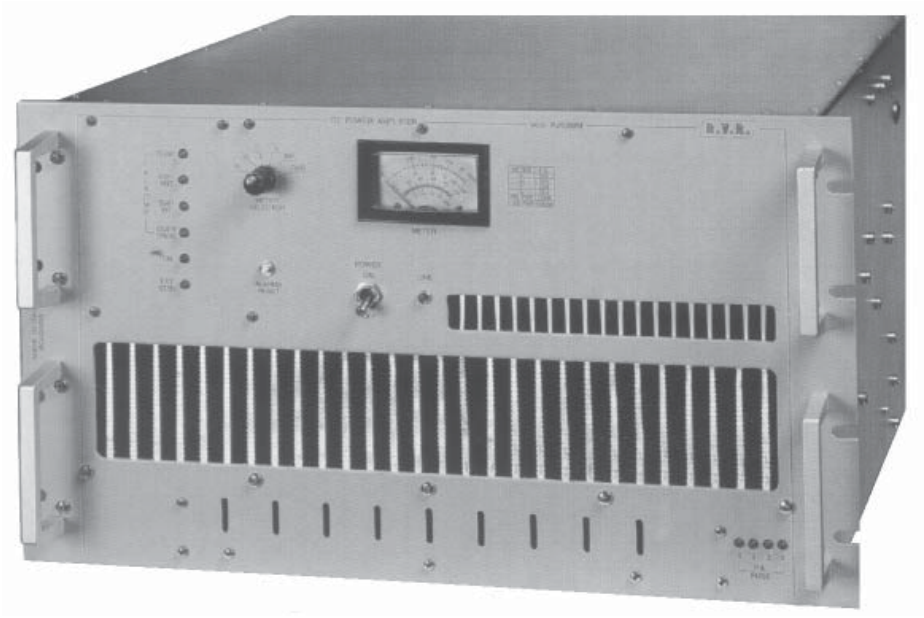
PJ1000M



User Manual

Manufactured by R.V.R. ELETTRONICA **Italy**

PJ1000M - User Manual
Versione 5.2

R.V.R. Elettronica SpA
Via del Fonditore 2/2c - 40138 - Bologna (Italia)
Telefono: +39 051 6010506
Fax: +39 051 6011104
Email: info@rvr.it
Web: www.rvr.it

Notification of intended purpose and limitations of product use
This product is a FM transmitter intended for FM audio broadcasting. It utilises operating frequencies not harmonised in the intended countries of use.
The user must obtain a license before using the product in intended country of use. Ensure respective country licensing requirements are complied with.
Limitations of use can apply in respect of operating freuency, transmitter power and/or channel spacing.

Declaration of Conformity
Hereby, R.V.R. Elettronica SpA, declares that this FM transmitter is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

This page intentionally left blank

Table of Content

1. Preliminary instructions

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 rules which should be observed by personnel in using this or other electronic equipment.

The installation, use and maintenance of this piece of equipment involve risks both for the personnel performing them and for the device itself, that shall be used only by trained personnel.

R.V.R. doesn't assume responsibility 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.

WARNING: 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.

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

R.V.R. Elettronica SpA reserves the right to modify the design and/or the technical specifications of the product and this manual without notice.

Pagina lasciata intenzionalmente in bianco

This page was intentionally left blank

2. Warranty

Any product of **R.V.R. Elettronica** is covered by a 12 (twelve) month warranty.

For components like tubes for power amplifiers, the original manufacturer's warranty applies.

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.

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.

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.

To claim your rights under this warranty:

a. Contact the dealer or distributor where you purchased 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.

a 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 SpA
Via del Fonditore, 2/2c
40138 BOLOGNA
ITALY
Tel. +39 051 6010506

3. First Aid

The personnel employed in the installation, use and maintenance of the device, shall be familiar with theory and practice of first aid.

3.1 Treatment of electrical shocks

3.1.1 If victim is not responsive

follow the A-B-C's of basic life support

- Place victim flat on his backon a hard surface.
- Open airway: lift up neck, push forehead back
- clear out mouth if necessary and observe for breathing
- if not breathing, begin artificial breathing (Figure 2): tilt head, pinch nostrils, make airtight seal, four quick full breaths. Remember mouth to mouth resuscitation must be commenced as soon as possible

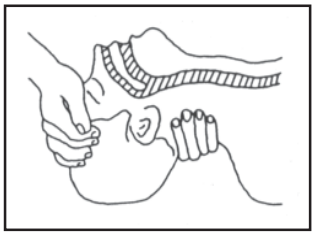


Figure 1

Figure 2

- Check carotid pulse (**Figura 3**); if pulse is absent, begin artificial circulation (**Figura 4**) depressing sternum 1 1/2" TO 2" (**Figure 5**).

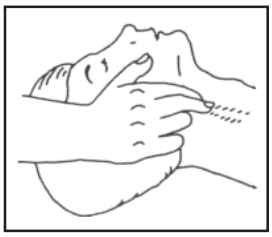


Figura 3

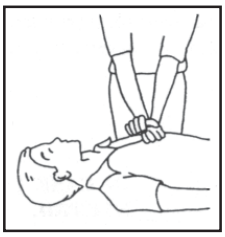


Figura 4

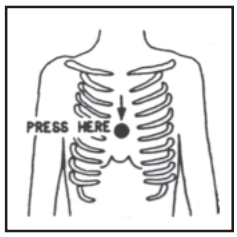


Figura 5

- APPROX. 80 SEC. : ONE RESCUER, 15 COMPRESSIONS
- APPROX. 60 SEC.: TWO RESCUERS, 5 COMPRESSIONS, 1 BREATH
- DO NOT INTERRUPT RHYTHM OF COMPRESSIONS WHEN SECOND PERSON IS GIVING BREATH
- Call for medical assistance as soon as possible.

3.1.2 If victim is responsive

- Keep them warm
- Keep them as quiet as possible
- Loosen their clothing (a reclining position is recommended)
- Call for medical help as soon as possible

3.2 Treatment of electrical Burns

3.2.1 Extensive burned and broken skin

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

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

3.2.2 Less severe burns (1st and 2nd degree)

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

4. General Description

RVR Elettronica's PJ1000M is a 19" Rack-mountable broadband MOSFET RF power amplificator. It works without adjustment on the whole 87.5-108MHZ FM band and its power output is 1000W with a drive level of about 16W.

The RF power section makes use of four modules, able to deliver more than 300W each.

The power supply is a switching mode one and a soft-start circuit is included to minimize the transformer's current spikes when the device is switched on.

The amplifier is implementated with a protection system against dangerous situations like exceeding output power or SWR, overdrive or overtemperature. When the warning conditions are been erased, the machine shall be returned in initial status.

The default working parameters can be selected throught a rotate selector and shown onto an analogic display.

On the front panel are located two LEDs group. The first group includes four red alarms LEDs (temperature, external SWR, internal SWR, overdrive), a green LED that indicates the ON status of the amplifier and a yellow LED that indicates if an external standby forces the machine.
The second group is composed by four green LEDs that indicates the fuses status of RF Amplifier Modules.

Different working parameters are made availabe for the user on the telemetry connector, as voltage levels that are proportional to the value of the parameter under consideration.

A built-in low pass filterkeeps the harmonic emission level below the CCIR and FCC permitted levels.

Pagina lasciata intenzionalmente in bianco

This page was intentionally left blank

5 Installation and Use

This chapter is intended to summarize the necessary points for the installation of the device. In case any of the arguments is unclear, for exmple when you use it for the first time, please read carefully the whole manual.

5.1 Preparation

Unpack the amplifier and before any other operation check that all the controls and connectors on the front and rear panel are in good conditions.

Check the mains voltage selector on the rear panel: the position of the jumpers to chose between 220 V o 110 V, or 380V are indicated on the panel.

Check also the presence and integity of the fuses. The required value for the 220/ 110 V version fuses are:

- PS 1, PS 2 2 x 25 A 10X38
- AC Line 2 x 16 A 10X38
- Service 10 A 6,3X32
- Aux 4 A 6,3X32

For 380/220 V version, the fuses required are:

- PS 1, PS 2 2 x 25 A 10X38
- Fan 6 A 10X38
- Service 6 A 10X38
- Line selector fuse:
  2 x 20 A 10X38

Verify that the mains switch is in the OFF positon.

Connect to the RF Input the RF Output of suitable exciter (for example the RVR Elettronica's PTX30) using a N-connectors terminated cable; the exciter shall be set for minimum power and OFF.

Link one of the Alarms/Interlock connectors to the Interlock connector of the exciter, if available (it is in RVR Elettronica's exciters).

Connect the RF output to the antenna cable or to a suitable dummy load.

Finally, connect a proper cable to the amplifier's mains input.
ATTENTION: the cable <u>has to be disconnected</u> from the mains outlet!

After the cable has been safely connected to the amplifier's mains plug, it is possible to plug it into the mains outlet.

It is essential that the unit is properly installed in one Rack that contain a anti-strap device to ensure that mains conductors are not expose accidentally.

ATTENTION: It is essential that the unit is roperly earthed to ensure both the safety of operaton as well as the correct working of the equipment.

5.2 Operation

Switch ON the amplifier abd verify the green “ON” LED being it.

Check throught the rotate selector on analogic devide that the internal voltages (V1, V2, Vpa) are 50V. Check that the Standby current (Ipa) is approx 800 mA.

Swith ON the exciter (to minimum power) and wait for it to lock on the working frequency. When the locketed condition will be reached, progressively increase its power, while controlling the amplifier’s display. In wich case the delivered power increase, verify the increase of the issued current (Ipa). Keep increasing the exciter output until the amplifier reaches the desired level at most 1000 W. At this point it is possible, for the user, to verify all the working parameters, the normal working nominal values are:

- V1 = V2 = Vpa ≅ 50 V
- Ipa = 32 ÷ 40 A

Is possible verify the precision of device with an external wattmeter (a difference of approx 10% is tollerated).

With the power amplifier, push and mantain pushed the Alarms Reset button, and verify that V1, V2, Vpa and Ipa goes to 0. If connection to Interlock it has been carried out correctly, tha amplifier power, and the exciter power, output goes to 0 too. Releasing the button,all the parameters devono tornare to precedent value.

To test the amplifier protection system you can increase the drive level until that the red Overdrive LED will light At this point the protection system is abled and disabled the amplifier and the exciter for approx 10 seconds. Until this time they are been reabilited. If in the meantime it has not been provided to reduce the exciter issued power, it will verify a new block conditon, otherwise the trasmitter will be function correctly.

The device doesn’t require aby human supervision for its normal operation. If any alarm condition arise, these are automatically managed by embedded protection system; if this doesn’t succedes is necessary the participation of user to reset the system.

5.3 Protection System

The protection system forced the Standby status of the amplifier in the case one is taken place breakdown situation.

After approx 10 seconds, the amplifier will be reabilited. If in the meantime it has not been provided to remove the block condition, the amplifier will be disbilitited. After four attempts the device will be disabilited for approx 90 seconds.

Passed this interval it comes repeated a new cycle of 4 disabilitations, analogous to

the previous one, after that, if the breakdown condition persists, the amplifiers comes disabled until that it does not come carried out a manual reset of the machine.

If, during the cycles of the protection, the amplifier works regularly for 90 seconds, the counters of the protection system come reset.

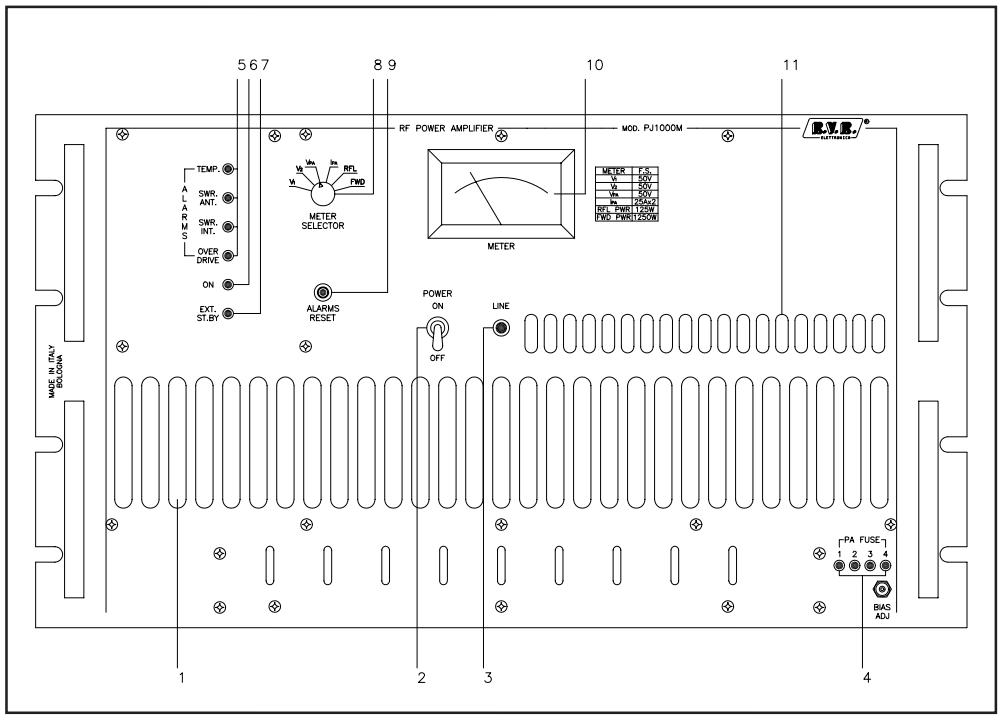
Pagina lasciata intenzionalmente in bianco

This page was intentionally left blank

6 External Description

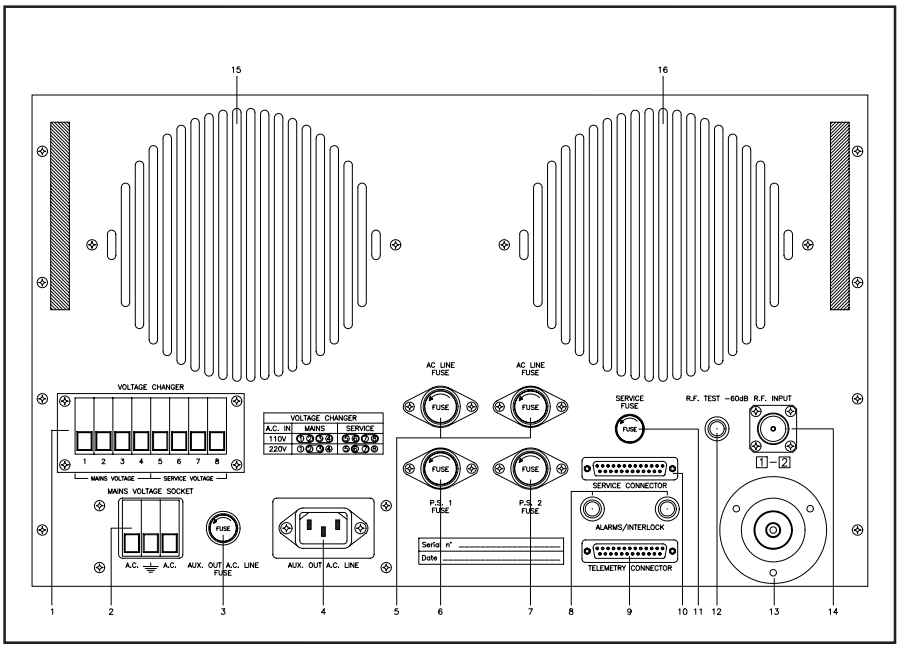
This chapter described the front and rear panel of PJ1000M, with a brief indication of all the different components.

6.1 Front Panel

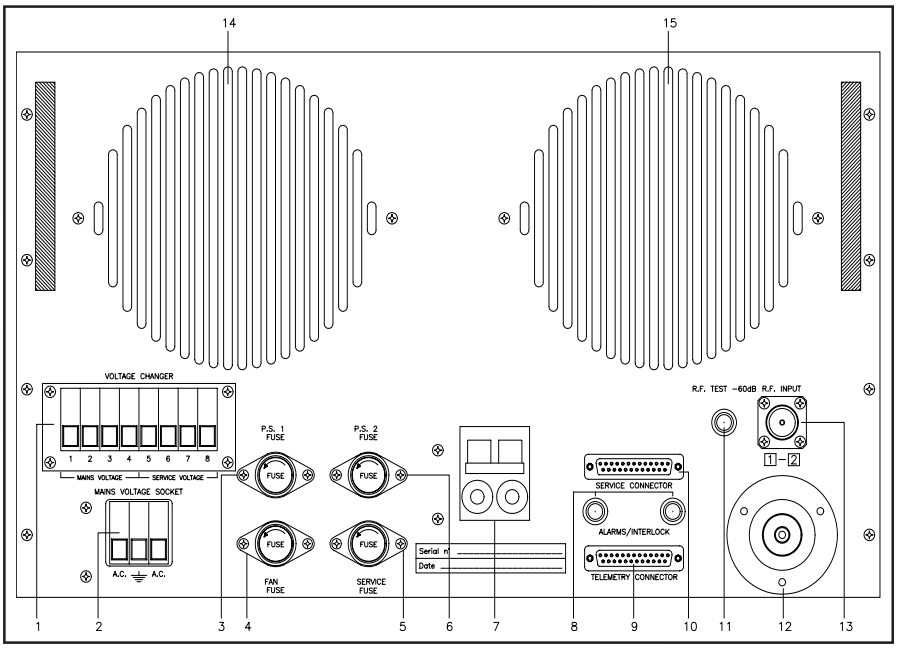


[1]	Heat-Sink	Heat sink
[2]	On / Off	Mains switch (not in TRF version)
[3]	Line	Line indicator C.A.
[4]	P.A. Protection	this four green LEDs shown the fuse status of each protection modules of the RF power amplifiers
[5]	Alarms	PJ1000M conditions alarms LEDs
[6]	On	Indicates when the aplifier is switched ON
[7]	Ext. St. By	External Standby LED indicator
[8]	Meter Selector	Working parameters switch:
		V1 voltage of the 1° RF module
		V2 voltage of the 2° RF module
		Vpa voltage of the Pj1000M
		Ipa current of thePJ1000M
		RFL Reflected power
		FWD Forward power
[9]	Alarms Reset	Push the button to reset the alarm status (not in TRF version)
[10]	Meter	Analogic display to show the working parameters
[11]	Heat-Sink	Power amplifier's heat sink

6.2 Rear Panel



[1]	Voltage Charger	Voltage changer:		
		Voltage	Mains	Service
		110 Vac	1-2 / 3-4	5-6 / 7-8
		220 Vac	2-3	6-7
[2]	Mains Voltage Socket	Mains voltage socket		
[3]	Aux. Ot A.C. Line Fuse	Auxiliary output A.C. line protection fuse		
[4]	Aux. Out A.C. Line	Auxiliary output A.C. line		
[5]	A.C. Line Fuse	A.C. line protection fuse		
[6]	P.S. 1 Fuse	Protection fuse of power supply1		
[7]	P.S. 2 Fuse	Protection fuse of power supply 2		
[8]	Alarms/Interlock	BNC connector that permit to exciter to comes Standby itself, putting to ground the central conductor, in case wich the aplifier is overloaded		
[9]	Telemetry Conector	Connector for remote measurement of working parameters		
[10]	Service Connector	Connector for research all processed parameters of the RF section		
[11]	Service Fuse	Service protection fuse		
[12]	R.F. Test -60 dB	-60 dB riferred to output level		
[13]	R.F. Output	RF output connector (7/8” EIA flange)		
[14]	R.F. Input	RF input connector (“N” type)		
[15]	Fan	Fan with forced ventilation		
[16]	Fan	Fan with forced ventilation		



6.3 Rear Panel (380/220V TRF version)

[1] Voltage changer — Voltage changer:

Voltage	Mains	Service
220Vac	1-2	4-5
380Vac	1-3	4-6

[2] Mains Voltage Socket — Mains voltage socket

[3] P.S. 1 Fuse — Protection fuse of power supply 1

[4] Fan Fuse — Fan protection fuse

[5] P.S. 2 Fuse — Protection fuse of power supply 2

[6] Service Fuse — Service protection fuse

[7] A.C. Line — Mains switch

[8] Alarms/Interlock — BNC connector that permit to exciter to comes Standby itself, putting to ground the central conductor, in case wich the aplifier is overloaded

[9] Telemetry Connector — Connector for remote measurement of working parameters

[10] Service Connector — Connector for research all processed parameters of the RF section

[11] R.f. Test -60 dB — -60 dB riferred to output level

[12] R.F. Output — RF output connector (7/8” EIA flange)

[13] R.F. Input — RF input connector (di tipo “N”)

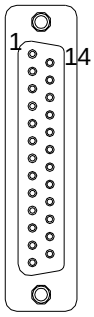
[14] Fan — Fan with forced ventilation

[15] Fan — Fan with forced ventilation

6.4 Connectors Description

6.4.1 Telemetry Connector

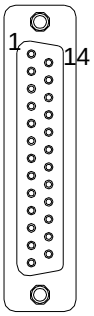
Type: DB25 Female



1	1° RF module voltage	2.0V X 50V
2	RF power amplifier voltage	2.0V X 50V
3	GND	0V
4	Reflected power	1.4V X 100W
5	Inhibitor TX	12V
6	Internal SWR	15V -> fault
7	GND	0V
8	Operativo	15V
9	Not used	
10	Not used	
11	Not used	
12	Not used	
13	Not used	
14	2° RF module amplifier voltage	2.0V X 50V
15	RF power amplifier current	2.0V X 40A
16	Forward power	1.6V X 1000W
17	Temperature	15V -> fault
18	SWR antenna	15V -> fault
19	Over drive	15V -> fault
20	Stand-by	15V
21	GND	0V
22	Not used	
23	Not used	
24	Not used	
25	Not used	

6.4.2 Service Connectors

Type: DB25 female



1	1° RF module voltage	5.0V X 50V
2	3° RF module voltage	5.0V X 50V
3	RF modules wais voltage	5.0V X 50V
4	GND	GND
5	1° RF module current	5.0V X 10A
6	2° RF module current	5.0V X 10A
7	3° RF module current	5.0V X 10A
8	4° RF module current	5.0V X 10A
9	Not used	
10	Not used	
11	Not used	
12	Not used	

13	Not used	
14	2° RF module voltage	5.0V X 50V
15	4° RF module voltage	5.0V X 50V
16	Not used	
17	V gate voltage of the RF module	5.0V X 10V
18	Not Used	
19	RF modules total current	5.0V X 40A
20	GND	GND
21	GND	GND
22	GND	GND
23	Not used	
24	Not used	
25	Not used	

Pagina lasciata intenzionalmente in bianco

This page was intentionally left blank

7. Technical Specifications

7.1 Dimensional and Enironmental Specifications

Cabinet Dimensions	454.0 mm (17,87") x 265.0 mm (10,43") x 507.0 mm (19,98")
Panel dimensions	483 mm (19") x 266 mm (10,47")
Depth	344 mm (26 1/2")
Weight	PJ1000M 54 Kg
Operating temperature range	-10 °C ÷ 50 °C
Umidity	95% Maximum, without condensation

7.2 Electrical Specifications

A.C. power supply	100-130 V, 50-60 Hz 198-250 V, 50-60 Hz 380V, 50-60 Hz (versione TRF) 220V, 50-60 Hz (versione TRF)
Cooling system	forced ventilation
Frequency range	87.5 MHz ÷ 108 MHz
Output power	1000 W
Drive power	< 20 W for Pout = 1000 W, typical 12 W
Input connector	"N" type standard connector
Input impedance	50 Ohm
Output connector	Standard 7/8" EIA Flange
Output impedance	50 Ohm
Harmonic and spurious soppression	Respect all requirments FCC and CCIR

Pagina lasciata intenzionalmente in bianco

This page was intentionally left blank

8. Theory of Operation

The figure 9.1 shows the block diagrams of PJ1000M. The blocks are described in the following chapter:

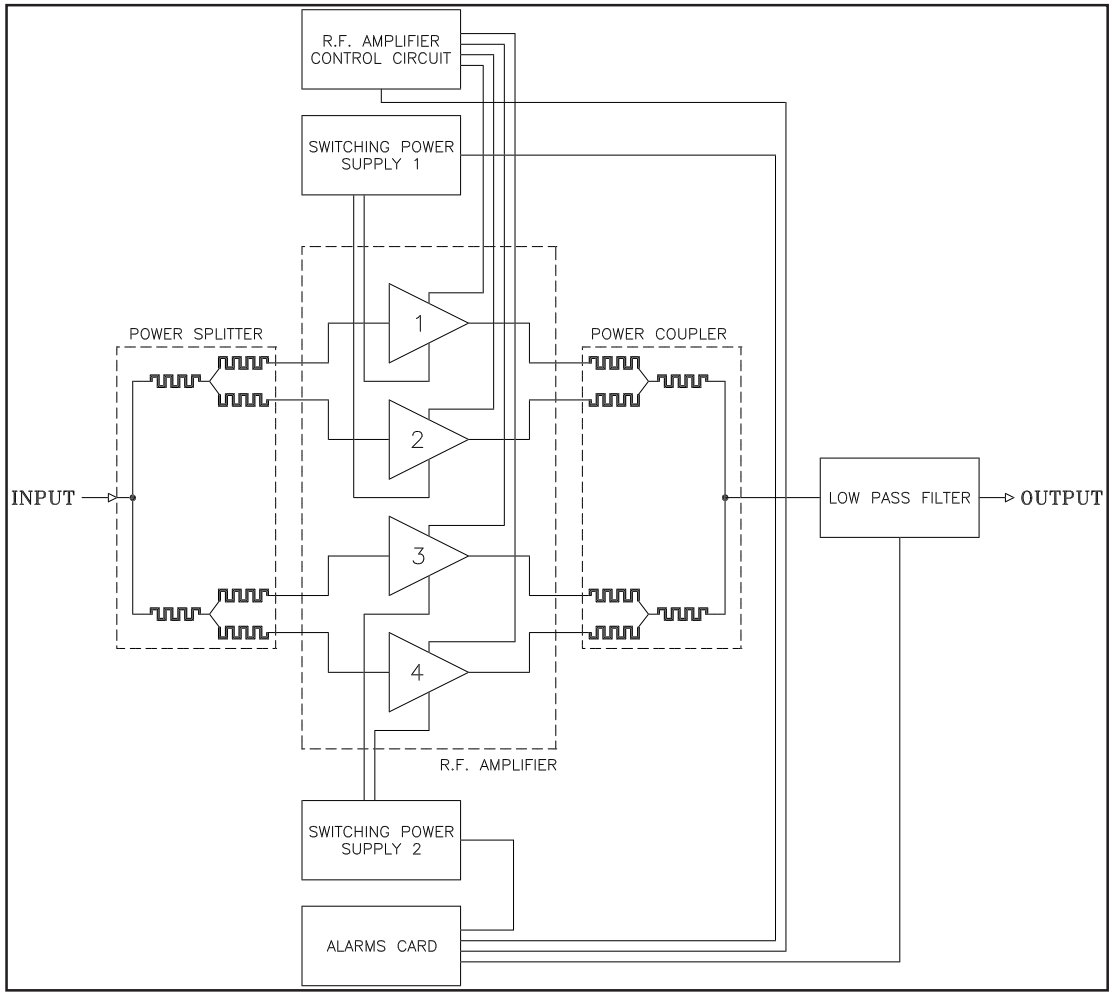


Figura 9.1

8.1 Power Supply

The PJ1000M contains four mains transformers. Depending of the version, the jumpers on rear panel can select the mains voltage of 380 o 220 Vac or 220 o 110 Vac.
Two transformers have one output 61-0-61 V for switching power supply. The switching power supply is located on a fin of cooling.
The third and fourth transformer give the supply for the other devices of the machine.

8.2 Soft Start

The soft-start is mounted on a board placed on the right side of the amplifier. This circuit eliminates the current spikes generated by the transformer when it is powered.

8.3 R.F. Power Amplifier

The RF Power Amplifier section is composed of the four power modules coupled through with a Wilkinson Splitter and Combiner realized with *strip line tecnology*. The section components are housed in the lower side of the equipment and mounted on a heat sink that allows its cooling through forced ventilation.

The Wilkison Splitter Card is used to split the input exciter's driving powers so that to each amplifier module arrives the same quantity.
Each module is supplied separately, and delivers 300 W di potenza RF with 4 e 6 W of drive.
The quiescent parameters of each module are:
Vdc = 50V, Vgs = 3.5 V, Idq = 200 mA
The active device employed is a MOSFET (BLF278).

The Wilkison Combiner is used to combine the output powers of each RF Power Amplifiers modules. Altogether, the Wilkinson Splitter and Combiner Card are planned so that the contribuitions of the single modules are added in phase between of they.

A power resistor placed on each circuits is used to absorb any unbalanced powers in case of faulty.

8.4 Low Pass Filter

The low pass filter is mounted on the same fin of cooling of the section of power amplification. The filter pulls down the level of the spurious emissions under the levels allowed from the international norms, so that the amplifier can be connected directly to the transmission antenna.

8.5 Bias Card

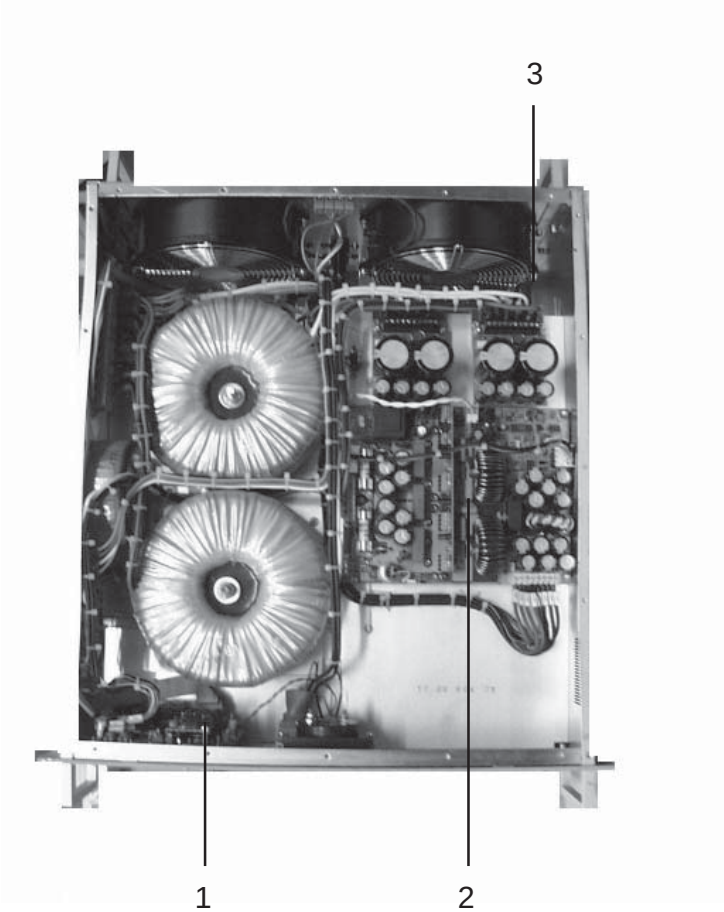
This card is housed in the lower side of the equipment. The dafault function is to control and if necessary to correct the polarization current of each single MOSFET of the RF section. Then it is able to supply external measures as: currents, voltages for each RF amplifier module, total current and average voltage.

8.6 Alarms Card

This card detect any system anomaly such as excessive SWR, internal or antenna, overtemperature, etc... . This module will also, whenever possible, reset the system to its original condition, after a fault has accused.

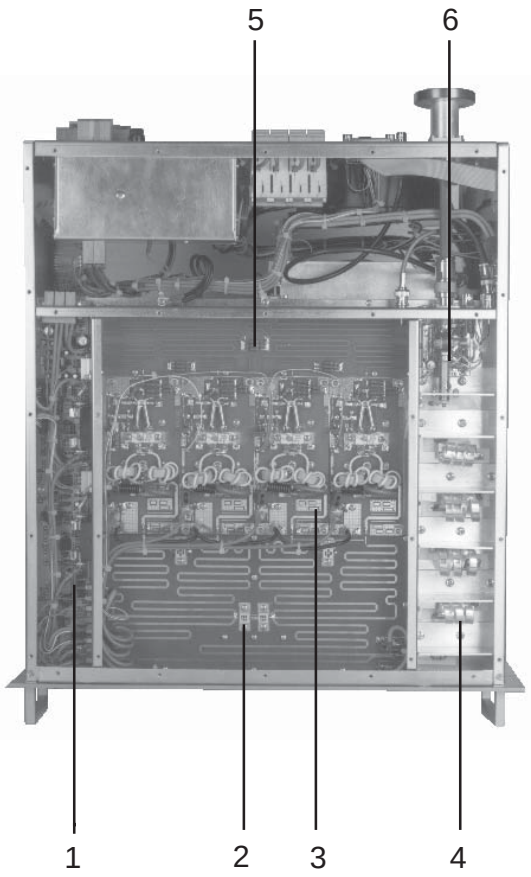
9 Identification and Access to Modules

9.1 Modules Identification (top view)



[1] Alarms card
[2] Power supply (PSSW5040)
[3] Soft start card

9.2 Modules Identification (bottom view)



[1] Bias card
[2] Wilkinson combiner card
[3] RF modules of power amplifier
[4] Low pass filter
[5] Wilkinson splitter card
[6] Directional coupler

9.4 Removal of the Modules

ATTENTION: When the amplifier is operated with the cover removed, hazardous voltages and heavy current are accessible. Ensure all primary power is disconnected from the amplifier before attempting equipment maintenance.

To reinstall the card is enough to execute operations sequence in the opposite way.

Remove all the screws that are located on the top and bottom covers of the machine. After that the covers have been removed, extract, with the help of the chapters 9.1 and 9.2, all amplifier modules.

9.4.1 Power Supply Replacement

- With the help of the Wiring Diagram shown in Appendix, take the note of the cable position inside the terminal boards J1, J2, J3, J4, J5, J6.
- Disconnect the external teminal boards loosening just the screws of the connectors mounted on the board.
- Remove the nine screws that fix the Power Supply to heat sink.
- Carefully remove the Power Supply.

9.4.2 R.F. Power Amplifier Module Replacement

- With the help of the Wiring Diagram shown in Appendix, take note of the wiring.
- Disconnect all wires (Supply, Gain Control, Input RF and output RF).
- Remove the five screws that fix the RF Power Amplifier Modle to heat sink.
- Carefully remove the RF Power Amplifier.

9.4.3 Wilkinson Splitter Card Replacement

- Unsolder the wire that connect the input of the Splitter to RF input connector of RF section
- Unsolder the four wires that connect the four outputs of the Splitter to the inputs of RF Power Amplifier Modules.
- Remove the ten screws that fix the card to the heat sink.
- Carefully extract the card.

9.4.4 Wilkinson Combiner Card Replacement

- Unsolder the wire that connect the output of the Combiner to the Low Pass Filter.
- Unsolder the four wires that connect the four inputs of the Combiner to the Outputs of RF Power Amplifier Module.
- Take note of the wiring of the Directional Coupler, after unsolder the three wires.
- Remove the screws that fix the four Power Resistor to the heat sink.
- Remove the screws thatfix the Combiner Card to heat sink.
- Carefully extract the card.

9.4.5 Directional Coupler Replacement

- Take note of the wirings.
- Unsolder the wires of the Directional Coupler.
- Unsolder the wire connecting the Directional Coupler Card to RF output connector.
- Unsolder thewire connecting the Directional Coupler Card to Low Pass Filter.
- Remove the four screws that fix the Directional Coupler ard to the hex standoffs and remove the board.

9.4.6 Soft Start Card Replacement

- Disconnect M1 and M2 Soft Start ‘s connectors.
- Disconnect M3.
- Dismount the four securing screws and remove the board.

9.4.7 Alarms Card Replacement

- Remove the knob of the meter selector loosening the screw inside the knob.
- Dismount the screws of the meter selector switch and alarms reset push-button.
- Disconnect CN1 and CN3 Alarms Card’s connectors.
- Disconnect CN2 Telemetry Card’s Connector.
- Remove the screws securing the board to the front panel.
- Carefully extract the card.

9.4.8 Bias Card Replacement

- Remove the screws that fix the two voltage regulators (U9, U10) internal separator.
- Dismount the screw that fix P1 and P2 Bias Card’s connectors to the internal separator.
- Disconnect JP1 and JP2 Bias Card’s connectors.
- Carefully extract the card.

10. Internal Adjustment

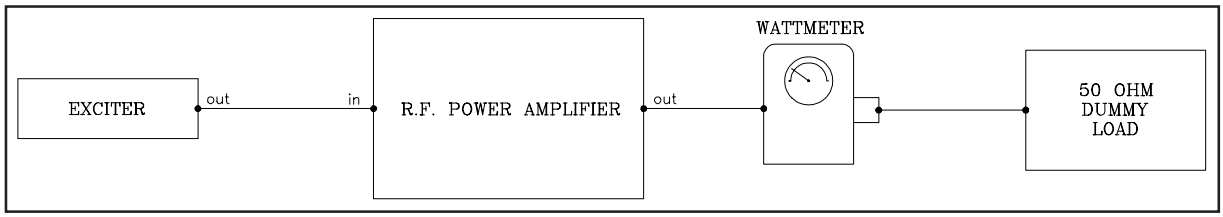
10.1 Power Supply Adjustment (PSSW5040)

No adjustments are required on this module.

10.2 R.F. Power Amplifier Adjustment

After tou have changed the module and you have connected again all cables, perform the following:

1) See the figure below, connect a dummy load to the RF output connector with through a wattmeter in series .



2) Connect to the RF input connector a suitable exciter able to deliver a power between 10 and 30 W.

3) Connect the Alarms/Interlock connector to the appropriate connector on the exciter.

4) Set the output power of the exciter to its minimum value.

5) Switch on the PJ1000M and the exciter and wait for the PLL to lock, now slowly increase the drive checking that the output power rises progressively, with an increase of Ipa current.

NOTE: with Pot= 1000W we have 15W< Pin< 18W and 32A< Ipa< 40A

Some differences in the currents drawn are related to the different gains of the MOSFET devices (BLF278) and must be compensated with the trimmers R15 placed on each RF Power Amplifier Board. The trimmer to be adjusted will be the one related to the Rf module that has a higher current consuption. This one must be adjusted turning it counter clockwise to obtain the same current consumption in each RF module. Differences of less than 800mA between the four modules are acceptable.

10.3 Wilkinson Spiltter Card Adjustment

No adjustment are required on this module. (Be very carefully to correctly reconnect the Splitter Card, since incorrect connections will destroy the RF Power Modules).

10.4 Wilkinson Combiner Card Adjustment

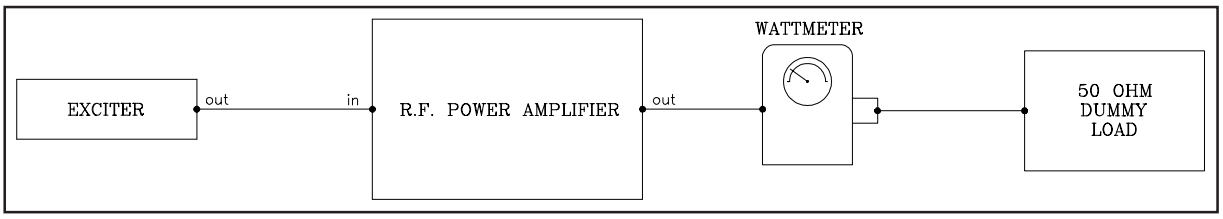
No adjustment are required on this module. (Be very carefully to correctly reconnect the Splitter Card, since incorrect connections will destroy the RF Power Modules).

10.5 Alarms Card Adjustment

NOTE: Make sure that this replacement is really necessary.

1) After changing the board, connect the amplifier as shown in the figure below.

2) Switch ON the PJ1000M.



3) Place the meter selector on V1 or V2.

4) Adjust the trimpot R14to obtain a .s.d. reading of 50V (check that the output voltage of the power supply is really 50V).

5) Switch On the exciter and wait for PLL lock.

6) Increase the output power to a level of 1000W.

7) Adjust the Fwd reading with trimpot R11.

8) Now increase again the drive until V1 and V2 decrease and you obtain a lock condition of the amplifier due to the overdrive protection; this protection is adjustable by means of trimpot R26 on the Alarm Card. This protection must come on when V1 and V2 voltages are about 48Vdc.

NOTE: If the Low Pass Filter and Directional Coupler Card has not been changed, don't move "AGC control" trimmer TR1.

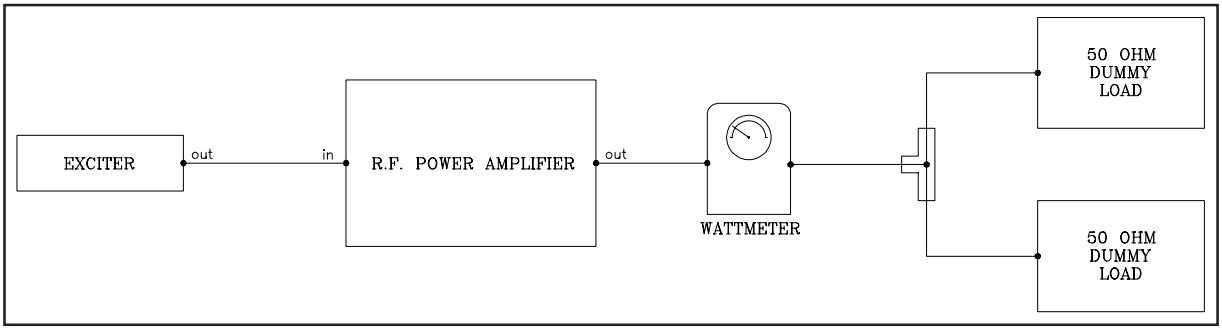
9) Internal S.W.R. Calibration (S.W.R. int.)

9A) Reduce the drive power to the minimum value, switch OFF the amplifier and the exciter.

9B) Connect two paralleled dummy loads to the RF Output connector of the amplifier as in schematic below.

9C) Switch ON tha amplifier and the exciter and wait for the PLL to lock.

9D) Select RFL with the meter selector, and set the external wattmeter for reflected power reading.



9E) Increase the output power to obtain a reading of 100W RFL on the external wattmeter. Now adjust trimpot R40 on the Alarms Card until the SWR-INT protection acts.

NOTE: This setting may vary with the working frequency, it's preferable to make this adjustment at the operating frequency.

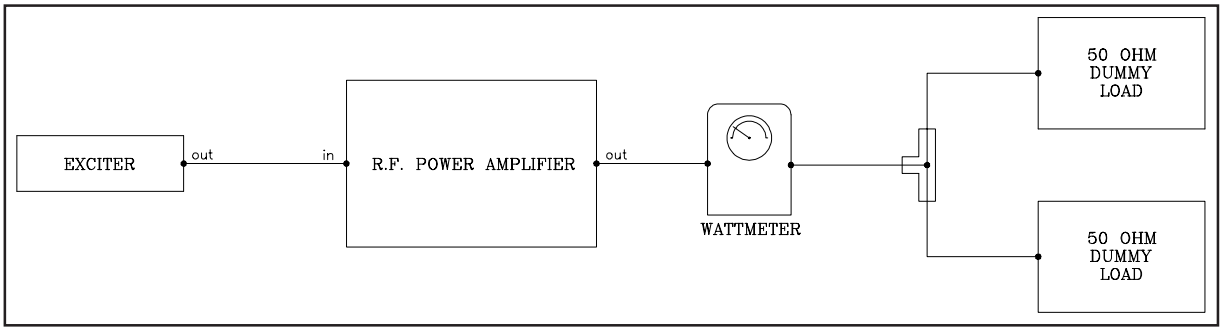
10) Antenna S.W.R. Calbration (S.W.R. ANT.)

10A) Reduce the drive power to the minimum value, switch OFF the amplifier and the exciter.

10B) Connect two paralleded dummy loads to the RF output connector of the amplifier as in the lower schematic.

10C) Switch ON the amplifier and the exciter and wait for the PLL to lock.

10D) Select RFL with the meter selector and set the external watmeter for reflected power reading.



10E) Increase the output power to obtain a reading of 100W RFL on the external wattmeter. Now adjust trimpot R13 on the Alarms Card to obtain the same reading on the PJ1000M meter.

10F) Increase again the power, until you read 100W or reflected power adjust R56 on the Alarms Cards (remove the metallic shield that covers tha Alarms Card) until S.W.R. Antenna protection acts.

NOTE: This setting may vary with the working frequency, it is preferable to make this adjustment at the operating frequency.

11) Overtemperature alarm check (temp.)

11A) Check the overtemperature protection by short circuiting the terminals o the temperature sensor placed on the RF Section heat sin (or on Power Supply heat sink);the appropriate LED will light, and the amplifier will stop.

12) External Standby check (EXT. ST. BY)

12A) Check the EXT.ST.BY protection by short circuing the pin20 of Telemetry connector, and verify that the EX.ST.BY LED lights and the amplifier will stop.

12B) Short cicuiting the pin8 of Telemetry connector will regularly restart.

10.6 Directional Coupler Card Adjustment

The Directonal Coupler Card don't need any adjustment, perhaps it is necessary to execute the following checkings after the replacing of the card:

1) Verify the "AGC control".

2) Verify the Antenna S.W.R. calibration.

3) Verify FWD PWR lecture.

4) Verify RFL PWR lecture.

10.7 Soft-start Card Adjusment

No adjustment are needed after this board has been changed.

NOTE: Pay attention to the correct inserton of the connectors.

10.8 Bias Card Adjustment

No adjustment are required inside the Bias Card beacause it's a factory adjusted device.

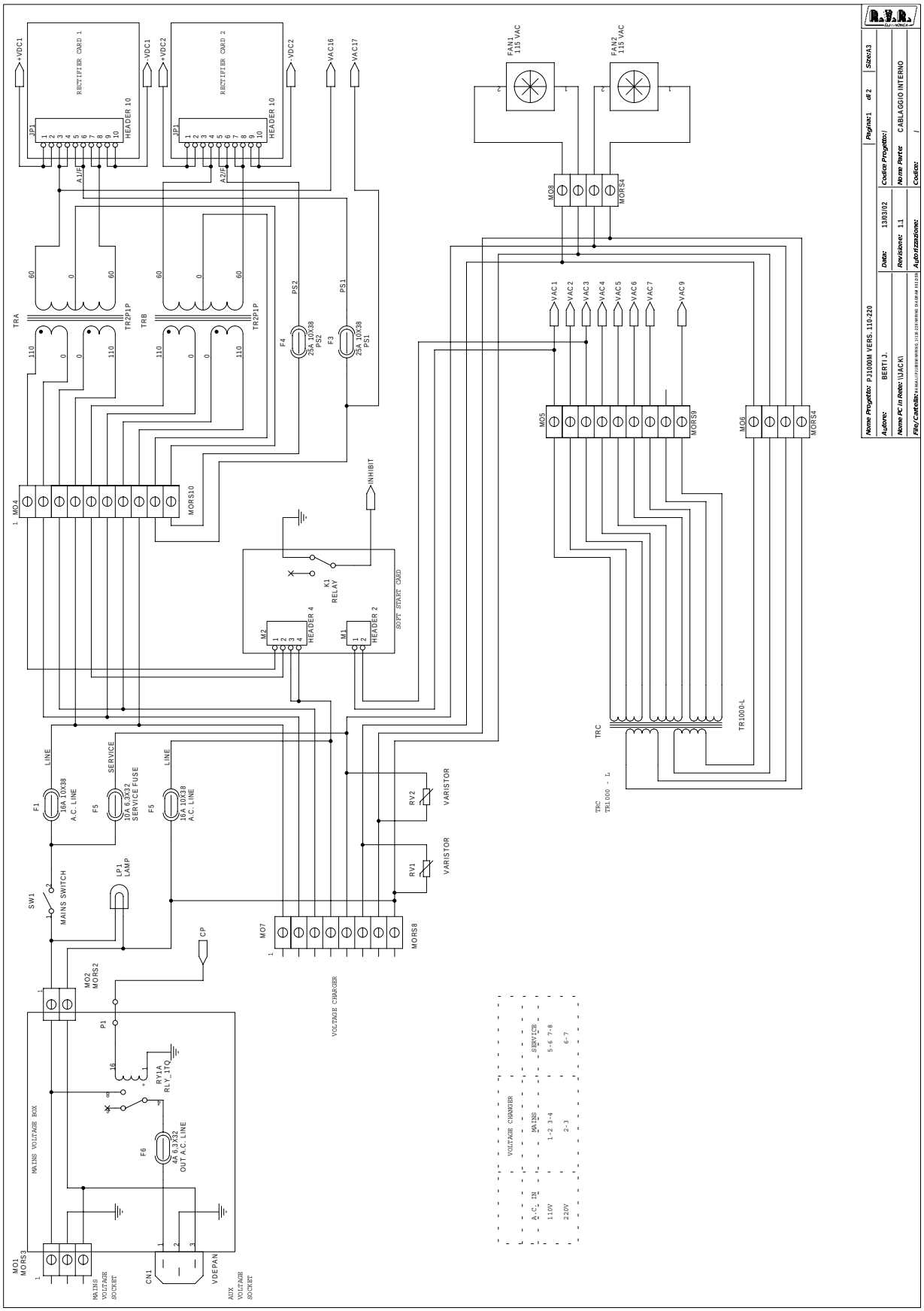
Appendix A Piani di montaggio, schemi elettrici, liste componenti / *Component layouts, schematics, bills of material*

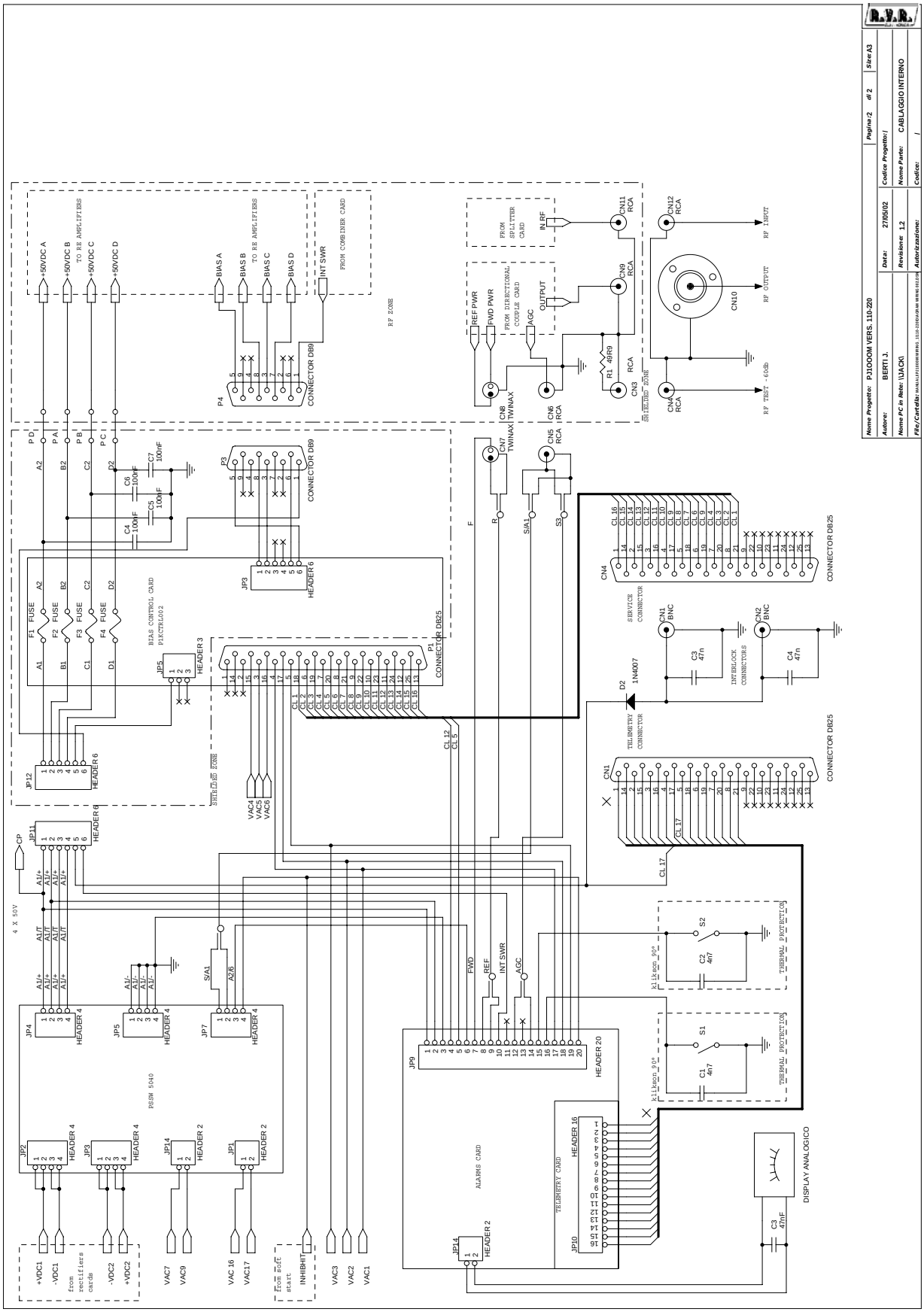
Questa parte del manuale contiene i dettagli tecnici riguardanti la costruzione delle singole schede componenti il PJ1000M. L'appendice è composta dalle seguenti sezioni:

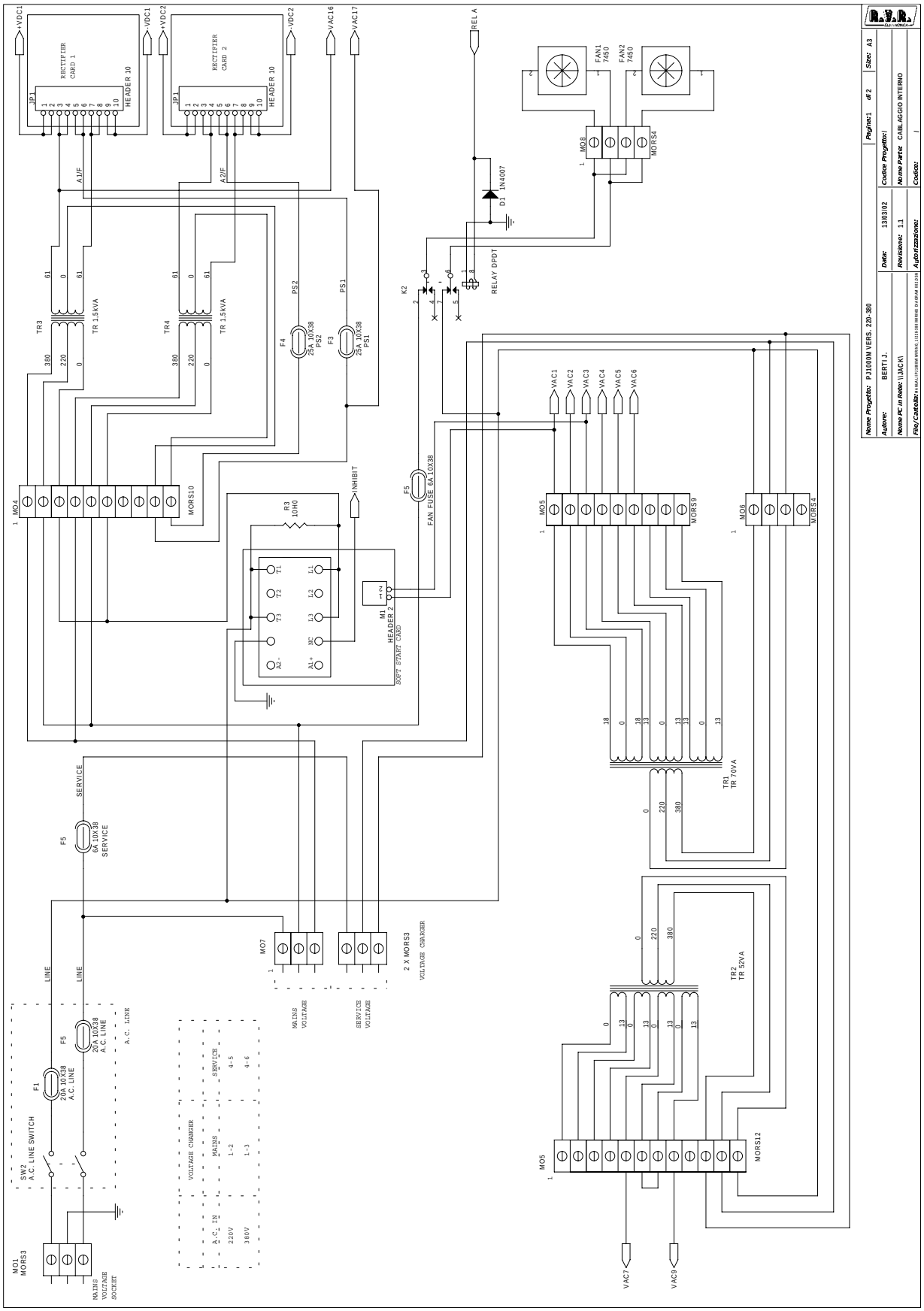
This part of the manual contains the technical details about the different boards of the PJ1000M. This appendix is composed of the following sections:

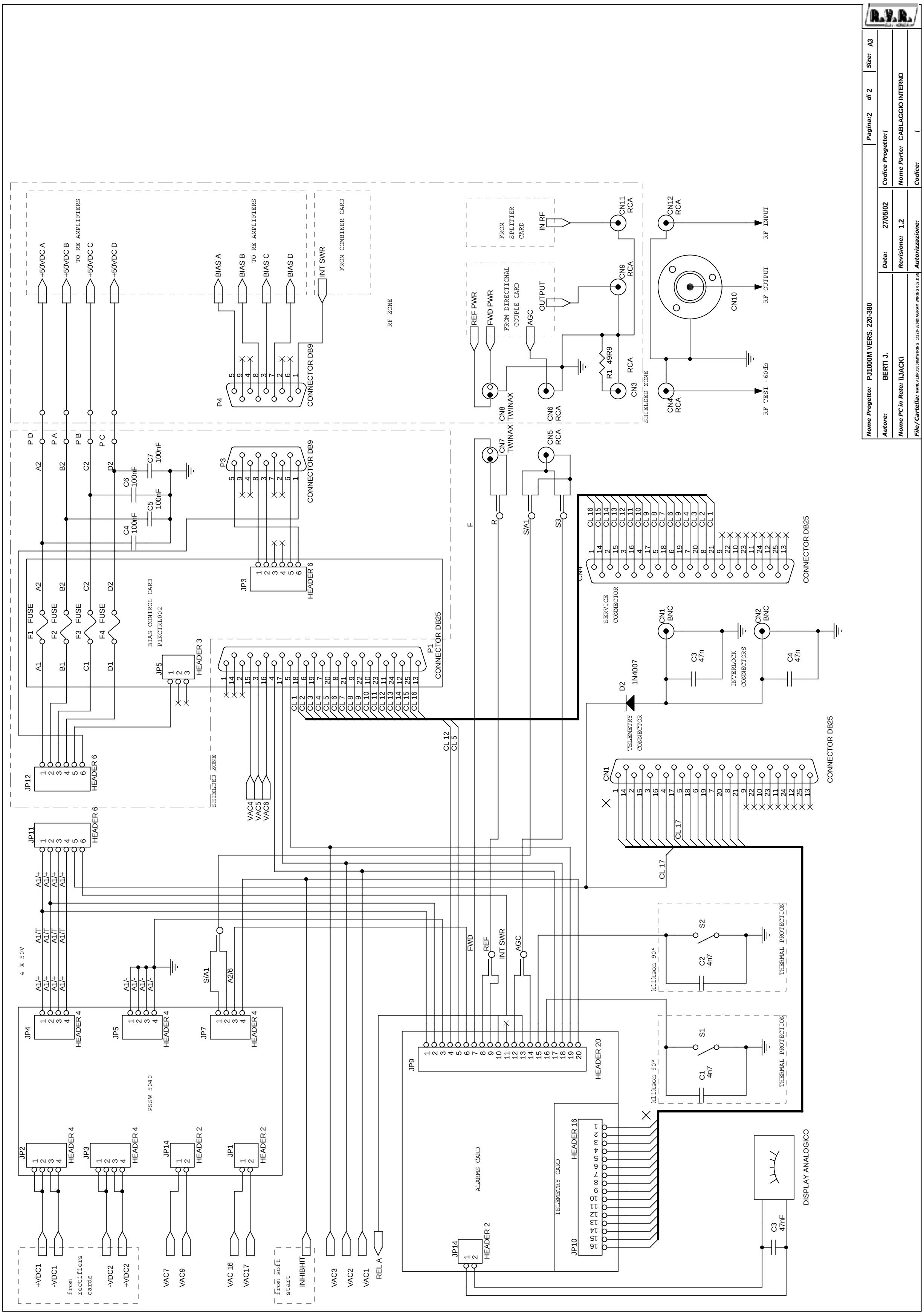
Description	RVR Code	Vers.	Pages
Wiring diagrams	Wiring diagrams	1.5	8
R.F. Power Amplifier Module	PJ1KRF	1.2	4
Wilkinson "4-Way" Splitter Card	PJ1KM SPL-IN	1.1	4
Wilkinson "4-Way" Combiner Card	PJ1KM CMB-OUT	1.1	4
Alarms Card	PRT501	1.1	4
Telemetry Card	PROT-A2	1.1	4
LPF+MEAS		1.0	4
	CSB1		
	CSBLFPJ1KM		
	CSLPFPJ1KM		
	CSDCLPFPJ1KM		
Low Pass Filter	PJ1KLPF (Before January 2002)	1.1	4
Directional Coupler Card	DRCP-PJ1KM (Before January 2002)	1.1	4
Switching Power Supply	PSSW5040	1.2	10
	PSSW5020B	1.1	4
	PSSW5020	1.1	4
	PSW1000	1.1	6
Soft Start Card	SOFTSTART2	1.1	4
	SOFTSTART1	1.2	4
Bias Control Card	PJ1KCTRL002	1.2	6
	PJ1KCTRL001	1.1	6

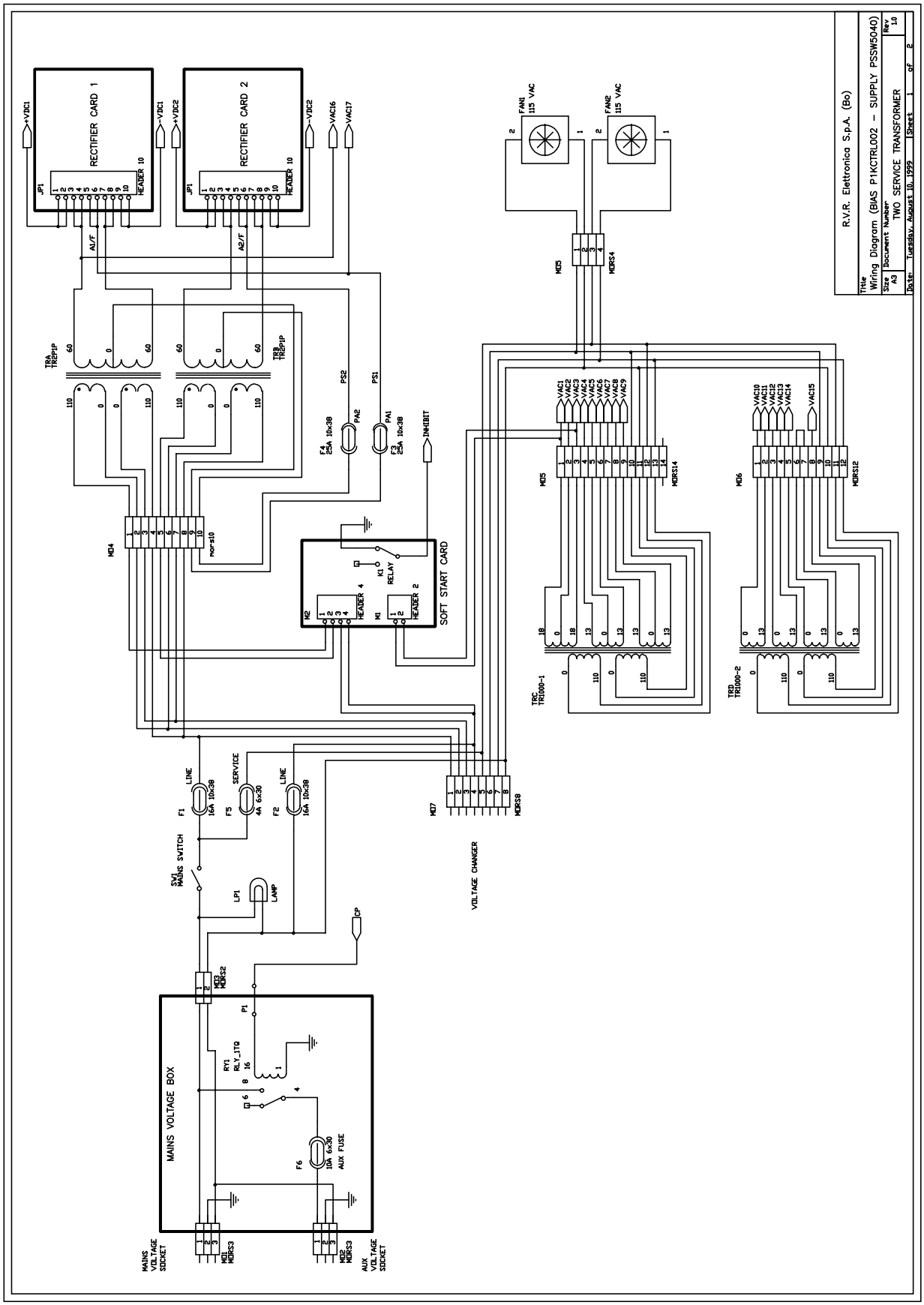
Pagina lasciata intenzionalmente in bianco
This page intentionally left blank


RECTIFIER CARD 1
RECTIFIER CARD 2
HEADER 10
VDC1
VDC2
VAC16
VAC17
A1/F
A2/F
TRA
TRB
TR2P1P
PS1
PS2
F3
F4
25A 10X38
MO4
MORS10
INHIBIT
K1
RELAY
SOFT START CARD
HEADER 4
HEADER 2
FAN1
115 VAC
FAN2
115 VAC
MO8
MORS4
VAC1
VAC2
VAC3
VAC4
VAC5
VAC6
VAC7
VAC9
MO5
MORS9
MO6
TRC
TR1000-L
F1
16A 10X38
A.C. LINE
SERVICE
10A 6.3X32
SERVICE FUSE
SW1
MAINS SWITCH
LP1
LAMP
RV1
RV2
VARISTOR
MO7
MORS8
CP
MO2
MORS2
P1
RY1A
RLY_11Q
F6
6A 6.3X32
OUT A.C. LINE
MAINS VOLTAGE BOX
MO1
MORS1
MAINS
VOLTAGE
SOCKET
CN1
VDEPAN
AUX
VOLTAGE
SOCKET
VOLTAGE CHANGER
A.C. IN
110V
220V
MAINS
1-2 3-4
2-3
SERVICE
5-6 7-8
6-7
Nome Progetto: PJ1000M VERS. 110-220
Autore: BERTI J.
Nome PC in Rete: \\JACK\
File/Cartella:
Pagina:1 di 2
Size:A3
Data: 13/03/02
Revisione: 1.1
Codice Progetto:/
Nome Parte: CABLAGGIO INTERNO
Codice: /
Autorizzazione:


Nome Progetto: PJ1OOOM VERS. 110-220
Pagina /2 di 2
Size A3
Autore: BERTI J.
Data: 27/05/02
Codice Progetto: /
Nome PC in Rete: \\JACK\
Revisione 1.2
Nome Parte: CABLAGGIO INTERNO
File/Cartella:
Autorizzazione:
Codice: /
+50VDC A
+50VDC B
+50VDC C
+50VDC D
TO RF AMPLIFIERS
BIAS A
BIAS B
BIAS C
BIAS D
INT SWR
FROM COMBINER CARD
CONNECTOR DB9
RF ZONE
REF PWR
FWD PWR
FROM DIRECTIONAL COUPLER CARD
AGC
OUTPUT
IN RF
FROM SPLITTER CARD
CN11 RCA
CN12 RCA
CN9 RCA
CN10
RF INPUT
RF OUTPUT
RF TEST 60db
R1 49R9
CN3 RCA
CN8 TWINAX
CN6 RCA
CN7 TWINAX
CN5 RCA
SHIELDED ZONE
BIAS CONTROL CARD PIKCTRL002
FUSE
CONNECTOR DB25
SERVICE CONNECTOR
TELEMETRY CONNECTOR
INTERLOCK CONNECTORS
1N4007
HEADER 3
HEADER 4
HEADER 6
HEADER 20
HEADER 16
HEADER 2
DSSM 5040
ALARMS CARD
TELEMETRY CARD
THERMAL PROTECTION
DISPLAY ANALOGICO
+VDC1
-VDC1
from rectifiers cards
-VDC2
+VDC2
VAC7
VAC9
VAC 16
VAC17
from soft start
INHIBHIT
VAC3
VAC2
VAC1
VAC4
VAC5
VAC6
4 X 50V

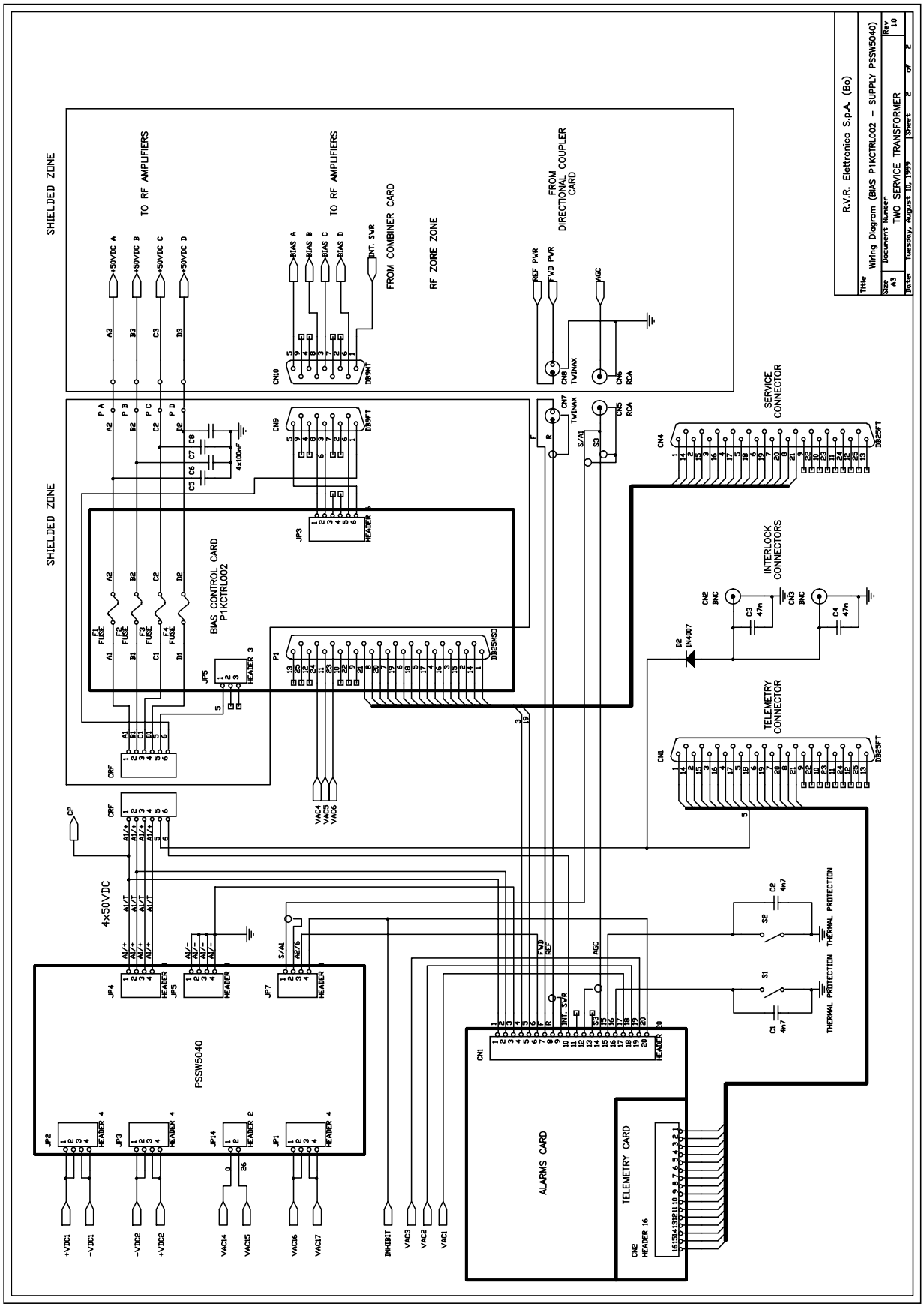

Nome Progetto: PJ1000M VERS. 220-380
Autore: BERTI J.
Nome PC in Rete: \\JACK\
File/Cartella:
Data: 13/03/02
Revisione: 1.1
Pagina: 1 di 2
Size: A3
Codice Progetto:
Nome Parte CABLAGGIO INTERNO
Codice: /
Autorizzazione:
VDC1
VDC2
VAC16
VAC17
RELA
RECTIFIER CARD 1
RECTIFIER CARD 2
HEADER 10
JP1
A1/F
A2/F
FAN1 7450
FAN2 7450
MO8
MORS4
D1 1N4007
RELAY DPDT
K2
TR3
TR4
TR 1.5kVA
F4 25A 10X38 PS2
F3 25A 10X38 PS1
PS2
PS1
MO4
MORS10
R3 10H0
INHIBIT
F5 FAN FUSE 6A 10X38
VAC1
VAC2
VAC3
VAC4
VAC5
VAC6
MO5
MORS9
MO6
MORS4
M1 HEADER 2
SOFT START CARD
TR1 TR 70VA
TR2 TR 52VA
MO5
MORS12
VAC7
VAC9
F5 SERVICE 6A 10X38 SERVICE
F1 20A 10X38 A.C. LINE
F5 20A 10X38 A.C. LINE
LINE
SW2 A.C. LINE SWITCH
A.C. LINE
MO1 MORS3
MAINS VOLTAGE SOCKET
VOLTAGE CHANGER
A.C. IN
MAINS
SERVICE
220V
380V
1-2
1-3
4-5
4-6
MO7
2 X MORS3
VOLTAGE CHARGER
MAINS VOLTAGE
SERVICE VOLTAGE


Nome Progetto: PJ1000M VERS. 220-380
Autore: BERTI J.
Data: 27/05/02
Revisione: 1.2
Nome Parte: CABLAGGIO INTERNO
Pagina: 2 di 2
Size: A3
RF ZONE
SHIELDED ZONE
CONNECTOR DB9
CONNECTOR DB25
BIAS CONTROL CARD
ALARMS CARD
TELEMETRY CARD
DISPLAY ANALOGICO
SERVICE CONNECTOR
TELEMETRY CONNECTOR
INTERLOCK CONNECTORS
THERMAL PROTECTION
RF INPUT
RF OUTPUT
RF TEST -60db



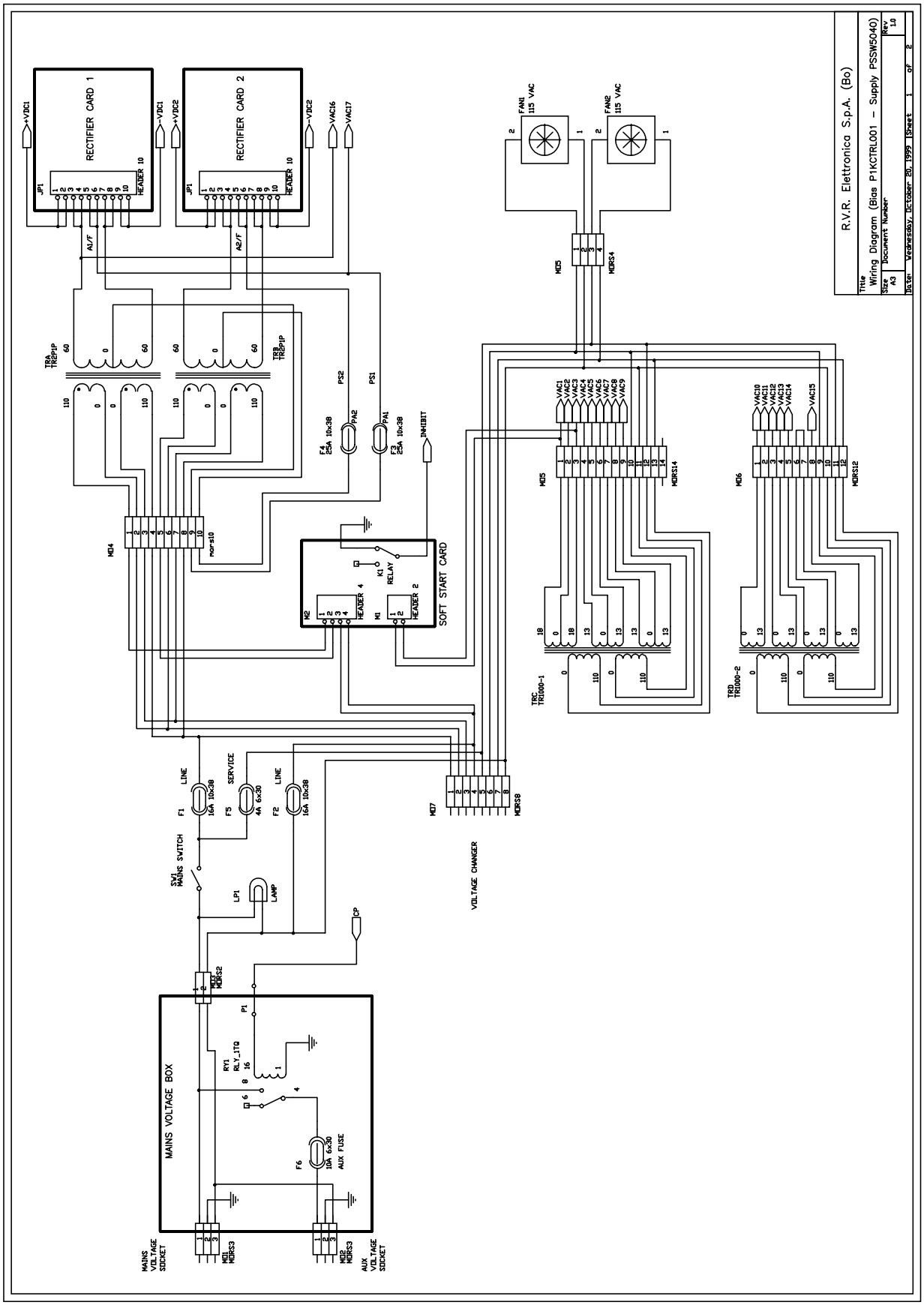
Versione precedente, solo per riferimento

Former version, for reference only



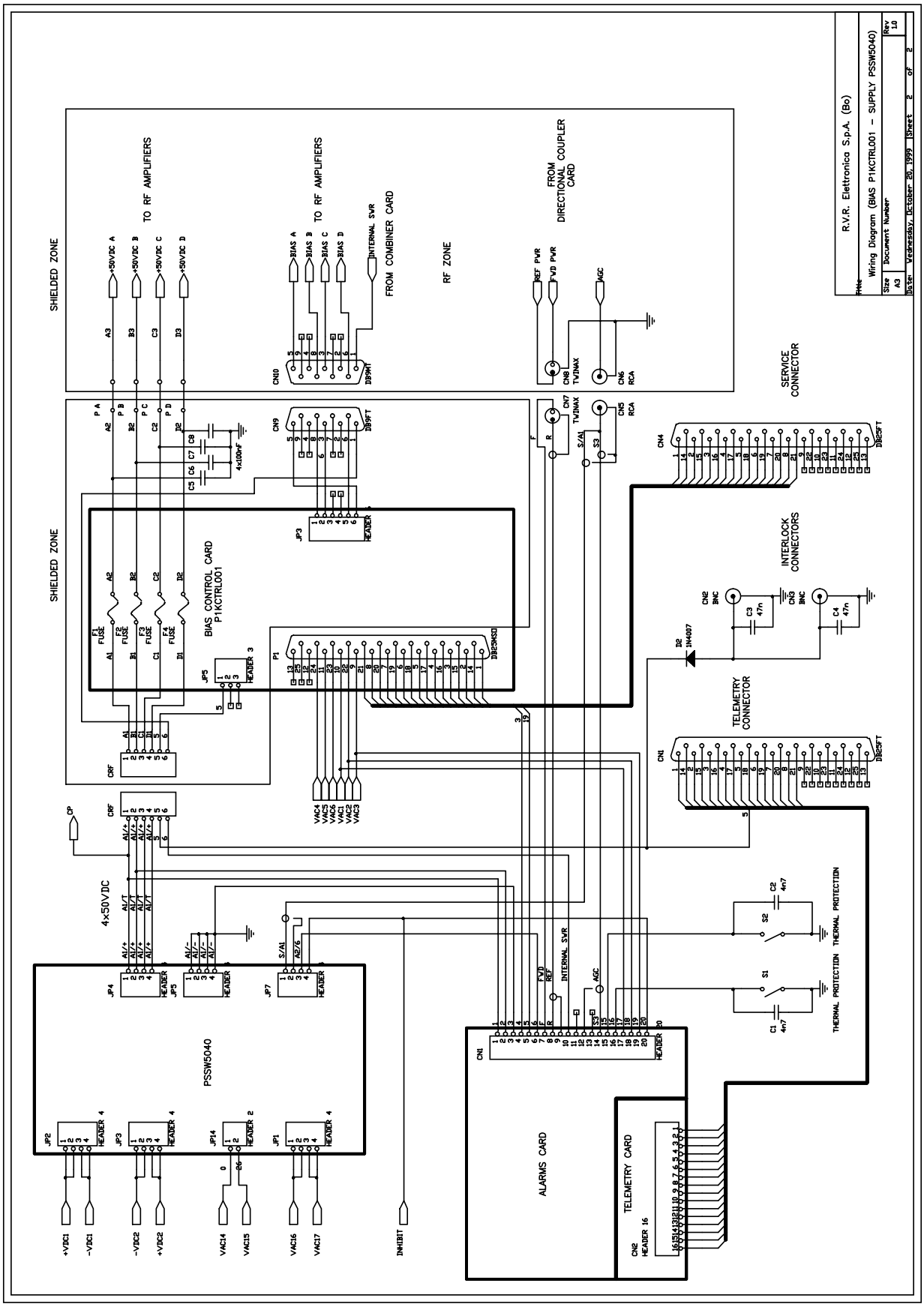
Versione precedente, solo per riferimento

Former version, for reference only



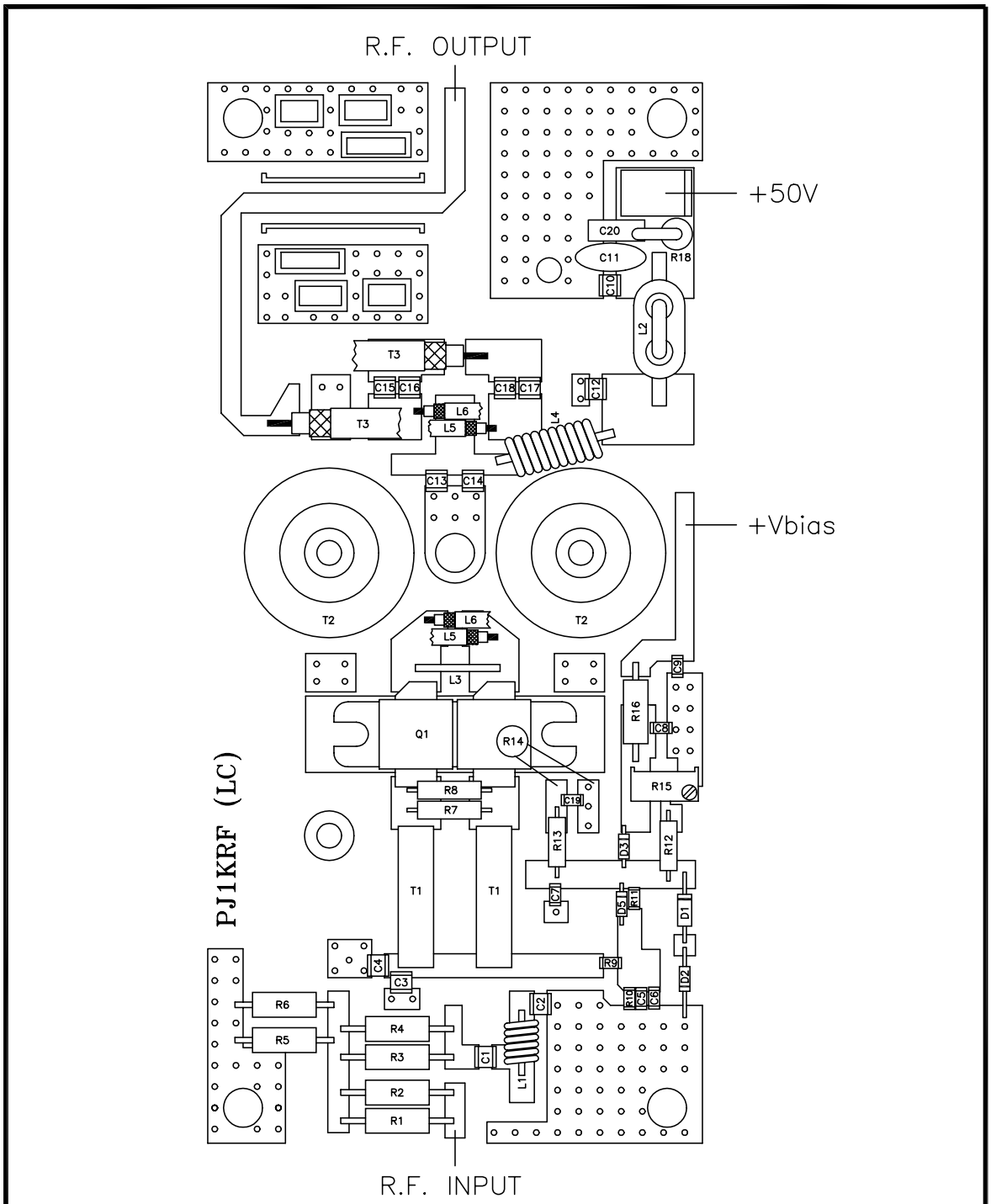
Versione precedente, solo per riferimento

Former version, for reference only

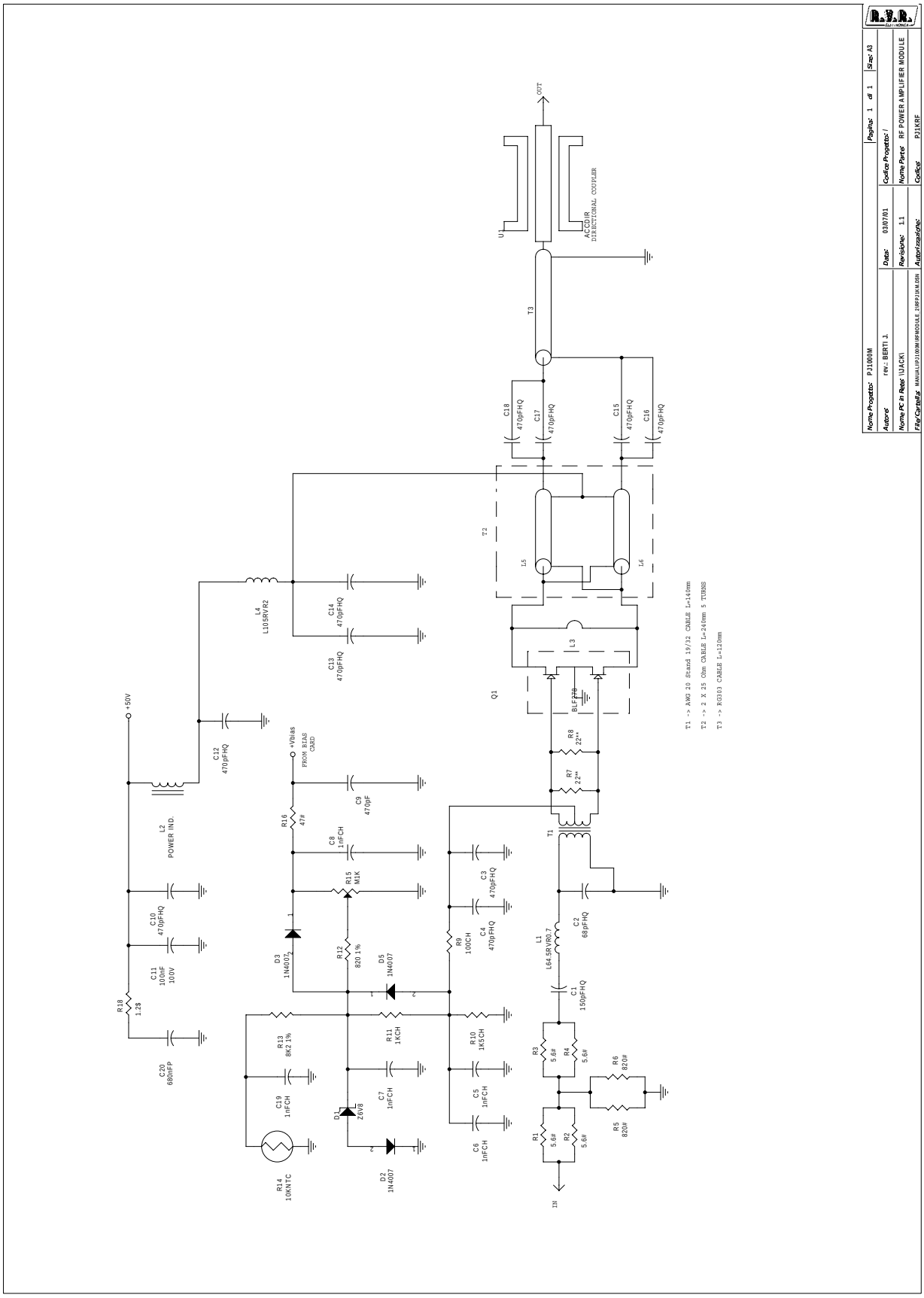


Versione precedente, solo per riferimento

Former version, for reference only



R.V.R. ELETTRONICA	DENOMINAZIONE: R.F. Power Amplifier Module Component Layout – Piano di Montaggio	
	DISPOSITIVO:	
SEMILAVORATO	DISEGNATO: D'Alessio D. li 12/08/98	DISEGNO
MATERIALE	SCALA	
TRATTAMENTO		TAVOLA n di

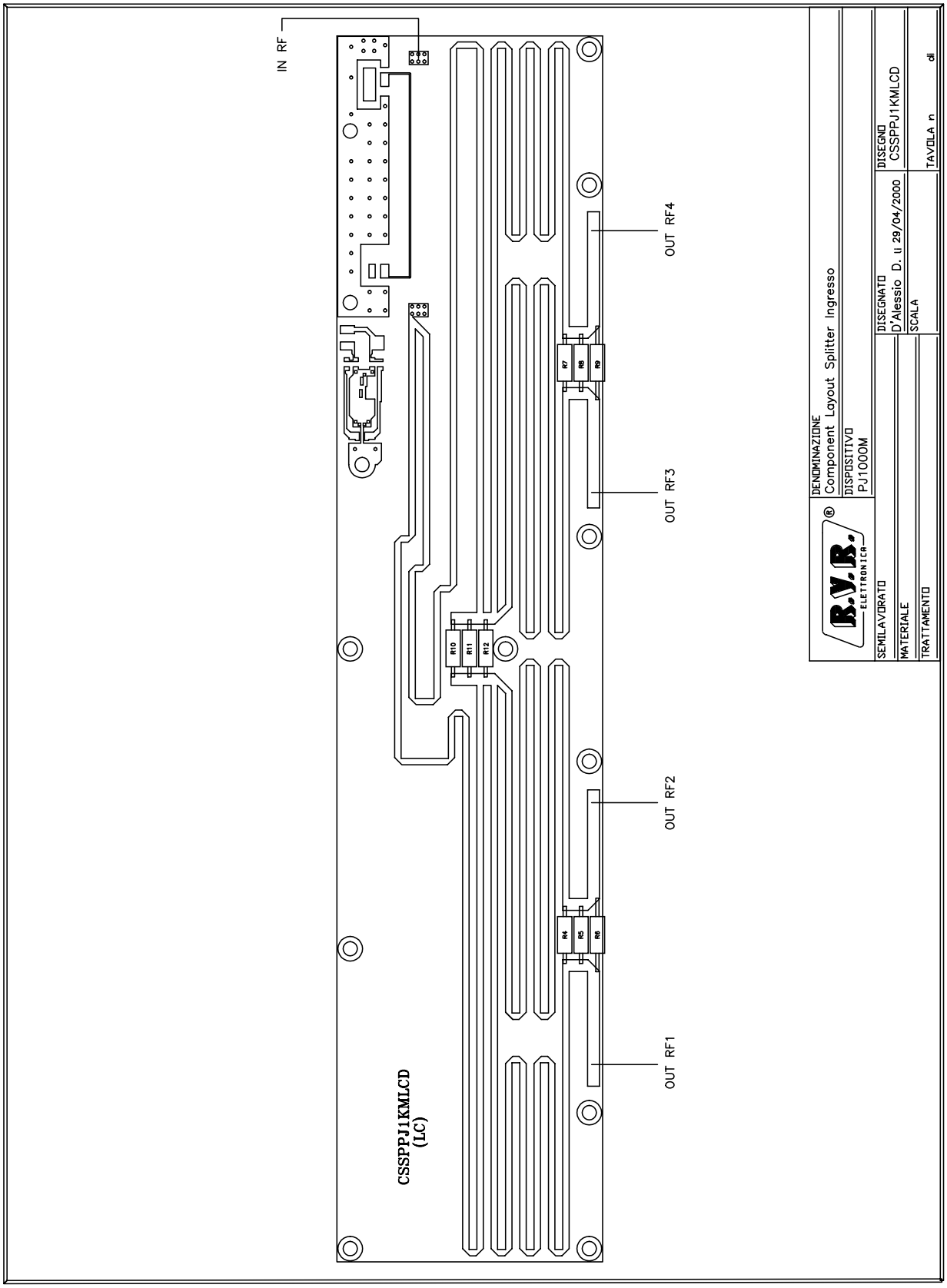

Nome Progetto: PJ1000M
Pagina: 1 di 1
Size: A3
Autore: rev.: BERTI J.
Data: 03/07/01
Codice Progetto: /
Nome PC in Rete: \JACK\
Revisione: 1.1
Nome Perle: RF POWER AMPLIFIER MODULE
File Gerber: MANUALI\PJ1000M\MODULE 30\PJ1KM.GBR
Autorizzazione:
Codice: PJ1KRF
T1 -> AWG 20 Stand 19/32 CABLE L=140mm
T2 -> 2 X 25 Ohm CABLE L=240mm 5 TURNS
T3 -> RG303 CABLE L=120mm
ACCUR. DIRECTIONAL COUPLER
+50V
+Vbias
FROM BIAS CARD
OUT
IN

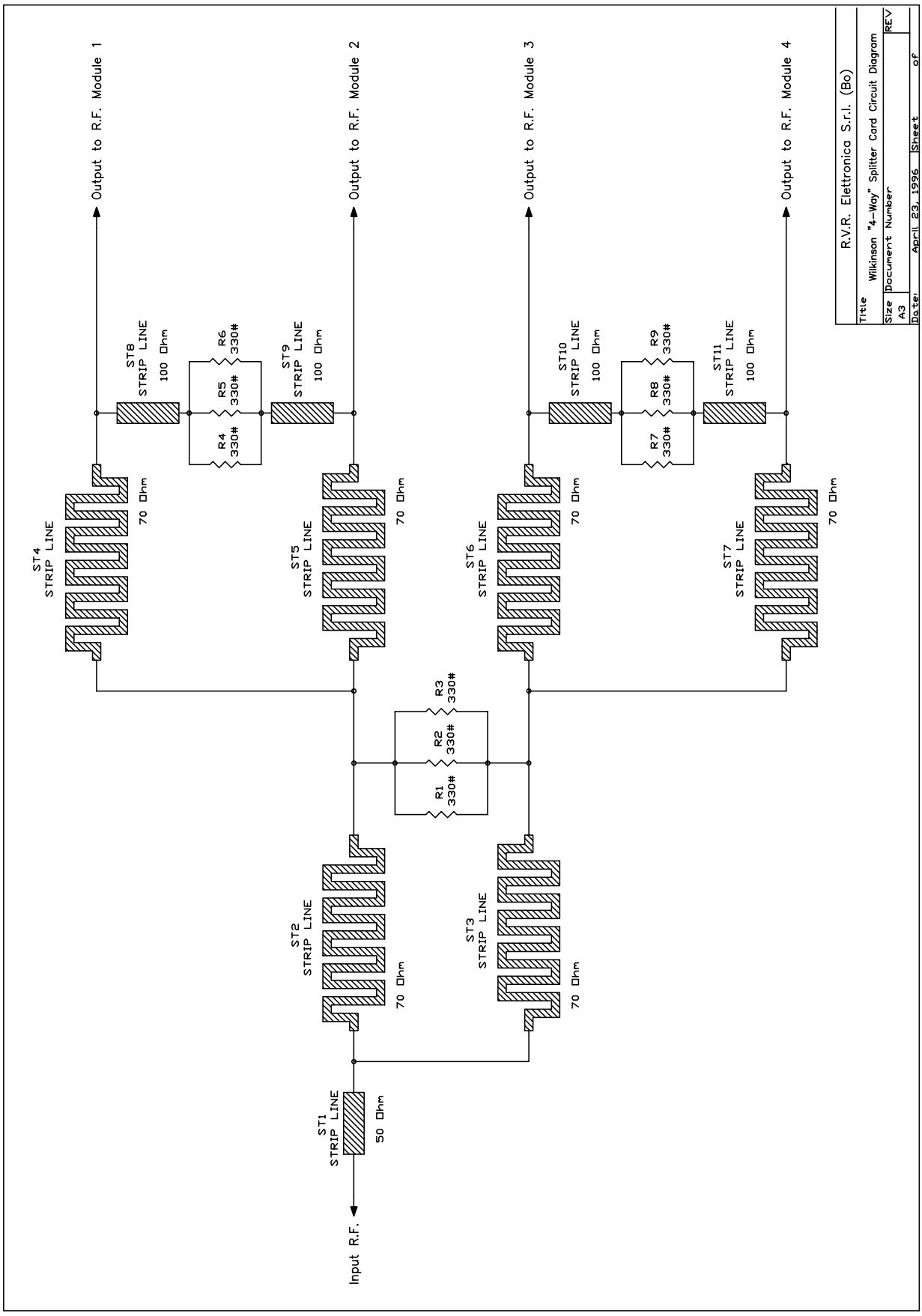
R.F. POWER AMPLIFIER Bill Of Materials Page 1

Item	Quantity	Reference	Part	DESCRIPTION	PART ORDER CODE
1	1	R18	1.2$	RESISTOR 5W	
2	4	R1,R2,R3,R4	5.6#	RESISTOR 2W	
3	2	R7,R8	22**	RESISTOR 1W 5%	
4	1	R16	47#	RESISTOR 2W	
5	1	R9	100CH	CHIP RESISTOR 1206 1%	
6	1	R12	820 1%	RESISTOR 1/4W 1%	
7	2	R5,R6	820#	RESISTOR 2W	
8	1	R11	1KCH	CHIP RESISTOR 1206 1%	
9	1	R10	1K5CH	CHIP RESISTOR 1206 1%	
10	1	R13	8K2 1%	RESISTOR 1/4W 1%	
11	1	R14	10KNTC	NTC	
12	1	R15	M1K	TRIMMER MULTIGIRI 3296	
13	1	C2	68PFHQ	HIGHT Q CAPACITOR	
14	1	C1	150PFHQ	HIGHT Q CAPACITOR	
15	11	C3,C4,C10,C12,C13,C14, C15,C16,C17,C18,C9	470PFHQ	HIGHT Q CAPACITOR	
16	5	C5,C6,C7,C8,C19	1NFCH	CERAMIC CHIP CAPACITOR	
17	1	C11	100NF	CERAMIC CAPACITOR	
18	1	C20	680NFP	POLIESTER CAPACITOR	
19	1	L2	POWER IND.	RF BINOC. CHOCKE	
20	1	L1	L64.5RVR0.76SP	DIA4.5 RAME SMAL 0.7mm	
21	1	L4	L105RVR2	10 SP DIA 5 F 2mm	
22	1	L3	BU6012RVR2	BOB L60MM D12 FILO ARG2MM	
23	1	T1	4:1	TRASF. RF. CAVO 25 OHM	
24	1	T3	RG303	COAX CABLE RG303	
25	2	L5,L6	RG316-25	CAOX CABLE RG316 25 Ohm	
26	3	D2,D3,D5	1N4007	SILICON DIODE 400V	
27	1	D1	Z6V8	ZENER DIODE	
28	1	Q1	BLF278	VHF PUSH-PULL POWER MOS	

Pagina lasciata intenzionalmente in bianco

This page was intentionally left blank


IN RF
OUT RF4
OUT RF3
OUT RF2
OUT RF1
R7
R8
R9
R10
R11
R12
R4
R5
R6
CSSPPJ1KMLCD
(LC)
DENOMINAZIONE
Component Layout Splitter Ingresso
DISPOSITIVO
PJ1000M
SEMILAVORATO
MATERIALE
TRATTAMENTO
DISEGNATO
D'Alessio D. u. 29/04/2000
SCALA
DISEGNO
CSSPPJ1KMLCD
TAVOLA n
di

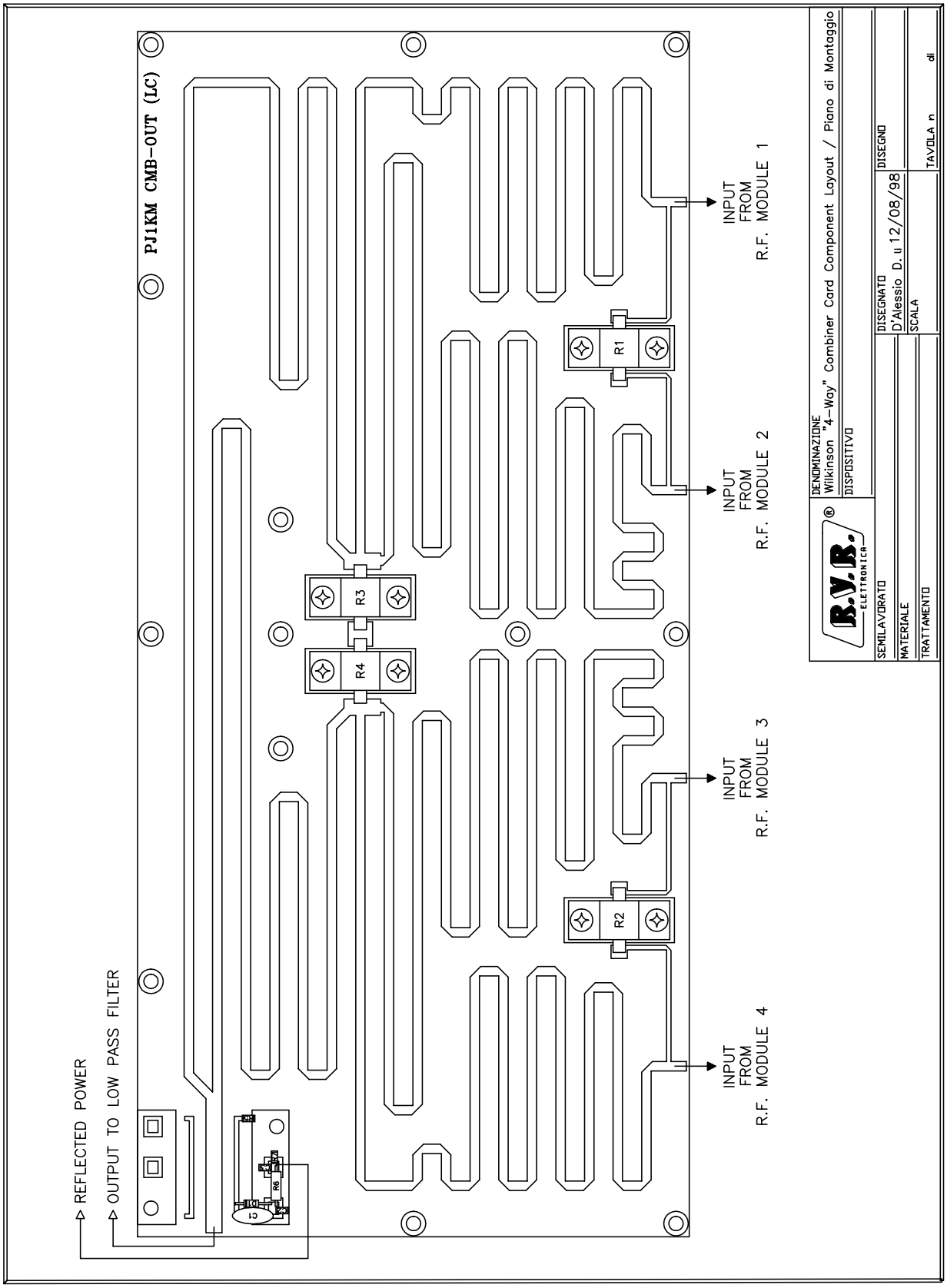

Output to R.F. Module 1
Output to R.F. Module 2
Output to R.F. Module 3
Output to R.F. Module 4
Input R.F.
ST1 STRIP LINE 50 Ohm
ST2 STRIP LINE 70 Ohm
ST3 STRIP LINE 70 Ohm
ST4 STRIP LINE 70 Ohm
ST5 STRIP LINE 70 Ohm
ST6 STRIP LINE 70 Ohm
ST7 STRIP LINE 70 Ohm
ST8 STRIP LINE 100 Ohm
ST9 STRIP LINE 100 Ohm
ST10 STRIP LINE 100 Ohm
ST11 STRIP LINE 100 Ohm
R1 330#
R2 330#
R3 330#
R4 330#
R5 330#
R6 330#
R7 330#
R8 330#
R9 330#
R.V.R. Elettronica S.r.l. (Bo)
Title Wilkinson "4-Way" Splitter Card Circuit Diagram
Size A3
Document Number
REV
Date: April 23, 1996
Sheet of

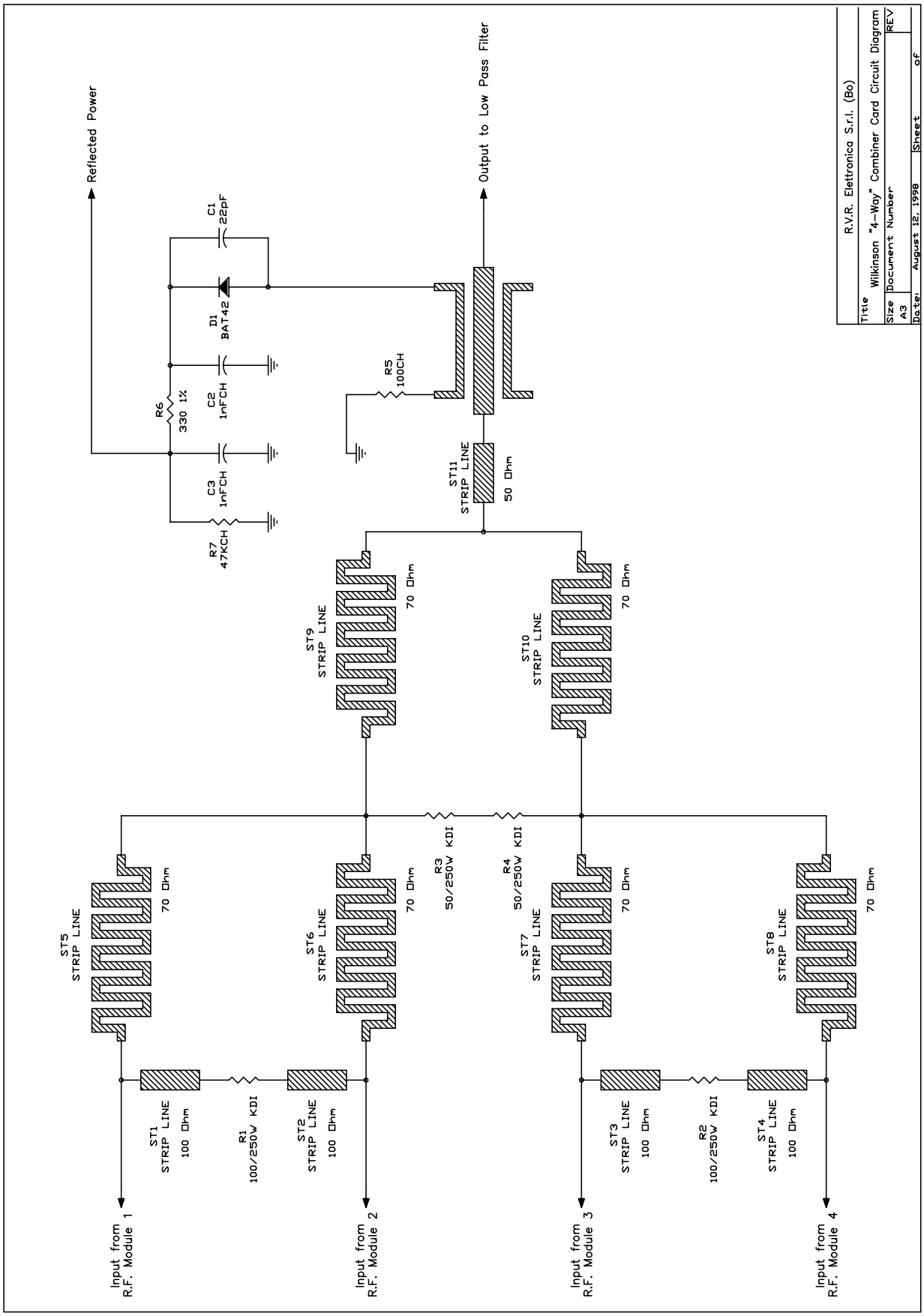
Splitter Card Circuit Diagram | Bill Of Materials | Page 1

Item	Quantity	Reference	Part	DESCRIPTION	PART ORDER CODE
1	9	R1,R2,R3,R4,R5,R6,R7,R8, R9	330#	RESISTOR 2W	
2	11	ST1,ST2,ST3,ST4,ST5,ST6, ST7,ST8,ST9,ST10,ST11	STRIP LINE	STRIP LINE	

Pagina lasciata intenzionalmente in bianco

This page was intentionally left blank


PJ1KM CMB-OUT (LC)
INPUT FROM R.F. MODULE 1
INPUT FROM R.F. MODULE 2
INPUT FROM R.F. MODULE 3
INPUT FROM R.F. MODULE 4
R1
R2
R3
R4
REFLECTED POWER
OUTPUT TO LOW PASS FILTER
DENOMINAZIONE
Wilkinson "4-Way" Combiner Card Component Layout / Piano di Montaggio
DISPOSITIVO
SEMILAVORATO
MATERIALE
TRATTAMENTO
DISEGNATO
D'Alessio D. u 12/08/98
SCALA
DISEGNO
TAVOLA n
di

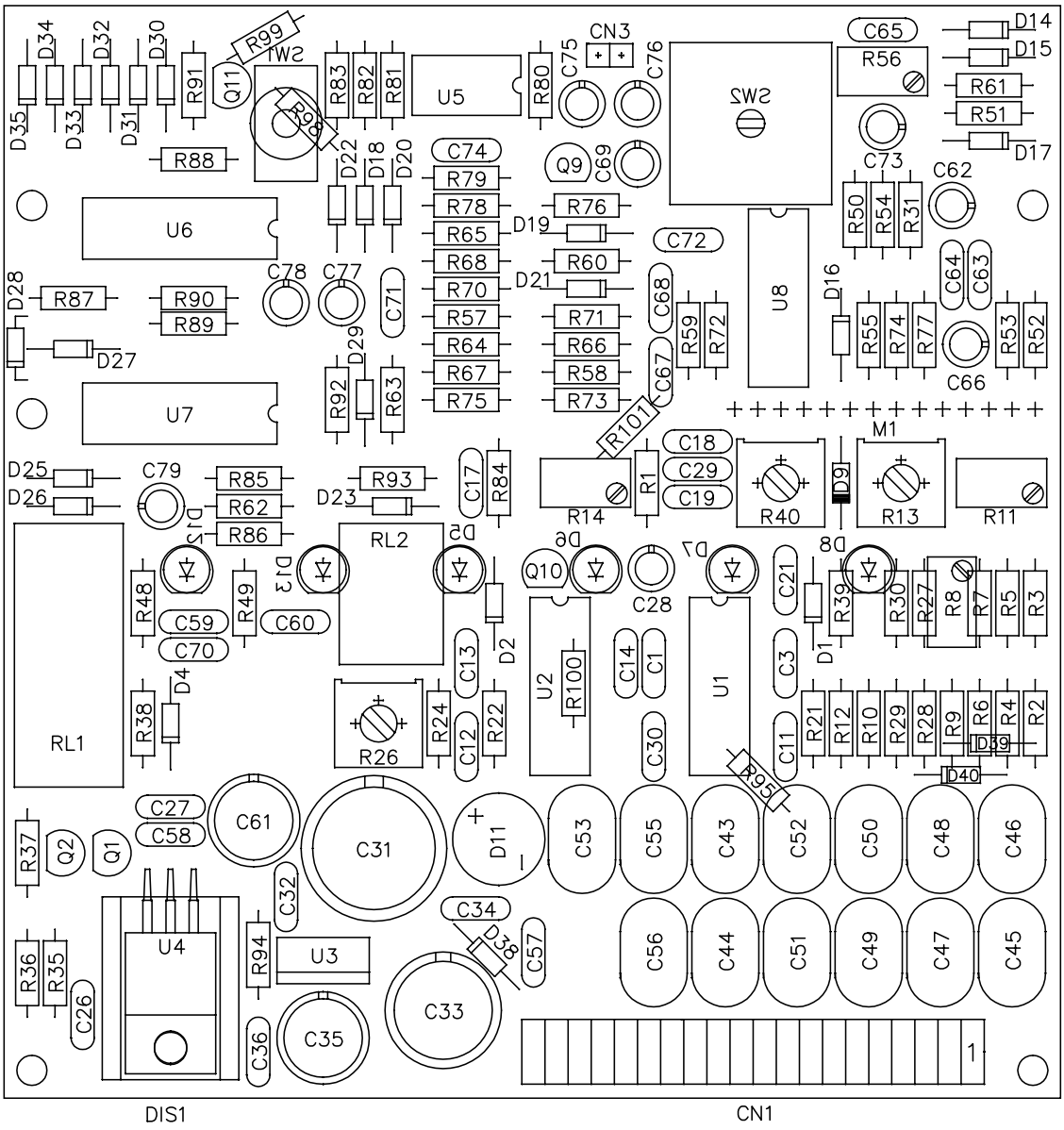

Reflected Power
Output to Low Pass Filter
C1 22pF
D1 BAT42
C2 1nFCH
R6 330 1%
C3 1nFCH
R7 47KCH
R5 100CH
ST11 STRIP LINE 50 Ohm
ST9 STRIP LINE 70 Ohm
ST10 STRIP LINE 70 Ohm
R3 50/250W KDI
R4 50/250W KDI
ST5 STRIP LINE 70 Ohm
ST6 STRIP LINE 70 Ohm
ST7 STRIP LINE 70 Ohm
ST8 STRIP LINE 70 Ohm
ST1 STRIP LINE 100 Ohm
R1 100/250W KDI
ST2 STRIP LINE 100 Ohm
ST3 STRIP LINE 100 Ohm
R2 100/250W KDI
ST4 STRIP LINE 100 Ohm
Input from R.F. Module 1
Input from R.F. Module 2
Input from R.F. Module 3
Input from R.F. Module 4
R.V.R. Elettronica S.r.l. (Bo)
Title Wilkinson "4-Way" Combiner Card Circuit Diagram
Size A3
Document Number
REV
Date: August 12, 1998
Sheet of

Combiner Card Circuit Diagram — Bill Of Materials — Page 1

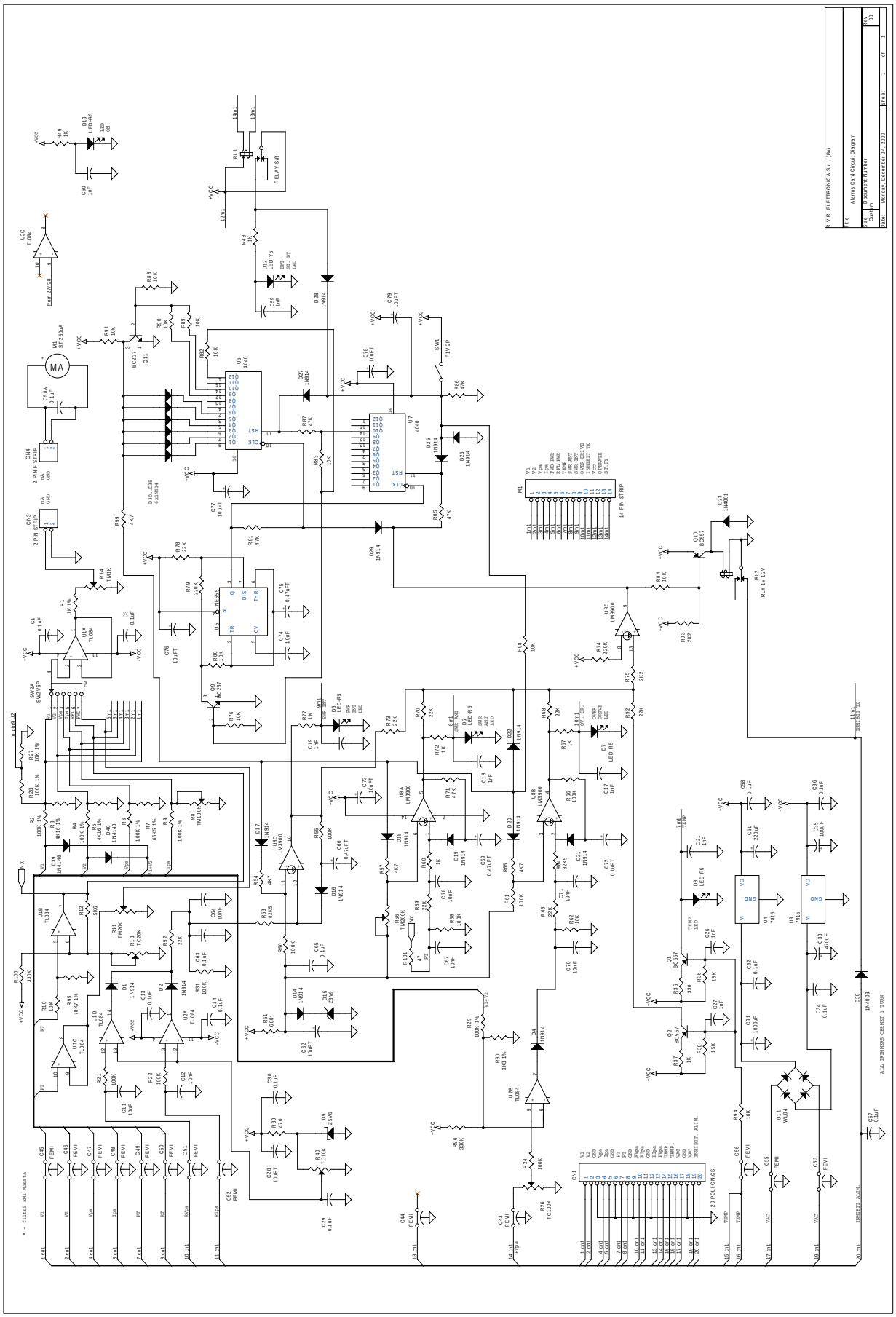
Item	Quantity	Reference	Part	DESCRIPTION	PART ORDER CODE
1	2	R3,R4	50/250W KDI	RESISTENZA KDI 250W	
2	1	R5	100CH	CHIP RESISTOR 1206 5%	
3	2	R1,R2	100/250W KDI	RESISTENZA KDI 250W	
4	1	R6	330 1%	RESISTOR 1/4W 5%	
5	1	R7	47KCH	RESISTOR 1/4W 5%	
6	1	C1	22PF	CERAMIC CAPACITOR NP0	
7	2	C2,C3	1NFCH	CERAMIC HIGH Q	
8	1	D1	BAT42	HOT CARRIER DIODE	
9	12	ST1,ST2,ST3,ST4,ST5, ST6,ST7,ST8,ST9,ST10, ST11,ST12	STRIP LINE	STRIP LINE	

Pagina lasciata intenzionalmente in bianco

This page was intentionally left blank



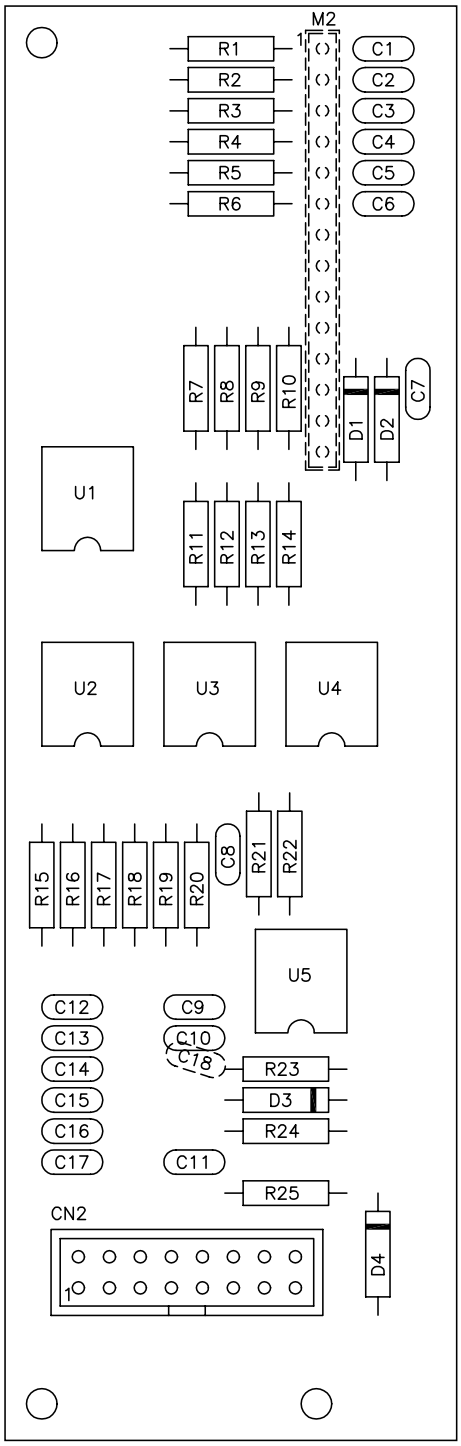
R.V.R. ELETTRONICA	DENOMINAZIONE: Alarms Card Component Layout / Piano di Monatggio	
	DISPOSITIVO:	
SEMILAVORATO	DISEGNATO li 12/08/98	DISEGNO
MATERIALE	SCALA	
TRATTAMENTO		TAVOLA n 1 di 2



Alarms Card Circuit Diagram — Bill Of Materials — Page 1

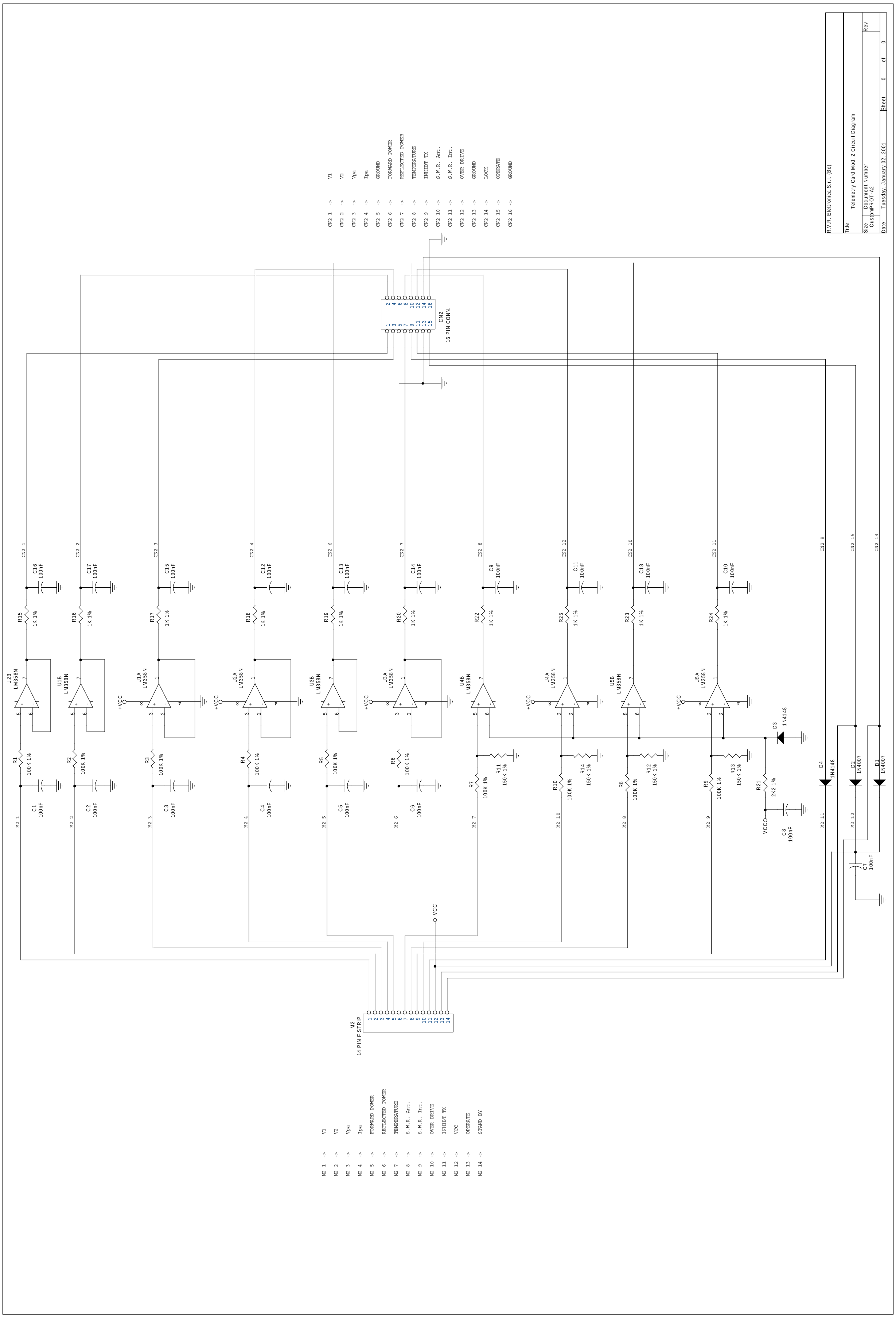
Item	Quantity	Reference	Part	DESCRIPTION	PART ORDER CODE
1	1	R101	47	RESISTOR 1/4W 5%	
2	1	R35	330	RESISTOR 1/4W 5%	
3	1	R39	470	RESISTOR 1/4W 5%	
4	1	R51	680*	RESISTOR 1/2W 5%	
5	1	R1	1K 1%	RESISTOR 1/4W 1%	
6	7	R37,R48,R49,R60,R67, R72,R77	1K	RESISTOR 1/4W 5%	
7	2	R75,R93	2K2	RESISTOR 1/4W 5%	
8	1	R30	3K3 1%	RESISTOR 1/4W 1%	
9	2	R3,R5	4K16 1%	RESISTOR 1/4W 1%	
10	4	R54,R57,R65,R99	4K7	RESISTOR 1/4W 5%	
11	1	R12	5K6	RESISTOR 1/4W 5%	
12	13	R10,R62,R76,R80,R82, R83,R84,R88,R89,R90,R91, R94,R98	10K	RESISTOR 1/4W 5%	
13	2	R36,R38	15K	RESISTOR 1/4W 5%	
14	8	R52,R59,R63,R68,R70, R73,R78,R92	22K	RESISTOR 1/4W 5%	
15	1	R8	TM100K	TRIM.MULTIGIRI REG.VERT	
16	5	R71,R81,R85,R86,R87	47K	RESISTOR 1/4W 5%	
17	1	R7	66K5 1%	RESISTOR 1/4W 1%	
18	1	R95	78K7 1%	RESISTOR 1/4W 1%	
19	2	R53,R64	82K5	RESISTOR 1/4W 5%	
20	5	R2,R4,R6,R9,R29	100K 1%	RESISTOR 1/4W 1%	
21	9	R21,R22,R24,R31,R50, R55,R58,R61,R66	100K	RESISTOR 1/4W 5%	
22	2	R74,R79	220K	RESISTOR 1/4W 5%	
23	2	R96,R100	330K	RESISTOR 1/4W 5%	
24	1	R14	TC1K	TRIM.MULTIGIRI REG.VERT	
25	1	R40	TC10K	TRIM.MULTIGIRI REG.ORIZ	
26	1	R13	TC20K	TRIM.MULTIGIRI REG.ORIZ	
27	1	R26	TC100K	TRIM.MULTIGIRI REG.ORIZ	
28	1	R56	TM220K	TRIM.MULTIGIRI REG.VERT	
29	8	C17,C18,C19,C21,C26, C27,C59,C60	1NF	CERAMIC CAPACITOR	
30	8	C11,C12,C64,C67,C68, C70,C71,C74	10NF	CERAMIC CAPACITOR	
31	14	C1,C3,C13,C14,C29, C30,C32,C34,C36,C57,C58A,C58, C63,C65	0.1UF	CERAMIC CAPACITOR	
32	1	C72	0.1UFT	TANTALIUM CAPACITOR	

33	3	C66,C69,C75	0.47UFT	TANTALIUM CAPACITOR
34	7	C28,C62,C73,C76, C77,C78,C79	10UFT	TANTALIUM CAPACITOR
35	1	C35	100UF	ELECTROLYTIC CAPACITOR
36	1	C61	220UF	ELECTROLYTIC CAPACITOR
37	1	C33	470UF	ELECTROLYTIC CAPACITOR
38	1	C31	1000UF	ELECTROLYTIC CAPACITOR
39	1	M1	ST 250UA	STRUMENTO 250uA
40	1	CN3	2 PIN STRIP	STRIP M P 2.54 2 PIN
41	1	M1	14 PIN STRIP	STRIP M P 2.54 14 PIN
42	1	CN4	2 PIN F STRIP	STRIP F P 2.54 2 PIN
43	1	CN1	20 POLI CN.CS.	CONN.STRIP 20P MASC. CS POL.
44	12	C43,C45,C46,C47, C48,C49,C50,C51, C52,C53,C55,C56	FEMI	FILTRO EMI MURATA
45	1	RL2	RLY 1V 12V	RELAY 1 VIA 12V
46	1	RL1	RELAY S/R	RELAY SET / RESET 12V
47	1	SW1	P1V 2P	PULSANTE 1 VIA 2 POS
48	1	SW2	SW2V6P	COMMUTATORE 2 VIE 6 POS FEME
49	2	D39,D40	1N4148	SILICON DIODE
50	22	D1,D2,D4,D14,D16, D17,D18,D19,D20,D21,D22, D25,D26,D27,D28,D29,D30, D31,D32,D33,D34,D35	1N4148	SILICON DIODE
51	1	D23	1N4148	SILICON DIODE
52	1	D38	1N4004	SILICON DIODE
53	1	D11	WL04	DIODE BRIDGE 1.5A
54	5	D5,D6,D7,D8,D12	LED-R5	RED LED DIODE
55	1	D13	LED-G5	GREEN LED DIODE
56	1	D15	Z3V9	ZENER DIODE 3.9V 1/4W
57	1	D9	Z5V6	ZENER DIODE 5.6V 1/4W
58	1	U4	7815	POS. STABILIZER 1A
59	1	U3	7915	NEG. STABILIZER 1A
60	2	Q9,Q11	BC237	NPN TRANSISTOR
61	3	Q1,Q2,Q10	BC557	PNP TRANSISTOR
62	2	U1,U2	TL084	QUAD OP. AMP.
63	1	U5	NE555	TIMER
64	2	U6,U7	4040	CMOS DIVIDER
65	1	U8	LM3900	NORTON QUAD AMP.
66	1	R11	TM20K	TRIM.MULTIGIRI REG.VERT
67	1	R27	10K 1%	RESISTOR 1/4W 1%
68	1	R28	100K 1%	RESISTOR 1/4W 1%



R.V.R. ELETTRONICA	DENOMINAZIONE Telemetry Card (Mod. PROT-A2) Component Layout / Piano di Montaggio
	DISPOSITIVO

SEMILAVORATO	DISEGNATO D'Alessio D.	DISEGNO
MATERIALE		
TRATTAMENTO	SCALA	TAVOLA n di

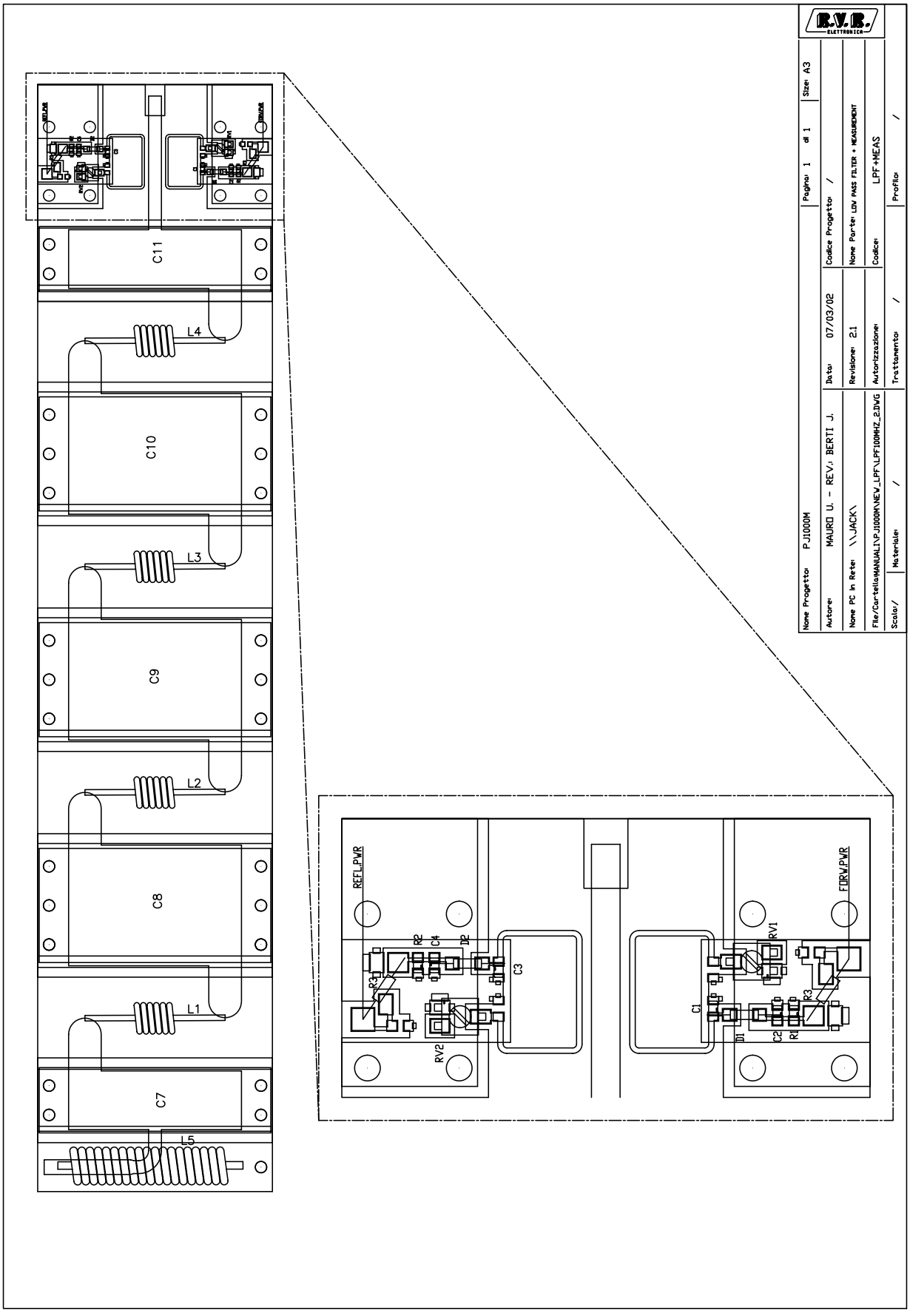

R.V.R. Elettronica S.r.l. (Bo)
Title Telemetry Card Mod. 2 Circuit Diagram
Size Custom Document Number PROT-A2 Rev 0
Date: Tuesday, January 02, 2001 Sheet 0 of 0
CN2 16 PIN CONN.
CN2 1 -> V1
CN2 2 -> V2
CN2 3 -> Vpa
CN2 4 -> Ipa
CN2 5 -> GROUND
CN2 6 -> FORWARD POWER
CN2 7 -> REFLECTED POWER
CN2 8 -> TEMPERATURE
CN2 9 -> INHIBIT TX
CN2 10 -> S.W.R. Ant.
CN2 11 -> S.W.R. Int.
CN2 12 -> OVER DRIVE
CN2 13 -> GROUND
CN2 14 -> LOCK
CN2 15 -> OPERATE
CN2 16 -> GROUND
M2 14 PIN F STRIP
M2 1 -> V1
M2 2 -> V2
M2 3 -> Vpa
M2 4 -> Ipa
M2 5 -> FORWARD POWER
M2 6 -> REFLECTED POWER
M2 7 -> TEMPERATURE
M2 8 -> S.W.R. Ant.
M2 9 -> S.W.R. Int.
M2 10 -> OVER DRIVE
M2 11 -> INHIBIT TX
M2 12 -> VCC
M2 13 -> OPERATE
M2 14 -> STAND BY

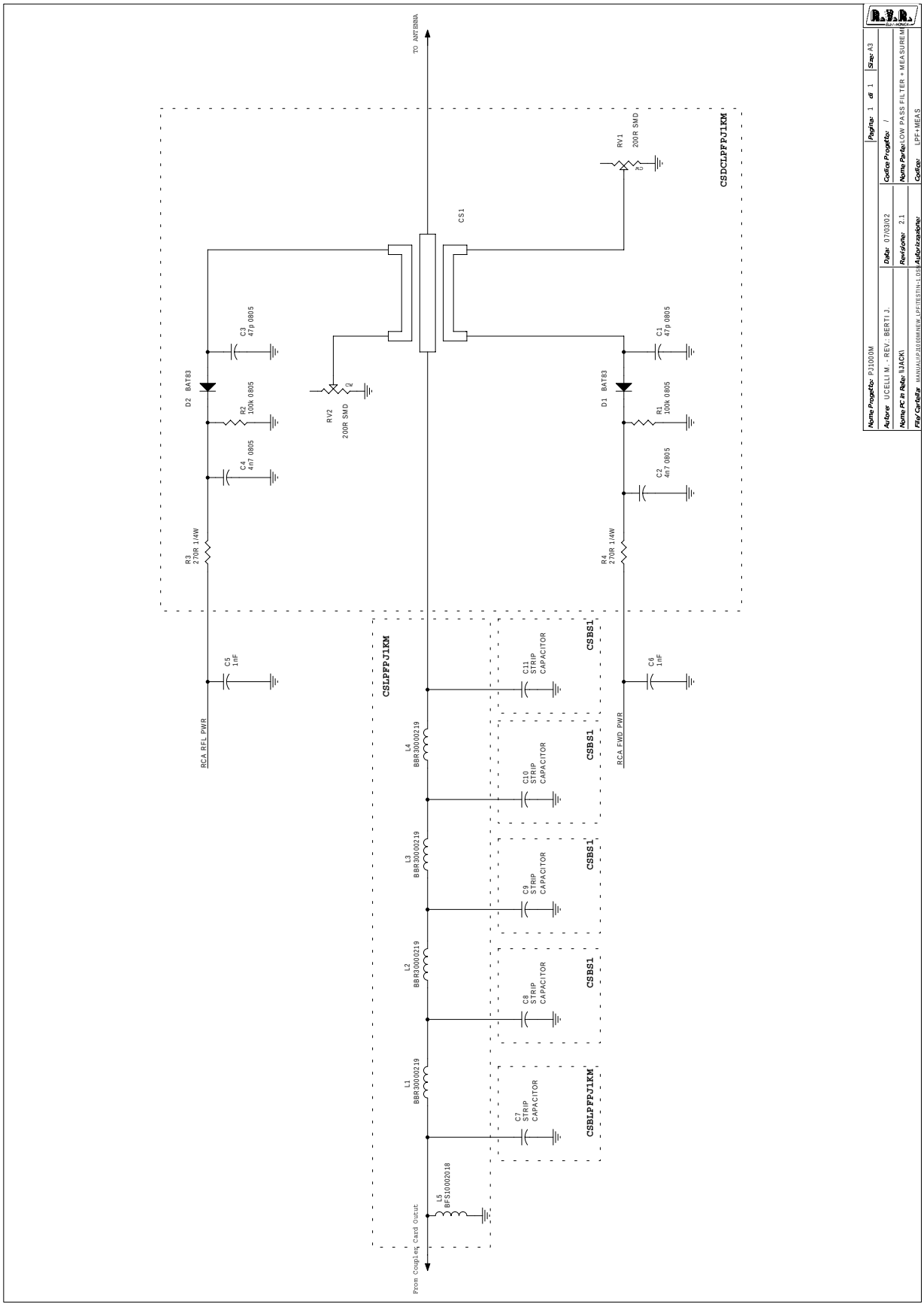
Telemetry Card Mod. 2 Bill Of Materials Page 1

Item	Quantity	Reference	Part	DESCRIPTION	PART ORDER CODE
1	9	R15,R16,R17,R19,R20, R22,R23,R24,R25	1K 1%	RESISTOR 1/4W 1%	
2	1	R18	1K	RESISTOR 1/4W 5%	
3	1	R21	2K2 1%	RESISTOR 1/4W 1%	
4	14	R1,R2,R3,R4,R5,R6,R7, R8,R9,R10,R11,R12,R13, R14	100K 1%	RESISTOR 1/4W 1%	
5	18	C1,C2,C3,C4,C5,C6,C7, C8,C9,C10,C11,C12,C13, C14,C15,C16,C17,C18	100NF	CERAMIC CAPACITOR	
6	1	M2	14 PIN F STRIP	STRIP F P 2.54 14 PIN	
7	1	CN2	16 PIN CONN.	CONN. M 2*8 P 2.54	
8	2	D3,D4	1N4148	SILICON DIODE	
9	2	D2,D3	1N4007	SILICON DIODE 1000V	
10	5	U1,U2,U3,U4,U5	LM358N	DOUBLE OP. AMP.	

Pagina lasciata intenzionalmente in bianco

This page was intentionally left blank


R.V.R. ELETTRONICA
Nome Progetto: PJ1000M
Pagina: 1 di 1
Size: A3
Autore: MAURO U. - REV: BERTI J.
Data: 07/03/02
Codice Progetto: /
Nome PC in Rete: \\JACK\
Revisione: 2.1
Nome Parte: LOW PASS FILTER + MEASUREMENT
File/Cartella: MANUALI\PJ1000M\NEW_LPF\LPF100MHZ_2.DWG
Autorizzazione:
Codice: LPF+MEAS
Scala: /
Materiale: /
Trattamento: /
Profilo: /
C11
L4
C10
L3
C9
L2
C8
L1
C7
L5
REFL_PWR
FORW_PWR
R2
C4
D2
C3
R3
RV2
RV1
C1
D1
C2
R1
R3

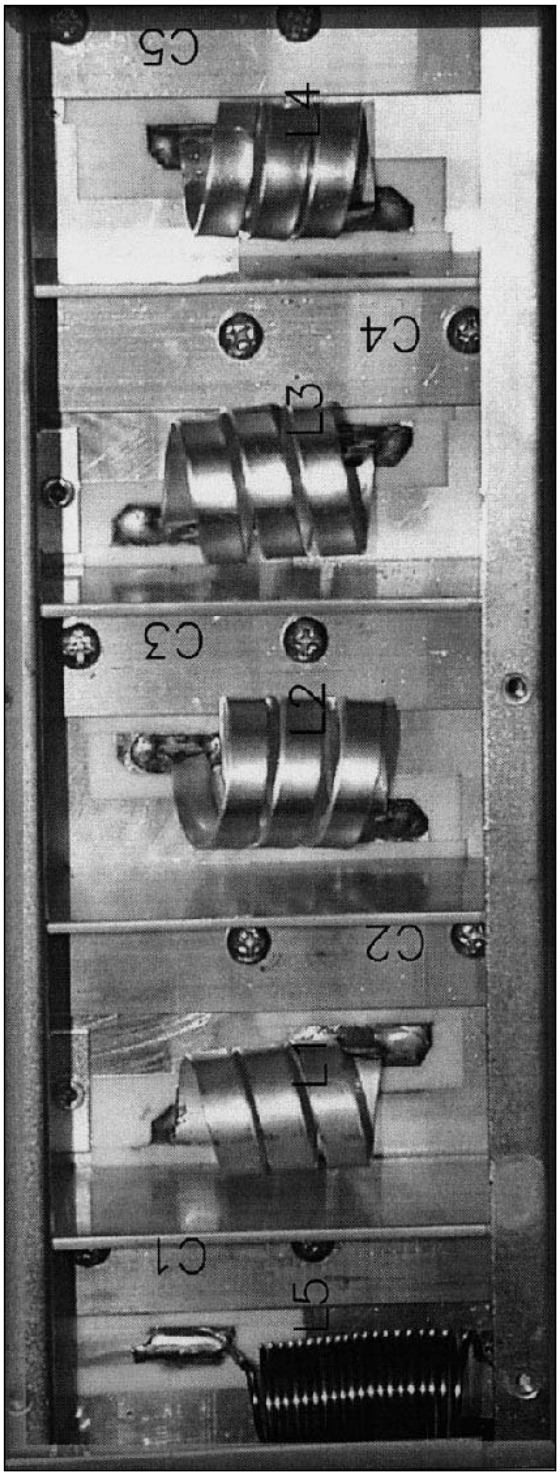

TO ANTENNA
CSDCLPFPJ1KM
CS1
RV1
200R SMD
RV2
200R SMD
C3
47p 0805
C1
47p 0805
D2 BAT83
D1 BAT83
R2
100k 0805
R1
100k 0805
C4
4n7 0805
C2
4n7 0805
R3
270R 1/4W
R4
270R 1/4W
C5
1nF
C6
1nF
RCA RFL PWR
RCA FWD PWR
CSLPFPJ1KM
CSBS1
C11
STRIP
CAPACITOR
C10
STRIP
CAPACITOR
C9
STRIP
CAPACITOR
C8
STRIP
CAPACITOR
C7
STRIP
CAPACITOR
CSBLPFPJ1KM
L4
BBR30000219
L3
BBR30000219
L2
BBR30000219
L1
BBR30000219
L5
BFS10002018
From Coupl.Arg. Card Output
Nome Progetto: PJ1000M
Autore: UCELLI M. - REV. BERTI J.
Nome PC in Rete: \JACK\
File Cartella: MANUALI\PJ1000M\NEW_LPF\TESTIN~1.DSN
Pagina: 1 di 1
Size: A3
Data: 07/03/02
Revisione: 2.1
Codice Progetto: /
Nome Parte: LOW PASS FILTER + MEASURE
Codice: LPF+MEAS
Autorizzazione:

PJ1000M Bill Of Materials Page1

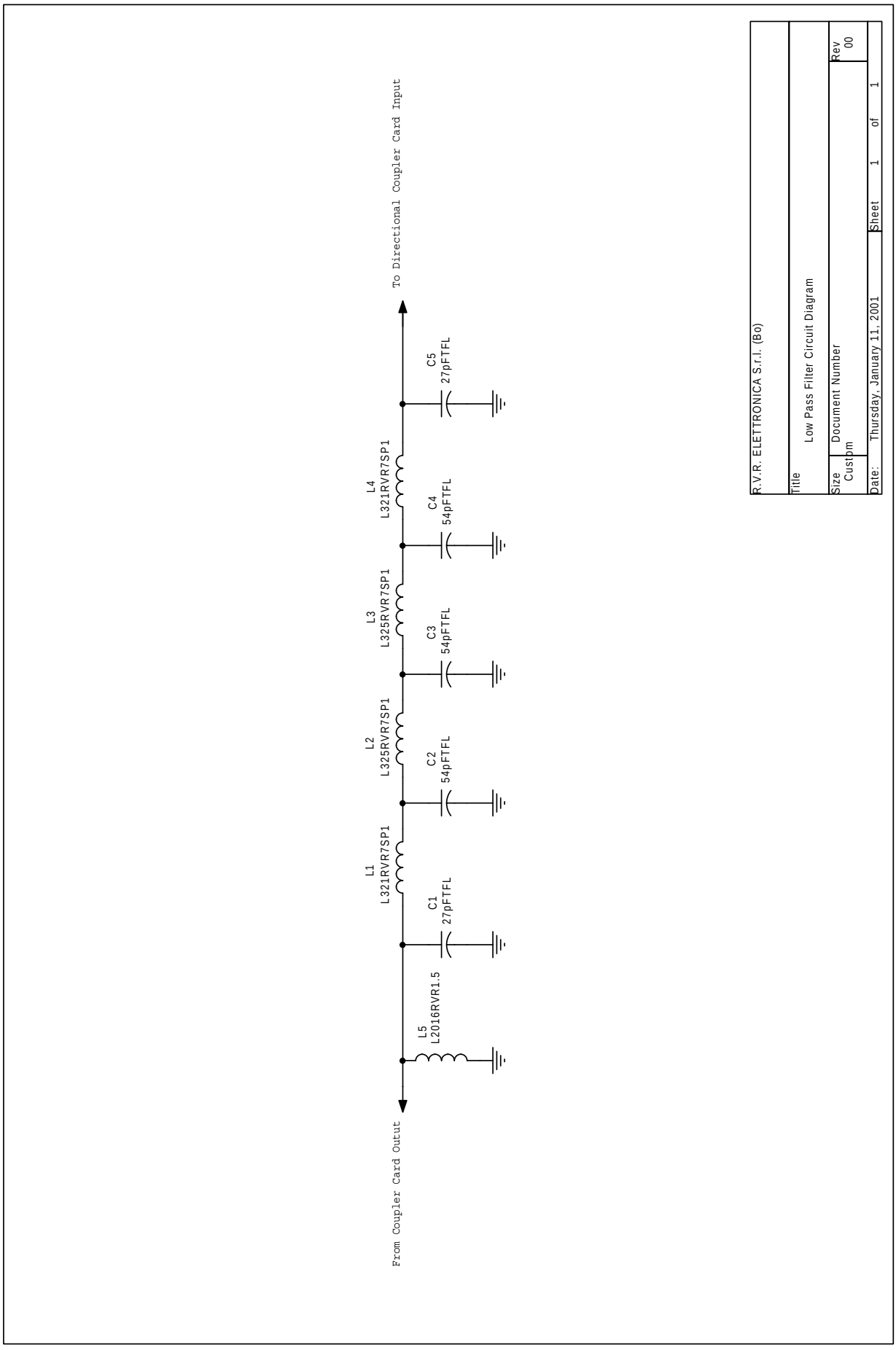
Item	Q.ty	Reference	Part
1	1	L5	BFS10002018
2	1	CS1	CSDRCPPJ1KM
3	2	C3,C1	47p 0805
4	2	C4,C2	4n7 0805
5	2	C5,C6	1nF
6	2	C7,C11	27pFTFL
7	3	C8,C9,C10	54pFTFL
8	2	D2,D1	BAT83
9	4	L1,L2,L3,L4	BBR30000219
10	2	RV2,RV1	200R SMD
11	2	R2,R1	100k 0805
12	2	R3,R4	270R 1/4W

Pagina lasciata intenzionalmente in bianco

This page was intentionally left blank



R.V.R. ELETTRONICA®	DENOMINAZIONE: Low Pass Filter Photo		
	DISPOSITIVO:		
SEMILAVORATO:	DISEGNATO: Berti J. li 18/01/01	DISEGNO:	
MATERIALE:	SCALA:	TAVOLA n.	di
TRATTAMENTO:			

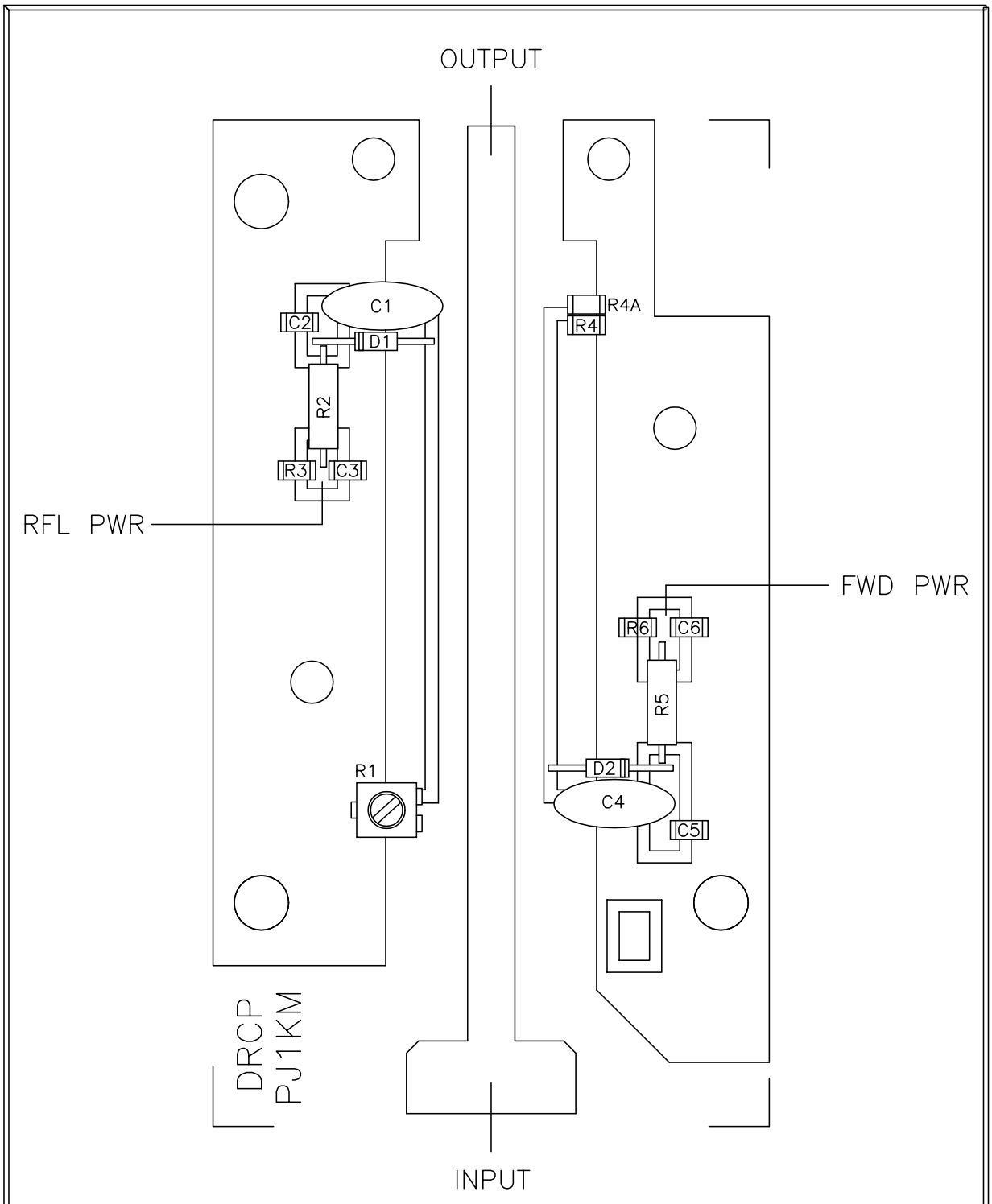

To Directional Coupler Card Input
From Coupler Card Outut
L1
L321RVR7SP1
C1
27pFTFL
L2
L325RVR7SP1
C2
54pFTFL
L3
L325RVR7SP1
C3
54pFTFL
L4
L321RVR7SP1
C4
54pFTFL
C5
27pFTFL
L5
L2016RVR1.5
R.V.R. ELETTRONICA S.r.l. (Bo)
Title
Low Pass Filter Circuit Diagram
Size
Custom
Document Number
Rev
00
Date:
Thursday, January 11, 2001
Sheet
1
of
1

Low Pass Filter Circuit Diagram Bill Of Materials Page 1

Item	Quantity	Reference	Part	DESCRIPTION	PART ORDER CODE
1	2	C1,C5	27PFTFL	CONDBANDELLA RAME TEFLON	
2	3	C2,C3,C4	54PFTFL	COND.BANDELLA RAME TEFLON	
3	2	L1,L4	L321RVR7SP1	RAME ARG.3SP DIA21 7MM SP1	
4	2	L2,L3	L325RVR7SP1	RAME ARG.3SP DIA25 7MM SP1	
5	1	L5	L2016RVR1.5	RAME ARG.1.5MM 20SP DIA16MM	

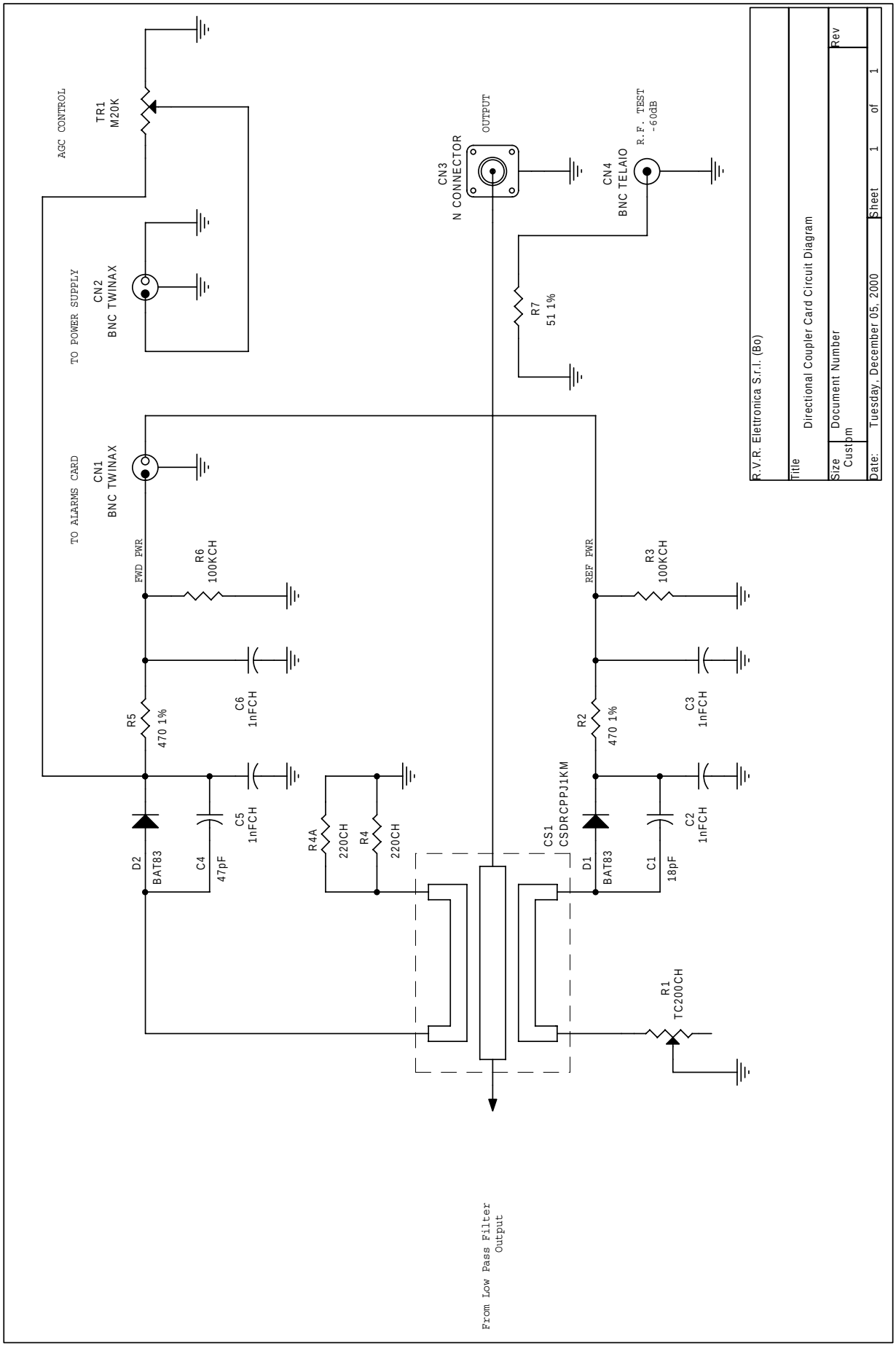
Pagina lasciata intenzionalmente in bianco

This page was intentionally left blank



R.V.R. ELETTRONICA	DENOMINAZIONE: Directional Coupler Card Component Layout / Piano di Montaggio
	DISPOSITIVO:

SEMILAVORATO	DISEGNATO: D'Alessio D.ti 12/08/98	DISEGNO
MATERIALE	SCALA	
TRATTAMENTO		TAVOLA n di

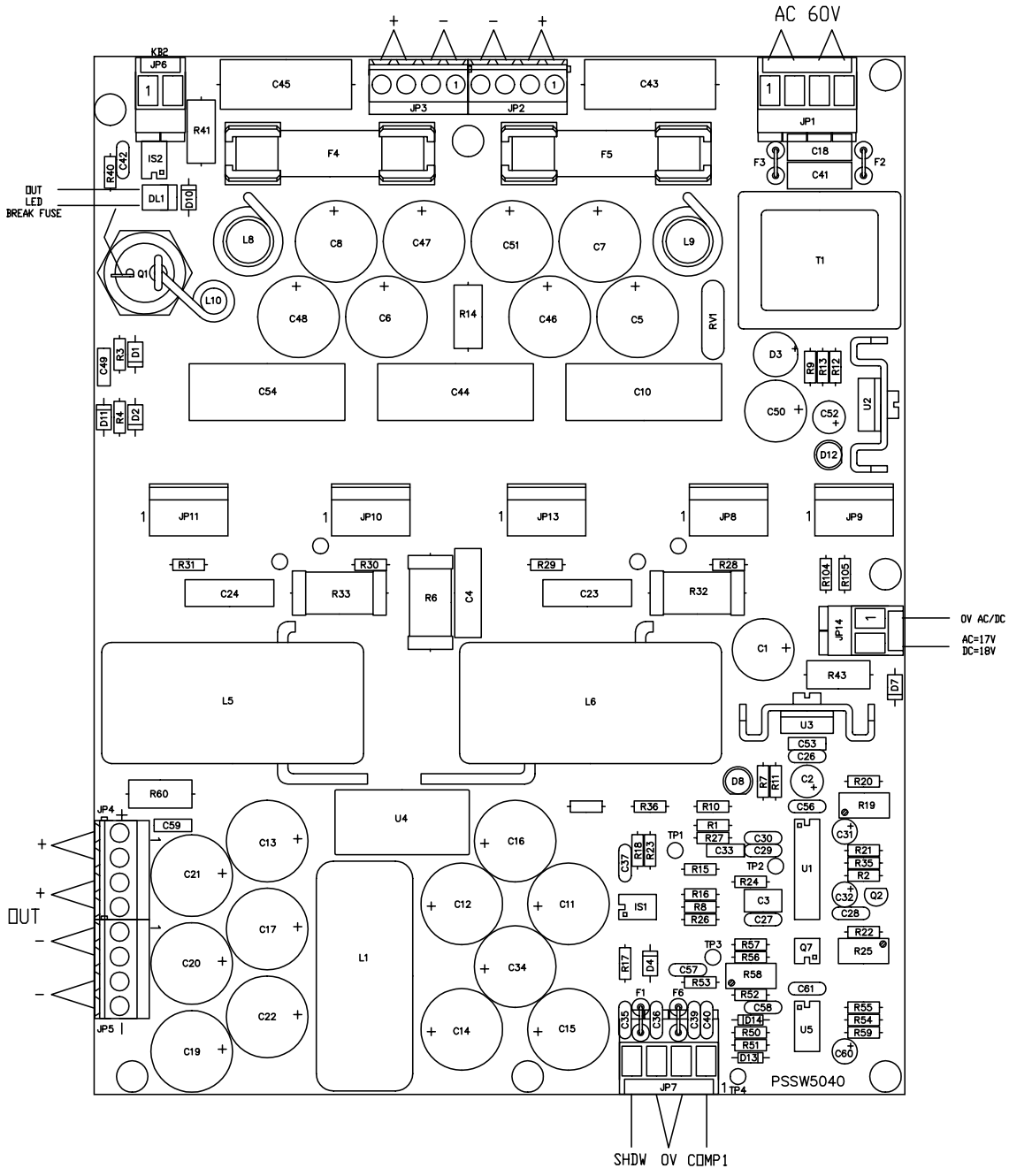

AGC CONTROL
TR1
M20K
TO POWER SUPPLY
CN2
BNC TWINAX
CN3
N CONNECTOR
OUTPUT
CN4
BNC TELAIO
R.F. TEST
-60dB
R7
51 1%
TO ALARMS CARD
CN1
BNC TWINAX
FWD PWR
R6
100KCH
R5
470 1%
C6
1nFCH
D2
BAT83
C4
47pF
C5
1nFCH
R4A
220CH
R4
220CH
REF PWR
R3
100KCH
R2
470 1%
C3
1nFCH
CS1
CSDRCPPJ1KM
D1
BAT83
C1
18pF
C2
1nFCH
R1
TC200CH
From Low Pass Filter
Output
R.V.R. Elettronica S.r.l. (Bo)
Title
Directional Coupler Card Circuit Diagram
Rev
Size
Custom
Document Number
Date: Tuesday, December 05, 2000
Sheet 1 of 1

Directional Coupler Card Circuit Diagram Bill Of Materials Page 1

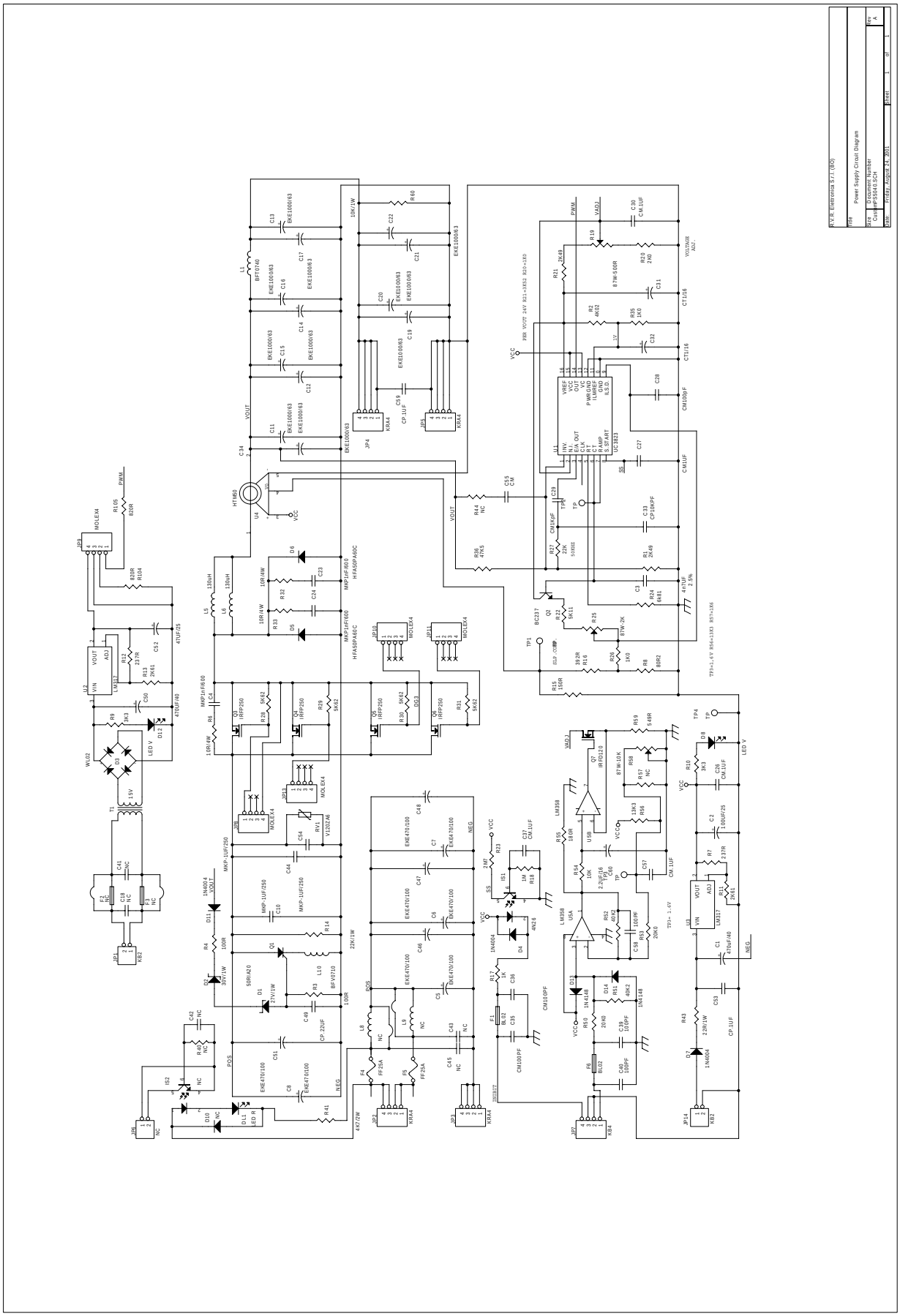
Item	Quantity	Reference	Part	DESCRIPTION	PART ORDER CODE
1	1	R7	51 1%	RESISTOR 1/4W 1%	
2	2	R4A,R4	220CH	CHIP RESISTOR 1206 1%	
3	2	R2,R5	470 1%	RESISTOR 1/4W 1%	
4	2	R3,R6	100KCH	CHIP RESISTOR 1206 1%	
5	1	R1	TC200CH	TRIM.REG.VER.CERMET SMD	
6	1	TR1	M20K	TRIMMER MULTIGIRI	
7	1	C1	18PF	CERAMIC CAPACITOR NP0	
8	1	C4	47PF	CERAMIC CAPACITOR NP0	
9	4	C2,C3,C5,C6	1NFCH	CAPACITOR HIGH Q	
10	1	CN4	BNC TELAIO	CONN. BNC A TELAIO	
11	2	CN1,CN2	BNC TWINAX	CONN.BNC X CAVO TWINAX	
12	1	CN3	N CONNECTOR	CONN. N A TELAIO	
13	2	D1,D2	BAT83	HOT CARRIER DIODE	
14	1	CS1	CSDRCPPJ1KM	CS DIR.COUPLER PJ1KM	

Pagina lasciata intenzionalmente in bianco

This page was intentionally left blank



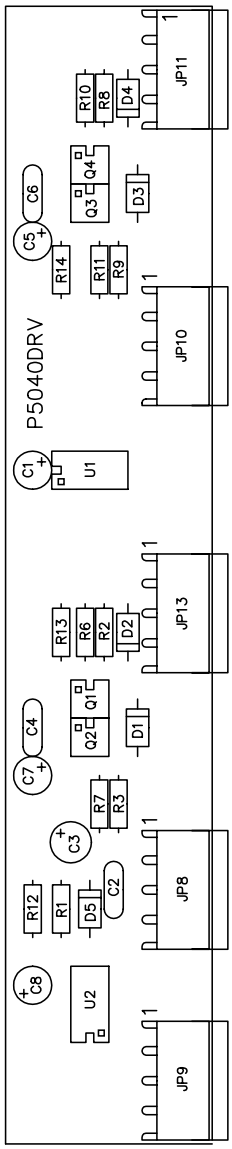
R.V.R. ELETTRONICA	DENOMINAZIONE: Main Section Component Layout – PSSW5040 –	
	DISPOSITIVO	
SEMILAVORATO	DISEGNATO: D'Alessio D. li 11/08/98	DISEGNO
MATERIALE	SCALA: 1:1	TAVOLA n 1 di 1
TRATTAMENTO		



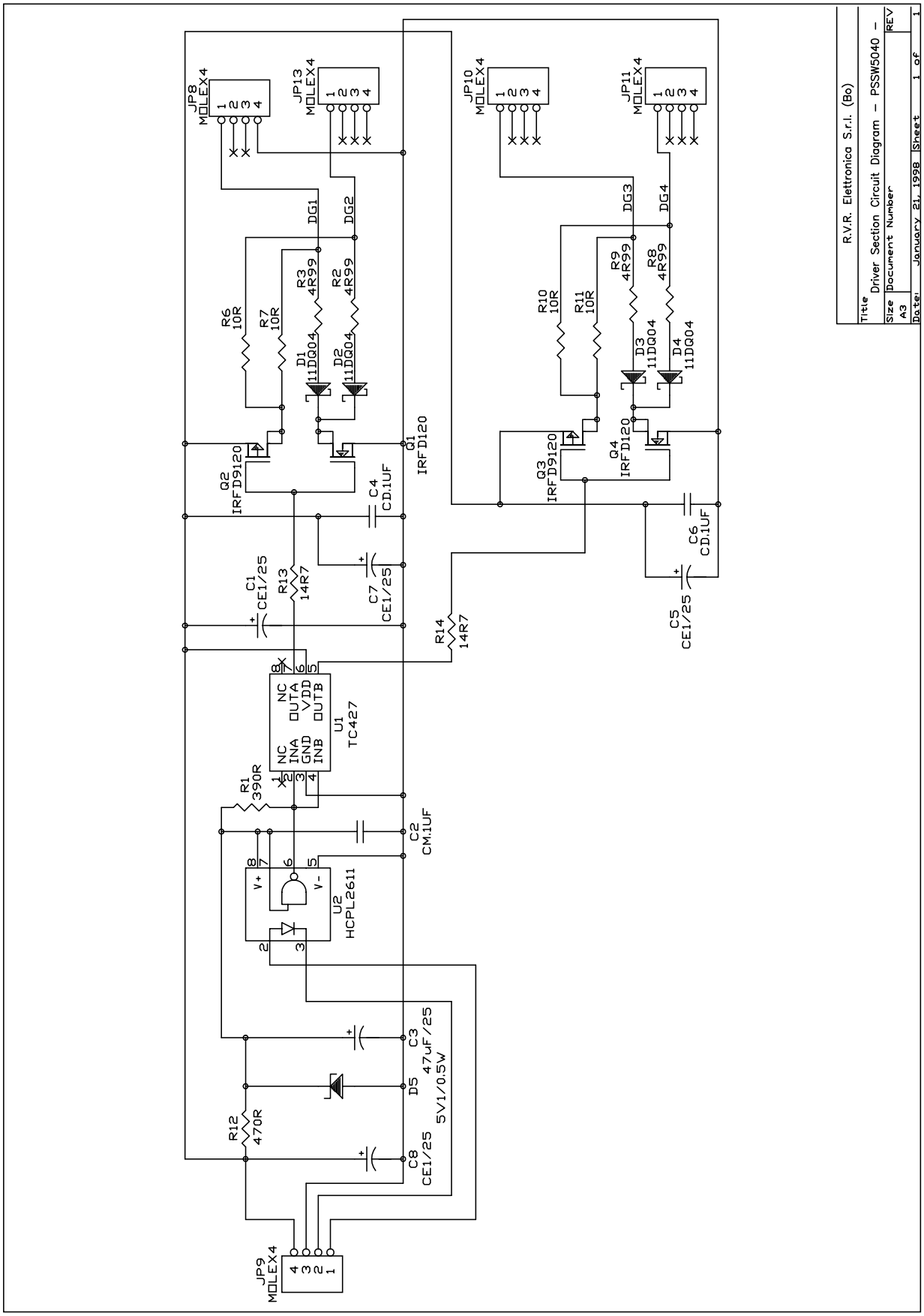
PS5040 Bill Of Materials Page1

Item	Q.ty	Reference	Part
1	4	Q3, Q4, Q5, Q6	IRFP250
2	2	C1,C50	470UF/40
3	1	C2	100UF/25
4	1	C3	4n7UF
5	3	C4,C23,C24	MKP1nF/600
6	8	C5,C6,C7,C8,C46,C47,C48, C51	EKE470/100
7	3	C10,C44,C54	MKP-1UF/250
8	12	C11,C12,C13,C14,C15,C16, C17,C19,C20,C21,C22,C34	EKE1000/63
9	12	IS2,F2,F3,L8,L9,D10,C18, R40,C42,R44,C45,R57	NC
10	4	C26,C30,C37,C57	CM.1UF
11	1	C27	CM1UF
12	3	C28,C35,C36	CM100PF
13	1	C29	CM1KpF
14	2	C31,C32	CT1/16
15	1	C33	CP10KPF
16	3	C39,C40,C58	100PF
17	3	JP6,C41,C43	NC
18	1	C49	CP.22UF
19	1	C52	47UF/25
20	2	C53,C59	CP.1UF
21	1	C55	CM
22	1	C60	2.2UF/16
23	1	DL1	LED R
24	1	D1	27V/1W
25	1	D2	30V/1W
26	1	D3	WL02
27	3	D4,D7,D11	1N4004
28	2	D6,D5	HFA50PA60C
29	2	D12,D8	LED V
30	2	D13,D14	1N4148
31	2	F6,F1	BL02
32	2	F4,F5	FF25A
33	1	IS1	4N26
34	2	JP1,JP14	KB2
35	4	JP2,JP3,JP4,JP5	KRA4
36	1	JP7	KB4
37	5	JP8,JP9,JP10,JP11,JP13	MOLEX4
38	1	JP12	JUMPER2
39	1	L1	BFT0740
40	2	L5,L6	130uH
41	1	L10	BFV0710
42	1	Q1	50RIA20
43	1	Q2	BC237
44	1	Q7	IRFD120
45	1	RV1	V120ZA6
46	2	R21,R1	2K49
47	1	R2	4K02
48	2	R3,R4	100R
49	3	R6,R32,R33	10R/4W
50	2	R7,R12	237R
51	1	R8	80R2
52	2	R9,R10	3K3

53	2	R11,R13	2K61
54	1	R14	22K/1W
55	1	R15	150R
56	1	R16	392R
57	1	R17	1K
58	1	R18	1M
59	1	R19	87W-500R
60	1	R20	2K0
61	1	R22	5K11
62	1	R23	2M7
63	1	R24	6k81
64	1	R25	87W-2K
65	2	R35,R26	1K0
66	1	R27	22K
67	4	R28,R29,R30,R31	5K62
68	1	R36	47K5
69	1	R41	4K7/2W
70	1	R43	22R/1W
71	2	R50,R53	20K0
72	2	R51,R52	40K2
73	1	R54	10K
74	1	R55	180R
75	1	R56	13K3
76	1	R58	87W-10K
77	1	R59	549R
78	1	R60	10K/1W
79	2	R105,R104	820R
80	4	TP1,TP2,TP3,TP4	TP
81	1	T1	15V
82	1	U1	UC3823
83	2	U3,U2	LM317
84	1	U4	HTM50
85	1	U5	LM358

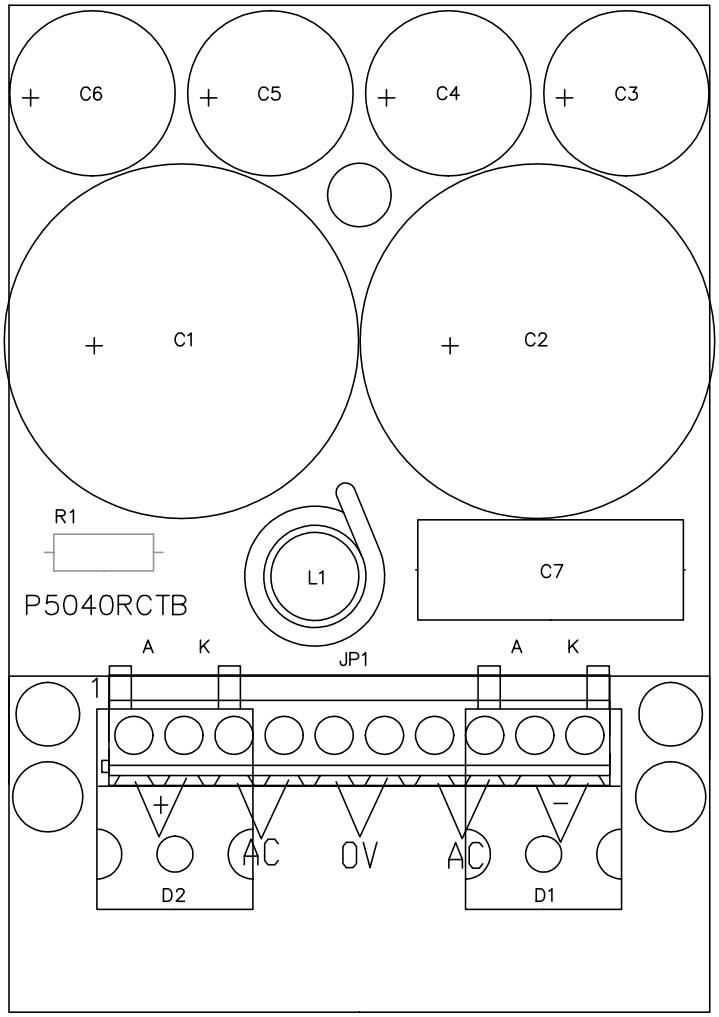


R.V.R. ELETTRONICA	DENOMINAZIONE: Driver Section Component Layout – PSSW5040 –	
	DISPOSITIVO:	
SEMILAVORATO	DISEGNATO: D'Alessio D. li 11/08/98	DISEGNO:
MATERIALE	SCALA: 1:1	
TRATTAMENTO		TAVOLA n 1 di 1

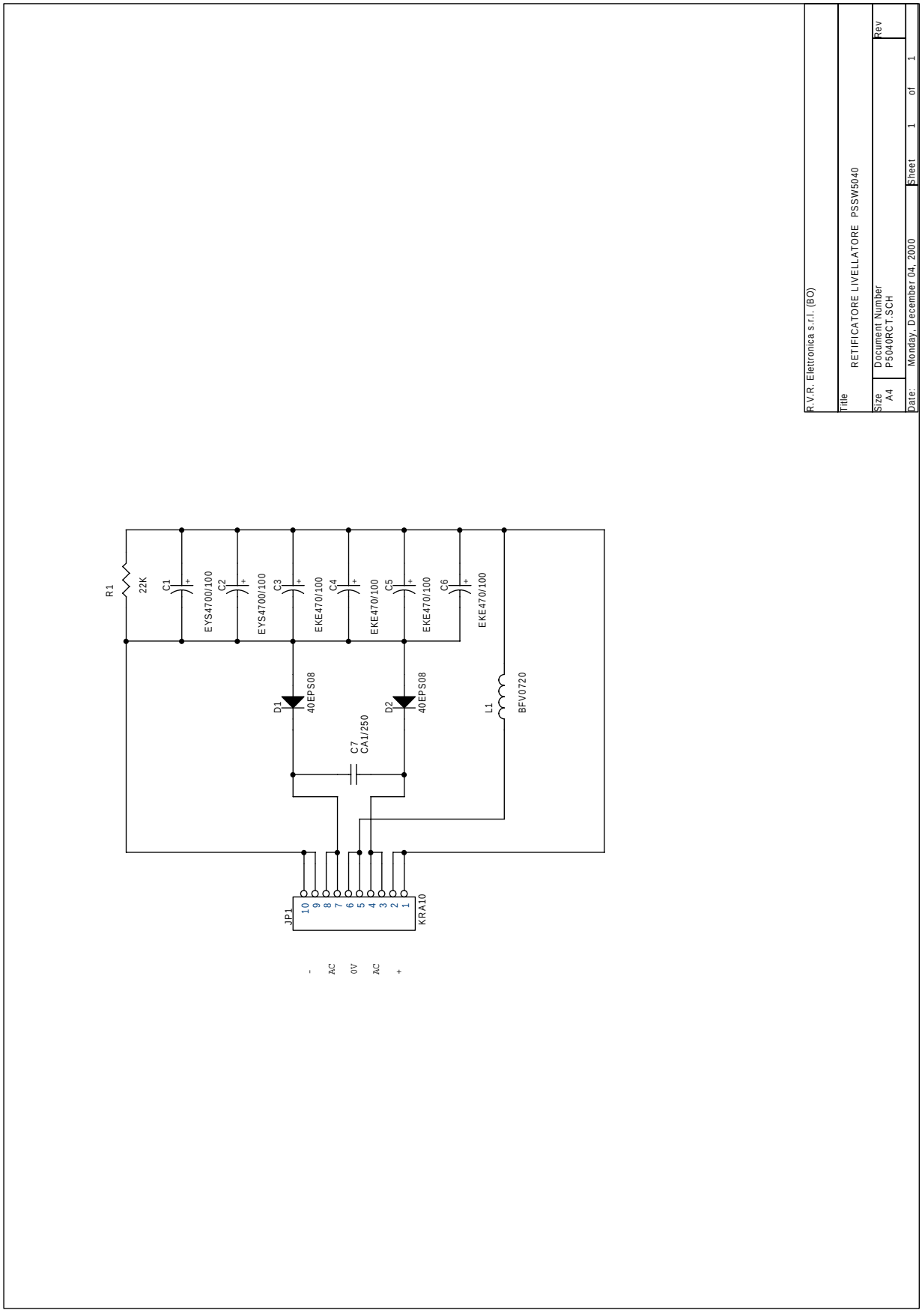

R.V.R. Elettronica S.r.l. (Bo)
Title
Driver Section Circuit Diagram – PSSW5040 –
REV
Size
A3
Document Number
Date: January 21, 1998
Sheet 1 of 1
JP8 MOLEX4
JP13 MOLEX4
JP10 MOLEX4
JP11 MOLEX4
JP9 MOLEX4
DG1
DG2
DG3
DG4
R6 10R
R7 10R
R3 4R99
R2 4R99
R10 10R
R11 10R
R9 4R99
R8 4R99
D1 11DQ04
D2 11DQ04
D3 11DQ04
D4 11DQ04
Q1 IRFD120
Q2 IRFD9120
Q3 IRFD9120
Q4 IRFD120
C4 CD.1UF
C6 CD.1UF
C1 CE1/25
C7 CE1/25
C5 CE1/25
R13 14R7
R14 14R7
U1 TC427
NC
INA
GND
INB
NC
OUTA
VDD
OUTB
R1 390R
C2 CM.1UF
U2 HCPL2611
V+
V-
C3 47uF/25
D5 5V1/0.5W
R12 470R
C8 CE1/25

DRIVER PS5040 Bill Of Materials Page 1

Item	Quantity	Reference	Part
1	4	C1,C5,C7,C8	CE1/25
2	1	C2	CM.1UF
3	1	C3	47UF/25
4	2	C4,C6	CD.1UF
5	4	D1,D2,D3,D4	11DQ04
6	1	D5	5V1/0.5W
7	5	JP8,JP9,JP10,JP11,JP13	MOLEX4
8	2	Q1,Q4	IRFD120
9	2	Q2,Q3	IRFD9120
10	1	R1	390R
11	4	R2,R3,R8,R9	4R99
12	4	R6,R7,R10,R11	10R
13	1	R12	470R
14	2	R13,R14	14R7
15	1	U1	TC427
16	1	U2	HCPL2611

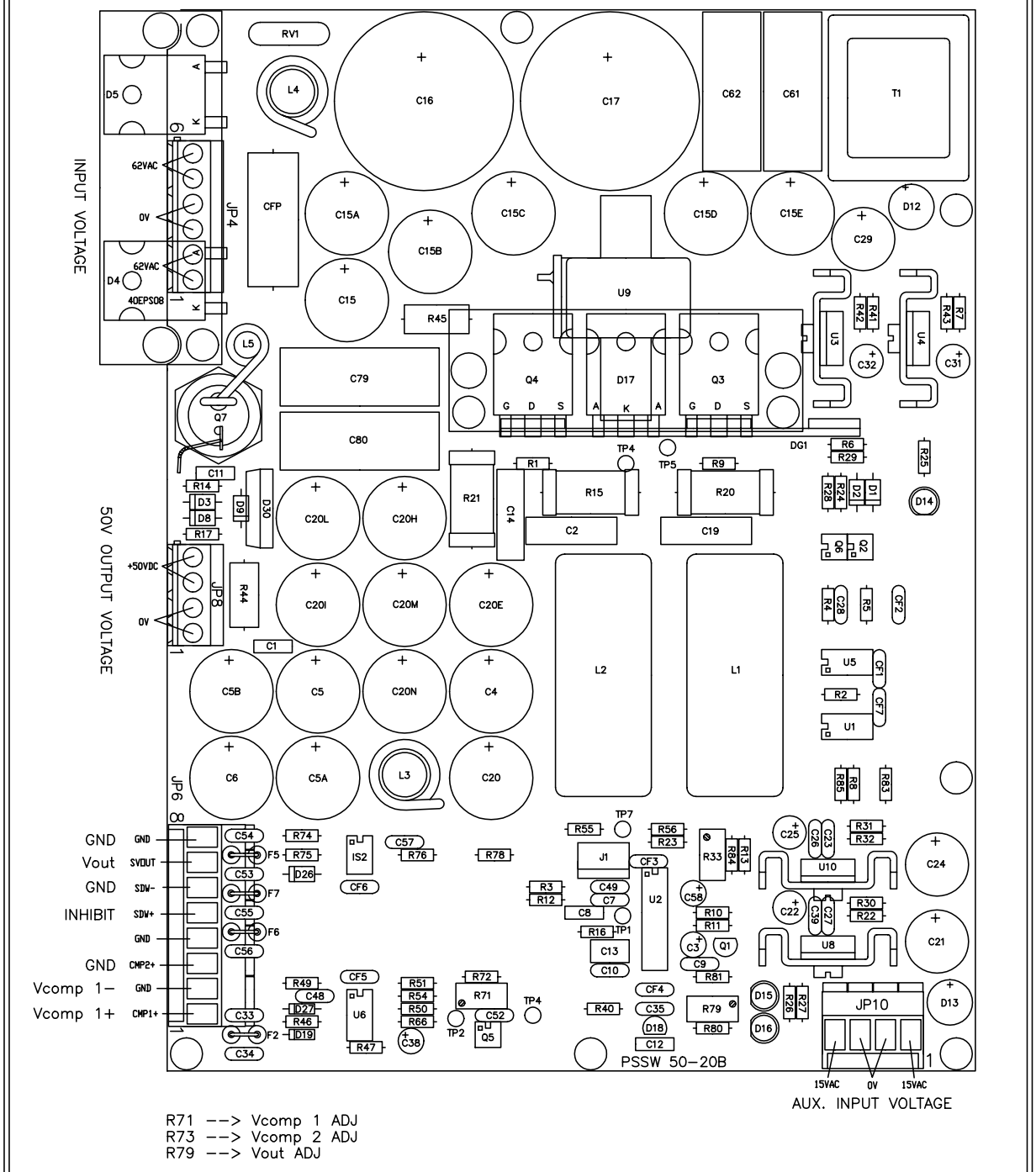


R.V.R. ELETTRONICA	DENOMINAZIONE: Rectifier Section Component Layput – PSSW5040 –	
	DISPOSITIVO:	
SEMILAVORATO	DISEGNATO: D'Alessio D.li 11/08/98	DISEGNO
MATERIALE	SCALA: 1:1	TAVOLA n 1 di 1
TRATTAMENTO		

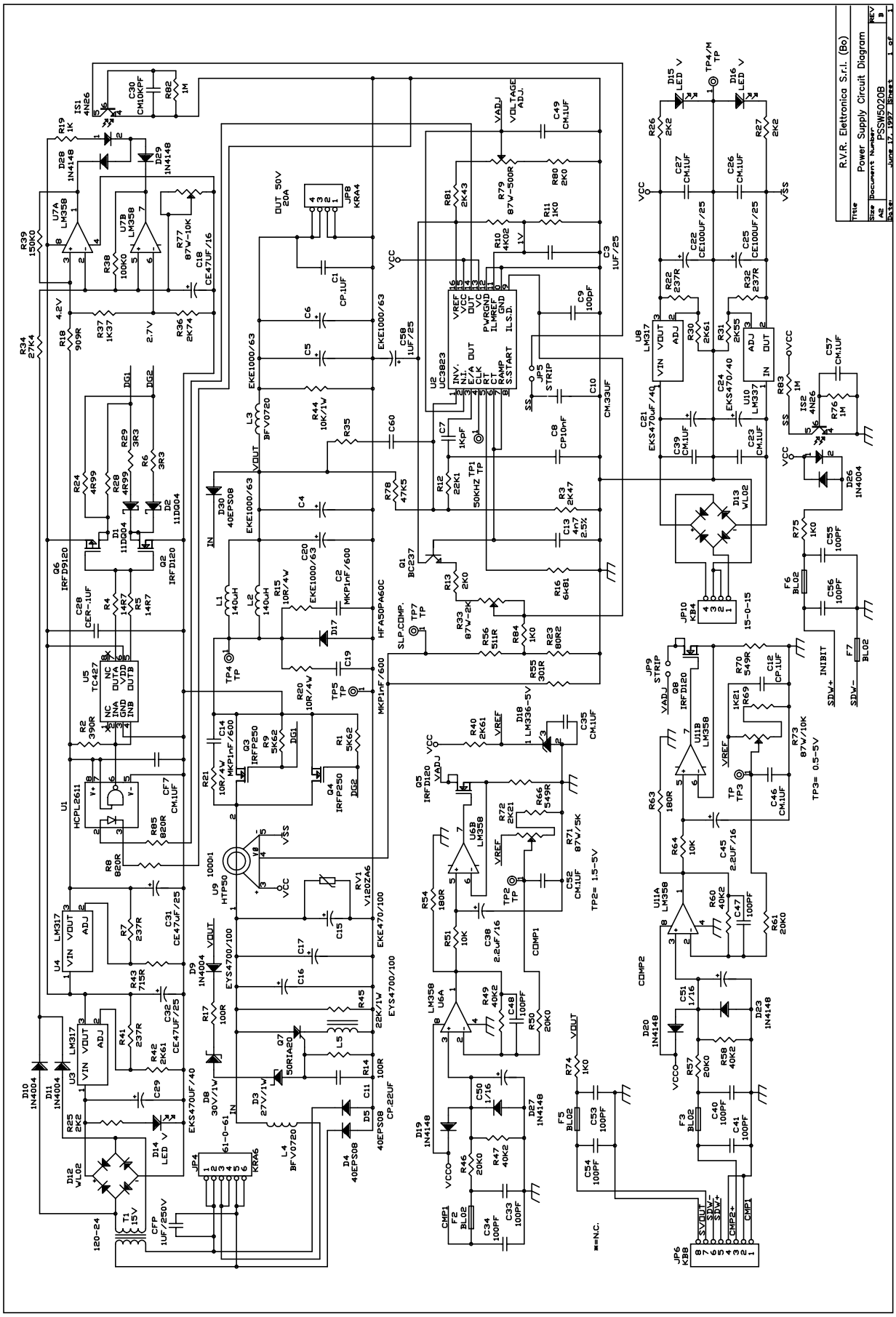

R.V.R. Elettronica s.r.l. (BO)
Title
RETIFICATORE LIVELLATORE PSSW5040
Size
A4
Document Number
P5040RCT.SCH
Rev
Date:
Monday, December 04, 2000
Sheet
1
of
1
R1
22K
C1
EYS4700/100
C2
EYS4700/100
C3
EKE470/100
C4
EKE470/100
C5
EKE470/100
C6
EKE470/100
D1
40EPS08
D2
40EPS08
C7
CA1/250
L1
BFV0720
JP1
KRA10
10
9
8
7
6
5
4
3
2
1
-
AC
0V
AC
+

RETIFICATORE LIVELLATORE PSSW5040 Bill Of Materials Page1

Item	Quantity	Reference	Part
1	2	C1,C2	EYS4700/100
2	4	C3,C4,C5,C6	EKE470/100
3	1	C7	CA1/250
4	2	D1,D2	40EPS08
5	1	JP1	KRA10
6	1	L1	BFV0720
7	1	R1	22K



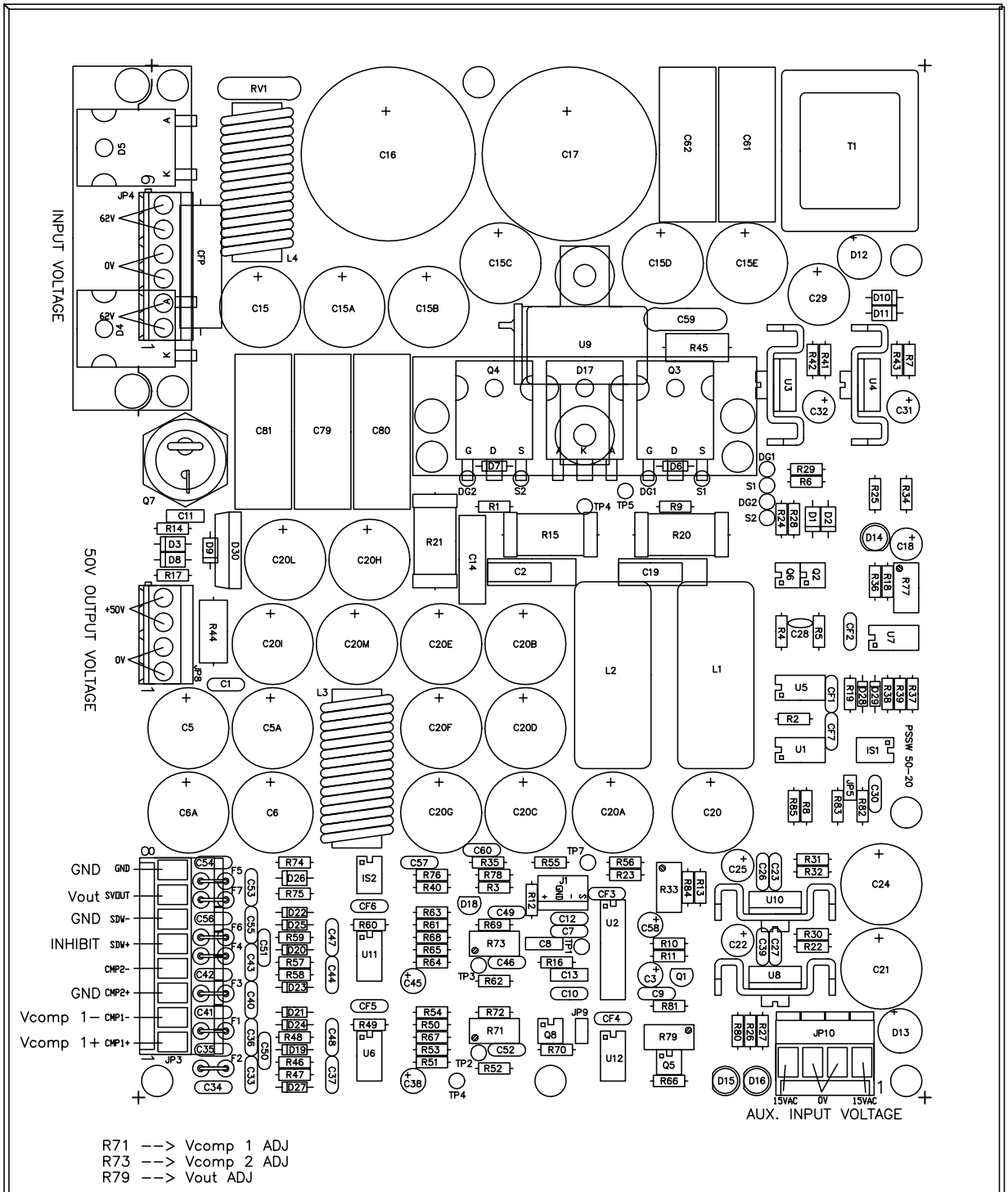
R.V.R. ELETTRONICA	DENOMINAZIONE: Switching Power Supply Component Layout / Piano di Montaggio
	DISPOSITIVO:
SEMILAVORATO	DISEGNATO: D'Alessio D. li 17/06/97 — DISEGNO: PSSW 50−20B
MATERIALE	SCALA
TRATTAMENTO	TAVOLA n di


R.V.R. Elettronica S.r.l. (Bo)
Power Supply Circuit Diagram
PSSW5020B
June 17, 1997
*=N.C.

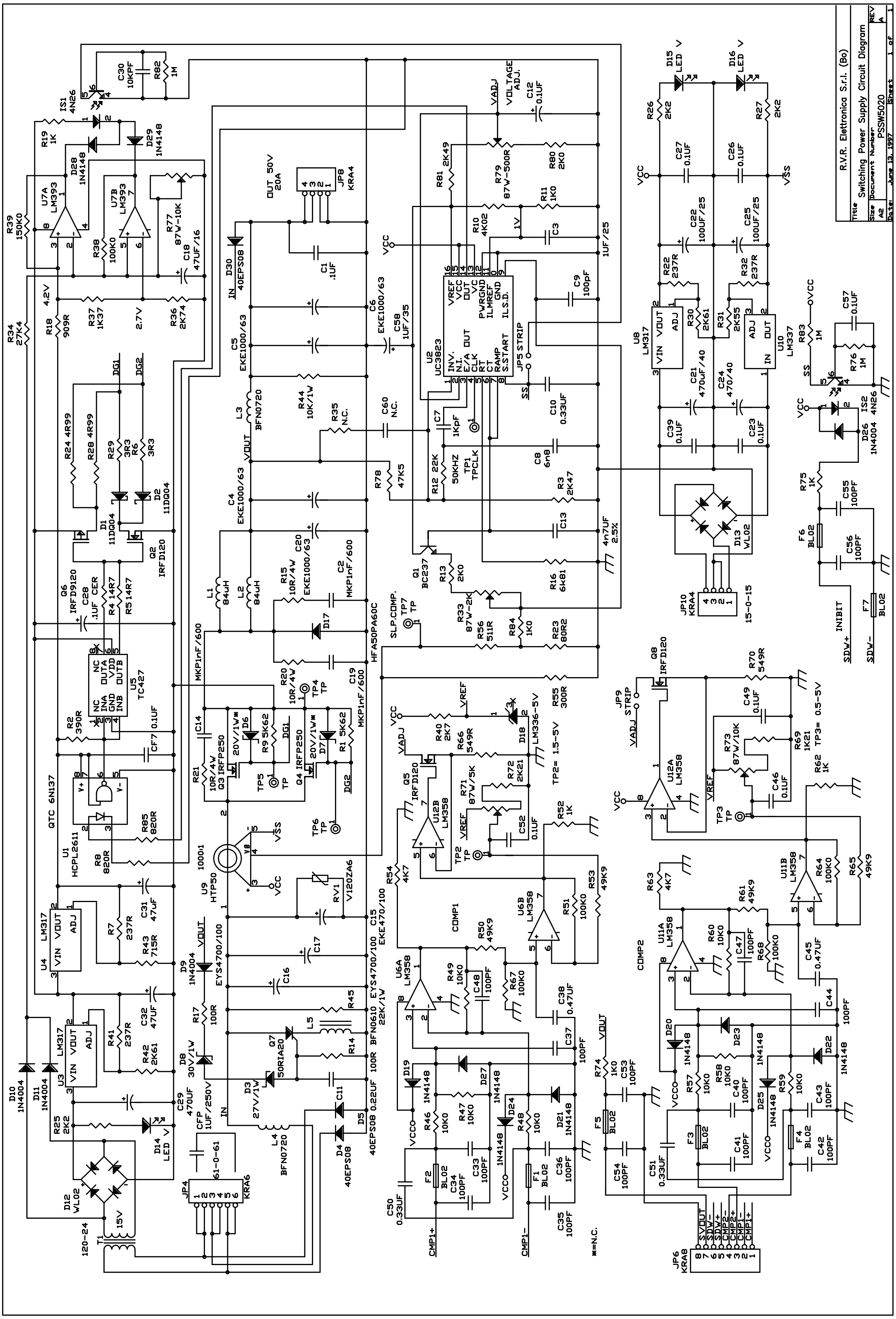
Power Supply Circuit Diagram Bill Of Materials Page 1

Item	Quantity	Reference	Part
1	1	CFP	1UF/250V
2	10	CF7,C23,C26,C27,C35,C39, C46,C49,C52,C57	CM.1UF
3	2	C1,C12	CP.1UF
4	3	C2,C14,C19	MKP1NF/600
5	2	C3,C58	1UF/25
6	4	C4,C5,C6,C20	EKE1000/63
7	1	C7	1KPF
8	1	C8	CP10NF
9	11	C9,C33,C34,C40,C41,C47, C48,C53,C54,C55,C56	100PF
10	1	C10	CM.33UF
11	1	C11	CP.22UF
12	1	C13	4N7
13	1	C15	EKE470/100
14	2	C16,C17	EYS4700/100
15	1	C18	CE47UF/16
16	2	C21,C29	EKS470UF/40
17	2	C22,C25	CE100UF/25
18	1	C24	EKS470/40
19	1	C28	CER-.1UF
20	1	C30	CM10KPF
21	2	C31,C32	CE47UF/25
22	2	C38,C45	2.2UF/16
23	2	C50,C51	1/16
24	2	R35,C60	N.C.
25	2	D1,D2	11DQ04
26	1	D3	27V/1W
27	3	D4,D5,D30	40EPS08
28	1	D8	30V/1W
29	4	D9,D10,D11,D26	1N4004
30	2	D12,D13	WL02
31	3	D14,D15,D16	LED V
32	1	D17	HFA50PA60C
33	1	D18	LM336-5V
34	6	D19,D20,D23,D27,D28,D29	1N4148
35	5	F2,F3,F5,F6,F7	BL02
36	2	IS1,IS2	4N26
37	1	JP4	KRA6
38	2	JP5,JP9	STRIP
39	1	JP6	KB8
40	1	JP8	KRA4
41	1	JP10	KB4
42	2	L1,L2	140UH
43	2	L3,L4	BFV0720
44	1	L5	BFV0710

45	1	Q1	BC237
46	3	Q2,Q5,Q8	IRFD120
47	2	Q3,Q4	IRFP250
48	1	Q6	IRFD9120
49	1	Q7	50RIA20
50	1	RV1	V120ZA6
51	2	R1,R9	5K62
52	1	R2	390R
53	1	R3	2K47
54	2	R4,R5	14R7
55	2	R6,R29	3R3
56	4	R7,R22,R32,R41	237R
57	2	R8,R85	820R
58	1	R10	4K02
59	4	R11,R74,R75,R84	1K0
60	1	R12	22K1
61	2	R13,R80	2K0
62	2	R14,R17	100R
63	3	R15,R20,R21	10R/4W
64	1	R16	6K81
65	1	R18	909R
66	1	R19	1K
67	1	R23	80R2
68	2	R24,R28	4R99
69	3	R25,R26,R27	2K2
70	3	R30,R40,R42	2K61
71	1	R31	2K55
72	1	R33	87W-2K
73	1	R34	27K4
74	1	R36	2K74
75	1	R37	1K37
76	1	R38	100K0
77	1	R39	150K0
78	1	R43	715R
79	1	R44	10K/1W
80	1	R45	22K/1W
81	4	R46,R50,R57,R61	20K0
82	4	R47,R49,R58,R60	40K2
83	2	R51,R64	10K
84	2	R54,R63	180R
85	1	R55	301R
86	1	R56	511R
87	2	R66,R70	549R
88	1	R69	1K21
89	1	R71	87W/5K
90	1	R72	2K21
91	1	R73	87W/10K



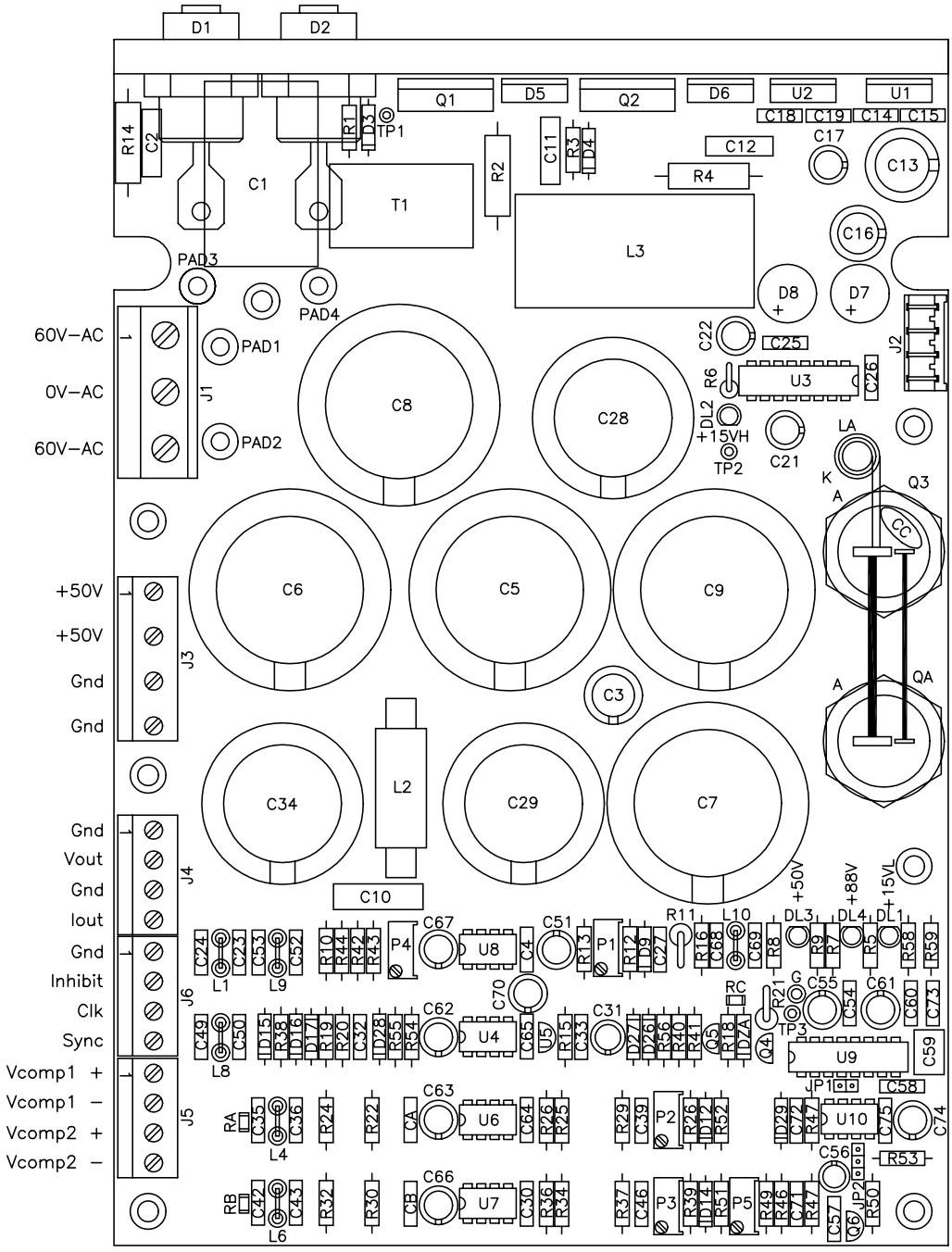
R.V.R. ELETTRONICA	DENOMINAZIONE Switching Power Supply Component Layout / Piano di Montaggio	
	DISPOSITIVO	
SEMILAVORATO	DISEGNATO D'Alessio D. 13/06/97	DISEGNO PSSW5020
MATERIALE	SCALA	
TRATTAMENTO		TAVOLA n di


R.V.R. Elettronica S.r.l. (Bo)
Switching Power Supply Circuit Diagram
PSSW5020

Power Supply Circuit Diagram Bill Of Materials Page 1

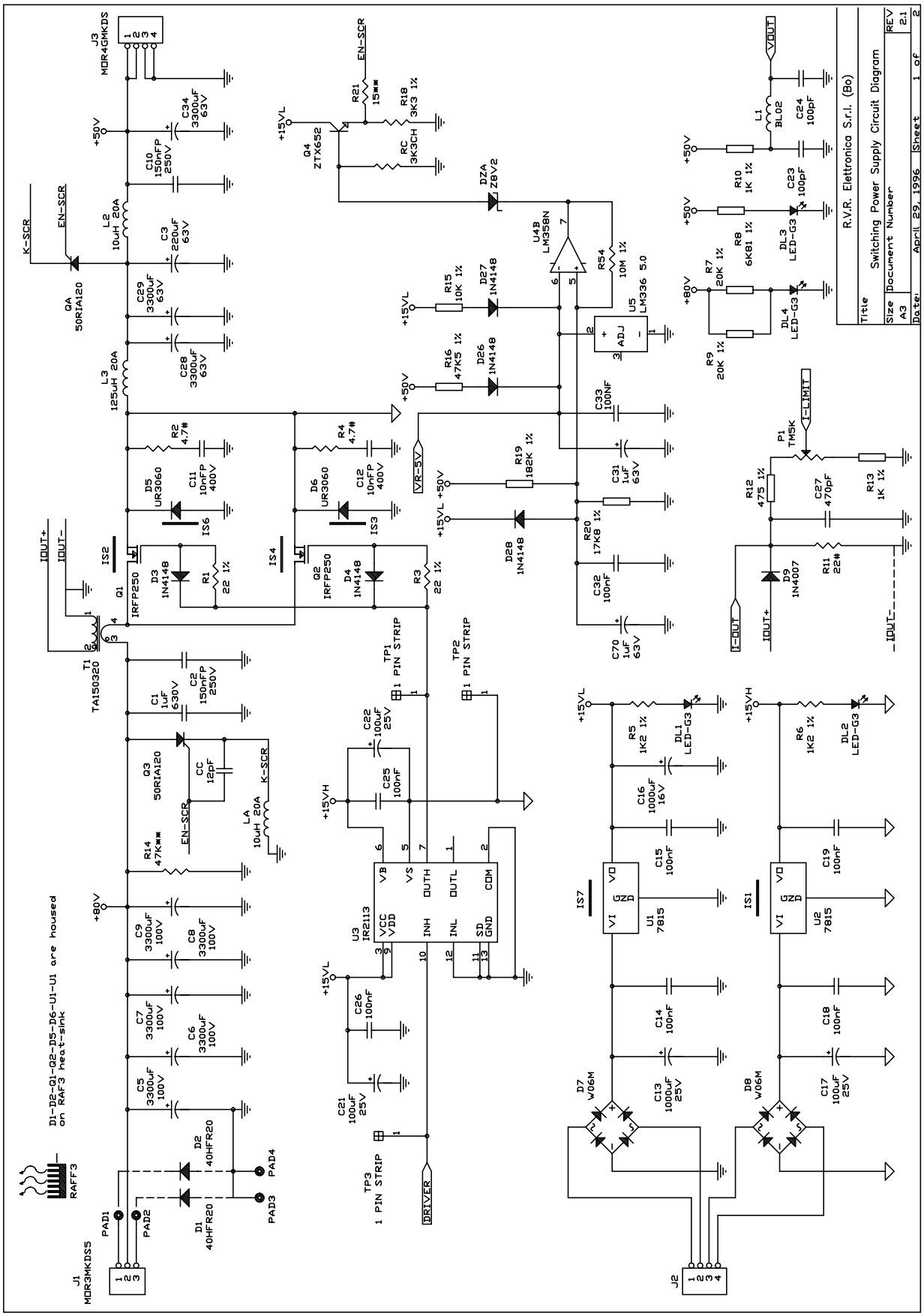
Item	Quantity	Reference	Part
1	1	CFP	1UF/250V
2	10	CF7,C12,C23,C26,C27, C39,C46,C49,C52,C57	0.1UF
3	1	C1	0.1UF
4	3	C2,C14,C19	MKP1NF/600
5	1	C3	1UF/25
6	4	C4,C5,C6,C20	EKE1000/63
7	1	C7	1KPF
8	1	C8	6N8
9	17	C9,C33,C34,C35,C36, CC37,40,C41,C42,C43,C44, C47,C48,C53,C54,C55,C56	100PF
10	3	C10,C50,C51	0.33UF
11	1	C11	0.22UF
12	1	C13	4N7UF
13	1	C15	EKE470/100
14	2	C16,C17	EYS4700/100
15	1	C18	47UF/16
16	1	C21	470UF/40
17	2	C22,C25	100UF/25
18	1	C24	470/40
19	1	C28	0.1UF CER
20	1	C29	470UF
21	1	C30	10KPF
22	2	C31,C32	47UF
23	2	C38,C45	0.47UF
24	1	C58	1UF/35
25	2	R35,C60	N.C.
26	2	D1,D2	11DQ04
27	1	D3	27V/1W
28	3	D4,D5,D30	40EPS08
29	2	D6,D7	20V/1W*
30	1	D8	30V/1W
31	4	D9,D10,D11,D26	1N4004
32	2	D12,D13	WL02
33	3	D14,D15,D16	LED V
34	1	D17	HFA50PA60C
35	1	D18	LM336-5V
36	10	D19,D20,D21,D22,D23, D24, D25,D27,D28,D29	1N4148
37	7	F1,F2,F3,F4,F5,F6,F7	BL02
38	2	IS1,IS2	4N26

39	1	JP4	KRA6
40	2	JP5,JP9	STRIP
41	1	JP6	KRA8
42	2	JP8,JP10	KRA4
43	2	L1,L2	84UH
44	2	L3,L4	BFN0720
45	1	L5	BFN0610
46	1	Q1	BC237
47	3	Q2,Q5,Q8	IRFD120
48	2	Q3,Q4	IRFP250
49	1	Q6	IRFD9120
50	1	Q7	50RIA20
51	1	RV1	V120ZA6
52	2	R1,R9	5K62
53	1	R2	390R
54	1	R3	2K47
55	2	R4,R5	14R7
56	2	R6,R29	3R3
57	4	R7,R22,R32,R41	237R
58	2	R8,R85	820R
59	1	R10	4K02
60	3	R11,R74,R84	1K0
61	1	R12	22K
62	2	R13,R80	2K0
63	2	R14,R17	100R
64	3	R15,R20,R21	10R/4W
65	1	R16	6K81
66	1	R18	909R
67	4	R19,R52,R62,R75	1K
68	1	R23	80R2
69	2	R24,R28	4R99
70	3	R25,R26,R27	2K2
71	2	R30,R42	2K61
72	1	R31	2K55
73	1	R33	87W-2K
74	1	R34	27K4
75	1	R36	2K74
76	1	R37	1K37
77	5	R38,R51,R64,R67,R68	100K0
78	1	R39	150K0
79	1	R40	2K7
80	1	R43	715R



P1 -> Trimmer for Max Iout adj.
P2 -> Trimmer for External 1 Compensation adj.
P3 -> Trimmer for External 2 Compensation adj.
P4 -> Trimmer for Iout adj.
P5 -> Trimmer for Vout adj.

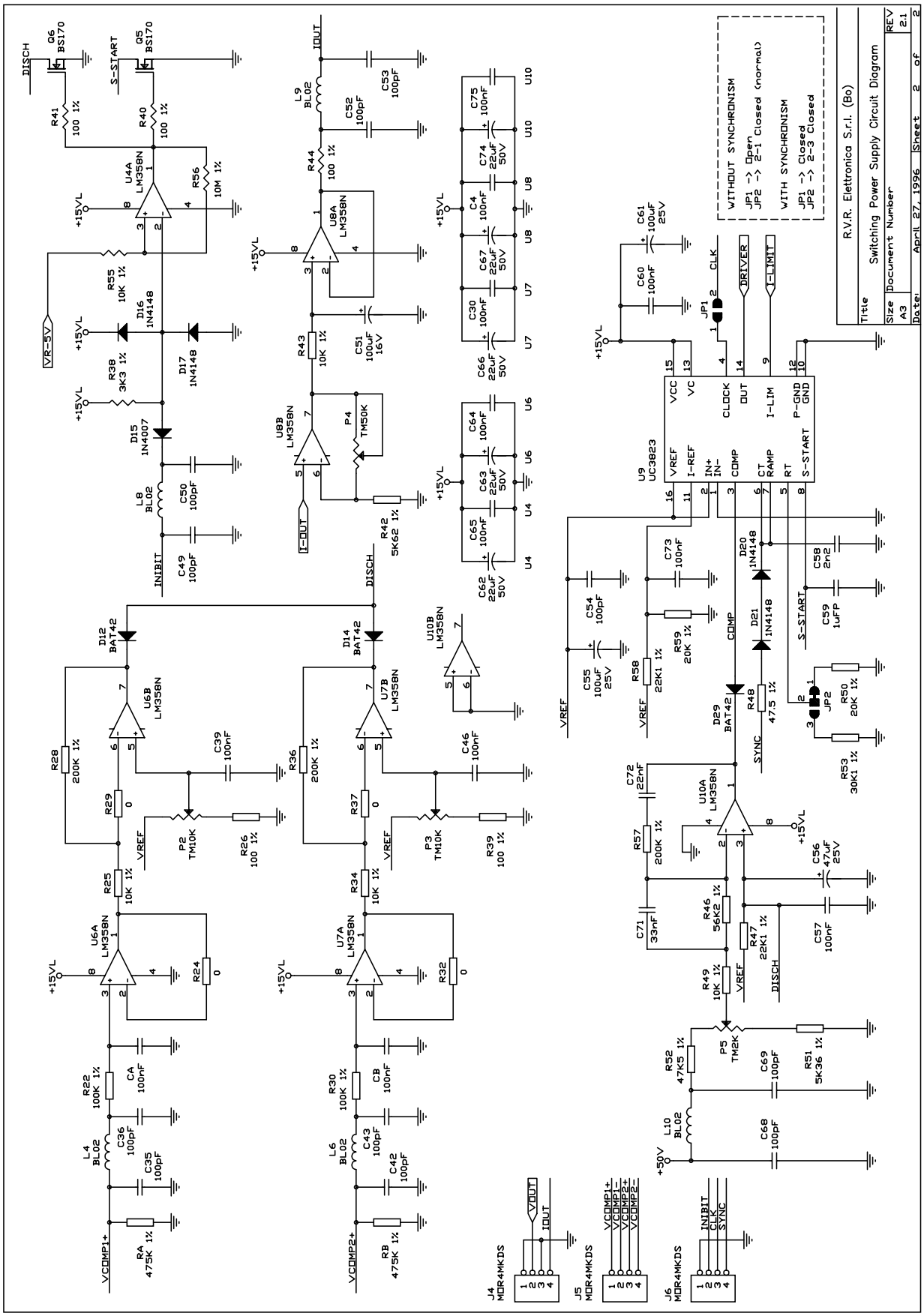
R.V.R. ELETTRONICA	DENOMINAZIONE: Switching Power Supply Component Layout / Piano di Montaggio	
	DISPOSITIVO:	
SEMILAVORATO	DISEGNATO: D'Alessio D. li 26/04/96	DISEGNO: PSW1K-2
MATERIALE	SCALA	
TRATTAMENTO		TAVOLA n di


R.V.R. Elettronica S.r.l. (Bo)
Title
Switching Power Supply Circuit Diagram
Size A3
Document Number
REV 2.1
Date: April 29, 1996
Sheet 1 of 2
D1-D2-Q1-Q2-D5-D6-U1-U2 are housed on RAF3 heat-sink
J1 MDR3MKDSS
J2
J3 MDR4GMKDS
RAFF3
PAD1
PAD2
PAD3
PAD4
D1 40HFR20
D2 40HFR20
Q1 IRFP250
Q2 IRFP250
Q3 50RIA120
Q4 ZTX652
QA 50RIA120
T1 TA150320
U1 7815
U2 7815
U3 IR2113
U4B LM358N
U5 LM336 5.0
TP1 1 PIN STRIP
TP2 1 PIN STRIP
TP3 1 PIN STRIP
DRIVER
I-LIMIT
I-OUT
IOUT+
IOUT-
VOUT
VR-5V
EN-SCR
K-SCR

Switching Power Supply Circuit Diagram Bill Of Materials Page 1

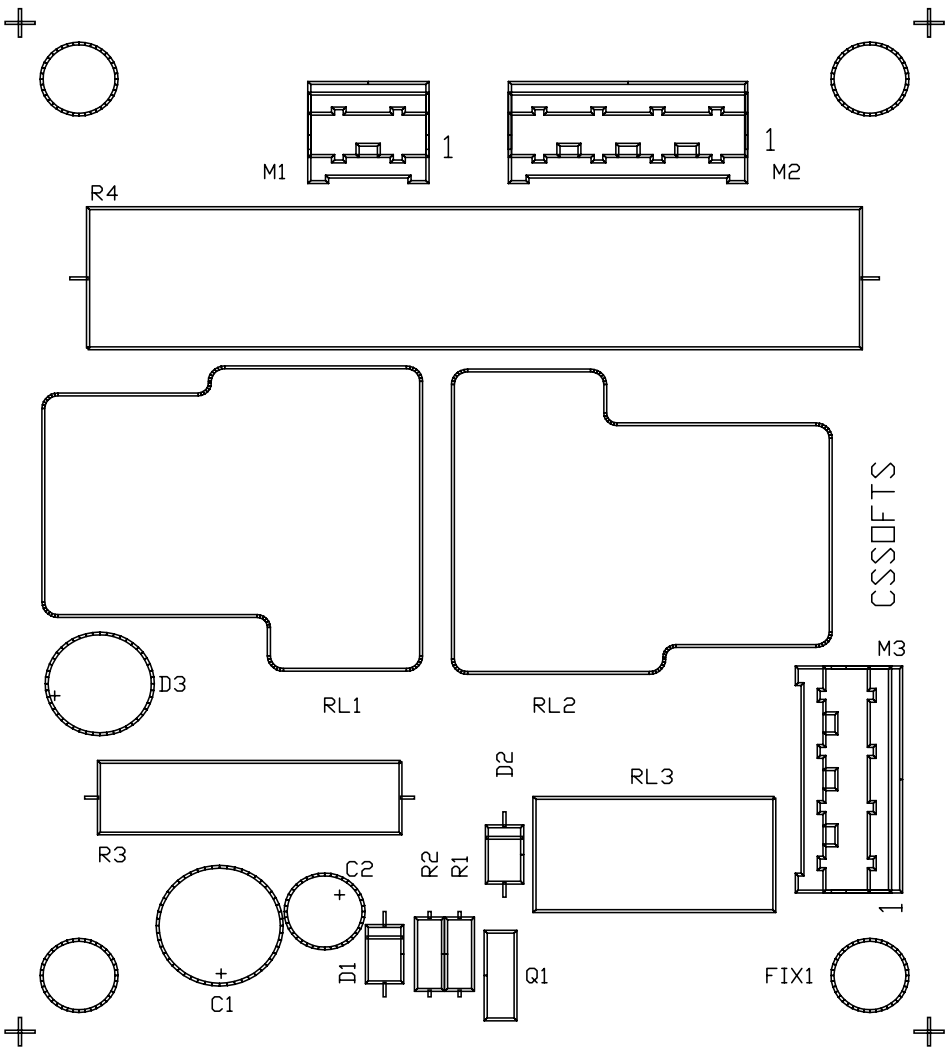
Item	Quantity	Reference	Part	DESCRIPTION	PART ORDER CODE
1	2	R2,R4	4.7#	RESISTOR 2W	
2	1	R21	15**	RESISTOR 1W	
3	1	R11	22#	RESISTOR 2W	
4	2	R1,R3	22 1%	RESISTOR 1/4W 1%	
5	1	R12	475 1%	RESISTOR 1/4W 1%	
6	2	R10,R13	1K 1%	RESISTOR 1/4W 1%	
7	2	R5,R6	1K2 1%	RESISTOR 1/4W 1%	
8	1	RC	3K3CH	CHIP RESISTOR	
9	1	R18	3K3 1%	RESISTOR 1/4W 1%	
10	1	R8	6K81 1%	RESISTOR 1/4W 1%	
11	1	R15	10K 1%	RESISTOR 1/4W 1%	
12	1	R20	17K8 1%	RESISTOR 1/4W 1%	
13	2	R7,R9	20K 1%	RESISTOR 1/4W 1%	
14	1	R16	47K5 1%	RESISTOR 1/4W 1%	
15	1	R14	47K**	RESISTOR 1W 5%	
16	1	R19	182K 1%	RESISTOR 1/4W 1%	
17	1	R54	10M 1%	RESISTOR 1/4W 1%	
18	1	P1	TM5K	TRIM.MULTIGIRI REG.VERT	
19	1	CC	12PF	CERAMIC CAPACITOR NP0	
20	2	C23,C24	100PF	CERAMIC CAPACITOR NP0	
21	1	C27	470PF	CERAMIC CAPACITOR	
22	2	C11,C12	10NFP	POLIESTER CAPACITOR	
23	8	C14,C15,C18,C19,C25, C26,C32,C33	100NF	CERAMIC CAPACITOR	
24	2	C2,C10	150NFP	POLIESTER CAPACITOR	
25	3	C1,C31,C70	1UF	ELECTROLYTIC CAPACITOR	
26	3	C17,C21,C22	100UF	ELECTROLYTIC CAPACITOR	
27	1	C3	220UF	ELECTROLYTIC CAPACITOR	
28	2	C13,C16	1000UF	ELECTROLYTIC CAPACITOR	
29	8	C5,C6,C7,C8,C9,C28, C29, C34	3300UF	ELECTROLYTIC CAPACITOR	
30	2	L2,LA	10UH 20A	RF CHOCHE 10uH 20A	
31	1	L3	125UH 20A	TOR.RF CHOKE 125uH 20A	
32	1	L1	BL02	BL02 IND.POW.SUP.PJ1KM	
33	3	TP1,TP2,TP3	1 PIN STRIP	STRIP M 1 PIN	
34	1	J1	MOR3MKDS5	MORS. 3MKDS5 PHOENIX	

35	1	J3	MOR4GMKDS	MORS. 4GMKDS PHOENIX
36	1	J2	MOR280610	MORS. CTRL PWR SUPPLY PJ1KM
37	2	D1,D2	40HFR20	DIODE IOR 200V 40A
38	5	D3,D4,D26,D27,D28	1N4148	SILICON DIODE
39	1	D9	1N4007	SILICON DIODE 1000V
40	2	D5,D6	UR3060	HARRIS DIODE UR3060
41	2	D7,D8	W06M	DIODE BRIDGE 1.5A 600V
42	2	Q3,QA	50RIA120	PHASE CTRL SCR 1200V 80A
43	4	DL1,DL2,DL3,DL4	LED-G3	GREEN LED DIODE 3mm
44	1	DZA	Z8V2	ZENER DIODE 8.2V 0.4W
45	2	U1,U2	7815	POS. STABILIZER 1A
46	1	U5	LM336 5.0	REFERENCE DIODE
47	2	Q1,Q2	IRFP250	HEXFET N-CHANNEL TO-247AC
48	1	U3	IR2113	HV PWR MOSFET/IGBT GATE DRIV
49	1	Q4	ZTX652	NPN MEDIUM POWER TRANSISTOR
50	1	U4	LM358N	DOUBLE OP. AMP.
51	1	T1	TA150320	CURRENT TRANSF. P.S. PJ1KM
52	1	RAFF3	DISPSPJ1KM	HEAT SINK PWR SUPPLY PJ1KM
53	4	IS1,IS3,IS6,IS7	MICA-TO220	MICA ISOLANTE TO220
54	2	IS2,IS4	MICA-TO247	MICA ISOLANTE TO247
55	4	PAD1,PAD2,PAD3,PAD4	PAD	PAD C.S.

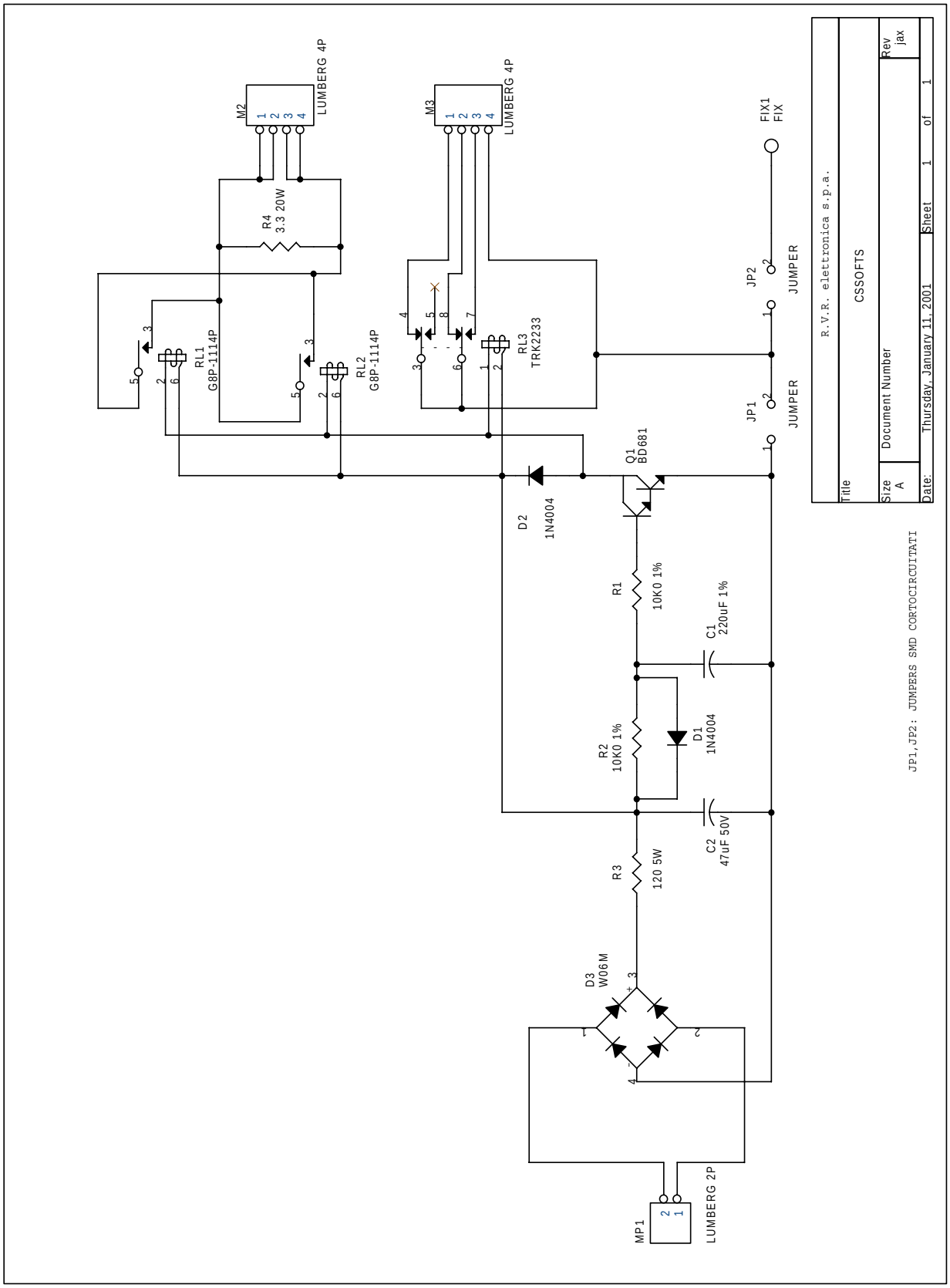

R.V.R. Elettronica S.r.l. (Bo)
Title
Switching Power Supply Circuit Diagram
Size A3
Document Number
REV 2.1
Date: April 27, 1996
Sheet 2 of 2
WITHOUT SYNCHRONISM
JP1 -> Open
JP2 -> 2-1 Closed (normal)
WITH SYNCHRONISM
JP1 -> Closed
JP2 -> 2-3 Closed
U9 UC3823
VREF
I-REF
IN+
IN-
COMP
CT
RAMP
RT
S-START
VCC
VC
CLOCK
OUT
I-LIM
P-GND
GND
JP1
CLK
DRIVER
I-LIMIT
U4A LM358N
U6A LM358N
U6B LM358N
U7A LM358N
U7B LM358N
U8A LM358N
U8B LM358N
U10A LM358N
U10B LM358N
DISCH
S-START
IOUT
I-OUT
INIBIT
VREF
SYNC
VCOMP1+
VCOMP1-
VCOMP2+
VCOMP2-
VOUT
CLK
SYNC
J4 MDR4MKDS
J5 MDR4MKDS
J6 MDR4MKDS
Q6 BS170
Q5 BS170
D12 BAT42
D14 BAT42
D29 BAT42
D15 1N4007
D16 1N4148
D17 1N4148
D20 1N4148
D21 1N4148
L4 BL02
L6 BL02
L8 BL02
L9 BL02
L10 BL02
P2 TM10K
P3 TM10K
P4 TM50K
P5 TM2K
JP2

Swirching Power Supply Circuit Diagram Bill Of Materials Page 1

Item	Quantity	Reference	Part	DESCRIPTION	PART ORDER CODE
1	4	R24,R29,R32,R37	0	0 OHM RESISTOR	
2	1	R48	47.5 1%	RESISTOR 1/4W 1%	
3	5	R26,R39,R40,R41,R44	100 1%	RESISTOR 1/4W 1%	
4	1	R38	3K3 1%	RESISTOR 1/4W 1%	
5	1	R51	5K36 1%	RESISTOR 1/4W 1%	
6	1	R42	5K62 1%	RESISTOR 1/4W 1%	
7	5	R25,R34,R43,R49,R55	10K 1%	RESISTOR 1/4W 1%	
8	2	R50,R59	20K 1%	RESISTOR 1/4W 1%	
9	2	R47,R58	22K1 1%	RESISTOR 1/4w 1%	
10	1	R53	30K1 1%	RESISTOR 1/4W 1%	
11	1	R52	47K5 1%	RESISTOR 1/4W 1%	
12	1	R46	56K2 1%	RESISTOR 1/4W 1%	
13	2	R22,R30	100K 1%	RESISTOR 1/4W 1%	
14	3	R28,R36,R57	200K 1%	RESISTOR 1/4W 1%	
15	2	RB,RA	475K 1%	RESISTOR 1/4W 1%	
16	1	R56	10M 1%	RESISTOR 1/4W 1%	
17	1	P5	TM2K	TRIM.MULTIGIRI REG.VERT	
18	2	P2,P3	TM10K	TRIM.MULTIGIRI REG.VERT	
19	1	P4	TM50K	TRIM.MULTIGIRI REG.VERT	
20	11	C35,C36,C42,C43,C49, C50,C52,C53,C54,C68,C69	100PF	CERAMIC CAPACITOR NP0	
21	1	C58	2N2	CERAMIC CAPACITOR	
22	1	C72	22NF	CERAMIC CAPACITOR	
23	1	C71	33NF	CERAMIC CAPACITOR	
24	12	C4,C30,C39,C46,C57,C60, C64,C65,C73,C75,CB,CA	100NF	CERAMIC CAPACITOR	
25	1	C59	1UFP	POLIESTER CAPACITOR	
26	5	C62,C63,C66,C67,C74	22UF	ELECTROLYTIC CAPACITOR	
27	1	C56	47UF	ELECTROLYTIC CAPACITOR	
28	3	C51,C55,C61	100UF	ELECTROLYTIC CAPACITOR	
29	5	L4,L6,L8,L9,L10	BL02	BL02 IND.POW.SUP.PJ1KM	
30	1	JP1	2 PIN STRIP	STRIP M P 2.54 2 PIN	
31	1	JP2	3 PIN STRIP	STRIP M P 2.54 3 PIN	
32	3	J4,J5,J6	MOR4MKDS	MORS. 4MKDS PHOENIX	
33	4	D16,D17,D20,D21	1N4148	SILICON DIODE	
34	3	D12,D14,D29	BAT42	HOT CARRIER DIODE	
35	1	D15	1N4007	SILICON DIODE 1000V	
36	1	U9	UC3823	HIGH SPEED PWM CONTROLLER	
37	2	Q5,Q6	BS170	TMOS FET SWITCHING	
38	5	U4,U6,U7,U8,U10	LM358N	DOUBLE OP. AMP.	



R.V.R. ELETTRONICA	DENOMINAZIONE soft start	
	DISPOSITIVO	
SEMILAVORATO	DISEGNATO D'Alessio D.li 4/12/00	DISEGNO
MATERIALE	SCALA 1:1	
TRATTAMENTO		TAVOLA n 1 di 1

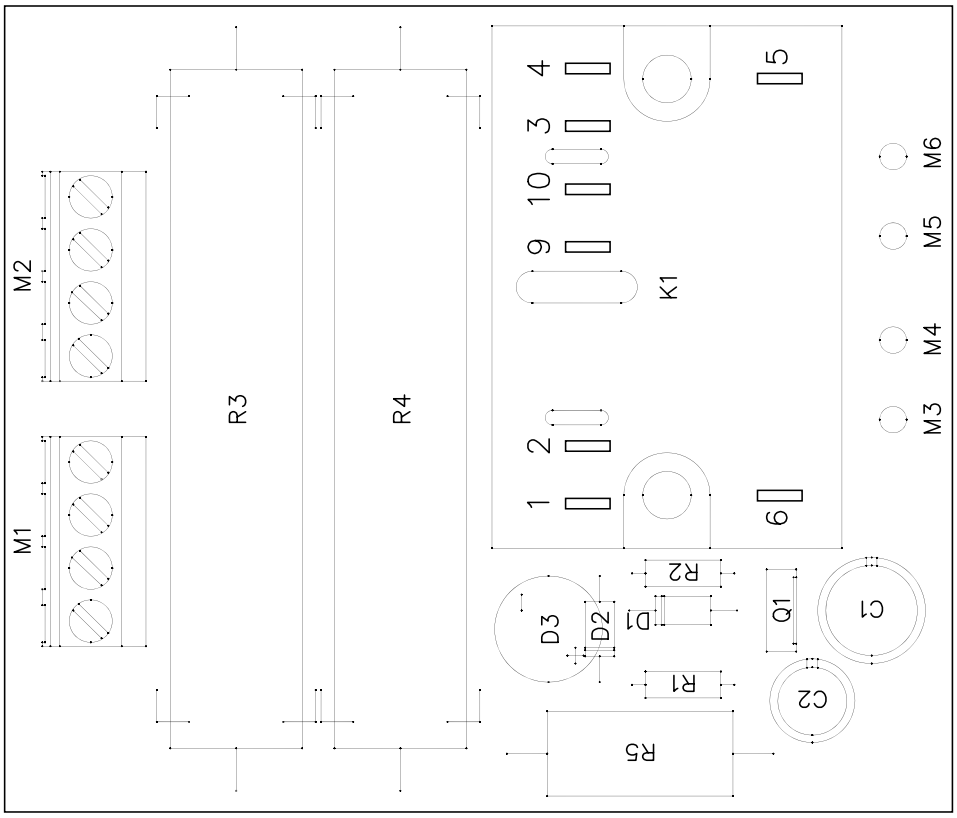

M2
LUMBERG 4P
M3
LUMBERG 4P
R4
3.3 20W
RL1
G8P-1114P
RL2
G8P-1114P
RL3
TRK2233
FIX1
FIX
JP2
JUMPER
JP1
JUMPER
Q1
BD681
D2
1N4004
R1
10K0 1%
C1
220uF 1%
R2
10K0 1%
D1
1N4004
C2
47uF 50V
R3
120 5W
D3
W06M
MP1
LUMBERG 2P
R.V.R. elettronica s.p.a.
CSSOFTS
Document Number
Rev
jax
Sheet 1 of 1
Thursday, January 11, 2001
Date:
Size
A
Title
JP1,JP2: JUMPERS SMD CORTOCIRCUITATI

Soft-Start Card Vers.LCD Circuit Diagram Bill Of Materials
Page 1

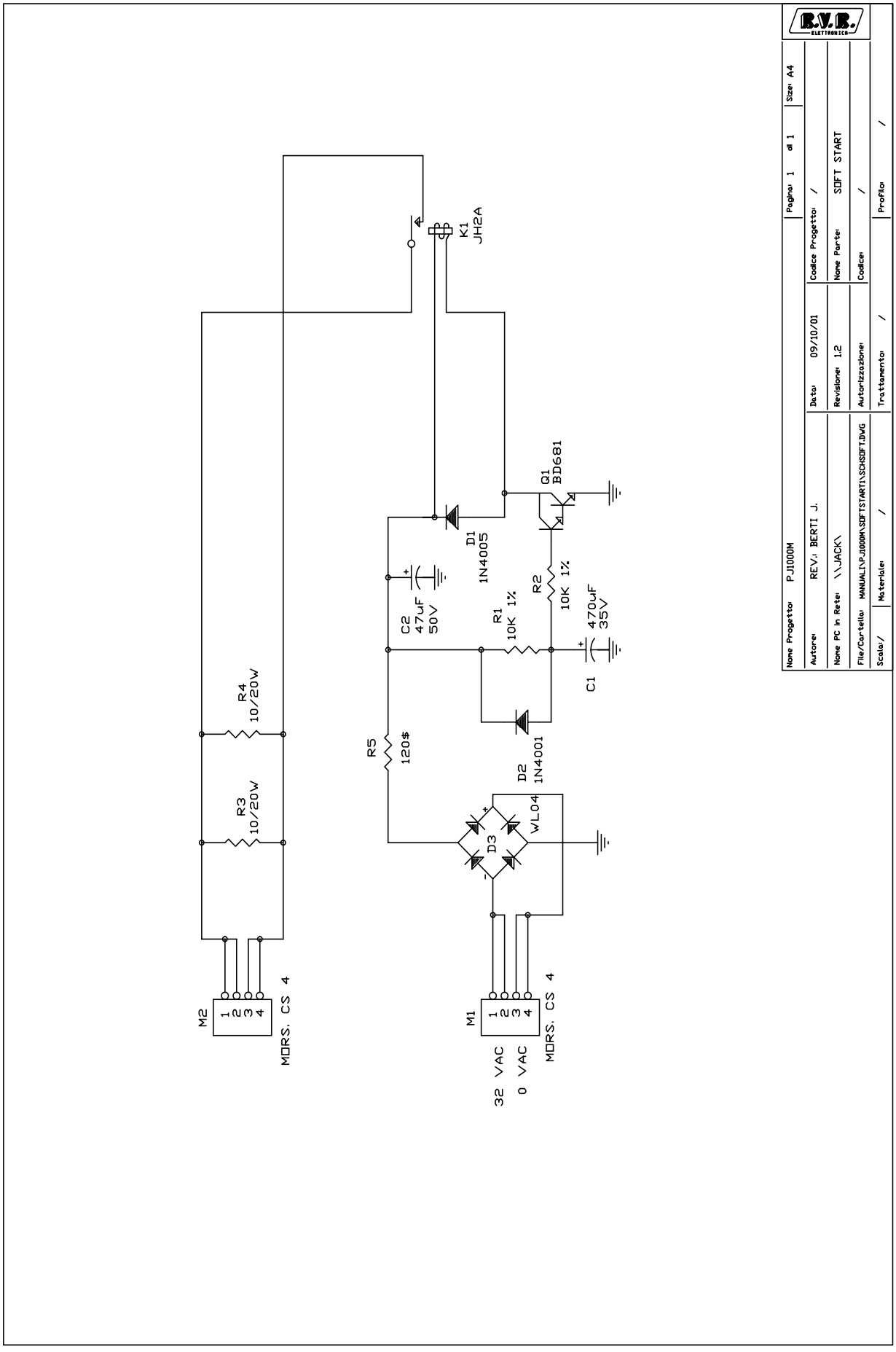
Item	Quantity	Reference	Part	
1	1	C1	220UF 50V	COND. ELETTR.
2	1	C2	47UF 50V	COND. ELETTR.
3	2	D1,D2	1N4004	DIODO AL SILICIO
4	1	D3	W02M	PONTE DI DIODI
5	1	FIX1	FIX	
6	2	JP1,JP2	JUMPER 2P	
7	1	M1	LUMBERG 2P	MORS. 2 PIN
8	2	M2,M3	LUMBERG 4P	MORS. 4 PIN
9	1	Q1	BD681	TRANSISTOR
10	2	RL1,RL2	G8P-1114P	RELè G8-1114P
11	1	RL3	V23042 A 2003	RELè 2SC. 2VIE
12	2	R1,R2	10K	RES. STRATO MET.
13	1	R3	120 5W	RES. A FILO
14	1	R4	4.7 20W	RES. A FILO

Pagina lasciata intenzionalmente in bianco

This page was intentionally left blank



Nome Progetto: PJ1000M		Pagina: 1 di 1	Size: A4
Autore: REV.: BERTI J.	Data: 09/10/01	Codice Progetto: /	
Nome PC in Rete: \\JACK\	Revisione: 1.2	Nome Parte: SOFT START	
File/Cartella: MANUALI\PJ1000M\SOFTSTART1\LAYSOFT.DWG	Autorizzazione:	Codice: /	
Scala: / Materiale: /	Trattamento: /		Profilo: /

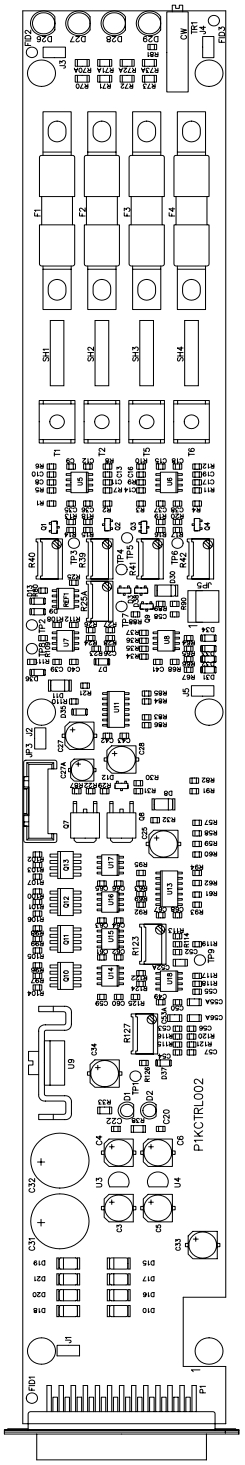

K1
JH2A
D1
1N4005
Q1
BD681
C2
47uF
50V
R1
10K 1%
R2
10K 1%
C1
470uF
35V
R5
120$
D2
1N4001
D3
WL04
R4
10/20W
R3
10/20W
M2
MORS. CS 4
M1
MORS. CS 4
32 VAC
0 VAC
Nome Progetto: PJ1000M
Pagina: 1 di 1
Size: A4
Autore: REV.: BERTI J.
Data: 09/10/01
Codice Progetto: /
Nome PC in Rete: \\JACK\
Revisione: 1.2
Nome Parte: SOFT START
File/Cartella: MANUALI\PJ1000M\SOFTSTART1\SCHSOFT.DVG
Autorizzazione:
Codice: /
Scala: /
Materiale: /
Trattamento: /
Profilo: /

Soft-Start Card Circuit Diagram Bill Of Materials Page 1

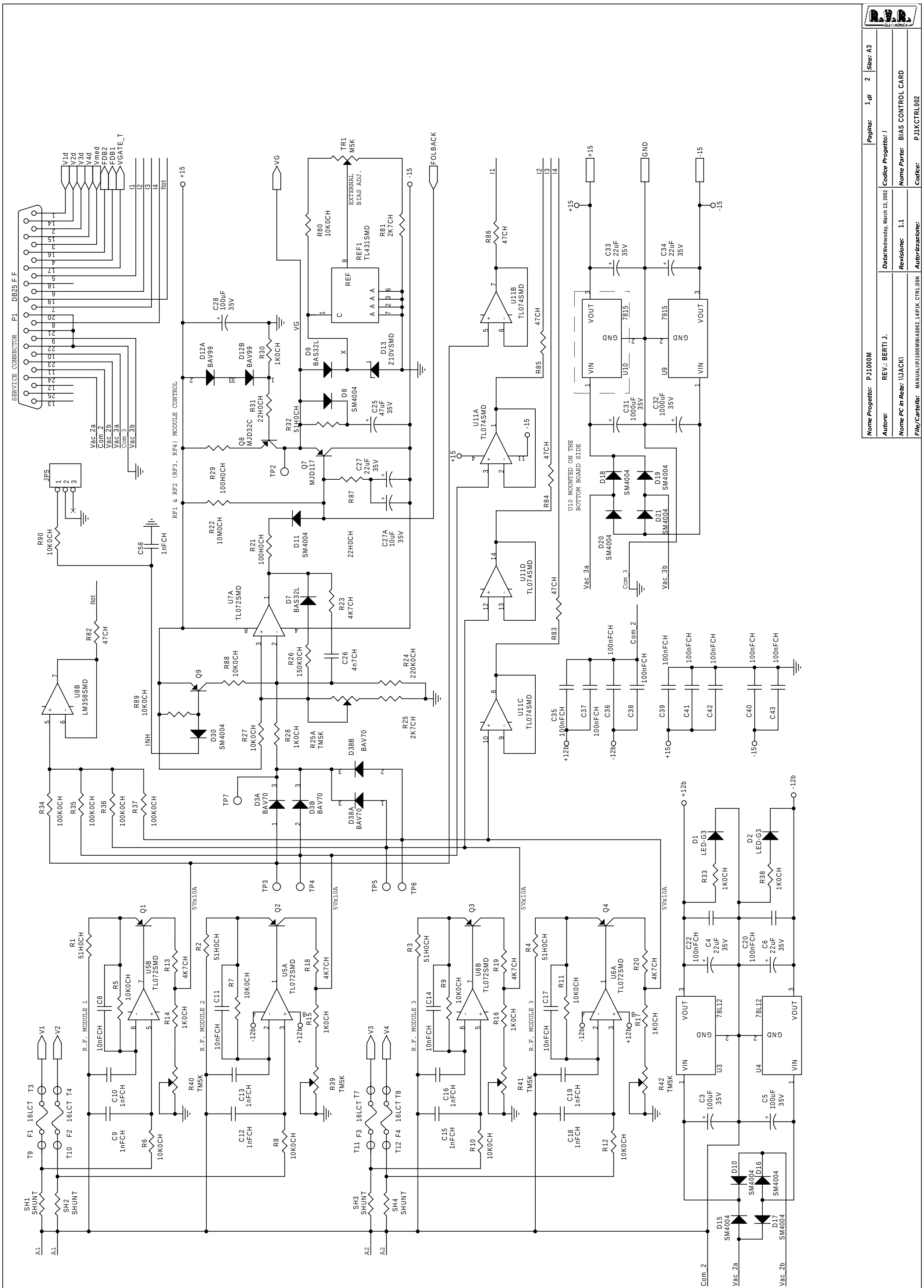
Item	Quantity	Reference	Part	DESCRIPTION	PART ORDER CODE
1	2	R3,R4	10/20W	RESISTOR 20W	
2	1	R5	120$	RESISTOR 5W	
3	2	R1,R2	10K 1%	RESISTOR 1/4W 1%	
4	1	C2	47UF	ELECTROLYTIC CAPACITOR	
5	1	C1	470UF	ELECTROLYTIC CAPACITOR	
6	2	M1,M2	MORS. CS 4	MORSETTIERA C.S.4 CONT.	
7	1	K1	JH2A	RELè MATHSUSHITA 2CA1CC	
8	1	D2	1N4001	SILICON DIODE 50V	
9	1	D1	1N4005	SILICON DIODE 600V	
10	1	D3	WL04	DIODE BRIDGE 1.5A	
11	1	Q1	BD681	NPN DARLINGTON	

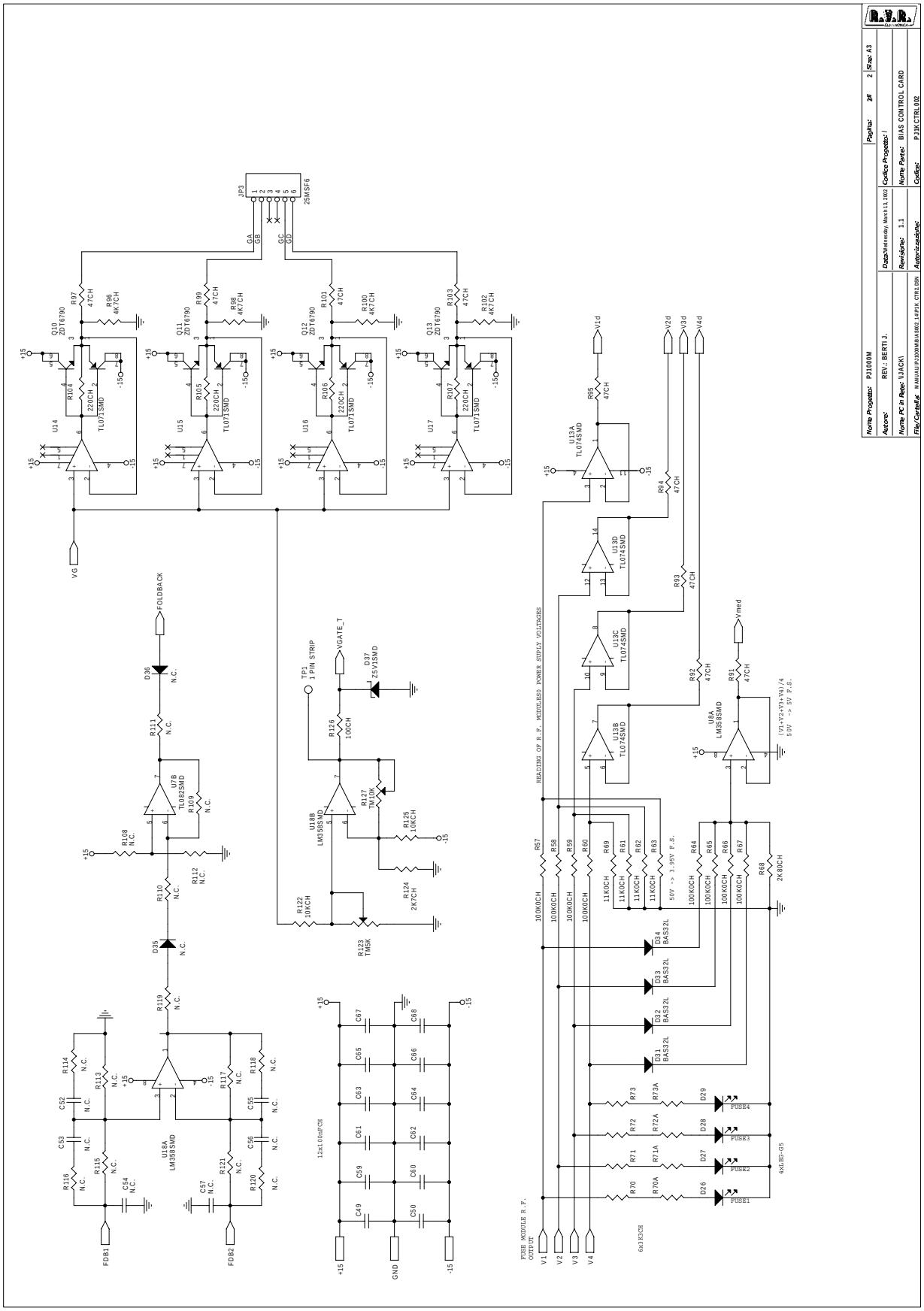
Pagina lasciata intenzionalmente in bianco

This page was intentionally left blank



Nome Progetto:	PJ 1000		Pagina: 1 di 1	Size: A3	
Autore:	REV.: BERTI J.	Data: 13/03/02	Codice Progetto: /		
Nome PC in Rete:	\\JACK\	Revisione: 1.1	Nome Parte:	BIAS CONTROL CARD	
File/Cartella: MANUALI\PJ1000M\BIAS002_14\LAYBIAS2.DWG		Autorizzazione:	Codice:	P1KCTRL002	
Scala: /	Materiale: /	Trattamento: /	Profilo: /		


BIAS CONTROL CARD
PJ1KCTRL002
Nome Progetto: PJ1000M
Autore: REV.: BERTI J.
Revisione: 1.1
SERVICE CONNECTOR P1 DB25 F F
RF1 & RF2 (RF3, RF4) MODULE CONTROL
EXTERNAL BIAS ADJ.
U10 MOUNTED ON THE BOTTOM BOARD SIDE


JP3
25MSF6
GA
GB
GC
GD
Q10 ZDT6790
Q11 ZDT6790
Q12 ZDT6790
Q13 ZDT6790
R97 47CH
R96 4K7CH
R99 47CH
R98 4K7CH
R101 47CH
R100 4K7CH
R103 47CH
R102 4K7CH
U14 TL071SMD
U15 TL071SMD
U16 TL071SMD
U17 TL071SMD
R104 220CH
R105 220CH
R106 220CH
R107 220CH
+15
-15
VG
FOLDBACK
D36 N.C.
R111 N.C.
U7B TL082SMD
R109 N.C.
R108 N.C.
R112 N.C.
R110 N.C.
D35 N.C.
R119 N.C.
TP1 1 PIN STRIP
VGATE_T
DZ7 Z5V1SMD
R126 100CH
U18B LM358SMD
R127 TM10K
R125 10KCH
R124 2K7CH
R122 10KCH
R123 TM5K
R114 N.C.
R113 N.C.
R117 N.C.
R118 N.C.
C52 N.C.
C55 N.C.
C53 N.C.
C56 N.C.
R116 N.C.
R115 N.C.
C54 N.C.
R121 N.C.
C57 N.C.
R120 N.C.
U18A LM358SMD
FDB1
FDB2
C67
C68
C65
C66
C63
C64
C61
C62
C59
C60
C49
C50
12x100nF/CH
GND
V1d
V2d
V3d
V4d
U13A TL074SMD
R95 47CH
R94 47CH
R93 47CH
R92 47CH
R91 47CH
U13D TL074SMD
U13C TL074SMD
U13B TL074SMD
U8A LM358SMD
Vmed
(V1+V2+V3+V4)/4
5.0V -> 5V F.S.
REGULING OF R.F. MODULES POWER SUPPLY VOLTAGES
R57 100K0CH
R58 100K0CH
R59 100K0CH
R60 100K0CH
R69 11K0CH
R61 11K0CH
R62 11K0CH
R63 11K0CH
5.0V -> 3.95V F.S.
R64 100K0CH
R65 100K0CH
R66 100K0CH
R67 100K0CH
R68 2K80CH
D34 BAS32L
D33 BAS32L
D32 BAS32L
D31 BAS32L
R73 R73A
R72 R72A
R71 R71A
R70 R70A
D29 FUSE4
D28 FUSE3
D27 FUSE2
D26 FUSE1
4xLED-G5
6x47K/CH
FUSE MODULE R.F. OUTPUT
V1
V2
V3
V4
Nome Progetto: PJ1000M
Pagina: 2/f
Size: A3
Autore: REV. - BERTI J.
Data: Wednesday, March 13, 2002
Codice Progetto: /
Nome PC in Rete: %JACK\
Revisione: 1.1
Nome Parte: BIAS CONTROL CARD
File/Cartella: MANUALI\PJ1000M\BIAS002.14PIK.CTRL.DSN
Autorizzazione:
Codice: PJ1K CTRL 002

Scheda di controllo moduli RF Revised: August 27, 1998
P1K-CTRL ver. 1.1 Revision: 2
Bill Of Materials October 20, 1999 8:43:19 Page 1

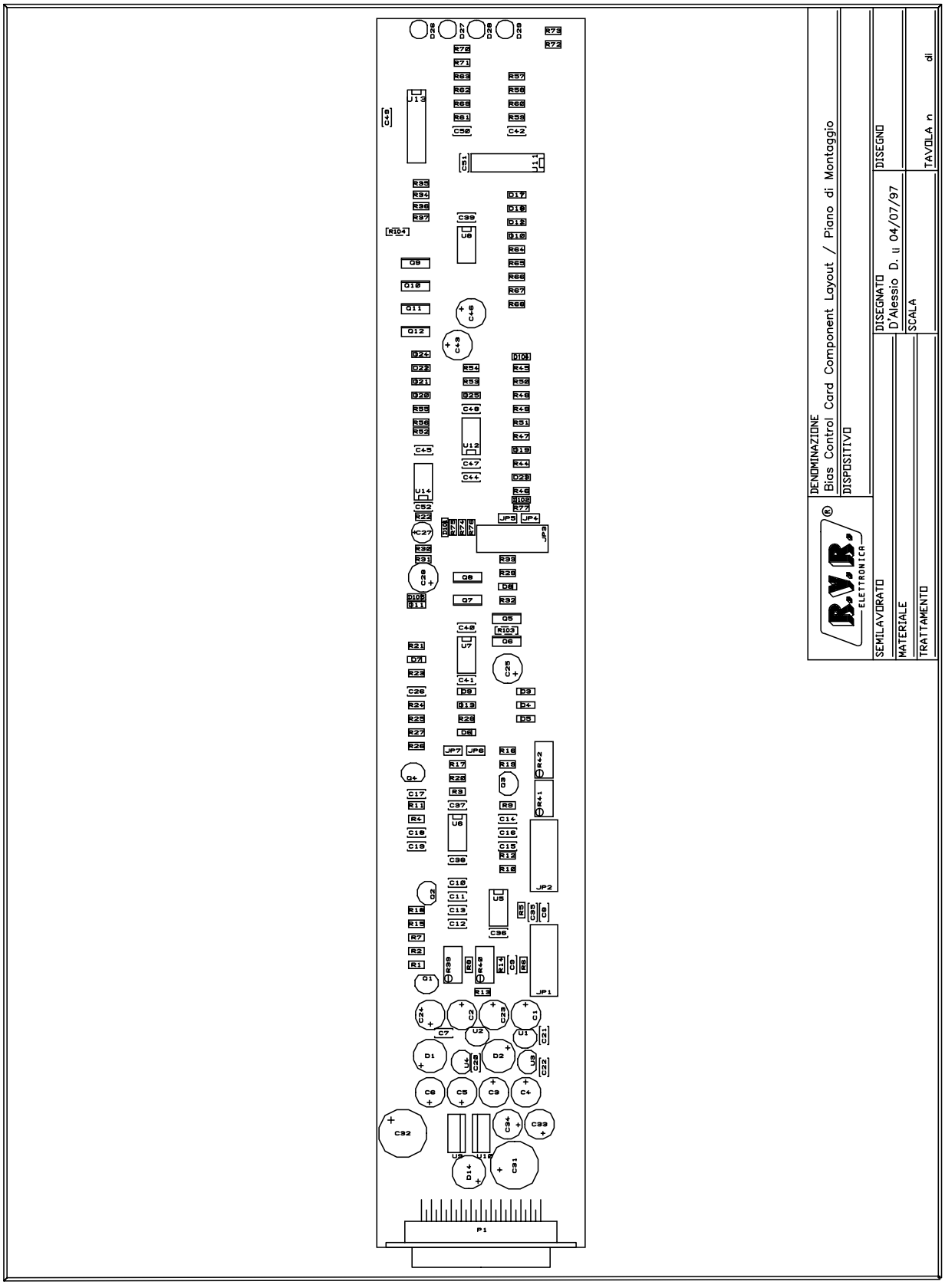
Item	Quantity	Reference	Part	DESCRIPTION	PART ORDER CDE
1	2	R31,R87	22H0CH	CHIP RESISTOR 1%	
2	14	R82,R83,R84,R85,R86,R91, R92,R93,R94,R95,R97,R99, R101,R103	47CH	CHIP RESISTOR 1/4W	
3	5	R1,R2,R3,R4,R32	51H0CH	CHIP RESISTOR 1%	
4	2	R21,R29	100H0CH	CHIP RESISTOR 1%	
5	1	R126	100CH	CHIP RESISTOR	
6	4	R104,R105,R106,R107	220CH	CHIP RESISTOR	
7	6	R14,R15,R16,R17,R28,R30,	1K0CH	CHIP RESISTOR 1%	
8	3	R25,R81,R124	2K74CH	CHIP RESISTOR 1%	
9	1	R68	2K80CH	CHIP RESISTOR 1%	
10	8	R70A,R70,R71A,R71,R72A, R72,R73A,R73	3K32CH	CHIP RESISTOR 1%	
11	4	R96,R98,R100,R102	4K7CH	CHIP RESISTOR	
12	5	R13,R18,R19,R20,R23	4K75CH	CHIP RESISTOR 1%	
13	13	R5,R6,R7,R8,R9,R10,R11, R12,R27,R80,R88,R89,R90	10K0CH	CHIP RESISTOR 1%	
14	2	R122,R125	10KCH	CHIP RESISTOR	
15	4	R61,R62,R63,R69	11K0CH	CHIP RESISTOR 1%	
16	12	R34,R35,R36,R37,R57,R58, R59,R60,R64,R65,R66,R67	100K0CH	CHIP RESISTOR 1%	
17	1	R26	150K0CH	CHIP RESISTOR 1%	
18	1	R24	221K0CH	CHIP RESISTOR 1%	
19	1	R22	10M0CH	CHIP RESISTOR 1%	
20	1	TR1	M5K	TRIMMER MULTIGIRI	
21	6	R25A,R39,R40,R41,R42, R123	TM5K	TRIMM. MULTIGIRI	
22	1	R127	TM10K	TRIMM. MULTIGIRI	
23	9	C9,C10,C12,C13,C15,C16, C18,C19,C58	1NFCH	CERAMIC CHIP CAPACITOR	

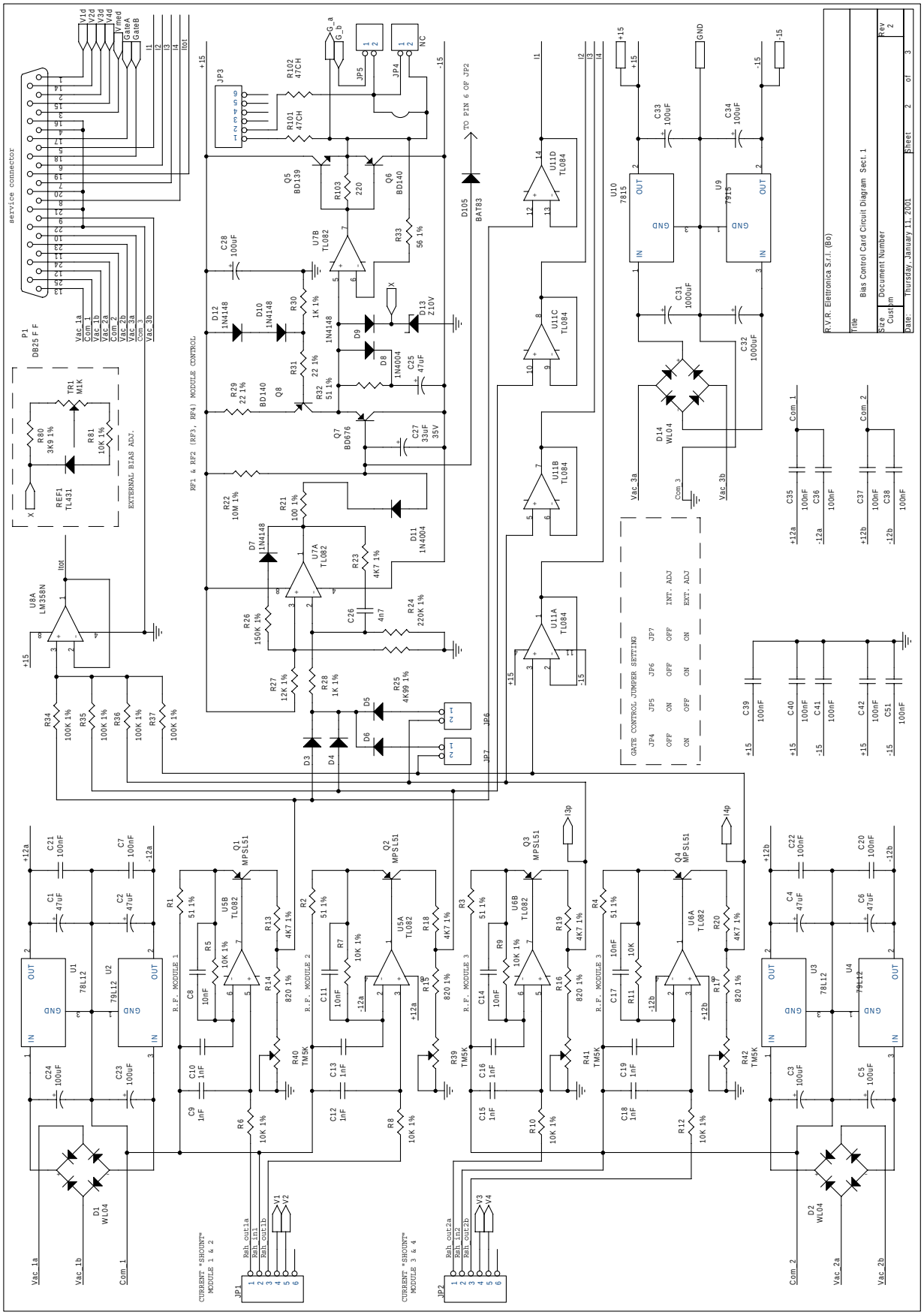
Scheda di controllo moduli RF Revised: August 27, 1998
P1K-CTRL ver. 1.1 Revision: 2
Bill Of Materials October 20, 1999 8:43:19 Page 2

Item	Quantity	Reference	Part	DESCRIPTION	PART ORDER CDE
24	1	C26	4N7CH	CERAMIC CHIP CAPACITOR	
25	4	C8,C11,C14,C17	10NFCH	CERAMIC CHIP CAPACITOR	
26	23	C20,C22,C35,C36,C37,C38,C39,C40,C41,C42,C43,C49,C50,C59,C60,C61,C62,C63,C64,C65,C66,C67,C68	100NFCH	CERAMIC CHIP CAPACITOR	
27	1	C27A	10UF	ELECTROLYTIC CAPACITOR	
28	5	C4,C6,C27,C33,C34	22UF	ELECTROLYTIC CAPACITOR	
29	1	C25	47UF	ELECTROLYTIC CAPACITOR	
30	3	C3,C5,C28	100UF	ELECTROLYTIC CAPACITOR	
31	2	C31,C32	1000UF	ELECTROLYTIC CAPACITOR	
32	9	TP1,TP2,TP3,TP4,TP5,TP6,TP7,TP8,TP9	1 PIN STRIP	STRIP M 1 PIN	
33	1	JP5	3 PIN STRIP	STRIP M P 2.54 3 PIN	
34	1	JP3	25MSF6	MINIMODUL CONNECTOR 2.5MM 6P	
35	4	SH1,SH2,SH3,SH4	SHUNT	SHUNT CURRENT	
36	1	P1	DB25 F F	CONN. F 25 FILTRATO MURATA	
37	6	D7,D9,D31,D32,D33,D34	BAS32L	CHIP SILICON DIODE	
38	2	D3,D38	BAV70	DUAL COMM. SWITH. CAT. DIODE	
39	1	D12	BAV99	DUAL SERIES. SWITH. DIODE	
40	11	D8,D10,D11,D15,D16,D17,D18,D19,D20,D21,D30	SM4004	SILICON DIODE 400V SMD	
41	2	D1,D2	LED-G3	GREEN LED DIODE 3mm	
42	4	D26,D27,D28,D29	LED-G5	GREEN LED DIODE	
43	1	D37	Z5V1SMD	ZENER DIODE 5.1V 0.4W SMD	
44	1	D13	Z10VSMD	ZENER DIODE 10V 0.4W SMD	
45	1	U3	78L12	POS. STABILIZER 100mA	
46	1	U4	79L12	NEG. STABILIZER 100mA	
47	1	U10	7815	POS. STABILIZER 1A	

Scheda di controllo moduli RF Revised: August 27, 1998
P1K-CTRL ver. 1.1 Revision: 2
Bill Of Materials October 20, 1999 8:43:19 Page 3

Item	Quantity	Reference	Part	DESCRIPTION	PART ORDER CDE
48	1	U9	7915	NEG. STABILIZER 1A	
49	1	REF1	TL431SMD	VOLT. PREC. REFER. SMD	
50	5	Q1,Q2,Q3,Q4,Q9	MMBT5401LT1	PNP HIGH VOLT. TRANSISTOR	
51	1	Q7	MJD117	PNP BIPOLAR POWER TRANS.	
52	1	Q8	MJD32C	PNP BIPOLAR POWER TRANS.	
53	4	Q10,Q11,Q12,Q13	ZDT6790	COMPLEM. MED. PWR HG. TRANS.	
54	2	U8,U18	LM358SMD	DUOBLE OP. AMP. SMD	
55	3	U5,U6,U7	TL082SMD	DOUBLE OP. AMP. SMD	
56	4	U14,U15,U16,U17	TL071SMD	SINGLE OP. AMP.	
57	2	U11,U13	TL084SMD	QUAD OP. AMP. SMD	
58	12	T1,T2,T3,T4,T5,T6,T7,T8,T9,T10,T11,T12	TORRETTA	TORRETTA ESAGONALE	
59	22	D35,D36,C52,C53,C54,C55,C56,C57,R108,R109,R110,R111,R112,R113,R114,R115,R116,R117,R118,R119,R120,R121	N.C.	NOT CONNECTED	
60	2	R33,R38	1K0CH	CHIP RESISTOR	
61	4	F1,F2,F3,F4	16LCT	BOLT-IN MOUNTED FUSES 16LCT	

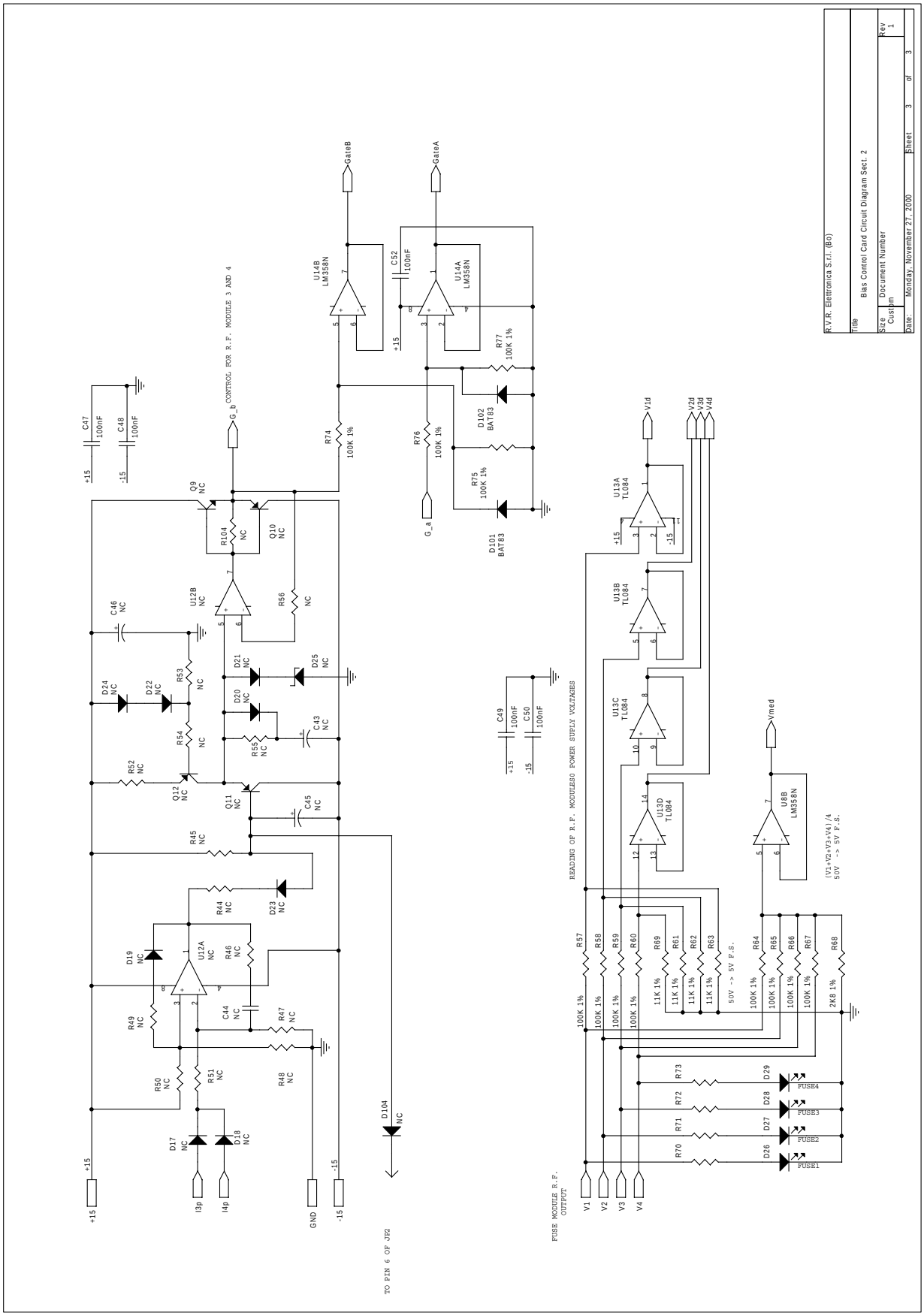

DENOMINAZIONE
Bias Control Card Component Layout / Piano di Montaggio
DISPOSITIVO
DISEGNATO
D'Alessio D. u 04/07/97
DISEGNO
SCALA
TAVOLA n
di
SEMILAVORATO
MATERIALE
TRATTAMENTO
R.V.R. ELETTRONICA


service connector
P1 DB25 F F
TR1 M1K
R80 3K9 1%
R81 10K 1%
REF1 TL431
EXTERNAL BIAS ADJ.
RF1 & RF2 (RF3, RF4) MODULE CONTROL
U8A LM358N
U7A TL082
U7B TL082
U11A TL084
U11B TL084
U11C TL084
U11D TL084
U10 7815
U9 7915
D14 WL04
D1 WL04
D2 WL04
U1 78L12
U2 79L12
U3 78L12
U4 79L12
Q1 MPSL51
Q2 MPSL51
Q3 MPSL51
Q4 MPSL51
Q5 BD139
Q6 BD140
Q7 BD676
Q8 BD140
GATE CONTROL JUMPER SETTING
R.V.R. Elettronica S.r.l. (Bo)
Bias Control Card Circuit Diagram Sect. 1
Document Number
Thursday, January 11, 2001

Bias Control Card Circuit Diagram Sect.1 Bill Of Materials Page 1

Item	Quantity	Reference	Part	DESCRIPTION	PART ORDER CODE
1	2	R29,R31	22 1%	RESISTOR 1/4W 1%	
2	2	R101,R102	47CH	CHIP RESISTOR 1/4W	
3	5	R1,R2,R3,R4,R32	51 1%	RESISTOR 1/4W 1%	
4	1	R33	56 1%	RESISTOR 1/4W 1%	
5	1	R21	100 1%	RESISTOR 1/4W 1%	
6	1	R103	220	RESISTOR 1/4W 5%	
7	4	R14,R15,R16,R17	820 1%	RESISTOR 1/4W 1%	
8	2	R28,R30	1K 1%	RESISTOR 1/4W 1%	
9	1	R80	3K9 1%	RESISTOR 1/4W 1%	
10	5	R13,R18,R19,R20,R23	4K7 1%	RESISTOR 1/4W 1%	
11	1	R25	4K99 1%	RESISTOR 1/4W 1%	
12	8	R5,R6,R7,R8,R9,R10, R12,R81	10K 1%	RESISTOR 1/4W 1%	
13	1	R11	10K	RESISTOR 1/4W 5%	
14	1	R27	12K 1%	RESISTOR 1/4W 1%	
15	4	R34,R35,R36,R37	100K 1%	RESISTOR 1/4W 1%	
16	1	R26	150K 1%	RESISTOR 1/4W 1%	
17	1	R24	220K 1%	RESISTOR 1/4W 1%	
18	1	R22	10M 1%	RESISTOR 1/4W 1%	
19	1	TR1	M1K	TRIMMER MULTIGIRI	
20	4	R39,R40,R41,R42	TM5K	TRIM.MULTIGIRI REG.VERT	
21	8	C9,C10,C12,C13,C15, C16, C18,C19	1NF	CERAMIC CAPACITOR	
22	1	C26	4N7	CERAMIC CAPACITOR	
23	4	C8,C11,C14,C17	10NF	CERAMIC CAPACITOR	
24	13	C7,C20,C21,C22,C35, C36,C37,C38,C39,C40,C41, C42,C51	100NF	CERAMIC CAPACITOR	
25	1	C27	33UF	ELECTROLYTIC CAPACITOR	
26	5	C1,C2,C4,C6,C25	47UF	ELECTROLYTIC CAPACITOR	
27	7	C3,C5,C23,C24,C28,C33, C34	100UF	ELECTROLYTIC CAPACITOR	
28	2	C31,C32	1000UF	ELECTROLYTIC CAPACITOR	
29	3	JP5,JP6,JP7	2 PIN STRIP	STRIP M P 2.54 2 PIN	
30	3	JP1,JP2,JP3	25MSF6	MINIMODUL CONN.2.5MM 6P	
31	1	P1	DB25 F F	CONN.F 25 FILTR.MURATA	
32	8	D3,D4,D5,D6,D7,D9,D10, D12	1N4148	SILICON DIODE	

33	1	D105	BAT83	HOT CARRIER DIODE
34	2	D8,D11	1N4004	SILICON DIODE 400V
35	3	D1,D2,D14	WL04	DIODE BRIDGE 1.5A
36	1	D13	Z10V	ZENER DIODE 10V 0.4W
37	2	U1,U3	78L12	POS. STABILIZER 100mA
38	2	U2,U4	79L12	NEG. STABILIZER 100mA
39	1	U10	7815	POS. STABILIZER 1A
40	1	U9	7915	NEG. STABILIZER 1A
41	1	REF1	TL431	VOLTAGE PRECISION REFERENCE
42	4	Q1,Q2,Q3,Q4	MPSL51	PNP HIGH VOLT. AMP. TRANS.
43	1	Q5	BD139	NPN TRANSISTOR
44	2	Q6,Q8	BD140	PNP TRANSISTOR
45	1	Q7	BD676	PNP DARLINGTON
46	1	U8	LM358N	DOUBLE OP. AMP.
47	3	U5,U6,U7	TL082	DOUBLE OP. AMP.
48	1	U11	TL084	QUAD OP. AMP.
49	1	JP4	N.C.	NON CONNESSO


R.V.R. Elettronica S.r.l. (Bo)
Title
Bias Control Card Circuit Diagram Sect. 2
Size
Custom
Document Number
Rev
1
Date:
Monday, November 27, 2000
Sheet
3
of
3
GateB
GateA
U14B LM358N
U14A LM358N
C52 100nF
R77 100K 1%
R74 100K 1%
R76 100K 1%
R75 100K 1%
D102 BAT83
D101 BAT83
G_b
G_a
CONTROL FOR R.F. MODULE 3 AND 4
C47 100nF
C48 100nF
+15
-15
Q9 NC
Q10 NC
R104 NC
U12B NC
R56 NC
C46 NC
D21 NC
D25 NC
D20 NC
D24 NC
D22 NC
R53 NC
R54 NC
R55 NC
C43 NC
R52 NC
Q12 NC
Q11 NC
C45 NC
R45 NC
R44 NC
D23 NC
D19 NC
U12A NC
R46 NC
R49 NC
C44 NC
R47 NC
R50 NC
R51 NC
R48 NC
D17 NC
D18 NC
D104 NC
I3p
I4p
GND
TO PIN 6 OF JP2
C49 100nF
C50 100nF
READING OF R.F. MODULES POWER SUPLY VOLTAGES
V1d
V2d
V3d
V4d
U13A TL084
U13B TL084
U13C TL084
U13D TL084
U8B LM358N
Vmed
(V1+V2+V3+V4)/4
50V -> 5V F.S.
R57 100K 1%
R58 100K 1%
R59 100K 1%
R60 100K 1%
R69 11K 1%
R61 11K 1%
R62 11K 1%
R63 11K 1%
R64 100K 1%
R65 100K 1%
R66 100K 1%
R67 100K 1%
R68 2K8 1%
R73
R72
R71
R70
D29
D28
D27
D26
FUSE4
FUSE3
FUSE2
FUSE1
FUSE MODULE R.F. OUTPUT
V1
V2
V3
V4

Bias Control Card Sect. 2 Bill Of Materials Page 1

Item	Quantity	Reference	Part	DESCRIPTION	PART ORDER C0DE
1	34	Q9,Q10,Q11,U12,Q12,D18, D20,D21,D22,D24,D25,C43, C44,R45,R47,R48,R52,R53, R54,R55,R56,R104,D104,U12, D17,D19,D23,R44,C45,R46, R49,R50,R51,C46	N.C.	NON CONNESSO	
2	5	C47,C48,C49,C50,C52	100NF	CERAMIC CAPACITOR	
3	4	D26,D27,D28,D29	LED-G5	GREEN LED DIODE	
4	2	D101,D102	BAT83	HOT CARRIER DIODE	
5	12	R57,R58,R59,R60,R64, R65, R66,R67,R74,R75, R76,R77	100K 1%	RESISTOR 1/4W 1%	
6	4	R61,R62,R63,R69	11K 1%	RESISTOR 1/4W 1%	
7	1	R68	2K8 1%	RESISTOR 1/4W 1%	
8	4	R70,R71,R72,R73	12K*	RESISTOR 1/2W 5%	
9	2	U8,U14	LM358N	DOUBLE OP. AMP.	
10	1	U13	TL084	QUAD OP. AMP.	