Logitek

SUPER-VU

LED BARGRAPH AUDIO METER

Operation & Service Manual

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Super-VU LED Meter
INSTRUCTION MANUAL
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SECTION 1— GENERAL INFORMATION

1-1 General Description

The Logitek Super-VU is a bargraph type audio meter featuring two tricolor LED bargraphs separated by an adjustable scale. A switch on the front panel controls the peak hold function. The meters accept either analog audio or serial digital inputs and are available in three mounting configurations — all with internal power supplies.

1-2 Electrical Specifications

Bargraphs per meter: Two

Indicators per bargraph: 40

Normal Range: 40 dB
(user selected zero reference)

Reference Point: even dBs, 0 to -30 dBFS

Response Time:

VU Mode	300 ms/20dB attack & release
PPM Mode	0 us attack 2.8S/24dB release
Peak Hold	0 us attack 2 or 5 Second hold
Max Hold	0 us attack pushbutton release
Image/Phase	3 Sec hold on max image

Frequency Response:

Normal Modes: +/-.1 dB 20 Hz - 20 KHz

Brightness control: 2 levels

Analog Input:

Sensitivity	-10 to +20 dBu for full scale rear panel adjustable
Overload Level	+24 dBu
Impedance	40 Kohm balanced
CMRR	-65 dB @ 60 Hz
Connector	3-pin XLR

Digital Input:

Codes	AES/EBU, S/PDIF
Impedance	110 Ohm (XLR) 75 Ohm (coax adapter)
Pass-through	2200 Ohm (XLR)
Termination	transformer balanced

AC Line Input Voltage:

50-60 Hz (switch settable)	105-120 VAC or 220-240 VAC

Power Requirement:

SV1-(all), SP1-(all), DST-(all)	8 Watts
SV2-(all), SP2-(all), SIS1-(all)	13 Watts
SV3-(all), SP3-(all), SIS2-(all)	18 Watt

Dimensions:

1RU enclosure	19" W x 7" D x 1¾' H
Desk top enclosure	6" W x 6¼" D x 2½" H

1-3 Instrument Identification

The Super-VU is identified by a model number and a three or four digit serial number. The model number and serial number appear on a label on the back of the unit near the power cord. All correspondence to your Logitek dealer or to the Logitek factory should refer to the model number and serial number.

1-4 Where to Find Help

Logitek customer service personnel are available to help with any questions, comments or problems you might have with the Super-VU meter, both during and after the warranty period. Our hours of operation are 8AM to 5PM central time. We may be contacted in one of the following ways.

By Phone: 877-231-5870 (USA & Canada)
or 713-664-4470

By Fax: 713-664-4479

By E-mail: help@logitekaudio.com

By Mail: Logitek Electronic Systems, Inc.
5622 Edgemoor Drive
Houston, Texas 77081
USA

SECTION 2 — PREPARATION FOR USE

2-1 Initial Inspection

Check the shipping carton carefully for external damage. If the carton shows evidence of abuse, ask the carrier's agent to be present when the unit is unpacked. Carefully unpack the unit to avoid damaging the equipment through the use of careless procedures. Inspect all equipment for damages immediately after unpacking. Bent and broken parts, dents and scratches should be noted. If damage is found, refer to paragraph 2-2 for recommended claim procedures. Keep all packing material for possible future use.

2-2 Claims

If the unit has been damaged, notify the carrier immediately. File a claim with the carrier and advise Logitek of such action to arrange for repair or replacement without waiting for a claim to be settled with the carrier.

2-3 Repacking for Shipment

If the unit must be returned to Logitek, attach a letter to it showing the owner's name and address. A description of necessary service should be included in the letter. The original shipping carton and packaging materials should be used for reshipment if possible. Use FRAGILE labels on each surface. Return the unit freight prepaid. Be sure to insure the unit for its full value. The unit will be repaired promptly and returned freight prepaid.

2-4 Installation

Rackmount Enclosure

The Super-VU rackmount models are designed to be mounted in a standard 19" equipment rack by using the four mounting holes in the corners of the front panel. Plastic washers should be used to keep the mounting screw for marring the front panel finish.

Desktop Enclosure

The Super-VU desktop enclosure is designed to sit on any flat surface. The front of the meter may be angled up for easier viewing by raising the bale located on the bottom of the box.

While flow through ventilation is not necessary, the units should not be mounted directly above equipment which produces significant heat, such as equipment using vacuum tubes. The unit should never be operated if the ambient temperature is above 55 degrees C (131 degrees F).

2-5 Connecting Mains Power

Connect the meter to the power mains with the enclosed power cord. The unit is factory set for 115VAC operation but 230VAC operation can be selected via a slide switch located next to the power transformer inside the unit. To gain access to the voltage select switch, remove the enclosure top cover. The switch is located adjacent to the large power transformer.

2-6 Input Selection on Dual Input Models

If the digital receiver can lock onto an input signal, then the meter will display that signal whether it contains errors or not. If no signal is connected to the digital input or the data rate is out of the receiver's capture range, then the meter will display the analog signal. This happens even if nothing is connected to the analog inputs. The Super-VU can be forced to display only one input by connecting a remote switch to the unit. Consult the factory for details.

2-7 Connecting Digital Input Models

The Super-VU accepts AES/EBU or S/PDIF serial data at sample rates of 30,000 to 50,000 samples per second via a female XLR connector on the rear panel. The input is also wired directly to the male XLR connector on the back panel for use in loop-through mode. The loop-through connector provides a convenient way to daisy-chain several pieces of equipment off of one digital output. Pass-through works well with AES/EBU signals but should be limited to 10 feet with S/PDIF signals and cables.

S/PDIF signals using RCA type plugs may be connected to the input using an RCA to XLR adapter. Coax cables using BNC connectors can be connected to the input using a BNC to XLR adapter. Both adapters are available from Logitek.

AES/EBU Connection

Pin 1	**Ground**
Pin 2	**Signal +**
Pin 3	**Signal -**

It is also important to set the two input load switches located between the two XLR connectors.

Input Load Switch Settings

Sw1	Sw2	Ohms	Use
Up	Up	2200	Pass-through mode
Up	Dn	110	balanced twisted pair (XLR)
Dn	Up	75	unbalanced coax (RCA & BNC)
Dn	Dn	44	do NOT use this combination

2-8 Connecting Analog Input Models

The Super-VU accepts balanced or unbalanced inputs via the XLR connectors on the rear panel. The connectors are wired as follows:

Balanced Connection

Pin 1	**Ground**
Pin 2	**Signal +**
Pin 3	**Signal -**

Unbalanced Connection

Pin 1	**Shield**
Pin 2	**Center Hot**
Pin 3	**Connect to pin 1**

When using balanced connections, care should be taken to be sure that cable shields are connected to grounded equipment on only one end of the cable. On any cable which connects two pieces of equipment, of which both are grounded, the cable shield must be left unconnected on one end or poor noise performance may result.

The zero reference level for each input can be set anywhere between -10 dBu and +20 dBu by adjusting the multiturn gain control located adjacent to each input connector. A small flat blade screwdriver is needed to adjust the gain.

2-9 Rear Panel Programming Switches

A block of eight mode setting switches is located on the rear panel of the meter to the right of the input XLR connectors. The switches are numbered 1 through 8 and are set by pushing the white levers up or down with a small screwdriver or pen point.

The bargraph zero reference marker is set via switches 5,6, 7 and 8 as shown. These switches only move the location of the orange reference marker and do not change the input signal gain.

Zero Reference Setting

Sw5	Sw6	Sw7	Sw8	dBs below full scale
Up	Up	Up	Up	-30 dB
Up	Up	Up	Dn	-28 dB
Up	Up	Dn	Up	-26 dB
Up	Up	Dn	Dn	-24 dB
Up	Dn	Up	Up	-22 dB
Up	Dn	Up	Dn	-20 dB
Up	Dn	Dn	Up	-18 dB
Up	Dn	Dn	Dn	-16 dB
Dn	Up	Up	Up	-14 dB
Dn	Up	Up	Dn	-12 dB
Dn	Up	Dn	Up	-10 dB
Dn	Up	Dn	Dn	-8 dB
Dn	Dn	Up	Up	-6 dB
Dn	Dn	Up	Dn	-4 dB
Dn	Dn	Dn	Up	-2 dB
Dn	Dn	Dn	Dn	0 dB

Switch 2 turns the peak program mode (PPM) display on and off. Peak hold is controlled from the front panel and is unaffected by switch 2. Switch 3 sets the amount of time the peak hold dot retains the largest peak reading before resetting.

Bargraph Settings

Sw1	Sw2	Sw3	Function
Up			5 Second peak hold
Dn			2 Second peak hold
	Up		PPM display ON
	Dn		PPM display OFF
		Up	Peak hold display ON
		Dn	Peak hold display OFF

Switch 4 is used to control the brightness of the bargraphs.

Brightness Settings

Sw4		Function
Up		Low display illumination
Dn		High display illumination

The mode switches are only checked occasionally, so it may take up to two seconds for switch changes to be reflected in the meter's operation.

2-10 Adjusting the Meter Scale

The meter scale is printed on a piece of plastic film that is attached to a support bracket between the LED bargraphs. The scale covers a range of +20 dB to -40 dB with only a portion showing through the display opening. The scale 0 dB point can be physically moved to the left or right by removing the meter cover plate and detaching the bargraph assembly to gain access to the unseen portion of the scale strip. In this way the printed 0 dB point can be made to match the orange zero reference marker.

SECTION 3 — OPERATING INSTRUCTIONS

3-1 Bargraph Description

The Super-VU display contains two multi-LED bargraph displays mounted one above the other. The top bar shows either left channel or image/phase information. The bottom bar shows either right channel or mono sum information. The 40 segments are tricolor LEDs that can be green, red or orange depending on their function and cover the range from -39 dBFS to 0 dBFS (decibels below full scale).

The zero reference point of the meter is indicated by a dim orange marker in the bargraph. The reference mark can be varied between 0 and -30 dBFS in 2 dB steps via switches on the back panel. The scale can also be moved to line up with the marker light.

3-2 VU Display

VU is indicated by a solid green bar. VU represents the perceived loudness of the input signal. The motion of the bars conforms to the industry standard 300 mSec per 20 dB rise and fall times. The VU display is always active.

3-3 PPM Display

True peak (PPM) information is shown by a single red segment. PPM represents the highest point of the input signal. The display has a zero rise time and an industry standard 2.8 Sec per 24 dB fall time. The PPM display is always active unless it is turned off by the programming switches on the back panel.

3-4 Peak Hold Display

The peak hold display is a single red segment that maintains the highest PPM reading for a user selectable amount of time. If the holding period expires before the PPM dot equals or exceeds the peak hold dot, then the peak hold display will be turned off until the PPM dot reaches a new peak.

Two holding modes are available. Release (PEAK) mode holds the peak reading for either 2 or 5 seconds depending on the position of the rear panel program switches. Maximum (Max) mode holds the highest peak reading until it is manually reset by pressing RST.

Peak hold is controlled with the front panel rocker switch and is always active unless it is turned off by the programming switches on the back panel.

3-5 I-S — Image/Sum Display

Super-VU meters are available with a second display that shows additional information about stereo input signals.

The lower bargraph displays the mono sum of the left and right input channeled. The display operates identically to the left and right bargraphs in the main display. Some models control the mono peak hold feature from the same switch as the left/right display and some models have an independent control.

The upper bargraph shows the stereo image and relative phase information. An orange marker in the center indicates 0 degrees. The scale covers 180 degrees which is the largest relative phase difference two signal can have.

The red dot indicates the current location of the left channel in the stereo sound field and the green dot indicates the current location of the right channel in the stereo sound field. The overall width and location of the stereo image is shown by a second pair of red and green segments that hold the furthest left and right readings for about three seconds.

If a mono signal is being displayed, then the red and green segments will be at the same location resulting in a dot that looks orange. If the mono signal is off center (such as left channel only), the resulting orange dot will be off to one side of the display.

If both input levels are less than -36 dB full scale than the image meter will deactivate. Noise and numeric resolution cause incorrect readings to be displayed at lower input levels.

3-6 Using Alignment Tones

The Super-VU calculates the average signal average and displays it as the VU bar. The single highest signal sample is also determined for the peak display. Since there is no averaging involved in the peak measurement that number will be much higher than the average level for any signal other than a square wave.

Standard ballistics, however, are defined in terms of sine wave inputs. Therefore the Super-VU calculates the average value of the sine wave that would produce the measured peak reading and displays that as the peak dot. Doing this causes the peak and VU readings to be the same for sine wave input signals and the difference between the two readings to be the crest factor.

SECTION 4 — MAINTENANCE

4-1 General Information

The Super-VU is designed to need a minimum of maintenance for long trouble-free operation. Should repair be necessary, the technician should first read the information in the manual concerning the circuits in question and should follow proper procedures for testing and replacing semiconductors. Logitek engineers are readily available at the factory to provide technical assistance both during and after the warranty period.

4-2 Fuse

The primary winding of the power transformer is fused with a 1/2 amp slow-blow 20mm fuse housed in a fuse holder in a slide-out drawer under the power cord on the rear panel of the unit. It should only be replaced with fuses of the same type and current rating. The power cord must be unplugged from the rear panel to gain access to the fuse holder.

*** * * * * * * * * * WARNING * * * * * * * * * ***

Do *NOT* replace the fuse without first disconnecting the meter's power cord from the wall socket, as dangerous voltages are present which may cause electrical shock. Always use fuses of the same value and type as specified in this manual. Do *NOT* use fuses of a higher value than those specified, as shock hazard and fire hazard may result.

*** ***

A blown fuse is most often, although not always, a symptom of another failure. Related circuitry should always be carefully examined after any fuse failure, especially if a replacement fuse also blows.

4-3 Handling of CMOS Integrated Circuits

All logic components in the Super-VU meter are CMOS type integrated circuits. Even though all circuits have built in static discharge protection, special care must be taken in the handling of these devices, particularly in dry environments.

*** * * * * * * * * IMPORTANT * * * * * * * * ***

Do *NOT* remove or handle CMOS integrated circuits except in a grounded environment which is free of the risk of static electricity. Store such circuits on conductive foam or in anti-static controllers. Do *NOT* store on styrofoam or other plastic sheets. Improper handling may damage these devices.

*** ***

4-4 Access to Circuit Cards

Access to the circuitry of the rackmount and half-rack meters is accomplished by removing the six screws that attach the top cover. The inside of the desktop unit is accessed by removing the four screws along the edges of the bottom panel and pulling apart the two halves of the plastic case.

4-5 Power Supply

Each Super-VU contains a ground isolated and filtered step-down power supply to create the necessary operating voltages. This supply is located on a PCB on the right side of the meter enclosure.

Mains AC from the power entry module J2 is fed through fuse F1, located in a drawer under the power cord in J2, to J1 on supply card LG-253. J1 feeds voltage selection switch S1 which connects the dual primaries of transformer T1 in series for 230VAC operation or parallel for 115VAC operation. The dual secondaries of T1 are wired in parallel and loaded with a full-wave bridge rectifier RT1. The DC output of RT1 is filtered by capacitors C1 and C2 and fed to the red and green output pads. The voltage should be between 8 to 10 VDC with less than .5 volt of ripple.

Analog input models will also have a charge pump consisting of IC1 and C3 that feeds filter C4 and the black output pads. The voltage should be -8 to -10 VDC with less than .1 volt of ripple.

Jumpers soldered to the output pads feed power to one or two meter control cards.

*** * * * * * * * * * WARNING * * * * * * * * * ***

Dangerous voltages are present on the bottom of the power supply card. Always disconnect the AC power cord when servicing this circuit board.

*** ***

4-6 Digital/Dual Input Control Card

Power from input connector P4 is connected to voltage regulators IC2 and IC3 as well as display board connector P6. IC2 is a +5VDC regulator that feeds power to the analog front end of data receiver IC1. The voltage is filtered by C2, C6 and clamped against over voltage and voltage reversal by D1. IC3 is a +5VDC regulator that feeds the digital portion of IC1 and all other circuits on the control board. The output voltage is filtered by C3 and clamped by D2. Distributed power filtering is supplied by C4,7,8,9 & 10.

On power up, the DSP is kept in reset by IC4 until the power has stabilized, ensuring a good power on reset. IC4 also contains a watchdog timer that will reset the DSP if its ST pin in not taken low at least once every 150 mSec. This pin is normally pulsed low every 5 mSec by the left bargraph load signal.

The DSP (IC6) is clocked by a 12.288 MHz crystal oscillator consisting of Y1,C11,C12 and an internal driver. IC6, pin43 is a buffered output of the oscillator.

The first thing the DSP (IC6) does after reset is copy its startup program from EPROM IC5 to internal RAM memory. That program executes once and then loads the main program from EEPROM which executes continuously. Note that the 8 bit data bus is connected to the middle byte of the DSP's 24 bit data port.

The rear panel programming DIP switches S1-S8 are also connected to the DSP's middle data byte via isolation resistors R10 and control that portion of the data bus when neither the DSP nor the EEPROM output is active. The DSP inputs the switch positions via a read to address zero.

Front panel pushbuttons S11,12,13 are connected to the high byte of the DSP 24-bit data port via connector P3 and isolation resistors R9.

Serial data is sent synchronously (data, clock, load) to the display driver chips via the display connector P6 in 32 bit strings. Data is placed on the top bit (bit 23) of the DSP data port and clocked into the display drivers via a write to address decoder IC7. Other writes to IC7 will load the 32 bit data string into the left bargraph, right bargraph or scale/indicator driver groups via P6. A write to the left bargraph will also reset the watchdog timer.

Two channel audio data is fed synchronously (data, clock, frame sync) from digital data receiver IC1 to DSP (IC6) serial port 1.

Encoded audio data enters the meter via XLR connector J1 and is directly connected to the output connector P2. Note that no buffering is applied to the loop through output.

The input data signal is connected to pulse transformer T1 via DC blocking capacitor C5. The output of T1 is loaded by R1,R2, R3 and connected to data receiver IC1. C1 and R4 form a loop filter used by IC1 to recover the embedded clock from the coded input signal. IC1 separates the audio data, channel data and clock from the input data. The audio is sent to the DSP in 64 bit strings via a serial port. Three other signals from IC1 are read once per stereo sample and are connected to the DSP's parallel data port via isolation resistors R9. These are the channel status bit, start of subcode data block flag and receiver error flag. These are input to the DSP via a read to address zero.

Connector P5 attaches to the DSP's other serial port and allows analog data to be sent to the DSP via an external ADC card. The connector also provides power and the master processor clock for use by the ADC card.

If the digital receiver IC1 can lock onto an input signal then the DSP will display that signal whether it contains errors or not. If no signal is connected to J1 or the data rate is out of the receiver's capture range, then the DSP will display the data from P5. This happens even if nothing is connected to the analog inputs or the ADC card is absent.

4-7 Analog Input Control Card

Power from input connector J1 is connected to voltage regulators IC3 and IC4 as well as display board connector J4. IC3 is a +5VDC regulator that feeds power to the analog front end of data receiver IC2. The voltages filtered by C1, C7 and clamped against overvoltage and voltage reversal by D1. IC4 is a +5VDC regulator that feeds the digital portion of IC2 and all other circuits on the control board. The output voltage is filtered by C2 and clamped by D2. Distributed power filtering is supplied by C3, 4, 5, 6, 12.

On power up, the DSP is kept in reset by IC5 until the power has stabilized, ensuring a good power on reset. IC5 also contains a watchdog timer that will reset the DSP if its ST pin is not taken low at least once every 150 mSec. This pin is normally pulsed low every 5 mSec by the left bargraph load signal.

The DSP (IC7) is clocked by a 10 MHz crystal oscillator consisting of Y1, C10, C11 and an internal driver. IC7, Pin 43 is a buffered output of the oscillator.

The first thing the DSP (IC7) does after reset is copy its program from EEPROM IC6 to internal RAM memory. The program executes continuously. Note that the 8 bit data bus is connected to the middle byte of the DSP's 24 bit data port.

Address decoder IC8 is used to reset the watchdog timer (IC5), connect the rear panel programming switches (S1-S8) to the data bus via buffer IC1 and read/write the data receiver (IC2) control/status registers.

Front panel rocker switches S9 and S10 are connected directly to the low byte of the DSP data port.

Serial data is sent synchronously (data, clock, load) to the display driver chips via left/right display connector J5 and image/sum display connector J4 in 32 bit strings. Data is placed on the top bit of the DSP data port and clocked into the display drivers via a write to address decoder IC9. Other writes to IC9 will load the 32 bit data string into one of the display drivers J5 or J4. A write to the left bargraph low group will also be decoded by IC8 and used to rest the watchdog timer.

Signal from left input jack J7 is connected to balanced receiver IC1 via R5 and R7. The resistors form a voltage divider with the input resistance of the IC to create a 6 dB loss. The IC also has an internal loss of 6 dBs. The 12 dB total loss allows +24 dB signals to be handled by the 5 volt op-amps. R5, R7 and C2, C3 form a low-pass out of band filter. The single ended output of IC1 is fed, via R1 to op-amp IC2b. R2 adjusts the op-amp gain and is used as the zero reference trim. IC2b rives the input of 12-bit sampling ADC IC5. Reads to address decoder IC13 are used to start the ADC and to read the results via the 12 bit data bus. The ADC signals a finished conversion by grounding the DSPs interrupt pin.

The right input is handles identically to the left input.

4-8 Display Assembly

+5VDC from P1 is filtered by C1, C2, C3 and C4 for use by the three driver ICs. The display drivers accept synchronous serial data (clock, data, load) in 16 bit strings composed of an address byte and a data byte. A separate signal loads each IC.

Each display driver IC controls 64 LEDs by scanning them in an eight by eight matrix. Segment lines are current controlled and connect to the LED anodes. Digit lines connect to the LED cathodes. Scanning is accomplished by taking each digit line low one at a time and sourcing current from the segment lines for whichever of the 8 LEDs in a digit group need to be lit. Maximum LED brightness is set by the external resistors. The drivers further control brightness by pulse-width modulating the LED on times with a value supplied by the DSP.

Remember to consult the component diagram for the correct orientation before installing a new LED. If a LED is installed backwards the red and green colors will be reversed.

4-9 ADC Input Card LG-264

The audio from the left input 1/4" phone connector J2 is connected to a RF lowpass filter formed by R10, R11, C3 and C4. The resistors also form a -9 dB pad with the input impedance of the balanced receiver IC4. IC4 provides an additional -6 dB pad between its input and output. These pads allow +20 dBu input signals to be handled by the +/- 5 volt supply rails. The output of IC4 is unity gain inverted by op-amp IC2b and fed back to the reference input of IC4. This enables IC4 to present an identical resistive load on its two input pins. Input gain is adjusted via trimpot R9 which is the feedback resistor around gain stage IC1b.

*** * * * * * * * * IMPORTANT * * * * * * * * * ***

Only replace IC2 with an op-amp which is slower than the SSM2143 such as the TL072 used here. A faster op-amp like the NE5532 will cause the output of IC4 to oscillate.

*** ***

Signal from IC1b is fed through antialias filter R14 C8 and DC isolated by C11 before connecting to the left input of the sigma delta analog to digital converter IC7. The right channel connects to the converter via similar circuitry.

The 12.288 MHz master clock input to the ADC is generated by a crystal oscillator located on the DSP control card. Combined left and right audio data is sent synchronously (data, clock, frame sync) to the DSP in 64-bit strings via connector P3. The reset signal from the DSP control card is also connected to the ADC. The DSP activates the reset once a day which causes the ADC to perform a self calibration routine for about half a second. If the meter has undergone a substantial temperature change, it may generate noise up to -70 dBFS until it undergoes a calibration cycle

The three supply voltages from P3 are EMI isolated by ferrite beads FR1, FR2 and FR3 before connecting to the other circuitry. IC5 and IC6 supply low noise regulated +/- 5 VDC to the analog portions of the circuit. The digital part of the data converter gets its +5 VDC from the DSP control card.

SECTION 5 — REPLACEMENT PARTS LIST

All replacement parts are stocked in depth at the Logitek factory. Most are also available through local electronic parts distributors. For your convenience in purchasing replacement parts locally, we include the following parts list.

All Logitek part numbers consist of a two-letter manufacturer code followed by that manufacturer's standard part number for the item. A list of manufacturers, arranged alphabetically by manufacturer code, follows this parts list in Section 7.

All resistors are 1/4 watt, +/- 5% tolerance unless otherwise noted.

SYMBOL	DESCRIPTION	LOGITEK PART NUMBER
5-1 Power Supply		
	Capacitors	
C1	6800 uf/25V electrolytic	IL-688LBA025M2CD
C2	.1uf/50V ceramic disc	NC-.100MF50ME2
C3,4	100uf/25V electrolytic	MI-UFS1E101MPJ
	Integrated Circuits	
IC1	Charge pump	TI-LT1054CN
1 pc.	8-pin dip socket	EM-100-083-10-1003
	Rectifiers	
RT1	6A pc mount/240V	GI-GBPC-602
	Fuses	
F1	1/2 amp slow blow 20mm	LF-218.500
	Connectors	
P1	3-pin large header - locking	PN-MLSS156-3A
J1	3-pin large socket	PN-CE156F20-3A
J2	Power entry module/fuse holder	SR-6200.4115
	Switches	
S1	Slide DPDT	CK-L202-121MS02QE
	Transformers	
T1	8V, 3A international rating	SI-IF-24-16
1 pc.	Super-VU Supply circuit card	LG-253B
1 pc.	Power cord (North America)	BE-17251
5-2 Digital/Dual Input Control Card		
	Capacitors	
C1	.047uf/1000V ceramic	CE-CW-20C473K
C2-4	10uf/25V tantalum	AV-TAP106K025HSB
C5-10	.1 uf/50V SMD	NC-NMC1206Z5U104M50T
C11	25pf/1000V ceramic	CE-DD-250
C12	15pf/1000V ceramic	CE-DD-150
	Diodes	
D1,2	5.4V zener	GI-1N4734A
	Integrated Circuits	
IC1	AES/EBU receiver without uP port	CS-CS8412-CS
IC2	+5VDC regulator/100 mA	MO-MC78L05ACP
IC3	+5VDC regulator/1.5A	MO-MC7805CT
IC4	Watchdog timer/uP reset	MM-MAX1232CPA
IC5	PROM 128K 120ns	MC-27C128-12/L
IC6	DSP 16 bit 2K/1K	AD-ADSP-2105KP55
IC7	3 to 8 decoder SMD	MO-MC74HC138D

SYMBOL	DESCRIPTION	LOGITEK PART NUMBER
1 pc.	8-pin dip socket	EM-100-083-10-1003
1 pc.	32-pin PLCC socket	EM-150-032-11-02
1 pc.	68-pin PLCC socket	EM-150-068-11-02
	Connectors	
J1	3-pin large socket	PN-CE156F20-3A
J3	3-pin socket (2 pcs.)	PN-CE100F28-3A
J5-7	10-pin dual row socket	PN-050-010-455
J1	Female XLR	NT-NC3FK-H
P2	Male XLR	NT-NC3MK-H
P3	6-pin header	PN-MFSS100-6A
P4	3-pin large header locking	PN-MFLS156-3A
P5-7	10-pin dual row header	PN-051-010-153
	Crystal	
Y1	12.288 Mhz crystal	CT-MP122
	Resistors	
R1	2200	
R2	110	
R3	75	
R4	1000	
R5,6	100K	
R7,8	100K 2% 5 position bussed	CT-770-61-R104
R9,10	20K 8 position isolated SMD	CT-767163203G
R11,12	10K	
	Switches	
S(1-8)	Dip switch block	CT-194-8MST
S(12,13)	Dip switch block	CT-194-2MST
	Transformers	
T1	AES/EBU	SS-67129600
1 pc.	Ultra-VU Dual Control circuit card	LG-265

5-3 Analog Input Control Card

	Capacitors	
C1,2	75pf/1000V ceramic	CE-DD750
C3	1uf/35V tantalum	AV-TAP105K035HSB
C4	2200pf/50V NPO ceramic SMD	NC-NMC1206NPO222K50TR
C5	4.7uf/25V tantalum	AV-TAP475K025CCS
C6	.1uf/50V ceramic SMD	NC-NMC1206Z5U104M50T
C7	1uf/35V tantalum	AV-TAP105K035HSB
C8	.01uf/50V ceramic SMD	AV-12065E103MATMA
C9,10	470pf/50V NPO ceramic SMD	AV-12061A471JATMA
C11	2200pf//50V NPO ceramic SMD	NC-NMC1206NPO222K50TR
C12	1uf/35V tantalum	AV-TAP105K035HSB
C13,14	75pf/1000V ceramic	CE-DD750
C15,16	470pf/50V NPO ceramic SMD	AV-12061A471JATMA
C17	.1uf/50V ceramic SMD	NC-NMC1206Z5U104M50T
C18-20	4.7uf/25V tantalum	AV-TAP475K025CCS
C21	.1uf/50V ceramic SMD	NC-NMC1206Z5U104M50T
C22	.01uf/50V ceramic SMD	AV-12065E103MATMA
C23	1uf/35V tantalum	AV-TAP105K035HSB
C24	10uf/25V tantalum	AV-TAP106K025HSB
C25	15pf/1000V ceramic	CE-DD-150
C26	25pf/1000V ceramic	CE-DD-250
C27-29	.1uf/50V ceramic	CE-UK50-104
C30	10uf/25V tantalum	AV-TAP106K025HSB
	Diodes	
D1	5.4V zener	GI-1N4734A

SYMBOL	DESCRIPTION	LOGITEK PART NUMBER
	Ferrites	
FR1-7	600 ohm @ 100Mhz	MU-BLM31A601SPB
	Integrated Circuits	
IC1,2	Dual bi-fet op amp	TI-TLO72CP
IC3,4	Balanced receiver -6dB	AD-SSM2143P
IC5	-5 VDC regulator/100mA	MO-MC79L05ACP
IC6	+5VDC regulator/100 mA	MO-MC78L05ACP
IC7	16 bit ADC	AD-AD1877JR
IC8	Watchdog timer/uP reset	MM-MAX1232CPA
IC9	3 to 8 decoder	MO-SN74HC138AD
IC10	32K x 8 EEPROM	MC-28C256A-25/L
IC11	16 bit DSP	AD-ADSP-2105KP55
IC12	+5VDC regulator/1.5A	MO-MC7805CT
5 pcs.	8-pin dip socket	EM-100-083-10-1003
1 pc.	32-pin PLCC socket	EM-150-032-11-02
1 pc.	68-pin PLCC socket	EM-150-068-11-02
	Connectors	
J1,2	Female XLR	NT-NC3FK-H
J3	3-pin socket	PN-CE100F28-3A
J4	3-pin large socket	PN-CE156F20-3A
J6,7	10-pin dual row socket	PN-050-010-455
P3	3-pin header	PN-MFSS100-3A
P4	3-pin large header	PN-MFSS156-3A
P5,6	10-pin dual row header	PN-051-010-153
	Resistors	
R1,2	50K trimpot multiturn	MP-CT9X503
R3-5	4220, 1%	
R6,7	100K	
R8,9	100K 2% 5 position bussed	CT-770-61-R104
R10,11	21K, .1%	DL-RNC55H2102BS
R12-14	4220, 1%	
R15,16	300	
R17,18	21K, .1%	DL-RNC55H2102BS
R19,20	20K 8 position isolated SMD	DL-SOMC1603203G
R21,22	10K	
	Switches	
S(1-8)	Dip switch block	CT-194-8MST
	Crystals	
Y1	12.288 Mhz	CT-MP122
1 pc.	Circuit Card	LG-266 (Analog Control)

5-4 Display Assembly

	Capacitors	
C1	.1 uf/50V ceramic	CE-UK50-104
C2	10uf/25V tantalum	AV-TAP106K025HSB
C3,4	.1 uf/50V ceramic	CE-UK50-104
	Diodes	
D1-80	Tricolor LED bar 2mm x 5mm (order by brightness number on display card)	SY-VBRG5641X
6 pcs.	40-pin sip socket	PR-310-93-140-41-001
	Integrated Circuits	
IC1-3	64 LED driver	MM-MAX7219CNG
3 pcs.	24-pin dip socket	EM-100-243-10-1003

SYMBOL	DESCRIPTION	LOGITEK PART NUMBER
	Connectors	
P1	10-pin dual row header	PN-051-010-153
J1	10-pin dual row socket	PN-050-010-455
	Resistors	
R1-3	5100	
1 pc.	Super-VU display circuit card	LG-260A

5-5 ADC Input Card

	Capacitors	
C1-4	75pf/1000V ceramic	CE-DD-750
C5,6	4.7uf/25V tantalum	AV-TAP475K025CCS
C7,8	2200pf/50V ceramic SMD	NC-NMC1206NPO222K50TR
C9-12	1uf/35V tantalum	AV-TAP105K035HSB
C13,14	4.7uf/25V tantalum	AV-TAP475K025CCS
C15	.1 uf/50V ceramic SMD	NC-NMC1206Z5U104M50T
C16,17	470pf/100V ceramic SMD	AV-12061A471JATMA
C18	.1 uf/50V ceramic SMD	NC-NMC1206Z5U104M50T
C19	.01uf/	AV-12065E103MATMA
C20,21	1uf/35V tantalum	AV-TAP105K035HSB
C22	.01uf/	AV-12065E103MATMA
C23	1 uf/50V ceramic SMD	NC-NMC1206Z5U104M50T
C24,25	470pf/100V ceramic SMD	AV-12061A471JATMA
C26	1 uf/50V Z5U SMD(1206)	NC-NMC1206Z5U104M50T
	Diodes	
D1,2	5.4V zener	GI-1N4734A
	Integrated Circuits	
IC1,2	Quiet op amp	SG-NE5532N
IC2,3	Balanced line receiver	AD-SSM2143P
IC5	-5VDC regulator/100 mA	MO-MC79L05ACP
IC6	+5VDC regulator/100 mA	MO-MC78L05ACP
IC7	ADC 16-bit stereo	AD-AD1877JR
4 pcs.	8-pin dip socket	EM-100-083-10-1003
	Connectors	
J1,2	Phone jack switch PC	SW-RN-114BCP
J3	10-pin dual row socket	PN-050-010-455
	Ferrites	
FR1-3	Ferrite bead	MU-BLM32A07PB
	Resistors	
R1,2	21k, .1%	DL-RNC55H2102BS
R3-7	4220, 1%	
R8,9	50K multiturn trimpot	MP-CT9X503
R10,11	21K, .1%	DL-RNC55H2102BS
R12	4220, 1%	
R13-14	300	
1 pc.	ADC Input circuit card	LG-264A

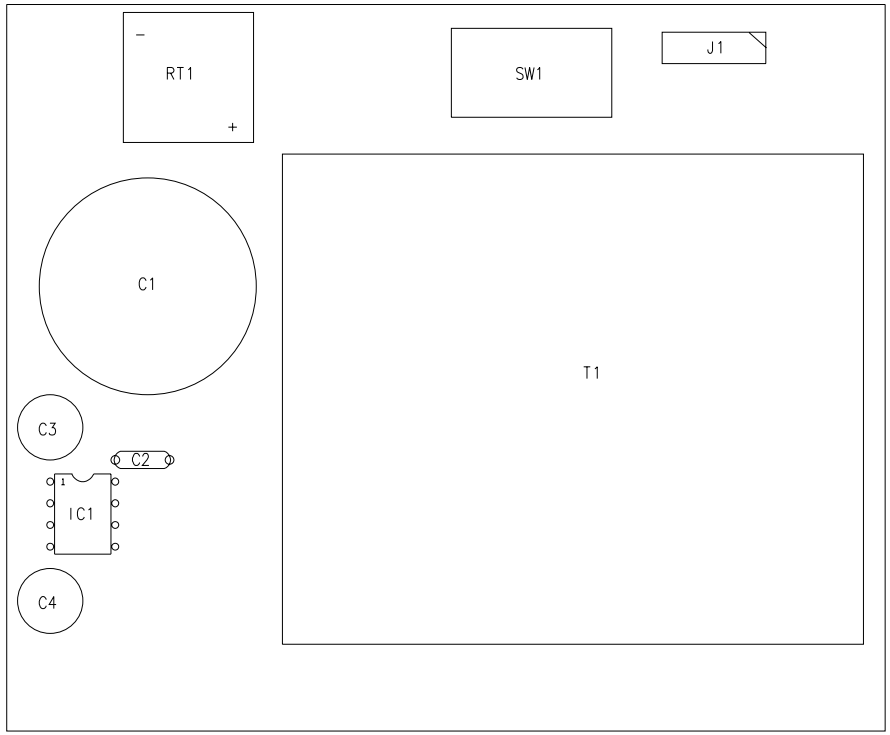
5-6 Front Panel Switches

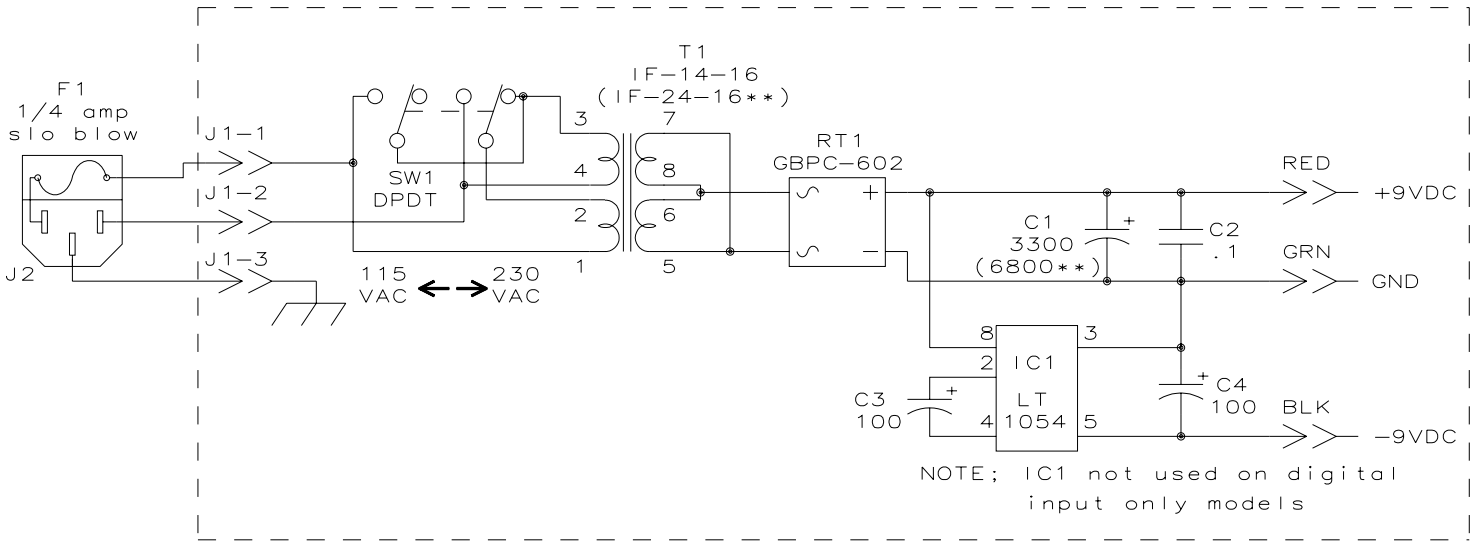
	Switches	
1 to 4 pcs.	3 position rocker switch	MR-ST1-4L5S5ZBJ3J90-22

SECTION 6 — MANUFACTURERS LIST

CODE	MANUFACTURER	LOCATION
AD	Analog Devices	Norwood, MA
AV	AVX/Stantel Corp.	Myrtle Beach, SC
BE	Belden	Richmond, IN
CA	Catalyst Semiconductor	Santa Clara, CA
CE	Centralab Electronics Div.	Milwaukee, WI
CK	C&K Components	Newton, MA
CS	Crystal Semiconductor	Austin, TX
CT	CTS	Elkhart, IN
EC	E-Switch	Minneapolis, MN
EM	Ecam Technology	Scottsdale, AZ
GI	General Instruments/Quality Technologies	Sunnyvale, CA
HP	Hewlett Packard Opto-electronics Div.	Santa Clara, CA
IL	Illinois Capacitor	Lincolnwood, IL
LF	Littlefuse	Des Plaines, IL
LG	Logitek (Circuit Cards)	Houston, TX
LO	Lite-On Inc. Semiconductor Div.	Milpitas, CA
MM	Maxim	Sunnyvale, CA
MO	Motorola Semiconductor Products	Phoenix, AZ
MP	Mepcopal	San Diego, CA
MR	MORS Components Inc.	Wakefield, MA
NC	NIC Components Corp.	North Amityville, NY
NI	Nichicon	Schaumburg, IL
NT	Neutrik	Lakewood, NJ
PR	Mill-Max Mfg. (Preci-dip)	Oyster Bay, NY
PN	Panduit Corp.	Tinsley Park, IL
SI	Signal Transformer	Inwood, NY
SR	Schurter Inc.	Petaluma, CA
SS	Schott Corp.	Minneapolis, MN
SY	Stanley	Battle Creek, MI
TI	Texas Instruments, Inc.	Dallas, TX

SECTION 7 — DIAGRAMS

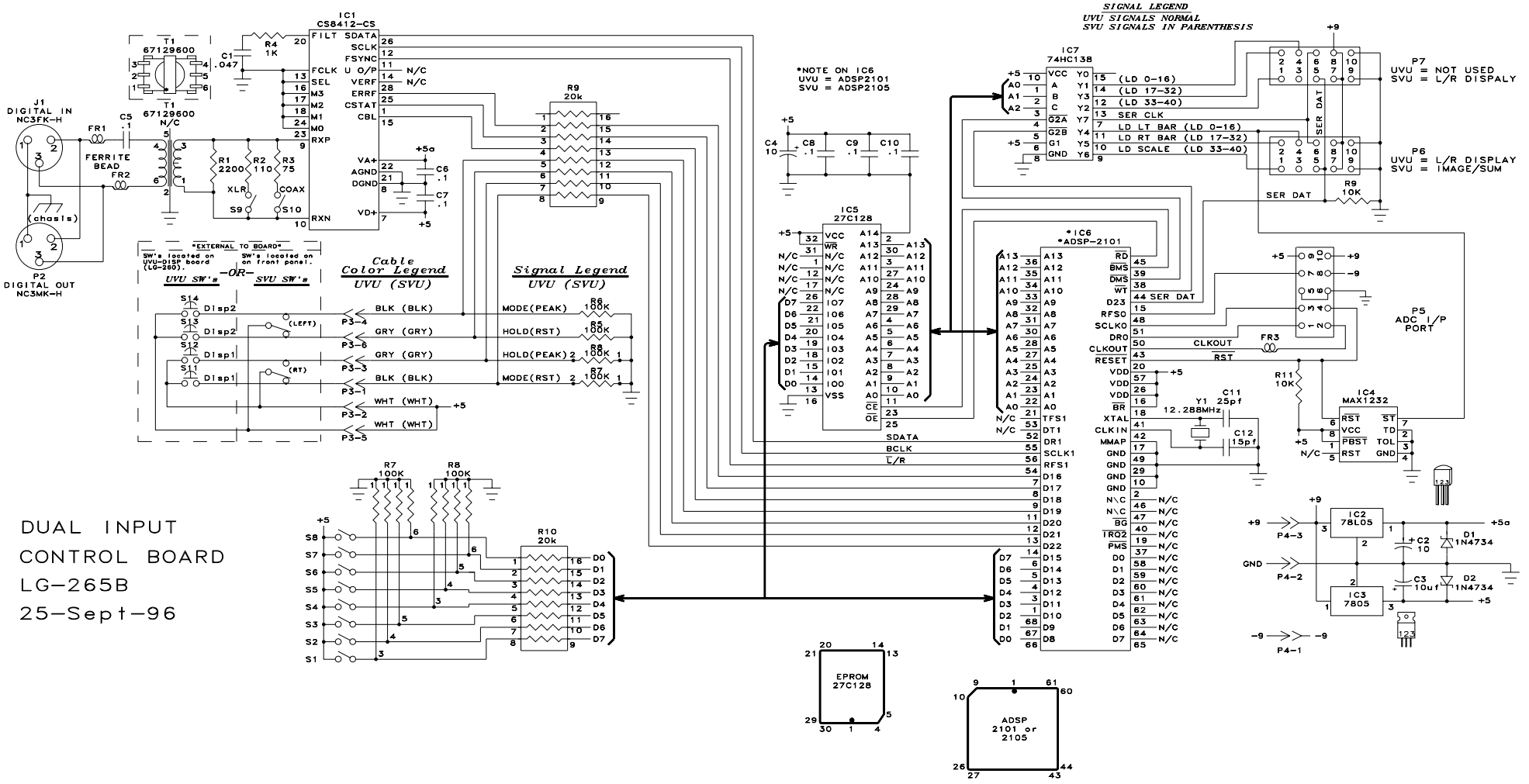


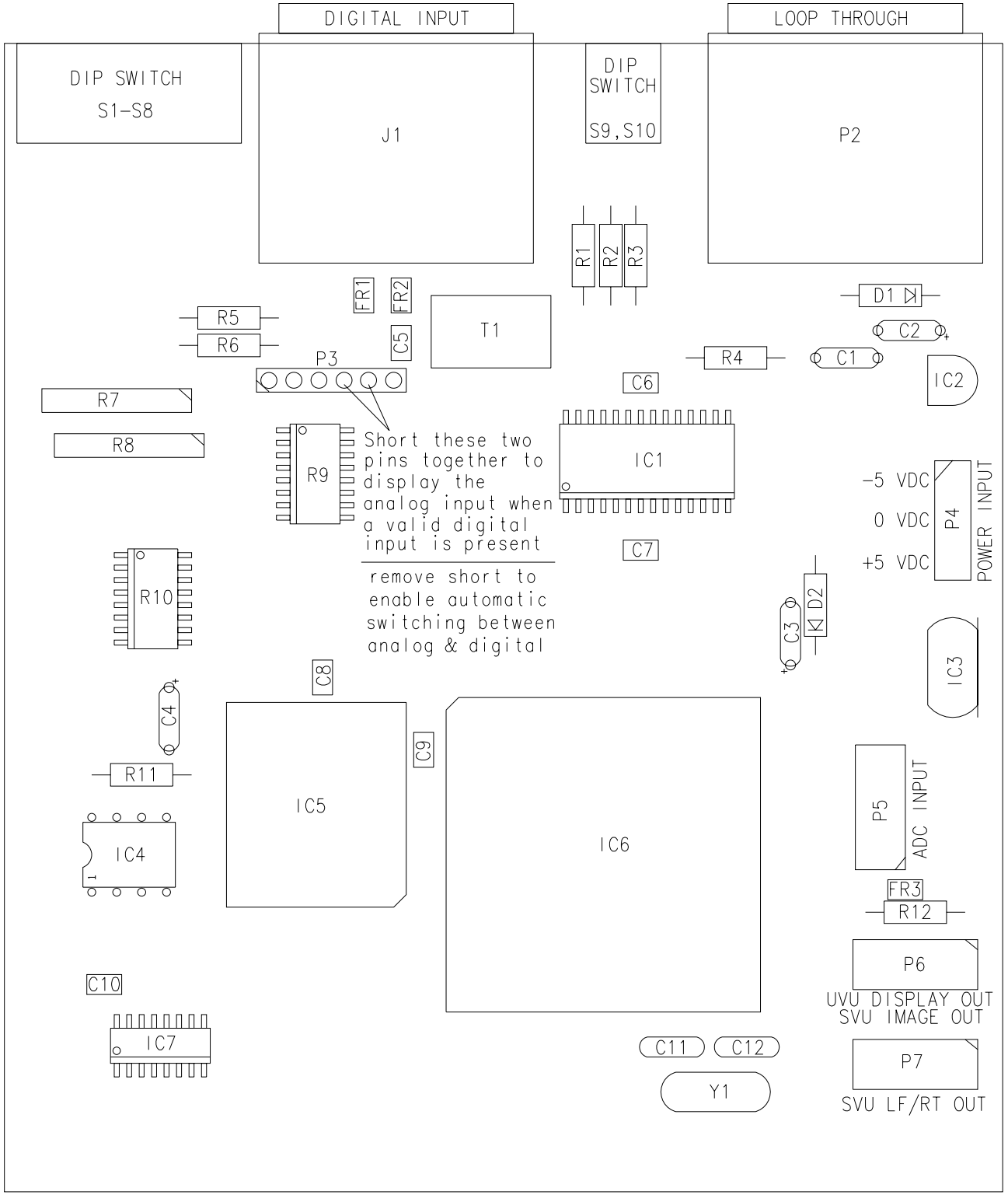


SVU,BVU,UVU SUPPLY LG-253
Component Diagram
31-Jan-94

POWER SUPPLY
LG-253A

** These values are used on models
SIS2 and UV2 only


DUAL INPUT
CONTROL BOARD
LG-265B
25-Sept-96
SIGNAL LEGEND
UVU SIGNALS NORMAL
SVU SIGNALS IN PARENTHESIS
*NOTE ON IC6
UVU = ADSP2101
SVU = ADSP2105
IC1
CS8412-CS
IC5
27C128
*IC6
*ADSP-2101
IC7
74HC138
P7
UVU = NOT USED
SVU = L/R DISPALY
P6
UVU = L/R DISPLAY
SVU = IMAGE/SUM
P5
ADC I/P
PORT
IC4
MAX1232
IC2
78L05
IC3
7805
D1
1N4734
D2
1N4734
Y1 12.288MHz
J1
DIGITAL IN
NC3FK-H
P2
DIGITAL OUT
NC3MK-H
EXTERNAL TO BOARD
SW's located on UVU-DISP board (LG-260).
SW's located on on front panel.
-OR-
UVU SW's
SVU SW's
Cable
Color Legend
UVU (SVU)
Signal Legend
UVU (SVU)
EPROM
27C128
ADSP
2101 or
2105

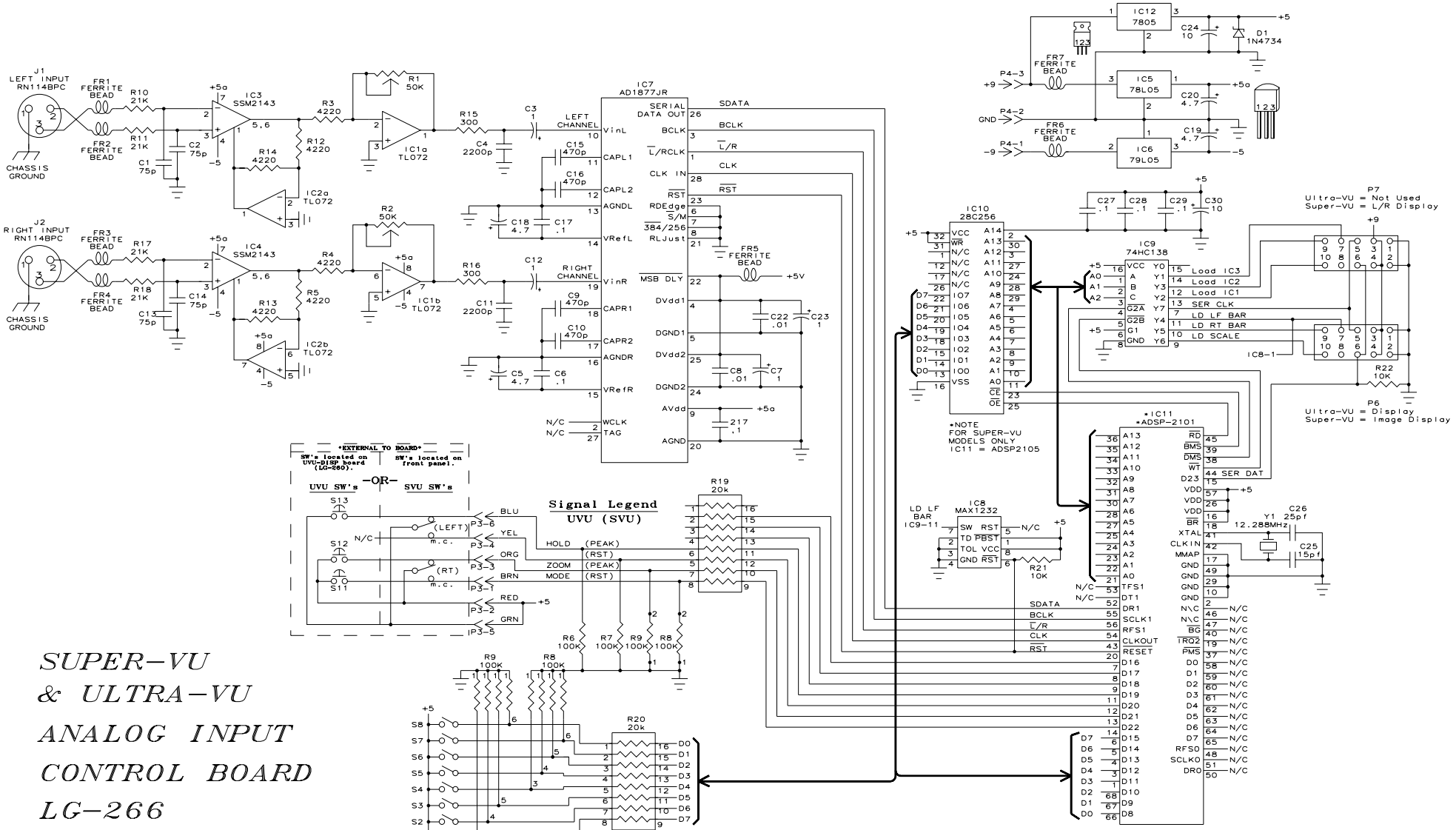


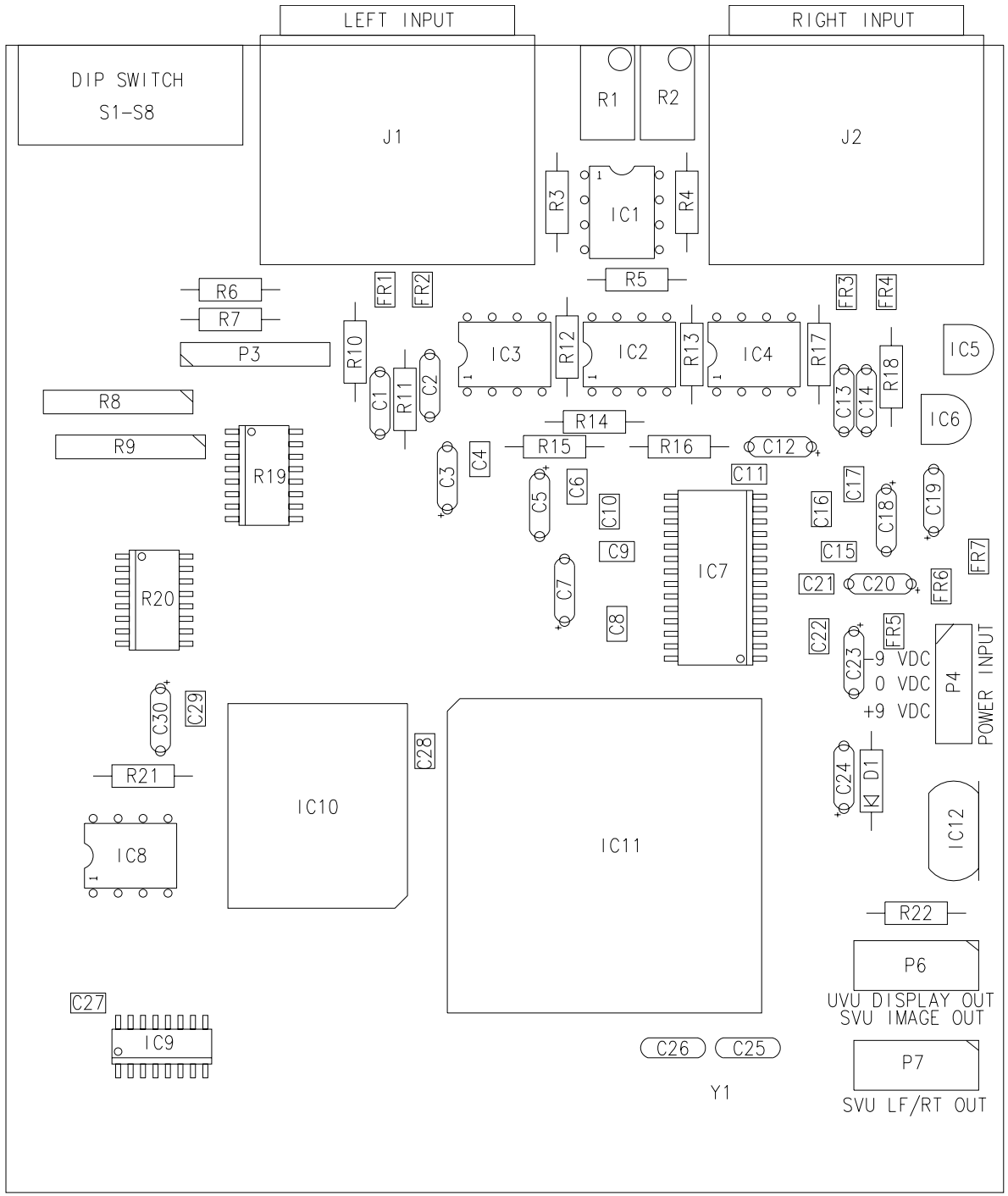
SVU/UVU Digital/Dual Control

LG-265B

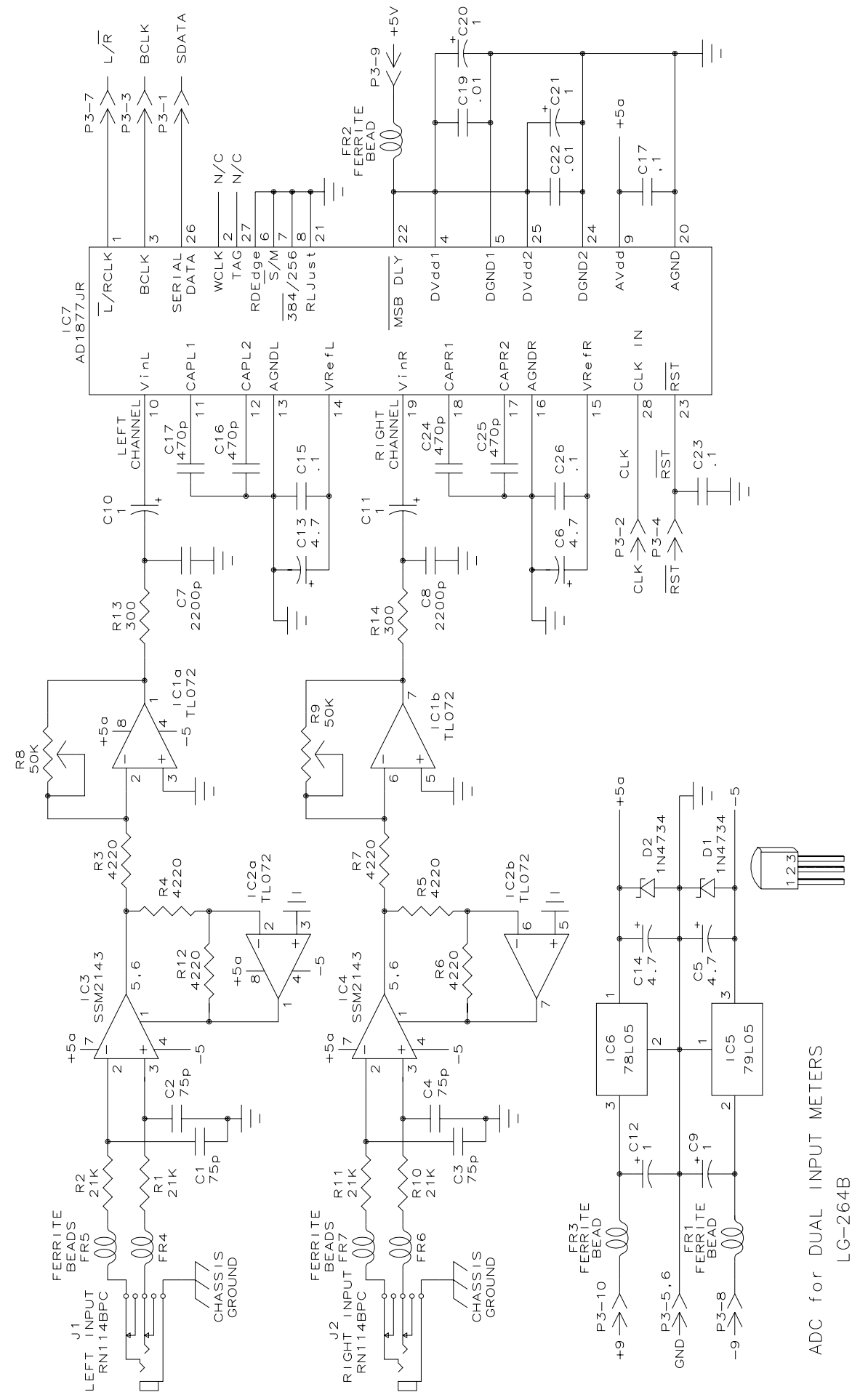
Component Diagram

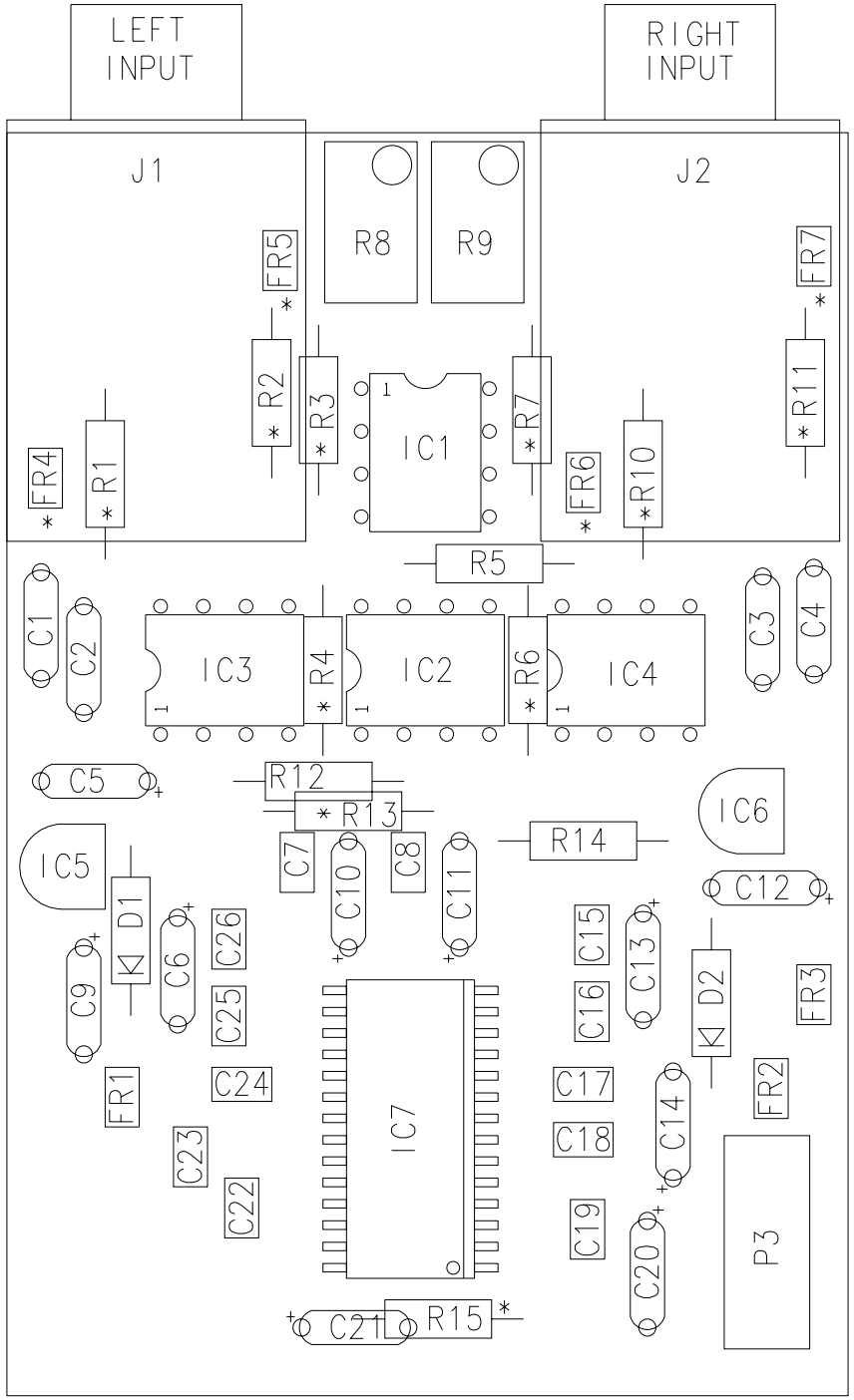
4-Mar-96


J1
LEFT INPUT
RN114BPC
CHASSIS GROUND
J2
RIGHT INPUT
RN114BPC
CHASSIS GROUND
IC3 SSM2143
IC4 SSM2143
IC1a TL072
IC1b TL072
IC2a TL072
IC2b TL072
IC7 AD1877JR
SERIAL DATA OUT
LEFT CHANNEL
RIGHT CHANNEL
IC12 7805
IC5 78L05
IC6 79L05
D1 1N4734
IC10 28C256
IC9 74HC138
IC8 MAX1232
*IC11 *ADSP-2101
*NOTE
FOR SUPER-VU
MODELS ONLY
IC11 = ADSP2105
P7
Ultra-VU = Not Used
Super-VU = L/R Display
P6
Ultra-VU = Display
Super-VU = Image Display
EXTERNAL TO BOARD
SW's located on UVU-DISP board (LG-260).
SW's located on front panel.
UVU SW's
-OR-
SVU SW's
Signal Legend
UVU (SVU)
SUPER-VU
& ULTRA-VU
ANALOG INPUT
CONTROL BOARD
LG-266
26 JAN 96



SVU/UVU ANALOG CONTROL LG-266
Component Diagram
28-Oct-95


ADC for DUAL INPUT METERS
LG-264B
24-Jul-97

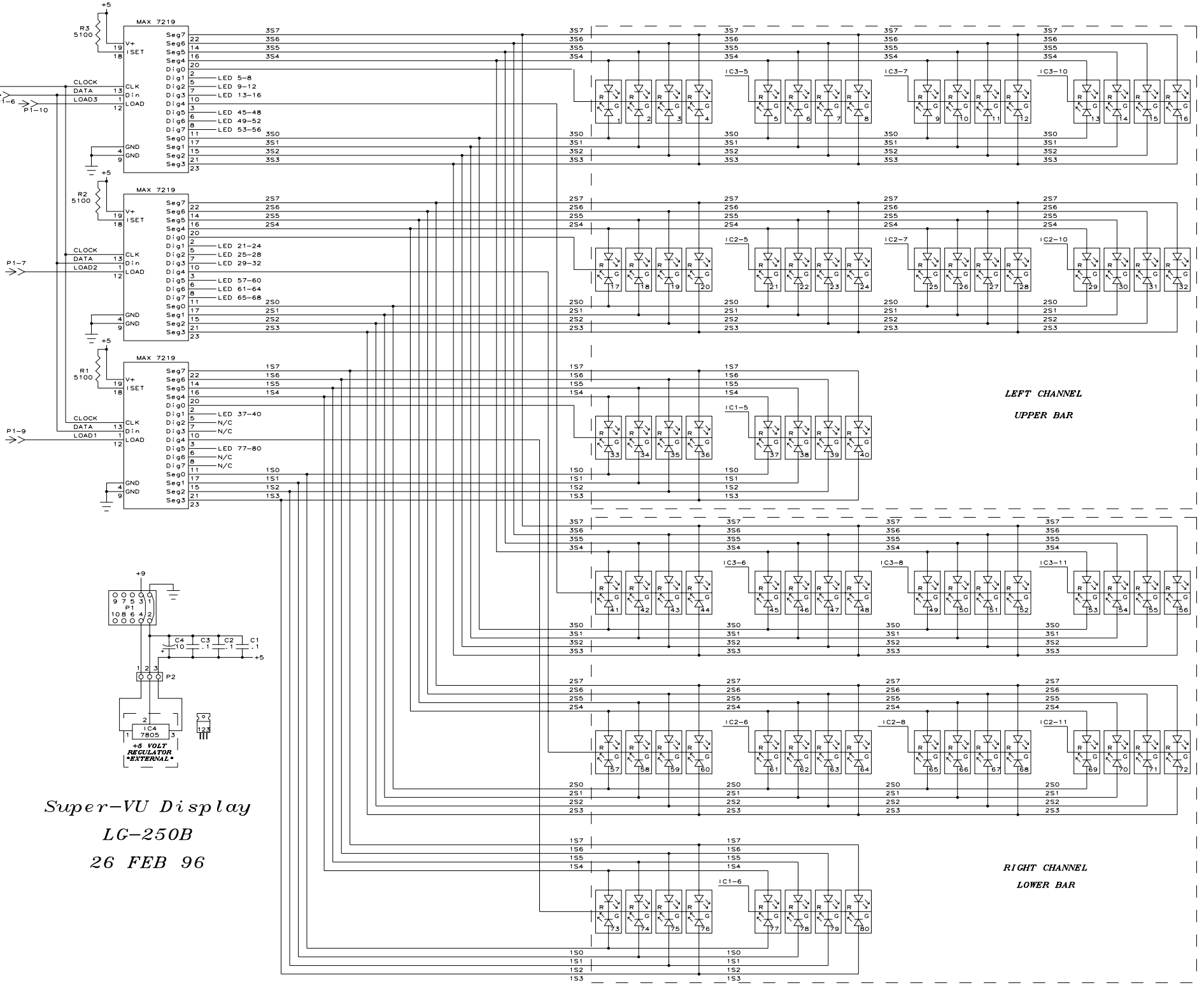


PARTS MARKED WITH "*" ARE MOUNTED
ON THE UNDER SIDE OF THE BOARD

ADC for DUAL INPUT METERS LG-264B

Component Diagram

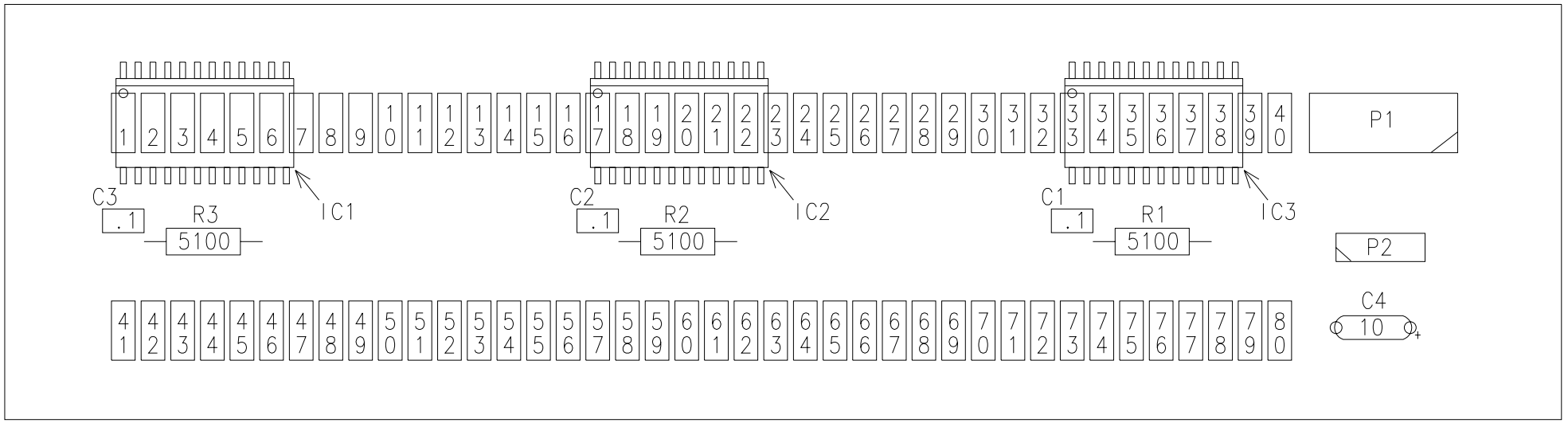
18-Jun-96



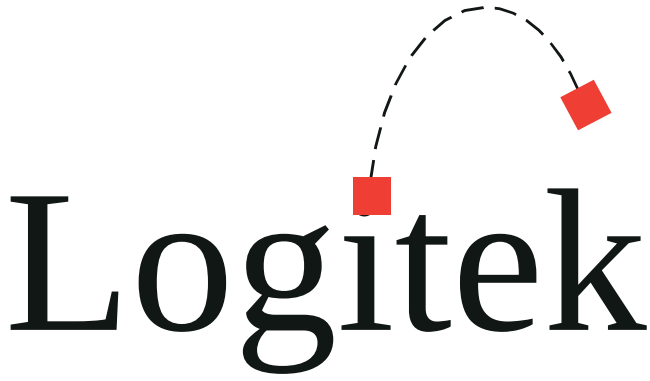
Super-VU Display

LG-250B

26 FEB 96



SUPER-VU DISPLAY LG-250b
Component Diagram
28-Jan-94



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In the event that any part of this professional equipment becomes defective during the first two years following purchase, and purchaser wishes to attempt repair, purchaser may obtain a replacement part by notifying LOGITEK of the part of the equipment which has failed. LOGITEK will thereafter ship a replacement part, freight prepaid. LOGITEK may require the purchaser to return the defective part to LOGITEK freight prepaid as a condition of such replacement, either before or after LOGITEK ships the replacement part. LOGITEK shall not be responsible for any other charges or liabilities associated with purchaser--made repairs.

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