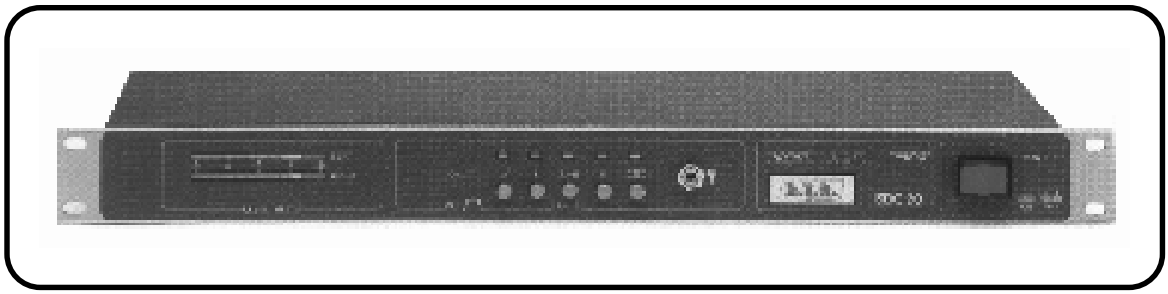
SDC20



TECHNICAL MANUAL

R.V.R. ELETTRONICA

Manufactured by R.V.R. Elettronica - Italy

SDC20
STEREO DIGITAL CODER
Technical Manual

INDEX

PRELIMINARY INSTRUCTIONS AND WARRANTY INFORMATION

WARNING: This is a "CLASS A" equipment. In a residential place this equipment can cause hash. In this case can be requested to user take necessary measures.

Please observe safety precautions when handling this unit. This equipment contains dangerous currents and high voltages.

This manual is written as a general guide for those having previous knowledge and experience with this kind of equipment. It is not intended to contain a complete statement of all safety warnings which should be observed by personnel in using this or other elettronic equipment.

R.V.R. doesn't assume responsability for injury or damage resulting from improper procedures or practices by untrained/unqualified personnel in the handling of this unit.

Please observe all local codes and fire protection standards in the operations of this unit.

CAUTION: always disconnect power before opening covers or removing any part of this unit. Use appropriate grounding procedures to short out capacitors and high voltage points before servicing.

Any damage to the goods must be reported to the carrier in writing on the shipment receipt. Any discrepancy or damage discovered subsequent to delivery, shall be reported to R.V.R. within five (5) days from its receipt.

R.V.R. extends to the original end-user purchaser all original manufacturers warranties which are transferable and all claims are to be made directly to R.V.R. per indicated procedures.

All manufacturers warranties will be supported by R.V.R. to ensure precise and speedy service where possible.

R.V.R. shall not be liable for any damage of whatsoever nature, arising out of or in connection with the product or its use thereof.

R.V.R.'s warranty shall not include:

1) Re-shipment of the unit to R.V.R. for repair purposes
2) Any unauthorized repair/modification
3) Incidental/consequential damages as a result of any defect
4) Nominal non-incidental defects
5) Re-shipment costs or insurance of the unit or replacement units/parts

Warranty shall come into force from invoice date and for the period of the manufactures warranty.

The warranty for a period of 12 months is referred to any R.V.R. product, while for products as Transistors, Mos-Fet and Tubes of the final stages is applied the manufacture's warranty of these devices.

To claim your rights under this warranty:

a. Contact the dealer or distributor where you prchased the unit. Describe the problem and ask if he has an easy solution. Dealers and Distributors are supplied with all the information about problems that may occur and usually they can repair the unit quicker than what the manufacturer could do. Very often installing errors are discovered by dealers.

b. If your dealer cannot help you, contact R.V.R. in Bologna and explain the problem. If it is decided to return the unit to the factory, R.V.R. will mail you a regular authorization with all the necessary instructions to send back the goods.

c. When you receive the authorization, you can return the unit. Pack it carefully for the shipment, preferably using the original packing and seal the package perfectly. The customer always assumes the risks of loss (i.e., R.V.R. is never responsible for damage or loss), until the package reaches R.V.R. premises. For this reason, we suggest you to insure the goods for the whole value. Shipment must be effected C.I.F. (PREPAID) to the address specified by R.V.R.'s service manager on the authorization.

DO NOT RETURN UNITS WITHOUT OUR AUTHORIZATION AS THEY WILL BE REFUSED

Be sure to enclose a written technical report where mention all the problems found and a copy of your original invoice establishing the starting date of the warranty.

Replacement and warranty parts may be order from the following address. Be sure to include the equipment model and serial number as well as part description and part number.

R.V.R. Elettronica S.r.l. - Broadcasting Equipment -
Via del Fonditore, 2/2c
Zona Roveri
40138 Bologna - Italy
Telephone +39-51-6010506
Fax +39-51-6011104

R.V.R. reserves the right to modify the design and specifications of the equipment in this manual without previous notice.

WARNING!

The currents and voltages in this equipment are dangerous!
Personnel must at all times observe safety regulation!

This manual is intended as a general guide for trained and qualified personnel who are aware of the dangers inherent in handling potentially hazardous electrical and electronic circuits.
It is not intended to contain a complete statement of all safety precautions which should be observed by personnel in using this or other electronic equipment.

The installation, operation, maintenance and service of this equipment involves risks both to personnel and equipment, and must be performed only by qualified personnel exercising due care.
R.V.R. ELETTRONICA s.r.l. shall not be responsible for injury or damage resulting from improper procedures or from the use of improperly trained or inexperienced personnel performing such tasks.

During installation and operation of this equipment, local building codes and fire protection standards must be observed.

WARNING!

Always disconnect power before opening covers, doors, enclosures, gates, panels or shields. Always use grounding sticks and short out high voltage points before servicing. never make internal adjustments, perform maintenance or service when alone or when fatigued.

Do not remove, short-circuit or tamper with interlock switches on access covers, doors, enclosures, gates, panels or shields.
Keep away from live circuits, know your equipment and don’t take chances.

WARNING!

In case of emergency ensure that power has been disconnected

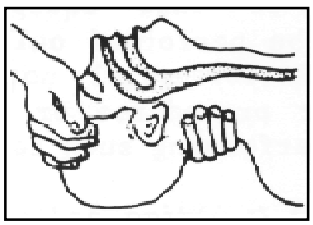
Treatment of electrical Shock

1) If victim is not responsive follow the A-B-C's of basic life support.

PLACE VICTIM FLAT ON HIS BACK ON A HARD SURFACE

A AIRWAY

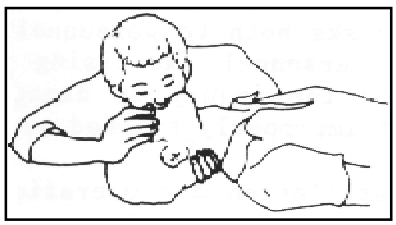
IF UNCONSCIOUS,
OPEN AIRWAY



LIFT UP NECK,
PUSH FOREHEAD BACK,
CLEAR OUT MOUTH IF NECESSARY,
OBSERVE FOR BREATHING.

B BREATHING

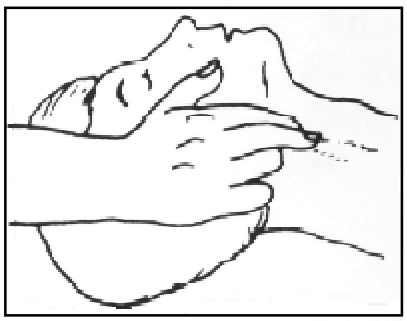
IF NOT BREATHING,
BEGIN ARTIFICIAL BREATHING



TILT HEAD,
PINCH NOSTRILS,
MAKE AIRTIGHT SEAL,
4 QUICK FULL BREATHS.
REMEMBER MOUTH TO MOUTH RESUSCITATION MUST BE COMMENCED AS SOON AS POSSIBLE.

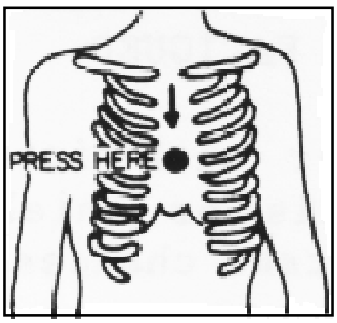
C CIRCULATION

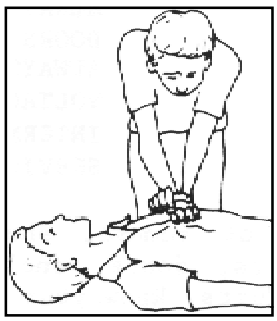
CHECK CAROTID PULSE



IF PULSE ABSENT,
BEGIN ARTIFICIAL CIRCULATION

DEPRESS STERNUM 1 1/2" TO 2"





APPROX. 80 SEC. : ONE RESCUER, 15 COMPRESSIONS, 2 QUICK BREATHS.

APPROX. 60 SEC. : TWO RESCUERS, 5 COMPRESSIONS, 1 BREATH

NOTE: DO NOT INTERRUPT RHYTHM OF COMPRESSIONS WHEN SECOND PERSON IS GIVING BREATH.

Call for medical assistance as soon as possible.

2) If victim is responsive.
   a. Keep them warm.
   b. Keep them as quiet as possible.
   c. Loosen their clothing (a reclining position is recommended).

FIRST-AID

Personnel engaged in the installation, operation, maintenance or servicing of this equipment are urged to become familiar with first-aid theory and practices. The following information is not intended to be a complete first-aid procedure, it is brief and is only to be used as a reference. It is the duty of all personnel using the equipment to be prepared to give adequate Emergency First Aid and thereby prevent avoidable loss of life.

Treatment of electrical Burns

1) Extensive burned and broken skin.

   a. Cover area with clean sheet or cloth. (Cleanest available cloth article).
   b. Do not break blisters, remove tissue, remove adhered particles of clothing, or apply any salve or ointment.
   c. Treat victim for shock as required.
   d. Arrange transportation to a hospital as quickly as possible
   e. If arms or legs are affected keep them elevated.

NOTE

If medical help will not be available within an hour and the victim is conscious and not vomiting, give him a weak solution of salt and soda: 1 level teaspoonful of salt and 1/2 level teaspoonful of baking soda to each quart of water (neither hot or cold).
Allow victim to sip slowly about 4 ounces (half a glass) over a period of 15 minutes.
Discontinue fluid if vomiting occurs (Do not give alcohol).

2) Less severe burns - (1st & 2nd degree)

   a. Apply cool (not ice cold) compresses using the cleanest available cloth article.
   b. Do not break blisters, remove tissue, remove adhered particles of clothing, or apply salve or ointment.
   c. Apply clean dry dressing if necessary.
   d. Treat victim for shock as required.
   e. Arrange transportation to a hospital as quickly as possible.
   f. If arms or legs are affected keep them elevated.

SECTION 1

SDC20 STEREO DIGITAL CODER DESCRIPTION

1.1 EXTERNAL DESCRIPTION

The SDC20 is contained in 19" 1U rack. This stereo digital coder is engineered for high performance stereo FM broadcasting.
It's an equipment that integrates in a cheap model, but without quality compromises, all technical characteristics of the expansive Coders.
On the front panel there are: the Power ON/OFF luminous switch (8 Fig.1), the two led bars for left and right channels (1-2 Fig.1) and a trimmer for phase adjustment (14 Fig.1).
Moreover, there is a commands section with relative led indicators composed of: a preenphasis command switch (3-9 Fig.1), a left channel switch (4-10 Fig.1), a command to put in phase left and right channels (5-11 Fig.1), a right channel switch (6-12 Fig.1), a 19 KHz tone selector (7-13 Fig.1) and a trimmer for fine tuning of the phase.
On the rear panel there are: the mains voltage inlet (1 Fig.2), a MPX output connector with its level selector (2-3 Fig.2), a RDS input connector (4 Fig.2), a SCA input connector (5 Fig.2), a RIGHT input connector with its level selector (8-9 Fig.2) and a LEFT input connector with its level selector (6-7 Fig.2).

1.2 ELECTRICAL DESCRIPTION

This Stereo Coder uses a frequency sinthesized internal digital circuitry that allows very linear modulation, high stereo separation, high input level capability.
The input/output analog section of good quality integrates oneself with digital system answering for high input dynamics, high signal/noise rate and very low distorsion.

1.3 TECHNICAL SPECIFICATIONS

Refer to Table (A) for electrical specs and to Table (B) for dimensional and environmental specs.

TABLE A

TECHNICAL SPECIFICATION

AUDIO INPUT (L & R)	
Input Level	*Adjustable from 0 to 12 dB*
Input Sensitivity	*194 mVrms (-12 dBm)*
Input Impedance	*> 6 Kohm (balanced)*
Frequency Response	*from 20 Hz to 15 KHz*
19 KHz Suppression	*-70 dB*
38 KHz Suppression	*-72 dB*
Pre-emphasis	*50 microsec, 75 microsec, off*
SCA INPUT	
Input Level	*0 dB*
Input Impedance	*> 10 Kohm (unbalanced)*
Frequency Response (20 Hz to 100 KHz)	*< ± 0.5 dB*
RDS INPUT	
Input Level	*0 dB*
Input Impedance	*> 150 Kohm*
Frequency Response (20 Hz to 100 KHz)	*< ± 0.5 dB*
STEREO GENERATOR	
Pilot Tone Frequency	*19 KHz ± 0.1 Hz*
Pilot Tone Level	*- 20 dBm (adjustable 2 dBm)*
Output Impedance (Multiplex)	*50 Ohm (unbalanced)*
Output Level (Multiplex)	*0 dBm to + 12 dBm (with 0 dBm, 1 KHz input signal)*
Separation (20 Hz to 15 KHz)	*> 60 dB*
Subcarrier Suppression (38 KHz)	*> 70 dB*
THD (1 KHz, output = + 12 dBm)	*< 0.03%*
Signal/Noise Ratio	*- 80 dB (DIN audio)*
Power Requirements	*117/230 Vac, 50/60 Hz, 8 W*

TABLE B

DIMENSIONAL AND ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	*-10°C to +50°C*
Humidity	*95% Max, Non Condensing*
Weight	*3.2 Kg (7 Lbs)*
Panel Size	*483 mm (19") W* *44 mm (1.7") H* *164 mm (6.45") D*

FRONT PANEL (FIG.1)

1	**LEFT**	Left channel peak level meter by "Led Diode Bar"
2	**RIGHT**	Right channel peak level meter by "Led Diode Bar"
3	**PREEMPHASIS**	Pre-emphasis ON/OFF selector
4	**L**	Left channel ON/OFF selector
5	**L=R / L=-R**	Channels phase selector
6	**R**	Right channel ON/OFF selector
7	**19 KHz**	19 KHz pilot tone selector
8	**POWER**	ON/OFF power switch
9	**PRE-EMPHASIS LED**	Pre-emphasis ON/OFF led indicator
10	**L CHANNEL LED**	Left channel ON/OFF led indicator
11	**L=R/L=-R LED**	Channels phase led indicator
12	**R CHANNEL LED**	Right channel ON/OFF led indicator
13	**19 KHz LED**	19 KHz tone led indicator
14	**PHASE**	Fine tuning trimmer

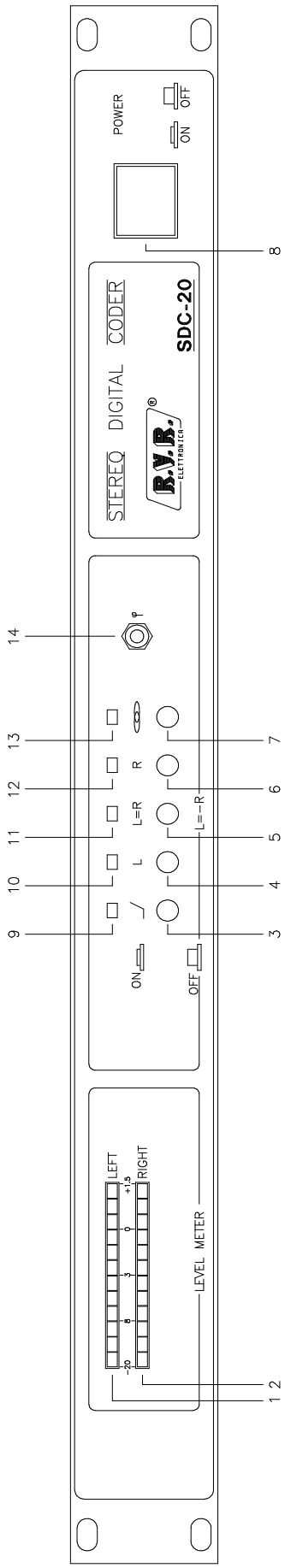

POWER
OFF
ON
8
STEREO DIGITAL CODER
SDC-20
R.V.R.
ELETTRONICA
14
13
12
11
10
9
R
L=R
L
L=-R
7
6
5
4
3
ON
OFF
LEFT
RIGHT
+1,5
0
3
8
20
LEVEL METER
1
2

FIG.1

REAR PANEL (FIG.2)
XLR VERSION

1	**A.C. IN**	A.C. Line inlet
2	**MPX**	MPX output channel connector (XLR male)
3	**MPX LEV**	MPX channel level selector
4	**RDS**	RDS input channel (XLR female)
5	**SCA**	SCA input channel (XLR female)
6	**LEFT**	LEFT input channel (XLR female)
7	**LEFT LEV**	LEFT channel level selector
8	**RIGHT**	RIGHT input channel (XLR female)
9	**RIGHT LEV**	RIGHT channel level selector

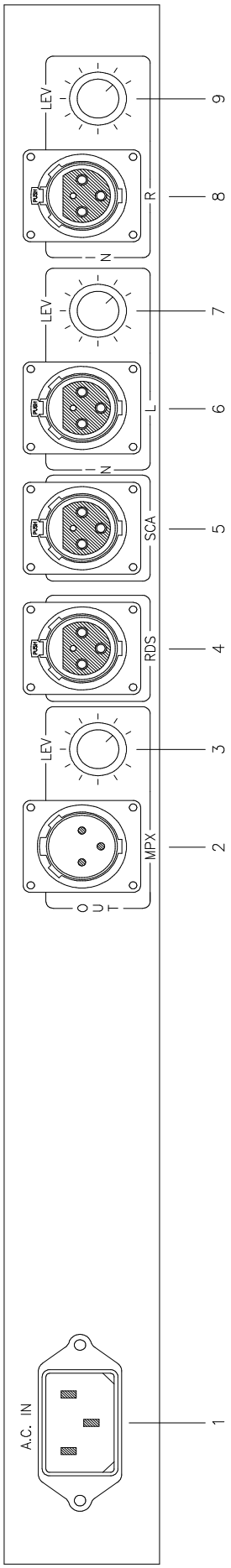


FIG.2 (XLR VERSION)

REAR PANEL (FIG.3)
SOCKET VERSION

1	**A.C. IN**	A.C. Line inlet
2	**MPX**	MPX output channel connector (Socket)
3	**MPX LEV**	MPX channel level selector
4	**RDS**	RDS input channel (Socket)
5	**SCA**	SCA input channel (Socket)
6	**LEFT**	LEFT input channel (Socket)
7	**LEFT LEV**	LEFT channel level selector
8	**RIGHT**	RIGHT input channel (Socket)
9	**RIGHT LEV**	RIGHT channel level selector

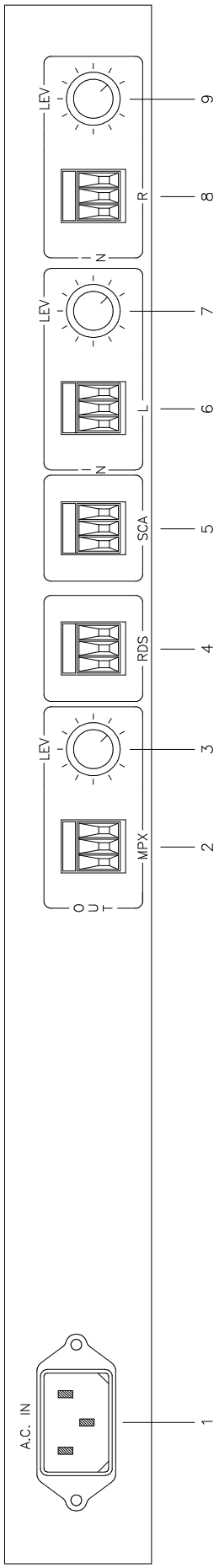


FIG.3 (SOCKET VERSION)

SECTION 2

ELECTRICAL DESCRIPTION

2.1 PANEL CARD

This card is fixed on the left side of the front panel (1 Fig.4). The Panel card allows to display the Left and Right input signals level through a level meter on a scale from -20 dBm to + 15 dBm.
It's reliable to adjust the level until 0 dBm and not more (yellow led ON). This led meter can display peak level before or after limiter (optional).
The value before limiter can be obtained inserting flat cable of the led meter in J5 connector, after limiter in J4 connector.

2.2 MAIN CARD

This card is fixed on the bottom in central position (2 Fig.4).
The Main card receives input signals (LEFT, RIGHT, RDS and SCA) from a Mixer or a transmitter.
These signals are amplified and filtered through 19KHz filters and preemphasis circuits.
Through PR1 and PR2 jumpers is possible to set 50µs or 75µs preemphasis.
Then, the signal is processed by a digital circuit and then is sent to MPX output.
Here, this signal is mixed, if present, with RDS or SCA input.
Pilot level can be changed adjusting P5 trimmer. The variation dynamics is of ± 2 dBm.

2.3 LIMITER CARD (Optional)

This optional board is fixed on the left of the rack bottom in central position.
This card is used to check too high level capability of input signals.
The limiter is inserted on J7 and J8 connectors through a flat cable and it's necessary to remove PR3 and PR4 jumpers.

SECTION 3

INSTALLATION PROCEDURES

3.1 CONNECTIONS

Verify that SDC20 coder is switch off. Connect the output connector of the mixer or of the last transmitter to R and L input connectors. The SDC20 coder input is balanced and can be of XLR type or socket type. Respect pins position showed in technical specifications of the connectors (Fig.5). SDC20 has SCA and RDS inputs; the technical caracteristics of these inputs are mentioned in Table A.
It's important don't connect any audio signals not codified because will be mixed with MPX signal on the MPX output.

3.2 INSTALLATION

The SDC20 coder is setted ex factory to obtain max stereo separation through a measuring professional decoder. This setting is just sufficient for the most part of the FM station.
However it's possible, to obtain max. performance for each transmitting system, adjust again on pilot tone phase to compensate possible FM transmitter phase delays.
So that this adjustment is precise, it's necessary to use a measureing professional decoder.
In absence of measuring instruments, an approximative adjustment can be executed in the following way:

1) Put into L and R inputs of the coder a 1 KHz sinusoidal signal.

2) Switch off the Preenphasis command.

3) Adjust input level to read on led meter a signal of 0 dBm (yellow led).

4) Adjust output level for a level that entails a deviation of 75 KHz (100%) on the tranmsitter meter.

5) Connect an oscilloscope to low frequency output of left channel of a good quality tuner.

6) Switch off left channel on the coder and adjust the phase on the oscilloscope to obtain a minimum residual of signal.

7) Now, connect the oscilloscope on low frequency output of the tuner right channel and disconnect coder right channel inserting again left channel.

8) Adjust again the phase to obtain a minimum residual of signal.

9) Repeat to the bitter end the operations at points 5), 6), 7) and 8) until to obtaim maximum symmetrical separation.

Now the coder is perfectly interfaced to your FM transmitting system.

NOTE: However the tuner used for the adjustments can be of good quality, the performances as separation of this equipment and of all transmitting system, improbably can be compared with SDC20 ones, therefore the results don't reflect quantitatively SDC20 characteristics.

3.2 MAINS VOLTAGE CHANGE

SW6 switch allows to select the correct mains voltage that it's necessary to coincide with A.C. line.
With selector in "A" position is selected a mains voltage of 220/230V; with selector in "B" position is selected a mains voltage of 110/115V.

TOP VIEW DESCRIPTION (FIG.4)

1 Panel card

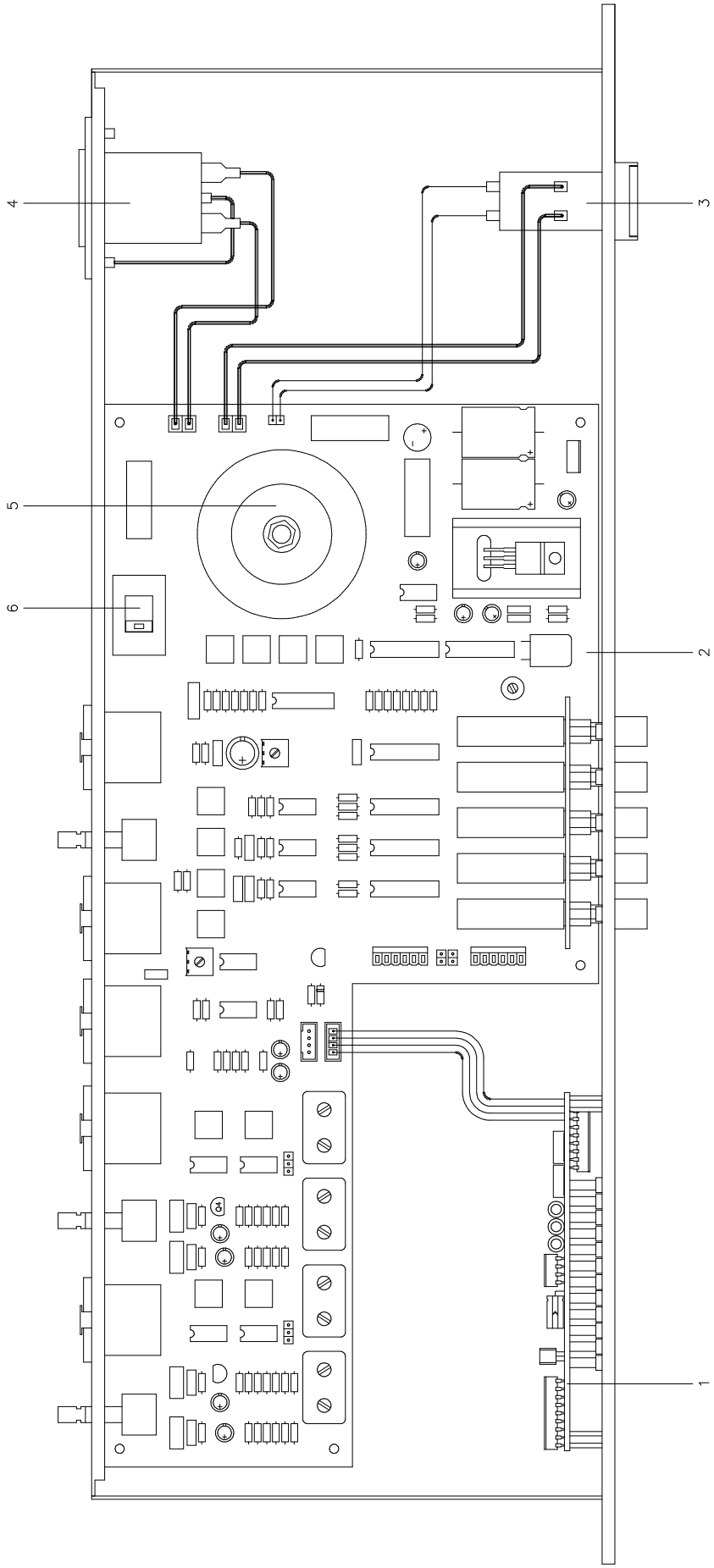
2 Main card

3 Power switch

4 Mains voltage inlet

5 Mains voltage transformer

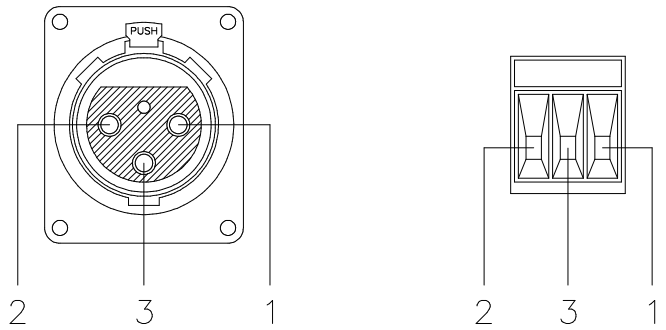
6 Voltage switch 117 V - 230 V



TOP VIEW (FIG.4)

L & R INPUTS

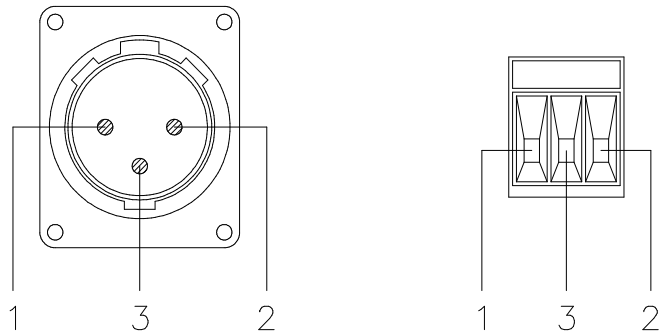
1 - Ground
2 - Inphase (+)
3 - Return (-)



With unbalanced signals ground terminal Return (3) connecting to terminal Ground (1).

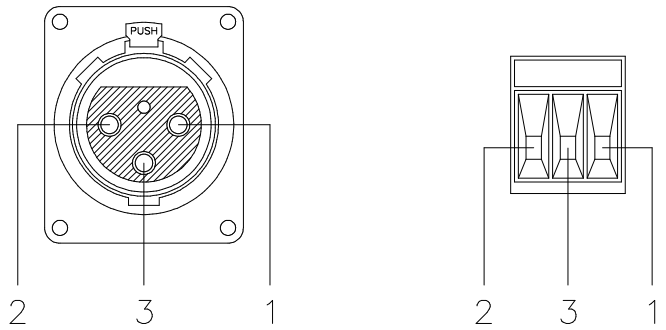
MPX OUTPUT

1 - Ground
2 - Output
3 - Ground



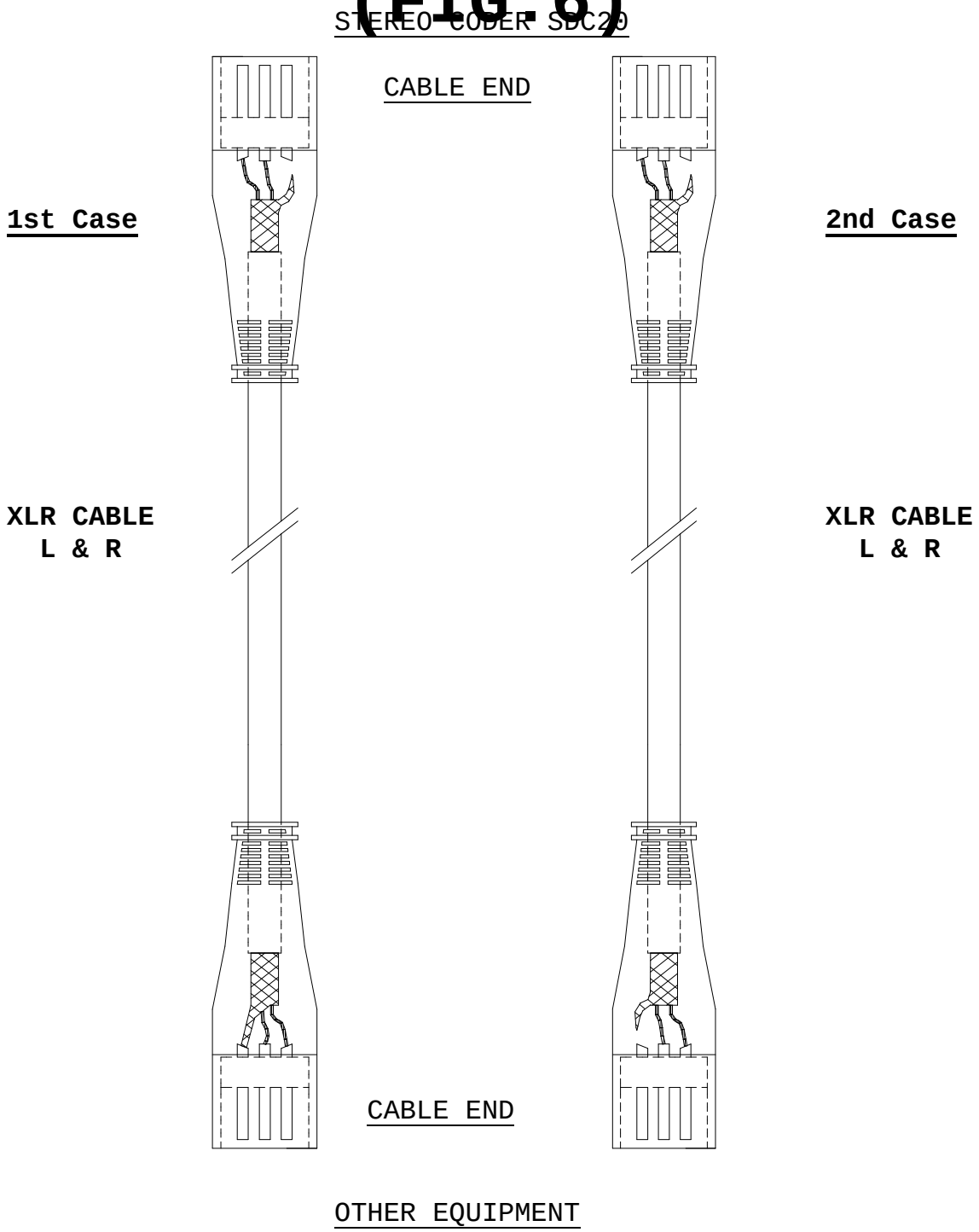
RDS & SCA INPUTS

1 - Ground
2 - RDS or SCA Input
3 - Pilot Tone Output



C'

BALANCED INPUTS CONNECTION (FIG.6)



NOTE:

In case of hum noise presence, disconnect the braide wire on connectors both of right channel and left channel of the XLR cable end connected on Stereo Coder (1st Case). If this hum noise is still present, repeat the same operation on the connectors of the XLR cable end connected on other equipment (2nd Case).

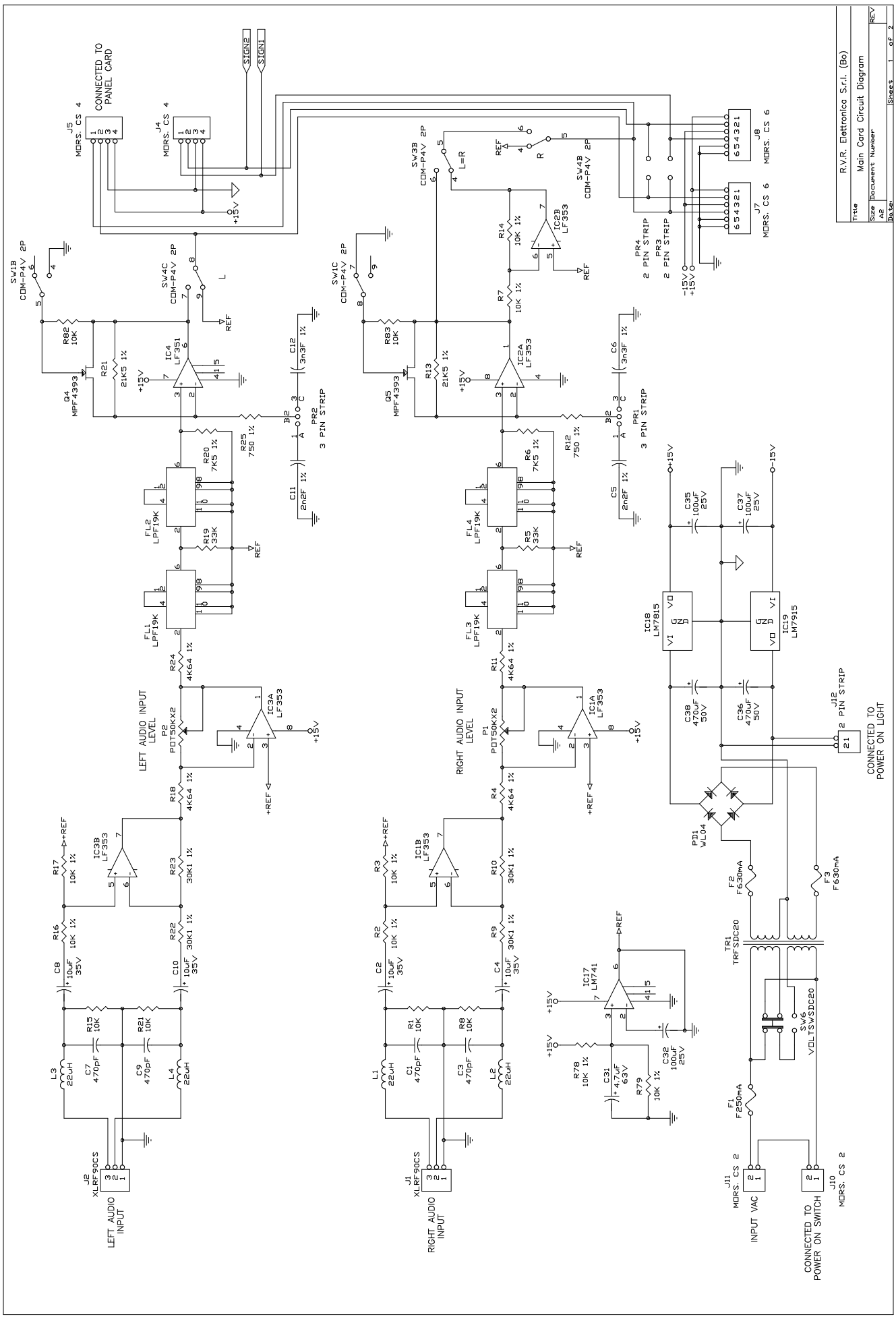
APPENDIX A
CIRCUIT
DIAGRAMS, LAYOUTS AND BILLS OF MATERIAL

This section contains circuit diagrams, layouts and bills of material of the modules which composing the equipment.
For more information about each module see as reference Section 2.

APPENDICE A
SCHEMI
ELETTRICI, PIANI DI MONTAGGIO E LISTE COMPONENTI

Questo capitolo contiene gli schemi elettrici, i piani di montaggio e le liste componenti delle schede che compongono la macchina.
Per ulteriori informazioni riguardanti le singole schede vedere come riferimento il Capitolo 2.

MAIN CARD

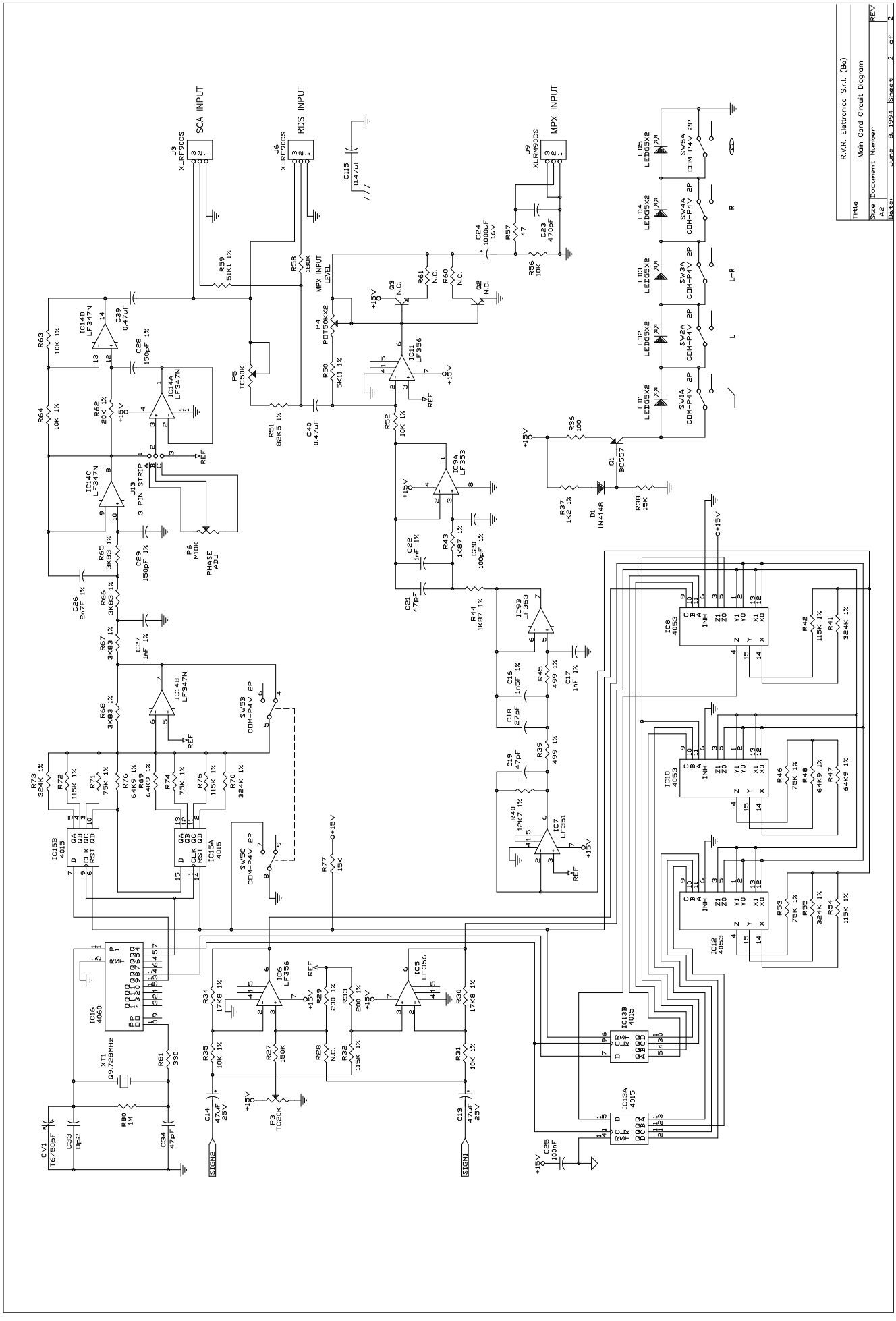

R.V.R. Elettronica S.r.l. (Bo)
Main Card Circuit Diagram
CONNECTED TO PANEL CARD
SIGN2
SIGN1
LEFT AUDIO INPUT LEVEL
RIGHT AUDIO INPUT LEVEL
LEFT AUDIO INPUT
RIGHT AUDIO INPUT
INPUT VAC
CONNECTED TO POWER ON SWITCH
CONNECTED TO POWER ON LIGHT
3 PIN STRIP
2 PIN STRIP
LF351
LF353
LM741
LM7815
LM7915
LPF19K
MPF4393
TRFSDC20
VOLTSWSDC20
+15V
-15V
+REF
REF

MAIN CARD SDC20 Bill Of Materials Page 1

Item	Quantity	Reference	Part	Description	Part Order Code
1	2	R12,R25	750 1%	RESISTOR 1/4W 1%	RSM1/4FH0750
2	4	R4,R11, R18,R24	4K64 1%	RESISTOR 1/4W 1%	RSM1/4FK4,64
3	2	R6,R20	7K5 1%	RESISTOR 1/4W 1%	RSM1/4FK07,5
4	8	R2,R3,R7, R14,R16, R17,R78,R79	10K 1%	RESISTOR 1/4W 1%	RSM1/4FK0010
5	6	R1,R8,R15, R21,R82,R83	10K	RESISTOR 1/4W 5%	RSC1/4JK0010
6	2	R13,R21	21K5 1%	RESISTOR 1/4W 1%	RSM1/4FK21,5
7	4	R9,R10, R22,R23	30K1 1%	RESISTOR 1/4W 1%	RSM1/WFK30,1
8	2	R5,R19	33K	RESISTOR 1/4W 5%	RSC1/4JK0033
9	2	P1,P2	POT50KX2	DOUBLE POTENT. 50K	RVP0650K
10	4	C1,C3, C7,C9	470PF	CERAMIC CAPACITOR	CKM471BK600P
11	2	C5,C11	2N2F 1%	CERAMIC CAPACITOR	CKM222BF63
12	2	C6,C12	3N3F 1%	CERAMIC CAPACITOR	CKM332BF63
13	1	C31	4.7UF	ELECTROLYTIC CAPACITOR	CEA475AM350
14	4	C2,C4, C8,C10	10UF	ELECTROLYTIC CAPACITOR	CEA106AM350
15	3	C32,C35, C37	100UF	ELECTROLYTIC CAPACITOR	CEA107BM350
16	2	C36,C38	470UF	ELECTROLYTIC CAPACITOR	CEA477BM350
17	4	L1,L2, L3,L4	22UH	RF CHOKE	IMP22U0A
18	1	F1	F250MA	FAST FUSIBILE	FUS5X20RP025
19	2	F2,F3	F630MA	FAST FUSIBILE	FUS5X20RP063
20	4	FL1,FL2, FL3,FL4	LPF19K	FILTRO LPF 19KHZ	FLP19KHZ
21	3	PR3,PR4, J12	2 P STRIP	STRIP M P 2.54 2 P	CNTSTRIPMCS
22	2	PR1,PR2	3 P STRIP	STRIP M P 2.54 3 P	CNTSTRIPMCS
23	2	J1,J2	XLRF90CS	XLR FEMMINA C.S. 90°	CNTXLRFP3CSA

MAIN CARD SDC20 Bill Of Materials Page 2

Item	Quantity	Reference	Part	Description	Part Order Code
24	2	J10,J11	MORS.CS 2	MORS. C.S. 2 CONT	MORSKB02PPO
25	2	J4,J5	MORS.CS 4	MORS. C.S. 4 CONT.	MORSKB04PPO
26	2	J7,J8	MORS.CS 6	MORS. C.S. 6 CONT.	MORSKB06PPO
27	5	SW1C,SW1B, SW3B,SW4C, SW4B	COM-P4V 2P	COMM.A PULS.4V 2P	CMMPULS4V2P
28	1	PD1	WL04	DIODE BRIDGE 1.5A	PNRWL04
29	1	IC18	LM7815	POS. STABILIZER	CILLM7815
30	1	IC19	LM7915	NEG. STABILIZER	CILLM7915
31	1	IC17	LM741	OPERATIONAL AMPLIFIER	CILLM741
32	2	Q4,Q5	MPF4393	JFET SWITCHING N-CHAN.	TRNMPF4393
33	1	IC4	LF351	SINGLE OP. AMP.	CILLF351
34	3	IC1,IC2, IC3	LF353	DOUBLE OP. AMP.	CILLF353
35	1	TR1	TRFSDC20	SDC20 TRANSFORMER	TRFSDC20
36	1	SW6	VOLTSWSDC20	VOLTAGE CHANGER SDC20	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Title
Main Card Circuit Diagram
Size A2
Document Number
REV
Date: June 8, 1994 Sheet 2 of 2
SCA INPUT
RDS INPUT
MPX INPUT
L
L+R
R
PHASE ADJ
MPX INPUT LEVEL
SIGN2
SIGN1

MAIN CARD SDC20 Bill Of Materials Page 1

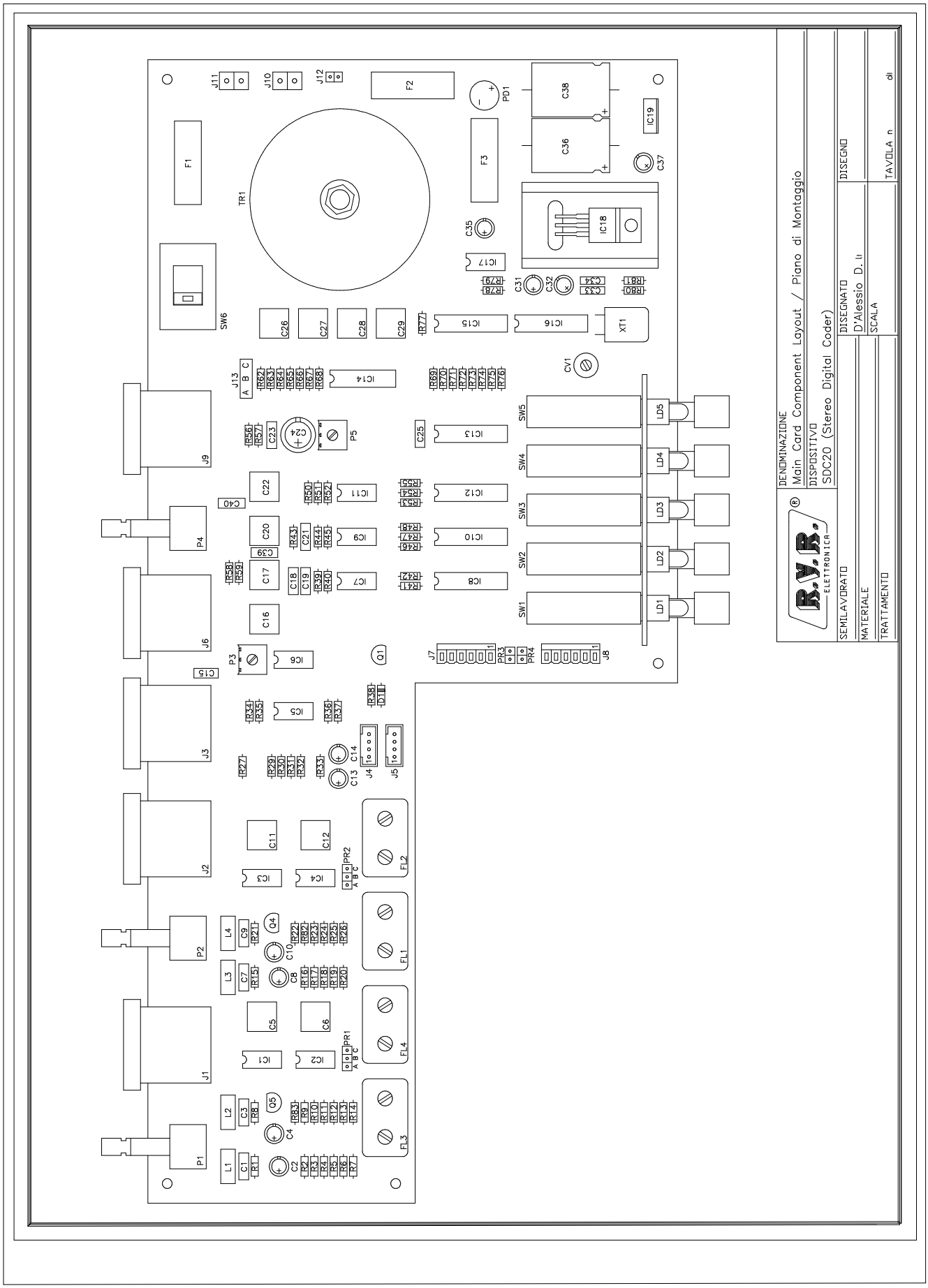
Item	Quantity	Reference	Part	Description	Part Order Code
1	1	R57	47	RESISTOR 1/4W 5%	RSC1/4JH0047
2	1	R36	100	RESISTOR 1/4W 5%	RSC1/4JH0100
3	2	R29,R33	200 1%	RESISTOR 1/4W 1%	RSC1/4FH0200
4	1	R81	330	RESISTOR 1/4W 5%	RSC1/4JH0330
5	2	R39,R45	499 1%	RESISTOR 1/4W 1%	RSM1/4FH0499
6	1	R37	1K2 1%	RESISTOR 1/4W 1%	RSM1/4FK01,2
7	2	R43,R44	1K87 1%	RESISTOR 1/4W 1%	RSM1/4FK1,87
8	4	R65,R66, R67,R68	3K83 1%	RESISTOR 1/4W 1%	RSC1/4FK3,83
9	1	R50	5K11 1%	RESISTOR 1/4W 1%	RSM1/4FK5,11
10	5	R31,R35, R52,R63,R64	10K 1%	RESISTOR 1/4W 1%	RSM1/4FK0010
11	1	R56	10K	RESISTOR 1/4W 5%	RSC1/4JK0010
12	1	R40	12K7 1%	RESISTOR 1/4W 1%	RSM1/4FK12,7
13	2	R38,R77	15K	RESISTOR 1/4W 5%	RSC1/4JK0015
14	2	R30,R34	17K8 1%	RESISTOR 1/4W 1%	RSC1/4FK17,8
15	1	R62	20K 1%	RESISTOR 1/4W 1%	RSM1/4FK0020
16	1	R59	51K1 1%	RESISTOR 1/4W 1%	RSM1/4KK51,1
17	4	R47,R48, R69,R76	64K9 1%	RESISTOR 1/4W 1%	RSM1/4FK64,9
18	4	R46,R53, R71,R74	75K 1%	RESISTOR 1/4W 1%	RSM1/4FK0075
19	1	R51	82K5 1%	RESISTOR 1/4W 1%	RSM1/4FK82,5
20	5	R32,R42, R54,R72,R75	115K 1%	RESISTOR 1/4W 1%	RSM1/4FK0115
21	1	R27	150K	RESISTOR 1/4W 5%	RSC1/4JK0150
22	1	R58	180K	RESISTOR 1/4W 5%	RSC1/4JK0180
23	4	R41,R55, R70,R73	324K 1%	RESISTOR 1/4W 1%	RSM1/4FK0324
24	1	R80	1M	RESISTOR 1/4W 5%	RSC1/4JM0001
25	1	P3	TC20K	TRIMM.REG.VERT.CERMET	RVTVERVK0020
26	1	P5	TC50K	TRIMM.REG.VERT.CERMET	RVTCERVK0050

MAIN CARD SDC20 Bill Of Materials Page 2

Item	Quantity	Reference	Part	Description	Part Order Code
27	1	P6	M10K	TRIMMER MULTIGIRI	RVTMULAK0010
28	1	P4	POT50KX2	DOUBLE POTENT. 50K	RVP0650K
29	1	C33	8P2	CERAMIC CAPACITOR NP0	CKM8,2BJ600C
30	1	C18	27PF	CERAMIC CAPACITOR NP0	CKM270BJ600C
31	3	C19,C21, C34	47PF	CERAMIC CAPACITOR NP0	CKM470BJ600C
32	1	CV1	T6/50PF	TRIMMER CAPACITOR	CVF500BK
33	1	C20	100PF 1%	CERAMIC CAPACITOR	CKM101BF63
34	2	C28,C29	150PF 1%	CERAMIC CAPACITOR	CKM151BF63
35	1	C23	470PF	CERAMIC CAPACITOR	CKM471BK600P
36	3	C17,C22, C27	1NF 1%	CERAMIC CAPACITOR	CKM102BF63
37	1	C16	1N5F 1%	CERAMIC CAPACITOR	CKM152BF63
38	1	C26	2N7F 1%	CERAMIC CAPACITOR	CKM272BF63
39	1	C25	100NF	CERAMIC CAPACITOR	CKM104BK600P
40	3	C39,C40, C115	0.47UF	POLIESTER CAPACITOR	CPE474EK101
41	2	C13,C14	47UF	ELECTROLYTIC CAPACITOR	CEA476BM630
42	1	C24	1000UF	ELECTROLYTIC CAPACITOR	CEA108SCM350
43	1	J13	3 P STRIP	STRIP M P 2.54 3 P	CNTSTRIPMCS
44	2	J3,J6	XLRF90CS	XLR FEMMINA C.S. 90°	CNTXLRFP3CSA
45	1	J9	XLRM90CS	XLR MASCHIO C.S. 90°	CNTXLRMP3CSA
46	1	XT1	Q9.728MHZ	CRYSTAL	QRZ9,728HC18
47	7	SW1A,SW2A, SW3A,SW4A, SW5C,SW5B, SW5A	COM-P4V 2P	COMMUT.A PULS. 4V 2P	CMMPULS4V2P
48	1	D1	1N4148	SILICON DIODE	DIS1N4148
49	5	LD1,LD2, LD3,LD4, LD5	LEDG5X2	GREEN LED DIODE 5X2	LEDVE5X2
50	1	Q1	BC557	PNP TRANSISTOR	TRNBC557
51	1	IC7	LF351	SINGLE OP. AMP.	CILLF351

MAIN CARD SDC20 Bill Of Materials Page 3

Item	Quantity	Reference	Part	Description	Part Order Code
52	1	IC14	LF347N	QUAD JFET IN.OP.AMP.	CILLF347N
53	1	IC9	LF353	DOUBLE OP. AMP.	CILLF353
54	3	IC5,IC6, IC11	LF356	JPFET IN.OP.AMPLIFIER	CILLF356
55	2	IC13,IC15	4015	SHIFT REGISTER	CID4015
56	3	IC8,IC10, IC12	4053	TRIPLE 2CH ANAL.MULTI.	CID4053
57	1	IC16	4060	CMOS BIN DIVIDER	CID4060
58	5	Q2,Q3,R28, R60,R61	N.C.	NOT CONNECTED	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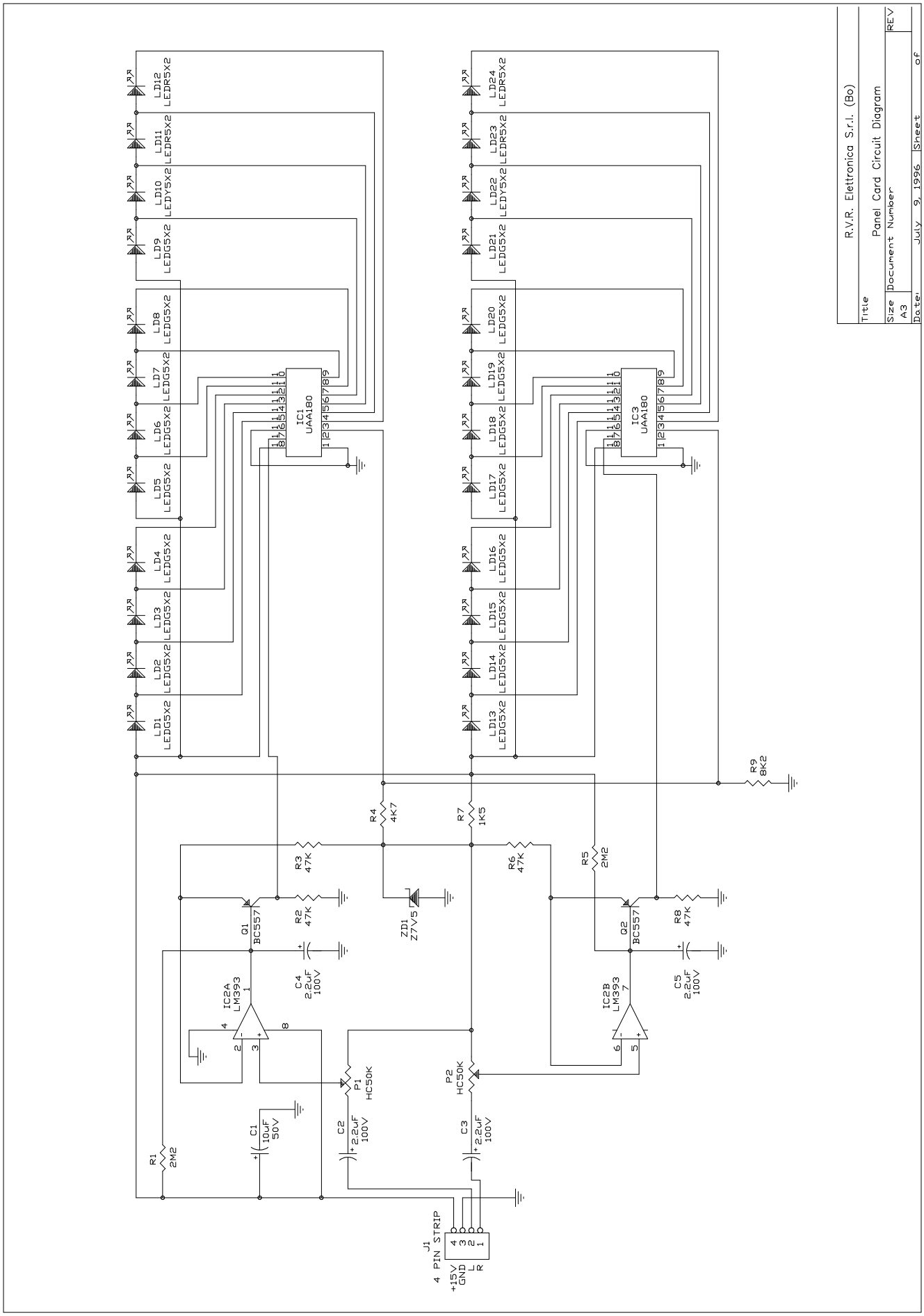
Main Card Component Layout / Piano di Montaggio
DISPOSITIVO
SDC20 (Stereo Digital Coder)
DISEGNATO
D'Alessio D. u
DISEGNO
SCALA
TAVOLA n
di
SEMILAVORATO
MATERIALE
TRATTAMENTO
R.V.R.
ELETTRONICA

PANEL CARD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Size A3
Document Number
REV
Date: July 9, 1996
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LD4 LEDG5X2
LD5 LEDG5X2
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LD9 LEDG5X2
LD10 LEDY5X2
LD11 LEDR5X2
LD12 LEDR5X2
LD13 LEDG5X2
LD14 LEDG5X2
LD15 LEDG5X2
LD16 LEDG5X2
LD17 LEDG5X2
LD18 LEDG5X2
LD19 LEDG5X2
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LD23 LEDR5X2
LD24 LEDR5X2
IC1 UAA180
IC3 UAA180
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R4 4K7
R7 1K5
R3 47K
R6 47K
R5 2M2
R2 47K
R8 47K
ZD1 Z7V5
Q1 BC557
Q2 BC557
C4 22uF 100V
C5 22uF 100V
IC2A LM393
IC2B LM393
P1 HC50K
P2 HC50K
R1 2M2
C1 10uF 50V
C2 2.2uF 100V
C3 2.2uF 100V
J1 4 PIN STRIP
+15V
GND
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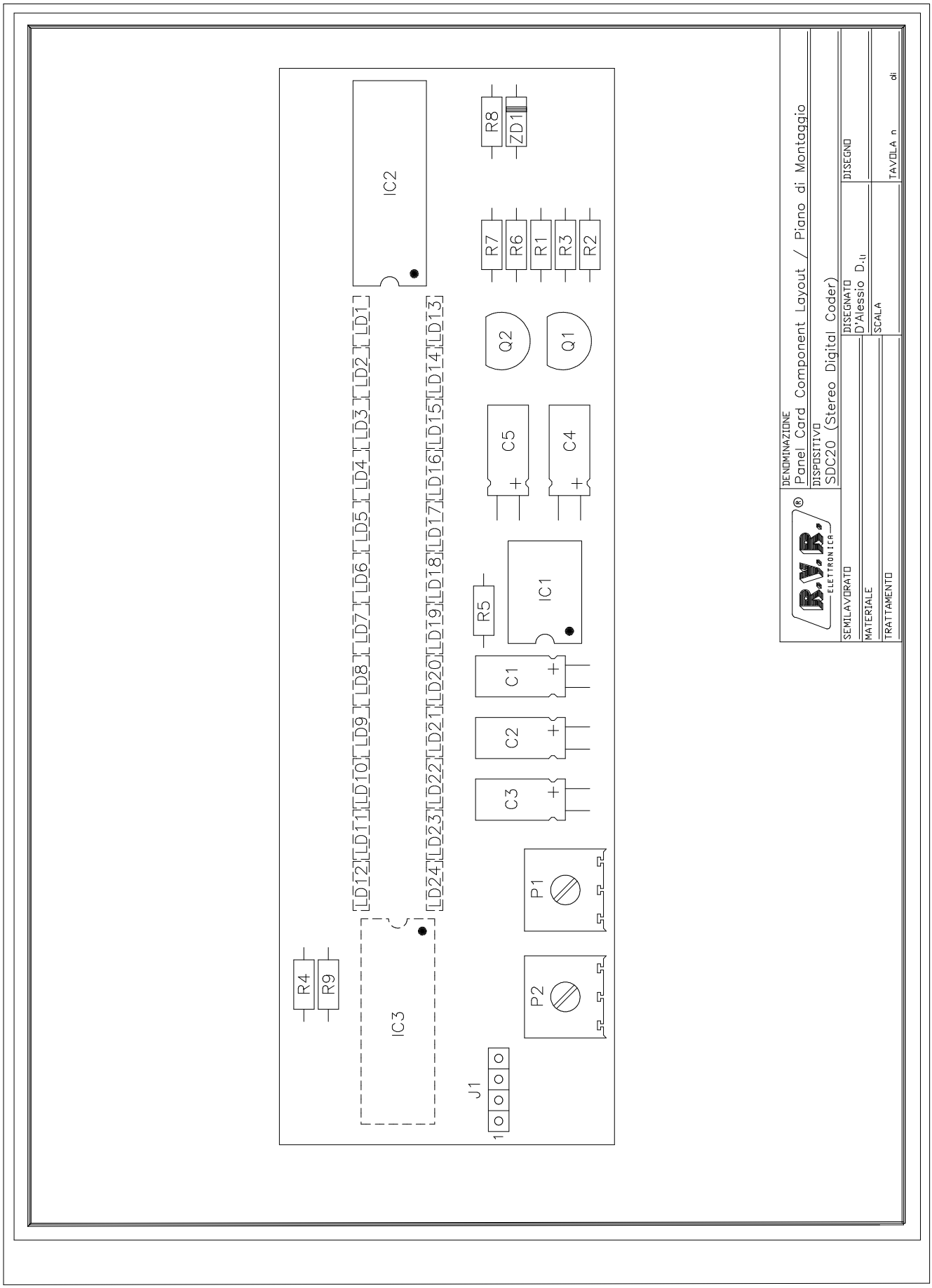
R

SDC20 PANEL CARD Bill Of Materials Page 1

Item	Quantity	Reference	Part	Description	Part Order Code
1	1	R7	1K5	RESISTOR 1/4W 5%	RSC1/4JK01,5
2	1	R4	4K7	RESISTOR 1/4W 5%	RSC1/4JK04,7
3	1	R9	8K2	RESISTOR 1/4W 5%	RSC1/4JK08,2
4	4	R2,R3,R6,R8	47K	RESISTOR 1/4W 5%	RSC1/4JK0047
5	2	R1,R5	2M2	RESISTOR 1/4W 5%	RSC1/4JM02,2
6	2	P1,P2	HC50K	TRIMM. REG. OR. CERMET	RVTCEROK0050
7	4	C2,C3,C4,C5	2.2µF	ELECTROLYTIC CAPACITOR	CEA225AM630
8	1	C1	10µF	ELECTROLYTIC CAPACITOR	CEA106AM350
9	1	J1	4 PIN STRIP	STRIP M P 2.54 4 PIN	CNTSTRIPMCS
10	4	LD11,LD12, LD23,LD24	LEDR5X2	RED LED DIODE DIM 5X2	LEDRO5X2
11	18	LD1,LD2, LD3,LD4, LD5,LD6, LD7,LD8, LD9,LD13, LD14,LD15, LD16,LD17, LD18,LD19, LD20,LD21	LEDG5X2	GREEN LED DIODE DIM 5X2	LEDVE5X2
12	2	LD10,LD22	LEDY5X2	YELLOW LED DIODE 5X2	LEDGI5X2
13	1	ZD1	Z7V5	ZENER DIODE 7.5V 0.4W	DIZ7V50W4
14	2	Q1,Q2	BC557	PNP TRANSISTOR	TRNBC557
15	1	IC2	LM393	DOUBLE COMPARATOR	CILLM393
16	2	IC1,IC3	UAA180	IC BAR LED DRIVER	CILUAA180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Panel Card Component Layout / Piano di Montaggio
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SDC20 (Stereo Digital Coder)
SEMILAVORATO
MATERIALE
TRATTAMENTO
DISEGNATO
D'Alessio D.
SCALA
DISEGNO
TAVOLA n
di
IC2
IC3
IC1
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R6
R7
R8
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Q2
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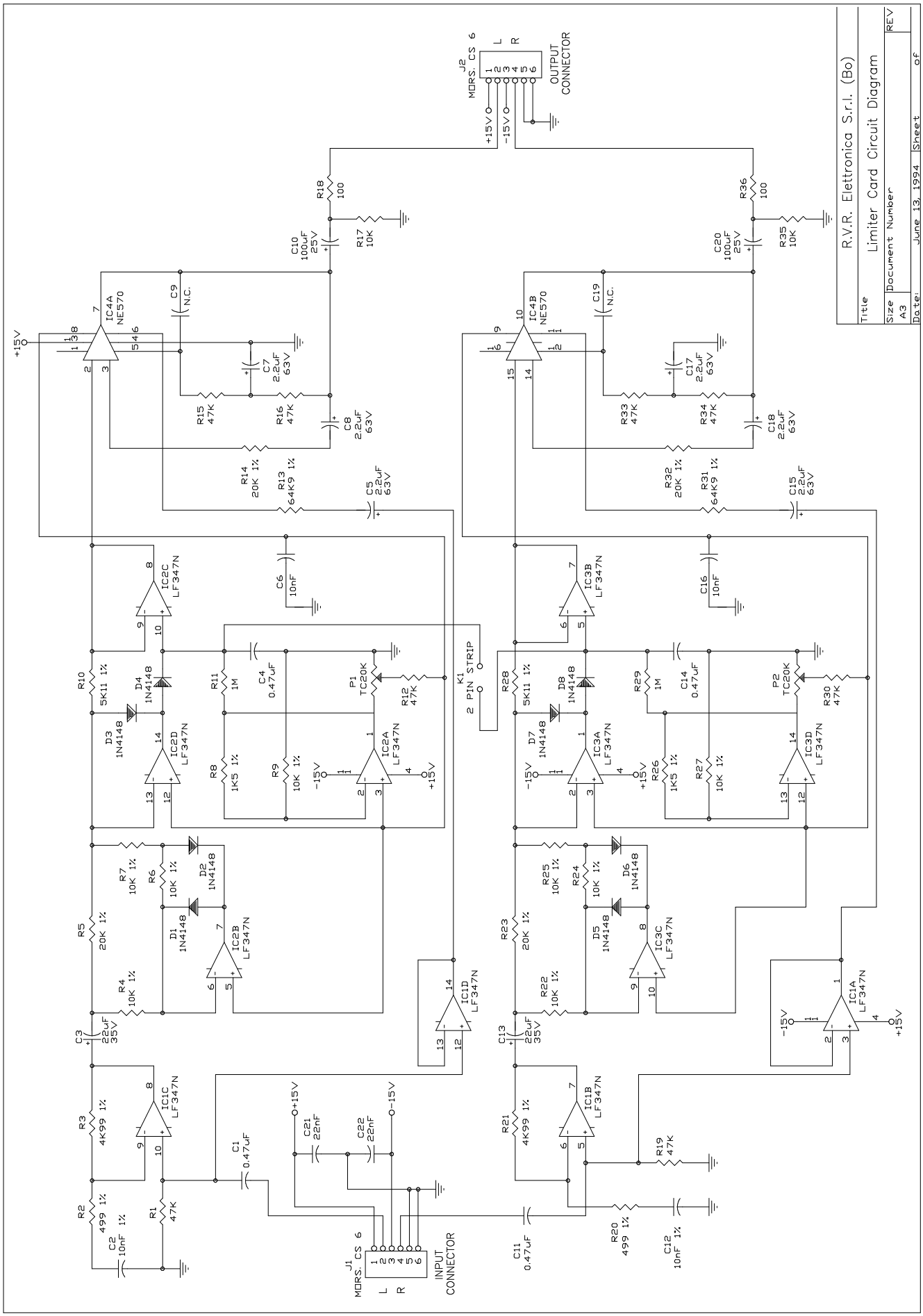
J1

LIMITER CARD (OPTIONAL)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Size
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Date:
June 13, 1994
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of
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INPUT CONNECTOR
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MDRS. CS 6
OUTPUT CONNECTOR
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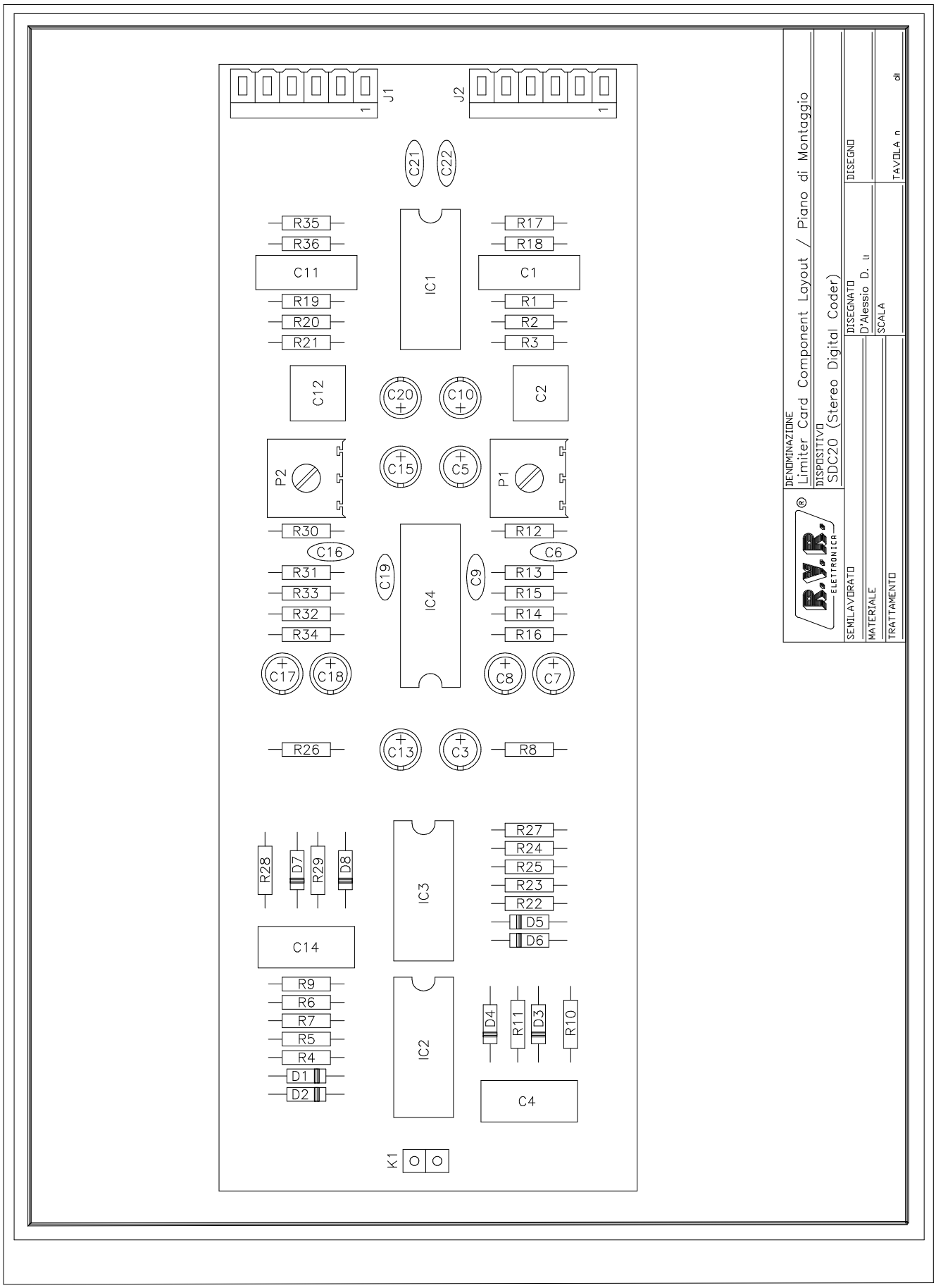
IC1B LF347N
IC1C LF347N
IC1D LF347N
IC2A LF347N
IC2B LF347N
IC2C LF347N
IC2D LF347N
IC3A LF347N
IC3B LF347N
IC3C LF347N
IC3D LF347N
IC4A NE570
IC4B NE570
+15V
-15V

SDC20 LIMITER CARD Bill Of Materials Page 1

Item	Quantity	Reference	Part	Description	Part Order Code
1	2	R18,R36	100	RESISTOR 1/4W 5%	RSC1/4JH0100
2	2	R2,R20	499 1%	RESISTOR 1/4W 1%	RSM1/4FH0499
3	2	R8,R26	1K5 1%	RESISTOR 1/4W 1%	RSC1/4FK01,5
4	2	R3,R21	4K99 1%	RESISTOR 1/4W 1%	RSM1/4FK4,99
5	2	R10,R28	5K11 1%	RESISTOR 1/4W 1%	RSM1/4FK5,11
6	8	R4,R6,R7, R9,R22,R24, R25,R27	10K 1%	RESISTOR 1/4W 1%	RSM1/4FK0010
7	2	R17,R35	10K	RESISTOR 1/4W 5%	RSC1/4JK0010
8	4	R5,R14, R23,R32	20K 1%	RESISTOR 1/4W 1%	RSM1/4FK0020
9	8	R1,R12, R15,R16, R19,R30, R33,R34	47K	RESISTOR 1/4W 5%	RSC1/4JK0047
10	2	R13,R31	64K9 1%	RESISTOR 1/4W 1%	RSM1/4FK64,9
11	2	R11,R29	1M	RESISTOR 1/4W 5%	RSC1/4JM0001
12	2	P1,P2	TC20K	TRIMM.REG.VERT.CERMET	RVTVERVK0020
13	2	C2,C12	10NF 1%	CERAMIC CAPACITOR	CKM103BF63
14	2	C6,C16	10NF	CERAMIC CAPACITOR	CKM103BK600P
15	2	C21,C22	22NF	CERAMIC CAPACITOR	CKM223BK600P
16	4	C1,C4,C11, C14	0.47UF	POLIESTER CAPACITOR	CPE474EK101
17	6	C5,C7,C8, C15,C17,C18	2.2UF	ELECTROLYTIC CAPACITOR	CEA225AM630
18	2	C3,C13	22UF	ELECTROLYTIC CAPACITOR	CEA226BM350
19	2	C10,C20	100UF	ELECTROLYTIC CAPACITOR	CEA107BM350
20	1	K1	2 P STRIP	STRIP M P 2.54 2 P	CNTSTRIPMCS
21	2	J1,J2	MORS.CS 6	MORSETTIERA CS 6 CONT.	MORSKB06PPO
22	8	D1,D2,D3, D4,D5,D6, D7,D8	1N4148	SILICON DIODE	DIS1N4148
23	3	IC1,IC2, IC3	LF347N	QUAD JFET IN.OP.AMP.	CILLF347N

SDC20 LIMITER CARD Bill Of Materials Page 2

Item	Quantity	Reference	Part	Description	Part Order Code
24	1	IC4	NE570	IC 2 COMPANDOR	CILNE570
25	2	C9,C19	N.C.	NOT CONNECTED	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DENOMINAZIONE
Limiter Card Component Layout / Piano di Montaggio
DISPOSITIVO
SDC20 (Stereo Digital Coder)
R.V.R.
ELETTRONICA
DISEGNATO
D'Alessio D. lu
DISEGNO
SEMILAVORATO
SCALA
MATERIALE
TAVOLA n
TRATTAMENTO
of

Second Edition - July '96
Created By D'Alessio D.

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