JANDS HOG 250/600

Controllers for Moving and Conventional Lights

Technical Manual

EMC COMPLIANCE

This product is approved for use in Europe and Australia/New Zealand and conforms to the following standards:

European Norms	Australian / New Zealand Standards
EN 50081-1	AS/NZS 4252.1
EN 50082-1	AS/NZS 4251.1
EN 60950	AS/NZS 3260

To ensure continued compliance with EMC Directive 89/336 and the Australian Radiocommunications Act 1992, use only high quality data cables with continuous shield, and connectors with conductive backshells. Examples of such cables are:

DMX, MIDI, Keyboard cables: Belden 8102 100% Aluminium foil screen, 65% Copper braid.

Video, Printer: Amtron FR2651 Flat round cable, woven shield.

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1.0 Introduction

The JANDS HOG has emerged through a collaborative effort between Jands Electronics and Flying Pig Systems, resulting in a console that combines the strengths of both companies: flexibility, power, and ease of use, without overwhelming your budget.

The JANDS HOG is a lighting console designed primarily for use with moving light fixtures. A great deal of the functionality is produced with software, and for this reason, none of the button functions are hardwired but instead are read by a processor. An output is then computed as a result of that button's assigned function. Additionally the consoles have been designed with the capability for users to upgrade the software without removing the base.

Due to the multitude of inputs and outputs, a number of IBM PC-type I/O devices have been used in its design to reduce size and cost. Many surface mount devices are also used, mainly because the particular devices are unavailable in a normal through-hole package. While some SMDs eg. resistors, capacitors, etc, are quite easy to remove by normal methods, the larger ICs are fairly difficult and so should be returned to the JANDS factory for service.

2.0 Equipment Description

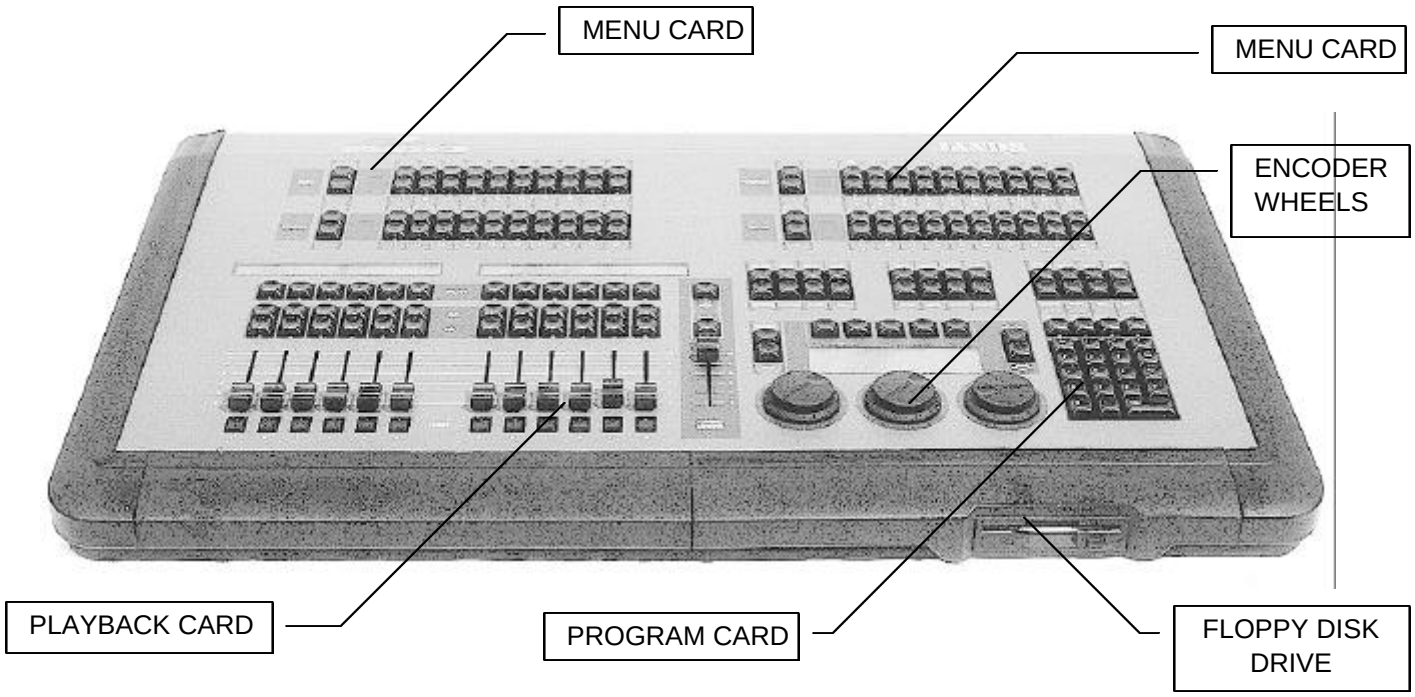

Figure 2.1 JANDS HOG 250 console layout

Figure 2.1 shows the layout of the JANDS HOG 250 console. The front panel cards and major features have been labelled for clarity.

The circuit boards contained within a console are as follows:

CARD TYPE	QUANTITY	
	250	600
Menu card	2	3
Playback card	1	2
Program card	1	1
CPU card	1	1
Backpanel card	1	1

Other miscellaneous components include a 40 watt switch-mode power supply and a 3½ inch floppy disc drive.

The JANDS HOG 250/600 Operating Manual should be consulted for a description of desk operation.

3.0 Circuit Descriptions

☜ Figure 3.1

3.1 Processor Card

The main CPU reads all inputs and generates all outputs. Due to the quantity of front panel controls a separate I/O processor is used to scan the switches and encoder wheels, and outputs data to the playback LCDs and front panel LEDs. The I/O processor communicates with the main CPU by a high speed synchronous serial interface - with the current software data is transferred every 2ms.

A large quantity of program memory and show memory has been provided, up to a maximum of 2MBytes program and 4MBytes show memory. However the initial release (V1.0) has 0.5MByte program and 0.75MByte (250) / 1.5MByte (600) show memory.

3.1.1 Main CPU

The main CPU is a 68332 microprocessor (IC1) running at 16MHz or 20MHz, depending upon the clock (IC33). The 68332 is a highly integrated part consisting of a 68020 core surrounded by serial ports, a System Integration Module (SIM), and a Time Processing Unit (TPU). The SIM is configured to generate chip select lines which are used to select the peripherals.

The CPU clock is provided by IC33. The CPU can be configured to run at 24MHz by removing J9 and inserting it in J4 while the power is off, however due to the increase in dissipation this causes, it is not recommended for normal operation. IC31:5:6 configures the CPU at reset to have an 8 bit Boot EPROM and A23 to be the clock output for synchronous data transfers.

The main processor's resources are allocated as follows:

SCI Port	MIDI in/out	
QSPI Port	Slave 0	I/O CPU interface
	Slave 1-3	Available for expansion
Chip Selects	CSBOOT	Byte wide Boot EPROM
	CS0	Word wide FLASH ROM
	CS1	Word wide FLASH ROM
	CS2	Word wide SRAM
	CS3	Word wide SRAM
	CS4	Word wide SRAM
	CS5	Word wide SRAM
	CS6	A19
	CS7	Byte wide Synchronous (to E clock) Expansion bus (512KB)
	CS8	Byte wide IBM PC Bus (lower $80000 I/O, upper $80000 memory)
	CS9	Keyboard/Graphics LCD
	CS10	E clock output
TPU	TP0-TP7	Inputs DIP Switch 1-8

	TP8	Output LED L1 (Red)
	TP9	Output LED L2 (Green)
	TP10	Output Desk Lamp Dimmer
	TP11	Output FLASH Program voltage control
	TP12	Output DMX indication - should be Low when outputting DMX-512 protocol from COM2
	TP13,14,15	Not connected - available for general software use
External Interrupts	IRQ1	Keyboard Interrupt/Expansion Bus Int 1
	IRQ2	Expansion Bus Int 2
	IRQ3	COM1/COM2/Expansion Bus Int 3
	IRQ4	Expansion Bus Int 4
	IRQ5	Not used (available)
	IRQ6	Expansion Bus Int 7
	IRQ7 (NMI)	Power fail detect

The graphics LCD on the Program card is driven directly from the 68332 due to the large amount of data transferred.

3.1.2 CPU Memory

The CPU memory consists of a Boot EPROM (IC26), two or four FLASH ROMs (IC24, IC25, IC3, IC4), and four or eight static RAMs (IC5-12). The CPU uses the Boot EPROM to configure the console, check DIP switches, and check the FLASH program. If all is correct the software continues on and executes the loaded FLASH program, else a menu is displayed on the graphics LCD module.

NOTE: At present all DIP switches should be off for normal console operation.

The EPROM is selected by CSBOOT directly from the CPU. CS0-CS6 are each used to select a pair of either FLASH or SRAM devices as per the following table. Read and Write control signals for each device are created by the GALs (IC14, IC19, IC21).

Chip Select	For Devices	Control From
CS0	FLASH IC24,25	IC14
CS1	FLASH IC3,4	IC14
CS2	SRAM IC5,6	IC19
CS3	SRAM IC7,8	IC19
CS4	SRAM IC9,10	IC21
CS5	SRAM IC11,12	IC21

Note that one GAL device controls two memory banks/pairs, and that the GALs contain the same program and therefore are interchangeable.

At present the second FLASH bank is not used but is provided for future software expansion. 512Kx8 FLASH devices can be used instead of 256Kx8 devices as selected

by J10. FLASH program voltage is controlled by CPU TP11 via a zener translator (D2) and transistor switch (Q1). Diode D1 maintains the program voltage at +5 when FLASH control is off as per the device specification. LED L5 (FLASH) illuminates when the FLASH programming voltage is on ie. when software is being updated.

Note that if D1 is leaky it can pull the program voltage below spec resulting in FLASH program failures.

SRAMs can be either 128Kx8 or 512Kx8 devices as selected by J2 (IC5-8) and J3 (IC9-12). At present the 250 console uses six 128Kx8 SRAM devices, while the 600 uses a combination of a pair of 512K devices and four 128K devices.

3.1.3 Reset / Power Fail Generator / Battery

The reset generator is based around IC13. This IC monitors the +5 volt rail and puts the CPU into reset if the voltage is below 4.6 volts. The RESET LED (L4) should flash briefly when power is applied and removed, and when the RESET terminals (J8) are shorted together. IC13 also disables the FLASH and SRAM via the CE pins and switches SRAM power from the main supply to battery during power down, via Q2. Capacitor C17 maintains the supply to the SRAMs during changeover - if a console is dropping its memory and the battery is OK this capacitor may be faulty.

IC13 also generates the power fail NMI by monitoring the +5 volt rail through the voltage divider consisting of R4, R3, and T1. T1 should be adjusted so that TP1 is 1.36 volts while the console is running - this gives the correct detection window so that the power fail signal is generated in enough time before the +5 volt rail drops below 4.6 volts, but should not operate in normal operation. Note that if a console is dropping it's memory, T1 could be out of adjustment.

The lithium battery should last approximately 5 years **from the date the battery was made** - note that a 4 year life from date of product sale would not be unexpected when delivery and manufacturing times are allowed for.

CAUTION

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

3.1.4 Expansion Bus

The expansion bus is a buffered extension of the system CPU bus and has been designed to accommodate Jands Event-type expansion option panels. All expansion bus activities are synchronised to the bus clock (E) which operates at one sixteenth the system clock frequency ie.1MHz for a 16MHz CPU clock or 1.25MHz for 20MHz clock.

3.1.5 I/O Processor

The I/O processor (IC15) is a 68HC705 single chip microprocessor. This I/O processor communicates with the main CPU via the Serial Peripheral Interface (SPI) port provided on both devices. At present the SPI is controlled by the I/O processor and data is transmitted every 2ms. Its functions are as follows:

- scan the front panel switches and check for keypresses

- transmit keychange info to the main CPU
- scan the encoders
- transmit encoder values to the main CPU
- receive LED and LCD information from the main CPU
- output LED and LCD data to the front panel cards

The bus data and control lines are buffered by 74HC245s (IC17, IC18) - odd or erratic behaviour of the front panel bus may be caused by one of these ICs being faulty. Note that the front panel bus flat cable plugs in to the CPU card at two places, near the I/O processor and near the Video/Back Panel connector. The second connection supplies power and terminates the bus signals - this connection **must** be made in order to get reliable console operation.

The I/O processor resources are allocated as follows:

SCI port	Not used
SPI port	Main CPU interface
Port A	Front Panel Card Bus data in/out
Port B	Bits 0-4 Not Used
	Bit 5 Card Bus R/W
	Bit 6 Card Bus ALE
	Bit 7 Card Bus DS
Port C	Bit 0 68332 SPI select
External Interrupt	Connected to Front panel Card bus interrupt

3.1.6 Miscellaneous

The 8 DIP switches (SW1), two CPU LEDs (L1, L2), desk lamp dimmer, and auxiliary DMX output control line are connected directly to the TPU pins. During normal operation all DIP switches should be off. The desk lamp dimmer circuit consists of a fuse-protected three transistor amplifier with the TPU providing the Pulse Width Modulation (PWM) functions. A LED in the fuse holder illuminates when the fuse is OK.

☜ Figure 3.2

3.1.7 Glue Logic / IBM PC Bus

Due to the large number and types of output, IBM PC-type peripheral ICs are used. IC22 (XC7336) is used to synthesise the necessary bus signals/timing - only 8 bit transfers are supported in this design. IC22 is also used to generate the LCD CS and perform the keyboard interface function. Keyboard clock signals are inverted by IC32:A before entering IC22.

The IBM PC bus is a simplified implementation of the PC architecture to enable the use of less expensive PC peripheral ICs. Currently there are two IBM-type ICs used in the JANDS HOG CPU card: IC2, the SMC FDC37C665IR (floppy disk controller) and IC41, the Cirrus GL-GD5429 (VGA driver). The chip-select used to select the PC devices is further decoded by A19 to separate it into upper and lower 512KB blocks. The lower block selects PC I/O transfers (eg. FDD, COM1, COM2, LPT1 registers), while the upper selects PC memory transfers (video RAM).

3.1.8 Output ports (DMX-512 / FDD / Printer)

DMX inputs, DMX outputs, the floppy disk drive interface, and printer interface are all supported by the FDC37C665 (IC2). This is a highly integrated part with most functions/components for the interfaces it supports already integrated onto the device. A special high speed mode allows the COM ports to be used at DMX speed.

The Floppy Drive is configured as the primary FDD interface ($3F0-3F7), while the COM ports are configured for COM1 ($3F8-3FF) and COM2 ($2F8-2FF). A printer port is also provided by the IC and is configured to LPT1 ($378-37F).

The DMX outputs are buffered by IC20 and IC38. A protection network consisting of 2 diodes and a resistor on each COM port output (D5,D7,R19 / D6,D8,R20) protect IC2 from large external faults that might pass through IC20 and/or IC38. Note these diodes should only be replaced with high speed Schottky diodes to maintain protection.

The DMX input is connected to the COM1 input via RS485 receiver IC37. Note that this input can be connected to the spare pins of the DMX outputs ie. pins 4 and 5, by inserting jumpers on the back panel PCB as required.

Note that all DMX receivers and transmitters are of the same type to facilitate in-field servicing.

The DMX shield is connected to electronics ground via a parallel RC combination - note that the size of these components is large enough to survive most shield faults. These RC networks are located on the back panel card.

3.1.9 VGA Output

To ensure 100% compatibility with VGA monitors and to get a high quality video display, an off-the-shelf Cirrus Logic VGA controller is used to generate the video output (IC41). Again this is a highly integrated part which contains many of the parts necessary to provide a fully functional VGA output. The exception to this are the parts required for the clock synthesiser filters (C48 etc, C52 etc), output voltage control (IC44 etc, RS3-7, RS3-8, RS3-9), EMI filters (C41-C43,C45,C46), and video RAM (IC23, IC35, IC36, IC42). Note also to prevent latchup, the video controller is run from the 5 volt rail via two 1 ohm resistors (R27, R28).

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3.2 Front Panel Cards

☜ Figures 3.3, 3.4, 3.5

All front panel cards follow the same design. A multiplexed 8 bit data/address bus is used to exchange bytes of information between the I/O processor and the cards. The address of a register is latched by the ALE line - the top 4 bits are used to select one of 16 cards, and the lower 4 bits are used to select one of 16 registers on that card. The data for that register is then either read or written as required, as controlled by R/W and DS. An interrupt line is provided for future use but it is not used at this time.

The 16 registers on any front panel card are addressed as per the following table:

Register Address (ALE low 4 bits)	Read Data		Write Data	
1111	Card ID	Switch 7	LED 7	
1110	Switch 6		LED 6	
1101	Switch 5		LED 5	
1100	Switch 4		LED 4	
1011	Switch 3		LED 3	
1010	Switch 2		LED 2	
1001	Switch 1		LED 1	
1000	Switch 0		LED 0	
0111	LCD 1 Data			
0110	LCD 1 Control			
0101	LCD 0 Data			
0100	LCD 0 Control			
0011	Wheel 3	Wheel 2	Contrast 1	Contrast 0
0010	Wheel 1	Wheel 0	Brightness	MUX address
0001	A-D Value (EOC)		A-D Start (SOC)	
0000	Spare		Spare	

A jumper on each card selects the address of the card in the system. When replacing cards ensure that the replacement card has its jumper in the same position as the card it is replacing.

Note that the Graphics LCD module on the Program card is connected directly to the main CPU due to the large amount of information transferred to it. However brightness and contrast are controlled from the Program card registers.

3.2.1 Switches / LEDs

All of the switches on the front panel card bus are read individually via 74HC245 tri-state buffers. Each switch when pressed (closed) pulls the buffer input high, otherwise a 10K resistor pulls it to ground.

Note that it is most likely any switch faults will be caused through wear and tear in the switches themselves.

LEDs are run fully statically (ie. not multiplexed) including the 7 segment displays on the Menu cards, and at startup are disabled for a short period of time to enable the I/O processor time to clear them. This prevents startup flashes, and is controlled by an RC network on the latch output enable pin.

3.2.2 Faders / Multiplexer / A-D Converter

The fader supply is decoupled from the 5 volt rail with R10/C40/C42/C15. This results in a DC voltage at the fader tops of around 4.4 volts. Fader bottoms are connected to the electronics ground. Each fader has a 100nF output capacitor to reduce noise.

Fader level are multiplexed into the Analogue to Digital Converter (ADC) by two 4051 eight channel CMOS switches (IC11, IC12) which are controlled by a 74HC573 latch (IC9). Limit resistors (R2,R3) prevent possible damage at startup. An op amp (IC20) buffers the signal before driving the ADC.

The ADC is a high speed converter controlled by Start of Conversion (SOC) and End of Conversion (EOC) signals, ie. writing to the ADC starts conversion of the current mux input and reading the ADC outputs the result to the bus.

3.2.3 LCDs

The brightness and contrast are controlled by resistive Digital to Analogue Converters (DACs). The contrast DACs are 4 bits wide, however due to the differing requirements of the Graphics LCD to the Character LCDs, the output circuit is slightly different. The brightness DACs are 3 bits wide and the same on each card, and consist of a DAC-controlled voltage regulator (LM317) which feeds an electroluminescent backlight inverter. Note that the brightness of the backlight decays with use, and so should be dimmed down when not required.

For data and control each LCD requires two register locations in both read and write. The LCDs are connected directly to the card's bus.

3.2.4 Encoders

The encoders used are of the two phase mechanical type. Each encoder has two output signals that pulse 90 degrees out of phase as the encoder is rotated. A pair of RC networks filter each signal - the value of these parts is quite critical to correct encoder operation.

The signals are squared by IC11:A/:B/:C. The signals are used to control the up/down counter IC8-10 such that when the encoder is rotated clockwise the counter counts up, conversely when the encoder is rotated counterclockwise the counter counts down. Note that any time the encoder is rotated, pulses should appear on both pin 15 and pin 10 of the encoder's counter, and the counter outputs should count up or down depending on the direction of rotation. This occurs without I/O processor intervention.

The counter outputs are output to the bus via a pair of 74HC245 tristate buffers (IC6, IC7). Counting is inhibited via inverters IC11:E/:F to prevent the counter outputs changing state while the buffers are being read.

4.0 Operating Notes

In general the console can be used with no special precautions, however a few points are worthy of mention.

4.1 Fine Tuning the LCD Settings

Each LCD has its own contrast control, while pairs of Playback card LCDs and the Program card LCD have brightness controls. These can be accessed and tuned individually to allow for variations in display characteristics due to display module type and ageing. The “Displays” option in the Boot menu is used for this purpose as follows:

1. Enter the Boot menu by holding down the “Enter” key on the keypad while turning power on.
2. Select option 4, ie. “Displays”.
3. Use the cursor keys to select between the three LCD-equipped cards.
4. Use the encoders to adjust individual parameters of each.
5. Press “Enter” to confirm and return to the Boot menu.
6. Press 0 to continue normal startup.

4.2 Deep Clear

The system memory is completely cleared, resetting all variables including LCD contrast and brightness settings. This option should be run after a memory test or RAM exercise has been performed.

1. Enter Boot menu.
2. Select Test option (5).
3. Select Deep Clr & Reset (7).
4. Follow prompts.

4.3 Outdoor Systems

It is recommended that in outdoor shows where the power is locally generated, the console be run from an extension cord that is plugged into the same power that the dimmers/moving lights are run from. If this is not possible a DMX isolating unit should be inserted between the lighting console and the dimmers/moving lights.

4.4 Upgrading the Software

To force the Boot menu, the user can hold any single key on the keypad while switching power on, or alternatively turn DIP switch #3 on and reset the CPU. Select option 1 (Software Load) - software reload takes approximately 2 minutes and power should not be interrupted during this time. Press option 2 (clean start) when reload is complete.

4.5 Upgrading the Memory

In their base form the JANDS HOG consoles are provided with enough memory to serve the average show for which the consoles were intended. It is possible that more memory will be required if the user's requirements are particularly large.

Extra memory can be provided on the CPU card by inserting the additional devices into the correct sockets with the following restrictions:

- Memory ICs must be inserted in vertical pairs. eg, IC5 and 6. Each pair is called a bank.
- The same type of memory IC must be inserted into the left hand pair of banks. ie, IC5, IC6, IC7, IC8 must be the same type. Jumper J2 must be set to match the RAM size in these two banks.
- The same type of memory IC must be inserted into the right hand pair of banks. ie, IC9, IC10, IC11, IC12 must be the same type. Jumper J3 must be set to match the RAM type in these two banks.

4.6 CPU Jumper settings

The CPU card uses a number of jumpers to configure the devices on it. The functions of the jumpers are as follows:

J1: Connects the CPU SCI port to the DMX output port. Normally off.

J2: Configures RAM IC5,6,7,8 for either 128Kx8 or 512Kx8 devices.

J3: Configures RAM IC9,10,11,12 for either 128Kx8 or 512Kx8 devices.

J4: CPU clock select 24MHz, used in conjunction with J9. Normally off.

J5,6,7: Factory test only. Normally off.

J8: Reset. Normally off.

J9: CPU clock select 20MHz, used in conjunction with J4. Normally on.

4.7 Floppy Disk Drives

With the increasing use of 3.5 inch disk drives in equipment it is important to know how to treat them properly. They are sensitive mechanical machines, but if you follow a few simple rules you will always be able to retrieve your data when you need it.

1. The diskettes are inserted label side up and outward. If the diskette won't go in, don't force it; it is probably not inserted correctly.

2. Backup frequently. Every time you leave the console (eg. for a coffee or to focus, etc) it is a good time to start a save so that when you return it has

finished and the console is ready for you to continue programming. Use two diskettes and alternately save to each one, labelling each differently.

3. Always use good quality diskettes. Quality diskettes are not much more expensive than cheap ones and as a backup it is important you can retrieve the data with no problems.

4. Take one of the backups with you when you leave the venue. In the case of a fire it is then possible to load the show into a replacement console.

5. Keep the diskettes in a diskette storage box to prevent them being damaged by dirt. These storage boxes are available from computer stores or are sometimes sold with boxes of new diskettes.

6. Always transport consoles with a diskette in the drive. This prevents damage to the mechanism from transport-induced vibration. Failure to do this will almost certainly result in damage to the drive head mechanisms.

4.8 Replacing the battery

The battery should be expected to last 4 years from date of purchase. The following points should be observed when replacing the battery:

- Before replacing the battery ensure any console data has been backed up to one or more diskettes.
- A soldering iron is required to remove the battery.
- Switch console power off before soldering the board.
- Perform a Deep Clear and Reset function as described in section 4.2 after the new battery has been installed.

CAUTION

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

5.0 Fault Diagnosis

5.1 DMX requirements

The DMX cable is the critical and often ignored link between a console and the lighting rig. In normal operation a DMX cable has to transmit well over 10 times audio frequencies so it is important to make sure that cable quality is high. If not, you can expect anything from small flickers to large flashes, or even complete DMX failure.

The following are some tips on selecting and using DMX cables for reliable use:

- If you are using fairly short runs, say less than 30 metres, then the cable type isn't critical and most types of two-core shielded cable will work OK. Remember though that you may have to join two of these cables together one day and poor quality cable could cause problems.
- If you are buying cable specifically for DMX systems, get cable with a 100-120 ohm impedance designed for RS-485 data systems. Category 5 shielded twisted pair cable, as now used in computer networks, is ideal for DMX data but it is usually not stranded and only really usable in permanent installations.
- The transmission of DMX data is degraded by cable joins. When terminating cables try to leave as much of the cable cores as possible twisted together, as they were before the insulation was stripped off. Also connect any unused conductors to the shield.

GOLDEN RULES OF DMX

- Terminate every data line with a 100 ohm resistor between pins 2 and 3.
- Never, ever Y-split a DMX signal without an active splitter box.
- If you are having problems, check your console softpatch and receiver address settings.
- Use an opto-isolator if the power supply to the different devices at each end of the cable is different.

5.2 Fault Finding Table

The table below may be used as a guide to pinpoint any problems that may arise when using a JANDS HOG console.

JANDS HOG FAULT FINDING GUIDE		
Symptom	**Possible Cause**	**Remedy**
Console won't run	Show memory corrupt Program memory corrupt Mains fuse blown	Clean start Reload program Replace fuse in power inlet
Front panel config error on start up	Flat cable disconnected Faulty flatcable Circuit board not working	Check that all flat cable connectors are locked closed Replace flatcable Replace card
Console crash with mesage "Sorry I've Croaked" etc	Software Bug Insufficient memory	Write down message Reboot console, load show disk Send message and actions that caused crash to Jands Install more memory or delete some unnecessary data
Console drops it's memory	Flat battery Power fail circuit out of adjustment	Replace battery Re-trim T1 as per section 3.1.3
Console always shows error	Software bug	Write down message and forward to Jands, then try clean start or program reload
Console won't write or read diskette	Disk not DOS format Diskette damaged Poor quality diskette Diskette drive damaged	Format on a PC compatible computer (DOS 3.0 and above) Replace diskette Use quality diskette Replace diskette drive
Fixture not available for patching	Fixture library in console not up to date or corrupt	Load new library from library diskette.
No DMX output	Incorrect patch Incorrect receiver address Faulty DMX cable No line termination Blown DMX driver	Check patch Check receiver Repair / replace cable Terminate DMX line Replace driver Patch to other DMX output
Desk Lamp off	Short circuit lamp Blown fuse Level turned down Blown bulb	Remove short circuit Replace fuse Adjust level Replace bulb
Radio Interference	Unearthed power cable Poor quality cables	Use earthed cable/outlet Use quality shielded cables
No intensity control from console DMX	Grand Master down Blind button active	Adjust Grand Master Press blind button
VGA monitor not working	Monitor not turned on Monitor not plugged into console External monitor not enabled Screen output not selected	Check power connection Press power switch Check VGA connection to console Select External Monitor in panel menu Select output in setup menu

6.0 Disassembly

Should it become necessary to repair or replace a PCB, the following procedures should be used. The numbers below refer to the sequence of operations.

6.1 PCB removal

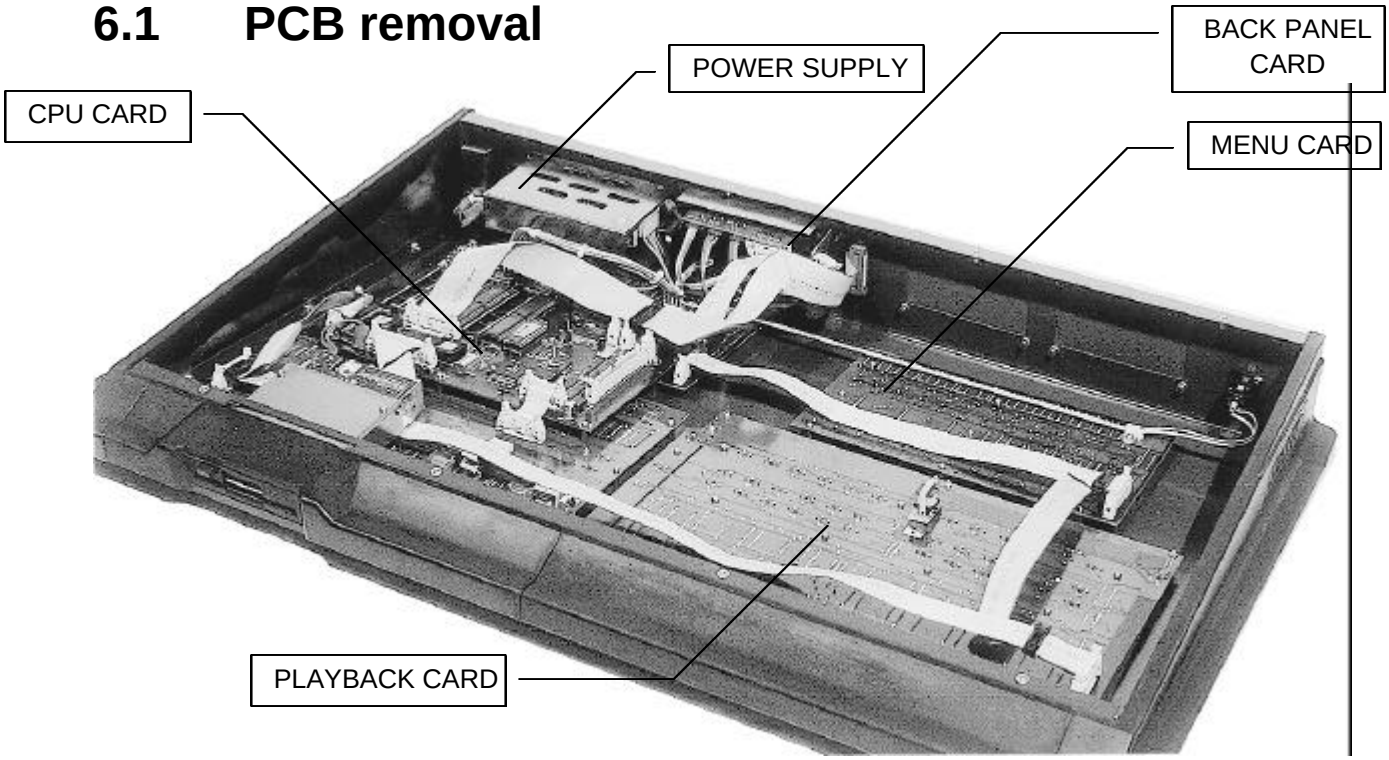


Figure 6.1 Internal layout of JANDS HOG 250

1. Disconnect power to the desk.
2. Remove base panel.
3. Disconnect any flat cables and looms to the PCB in question.
4. Remove PCB mounting screws.

Re-assembly involves carrying out the above operations in reverse order with attention to the following:

NOTE
When substituting front panel PCBs, check the jumper position of the card removed, and ensure the replacement PCB has the same setting when it is installed. Failure to do so may result in damage to the console.

7.0 Maintenance & Test Procedures

7.1 Maintenance

If a console should start to misbehave or operate erratically, the problems encountered can usually be attributed to one of two causes:

- normal wear and tear, eg. switches failing and becoming intermittent.
- physical abuse, eg. transit damage, spilt drinks, shorted cables.

Parts most likely to wear out in time with normal use include the following:

- switches
- faders
- LCD backlights
- digital encoders

These are generally easy to spot and there is little that can prevent these from occurring, however careful use will maximise their life. Note that the encoders are mechanical devices and can be expected to suffer badly at the hands of aggressive operators.

Almost all parts of the console can be damaged by physical abuse, however there are a number of things that can be done to prevent this kind of damage:

- Cover the console when not in use, eg. before, after and between sets.
- ALWAYS insert a diskette into the floppy disk drive when the console is to be transported. This prevents damage to the drive mechanism.
- Do not use spare audio lines for DMX cables because the damage that can be caused to the console when this gets mis-wired is extensive and often unrepairable at the venue.
- Do not smoke over the console.
- Do not obstruct the rear ventilation holes.
- Use an opto-isolator between the DMX outputs and the DMX receivers if the console power and the receiver's power are not from the same source.
- When cleaning, do not use solvents and never allow the entry of liquids into the console. Use only a damp soft cloth for cleaning.

If these steps are followed the console can be expected to have a long life and maintain its resale value.

7.2 DIP Switch Settings

The DIP switch settings are divided into two groups by SW1. When this switch is ON the CPU runs the low level self tests described in section 7.3. When SW1 is OFF the normal console software is run. In the latter case the DIP switches have the following functions:

1	ON
2	Development mode (enables special menu options and SW3)
3	Forces Boot menu when SW2 is ON.
4	Not used
5	Not used
6	FLASH bank 2 enable
7	FLASH 0 wait states
8	Software auto load from diskette

For normal console operation, all DIP switches should be OFF.

7.3 Selftest Routines

The selftest routines are contained in the Boot ROM. Note that use of these routines can corrupt the system memory containing both show information and console program, so before running ensure the show data in the console has been saved (if necessary) and a program disk is available.

Equipment Required:

To run all tests the following equipment is required:

1 x back panel PCB, including 2 x DMX output connectors and flat cable
1 x MIDI cable
2 x DMX receiver boxes
1 x VGA PCB and flatcable
1 x VGA monitor
1 x graphics LCD module and flat cable
1 x power supply and harnesses
1 x desk lamp
1 x Video/MCard option panel and flat cable
1 x Mcard
1 x DIN link cable (for testing keyboard interface)

The tests are run by selecting the appropriate DIP switch setting and resetting the CPU by momentarily shorting J8.

There are two types of test - those in which the results are checked by the CPU and display a good/bad indication on the Green or Red CPU LEDs (“functional” tests), and those where the CPU outputs some kind of pattern that can be recognised by an operator and a decision made by him/her as to whether the test has passed or failed (“display” tests).

For the display tests, the green LED is flashed each time the test is executed. Except where noted all tests repeat continuously.

DIP switches are numbered 1 2 3 4 5 6 7 8.

7.3.0 Test Software Version

DIP switch settings: 10000000

The self-test software version is displayed on the red LED - the number of times the red LED flashes indicates the self-test software version. The current version (2) gives two flashes. Note that if this setting is used with software version 1 the “all tests” function is run.

7.3.1 RAM Test

DIP switch settings: 10000001

Note this test corrupts the memory of the console.

The system RAM is checked by writing a value into each address that is a function of its address value, and then reading them back and comparing them with the data byte originally written. The test is then repeated for the inverse.

This test automatically detects the presence of 512Kx8 SRAM ICs, and bypasses unconfigured RAM banks. The RED LED flashes briefly when the CPU switches from one bank to another.

Note that because the test bypasses unconfigured banks, if there is a failure in a memory bank causing it to fail the test, it will be skipped as if it doesn’t exist. Hence the number of red LED flashes should equal the number of configured banks.

Note that a “Deep Clr & Reset” must be performed after this test has been run to ensure correct operation of the main program.

7.3.2 FLASH Test

DIP switch settings: 10000010

Note this test corrupts the program of the console.

The system FLASH is checked by writing a value into each address that is a function of its address value, and then reading them back in and comparing them with the data byte originally written. The test is then repeated for the inverse.

The algorithm is essentially the same as for the SRAM test however timing etc. has been modified with the FLASH control algorithms.

This test only executes once to prevent damage to the FLASH devices from over-programming.

7.3.3 Expansion Bus Test

DIP switch settings: 10000011

Note this test corrupts the data of the MCard. With power off, plug the Video/MCard option panel into the expansion bus, and insert the MCard into the socket.

The expansion bus is checked by performing RAM tests on the MCard and Video RAM using the same algorithm used in the SRAM test. This exercises the address, data, and control buses over much of their range. The red LED flashes when the test moves from testing the video RAM to the MCard RAM.

7.3.4 MIDI Test

DIP switch settings: 10000100

Using the MIDI cable, plug the MIDI Out into the MIDI In.

Serial data is transmitted out of the MIDI "Out" connector and received through the MIDI "In" connector. Data is checked and verified for all 256 values, and as a further check parity is enabled and checked even though MIDI does not normally use the parity check feature. Note that the MIDI "Thru" connector is not checked by this test, however data is output from that connector as a normal reflection of the MIDI "In" data and this can be verified with a CRO.

7.3.5 DMX Test

DIP switch settings: 10000101

A predefined pattern is output from DMX Out 1 for checking with a DMX load box, while a second predefined pattern is output from DMX Out 2. The patterns are as follows:

DMX Channel	DMX #1 Output	DMX #2 Output
1	1	$FF
2	2	$FE
3 to 255	3 to $FE	$FD to 1
256	$FF	0
257	0	$FF
258 to 511	1 to $FE	$FE to 1
512	$FF	0

7.3.6 LCD Test

DIP switch settings: 10000110

With power off, plug the Graphics LCD module into the LCD bus connector. When power is applied a pattern of ASCII characters is displayed on the Graphics screen as follows:

```
                                        !"#$%&'()*+
    CDEFGHIJKLMNOPQRSTUVWXYZ[¥]^_'abcdefghijklm
                                    xxxx.xxxxxxxxx
  xxxxxxxxxxxxxxxxxxxxxxxxxxxxαäβδμσρq√¹.jx¢£ñöpc
                                    !"#$%&'()*+,-./0123
    KLMNOPQRSTUVWXYZ[¥]^_'abcdefghijklmnopqrstu
```

The character "x" in the display drawing above represents characters that cannot be drawn using this word processor. Most of these undrawable characters are Japanese. Note that the contrast control for the display is set by the I/O processor and is not initialised.

This test runs continuously and the green LED flashes each time the test completes.

7.3.7 VGA Output Test

DIP switch settings: 10000111

Plug the VGA monitor into the console VGA output. The VGA controller is initialised, memory tests are performed on the video RAM, and horizontal test bars are drawn on the screen. The bars are displayed as follows:

Bar Number	Colour	Pattern
1	blue	1 pixel stripes
2	dark green	2 pixel stripes
3	dark red	4 pixel stripes
4	black	solid
5	white	solid
6	bright red	solid
7	black	solid
8	grey	4 pixel stripes
9	white	2 pixel stripes
10	blue	1 pixel stripes

This test executes once only. The red LED flashes each time the RAM plane is changed, ie. 4 times.

7.3.8 Desk Lamp Test

DIP switch settings: 10001000

Plug the desk lamp into the socket. The desk lamp is cycled from 0 to full over about 2 seconds.

7.3.9 Keyboard Test

DIP switch settings: 10001001

Data is clocked out of IC13 on the VDU/MCard (74HC74) and fed back into the keyboard input. A keyboard is simulated by these pulses and the input circuit checked. Connect pin 5 of IC13 to Keyboard DIN pin 1, and pin 9 of IC13 to Keyboard pin 2.

7.3.10 VGA Memory Test

DIP switch settings: 10001010

The VGA memory is tested continuously.

7.3.11 Development Test #1

DIP switch settings: 10001011

The red LED is flashed on for approximately 13 µsec.

7.3.12 Development Test #2

DIP switch settings: 10001100

The red LED is flashed on for approximately 20 µsec.

7.3.13 Development Test #3

DIP switch settings: 10001101

The red LED is flashed on for approximately 23 µsec.

7.3.14 Development Test #4

DIP switch settings: 10001110

The red LED is flashed on for approximately 10 msec.

7.3.9 All Tests

DIP switch settings: 10111111

With power off, plug all pieces of equipment listed on page 7-2 into the CPU card under test, and select all DIP switches (except #7) to ON. The CPU will run all tests through once. The tests are run in the following order:

1. VGA
2. RAM
3. LCD

4. FLASH
5. DMX
6. Expansion bus
7. Desk Lamp
8. MIDI
9. Keyboard

At the completion of these tests:

- the VGA display should be initialised and showing test bars;
- a DMX frame should have been output from each DMX output and be held by the receivers;
- there should be data on the LCD;
- the desk lamp should be at full after ramping up.

If all of the non-displaying tests have passed, the green LED will be lit.

If the red LED is on at the completion of the tests, the initialised displays can be used to determine which test has failed, eg. if the VGA and graphics display are initialised and all others are not, then the FLASH test failed.

This test takes approximately 5 minutes to execute.

Parts not Tested

The following areas of the CPU card are not checked by these tests:

- MIDI “Thru”
- Power fail circuitry generating NMI
- Floppy Disk Drive
- Printer port
- I/O processor
- Flash bank #2 (IC3 and IC4)
- DMX input
- Expansion bus interrupts

In addition, it is possible for the DMX outputs to be faulty in so far as one phase output (eg. TX+) may be faulty, but the receivers may still receive it correctly. This is an attribute of RS485 systems and is a indication of their fault tolerance.

7.4 JANDS HOG Boot ROM operation

The Boot ROM is used by the system to start and configure the console. In addition, it is possible to perform some higher level console tests and load new software into the FLASH. Note that the actual menu displayed will vary depending on the Boot software version installed in the CPU card. It is not possible to update the Boot software by loading from a floppy disk - the EPROM must be changed.

7.4.1 Accessing the Boot menu

The JANDS HOG Boot menu is accessed by holding down the enter key while turning the power on. The console should start normally, but stop with the message:

"User override. Press a key for the main menu"

Note that there is other information about the console configuration displayed on the main LCD, including system memory capacity and cards found present. If one of the PCBs in the console doesn't respond an "Equipment configuration error" is displayed.

Release the enter key, and press the enter key again to get the Boot menu. If your console does not display the Boot menu it has a CPU hardware problem.

7.4.2 Boot Menu Options

A number of options are available at the Boot menu. With version 1.03 onward the Boot menu is as shown below:

```
JandsHog Boot v1.03 [ ]
================================
1) Software Reload  2) Clean Start
3) Old Show         4) Displays...
5) Test...
0) Continue...
```

Options with "..." indicate a second level menu. Pressing a number button in the keypad activates the function / menu. The "[ ]" on the top line is where error messages are displayed, and should be checked for results after program reloads and tests.

7.4.2.1 Software Reload

Pressing "1" on the keypad at the Boot menu initiates the software reload sequence from diskette. Ensure you have a JANDS HOG software diskette in the drive before following the instructions on the LCD. Note that it is not recommended that software be reloaded in a critical time eg. just before the start of a show - if the software reload were to fail the console could become unusable.

7.4.2.2 Clean Start

Use this option to clear the show memory from the console, when a new show is to be programmed from scratch. Note that use of this option clears the fixture libraries, and a diskette with these libraries must be available to use the console.

7.4.2.3 Old Show

Using the Old Show option explicitly re-enters the currently loaded show where possible. Note that if the old show is corrupt, this option is replaced with the following message:

```
[old show bad]
```

In this case running the option is not possible.

7.4.2.4 Displays

Individually adjust the LCD contrast and brightness using the wheels and scroll buttons to the left of the display.

7.4.2.5 Test

A number of high level self tests are available to the user through a second menu. Refer to section 7.5.

7.4.2.6 Continue

The normal Boot sequence continues as if the Boot had not been interrupted.

7.5 Test Routines

These high level tests are accessed by pressing “5” at the Test menu. The Test menu with Boot version 1.03 and above is shown below:

```
JNT Test Menu       [ ]
================================
1) Test VGA         2) Test DMX
3) Test Printer     4) Checksums...
5) Console Config   6) Memory Dump...
7) Deep Clr & Reset 8) RAM Exercise
0) Exit
```

7.5.1 Test VGA

A test on the video memory is performed and test bars are drawn on the screen.

7.5.2 Test DMX

The DMX outputs transmit data packets of 512 bytes starting with DMX channel 1 at 1 to channel 16 at 16 ($F) and repeating up to 512. The predefined pattern is shown in table 7.1 below. Note that due to a bug in V1.03 only 510 channels are transmitted.

DMX Channel	DMX #1 Output	#2 Output
1	1	1
2	2	2
3 to 16	3 to 16	3 to 16
17 to 32	1 to 16	1 to 16
etc	etc	etc

Table 7.1 DMX output patterns from Test DMX option.

7.5.3 Test Printer

The printer test selects the printer and checks that it comes online without an error. It sets the 'AUTOFD' line inactive and prints 4 lines which should overwrite each other to show 'Non-auto feed mode Ok.'. It then needs the operator to wait until the printer stops before hitting enter to continue. It then sets the AUTOFD line active and prints another 4 lines, each which should linefeed:

"Auto"

"Feed"

"Mode"

"Ok"

(The wait is required because changing the AUTOFD line affects what is still in the print buffer).

It then prints some standard printer-test characters (all alphanumerics).

7.5.4 Checksums

Checksums of the Boot ROM and FLASH (program) memory are displayed. The correct value for Boot ROM V1.04 is $9F6742F2 and for the FLASH V1.0 is $249D9505.

7.5.5 Console Config

The current configuration as seen by the CPU is displayed. Use this to confirm the configuration is correct when changing settings, loading RAM etc.

7.5.6 Memory Dump

The system memory is displayed on the LCD.

7.5.7 Deep Clr & Reset

The system memory is completely cleared, resetting all variables including LCD contrast and brightness settings. This option should be run after a memory test or RAM exercise has been performed.

7.5.8 RAM Exercise

The system memory is tested continuously. A “Current Status” display shows if the current test has passed or failed. An “Overall status” displays the result if a fail ever occurs while the operator is not watching. Power down the console to exit this test.

Note that a “Deep Clr & Reset” must be performed after this test has been run to ensure correct operation of the main program.

8.0 Technical Data and Specifications

JANDS HOG 250/600 SPECIFICATIONS				
Mains Supply:	90-265VAC, 47-63Hz, 60 watts max.			
Temperature:	40°C maximum ambient			
Outputs:	DMX Out 1 & 2, MIDI Thru, MIDI Out, Two Desk Lamps, Printer, VGA			
Inputs:	DMX In, Keyboard (AT type), MIDI In			
Control channels:	250 / 600			
Memory capacity:	768 Kbytes (250) / 1536 Kbytes (600)			
VDU Output:	Equivalent to VGA Mode 12			
	Vertical frequency: 60Hz			
	Horizontal frequency: 31250 Hz			
Printer Port:	IBM compatible, parallel only			
Disk Drive:	IBM format DOS 3.0 and above, 1.44MB high density			
Desk Lamps:	12 volt 5 watt x 2, maximum output 1 amp total			
Construction:	All steel chassis with aluminium base and lexan control surface			
Dimensions: 250	L: 855mm	W: 530mmm	H: 110mm	
600	L: 1219mm	W: 530mm	H: 110mm	
Weight: 250	20 kg nett / 23 kg shipping			
600	25 kg nett / 28 kg shipping			

Glossary of Terms

Glossary of abbreviations and terms used in this Technical Manual:

ABBREVIATION	TERM	EXPLANATION
ADC	Analogue to Digital Converter	A device for converting real world (analog) signals into digital information a micro-processor can manipulate
BOOT	BOOT	System startup
CE	Chip enable	A select pin provided on a device to enable it to be used in conjunction with a CS line
CPU	Central Processing Unit	The heart of a microprocessor or computer
CS	Chip Select	A connection that goes true under certain circumstances to select a particular device
DIP	Dual In-line Package	A device package format with 2 parallel rows of pins
EPROM	Erasable Programmable Read Only Memory	A type of memory that is not intended to be re-programmed in circuit
FLASH	Flash RAM	A type of memory very much like EPROM but which is designed to be re-programmed in-system enabling program updates
GAL	Generic Array Logic	A logic device that can be programmed to perform many logic functions
$	Hexadecimal number	The number $A is $10_{(decimal)}$ and $F is $16_{(decimal)}$
IRQ	Interrupt Request	A line that goes true when a device has information ready to be accessed by the CPU
Jumper	Shunt, Link	A jumper is used to configure a system by shorting a pair of pins together
LED	Light Emitting Diode	A diode that is optimised to radiate light
LCD	Liquid Crystal Display	A type of display that uses a liquid to prevent the transmission of light
NMI	Non-Maskable Interrupt	An IRQ that cannot be ignored
PWM	Pulse Width Modulation	A cyclic technique of digital power control where a load is switched fully on for a period of time dependant upon the required output power
RAM	Random Access Memory	Memory in which the data contained within can be accessed in any order. The term RAM generally refers to memory that can be read and written to by the system
ROM	Read Only Memory	Memory that cannot be changed by the system

SCI	Serial Communications Interface	The asynchronous serial communications port provided on the 68332 CPU
SIM	System Integration Module	A part of the 68332 that simplifies the connection of the 68332 to a system by providing commonly used facilities
SMD	Surface Mount Device	A miniaturized leadless component mounted on the upper or lower surface of a circuit board
SPI	Serial Peripheral Interface	The synchronous serial communications port provided on the 68332
SRAM	Static RAM	RAM that can be used to hold data with battery backup
TPU	Time Processing Unit	A part of the 68332 that allows complicated timing functions to be executed without any intervention from the CPU

Appendix A History of Modifications

JANDS HOG 250

Serial Number	Modification
G95231	Boot ROM Version 1.01 Program Version 0.052
H95501	Program Version 0.054A
H95513	RAM increased to 768K Program Version 1.0
I95101	Boot ROM Version 1.03
J95531	Boot ROM Version 1.04
J95546	Program Card V4.10
K95241	Boot ROM Version 1.06 Program Version 1.14 Playback Card V2.9
E96131	Boot ROM 1.08 Program Version 1.18 Program Card V4.11 CPU Card V5.8 Back Panel Card V7.6
F96501	Program Version 1.18a
A97360	Program Version 1.19c

JANDS HOG 600

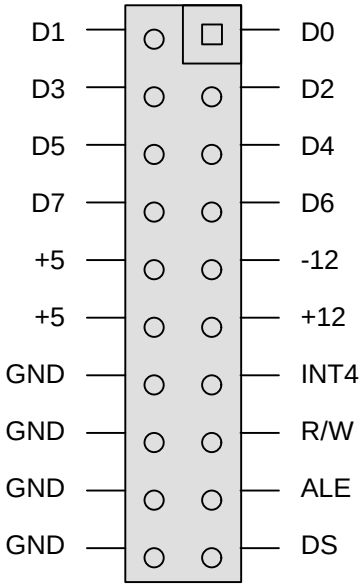
Serial Number	Modification
G95251	Boot ROM Version 1.03 Program Version 1.0 RAM increased to 1.5M
I95121	Boot ROM Version 1.04
J95551	Program Card V4.10 Playback Card V2.9
L95551	Boot ROM Version 1.06 Program Version 1.14
E96151	Boot ROM Version 1.08 Program Version 1.18 Program Card V4.11 CPU Card V5.8 Back Panel Card V7.6
E96167	Program Version 1.18a
A97355	Program Version 1.19c

Appendix B Connector Pinouts

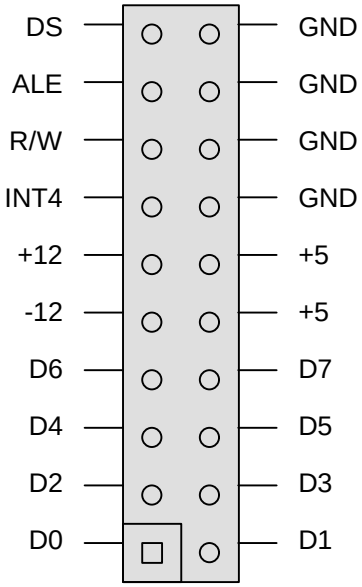
FRONT PANEL CARDS (MENU, PLAYBACK, PROGRAM)

MAIN BUS CONNECTOR (VIEWED FROM COMPONENT SIDE)

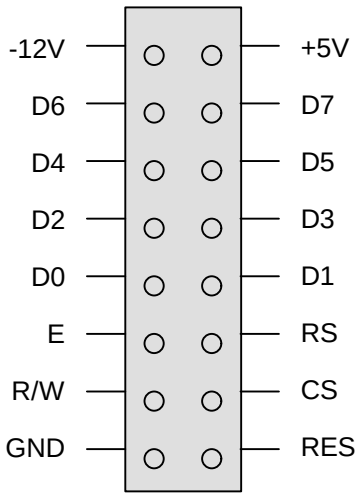
(MENU CARD)



(PLAYBACK, PROGRAM CARDS)



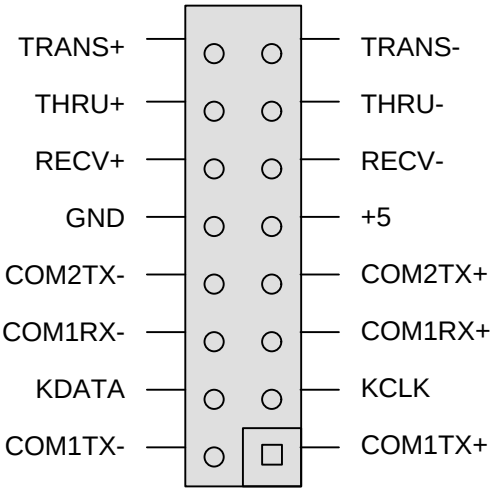
LCD BUS CONNECTOR (PROGRAM CARD)



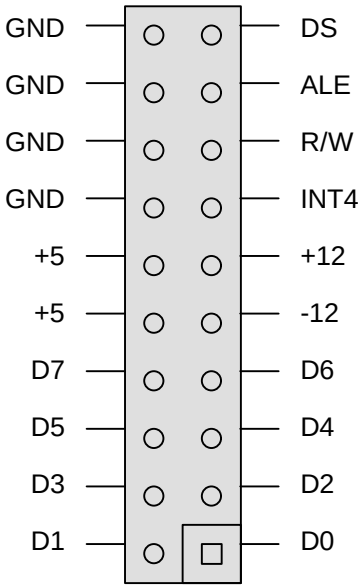
(VIEWED FROM SOLDER SIDE)

CPU CARD (ALL CONNECTORS VIEWED FROM COMPONENT SIDE)

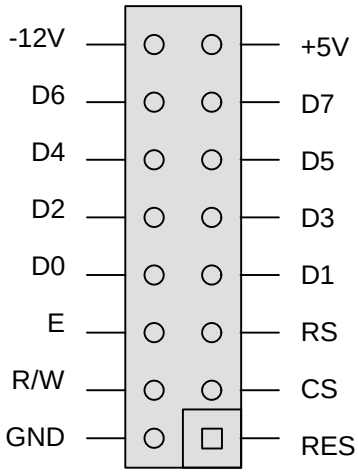
SERIAL CONNECTOR (CN4)



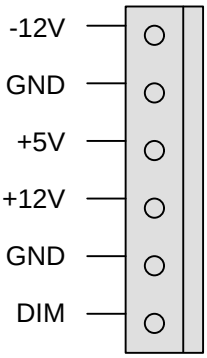
MAIN BUS CONNECTOR (CN5, CN6)



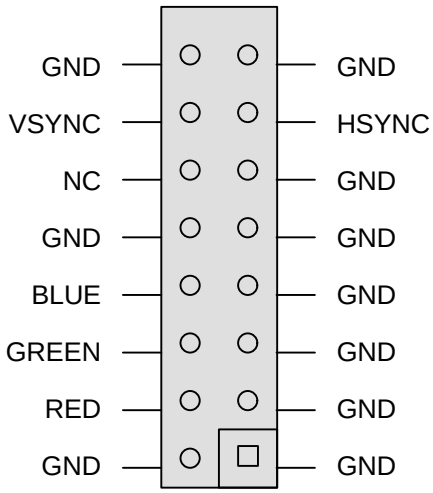
LCD BUS CONNECTOR (CN14)



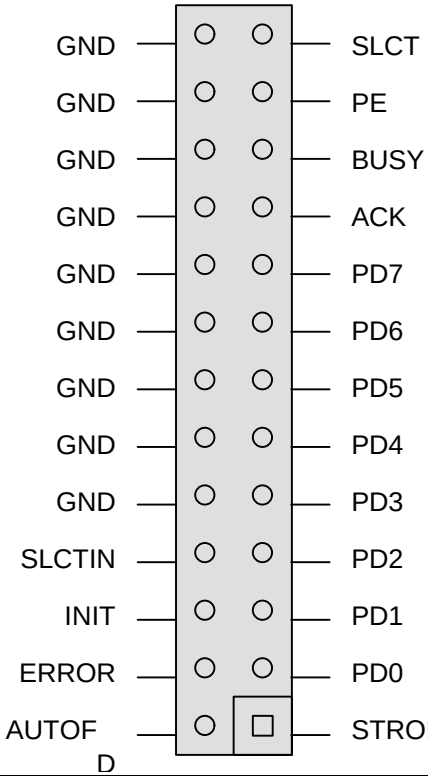
POWER CONNECTOR (CN11)



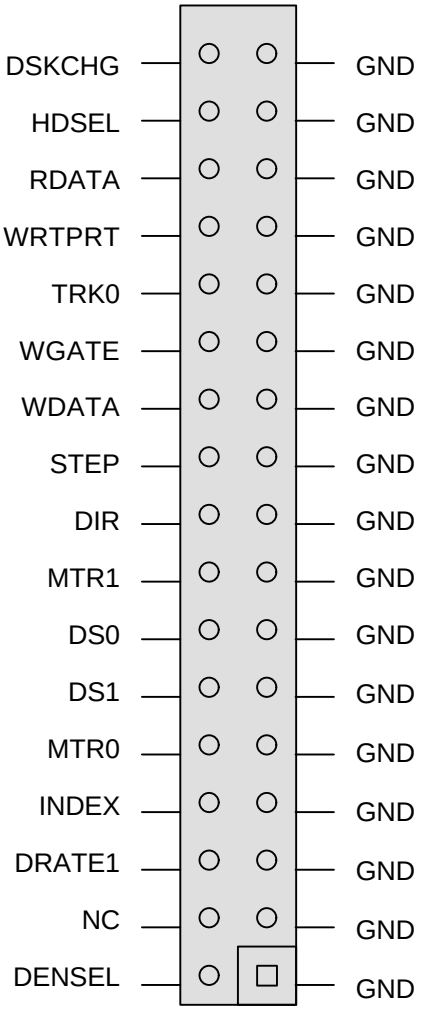
VIDEO CONNECTOR (CN8)



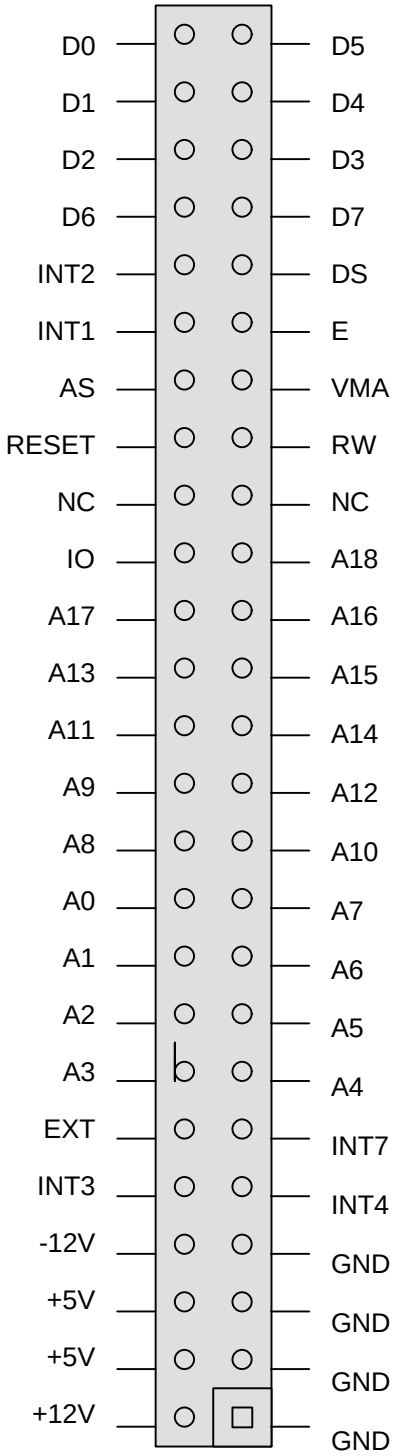
PRINTER CONNECTOR (CN12)



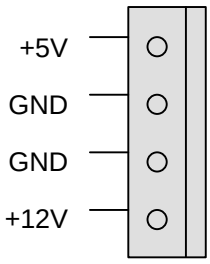
FDD CONNECTOR (CN7)



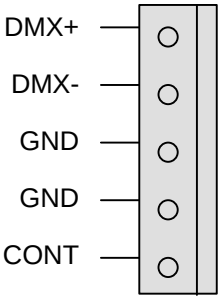
EXPANSION BUS CONNECTOR (CN1)

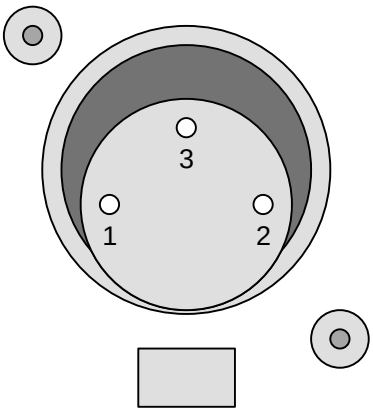


FDD POWER CONNECTOR (CN2)



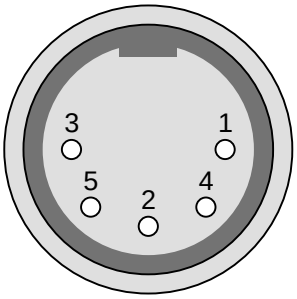
DMX CONNECTOR (CN9)





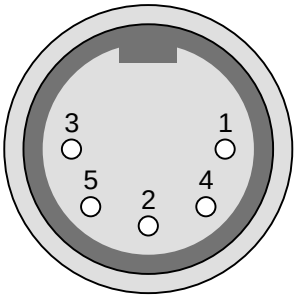
DESK LAMP CONNECTOR

DESK LAMP CONNECTIONS	
PIN No.	**FUNCTION**
1	NC
2	GND
3	V+



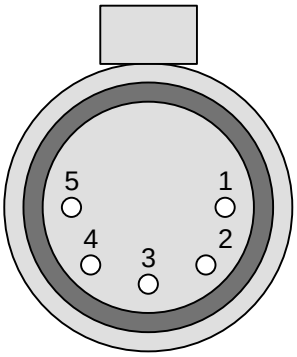
MIDI CONNECTOR

MIDI CONNECTIONS			
PIN No.	**FUNCTION**		
	IN	**OUT**	**THRU**
1	NC	NC	NC
2	NC	SHIELD	SHIELD
3	NC	NC	NC
4	IN+	OUT+	OUT+
5	IN-	OUT-	OUT-



KEYBOARD CONNECTOR

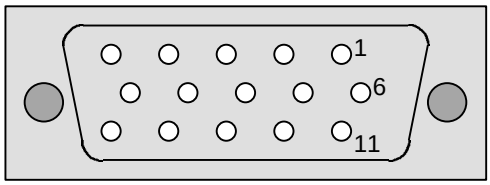
KEYBOARD CONNECTIONS	
PIN No.	**FUNCTION**
1	KCLK
2	KDATA
3	NC
4	GND
5	+5V



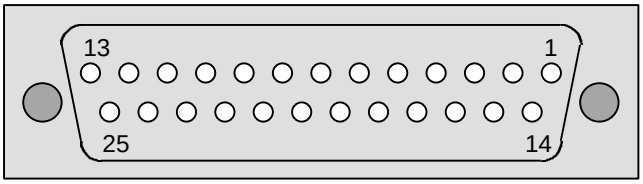
DMX CONNECTOR

DMX CONNECTIONS	
PIN No.	**FUNCTION**
1	SHIELD
2	SIGNAL-
3	SIGNAL+
4	NC
5	NC

VGA CONNECTIONS	
PIN No.	**FUNCTION**
1	RED
2	GREEN
3	BLUE
4	NC
5	NC
6	RED RETURN
7	GREEN RETURN
8	BLUE RETURN
9	NC
10	GND
11	NC
12	NC
13	HSYNC
14	VSYNC
15	NC



VGA CONNECTOR



PRINTER CONNECTOR

PRINTER CONNECTIONS			
PIN No.	**FUNCTION**	**PIN No.**	**FUNCTION**
1	STROBE	13	SELECT
2	D0	14	AUTOFEED
3	D1	15	ERROR
4	D2	16	INIT
5	D3	17	SELECT IN
6	D4	18	GND
7	D5	19	GND
8	D6	20	GND
9	D7	21	GND
10	ACK	22	GND
11	BUSY	23	GND
12	PAPER	24	GND
	END	25	GND

Appendix C Spare Parts

The following spare parts for JANDS HOG consoles are available from the JANDS Service Department:

ITEM	PART No.
Switching power supply NAN40-7608	ZSX020
Fuse M205 2 amp fast blow (mains)	ZEF215
Fuse M205 1 amp (desk lamp)	ZEF210
3.5” Disk drive	ZZA144
Desklamp socket AXR-3-31PB	ZPG038
DMX in socket AXR-5-22RB	ZPG220
DMX out socket AXR-5-21PB	ZPG210
25 pin female D-connector w/loom	ZPG445
Fader 10K 60mm (Alps)	ZRS010
Fader knob black/white line	ZZK035
Encoder EC16B40 (Alps)	ZRP040
Encoder knob	ZZK121
Switch (Schadow) SERU	ZSW045
Switchcap SRKL (Schadow)	ZSC005
Switch (Cherry) MX1A-A1NW	ZSW150
Switchcap (Cherry) no LED window	ZSC050
Switchcap (Cherry) with LED window	ZSC055
Green LED 3mm	ZDL110
Red LED 3mm	ZDL105
Red 7-segment LED display	ZDL310
LCD inverter NEL-D32-49	ZLC010
Lithium Battery 6126 CR (CPU)	ZDC010
IC 75176 / 3695 (DMX driver)	ZIC101

ITEM	PART No.
IC H11L1	ZIC015
IC 74HC04	ZIC515
Menu card complete	YPC300
Playback card complete	YPC301
Program card complete	YPC302
CPU card complete	YPC303
Back panel card complete	YPC304

Appendix D Technical Bulletins

TNJLT001.doc

JANDSHOG V1.14 SOFTWARE RELEASE

This technote relates to products with the following serial numbers: J95566, J95569, J95570, K95241-3, K95245, K95253-4, K95293-5, K95267-8, K95270-7, K95302, K95304-6, K95308-9, L95531-70, B96654-5, C96205-6, C96208-10, E96000 onwards

As of x/x/96, Jands has released Jandshog V1.14 software. This supersedes all previous releases and supports the following features and functions:

- Memory usage has been optimised
- VGA and diskette routines are faster.
- New patch and Cuelist VDU screens.
- Palette contents now shown on the VDU screen.
- Try Cue feature now operational
- Palettes can now be deleted.
- There is now no limitation on cue parts, with each part having its own fade time.
- Learn fade times. The console can replicate a fade time demonstrated to it by the operator previously.
- Loop cues now called link cues and mark cues now available.
- External keyboard now supported.
- Unformatted diskettes may be formatted for console use
- Diskette verify function
- Large cuelist files automatically split across diskettes
- MIDI Timecode implemented

Consoles manufactured with serial number E96000 and above include this software as standard.

Contact the Jands Electronics Service Department for further information.

TNJLT002.doc

OVERVIEW OF CONCEPTS AND OPERATION OF JANDS HOG

Abstract: The Jands Hog is used for moving and conventional lighting control. It treats fixtures as a collection of parameters and has three distinct areas of operation. The programmer is used for creating cues, the menu banks are used for storing preset parameter information, the playback area is used for running stored cues. The console uses HTP for intensity control and LTP for focus, colour and beam control. The console can be controlled by external sources.

Setup: The Jands Hog is used for the control of moving and conventional lighting. It makes no distinction between the two, a conventional lamp (ie non moving) is a fixture with one parameter, a moving light is a fixture with more than one parameter. When a fixture is patched the user need only provide the first DMX channel number of the fixture and the console will patch the remaining parameters correctly. After the patch is done the user does not have to refer to DMX channels again. The only limit to the

number of fixtures that are available is the amount of output channels that the console supports, ie. 250 for Jands Hog 250 and 600 for Jands Hog 600.

Programmer: The programmer is used for creating cues and is akin to the presets on a conventional lighting console. The user uses this area to select fixtures and give values to parameters within those fixtures. This is done using parameter wheels rather than faders or values previously stored in menu banks (see below). While creating a cue the user can assign fade, delay and path values to each parameter of a fixture, a complete fixture, a group of fixtures or a complete cue as a whole. The cue can be previewed with these values before it is recorded. The programmer also provides keys to manipulate which fixtures are selected or to remove parameter values or whole fixtures as needed. The programmer is also used for editing previously created cues,. This is achieved in one of two ways. Loading the whole cue into the programmer and changing the required values or making the changes to the required fixtures then merging them in to the cue to be edited..

Menu Banks: The menu banks are used for storing preset information that can be recalled when creating or editing cues. Any cues created using this preset information will automatically update if the preset information is edited. In the Jands Hog 600 there is also an area for selecting playback pages and macro's. The buttons within the Group, Position, Colour and Beam banks are referred to as palettes buttons. When recording to palette buttons the console will automatically mask out the unwanted parameters depending on the bank being accessed. The Group bank is used to store selections of fixtures so that they can be placed in the programmer by pressing one button.

The Position bank is used to store preset focus information for fixtures so that commonly used positions can be accessed by pressing one button. The Colour bank is used to store preset colour information for fixtures so that commonly used colours can be accessed by pressing one button. The Beam bank is used to store preset Beam information for fixtures so that commonly used beams can be accessed by pressing one button. The Page bank allows instant selection of playback pages. Macro's are as yet undefined. Menu Banks are edited in the same way as cues.

Playback: The Playback area is used for running cuelists that are stored in a fader. A cuelist contains one or more recorded cues and the user can set attributes as to how the cuelist reacts to certain situations. By default a cuelist is initiated by pressing the Go button This will execute the LTP part of the cue, the HTP part is under control of the fader. A cuelist can become a chase by selecting it to be a chase. A cuelist can be set up so that the Go button can be pressed by moving the fader or pressing the Flash button. The cues within a cuelist do not have to run sequentially, they can be set to run at different times after the Go button is pressed. Depending on the interaction between cuelists up to 24 cuelists can be run consecutively (Jands Hog 600).

A cuelists hold over the console output is stopped by overriding all the parameters with another cue, releasing the cue or changing pages. The number of cues, cuelists and pages is constrained only by the memory available in the console.

Precedence and console output: HTP (highest takes precedence), is used to control the intensity of most fixtures. All HTP parameters are under control of the Fader in a cuelist. LTP (Last or Latest takes precedence) is used to control position, colour and beam. By default both HTP and LTP components of a cuelist are inactive until the Go button is pressed, at this time the LTP cue/cues run and the fader has control of the HTP parameter. If the user wants access to the HTP part of a cue without having to press Go this can be set in the cuelist options. When recording cues the console will only save (unless told otherwise) the parameters that have been changed in the programmer. This means that the output of a cuelist is the accumulation of all cues in the cuelist up to the current one, the console tracks the last value of each parameter. It also means that if a parameter is not controlled by a cuelist it may be under control of a previous (last) cue. This allows the operator to mix and match different LTP cuelists. If

the user doesn't want this to happen he may force the console to record every value of every parameter of every fixture, this will create a blocking cue that will override all other cues. If a cuelist is active and the programmer is used to edit a fixture the values in the programmer will override the cuelist until the programmer is cleared or the parameter values are removed from the programmer.

The Jands Hog has provisions to be controlled by Midi timecode, Midi Show Control and DMX in and will also generate Midi Show Control and Notes.

Timecode control is activated by typing in a timecode value next to the cue that is to be activated. Midi Show Control provides a standard means of controlling other devices including another Jands Hog. DMX in can be used to pass DMX values into the programmer from an external device or trigger events on the console.

TNJLT003.doc

JANDSHOG FIXTURE LIBRARY VERSION 1.14

The JandsHog fixture library version 1.14 now contains the following fixtures:

In the default library supplied on the library disk.	**In the the uncommon directory of library disk**
Desk Channels	Auto Pilot Control
Scroller	Auto Pilot Offset
Scroller with Dimmer	Controlite PML
CMY Fader	Colour Fader
CMY Fader with Dimmer	DHA Light Curtain
VL5	DHA Network
VL6	DHA P Light Curtain
VL Mirror	Emulator
Goldenscan HPE	G300 Smoke
Goldenscan 3x	Intellabeam Lo
Goldenscan 3	Infinity
Goldenscan 2	Litho Cyberlight M1
Superzoom X	Litho Cyberlight M2
Superzoom	MN 400 Spot
Superscan 2	MN 400 Wash
Superscan	MN 600 Spot
Miniscan	MN 600 Wash
Cyberlight	Prince
Cyberlight mode 2	Coloram PSU
Cyberlight CX	Rim 1200
Studio Colour	Sky art
Intellabeam	Solar System
Trackspot	Starlite MK 2G
Dataflash	Xenotech
Robocolor 1220 xr	Yoke XL

Roboscan 218

Roboscan 518

Roboscan 812 5c

Robocolor pro 4

Pal 1200

Nat 1200

Nat 2500

Summahti

TNJLT004

JANDSHOG CE COMPLIANT CONSOLES

As of May 1996, Jands has released CE compliant Jandshog consoles. As well as complying with the European Community's recently introduced CE regulations, the new consoles also contain a number of new features:

- Memory expanded from 768 to 1024KBytes for the 250 consoles, and from 1536 to 1792 KBytes for the 600 consoles.
- Revised layout
- New fixture library (1.4, refer tech note TNJLT003)
- New main software (1.18A, refer tech note TNJLT006)
- New boot ROM (1.08, refer tech note TNJLT005)

The consoles are manufactured with serial numbers X96XXX and above.

TNJLT005.doc

JANDSHOG BOOT ROM VERSION 1.08 RELEASE

As of May 1996, Jands has released Jandshog software version 1.08. The new software provides a number of new features:

- Support for the revised layout
- Improved FLASH program routines
- Additional test and development routines

In general the software is used in exactly the same way that the older versions are used. However option 7 ("set layout") should be set to "02" for the new layout and "01" for the original layout. Note that this has no effect unless main software version 1.18 or later is fitted. Note also that the console layout can be toggled between versions as desired by the user at any time.

Consoles manufactured with serial numbers X96XXX and above have this software fitted as standard.

TNJLT006.doc

JANDSHOG SOFTWARE V1.18A RELEASE

As of May 1996, Jands has released software version 1.18A for the Jandshog 250 and 600 consoles. The new software provides a number of new features:

- Faster FDD loading and saving
- Improved timing control
- More efficient memory usage

- MIDI Show control and time code
- Revised VDU layouts
- Improved performance
- Keyboard support
- Support for the revised layout included in consoles manufactured from May 1996 onward.

Note that use of the new layout requires the installation of boot ROM 1.08 or later. (Refer to tech note TNJLT005 for information on this Boot ROM version)

The consoles manufactured with serial numbers X96XXX and above have been fitted with this software.

TNJLT009.doc

JANDSHOG BOOT EPROM V1.08.3 SELFTEST ROUTINES

The Jandshog selftest routines have been expanded with the release of boot EPROM version 1.08.3. Th new version contains the following additional test:

Printer Readback Test

DIP Switch settings 10001011

An adaptor is plugged into the printer port. When the test is run data is output from output port pins and read back via input pins. The green LED will light if all is correct. The adaptor circuit diagram is shown in figure 1.

Printer Output Test

DIP Switch Settings 10001100

A parallel printer is connected to the printer port. When the test is run data is output to the printer - it should start printing virtually straight away.

TNJLT014.doc

JANDSHOG SOFTWARE RELEASE V1.19C

As of 4/10/96, Jands has released Jansdhog V1.19c software for Jandshog 250s and 600s. This supersedes all previous releases and supports the following features and functions over V1.18a:

- A full implementaion of MIDI Notes. This allows complete remote control of a JandsHog by another JandsHog or Wholehog II.
- After pressing ‘Load’ all fixtures are now selected.
- A memory counter showing the total memory left and the corresponding number of full cues you can program is now shown on the panel window.
- The console now checks to see if it has enough memory before performing operations and will give an alert if memory is low.
- The syntax of Copy Merge and Choose now defaults to merging into all cues of the destination.
- Added an options text file to give control over more esoteric console options. The file is called “\setup\moreopts.txt”. Options supported are:

  version = 7 the format version of this file (don’t change this).

  midi_step_back = 1 set to 1 to enable midi output from cue comments on stepping back (default = 0).

ignore_same_page = 1 set to 1 to prevent a page reload if you change to the page that you are already on (default = 0).

- MIDI Show Control has been changed so that commands are now sent for all cues as they are executed, not just the cues that are 'halt' cues.

TNJLT015.doc

SOFTWARE VERSIONS

Please note the following listing of consoles and the version of software that was shipped with them. Jands recommends if your console is loaded with an early version of software that you contact your distributor and/or the factory for the latest revision. The latest copy of the operating software is also available from the Flying Pig website (http://flyingpig.com).

Note that the Boot ROM software would be updated if it is earlier than version 1.06 eg. 1.05 etc. The version of the Boot ROM software is displayed at the top of the main LCD if the "Enter" button is held down when the power is turned on. The version of the Operating software is displayed in the main LCD when the console is turned on in the normal manner ie. no buttons held down.

SERIAL NUMBER	Operating Software
G95231 onwards	0.052
G95251 onwards	1.00
K95241 onwards	1.14
E96131 onwards	1.18
J96000 onwards	1.19c

SERIAL NUMBER	Boot ROM SOFTWARE
G95XXX 8/95 onwards	1.01
G95251 9/95 onwards	1.03
H95XXX 10/95 onwards	1.04
K95XXX 12/95 onwards	1.06
E96XXX 5/96 onwards	1.08

TNJLT016.doc

CPU SPEED

If a Jandshog is configured to have a large number of HTP channels a noticeable degradation of operating speed may be observed. This is a normal outcome as a function of the console processing a large number of channels.

It is not recommended that a Jandshog be operated with a large number of HTP channels. The console has been designed with the use of LTP channels for non-intensity moving light parameters in mind, and hence will result in better control if this is how it is used.

For further information on using LTP channels, refer to the operating manual.

TNJLT017.doc

CONSOLE MEMORY LOSS

If a Jandshog console is experiencing a loss of memory when being powered up (eg no "Done" option in the main LCD) it is possible that the trim control on the CPU card may need to be adjusted. This trim is adjusted at the factory and should only require further adjustment under the following conditions:

- The CPU card is replaced.
- The trim is inadvertently adjusted.
- The Power supply is adjusted or replaced.

It is unlikely that this trim will require adjustment in normal service.

Please refer to the service manual for instructions on how to set this trim control appropriately.

It is also possible that if memory loss is being experienced that the back up battery may need to be replaced. Again refer to the service manual for instructions on how to replace this battery.

TNJLT018.doc

CPU CARD UPGRADE

Please find noted below the console serial number relating to a specific CPU Card model.

G95XXX onwards were fitted with CPU Cards 1265.84 / B5.4

E96XXX onwards are fitted with CPU Cards 1265.84 /B5.8 (RIMPOC8)

RIMPOC8 boards include the following changes:

- Additional filtering for EMC compliance.
- Six way power connector upgraded to eight way connector.

Note that RIMPOC8 boards are suitable as replacement for the earlier version boards. When installing a board with an eight way power connector into a console with six way power harness, plug the power harness into the right hand end of the board connector ie the left two pins of the 8 way connector will be unused.

All CPU cards supplied as spares will include a replacement 8 way power harness.

TNJLT019.doc

GROUNDING OF DESK LAMPS

Please note that Jands Hog 250 / 600 consoles with Serial Numbers E96131 and above feature a revised grounding scheme for the desk lamps to reduce susceptibility to static discharge. The revised grounding of the desk lamp bodies prevents static discharges getting into the CPU and minimises the chance of the system crash.

All previous consoles should be modified as follows:

1. Link from pin 1 to the connector chassis tag nearby.

TNJLT020.doc

RUBBER DUST SHIELDS

Jands Hog 250 / 600 consoles with Serial Numbers F95507 and onwards are fitted with faders featuring rubber dust shields. These faders give longer life.

All spare faders henceforth supplied will be fitted with integral dust shields. These faders are suitable for use in all Jandshog consoles.

TNJLT021.doc

MEMORY UPGRADE

Jandshogs with serial numbers E96XXX and above are fitted with a greater memory capacity, in order to provide more show memory. The amount of memory fitted is as follows:

- Jandshog 250 1 MByte
- Jandshog 600 1¾ MByte

If desired the additional memory can be added to earlier model consoles. For further information please contact your local distributor or the Jands Service Department.

TNJLT022.doc

POWER SUPPLY HARNESSES

G95XXX (8/95) consoles and earlier are fitted with a six pin connection harness linking the CPU to the power supply. Jands recommends that these connections be hard wired to avoid possible problems with intermittent faults with connections.

Consoles J95566 and onwards were modified to take into account this modification. Consoles E96XXX and onwards are fitted with an 8 way to 6 way wiring loom which eliminated the need for any modifications. Contact your local distributor or the Jands service department for details regarding this modification.

Jands Hogs are fitted with a switch mode power supply. The DC (+5V, +12V, -12V) output from this supply connects to the CPU card which distributes the power to the various PCBs.

Consoles prior to serial number G95XXX were fitted with a CPU which had a six (6) way DC power connector. The male connector on the CPU had round pins and even though the female header utilised "Trifurcon" 3 way grip crimp pins, reports of intermittent power supply problems were reported. Jands immediately quarantined warehouse stock and modified the DC power harness as described below. The CPU was modified to incorporate an 8 way connector with square pins to provide additional redundant +5V and ground connections and greater pin to pin contact area.

Listed below is a serial number list and recommended action:

SERIAL NUMBER	ACTION
G95231 → J95565	Modify DC loom as per drawing. DC loom soldered at CPU end with extra +5V and GND wires.
J95566 → L95570	DC loom modified in factory as above. No action required if retrofitting a new CPU (supplied with new DC loom). The desk lamp wires from CPU to back panel will require hand soldering.
E96131 and above "CE"	8 way DC harness. No action required.

TNJLT023.doc

UNRELIABLE FLOPPY DISKETTES

Note that only good quality floppy diskettes should be used for show backups. Poor quality or unbranded diskettes may not reliably read in other consoles. Jands recommends at least two copies of vital data be kept up to date at all times.

Consoles prior to K95280 (12/1995) manufacture were fitted with "Safronic" brand 3½" disk drives. Due to reports of difficulty with these drives reading all brands of disks or not reading disks recorded on other consoles, a change was made to "Panasonic" disk drives from serial number L95531 and later.

This disk problem was also more evident if the +5V DC rail was below 5V (4.8V → 5.0V) and as such early model consoles fitted with NSF40 - 7608 power supplies should have their 5V rail checked and adjusted to 5.1V or above using the TRIM pot on the power supply.

Later consoles ("CE") were fitted with NAN40 - 7608 power supplies which do not require adjustment. These later consoles are also fitted with Panasonic disk drives.

TNJLT024.doc

REVISED LEXAN FASCIA

Jandshog 250 / 600 consoles with serial numbers E96XXX onwards are fitted with a revised lexan fascia which includes a number of switch functions relocated to improve ergonomics. It is possible to switch between the old and revised layouts as desired by the user by setting the "Set Layout" option in the boot menu to either:

"1" for the old layout, or

"2" for the revised layout.

TNJLT025.doc

CE / C-Tick

Jands Hog 250 / 600 consoles with Serial Numbers E96131 and onwards are modified for CE/C-Tick approval. These changes include :-

- Revised Lexan key layout
- Revised Power Supply Harness
- Power Supply enclosure
- Ferrite beads fitted on internal harnesses

Note that all CE cards are backwards compatible with earlier version consoles.

TNJLT029.doc

JANDS HOG USAGE LIMITS

The operating software for the Jands Hog console is virtually identical to that used with the Wholehog II console. As such, there are many similarities between the two consoles in the way that they can be programmed to control moving and static fixtures. However, whilst the software is common to both type of consoles, the hardware platform is not, with the Jands Hog consoles being primarily designed as a cost effective alternative to the Wholehog II.

One of the core differences between the Wholehog II and the Jands Hog consoles is the reduced power and speed of the CPU in the Jands Hog, a change reflecting the more modest applications for which this latter console was designed.

The significance of this difference in hardware becomes obvious when one considers that the operating software for both consoles has no strict limitations (apart for the number of channels controllable), with no limits being applied to the number of cues that cuelist can contain, the number of pagesthat the user can create, the number of fixture types that a console can control or the number of chases that can be run simultaneously. A Jands Hog console will keep on accepting information until such time as memory capacity is exceeded, even if the CPU becomes overloaded with work.

To ensure maximum efficiency of operation, Jands Hog consoles should therefore not be pushed towards the CPU operating limits. If the console becomes slow or the reaction to button presses becomes sluggish, the limits of the console are probably being reached. An example of a particularly demanding task would be to run many complex chases at the same time.

It is recommended that the console be used/programmed for applications in keeping with its original design.

TNJLT030.doc

DMX- 512 COLOUR REFERENCE TABLE

All values are in percentage (%). Due to the difference in colour media and lamp source, colour references are approximate matches to Roscolux, Lee and GAM. They may vary according to application. Based on 256 output high definition DMX protocol.

Colour	Magenta	Cyan	Yellow
Red	75	00	FF
Pink	00	50	30
Magenta	FF	00	00
Orange	70	00	65
Yellow	00	00	FF
Gold	55	00	55
Green	00	FF	65
Med Green	00	FF	40
Teal	00	FF	25
Blue	FF	FF	00
Med Blue	55	FF	00
Steel Blue	00	55	00
Indigo	FF	52	00
Lt Lavender	40	55	00
Violet	75	00	00
RO4 MedBas Amb	40	00	00
RO8 Pale Gold	24	00	16
R18 Flame	42	00	26
R26 Lt Red	FF	00	50
R32 Med Salmon	00	34	40
R44 Middle Rose	57	00	00
R80 Primary Blue	35	58	00

L116 Med B/G	00	79	31
L128 bright Pink	60	00	00
L135 Golden Amber	60	00	FF
L147 Orange	45	00	FF
L180 Dark Lav	00	47	00
G180 Cherry	60	00	30
G250 Med Red	FF	00	FF
G290 Fire Orange	55	00	FF
G325 Bast Amb	38	00	00
G350 Dark Amb	52	00	44
G848 Bonus Blue	40	55	00

TNJLT031.doc

PAL1200 ADDRESSING

For more information on how to address by actual DMX address, see the Martin PAL1200 manual - pages 13- 14.

DMX		**DMX**	
Fixture #	Start Address	Fixture #	Start Address
1	1	12	265
2	25	13	289
3	49	14	313
4	73	15	337
5	97	16	361
6	121	17	385
7	145	18	409
8	169	19	433
9	193	20	457
10	217	21	481
11	241		

Setting the Address:

1. Switch on the PAL and wait until the reset has finished.
2. Press the Menu key once in order to access the main menu. Using the arrow keys, move through the options until the display reads ‘dAdr” (dAdr=DMX). Press Enter.
3. Scroll using Up or Down to select the desired DMX start address and press Enter.

The Wholehog II and Jands/Hog best operate the Standard PAL in 24 channel mode.

Adapters:

Don't forget all Martin fixtures require a 3 to 5 pin adapter. This adapter must be wired with pin 2 and 3 reverse wired. This is different than other fixtures that require 3 to 5 pin adapters. ie: Cyberlites and Intellabeams. See page 12 of the PAL manual for wire charts.

TNJLT032.doc

JANDS HOG Writing Quick Effects

Automatic real-time effects generation will be available on the Jands Hog soon however in the mean time if you are looking for quick, easy and very powerful effects try the following. Build pallets for the four corners of your stage using four moving mirror lights. You can use more than four if you want, but I'm using only four as a simple example.

Put your four lights to full and also into one of the palettes you have created, lets say the down stage left. Select light number 1 and give it a fade time of 2 and a delay time of 0 seconds for all parameters (in most cases this is what the default setting will be). Select light number 2 and give it a fade time of 2 seconds and a delay time of 1 second. Continue this until you have done all four of your lights. Record this as a cue into an empty fader. If you clear the programmer and then press go on your new cue you should see your four lights fading up and moving to your downstage left position one after the other.

Copy your cue three times so that you then have four cues exactly the same. Grab your four lights and put them at full and into your downstage right palette. Then merge this new information into the first copy you made (your second cue). Change to the upstage right palette and then merge this into cue 3 (your second copy) and finally change to your upstage left palette and then merge into cue 4. Go into the options screen and make your four cues a chase. Then toggle to "...but not in jumps" on, this will allow information to track from cue 4 into cue 1 as the chase runs around. Hey presto, if you then press "Go", you will see your lights chasing each other around the stage! You can then play with the crossfade percentage (hold down Choose/Select and move the middle wheel) to get a more circular effect if you want.

Now marvel at how easy that was and what a great effect you have created by just using normal cues. Next, try copying the whole cuelist to a new fader and then move cue 2 to cue 5. This will give you a figure of eight. Clever huh!

You can create all sorts of things by just copying and reusing your original cue including the best looking wave you have ever seen. Another thing to try is a four cue circular chase with "random" on, in the option screen.

The key with this way of building chases is to experiment with different fade times and delay times - remember there is no limit on number of lights and number of cues.

Have fun!

TNJLT034.doc

New Ibeam13 fixture

A new Ibeam fixture type has been added to the fixture library and gives easier control over Mspeed, 1/2 Colours/Gobos, continuous scolling, and scan effects. For this mode, set personality switches to the following: 3 or 4 (3 for DMX 1-256 or 4 for DMX 257-512) and 6 and 8 on.

13 Channel DMX Mode:

Fixture #	Address Switches On	DMX Address
1 (20)	None	001 (257)
2 (21)	1,3,4	014 (270)
3 (22)	2,4,5	027 (283)
4 (23)	1,2,3,6	040 (296)
5 (24)	3,5,6	053(309)
6 (25)	1,7	066 (322)
7 (26)	2,3,4,7	079 (335)
8 (27)	1,2,3,4,7	092 (348)
9 (28)	4,6,7	105 (361)
10 (29)	1,3,5,6,7	118 (374)
11 (30)	2,8	131 (387)
12 (31)	1,2,3,4,8	144 (400)
13 (32)	3,4,5,8	157 (413)
14 (33)	1,4,6,8	170(426)
15 (34)	2,3,5,6,8	183 (439)
16 (35)	1,2,7,8	196 (452)
17 (36)	5,7,8	209 (465)
18 (37)	1,3,4,5,7,8	222 (478)
19 (38)	2,4,6,7,8	235 (491)

DMX Tips:

1. Always remember to terminate each DMX line with a 100 Ω resistor across pins 2 and 3.
2. The transmission of DMX data is degraded by cable joins. When terminating cables try to leave as much of the cable cores as possible twisted together, as they were before the insulation was stripped off.
3. Always use the same power for fixtures and controller. If it becomes impossible to use the same power source, use an Opto-isolator to supply DMX to the fixtures.
4. Never, ever Y- split a DMX signal without an active splitter box.
5. To protect the console from power spikes down your DMX line, it is always a good idea to use an Opto-isolator.

TNJLT035.doc

Changed in V1.19

NB: The operating software for the Jands Hog console is virtually identical to that used with the Wholehog II console. As such, there are many similarities between the two consoles in the way that they can be programmed to control moving and static fixtures. Please note that some of the following may not be relevant to you depending on what console you have.

Memory Control

The console checks to see if it has enough memory before performing operations. If not, it will give a beep and a user alert to say “not enough memory”.

In some instances, you may not have enough memory to save your show - in this situation, you will have to delete items until you have enough memory.

In low memory situations, playback may get disabled. User alerts will tell you when this has happened. Again, to restore playback, delete unessential programming.

Memory Counter

A memory counter showing the total memory left, and the corresponding number of full cues you can program, is now shown on the control panel window. NB: a full cue is a cue with all channels programmed, i.e. much larger than a typical cue, so the full cue number will always understate the number of cues left.

Fixture Numbering (Hog 2)

Fixtures can now have different numbers than the default number assigned to them. (Note the old numbering scheme is still supported)

When you select fixtures in the programmer, if there is no fixture in the current type corresponding to the number or range you have selected, then the programmer will look for other types. That way, if you give every fixture a unique number, you need never use “Set Type”. Also, you could select all lights by going 1>1000 for instance.

Unfinished ranges like 1>‘enter’ will still only select all fixtures of the type corresponding to the ‘l’.

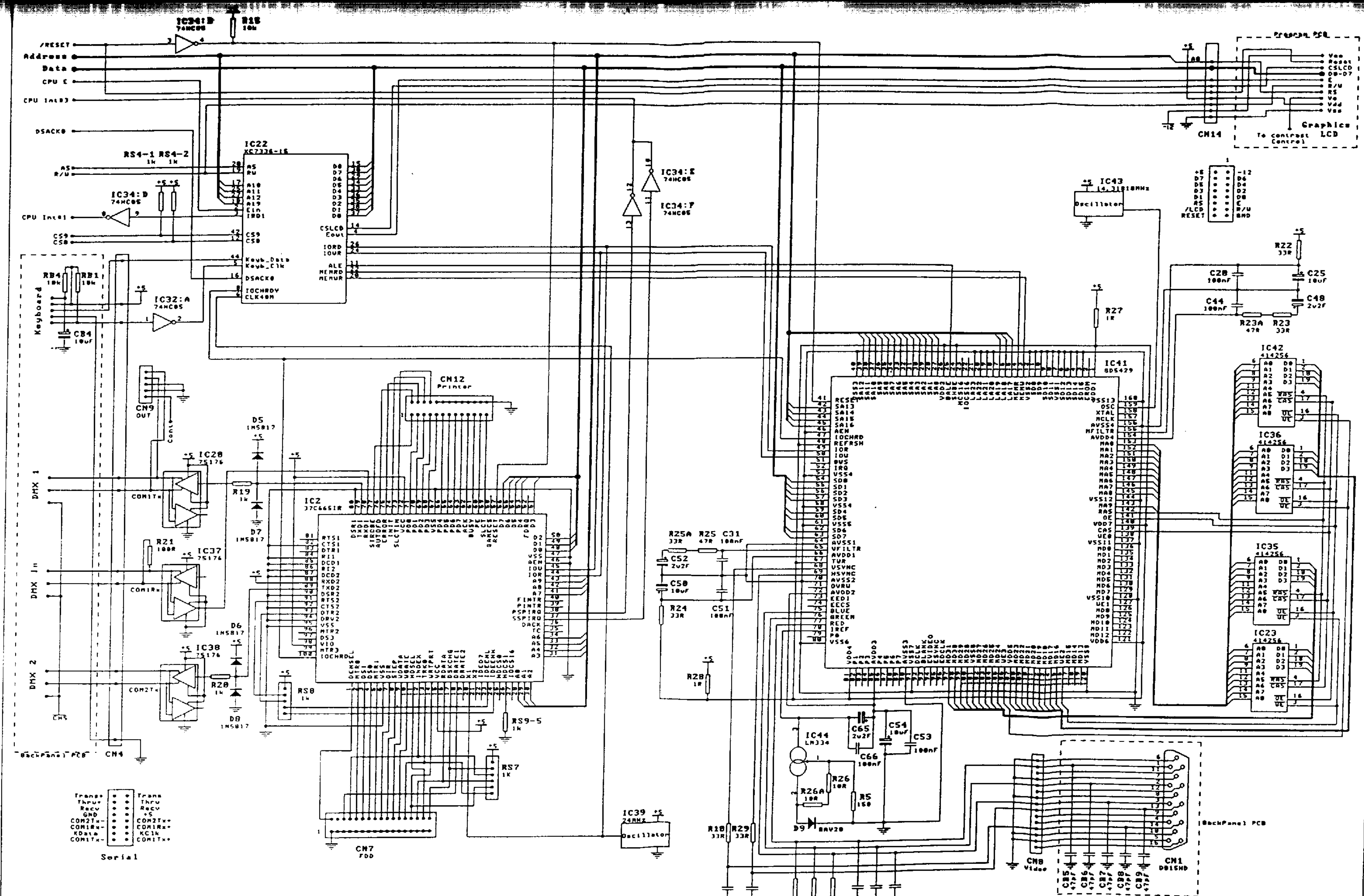
To set up user numbers:

1. Open the Path Window
2. Add fixtures to the console as normal
3. Press the “Change Numbers” button to open the numbering window for the current type of fixture.

Appendix E Circuit Diagrams

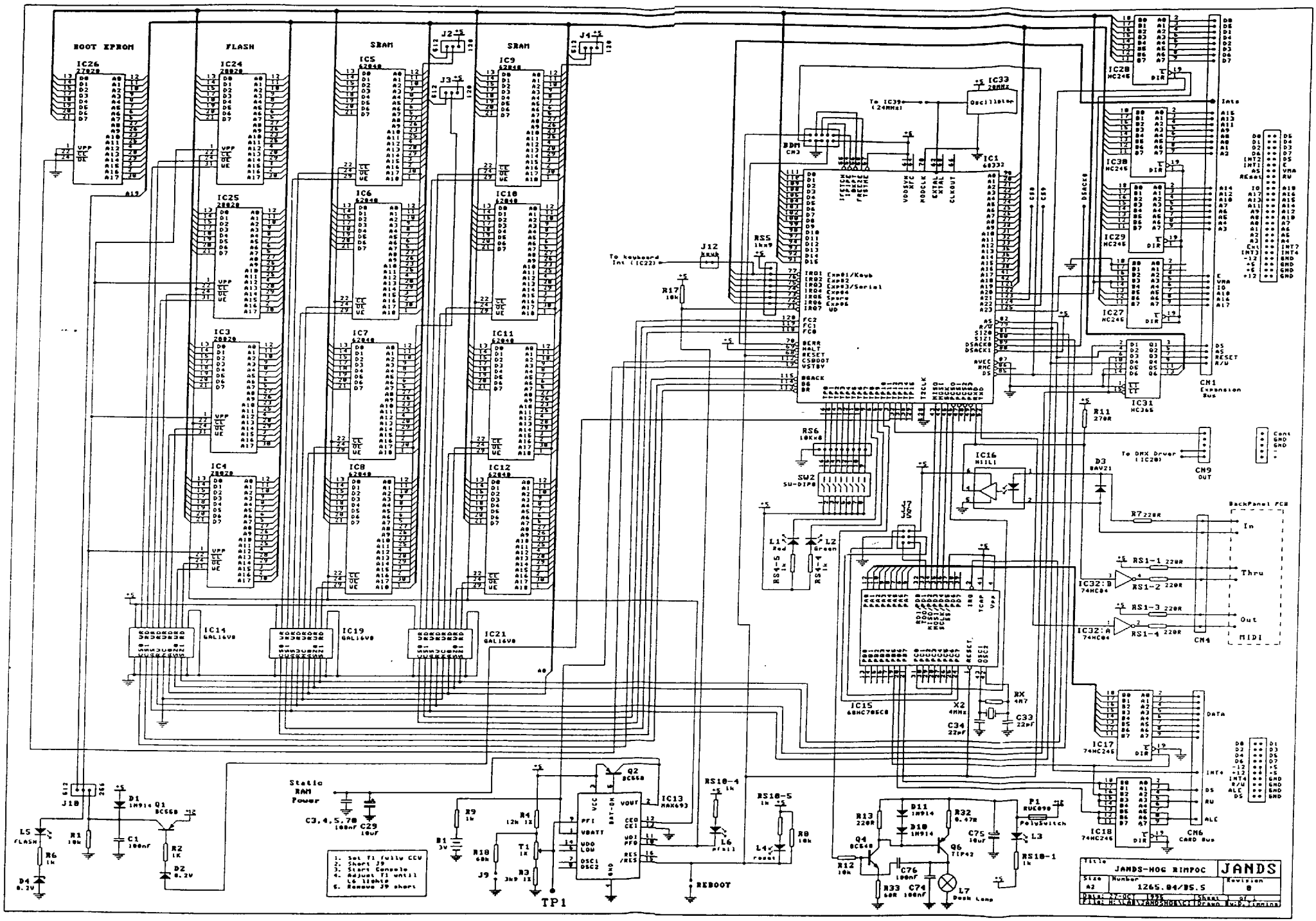
Current Circuit Diagrams

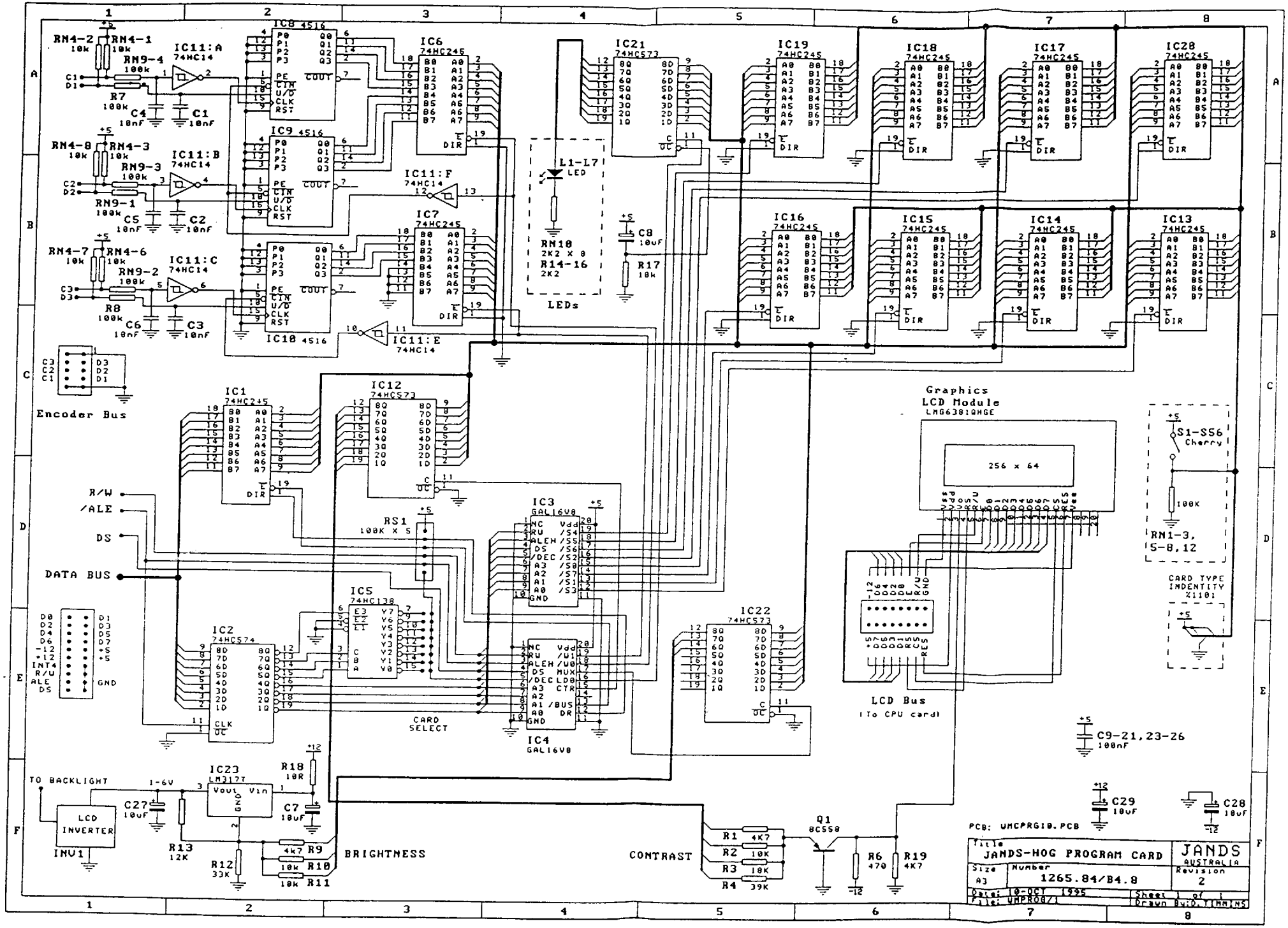
RIMPOC8.S01	CPU CARD (CPU, MEMORY, SERIAL I/O)
RIMPOC8.S02	CPU CARD (VIDEO, FDD, GLUE)
WMMENU.S01	MENU CARD
WMPLAYBK.S01	PLAYBACK CARD
WMPROG.S01	PROGRAM CARD
JHBPAN.S01	BACK PANEL CARD
JHEMCWIR.S01	EMC WIRING

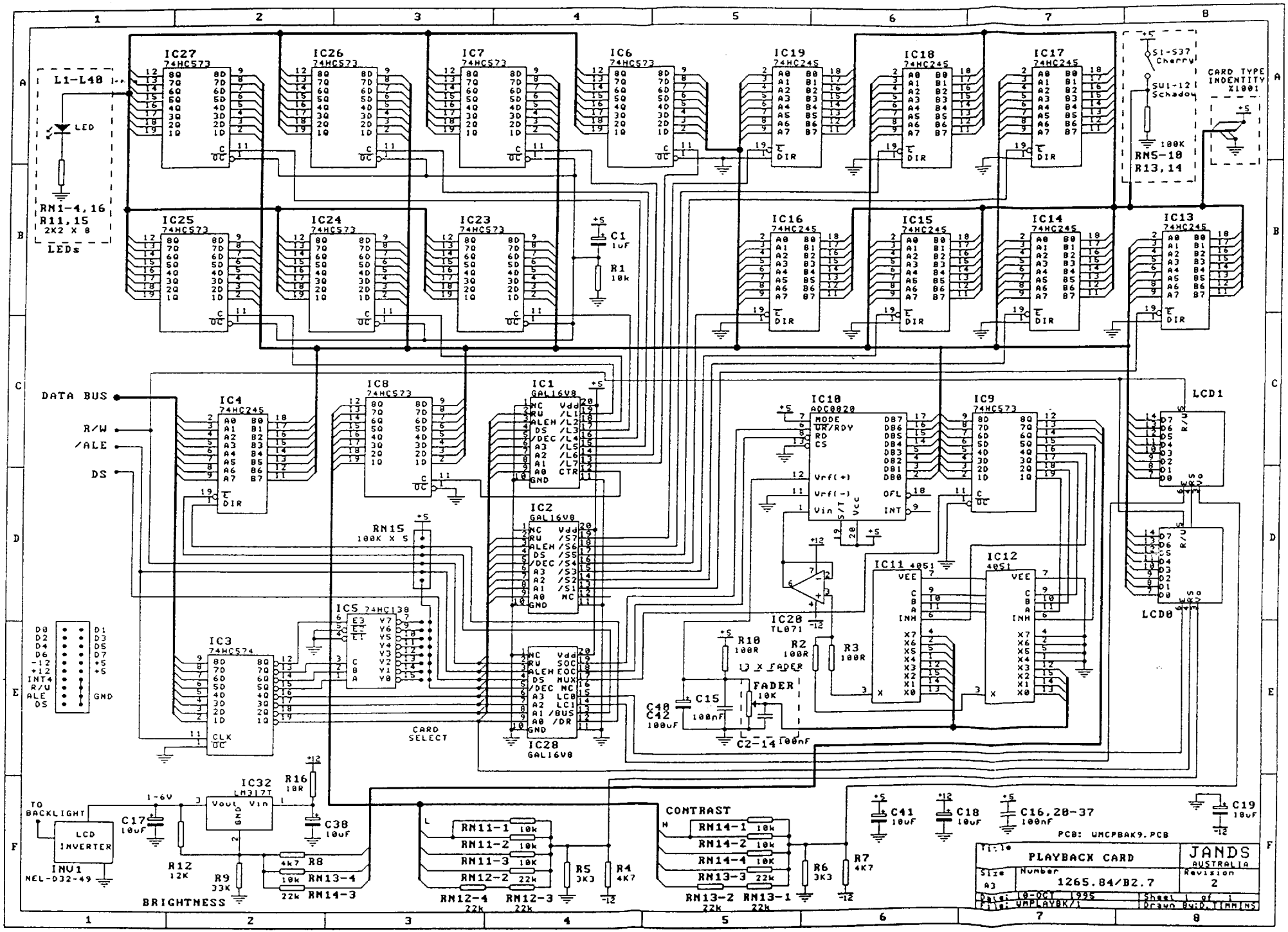


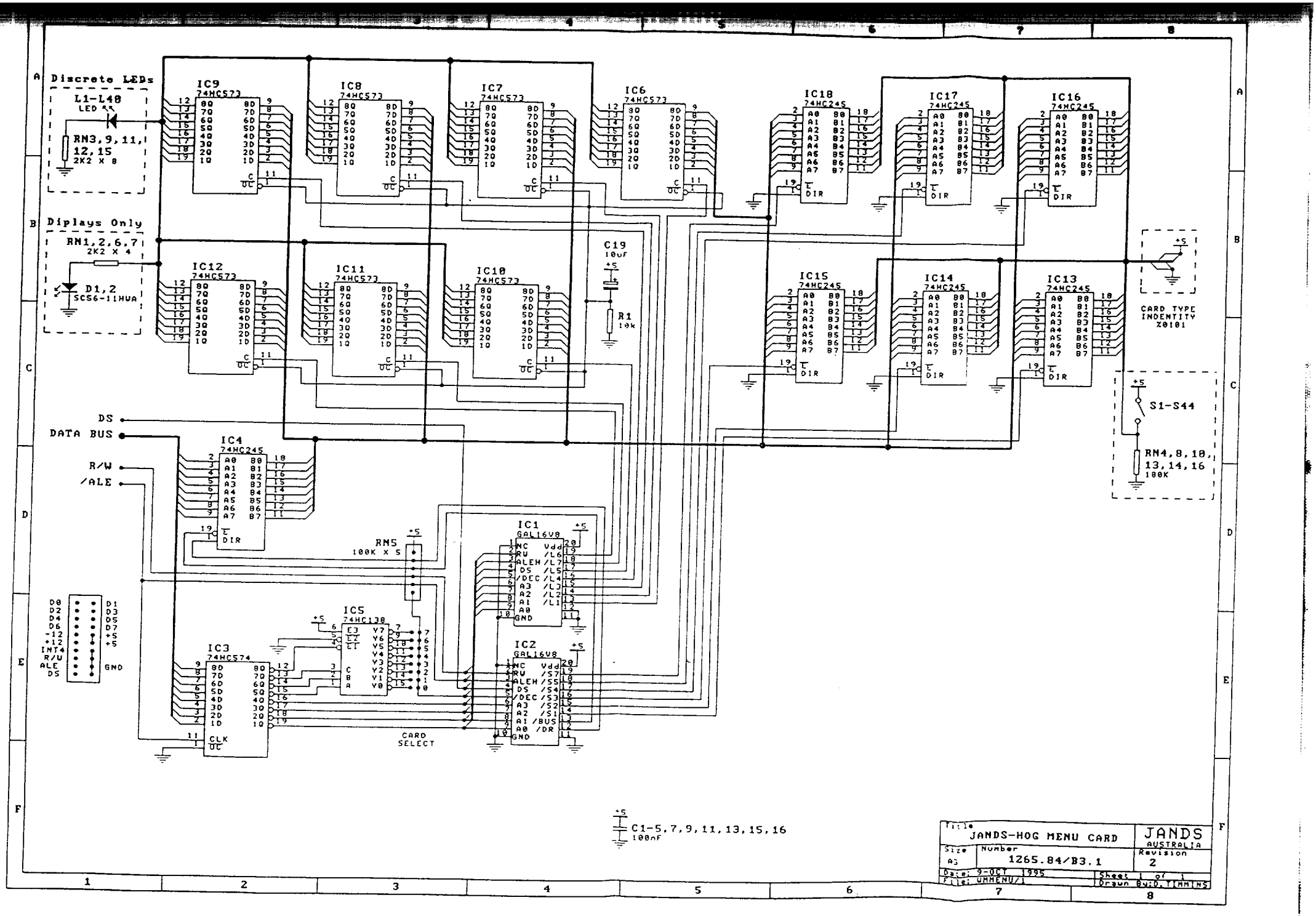
Notes:
- CB1-5 on back panel circuit board, and not included in first run.
- Parts in Dashed Boxs are on back panel PCB

Title		
JANDS-HOG RIMPOC		JANDS
Size: A2	Number: 1265.84/BS.5	Revision: 1
Date: 23-OCT-1995	Sheet 2 of 2	
File: H:\LAB\JANDSHOG\C\	Drawn By: D. Tinning	


BOOT EPROM
FLASH
SRAM
SRAM
IC26 27020
IC24 28020
IC5 62848
IC9 62848
IC25 28020
IC6 62848
IC10 62848
IC3 28020
IC7 62848
IC11 62848
IC4 28020
IC8 62848
IC12 62848
J2
J3
J4
IC14 GAL16V8
IC19 GAL16V8
IC21 GAL16V8
IC1 68332
IC33 28MHz
Oscillator
To IC39 (24MHz)
IC28 HC245
IC38 HC245
IC29 HC245
IC27 HC245
IC31 HC365
CN1 Expansion Bus
J12
To Keyboard Int (IC22)
R17 10k
RS5 1kx9
IRQ1 Exp01/Kevb
IRQ2 Exp02
IRQ3 Exp03/Serial
IRQ4 Exp04
IRQ5 Exp05
IRQ6 Exp06
IRQ7 UD
FC2
FC1
FC0
BERR
HALT
RESET
CSBOOT
VSTBY
BRACK
BG
BR
DSACK0
DSACK1
AVEC
RMC
DS
AS
SIZ0
SIZ1
R/W
R11 270R
RS6 10Kx8
SW2 SW-DIP8
IC16 MIL1
To DMX Driver (IC20)
CN9 OUT
D3 BAV21
R7 220R
BackPanel PCB
In
Thru
Out
MIDI
RS1-1 220R
RS1-2 220R
RS1-3 220R
RS1-4 220R
IC32:B 74HC04
IC32:A 74HC04
CN4
L1 Red
L2 Green
RS1-5 1k
RS1-4 1k
IC15 68HC705C8
X2 4MHz
RX 4k7
C34 22pF
C33 22pF
IC17 74HC245
DATA
IC18 74HC245
CN6 CARD Bus
J18
L5 FLASH
R6 1k
D4 8.2V
R1 10k
D1 1N914
C1 100nF
Q1 BC558
R2 1k
D2 8.2V
Static RAM Power
C3,4,5,7,8 100nF
C29 10uF
R9 1k
B1 3V
R4 12k 1%
R18 68k
T1 1k
R3 3k9 1%
J9
TP1
Q2 BC558
IC13 MAX693
VCC
VBATT
VDD
LOW
OSC1
OSC2
PFI
PFO
VOUT
CEO
CE1
WDI
RES
/RES
RESET
RS10-4 1k
L6 Green
RS10-5 1k
L4 Power
R8 10k
REBOOT
D11 1N914
D10 1N914
R13 220R
Q4 BC548
R12 10k
R33 68R
C74 100nF
R32 0.47R
Q6 TIP42
C75 10uF
C76 100nF
L7 Desk Lamp
P1 RUC090
PolySwitch
L3
RS10-1 1k
Title JANDS-MOG RIMPOC
JANDS
Size A2
Number 1265.04/85.5
Revision B
Date: 27-OCT-1995
Sheet of
File: H:\CAD\JANDS\MOG\PCB\MOG_RIM.PCB
1: Set T1 fully CCW
2: Short J9
3: Start Console
4: Adjust T1 until
5: Lights
6: Remove J9 short


IC8 4516
IC9 4516
IC10 4516
IC6 74HC245
IC7 74HC245
IC21 74HC573
IC19 74HC245
IC18 74HC245
IC17 74HC245
IC28 74HC245
IC16 74HC245
IC15 74HC245
IC14 74HC245
IC13 74HC245
IC11:A 74HC14
IC11:B 74HC14
IC11:C 74HC14
IC11:E 74HC14
IC11:F 74HC14
RN4-2 10k
RN4-1 10k
RN9-4 100k
R7 100k
C4 10nF
C1 10nF
RN4-8 10k
RN4-3 10k
RN9-3 100k
RN9-1 100k
C5 10nF
C2 10nF
RN4-7 10k
RN4-6 10k
RN9-2 100k
R8 100k
C6 10nF
C3 10nF
L1-L7 LED
RN10 2K2 X 8
R14-16 2K2
LEDs
C8 10uF
R17 10k
Encoder Bus
IC1 74HC245
IC12 74HC573
IC3 GAL16V8
IC4 GAL16V8
IC5 74HC138
IC2 74HC574
IC22 74HC573
RS1 100K X 5
R/W
/ALE
DS
DATA BUS
CARD SELECT
Graphics LCD Module
LMG6381QHGE
256 x 64
LCD Bus
(To CPU card)
S1-S56 Cherry
100K
RN1-3, 5-8, 12
CARD TYPE INDENTITY %1101
C9-21,23-26 100nF
IC23 LM317T
R18 10R
C27 10uF
C7 10uF
R13 12K
R12 33K
R9 4K7
R10 10K
R11 10K
TO BACKLIGHT
1-6V
LCD INVERTER
INV1
BRIGHTNESS
CONTRAST
R1 4K7
R2 10K
R3 10K
R4 39K
Q1 BC558
R6 470
R19 4K7
C29 10uF
C28 10uF
PCB: UMCPRG10.PCB
JANDS-HOG PROGRAM CARD
JANDS AUSTRALIA
Size A3
Number 1265.84/B4.8
Revision 2
Date: 10-OCT 1995
File: UMPROG7.1
Sheet 1 of 1
Drawn By: D. TIMMINS


L1-L48
LED
RN1-4,16
R11,15
2K2 X 8
LEDs
IC27
IC26
IC7
IC6
IC19
IC18
IC17
74HC573
74HC245
SW1-S37
Cherry
SW1-12
Schadow
100K
RN5-18
R13,14
CARD TYPE
INDENTITY
X1001
IC25
IC24
IC23
IC16
IC15
IC14
IC13
C1
1uF
R1
10k
DIR
DATA BUS
R/W
/ALE
DS
IC4
IC8
IC1
GAL16V8
IC10
ADC0820
IC9
LCD1
LCD0
RN15
100K X 5
IC2
IC5
74HC138
IC3
74HC574
CARD
SELECT
IC28
IC11
4051
IC12
IC20
TL071
R10
100R
R2
100R
R3
100R
FADER
10K
C40
C42
100uF
C15
100nF
C2-14
100nF
D0
D1
D2
D3
D4
D5
D6
D7
-12
+12
+5
INT4
R/W
ALE
DS
GND
IC32
LM317T
R16
18R
TO
BACKLIGHT
LCD
INVERTER
INV1
NEL-D32-49
1-6V
C17
10uF
C38
10uF
R12
12K
R9
33K
R8
4K7
RN13-4
10k
RN14-3
22k
BRIGHTNESS
RN11-1
RN11-2
RN11-3
RN12-2
RN12-4
RN12-3
10k
22k
R5
3K3
R4
4K7
CONTRAST
RN14-1
RN14-2
RN14-4
RN13-3
RN13-2
RN13-1
R6
3K3
R7
4K7
C41
10uF
C18
10uF
C16,20-37
100nF
C19
10uF
PCB: UMCPBAK9.PCB
PLAYBACK CARD
JANDS
AUSTRALIA
Size
A3
Number
1265.84/B2.7
Revision
2
Date: 10-OCT-1995
Sheet 1 of 1
File: UMPLAYBK/1
Drawn By: TIMMS


Discrete LEDs
L1-L48
LED
RN3,9,11,12,15
2K2 X 8
Diplays Only
RN1,2,6,7
2K2 X 4
D1,2
SCS6-11HUA
IC9
IC8
IC7
IC6
IC12
IC11
IC10
74HC573
IC18
IC17
IC16
IC15
IC14
IC13
74HC245
DIR
C19
10uF
R1
10k
CARD TYPE INDENTITY
X0101
S1-S44
RN4,8,10,13,14,16
100K
DS
DATA BUS
R/W
/ALE
IC4
RN5
100K X 5
IC1
GAL16V8
IC2
IC5
74HC138
IC3
74HC574
CLK
CARD SELECT
D0
D1
D2
D3
D4
D5
D6
D7
-12
+5
+12
+5
INT4
R/W
ALE
DS
GND
C1-5,7,9,11,13,15,16
100nF
Title
JANDS-HOG MENU CARD
JANDS
AUSTRALIA
Size
A3
Number
1265.84/B3.1
Revision
2
Date: 9-OCT 1995
Sheet 1 of 1
File: UMMENU/1
Drawn By:D.TIMMINS

Superseded Circuit Diagrams

RIMPOC6.S01	CPU CARD (CPU, MEMORY, SERIAL I/O)
RIMPOC6.S02	CPU CARD (VIDEO, FDD, GLUE)