Broadcast Electronics
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Marti Electronics
CD-15
Composite STL Demodulator

566-018 rev B
March 25, 2011

Marti Electronics

CD-15

Composite STL Demodulator

Marti Electronics
Product Warranty (One-Year Limited)

Broadcast Electronics (BE) hereby warrants all new Marti Electronics branded products, including STL systems, manufactured by BE, against any defects in material or workmanship at the time of delivery thereof, or that develop under normal use within a period of one (1) year, from the date of shipment.

BE reserves the right to repair equipment under warranty with new or refurbished equipment or parts. BE's sole responsibility with respect to any equipment or parts not conforming to this warranty is to replace or repair such equipment upon the return thereof F.O.B. to BE's factory in Quincy, Illinois, U.S.A. In the event of replacement pursuant to the foregoing warranty, only the unexpired portion of the warranty from the time of the original purchase will remain in effect for any such replacement.

This warranty shall exclude the following products, component parts and/or assemblies:

(a) Transmitter power output tubes shall only carry the original manufacturer's or supplier's standard warranty in effect on their original shipment date.

(b) All computers, computer peripherals, cables, hard disk drives, etc., shall only carry the manufacturer's or supplier's standard warranty in effect on their original shipment date.

(c) "Components", defined as separate and individual parts (e.g. transistors, integrated circuits, capacitors, resistors, inductors, fans, etc), resold by BE from another manufacturer or supplier, shall only carry a 90 day warranty, effective the date of shipment. Any such 'Components' being returned for warranty claim must be (1) returned in their original packaging and (2) must be in new, unused condition.
BE is unable to process or resolve component defects or performance concerns on components that have been soldered, installed, wired or in any way altered from new their new condition.

(d) "Resale Equipment", defined as equipment purchased from another manufacturer or supplier, then resold by BE, shall only carry such manufacturer's or supplier's standard warranty in effect as of the original shipment date.. All warranty claims against any and all 'resale equipment' sold by BE must be filed directly with the original equipment manufacturer. BE is unable to process or resolve equipment defects or performance concerns on products or services not manufactured by BE.

This warranty shall not extend to claims resulting from any acts of God, terrorism, war, defects or failures caused by Purchaser or user abuse or misuse, operator error, or unauthorized attempts to repair or alter the equipment in any way.

Under no circumstances shall BE be responsible for indirect, incidental or consequential damages, including, but not limited to transportation costs, non-authorized repair or service costs, downtime costs, costs for substituting equipment or loss of anticipated profits or revenue, incurred by Purchaser, whether based in contract, tort or for negligence or breach of statutory duty or otherwise.

The terms of the foregoing warranty shall be null and void if the equipment has been altered or repaired without specific written authorization from BE, or if not installed according to BE's instruction manuals, including, but not limited to, the absence of proper grounding, surge (TVSS) protection on the AC circuit panel or proper lightning protection/grounding on all output circuits, or if equipment is operated under environmental conditions or circumstances other than those specifically described in BE's product literature or instruction manual which accompany the

equipment. **The warranty shall be voided if the product or subassembly is equipped with a tamper seal and that tamper seal is broken.** BE shall not be liable for any expense of any nature whatsoever incurred by the original user without prior written consent of BE. The warranty provided herein shall terminate at the end of the period set forth above. **This warranty extends only to the original Purchaser and is not transferable.** There are no third party beneficiaries of any of the provisions of this warranty. If the equipment is described as "used" equipment, it is sold as is and where is and no warranty applies unless authorized in writing.

EXCEPT AS SET FORTH HEREIN, AS TO TITLE AND AS SPECIFICALLY REQUIRED BY LAW, THERE ARE NO OTHER WARRANTIES, OR ANY AFFIRMATIONS OF FACT OR PROMISES BY BE, WITH REFERENCE TO THE EQUIPMENT, OR TO MERCHANTABILITY, FITNESS FOR A PARTICULAR APPLICATION, SIGNAL COVERAGE, INFRINGEMENT, OR OTHERWISE, WHICH EXTEND BEYOND THE DESCRIPTION OF THE EQUIPMENT ON THE FACE HEREOF.

IMPORTANT INFORMATION

EQUIPMENT LOST OR DAMAGED IN TRANSIT -

When delivering the equipment to you, the truck driver or carrier's agent will present a receipt for your signature. Do not sign it until you have:

1) Inspected the containers for visible signs of damage and 2) Counted the containers and compared with the amount shown on the shipping papers. If a shortage or evidence of damage is noted, insist that notation to that effect be made on the shipping papers before you sign them.

Further, after receiving the equipment, unpack it and inspect thoroughly for concealed damage. If concealed damage is discovered, immediately notify the carrier, confirming the notification in writing, and secure an inspection report. This item should be unpacked and inspected for damage WITHIN 15 DAYS after receipt. Claims for loss or damage will not be honored without proper notification of inspection by the carrier.

RF PRODUCT TECHNICAL ASSISTANCE, REPAIR SERVICE, PARTS -

Technical assistance is available from Broadcast Electronics by letter, prepaid telephone or E-mail. Equipment requiring repair or overhaul should be sent by common carrier, prepaid, insured, and well protected. If proper shipping materials are not available, contact the RF Technical Services Department for a shipping container. Do not mail the equipment. We can assume no liability for inbound damage, and necessary repairs become the obligation of the shipper. Prior arrangement is necessary. Contact the RF Technical Services Department for a Return Authorization.

Emergency and warranty replacement parts may be ordered from the following address. Be sure to include the equipment model number, serial number, part description, and part number. Non-emergency replacement parts may be ordered directly from the Broadcast Electronics stock room at the number shown below.

RF TECHNICAL SERVICES -

Telephone: +1 (217) 224-9617
E-Mail: rfservice@bdcast.com
Fax: +1 (217) 224-6258

FACILITY CONTACTS -

Broadcast Electronics, - Quincy Facility
4100 N. 24th St. P.O. BOX 3606
Quincy, Illinois 62305
Telephone: +1 (217) 224-9600
Fax: +1 (217) 224-6258
General E-Mail: bdcast@bdcast.com
Web Site: www.bdcast.com

PARTS -

Telephone: +1 (217) 224-9617
E-Mail: parts@bdcast.com

RETURN, REPAIR, AND EXCHANGES -

Do not return any merchandise without our written approval and Return Authorization. We will provide special shipping instructions and a code number that will assure proper handling and prompt issuance of credit. Please furnish complete details as to circumstances and reasons when requesting return of merchandise. All returned merchandise must be sent freight prepaid and properly insured by the customer.

MODIFICATIONS -

Broadcast Electronics, reserves the right to modify the design and specifications of the equipment in this manual without notice. Any modifications shall not adversely affect performance of the equipment so modified.

SAFETY PRECAUTIONS

PLEASE READ AND OBSERVE ALL SAFETY PRECAUTIONS!!

ALL PERSONS WHO WORK WITH OR ARE EXPOSED TO POWER TUBES, POWER TRANSISTORS, OR EQUIPMENT WHICH UTILIZES SUCH DEVICES MUST TAKE PRECAUTIONS TO PROTECT THEMSELVES AGAINST POSSIBLE SERIOUS BODILY INJURY. EXERCISE EXTREME CARE AROUND SUCH PRODUCTS. UNINFORMED OR CARELESS OPERATION OF THESE DEVICES CAN RESULT IN POOR PERFORMANCE, DAMAGE TO THE DEVICE OR PROPERTY, SERIOUS BODILY INJURY, AND POSSIBLY DEATH.

DANGEROUS HAZARDS EXIST IN THE OPERATION OF POWER TUBES AND POWER TRANSISTORS -

The operation of power tubes and power transistors involves one or more of the following hazards, any one of which, in the absence of safe operating practices and precautions, could result in serious harm to personnel.

A. **HIGH VOLTAGE -** Normal operating voltages can be deadly. Additional information follows.

B. **RF RADIATION -** Exposure to RF radiation may cause serious bodily injury possibly resulting in Blindness or death. Cardiac pacemakers may be affected. Additional information follows.

C. **HOT SURFACES -** Surfaces of air-cooled radiators and other parts of tubes can reach temperatures of several hundred degrees centigrade and cause serious burns if touched. Additional information follows.

D. **RF BURNS -** Circuit boards with RF power transistors contain high RF potentials. Do not operate an RF power module with the cover removed.

HIGH VOLTAGE –

Many power circuits operate at voltages high enough to kill through electrocution. Personnel should always break the primary AC Power when accessing the inside of the transmitter.

RADIO FREQUENCY RADIATION -

Exposure of personnel to RF radiation should be minimized, personnel should not be permitted in the vicinity of open energized RF generating circuits, or RF transmission systems (waveguides, cables, connectors, etc.), or energized antennas. It is generally accepted that exposure to "high levels" of radiation can result in severe bodily injury including blindness. Cardiac pacemakers may be affected.

The effect of prolonged exposure to "low level" RF radiation continues to be a subject of investigation and controversy. It is generally agreed that prolonged exposure of personnel to RF radiation should be limited to an absolute minimum. It is also generally agreed that exposure should be reduced in working areas where personnel heat load is above normal. A 10 mW/cm^2 per one tenth hour average level has been adopted by several U.S. Government agencies including the Occupational Safety and Health Administration (OSHA) as the standard protection guide for employee work environments. An even stricter standard is recommended by the American National Standards Institute which recommends a 1.0 mW/cm^2 per one tenth hour average level exposure between 30 Hz and 300 MHz as the standard employee protection guide (ANSI C95.1-1982).

RF energy must be contained properly by shielding and transmission lines. All input and output RF connections, such as cables, flanges and gaskets must be RF leak proof. Never operate a power tube without a properly matched RF energy absorbing load attached. Never look into or expose any part of the body to an antenna or open RF generating tube or circuit or RF transmission system while energized. Monitor the tube and RF system for RF radiation leakage at regular intervals and after servicing.

HOT SURFACES –

The power components in the transmitter are cooled by forced-air and natural convection. When handling any components of the transmitter after it has been in operation, caution must always be taken to ensure that the component is cool enough to handle without injury.

Table of Contents

1 INTRODUCTION

The Marti CD-15 Stereo Demodulator decodes a multiplexed composite signal into discrete right and left channel audio. Designed to operate in conjunction with an STL-15C/R-15C Studio-Transmitter Link, the CD-15 provides for a composite AM Stereo transmitter feed, audio monitoring at composite STL repeater sites, and composite stereo remote broadcasting (export only). The unit is equipped with 75 microsecond de-emphasis and delivers 600 ohm balanced audio via rear via rear panel outputs. The CD-15 employs peak-hold LED metering of Left and Right Modulation. Audio output levels are front panel adjustable over a range of 0 to +10 dBm.

1.1 CD-15 Features

- Automatic mono/stereo switching
- Front panel peak-hold LED metering of left and right modulation
- Quick disconnect for balanced 600 ohm outputs
- Front panel adjustable audio output levels
- On board accessory relay allows for stereo/mono switching of associated equipment
- External DC power input via rear connector

2 Model CD-15 Multiplex Stereo Demodulator SPECIFICATIONS

Input Level	300 millivolts RMS
Channel Separation	45 dB
Channel Balance (monaural)	0.3 dB
Distortion (monaural)	0.4%
Outputs	+10 dBm, 600 ohms balanced
Signal to Noise (L & R)	55 dB
Frequency Response	± 1.5 dB (20 Hz to 15 KHz)
Metering	Pilot LED, DC power LED, 12-segment peak-hold bargraph for each channel
Audio Processing	75 micro-second de-emphasis standard
Controls	Program Level pots each channel, automatic stereo/mono switching keys, Accessory relay
Connectors	BNC jack for composite input, 10 pin screw terminal plug and socket for audio output and relay access
RF Protection	All outputs filtered for RF, Totally shielded and bonded aluminum enclosure

Operating Temperature Range	-10˚ C to +50˚ C
Power Requirements	110-125 VAC, 50-60 Hz, 12.5 VDC (neg. ground), 220 VAC on request (must be specified with order)
AC Fuse	½ Ampere 3AG fuse for 120 VAC operation
Dimensions	1.75 inches High x 19 inches Wide x 13 inches Deep 4.45 cm High x 48.26 cm Wide x 33.02 cm Deep
Weight	Net 5 pounds. Domestic packed 8 pounds Net 2.2 kilograms. Export packed 3.6 kilograms

Specifications subject to change without notice

2.1 UNPACKING & INSPECTING

This equipment was factory tested, inspected, packed, and delivered to the carrier with utmost care. Do not accept shipment from carrier, which shows damage or shortage until the carrier's agent endorses a statement of the irregularity on the face of the carrier's receipt. Without documentary evidence, a claim cannot be filed. Unpack equipment immediately upon receipt and thoroughly inspect for concealed damage. If damage is discovered, stop further unpacking and request immediate inspection by local agent of carrier. A written report of the agent's findings, with his signature is necessary to support claim. Check your shipment against the shipping papers for possible shortage. Do not discard any packing material until all items are accounted for. Small items are often thrown away with packing material.

Packing material should be retained until equipment testing is completed. Any equipment returned to the factory should be packed in original cartons, insured, and pre-paid.

3 INSTALLATION

Install rack-mounted equipment in a well-ventilated, well-grounded, and shielded rack cabinet. Do not locate solid-state equipment in a rack above tube-type equipment, which produces high temperatures.

Problems can also be avoided by locating this unit away from other equipment, which has transformers that produce strong magnetic fields. These fields can induce hum and noise into the Marti equipment thus reducing performance. Strong radio-frequency (RF) fields should be avoided where possible. Extensive shielding and filtering have been incorporated into this equipment to permit operation in moderate RF environments. All equipment racks, cabinets, etc., should be bonded together by wide copper grounding strap to ensure that all system elements are at RF ground potential.

3.1 CD-15 Demodulator Connections for Composite Stereo operation

1. Connect a BNC to BNC coaxial cable from the composite output of the R-15C receiver to the CD-15 rear panel BNC composite signal input, J1. NOTE: J1 is also paralleled with J2 (composite output) to enable connection to any other equipment requiring a composite signal.

2. Consult Table 1 below for audio, external power, and relay connections. Rear panel connector TB1 provides clamp screw terminals on a carrier, which is plugged into the socket at TB1. Loosen the screws, insert stripped wire leads into the carrier, tighten screws and plug carrier into the socket.

Table 1

Pin No.	Connection
1	Left audio out
2	Ground
3	Left audio out
4	Right audio out
5	Ground
6	Right audio out
7	Relay common
8	Relay normally closed
9	Relay normally open
10	External 13.5 VDC in

3. Connect AC line receptacle on back of the demodulator to a 115 volt AC power source with special cord set supplied. USE ONLY 3-PRONG GROUNDED OUTLET RECEPTACLES FOR SAFETY.

WARNING

This equipment must be operated with a 3-prong, grounded, 115 volt, AC outlet receptacle! Failure to use a properly grounded outlet could result in a safety hazard or faulty equipment performance!

4 OPERATION

4.1 PROGRAM LEVEL POTS

Left and right PGM LEVEL pots are adjusted for suitable output drive level as indicated by the CD-15 front panel LED metering, an AC voltmeter or indicators on the next piece of equipment in the signal chain.

4.2 ACCESSORY RELAY

The accessory relay is energized when the CD-15 detects a stereo pilot in the composite signal. The CD-15 automatically switches from mono to stereo when the pilot is detected. Control of associated equipment is possible using this feature. An external control signal should be connected to Pin 7 (see Table 1 on page 4) of TB1. The accessory relay is energized only when a stereo pilot is

detected. The control signal can be taken from Pin 8 (Normally Closed) or Pin 9 (Normally Open).

5 TEST EQUIPMENT

Oscillator ..... Krohn-Hite Model 4500
Frequency Counter ..... Hewlett-Packard Model 5383A (option 001)
Digital Multimeter ..... Beckman Model 3030
Analog Multimeter ..... Triplett Model 630
Stereo Monitor ..... Belar Model FMS-2
Stereo Generator ..... Aphex Model AX400
Oscilloscope ..... Tektronix Model TAS-250

6 TOOLS FOR ALIGNMENT

Type of Tool	Manufacturer's No.	Marti Part No.
Tuning Tool	GC 9300	930-037
Tuning Tool	GC 9440	930-069

7 TUNE-UP AND ADJUSTMENTS

Refer to Location of Adjustments Drawing No. 702-112 and appropriate schematic diagrams for each module.

7.1 COMPOSITE INPUT LEVEL CALIBRATION

1. Connect a multiplexed composite stereo generator to an FM modulation monitor. Place the generator in the STEREO mode. Remove any audio input to the generator and adjust the pilot injection for 10% total modulation. Apply a 1000Hz sinusoidal test tone to the left and right generator input simultaneously. Adjust the input level to achieve 100% total modulation. Disconnect the generator output from the modulation monitor.
2. Connect the generator output to BNC COMPOSITE IN jack J1 on the CD-15 rear panel. Connect an oscilloscope probe to TP-1 on the CD-15 main board, 800-318. Rotate potentiometer R3 to locate the threshold of STEREO mode indicated by the illumination of the STEREO LED on the CD-15 front panel. Adjust R3 to a point just beyond the actual threshold of STEREO mode turn on. A reading of 0.61 volts peak to peak is a typical reading for TP-1. On the generator, toggle the pilot injection on and off. Verify that the CD-15 stereo LED illumination corresponds to the pilot output of the generator. If the stereo LED on the CD-15 fails to re- illuminate when cycling the generator on and off, the composite input level at TP-1 must be increased to achieve this by adjusting R3.

7.2 CALIBRATION OF LED MODULATION METERS

1. Connect a multiplexed composite stereo generator to an FM modulation monitor. Place the

generator in the STEREO mode. Remove any audio input to the generator and adjust the pilot injection for 10% total modulation. Apply a 1000Hz sinusoidal test tone to the left and right generator input simultaneously. Adjust the tone input level to achieve 100% total modulation. Disconnect the generator output from the modulation monitor.

2. Connect the generator output to the CD-15 rear panel BNC COMPOSITE IN jack, J1. Adjust potentiometers R54 and R55 to achieve a reading of 100% modulation on the left and right meters, respectively.

7.3 CALIBRATION OF SEPARATION CONTROL

1. Connect a multiplexed composite stereo generator to an FM modulation monitor. Place the generator in the STEREO mode. Remove any audio input to the generator and adjust the pilot injection for 10% total modulation. Apply a 1000Hz sinusoidal test tone to the left and right generator input simultaneously. Adjust the input level to achieve 100% total modulation. Disconnect the generator output from the modulation monitor.
2. Connect the generator output to BNC COMPOSITE IN jack J1 on the CD-15 rear panel. Connect an audio analyzer to the LEFT channel output (TB1, Pins 1 & 3). Adjust the LEFT PGM LEVEL on the CD-15 front panel for an output of +10 dBm. Connect the audio analyzer to the RIGHT channel output of the CD-15 (TB1, Pins 4 & 6). Adjust the RIGHT PGM LEVEL on the CD-15 front panel for an output of +10 dBm. Remove the test tone from the RIGHT channel of the STEREO GENERATOR input. Adjust R4 to achieve minimum noise level. Reconnect the test tone to RIGHT channel input of the stereo generator. Disconnect the test tone feeding the LEFT channel input of the stereo generator. Connect the audio analyzer to the LEFT channel output of the CD-15. Adjust R4 to achieve minimum noise level.

   NOTE: Maximum separation is achieved when R4 is adjusted to achieve a compromise minimum level between the two channels. Improper adjustment of R4 will result in failure of the automatic mono/stereo-switching feature of the CD-15. Once R4 has been adjusted satisfactorily, the pilot output of the STEREO GENERATOR should be toggled on and off to insure that the stereo status of the CD-15 corresponds to the pilot output status of the generator.

8 BILL OF MATERIAL

This bill of material uses an indented structure to show relationships of parts into sub assemblies. Example; all BOM LEVEL 2 parts are contained in the BOM LEVEL 1 part immediately above it.

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
0	705-CD-15	CD-15 COMPOSITE DEMODULATOR		
..1	500-002-1	Hex Nut, #4-40 Regular Nickel Plated	2	
..1	500-033	Screw, 6 x 1/4 phillips head SM SS type A"	7	
..1	586-130	Ribbon Cable 18 Digi Key #M3AAA1618R-ND"	2	
..1	586-142	Harness, CD-15	1	
....2	510-090	Cable Ties, 4 Panduit PANPLT1M-M MS3367-4-9"	3	
....2	512-018	Solder Lug, #4 short Concord 707-1204	1	
....2	550-124	Connector, 5 pin Molex housing 09-50-8050 *NOTE*	1	
....2	550-126	Connector, crimp terminal pin Molex 08-50-0187	5	
....2	550-159	Connector, 4 pin Molex housing 09-50-8040	1	
....2	580-040	Wire, UL1061 22/7 OTC Black	1.06	
....2	580-043	Wire, UL1061 22/7 OTC Red	0.75	
..1	700-259-7A	CD-15 Final Assembly	1	
....2	320-040L	TRANSFORMER, POWER, SCD/SCG 110V W/LUGS	1	
......3	320-040	TRANSFORMER, POWER, 41FJ300	1	
......3	512-020	TERMINAL,NICHIFU TMDN #125-250-03FA TERMINAL	2	
....2	339-0006	FILTER,RFI,10A 250VAC,50/60HZ	1	
....2	500-002-1	Hex Nut, #4-40 Regular Nickel Plated	12	
....2	500-033	Screw, 6 x 1/4 phillips head SM SS type A"	3	
....2	500-055	Lockwasher, #4 internal tooth small pattern zinc plated	12	
....2	500-162	Screw, 4-40 x 7/16 phillips pan head MS zinc plated"	15	
....2	500-166	Self Locking Nut, 4-40	2	
....2	500-180	Screw, 4-40 x 1/4 phillips pan head M/S Black Zinc"	6	
....2	500-181	Screw, #4 x 1/4 phillips pan head S/M Black Zinc"	3	
....2	500-187	Screw, #6 x 1/4 phillips pan head S/M type A black zinc	8	
....2	500-188	Screw, 4-40 x 3/8 phillips,flat head,black oxide"	2	
....2	500-199	Keps nut 4 x 40 zinc 4CNKEOZ	3	
....2	500-203	Screw, 6 x 3/16 Philips Pan Head SMS	3	
....2	510-072	Fuseholder, Littlefuse #342-004	1	
....2	510-113	Bushing, #B-312-250 black shorty Microplastic #22MP01015	2	
....2	510-217	Fuse, 1/2 Amp., 3AG Littlefuse 312.500	1	

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
....2	513-042	Spacer,4-40 x 3/16,Hex,Threaded	12	
....2	550-015	Connector, UG-625B/U BNC receptacle Amphenol 31-236 *NOTE*	2	
....2	550-137	Connector, 8 pin Molex housing 09-50-8080	1	
....2	586-194	Cable Assembly, AC Connector to Fuseholder (SBCM)	1	
......3	512-020	TERMINAL,NICHIFU TMDN #125-250-03FA TERMINAL	2	
......3	580-130	Wire, Stranded UL1015-20/10 Black Tinned Copper	0.32	
....2	586-195	Cable Assembly, AC Connector to Ground (SBCM)	1	
......3	410-1416	LUG,TERM,BENT,11/16	1	
......3	512-020	TERMINAL,NICHIFU TMDN #125-250-03FA TERMINAL	1	
......3	580-130	Wire, Stranded UL1015-20/10 Black Tinned Copper	0.32	
....2	700-227-2	Top Cover, ATS/ARS/SCG/SCD/CD	1	
....2	700-227-3	Bracket,SCG/SCD/ATS/ARS/CD Rack	2	
....2	700-259-1	Chassis, SCG/SCD/CD-15/ATS/ARS	1	
....2	700-259-6	Rear Panel, CD-15	1	
....2	700-259-7	Front Panel, CD-15	1	
..1	800-219AG	SCG-10/CD-15 Power Supply (uses 800-302 pc bd)	1	
....2	103-2341	RES,2.32K OHM,1/4W,1%,METAL	1	R9
....2	145-241-1	RESISTOR, 240 OHM 1/4 WATT 1% SFR55 240 1% TR	1	R8
....2	219-200	CAPACITOR ELECTROLYTIC 22UF 25V	2	C6,C7
....2	219-472	CAPACITOR, ELECTROLYTIC 4700UF 25V	1	C5
....2	268-102	CAPACITOR, .001 uF 50V DISC -20+80%	4	C1,C2,C3,C4
....2	414-007	DIODE, RECITIFIER,1N4007	6	D1,D2,D3,D4, D5,D6
....2	520-051A338	Heatsink w/LM338T	1	IC3
......3	401-338	IC, SMT, REGULATOR, 5 AMP, LM338T *NOTE*	1	
......3	500-162	Screw, 4-40 x 7/16 phillips pan head MS zinc plated"	1	
......3	500-199	Keps nut 4 x 40 zinc 4CNKEOZ	1	
......3	520-051	HEATSINK, THERMALLOY 6030B-TT	1	
......3	DB61024	Washer, TO-220 Shoulder NYL Thermalloy #7721-7PPS	1	
......3	DB68027	Sil Pad TO220 .75x.5" ADHSV Berquist 3223-07AC-58"	1	
....2	550-125	Connector, 5 pin Molex Header (cut from 550-162) *NOTE*	1	P2
......3	550-162	Connector, 24 pin break-away (straight) Molex 26-48-6248	0.208	
....2	550-138	Connector, 8 pin Molex header (cut from 550-162)	1	P1
......3	550-162	Connector, 24 pin break-away (straight) Molex 26-48-6248	0.333	

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
....2	580-005	Buss Wire, #22AWG Solid Tinned Copper	0.25	R10
....2	800-302B	PC Board,Receiver Power Supply	1	PCB
..1	800-318A	Cd-15 Stereo Decoder/Audio Board	1	
....2	100-1051	RES,10K OHM,1/4W,1%	6	R10,R14,R24, R28,R56,R57
....2	101-104	Potentiometer, 100K ohm cermet Bourns 3309P-1-104	1	R3
....2	101-501	Potentiometer, 500 ohm cermet Bourns 3309P-501	2	R54,R55
....2	101-502	POT,5K,SINGLE TURN,HORIZONTAL PCB MOUNT	1	R4
....2	103-1062	RES,100K OHM,1/4W,1%,METAL	12	
....2	103-2051	RES,20K OHM,1/4W,1%,METAL	8	R12,R16,R18, R21,R26,R30, R32,R35
....2	103-2211	RES,22.1K OHM,1/4W,1%,METAL	5	R5,R40,R42, R49,R51
....2	103-3924	RES,3.92K OHM,1/4W,1%,METAL	3	R1,R2,R6
....2	145-030	RESISTOR, 3.3 OHM 1/4 WATT 1% METAL FILM MEPCO SFR25	2	R36,R45
....2	145-123	Resistor, 12k ohm 1/4 watt 1% metal film Mepco SFR25	4	R11,R17,R25, R31
....2	145-220	Resistor, 22 ohm 1/4 watt 5% metal film Mepco SFR25	4	R43,R44,R52, R53
....2	145-682-1	Resistor, 6.8k ohm 1/4 watt 1% RL07S682G	4	R13,R19,R27, R33
....2	145-752	Resistor, 7.5k ohm 1/4 watt 5% metal film Mepco SFR25	4	R15,R20,R29, R34
....2	215-102	CAPACITOR, .001 uFD 2.5% 100V POLYPRO	1	C9
....2	215-151C	Capacitor, 150pF 5% 200V ceramic dipped C322C151J2G5CA	4	C72,C74,C76, C78
....2	215-242	CAPACITOR, .0024 UF 2.5% 100V POLYPRO	5	C8,C17,C24, C32,C39
....2	215-301	CAPACITOR, 300 PF 2.5% 100V POLYPRO	4	C73,C75,C77, C79
....2	215-333	Capacitor, .033 mfd 2.5% 100v polypro Seacor PFWAC33OHGNE	1	C7
....2	215-682	Capacitor, .0068uF 2.5% 100V polypro Seacor PFWAB680HGFE	2	C3,C5
....2	215-701	Capacitor, 700 pf 2.5% 100V polypro Seacor PFWAA700HGUE	4	C19,C26,C34, C41
....2	217-103	CAP,0.1UF 250VDC 5%,POLY FILM	5	C65,C66,C69, C70,C71
....2	219-106	CAPACITOR, 10UF 50V RADIAL ELECTROLYTIC	2	C58,C64
....2	219-220	CAPACITOR, ELECTROLYTIC 22uF RADIAL 35V	4	C56,C57,C62, C63

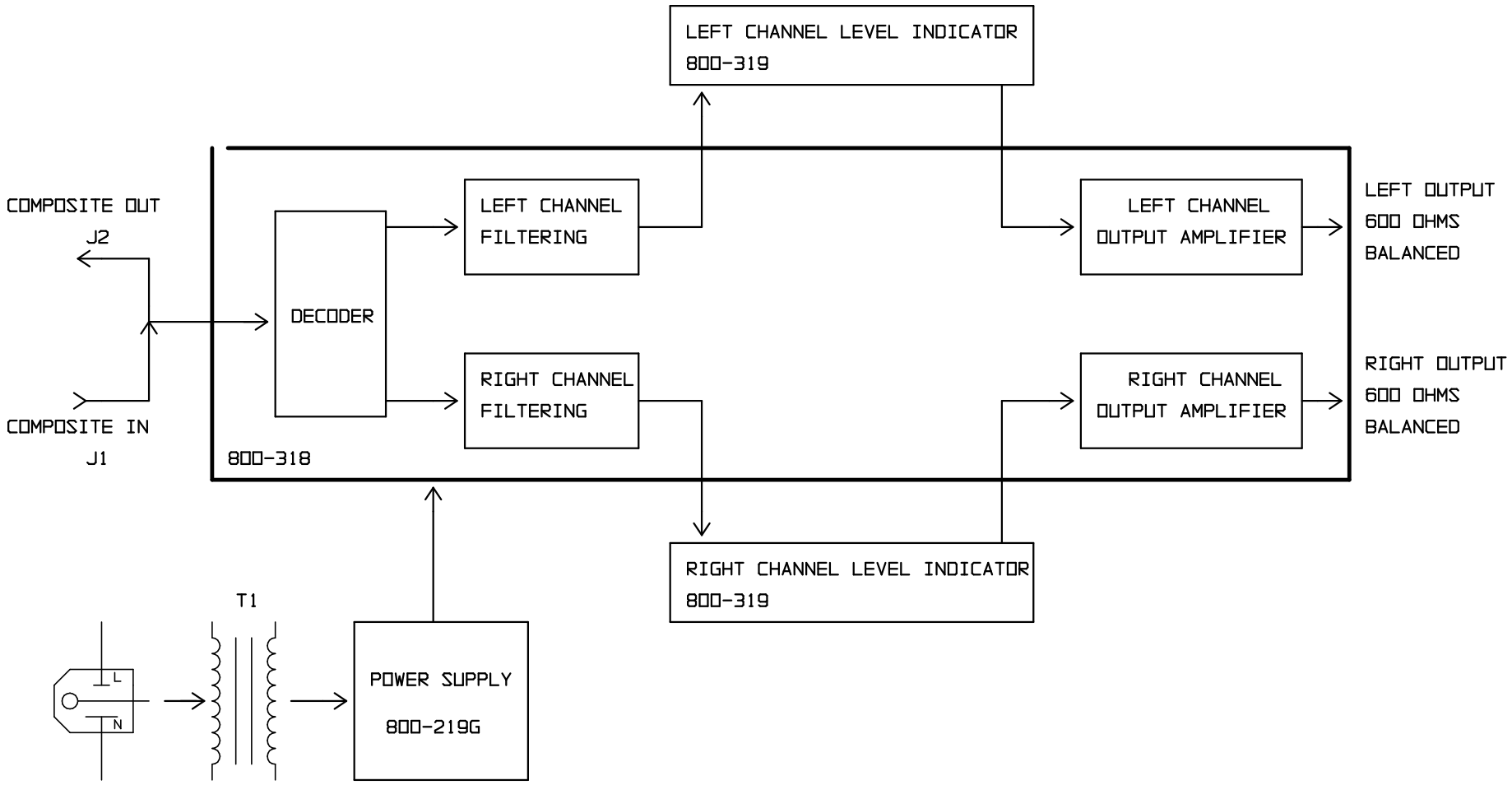
BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
....2	219-221	CAPACITOR, ELECTROLYTIC 220uF 25V RADIAL	6	C53,C54,C55, C59,C60,C61
....2	219-470	CAP,ELECTROLYTIC 47uF 16V RADIAL	6	C15,C16,C23, C30,C31,C38
....2	221-5532-001	IC,NE-5532AN	2	IC2,IC3
....2	226-224	Capacitor, .22 uf 50v 10% film CD MTC1P22K	3	C2,C12,C14
....2	226-274	Cap.,.27 mf 100v 10% polypro CD MTC1P27K OR Bishop C21B274K	2	C10,C13
....2	255-101C	Capacitor, 100pf 5% 200V ceramic dipped C317C101J2G5CA	8	C18,C22,C25, C29,C33,C37, C40,C44
....2	255-361	Capacitor, 360pF 300v 5% silver mica CD10FA361J03	1	C11
....2	268-203	CAPACITOR, .02 UF 50V Z5U DISC	2	C4,C6
....2	270-103	Cap, Monolithic chip 10000pF 10% XR7 Kemet C1206C103J5RACTR	8	C45,C46,C47, C48,C49,C50, C51,C52
....2	299-220	Capacitor, tantalum, 2.2 mf 25v ECS-F1EE225K Panasonic	1	C1
....2	310-014	TRANSFORMER, AUDIO, MIDCOM 671-9041 TECATE VFT 950-0394	2	T1,T2
....2	330-018	INDUCTOR, 10 uH, 10%	8	L1,L2,L3,L4,L5, L6,L7,L8
....2	401-877	IC, DUAL AUDIO POWER AMPLIFIER, LM1877N-9	2	IC4,IC5
....2	403-195	Integrated Circuit, CA3195E RCA/HARRIS	1	IC1
....2	414-007	DIODE, RECITIFIER,1N4007	3	D1,D2,D3
....2	417-1604	SKT,16-PIN,DIP	1	1C1
....2	550-069	IC Socket, 14 pin Keltron ICS-14-3-T / Aries 14-3510-10	2	IC4,IC5
....2	550-147	Connector,Horizontal Socket,10 Pin, 0.2 Spacing"	1	TB1
....2	550-148	Connector,Plug,10 Pin,0.2 Spacing"	1	TB1
....2	550-161	IC Socket, 16 pin Aries 16-3518-11	1	K1
....2	550-165	Connector, 4 pin Molex header (cut from 550-162)	1	P1
......3	550-162	Connector, 24 pin break-away (straight) Molex 26-48-6248	0.167	
....2	550-219	8 Pin Dual Row Header cut from 550-316	2	P2,P3
......3	550-316	HEADER, BREAKAWAY 40x2, 0.1 SPACING"	0.2	
....2	570-035-1	Relay, Aromat HB2E-DC12V	1	K1
....2	580-005	Buss Wire, #22AWG Solid Tinned Copper	0.25	
....2	800-318B	PC Board,CD Stereo Decoder/Audio	1	PCB
..1	800-319AG	CD-15 Stereo Decoder Meter Board (Green LED)	1	
....2	100-1051	RES,10K OHM,1/4W,1%	1	R4
....2	101-502	POT,5K,SINGLE TURN,HORIZONTAL PCB	1	R11

BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.
		MOUNT		
....2	103-1007	RES,1 MEG OHM,1/4W,1%,METAL	1	R1
....2	103-2241	RES,2.21K OHM,1/4W,1%,METAL	5	R5,R6,R7,R8, R9
....2	103-3323	RES,332 OHM,1/4W,1%,METAL	1	R10
....2	145-302	Resistor, 3k ohm 1/4 watt 1% metal film 29MF250	1	R2
....2	145-823	Resistor, 82.5k ohm 1/4 watt 1% metal film 29MF250	1	R3
....2	299-150	Cap.,Tantalum, 1.5 mf 35v ECS-F1VE155K Panasonic P2060-ND	1	C3
....2	299-220	Capacitor, tantalum, 2.2 mf 25v ECS-F1EE225K Panasonic	1	C1
....2	299-470	CAP, TANTALUM, 4.7 UF 16V	2	C2,C4
....2	401-412	INTEGRATED CIRCUIT, SANYO LB1412 (NOTE)	1	IC1
....2	410-255	LED, Green rectangular Lumex#SSL-LX2573GD	1	D1
....2	411-225	LED BAR GRAPH DISPLAY LUMEX SSA-LXH1225-23707	1	D2
....2	420-4104	SCREW,4-40X.250,S.S. PH	3	
....2	500-055	Lockwasher, #4 internal tooth small pattern zinc plated	3	
....2	500-120	Eyelet, #1-544047-5 copper	2	
....2	513-022	STANDOFF,1/4HEX x 0.375"LONG,4-40"	3	
....2	550-211	Conn,2x8 pin dual row header right angle cut from 550-217	1	P1
......3	550-217	Dual Right Angle Breakaway Header Amp #571-41033300 40x2	0.2	
....2	800-319B	PC BD Meter Bd for CD Stereo Decoder	1	PCB
..1	800-319AR	CD-15 Stereo Decoder Meter Board (Red LED)	1	
....2	100-1051	RES,10K OHM,1/4W,1%	1	R4
....2	101-502	POT,5K,SINGLE TURN,HORIZONTAL PCB MOUNT	1	R11
....2	103-1007	RES,1 MEG OHM,1/4W,1%,METAL	1	R1
....2	103-2241	RES,2.21K OHM,1/4W,1%,METAL	5	R5,R6,R7,R8, R9
....2	103-3323	RES,332 OHM,1/4W,1%,METAL	1	R10
....2	145-302	Resistor, 3k ohm 1/4 watt 1% metal film 29MF250	1	R2
....2	145-823	Resistor, 82.5k ohm 1/4 watt 1% metal film 29MF250	1	R3
....2	299-150	Cap.,Tantalum, 1.5 mf 35v ECS-F1VE155K Panasonic P2060-ND	1	C3
....2	299-220	Capacitor, tantalum, 2.2 mf 25v ECS-F1EE225K Panasonic	1	C1
....2	299-470	CAP, TANTALUM, 4.7 UF 16V	2	C2,C4
....2	401-412	INTEGRATED CIRCUIT, SANYO LB1412 (NOTE)	1	IC1
....2	410-155	LED, Red rectangular #604-L113HDT	1	D1

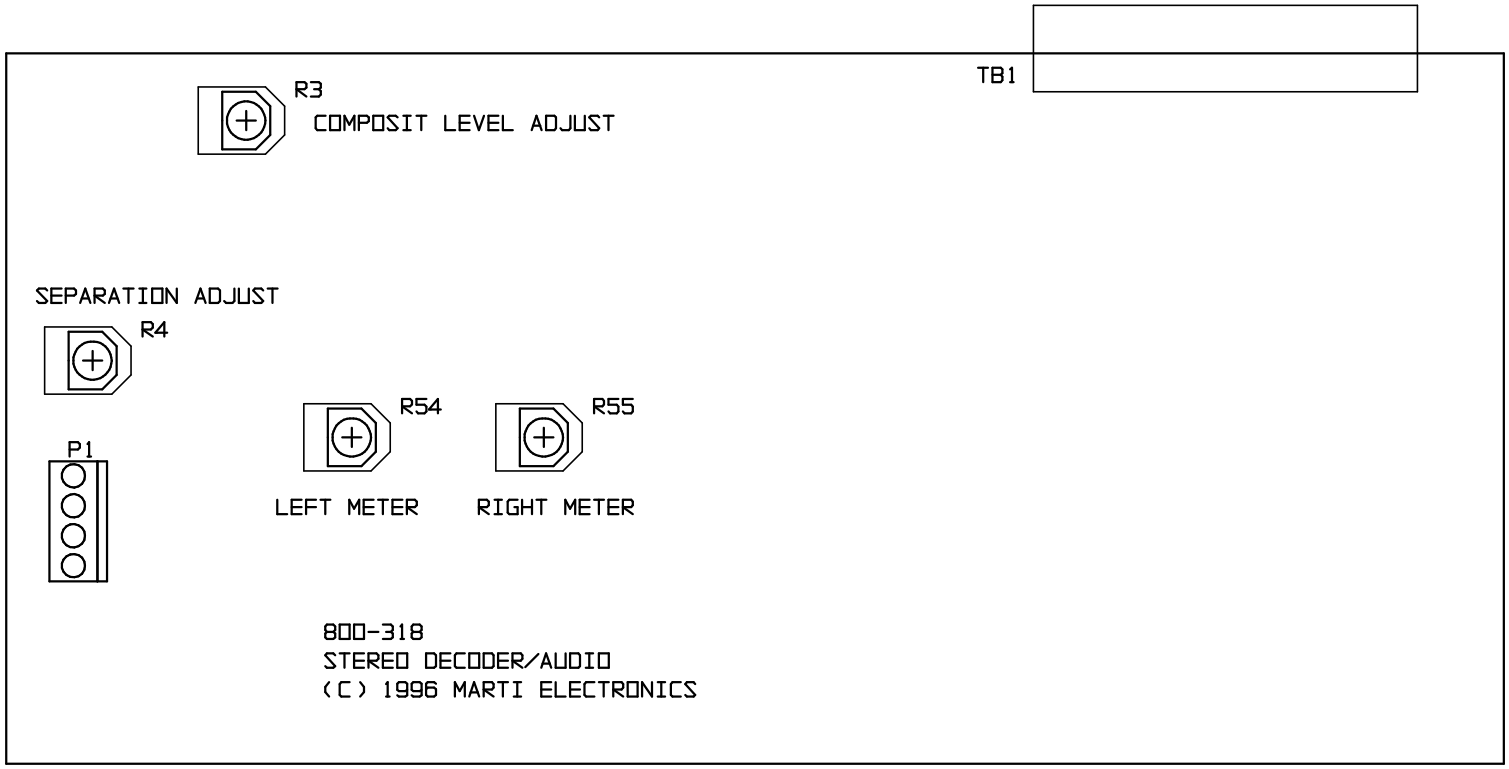
BOM LEVEL	PART NO.	DESCRIPTION	QTY	REF. DES.

....2	411-225	LED BAR GRAPH DISPLAY LUMEX SSA-LXH1225-23707	1	D2
....2	420-4104	SCREW,4-40X.250,S.S. PH	3	
....2	500-055	Lockwasher, #4 internal tooth small pattern zinc plated	3	
....2	500-120	Eyelet, #1-544047-5 copper	2	
....2	513-022	STANDOFF,1/4HEX x 0.375"LONG,4-40"	3	
....2	550-211	Conn,2x8 pin dual row header right angle cut from 550-217	1	P1
......3	550-217	Dual Right Angle Breakaway Header Amp #571-41033300 40x2	0.2	
....2	800-319B	PC BD Meter Bd for CD Stereo Decoder	1	PCB

9 SCHEMATICS

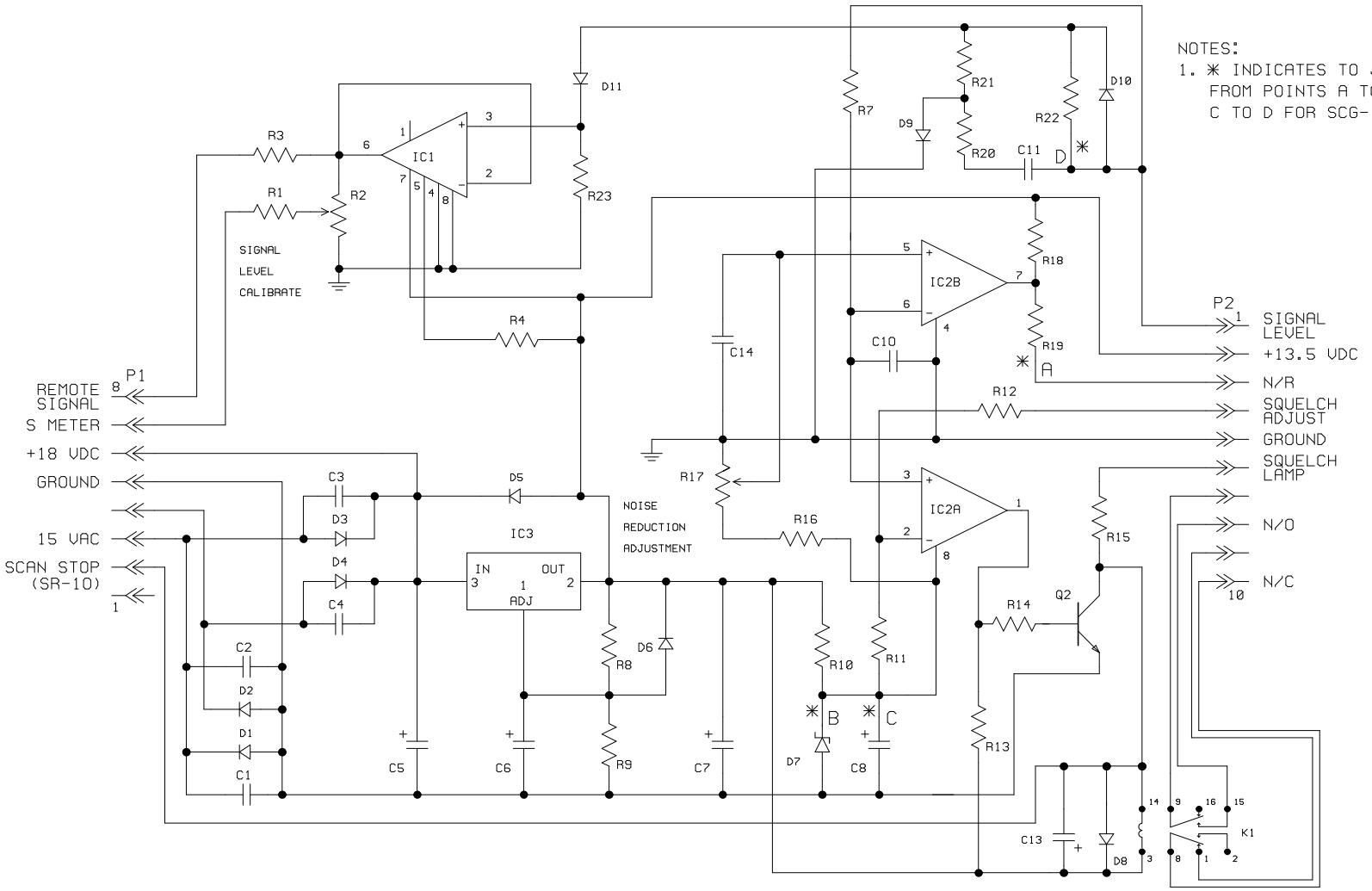


MARTI ELECTRONICS CLEBURNE, TX 76033-0661	DRAWING NO. COPYRIGHT <DATE> 702-111	TITLE CD-15 STEREO DEMODULATOR BLOCK DIAGRAM



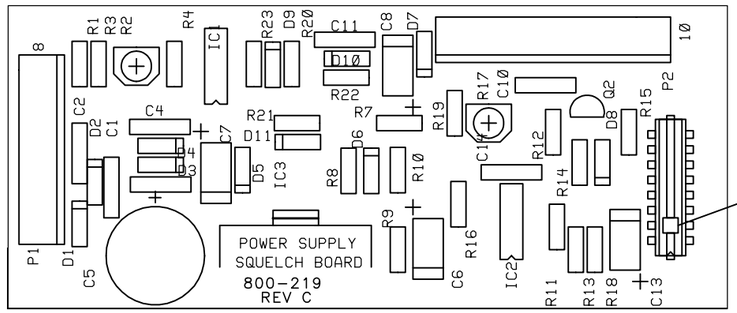
MARTI ELECTRONICS CLEBURNE, TX 76033-0661	DRAWING NO. COPYRIGHT <DATE> 702-112	TITLE CD-15 LOCATION OF ADJUSTMENTS

REV A 8-23-00 ADDED NOTE 1; MINOR CIRCUIT CHGS. M. HAYDEN

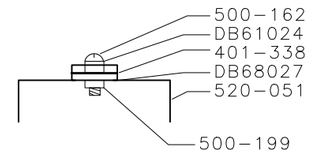


MARTI ELECTRONICS CLEBURNE, TX 76033-0661	DRAWING NO. COPYRIGHT 8-23-00 800-219	TITLE POWER SUPPLY/SQUELCH BOARD	REV A

REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
A	8-22-02	CREATED DRAWING	KT	EJ	10711
B	9-13-02	ADDED DETAIL "A"	KT	EJ	10759
C	11-4-02	ADDED DETAIL "B" & 402-0001	KT	EJ	10812



ADD TY-WRAP 402-0001
SEE DETAIL "B"



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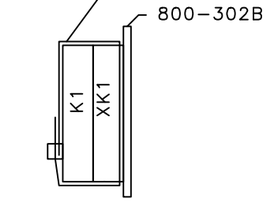
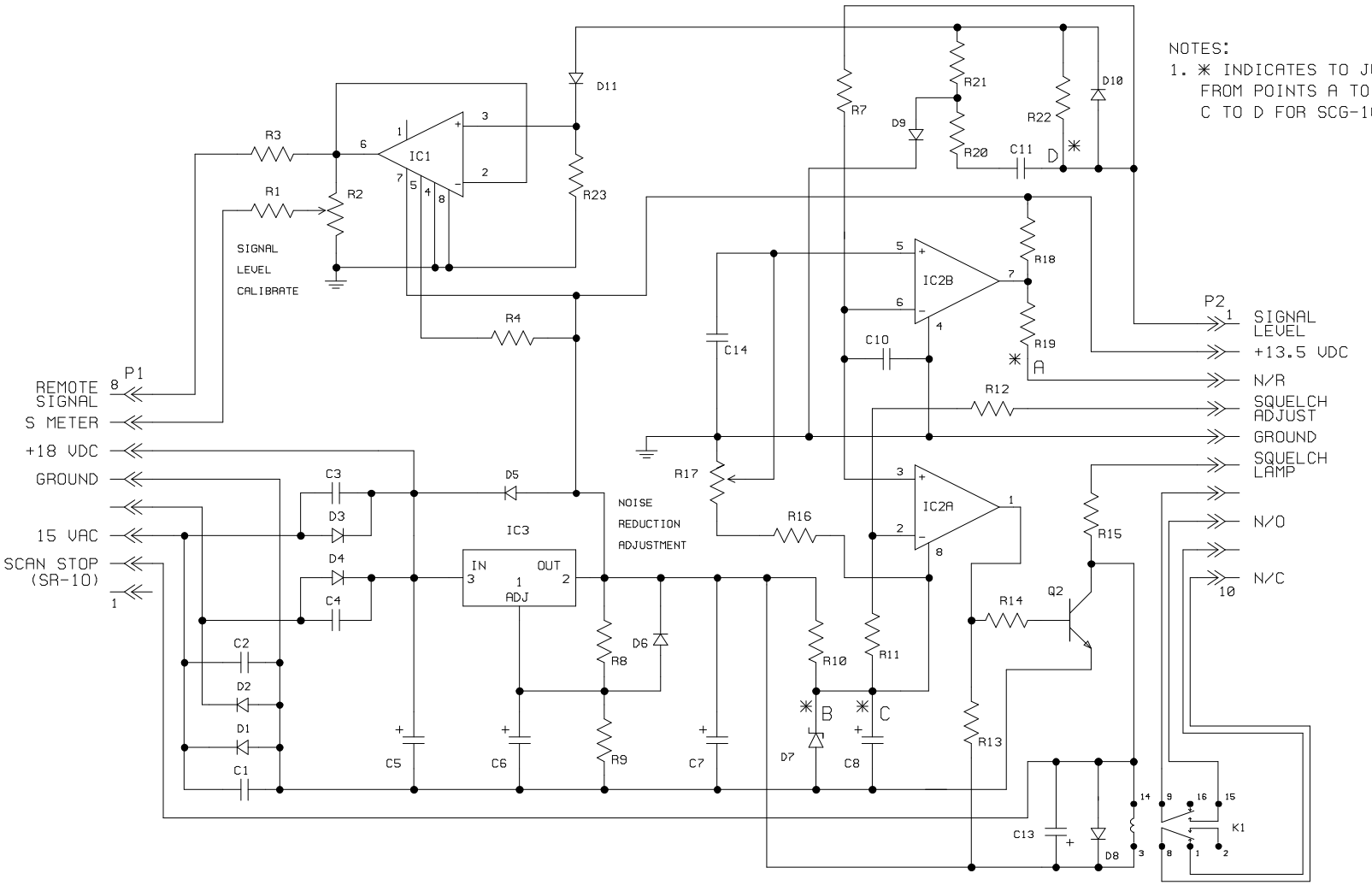


DETAIL "B"

MARTI ELECTRONICS
800-219A/AD/AG/CA REV C
POWER SUPPLY
SQUELCH BOARD

REV A 8-23-00 ADDED NOTE 1; MINOR CIRCUIT CHGS. M. HAYDEN



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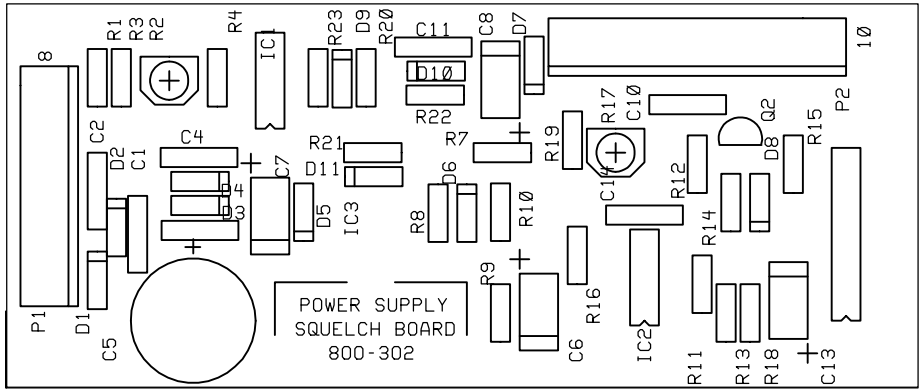
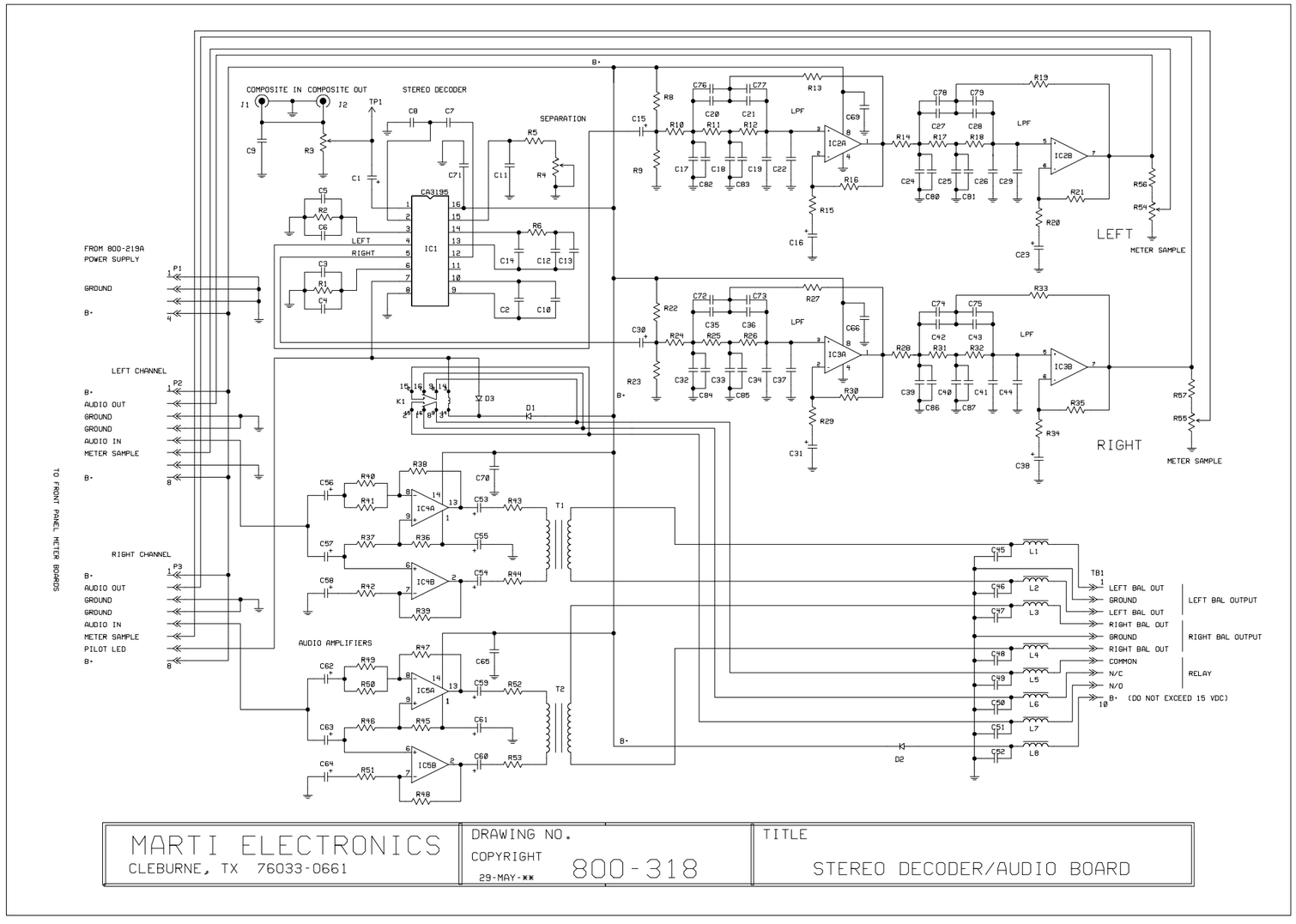
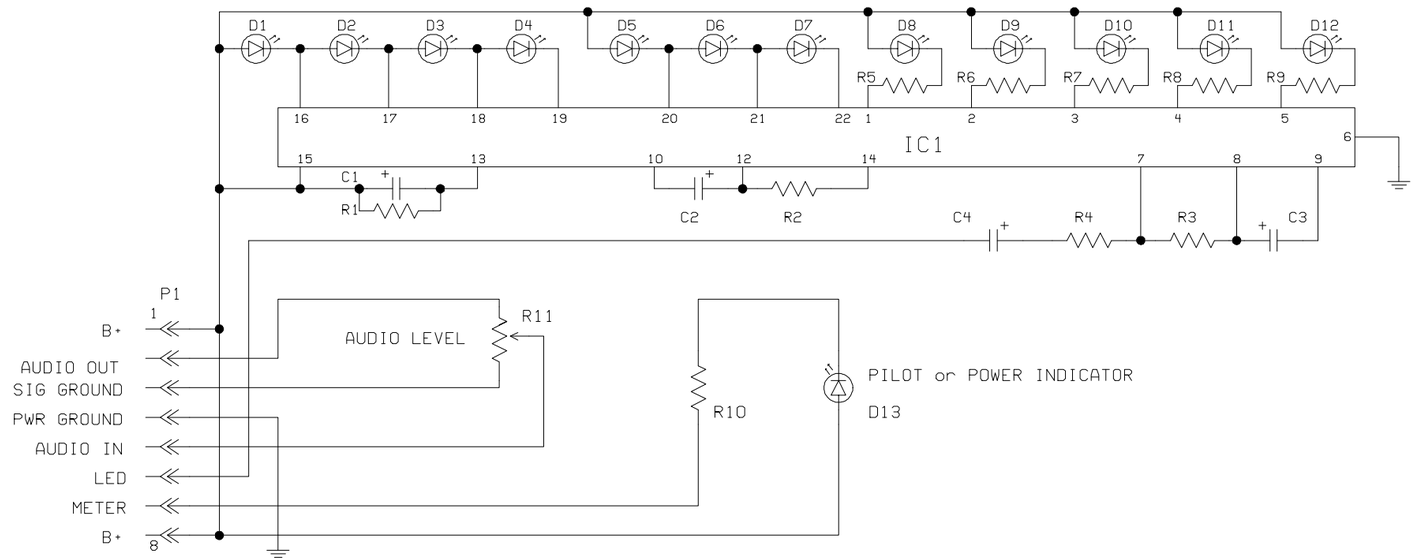


MARTI ELECTRONICS
800–302A REV A
POWER SUPPLY
SQUELCH BOARD



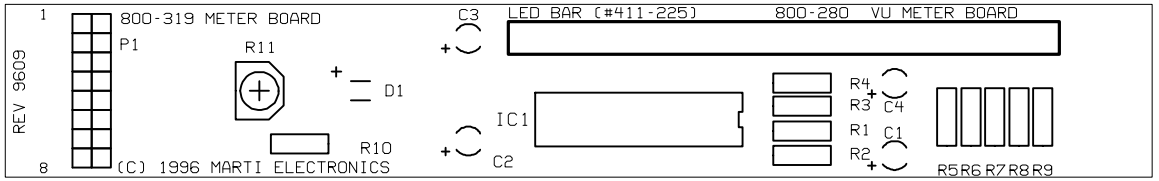
MARTI ELECTRONICS CLEBURNE, TX 76033-0661	DRAWING NO. COPYRIGHT 29-MAY-xx 800-318	TITLE STEREO DECODER/AUDIO BOARD

800-318 REV 9616
STEREO DECODER/AUDIO
(C) 1996 MARTI ELECTRONICS
LEFT
RIGHT
P2
P3
1
8
P1
1 POWER 4
SEPARATION
R4
R54
R55
R56
R57
LEFT METER
RIGHT METER
C11
C13
C9
C6
C5
C8
COMP LVL
R3
TP1
R1
R5
C1
R2
COMP IN
C71
IC1
C30
C15
R6
C7
C14
C79
C22
C16
R15
C10
C17
C2
C18
C13
C83
C12
C19
R11
R12
R13
R16
C82
C84
C32
C31
C34
C85
C33
C37
C75
R29
R30
R26
R27
R25
R24
C35
C72
C36
C73
R22
R23
IC3
R32
R35
R33
R31
R28
C66
C43
C74
C20
C76
C21
C77
R8
R9
R10
IC2
R18
R21
R19
R17
R14
C69
C28
C78
C87
C40
C44
C41
C38
R34
C39
C86
C42
C62
C63
IC5
R46
R48
C64
R51
R36
R38
R41
R40
C81
C25
C29
C26
C23
R20
C56
C57
IC4
R37
R42
C24
C80
C58
R39
C27
D2
AUDO AMPS
PREAMPS/FILTERS
STEREO DECODER
C70
C65
R47
R45
R49
R50
R53
R52
R44
R43
T1
T2
LEFT CHANNEL
RIGHT CHANNEL
C61
C59
C60
C55
C53
C54
D1
LEFT AMP
RIGHT AMP
C45
C46
C47
C48
C49
C50
C51
C52
D3
K1
L1
L2
L3
L4
L5
L6
L7
L8
TB1
1
10
I/O/FILTERING



MARTI ELECTRONICS CLEBURNE, TX 76033-0661	DRAWING NO. COPYRIGHT 800-319 29-MAY-**	TITLE METER BOARD

SILKSCREEN


1
8
REV 9609
800-319 METER BOARD
P1
R11
D1
R10
(C) 1996 MARTI ELECTRONICS
C3
C2
LED BAR (#411-225)
800-280 VU METER BOARD
IC1
R4
R3
C4
R1
C1
R2
R5 R6 R7 R8 R9