12WAY MHR/A
LINK TO COMMS PCB
NOT NORMALLY FITTED
CON21
6WAY MHLOPT
AUXMTR
SOLOMTR
IPCUE
OPCUE
IPCUEDC
OPCUEDC
SOLODC
OUTPUT CUE
LED15
LED16 YEL
LED17 YEL
LED18
LED24
LED25
CON1
40WAY IDCMH
MWK CON UNFITTED
MUTE1
MUTE2
MUTE3
MUTE4
BUSREF
CON11
3WAY MH
CON12
6WAY MH156
CON24
3WAY MH156
CON23 NC3MAHL
FHV CON17 6WAY
CON22
3WAY MH
NOT NORMALLY FITTED
EXT METER POWER NOT NORMALLY FITTED
FOR METER BRIDGE OPTIONS REMOVE LK9 AND FIT R190
USE WITH PC1396-1
SEE ALSO CD1281-1
DDA, HOUNSLOW, MIDDX, TW3 2EB, ENGLAND.
CS8 MASTER MODULE.
CD1282-1
March 6, 1997
Sheet 2 of 2


AUX2
AUX INSERT
AUX METER
AFL
AUX 2 SEND
CENTRE MIX
CENTRE INSERT
FADER BUFFER
BUS PEAK
TAPE BUFFER
TAPE BUFFER
RIGHT PEAK
RIGHT METER
MATRIX CONNECTOR
USE WITH PC1397-1
SEE ALSO CD1284-1
DDA, HOUNSLOW, MIDDX, TW3 2EB, ENGLAND.
CS8 COMMS MASTER (CENTRE MIX)
CD1283-1
February 5, 1997

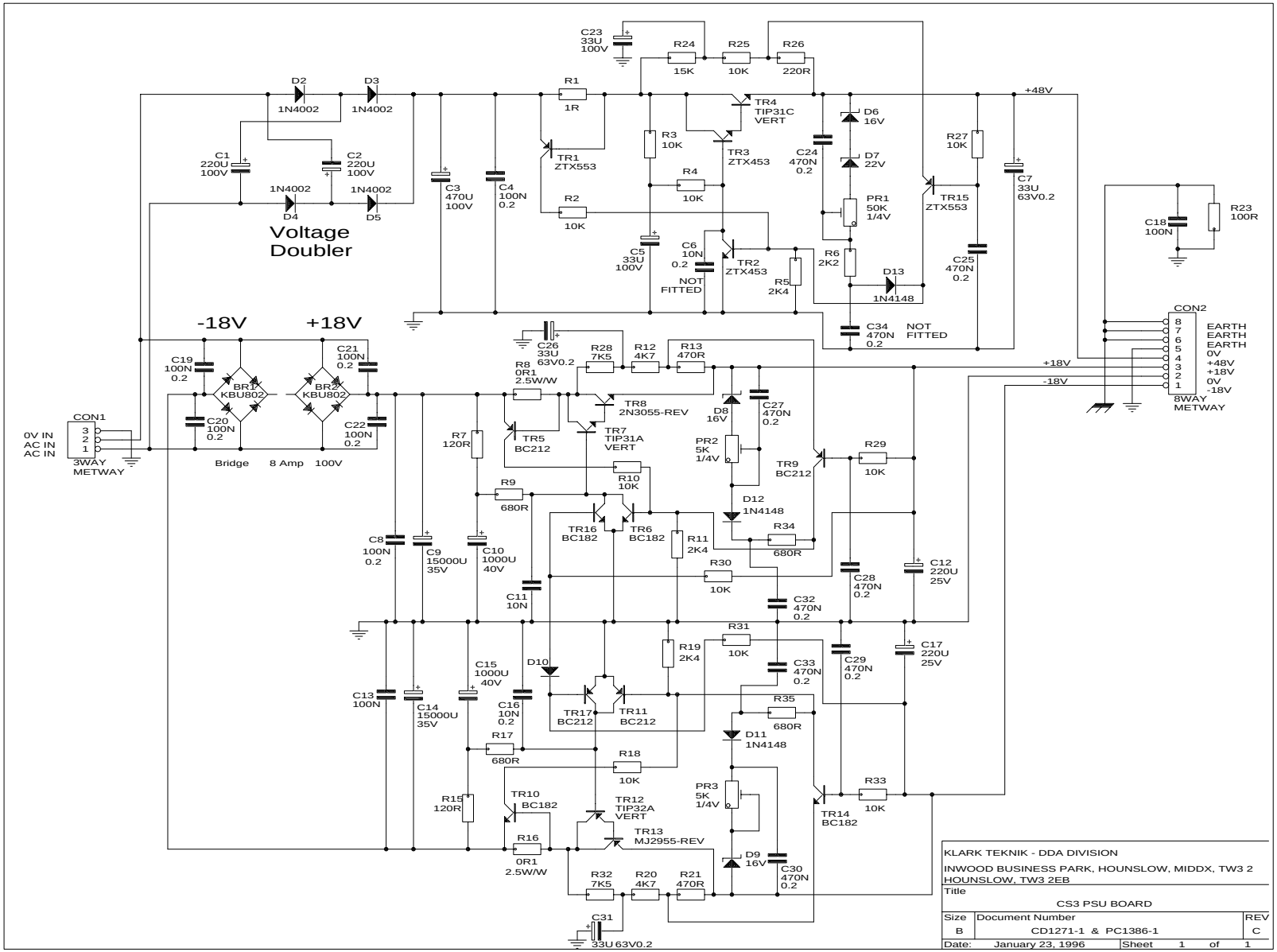


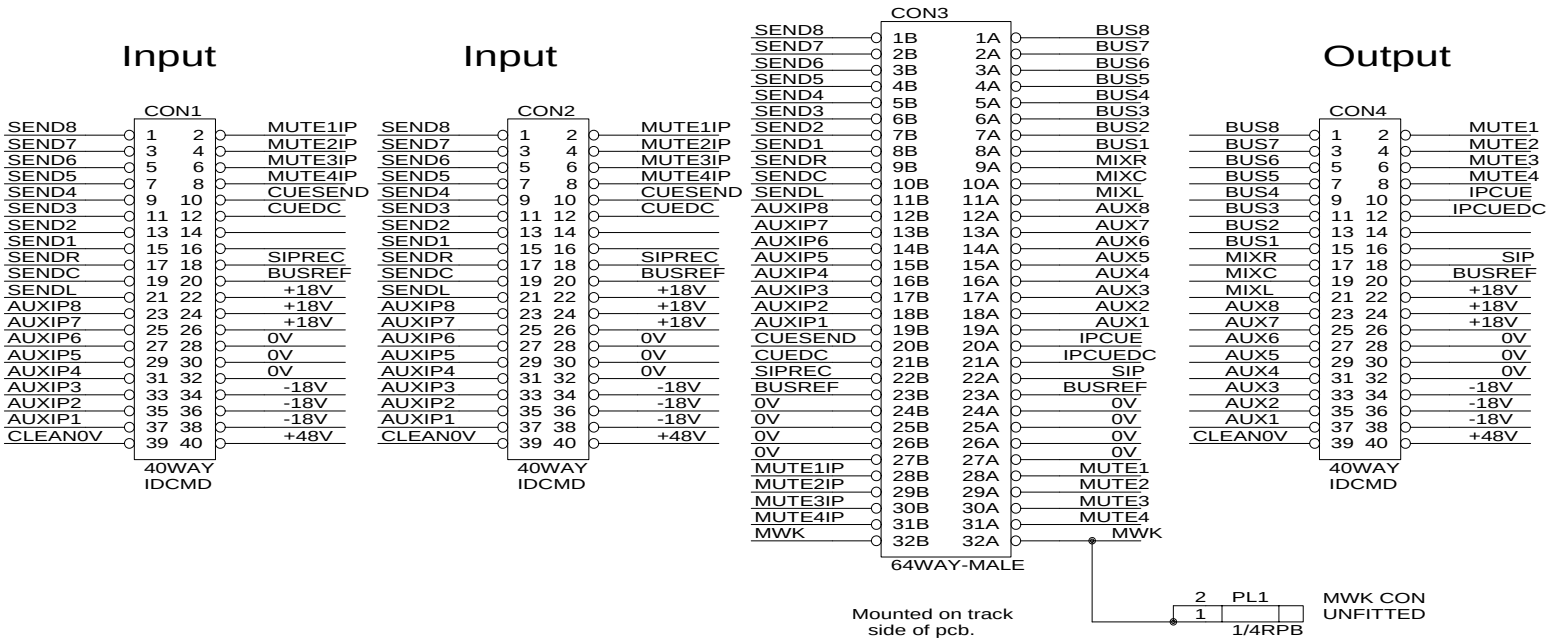
LAST R	R314	DDA, HOUNSLOW, MIDDX, TW3 2EB, ENGLAND.	
LAST C	C106		
LAST CON	CON22	Title	
LAST D	D19	CS8 COMMS MASTER (TB/MONITOR)	
LAST LED	LED18		
LAST IC	IC17	Size: C	Document Number: CD1284-1 — REV: A
LAST SW	SW14		
LAST VR	VR4	Date: March 14, 1997	Sheet 2 of 2
LAST TR	TR6		



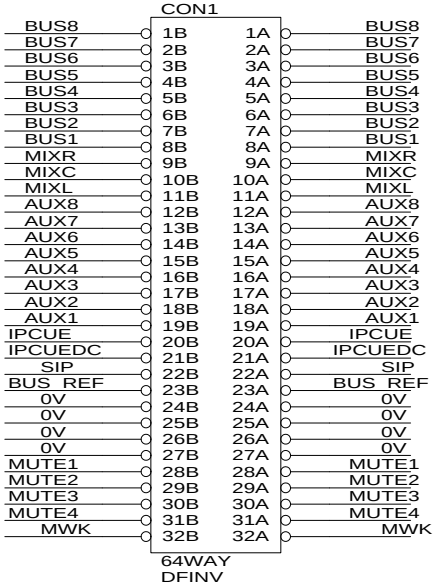
METER SUB BOARD

DDA, HOUNSLOW, MIDDX, TW3 2EB, ENGLAND.		
Title: CS3 METER BOARD (CENTRE METER)		
Size: A	Document Number: CD1273-1 & PC1385-1	REV: C
Date: January 23, 1996	Sheet 1 of 1	

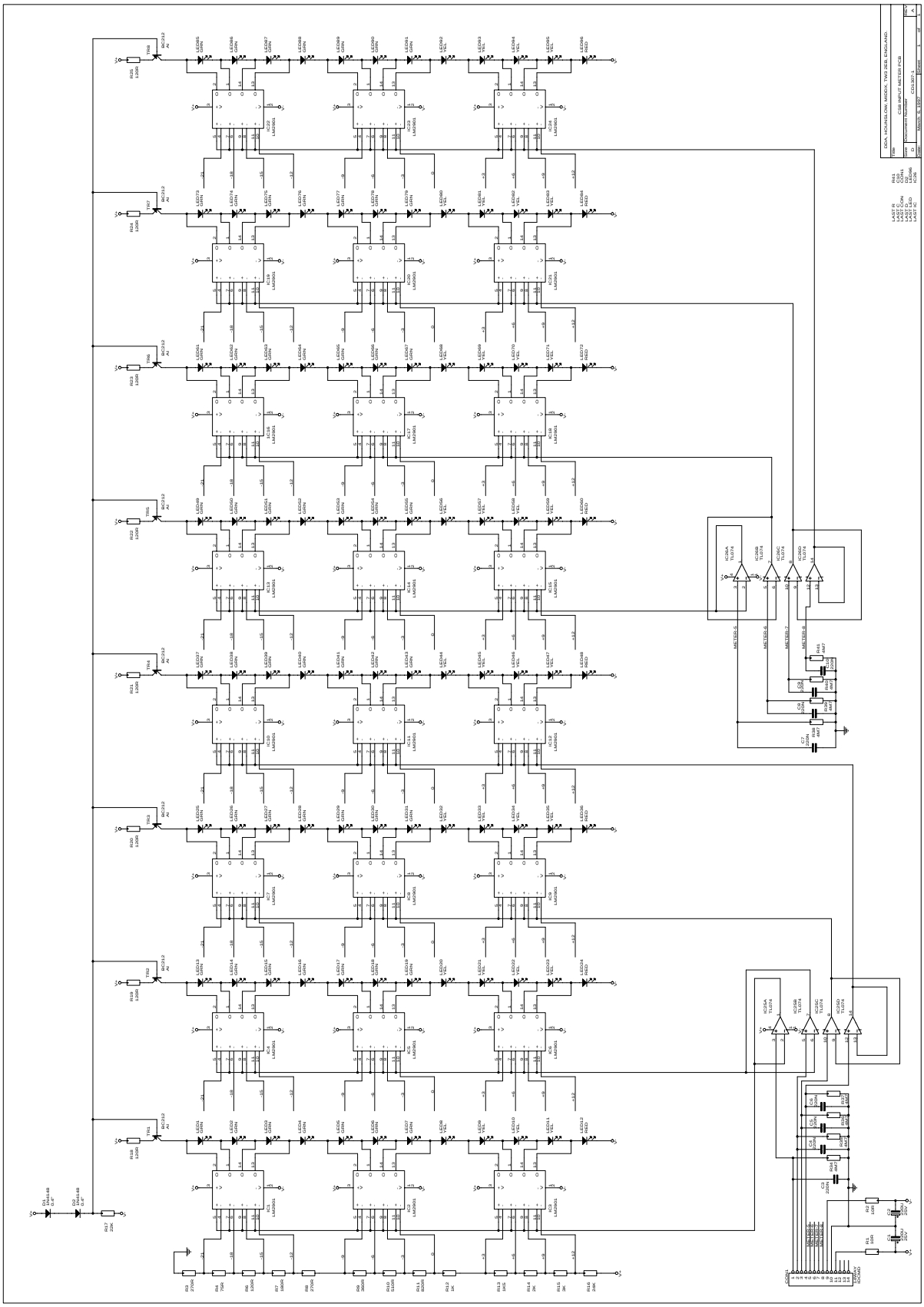

Voltage Doubler
-18V
+18V
Bridge 8 Amp 100V
0V IN
AC IN
AC IN
3WAY METWAY
8WAY METWAY
EARTH
EARTH
EARTH
0V
+48V
+18V
0V
-18V
+48V
+18V
-18V
KLARK TEKNIK - DDA DIVISION
INWOOD BUSINESS PARK, HOUNSLOW, MIDDX, TW3 2
HOUNSLOW, TW3 2EB
Title
CS3 PSU BOARD
Size B
Document Number CD1271-1 & PC1386-1
REV C
Date: January 23, 1996
Sheet 1 of 1



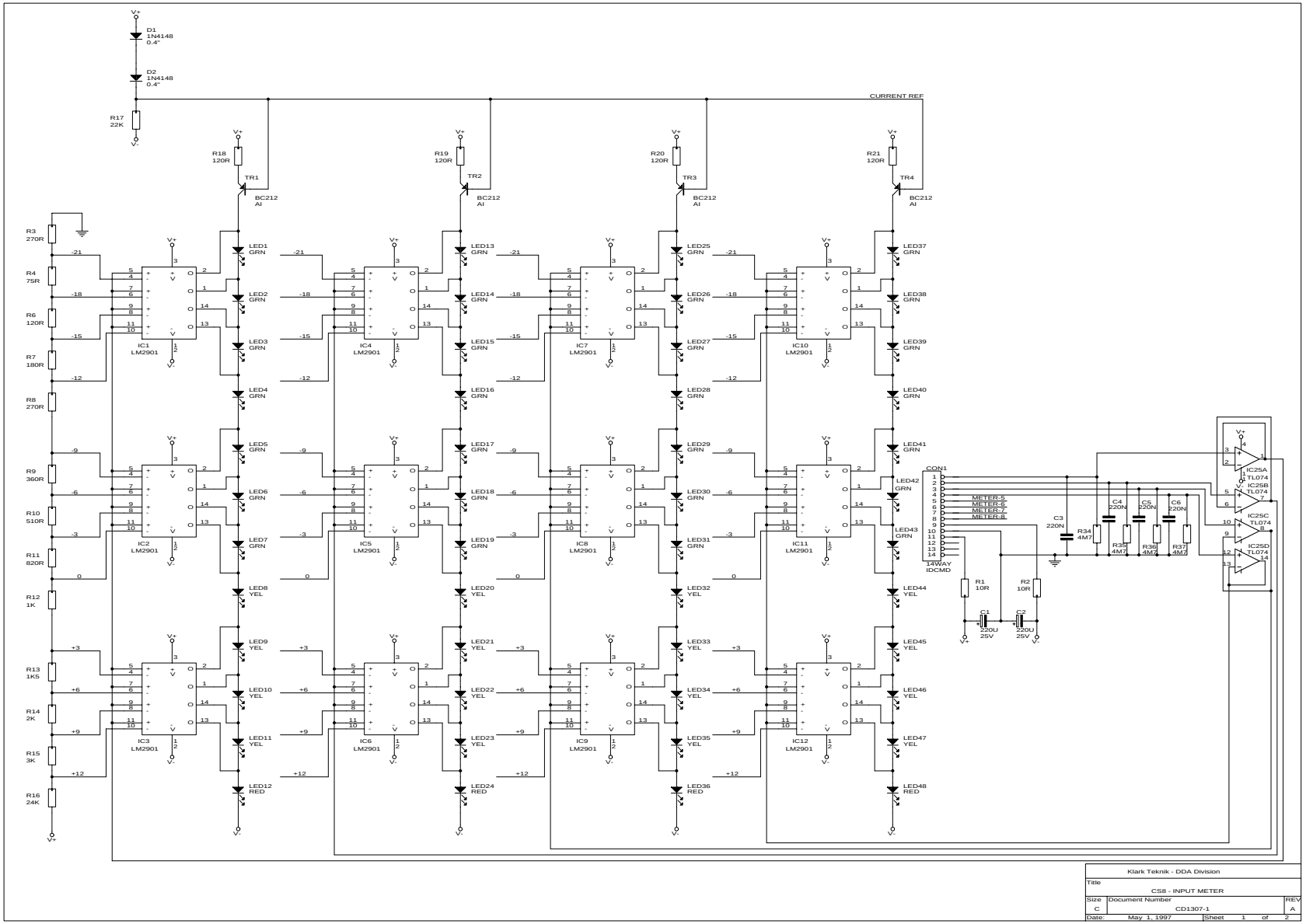
DDA, HOUNSLOW, MIDDX, TW3 2EB, ENGLAND.		
Title: CS8 BUS LINK		
Size: A	Document Number: CD1306-1	REV: A
Date: February 6, 1997	Sheet 1 of 1	



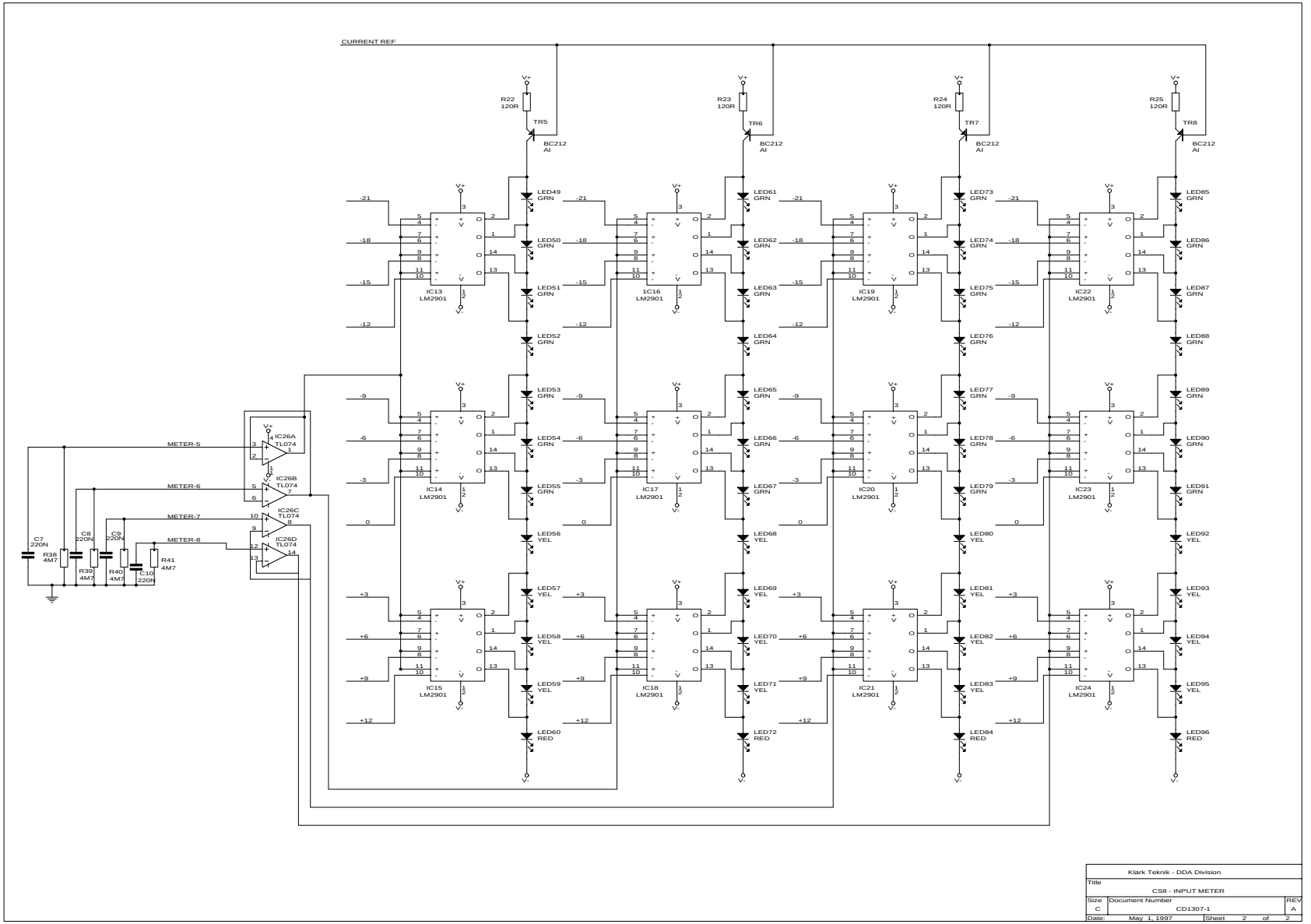
DDA, HOUNSLOW, MIDDX, TW3 2EB, ENGLAND.		
Title: CS8 BUS LINK BLANKING PLUG		
Size: A	Document Number: CD1308-1	REV: A
Date: February 12, 1997	Sheet 1 of 1	



This drawing is split across the following two pages to aid readability.

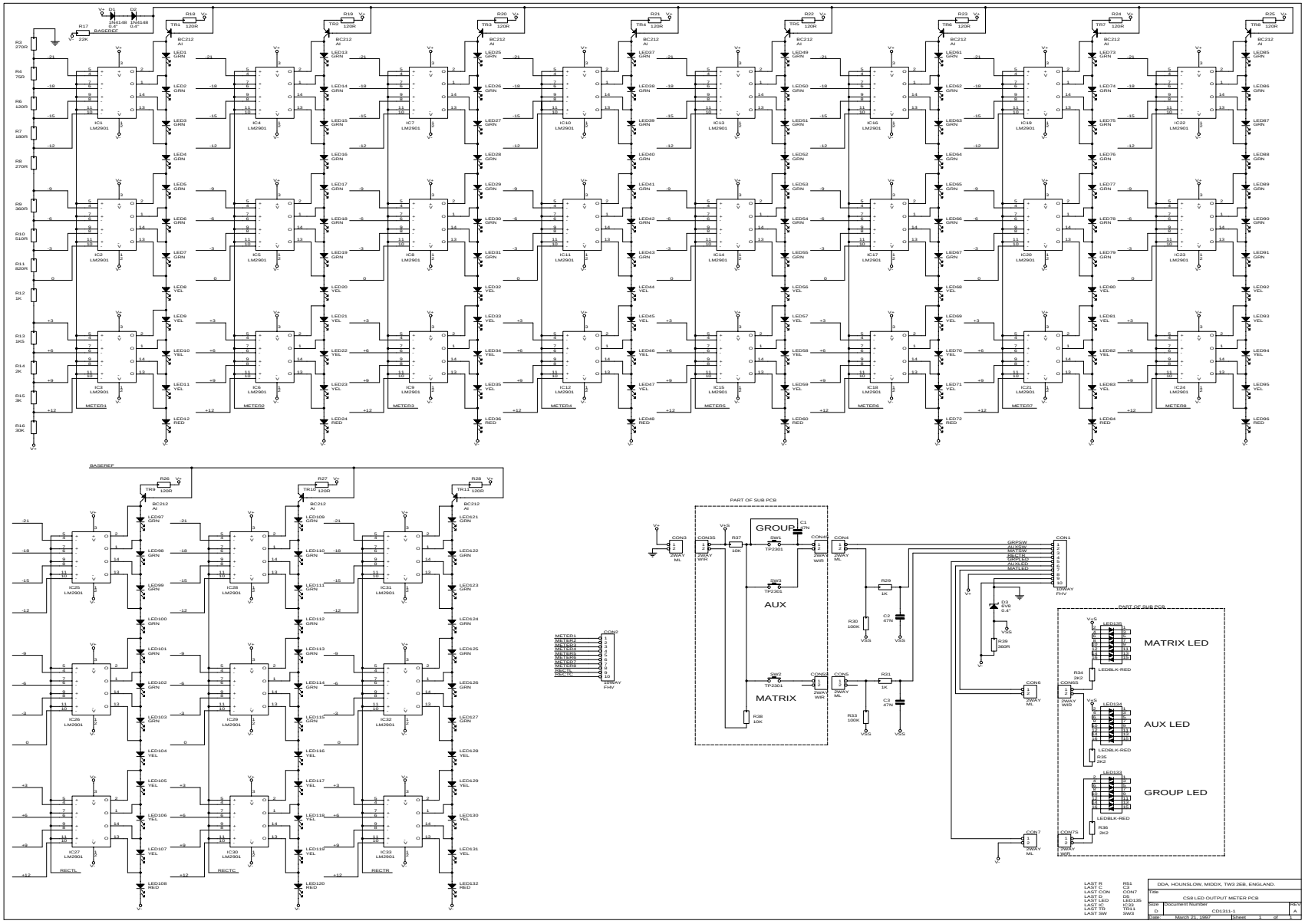


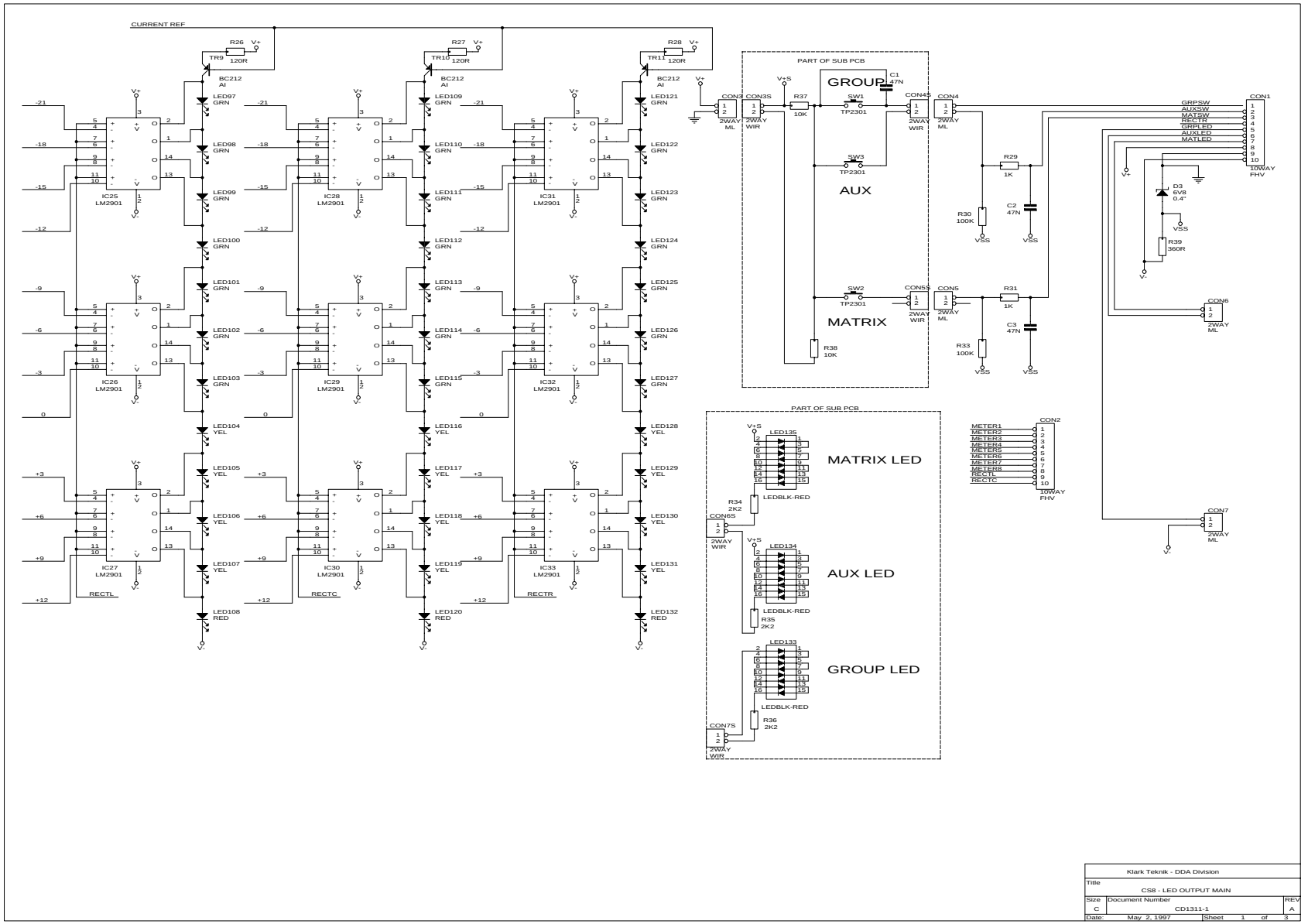
Klark Teknik - DDA Division		
Title: CS8 - INPUT METER		
Size: C	Document Number: CD1307-1	REV: A
Date: May 1, 1997	Sheet 1 of 2	



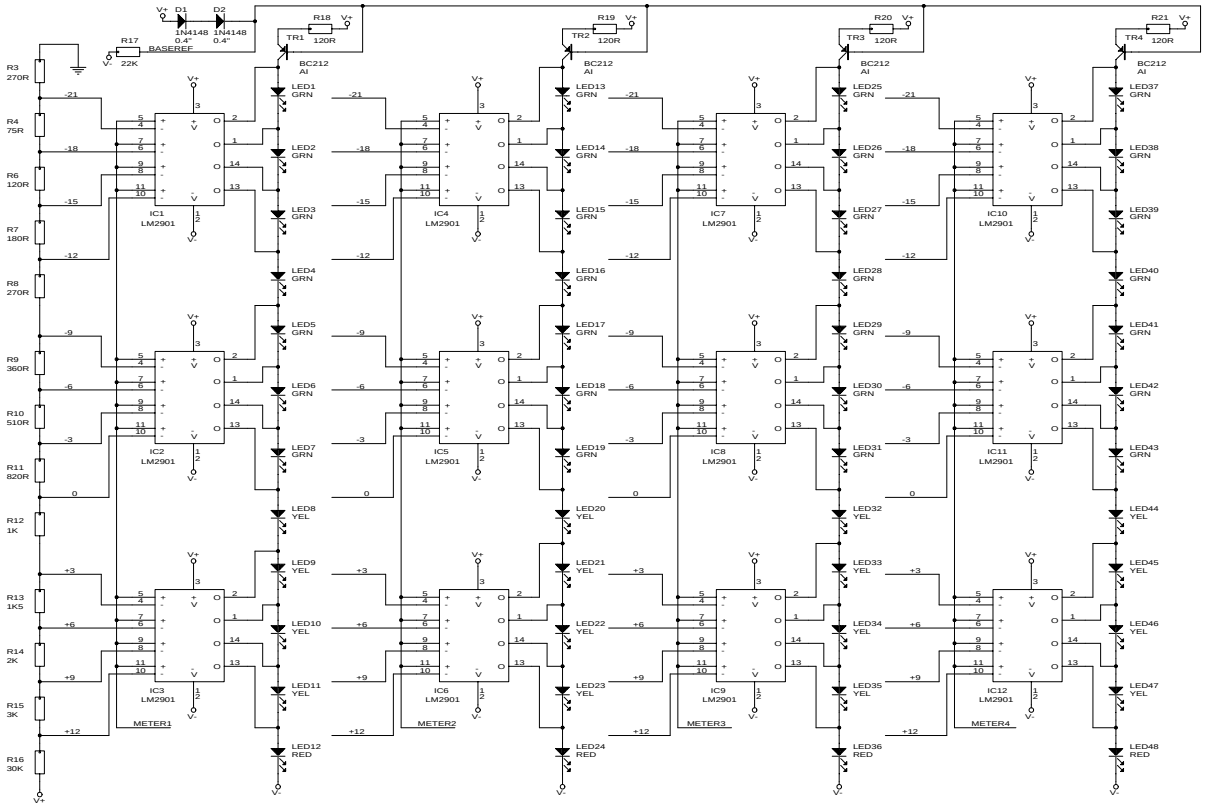
Klark Teknik - DDA Division		
Title: CS8 - INPUT METER		
Size: C	Document Number: CD1307-1	REV: A
Date: May 1, 1997	Sheet 2 of 2	

This drawing is split across the following three pages to aid readability.

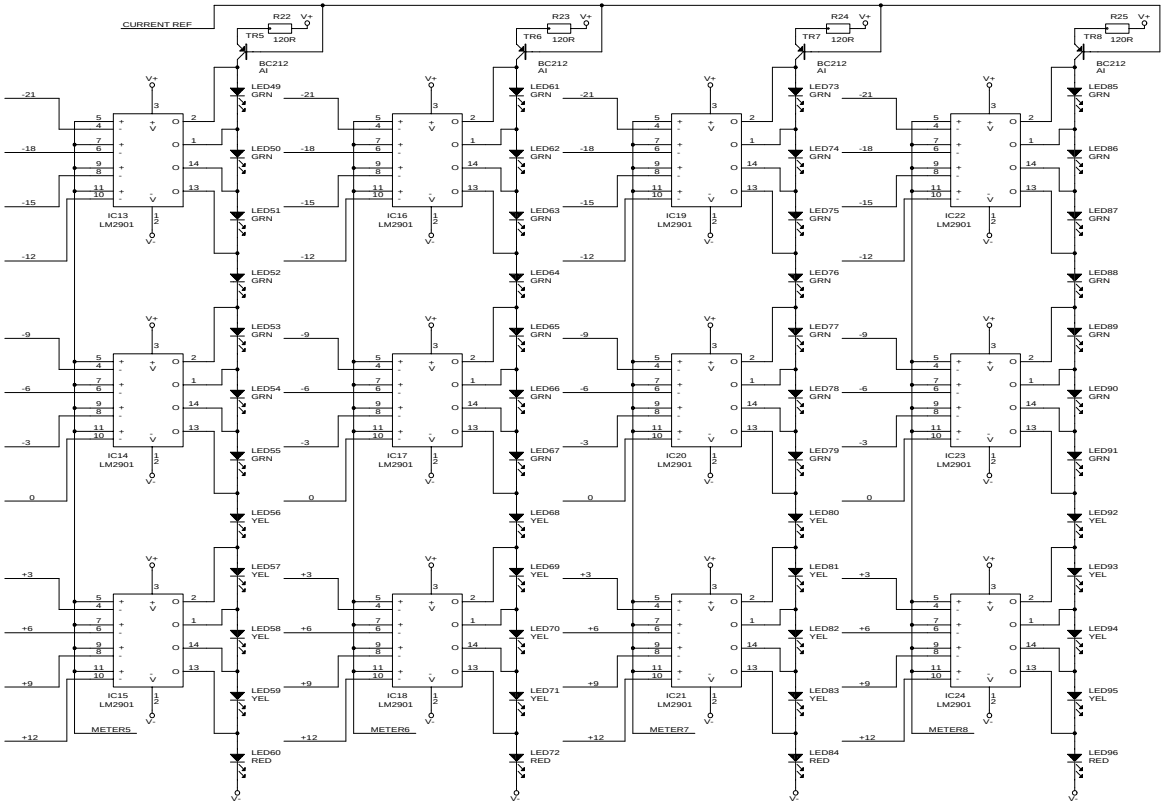




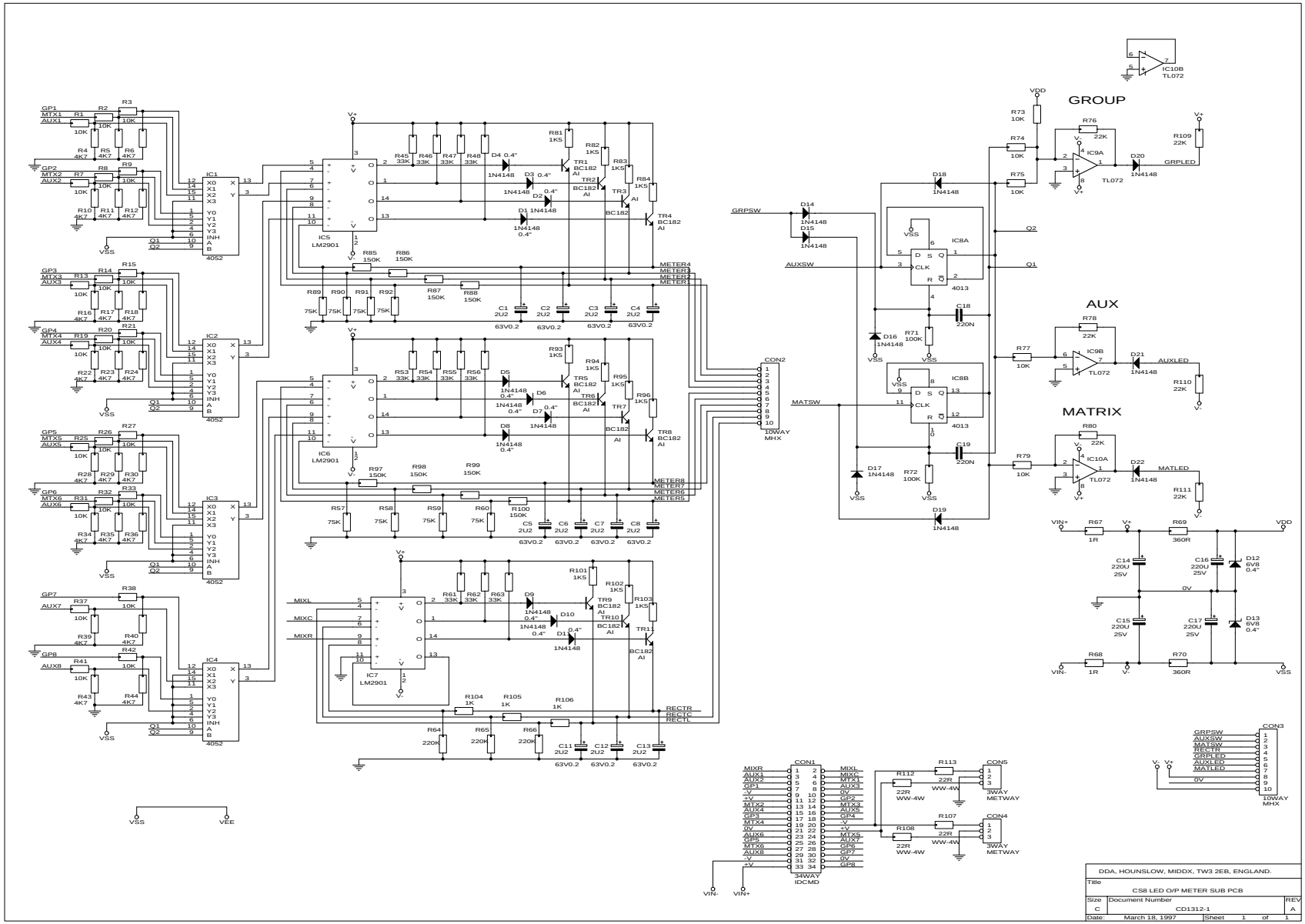
Klark Teknik - DDA Division		
Title: CS8 - LED OUTPUT MAIN		
Size: C	Document Number: CD1311-1	REV: A
Date: May 2, 1997	Sheet 1 of 3	



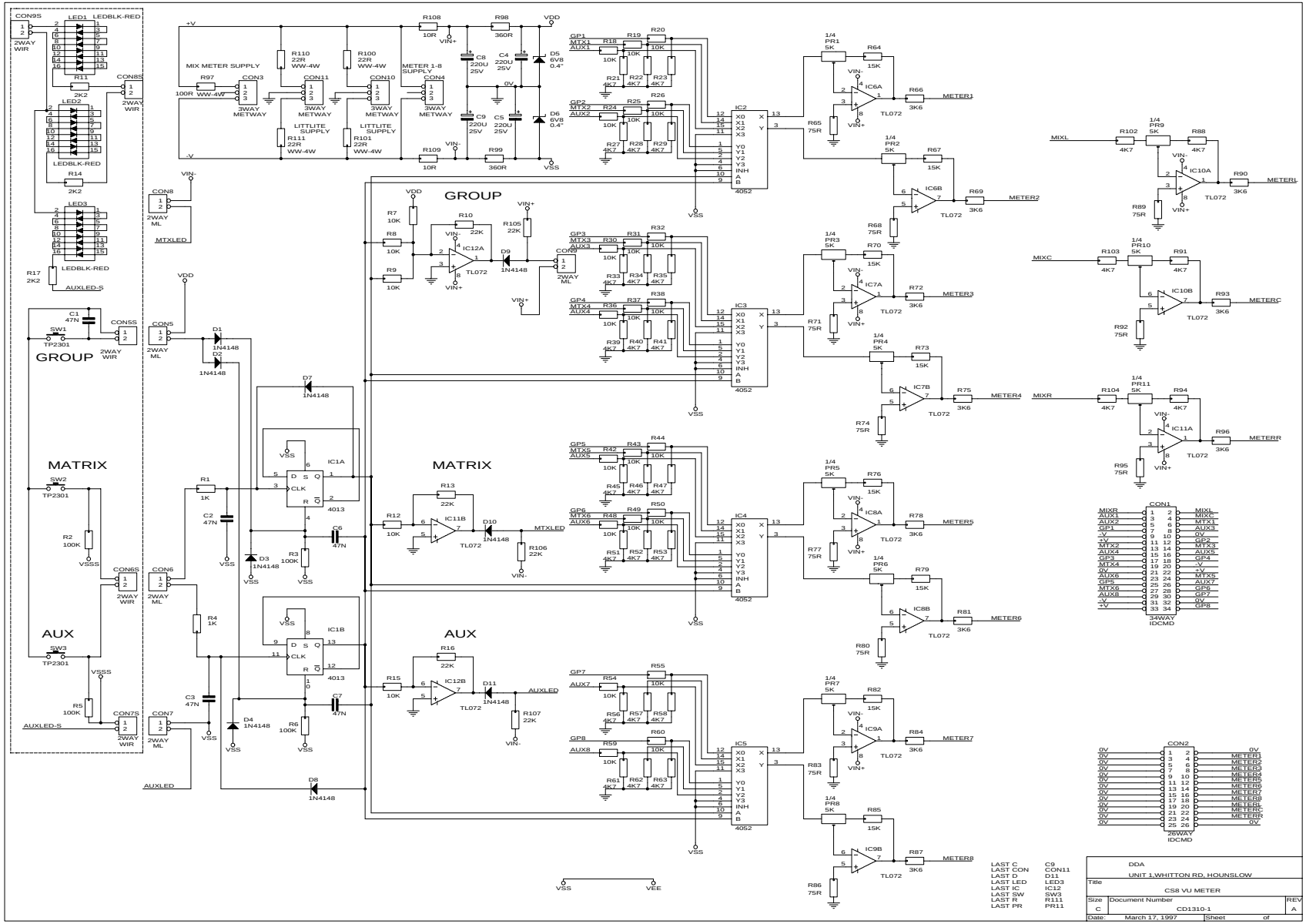
Klark Teknik - DDA Division		
Title: CS8 - LED OUTPUT MAIN		
Size: C	Document Number: CD1311-1	REV: A
Date: May 2, 1997	Sheet 2 of 3	

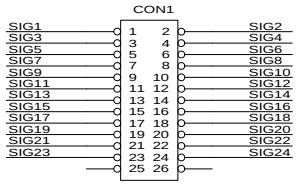


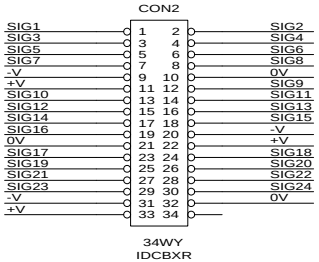
Klark Teknik - DDA Division		
Title	CS8 - LED OUTPUT MAIN	
Size C	Document Number CD1311-1	REV A
Date: May 2, 1997	Sheet 3 of 3	



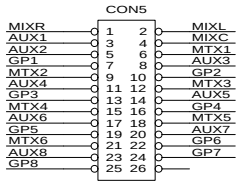
DDA, HOUNSLOW, MIDDX, TW3 2EB, ENGLAND.		
Title: CS8 LED O/P METER SUB PCB		
Size: C	Document Number: CD1312-1	REV: A
Date: March 18, 1997	Sheet 1 of 1	

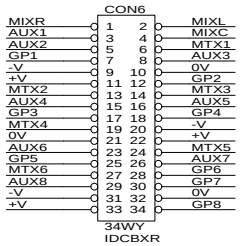

GROUP
MATRIX
AUX
MIX METER SUPPLY
METER 1-8 SUPPLY
LITTLITE SUPPLY
TL072
4052
4013
34WAY IDCMD
26WAY IDCMD
DDA
UNIT 1,WHITTON RD, HOUNSLOW
CS8 VU METER
CD1310-1
March 17, 1997



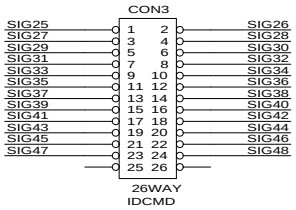


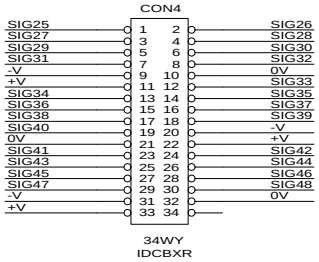
INPUT 1-24



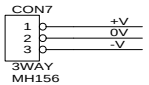


OUTPUT & MASTERS





INPUT 25-48



DDA, HOUNSLOW, MIDDX, TW3 2EB, ENGLAND.		
Title: CS8 METERS CONNECTOR		
Size: B	Document Number: CD1309-1	REV: A
Date: February 13, 1997	Sheet 1 of 1	