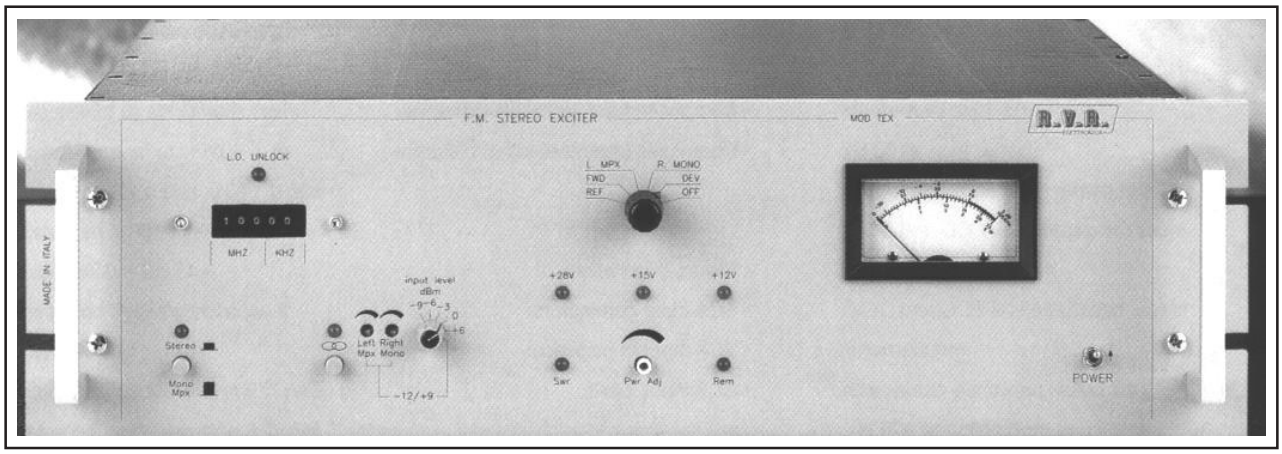
TEX150



User Manual

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

TEX150 - User Manual
Version 4.0

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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.

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1. Preliminary Instructions

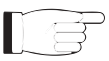
This manual is designed to provide a general guide to skilled and qualified personnel, who are aware of the dangers that may arise when handling electric and electronic circuits.

It does not aim to provide a complete description of all the safety precautions that must be observed by people who use this or similar equipment.

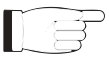
The installation, operation, maintenance and use of this piece of equipment involve risks both for people and the equipment itself, which must be handled only by experienced technicians.

R.V.R. Elettronica SpA does not assume responsibility for injuries to persons or damage to items caused by improper use or incorrect usage procedures, whether the users are experienced or not.

Users should observe local regulations and fire-prevention rules while installing and using this equipment.



WARNING: always disconnect the power before opening covers or removing any part of the equipment.
Take appropriate earthing measures to discharge the condensers and high voltage points before doing any maintenance work.



WARNING: this equipment may radiate radio-frequency energy, and if it is not installed according to the instructions, may cause troublesome interference to radio communications.
Operating this equipment in a residential environment may give rise to radio disturbance; if so, the user may be asked to take appropriate counter measures.

R.V.R. Elettronica SpA reserves the right to make modifications to the design and technical specifications of the equipment, and to update this manual without notice.

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2. Warranty

The guarantee, which is for 12 (twelve) months, is valid for any R.V.R. Elettronica product.

On components such as tubes for final amplifiers, the manufacturer's guarantee applies.

R.V.R. Elettronica extends all transferable original guarantees to its own products. To ensure that servicing is carried out properly and as fast as possible, the work shall be handled by R.V.R. Elettronica; any claims should be sent directly to R.V.R. Elettronica, in accordance with the defined procedures.

The warranty does not include:

1 damage while the equipment is being shipped to R.V.R. for repairs;

2 any unauthorized modification or repair;

3 accidental damage, or damage not due to defects in the equipment;

4 nominal damage not accidental;

5 shipping the equipment and insuring it, and replacement of parts or units.

Any damage to the equipment caused during shipment must be reported to the transporters and notified in writing on the forwarding receipt.

Any difference or damage discovered after delivery must be reported to R.V.R. Elettronica within 5 (five) days from the delivery date.

To take advantage of the guarantee, adopt the following procedure:

1 Contact the retailer or dealer where you bought the equipment; describe the problem or fault to check if there is a simple solution.

Retailers and Distributors can provide full information on the problems that occur most frequently; they can normally repair the equipment much faster than the manufacturer

2 If your dealer cannot help you, contact R.V.R. Elettronica and describe the problem to them; if necessary, you will be sent authorization with the necessary instructions;

3 When you have received authorisation, return the equipment carriage paid to the address specified.

Pack it carefully, if possible in the original packing, and seal the package.

Do not return the machine without prior authorization, otherwise it may be returned to you

4 Quote the machine's type, model and serial number; attach a written technical diagnosis listing all the problems and faults encountered, and enclose a copy of the invoice.

Replacement of parts under guarantee or spare parts can be ordered from the following address:

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

quoting type, model and serial number of the device.

3. First Aid

Personnel involved in the installation, use, and maintenance of the equipment must be familiar with the theory and practice of first aid.

3.1 Treating electric shocks

3.1.1 If the victim is inconscious

Follow the first aid principles described below.

- Lay the victim down on his back on a rigid surface
- Free the respiratory tracts by raising the neck and pushing the forehead back (Figure 1).
- If necessary, check the breathing of the victim opening his mouth.
- If the victim is not breathing, start artificial respiration immediately (Figure 2): incline the head, close the nostrils, apply your mouth to the victim's and make four fast respirations.

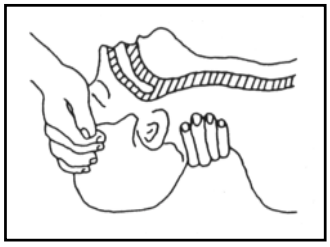


Figure 1

Figure 2

- Check the heart beat (Figure 3); if there is none, start a cardiac massage immediately (Figure 4) pressing the sternum approximately at the centre of the chest (Figure 5).

Figure 3

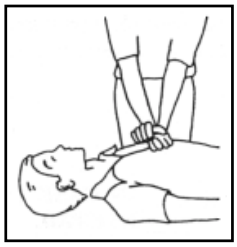


Figure 4

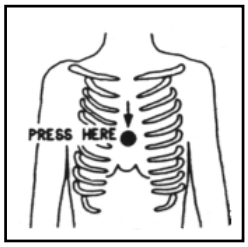


Figure 5

- If there is just one person providing first aid, he must adopt a rhythm of 15 compressions and 2 fast respirations alternately.
- If there are two persons, the rhythm must be 1 respiration and 5 compressions alternately

- Do not interrupt the cardiac massage during the artificial respiration.
- Call a doctor as soon as possible

3.1.2 If the victim is conscious

- Cover the victim with a blanket
- Keep him calm.
- Loosen the victim's clothes and keep him lying down
- Call a doctor as soon as possible

3.2 Treating electric burns

3.2.1 Large-scale burns and serious cuts

- Cover the area concerned with a sheet or a clean cloth.
- Do not break the blisters; remove any fabric and parts of clothing that may be attached to the skin; apply a suitable ointment.
- Treat the victim depending on the type of accident.
- Take the victim to hospital as soon as possible.
- If the arms and legs are injured, keep them raised.

If no medical help is available within an hour and the victim is conscious and has not retched, administer a liquid solution of salt and bicarbonate of soda: 1 teaspoonful of salt to every 250ml of water.
Get the victim to slowly drink half a glass of the solution, four times, over a period of 15 minutes.
Stop the treatment if the victim starts to retch.

Do not administer alcoholics!

3.2.2 Less serious burns

- Apply cold gauze compresses (not iced) using a clean cloth (i.e. as clean as possible).
- Do not break any blisters; remove any fabric and parts of clothing that may be attached to the skin; apply a suitable ointment.
- If necessary, dress the victim in clean dry clothes.
- Treat the victim depending on the type of accident.
- Take the victim to hospital as soon as possible.
- If the arms and legs are injured, keep them raised.

4. General Description

The TEX150 is an exciter working in the 87.5 to 108 MHz band, programmable in steps of 10KHz. Its power output is continuously adjustable from 10W to 100W into a 50 Ohm load and it's contained in a 19" rack mountable 3HE case.

The power output control, audio input level control and analog meter for the measurement of operating parameters, are all mounted on the front panel.

The line power, audio input, RF output and telemetry (optional) connectors are mounted on the rear panel.

This device is present in two version: the mono (TEX150) and the stereo version (TEX150/S).

The TEX150 incorporates a stereo coder which guarantees excellent stereo separation together with low harmonic distortion (only for Stereo version). It also accepts two SCA signals.

A front panel switch allows stereo operation (only for stereo version) or "mono/ mpx" operation which excludes the stereo encoder and uses the "right" input as the mono input and the "left" input as the wideband composite input.

The specification features low audio distortion and intermodulation figures (typically 0.03%) and a high signal-to-noise ratio (typically -80 dB).

A voltage selector on the transformer primary allows a variety of supply voltages to be used.

The operating parameters of the exciter can be monitored using the analog multimeter situated on the front panel. The parameter to be measured is selected by the rotary selector. The frequency control allows frequencies to be selected in steps of 10KHz.

Three red alarm leds indicate VCO unlock , excess VSWR on the output and the excess of temperature, and the shutdown condition, programmed by a remote command. Three green leds indicate the presence of +12V, +15V and +28V voltages which are used to power the various cards inside the exciter.

A selector allows selection between Mono/MPX and Stereo functions and another selector is provided to choose the level of the input signal. Trimmers are provided for adjustment of left and right channels and a switch allows the stereo subcarrier to be enabled or disabled.

The operating frequency is governed by a thermally-compensated, reference oscillator working within a phase-locked loop (PLL). The TEX150 reaches frequency lock within a maximum of 30 seconds.

The control circuits allow automatic control of output power(internal and external), maintaining the chosen power level across the entire operating band. Furthermore another circuit protects the final stage against excessive VSWR or short circuits and excessive temperature.

Then, there are other protection circuits that allow to limit the maximum output power and to protect the equipment against a power supply's overvoltage.

The RF amplifier is a wide-band design and guarantees an adjustable power output of 10 to 150 watts across the entire band.

A low-pass filter enables the TEX150 to be used as a low power transmitter, connected directly to an antenna.

The TEX150 is designed in a modular way: the different functionalities are performed by modules that are then interconnected either directly (the male connector of one module plugs in the the female connector of another one) or by means of connectors-ended cables. This design allows easy servicing and replacement of the single modules.

5. Quick Start

This chapter gives a concise view of the points that are necessary for the installation of the device. If any item is not completely clear, for example when you use the exciter for the first time, we strongly suggest to read throughly the manual.

5.1 Preparation

Unpack the exciter and before any other operation check the unit for any shipping damage and check that all the controls and connectors on the front and rear panels are in good conditions.

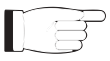
Check the mains voltage selector on the rear panel: the selected value is indicated by an arrow. If required, extract the selector block levering with a little screwdriver.

Rotate the block until the correct printed value corresponds with the arrow, then reinsert it.

The current capacity of the fuses are are the follows:

220-240V	10A 5X20
100-120V	12A 5X20
P.A. FUSE	6A 10X38
FUSE	16A 10X38

Now ensure that the PWR ADJ control is rotated fully anti-clockwise, using a small screwdriver.



NOTE: The control is a ten-turn potentiometer so care should be taken to verify the minimum position.

Units are usually shipped with this control already at minimum.

NOTE: When the unit is switched on with the control at its minimum position, power output is about 10W.

Connect a dummy load with a power rating of at least 150 W continuous to the RF output, situated on the rear panel of the unit. It is advisable to connect a bypass wattmeter in series with this load in order to verify the accuracy of the unit's own internal wattmeter, as shown in the figure below:

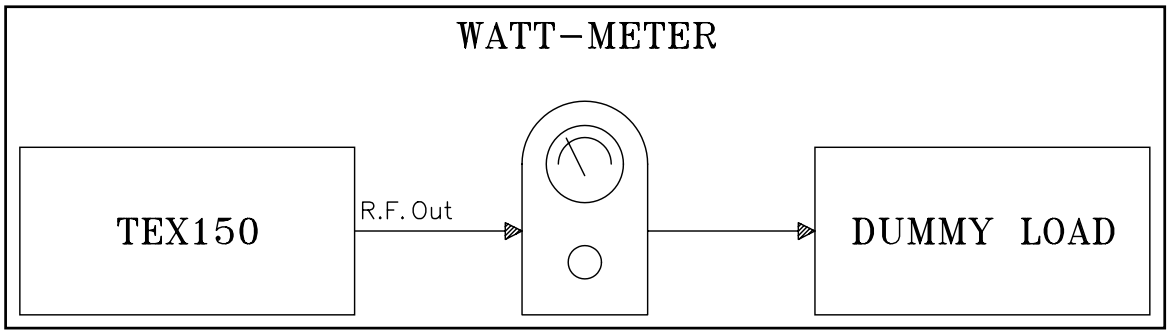


figure 5.1

Connect a switch, via a cable, to the REMOTE 3 connector on the rear panel so that the switch is able to short the central conductor to its screen. Leave the switch in the short-circuit position.

Verify that TEX150 is switch off.

Connect line power to the unit via the VDE socket.

NOTE: This device shall be correctly connected to ground. Correct grounding is essential both for safety and to reach the rated performances.

5.2 Operations

Switch the power On switc to the ON position and check that the three green internal voltage led and the red UNLOCK led are all on.

Select the desired operating frequency using the corresponding selector. The red UNLOCK led should switch off within 30 seconds, indicating that the oscillator has locked onto the operating frequency. The frequency selector comprises five figures of which the three to the left of the decimal point represent (from left to right) hundreds of MHz, tens of MHz and MHz. The two figures to the right of the decimal point represent (from left to right) hundreds of KHz and tens of KHz.

Eg: 098.45 = ninety eight megahertz and four hundred and fifty Kilohertz.

Eg: 103.94 = one hundred and three Megahertz and nine hundred and forty Kilohertz.

Furthermore, if a frequency is selected beyond the two limits of the 87.5-108 MHz band, the amplifier will continue to work even through the displayed frequency no longer corresponds to the operating frequency of the unit.

NOTE: Transmitting outside the legal band (87.5-108 MHz) is an offence and may lead to prosecution.

After having verified that the UNLOCK led is switched off and that the unit is therefore locked to the selected operating frequency, switch the switch connected to the REMOTE connector so as to remove the short circuit between the central conductor and ground. The RF output is now enabled and should correspond to a power level of about 10W. To check this reading, select FWD on the meter selector and read the power from the 200 W FSD scale.

Using a small screwdriver, rotate the PWR ADJ control clockwise; the power output should increase progressively to a maximum of 150W. Check the value with the bypass wattmeter which should be within ±10%.

With the power output at 150W, select a new operating frequency well away from the current value.

Eg. 107 MHz: the UNLOCK led should switch on and the power output should fall to zero at the same time. Only when the UNLOCK led switches off (unit locked to new frequency) should the power output resume its previous level.

Automatic power control check

It is advisable to start this procedure with the operating frequency set to 87.50 MHz. When locked to this frequency, the PWR ADJ control should be adjusted for an output power of 50 W.

Now, with no further adjustment of the PWR ADJ control, change the operating frequency in steps of 4-5 MHz, ensuring that the output power remains constant at 50 W.

SWR alarm check

For this test, adjust the PWR ADJ control for a power output of 10W. Disconnect the output load and check that the S.W.R. led switches on. Now adjust the PWR ADJ control to check that the unit switches on again at a reflected power level of about 20 W.

Turn the PWR ADJ control for maximum power and check that the reflected power does not exceed 50 W.

Re-connect the output load and check that REF falls to zero, the SWR led switches off and that PWR FWD jumps to 150 W.

Now short circuit the central conductor of the REMOTE input to ground and the output power should drop instantly to zero. Removing the short should cause the power output to return, gradually, to its previous level.

Verifica misuratore di deviazione

The maximum input sensitivity is determined by the position of the INPUT LEVEL control. In the -12/+9 position, the sensitivity will depend on the L/mpx and R/mono controls.

- Put the selector in the DEV position.
- Connect a low-distortion audio generator to the LEFT and RIGHT inputs.
- Inject a 400 Hz tone at a level of 0dBm (775mV$_{RMS}$ = 2.2V$_{pp}$).
- Put the INPUT LEVEL control in the 0dBm position.
- Select stereo mode (the corresponding led will switch on).

Enable the PILOT using the relevant switch (the green led will switch on). With the selector in the R/MONO position, check that the reading is 0b, measured on the +3dB FSD scale. Repeat the operation for the L/MPX. Check that the deviation reading is 100%.

5.3 Operation using the Stereo Encoder (Only for Stereo ver.)

Inject the pilot tone checking that the corresponding led switches on, than select STEREO operation confirmed by the corresponding led.

Select the sensitivity of the audio LEFT/RIGHT inputs to match the signal level being supplied to the unit. Connect the signal source to the LEFT/RIGHT inputs (these are balanced inputs).

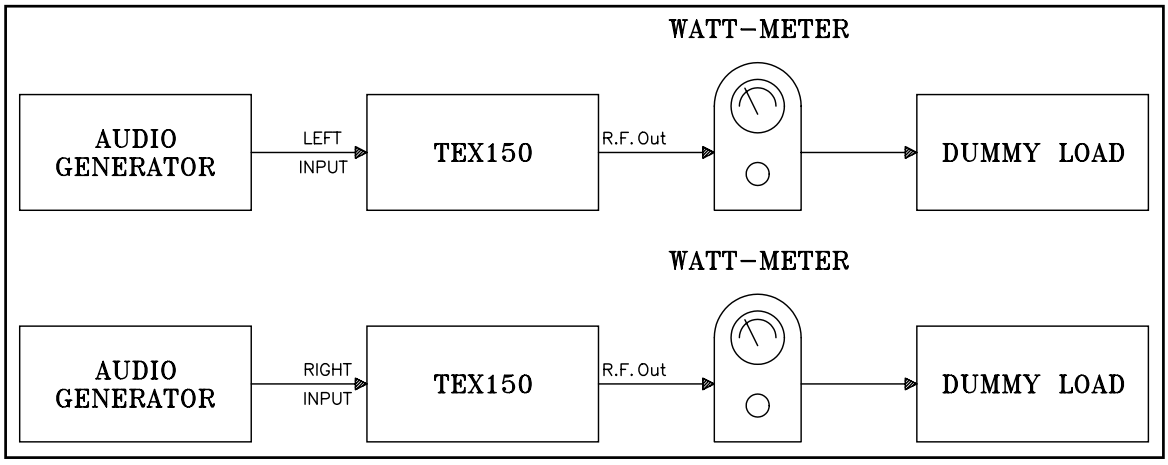


figure 5.2

Check on the internal analog meter that the L/R signal levels are those expected, selecting the desired input with the corresponding control. The effective modulation level may be measured on the analog multimeter by selecting DEV with the corresponding selector.

5.4 Connection of an External Stereophonic Source

Connect the stereo source's output to the MPX input of the unit.

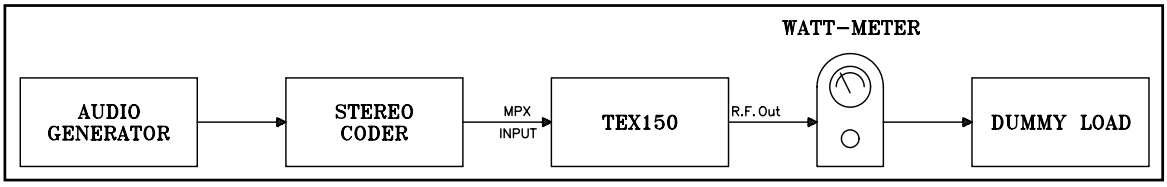


figure 5.3

Adjust the stereo encoder to obtain just the 19 KHz subcarrier output and ensure the total absence of signals on the left and right inputs of the encoder.

Adjust the output level of the encoder to obtain the correct level as displayed on the analog meter of the TEX150. Inject audio signals into the left and right inputs of the encoder and adjust the sensitivity of the input to obtain a peak reading of MAX=75KHz with both channels enabled.

5.5 Monophonic Transmission

Connect the signal source (audio mixer, receiver, compressor etc.) to the MONO input (this input is unbalanced), and select the desired INPUT LEVEL.

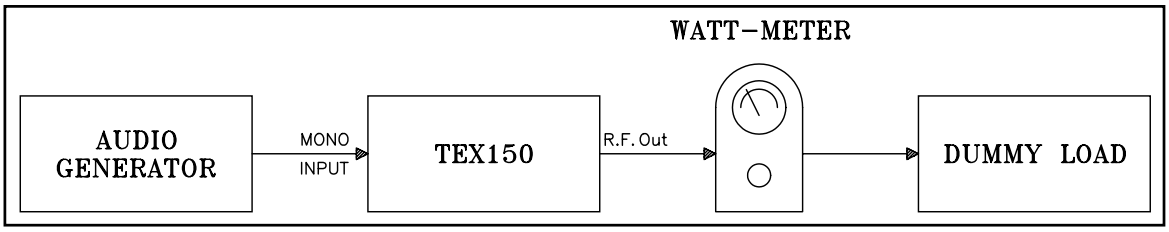


figure 5.4

Adjust the signal level of the equipment connected to the TEX150 (with the audio signal present) for a peak reading of DEVIATION MAX 75 KHz.

NOTE: The international standards permit a maximum deviation (DEV MAX) of 75 KHz for frequency modulated, radiophonic transmissions. Exceeding this limit will only result in the degradation of signal quality. In the case of mono transmissions, the stereo input is available for frequencies between 15 KHz and 100 KHz (i.e. subcarriers for SCA, RDS etc.).

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6. External Description

This chapter describes the elements of the front and rear panels of the TEX150.

6.1 Front Panel (TEX150/S stereo version)

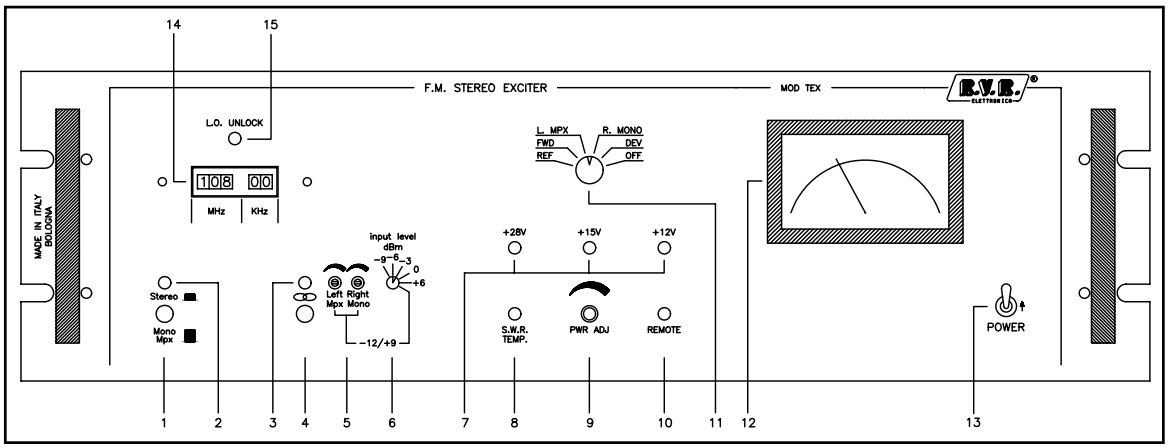

figure 6.1

[1]	STEREO/MONO	MPX Selects STEREO or MONO/MPX operation
[2]	STEREO LED	Indicates the operation of the stereo encoder
[3]	19KHz LED	Indicates the 19KHz pilot tone presence
[4]	MODE SELECTOR	Button in: STEREO OPERATION MODE pilot tone present Button out: MONO OPERATION MODE pilot tone absent
[5]	L/MPX & R/MONO LEVEL	L/MPX and R/MONO input level adjustable from -12 to +9dBm; this is possible if the input level switch is completly turned clockwise
[6]	INPUT LEVEL	Input signal attenuator adjustable in 5 steps from -9 to +6 dBm
[7]	VOLTAGES LED	Indicates the presence of internal operating voltages +12V, +15V and +28V
[8]	SWR	Indicates that reflected power exceeds 10W
[9]	PWR ADJ	10-turn trimmer to regulate the power outpu of the exciter. AGC mainteins the level set by this control
[10]	REMOTE	Indicates that the exciter has been shutdown by remote control
[11]	MEASUREMENT SELECTOR	The measurement made by the meter corresponds to the position of this selector
[12]	METER	Analog meter used to display the following operating parameters of the exciter: Direct power f.s. 200W Reflected power f.s. 50W Deviation f.s. 100KHz Right channel input level f.s. 3dB Left channel input level f.s. 3dB
[13]	POWER	ON/OFF switch
[14]	MHz/KHz	Rotary frequency selector
[15]	L.O. UNLOCK	If On indicates that the VCO is not locked to the reference frequency. The output power will drop zero in this condition

6.2 Front Panel (TEX150 mono version)

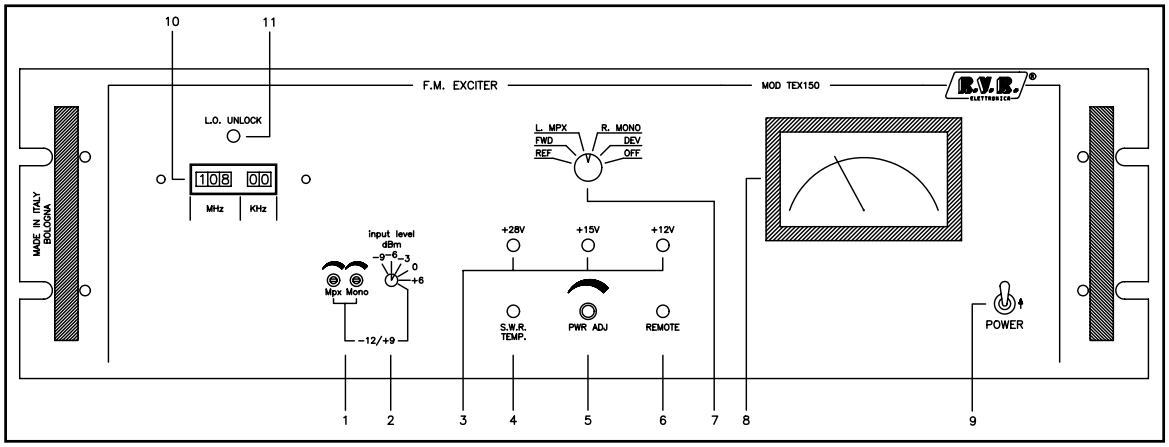

figure 6.2

[1]	L/MPX & R/MONO LEVEL	L/MPX and R/MONO input level adjustable fom -12 to +9dBm
[2]	INPUT LEVEL	Input signal attenuator adjustable in 5 steps from -9 to +6dBm
[3]	VOLTAGES LED	Indicates the presence of the internal operating voltages +12V, +15V and +28V
[4]	SWR	Indicates that reflected power exceeds 10W
[5]	PWR ADJ	10-tirn trimmer to regulate the power outpu of the exciter. AGC mainteins the level set by this control
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[10]	POWER	ON/OFF switch
[11]	MHz/KHz	Rotary frequency selector
[12]	L.O. UNLOCK	If On indicates that the VCO is not locked to the reference frequency. The output power will drop zero in this condition

6.3 Rear Panel

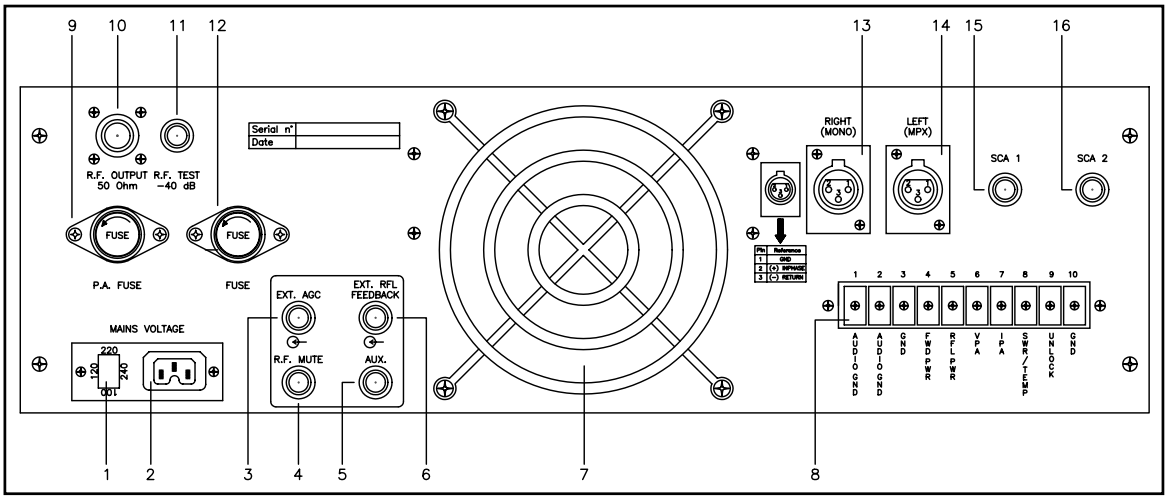

figure 6.3

[1]	FUSE BLOCK	Fuse block and line voltage selector. Use a small screwdriver to change the fuse or the line voltage. Rotate the block and position i for the desired
[2]	PLUG	Line power connector
[3]	REMOTE 1	BNC connector, extenal AGC input
[4]	REMOTE 2	BNC connector, extenal reflected feedback input
[5]	EXT REF 1KHz	External 1KHz reference (optional)
[6]	REMOTE 3	BNC connector. Connecting the central conductor to ground will cause the Rf output power level to drop to zero and to stay there until the short is removed. When used with an R.V.R. amplifier, this connector should be connected to the REMOTE output of the power amplifier
[7]	FAN	Fan assisted cooling for the power stage and the power supply
[8]	TELEMETRY TERMINALS	10 pin telemetry card
[9]	P.A.. FUSE	Power amplifier protection fuse 8A
[10]	R.F. OUTPUT	N type connector, 50Ohm
[11]	R.F. TEST POINT	-40dB output referred to the output power level
[12]	FUSE	Main protection fuse 6A
[13]	RIGHT (MONO)	BNC connector for FCC unbalanced version; cannon XLR for CCIR version with balanced input
[14]	LEFT (MPX)	BNC connector for FCC version; cannon XLR for CCIR version with balanced input
[15]	SCA 1	BNC connector, unbalanced SCA1 input
[16]	SCA 2	BNC connector, unbalanced SCA2 input or output (internally selectable) for pilot tone (i.e. for R.D.S. encoder)

6.4 Connectors Description

6.4.1 Left (MONO) / Right (MPX Bal)

Type: XLR female

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

7. Technical Specifications

7.1 Mechanical Specifications

Panel size	483 mm (19”) x 132.50 mm (5.20”) (3 HE)
Depth	345 mm (13.7”)
Weight	12 Kg
Temperature range	-10 °C ¸ +50 °C

7.2 Electrical Specifications

General

A.C. Supply	100-130 V, 50-60 Hz
	198-250 V, 50-60 Hz
D.C. Supply	24V
Power consuption	approx.350W
Cooling	Forced ventilation
Frequency range	from 87.5 to 108MHz in steps of 10KHz
Output power Adjustable	from 10 to 100W
Automatic output level control	Stabilizes the set RF output level
Output Impedance	50Ohm
Output connector	Standard N-type”
Harmonic suppression	> -65dB
Spurious signal suppression	> -80dB
Mono intermodulation distorion	0.05% or less, measured at 1KHz and 1.3KHz, ratio 1:1 at 100% modulation
Frequency stability	± 500Hz (typically ± 300Hz) from 0° to 50° C
Modulation type	Direct frequency modulation of the fundamental frequency
Frequency deviation	± 75KHz nominal
Harmonic distortion	< 0.05% (tipically 0.01%)
FM signal/noise ratio	> 75dB mono, > 70dB stereo measured with 75KHz deviation in the 30Hz to 15KHz band RMS.
Residual AM (asyncronous)	approx. 0.05% = 65dB RMS
Residual AM (syncronous)	0.1% = 60dB
Pre-emphasis	50µs ±2% or 75µs ±2% selectable
Audio input impedance	10KOhm balanced or 50KOhm unbalanced (600Ohm on request)
Audio input level	Selectable from -9 to +6dBm in five steps, Continuosly from -12 to +9 dBm
Audio frequency range	30-15000Hz, MONO input 30-10000H, MPX input
Audio input filter	> 45dB at 19KHz (mono) > 40dB from 20KHz to 100KHz
Mono frequency response	±0.3dB from 30Hz to 15KHz
MPX frequency response	±0.5dB from 30Hz to 75KHz
Stereo Separation	> 45dB (typically 50dB)
Pilot tone frequency	19KHz ± 1Hz
Pilot tone level	-20dBm adjustble
Number of SCA inputs	2
SCA input impedance	1KOhm unbalanced
SCA input level	0dBm per ±7.5KHz of deviation
SCA input response	±0.5dBm from 40KHz to 100KHz

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8. Identification and Access to the Modules

8.1 Modules Identification

The TEX150 is composed of different modules wired between them with connectors, allowing for easy servicing or module substitution.

8.1.1 Upper view

Figure below shows the upper view of the device with the indication of the different components.

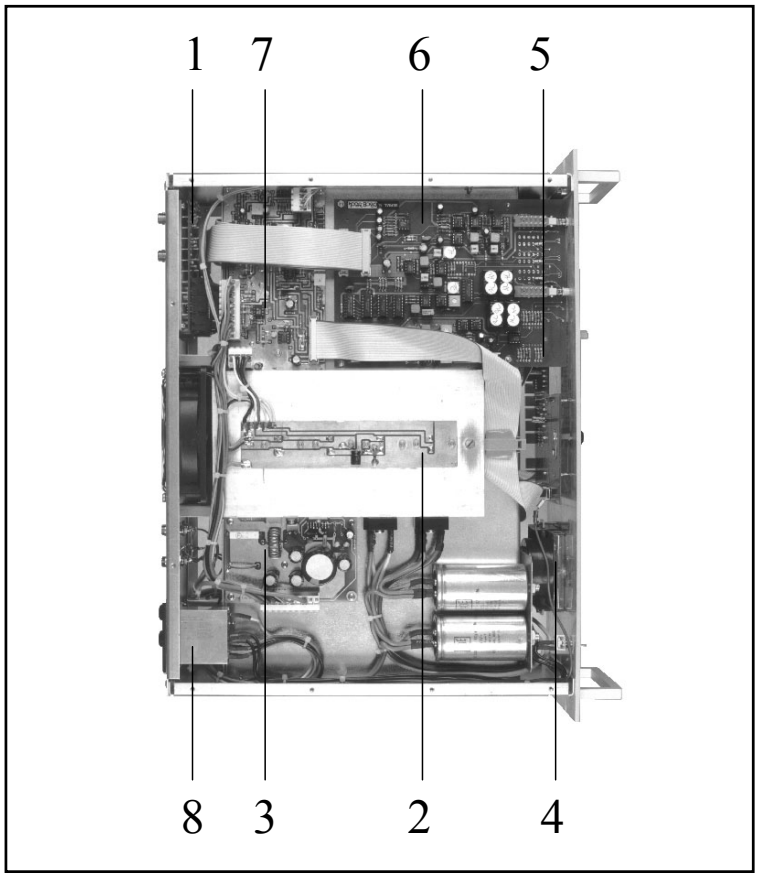

figure 8.1

[1] Audio input card
[2] Power supply
[3] Switching power supply 1
[4] Analog meter
[5] Meter card
[6] Stereo coder card (for stereo version)
[7] Mono/MPX card (for mono version)
[8] Alarms card

8.1.2 Bottom view

Figure below shows the bottom view of the device with the indication of the different components.

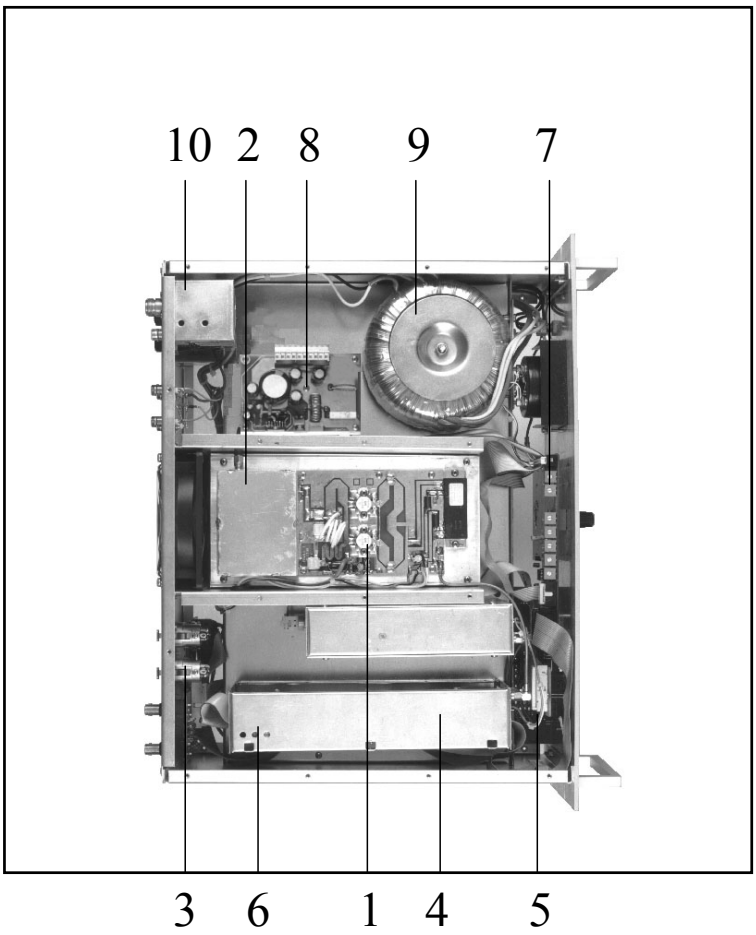

figure 8.2

[1] Power amplifier card
[2] Low pass filter
[3] Audio input card
[4] VCO card
[5] Frequency selector card
[6] PLL card
[7] Meter card
[8] Switching power supply2 (not present on the new version)
[9] Toroidal transformer
[10] Directional coupler
[9] Trasformatore toroidale
[10] Accoppiatore direzionale

8.2 Removal of the Modules

NOTA: When the exciter is operated with the cover removed, hazardous voltages and heavy current are accessible. Ensure all primary power is disconnected from the exciter 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 8.1.1 and 8.1.2, all exciter modules.

8.2.1 Stereo encoder card replacement

- Open the top and bottom covers of the unit.
- Disconnect connectors J1, J3 and J4.
- Unscrew the four nuts fixing the card on internal chassis.
- Unscrew the screw inside the INPUT LEVEL knob and slide it off.
- Raise the card from its supports, simultaneously sliding the switches and the INPUT L\EVEL switch pivot from the panel.

8.2.2 RF power amplifier transistor replacement

For this module it's only possible to replacement the transistors:

- Open the top cover of the unit.
- Open the top cover of the RF power amplifier.
- Unscrew the two fixing screws of the device (BGY33, MRF317 or SD1480).
- Remove the broken transistor.

NOTE: During replacement of broken devices it's necessary to pay attention to device's pin position and insertion, to check that the device's fixing screws aren't in short-circuit and to check that the soldering is good and without impurities.

NOTE: Interpose between devices and heat-sink an electronic silicone compound.

8.2.3 VCO replacement

- Open the top cover of the unit.
- Disconnect connectors CN1, CN2, J1, J3 and J4.
- Desolder the two wires connected on J2 and J5 of the VCO Card.
- Unscrew the fixing screws of the VCO card metal box on the internal chassis.
- Remove the metal box.

NOTE: For any adjustment is sufficient remove the top and bottom covers of the metal box.

8.2.4 Audio input card replacement

- Open the bottom cover of the unit.
- Disconnect connectors CN1, and CN2.
- Unscrew the nuts of the two connectors BNC1 and BNC2 situated on the rear panel.
- Desolder the six wires (placed on EC1 and EC2) connecting the Audio Input Card to the two audio connectors, RIGHT (mono) and LEFT (MPX).
- Slide the card out.

8.2.5 Main power supply's transistors replacement

- Open the top and bottom covers of the unit.
- Remove from flat cable clamp the flatwire fixed on heat-sink.
- Unscrew the two fixing screws of the components U1 and D1 of the switching power supply (pay attention to device insulator).
- Unscrew the two fixing screws of the two rectifier bridges.
- Unscrew the fixing screws of the heat-sink and raise the top part of heat-sink paying attention to cabling.
- Desolder the device's pins.
- Carefully lift out the device.

NOTE: During replacement of broken devices it's necessary to pay attention to device's pin position and insertion, to check that the device's fixing screws aren't in short-circuit and to check that the soldering is good and without impurities.

NOTE: Interpose between devices and heat-sink an electronic silicone compound.

8.2.6 Meter card replacement

- Open the top and bottom covers of the unit.
- Unscrew the four fixing screws of the front panel.
- Unscrew the nut inside the measurement selector situated on the front panel and the selector fixing nut.
- Disconnect connectors CN1, CN2, CN3, CN6 and CN7 situated on the meter card.
- Disconnect the faston CN4.
- Remove the card paying careful attention to the various leds and adjustments.

8.2.7 Frequency selector card replacement

- Open the top and bottom covers of the unit.
- Unscrew the four fixing screws of the front panel.
- Disconnect connector CN1 situated on the Contraves card.
- Unscrew the two card's fixing screws on the front panel.
- Remove the Contraves card.

8.2.8 PLL card replacement

- Open the top and bottom covers of the unit.
- Disconnect connectors CN1, J2, and J5, desolder the two wires connected on J1 and J3 of the PLL Card.
- Unscrew the fixing screws of the PLL card metal box on the internal chassis.
- Remove the metal box.

NOTE: For any adjustment is sufficient remove the top and bottom covers of the metal box.

8.2.9 Mono/MPX card replacement

- Open the top and bottom covers of the unit.
- Disconnect connectors JP1, JP2 and JP3.
- Unscrew the four nuts fixing the card on internal chassis.
- Unscrew the screw inside the INPUT LEVEL knob and slide it off.
- Raise the card from its supports, simultaneously sliding the switches and the INPUT LEVEL switch pivot from the panel.

8.2.10 Alarms card replacement

- Open the top and bottom covers of the unit.
- Disconnect connectors JP1 and JP2 of the Stereo Coder card (or Mono/MPX card) to ease the removal of the Alarms card.
- Disconnect connectors CN1, CN2, CN3 and CN4.
- Unscrew the fixing screws of the card on the internal chassis.
- Remove the card.

NOTE: During replacement of broken devices it's necessary to pay attention to device's pin position and insertion, to check that the device's fixing screws aren't in short-circuit and to check that the soldering is good and without impurities. Interpose between devices and heat-sink an electronic silicone compound.

8.2.11 Switching power supply replacement

- Aprire il coperchio inferiore della macchina.
- Disconnettere il connettore JP1 e JP2 della scheda switching.
- Svitare le due viti di fissaggio del componente D2 e U1 posto sul dissipatore.
- Svitare le viti di fissaggio della scheda switching.
- Estrarre la scheda.

NOTE: During replacement of broken devices it's necessary to pay attention to device's pin position and insertion, to check that the device's fixing screws aren't in short-circuit and to check that the soldering is good and without impurities. Interpose between devices and heat-sink an electronic silicone compound.

8.2.12 Directional coupler replacement

- Open the top and bottom covers of the unit.
- Disconnect input SMA connector.
- Desolder three wires connecting to METER100 card.
- Unscrew the fixing screws of the two connectors on the rear panel.
- Remove the card.

8.2.13 Fan replacement

- Open the top and bottom covers of the unit.
- Unscrew the fixing screws of the rear panel to ease fan removal, paying attention to connecting wires.
- Unscrew the fixing screws of the R.F. Power Amplifier on the rear panel.
- Unscrew the fixing screws of the two connectors on the rear panel.
- Desolder the two supply wires of the fan.
- Remove the fan.

8.2.14 Analog meter replacement

- Open the top and bottom covers of the unit.
- Unscrew the fixing screws of the front panel to ease Meter removal, paying attention to connetcing wires.
- Disconnect connector CN3 on the METER card.
- Unscrew the fixing bold of the transformer.
- Remove the transformer paying attention to rubber insulators (pay attention to replace correctly rubber insulators).

9. Theory of the Operations

The figure shows the block diagrams of TEX150 (fig. 9.1) and TEX150/S (fig. 9.2). The blocks are described in the following chapter:

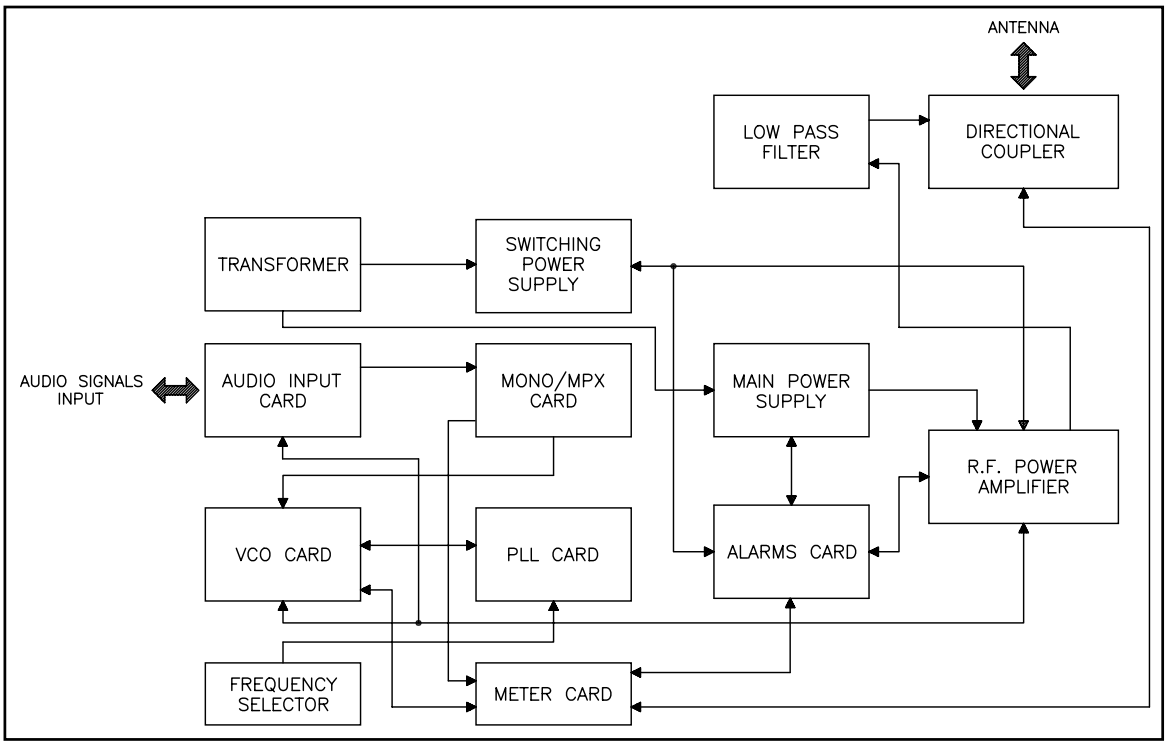

figure 9.1

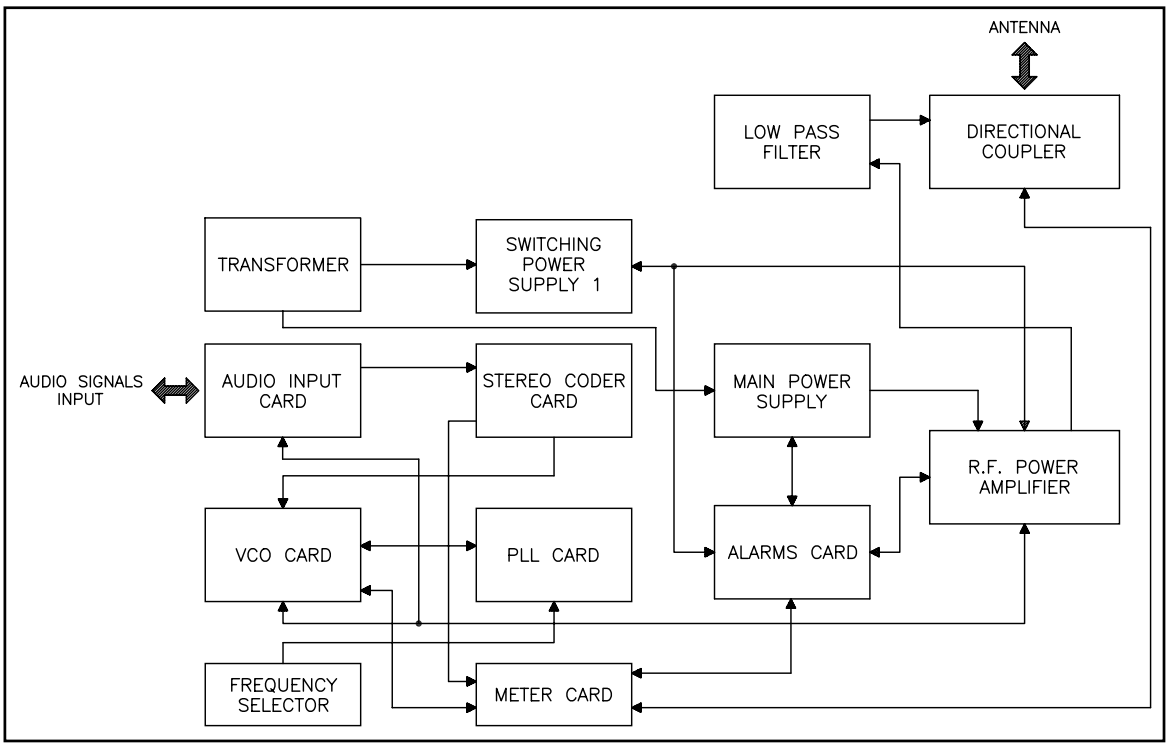

figure 9.2

9.1 Power Supply

This circuit comprises a board, mounted on a heat sink, which is fixed to the central part of the lower section of the unit.

The power supply generates the various stabilized voltages necessary for each of the various modules that make up the TEX150.

The transformer has a selectable input from 110 V to 240 V and two outputs A +18V (6.3A) and B +32V (10A).

This power supply is composed of two main parts: after having undergone filtering for mains-borne interference, the supply is transformed into four lower voltages, rectified, smoothed and stabilized to the following values: +12V, +15V and 10 to 28V variable to obtain the high efficiency (85-90%).

The +15V supplies the encoder mixer, the PLL card, the VCO card, the meter 100 card and the alarm card. The +12V supplies the input of RF power amplifier driver (BGY33) and the 10-28V variable supplies the output of RF power amplifier driver (BGY33) and the final power stage of the same module (two MRF317 or two SD1480).

The variable voltage of the final stage is controlled by the PWR ADJ control which determines the R.F. power output of the exciter.

The automatic control of output power guarantees the power level set by the PWR ADJ control right across the frequency range and independantly of other variables such as temperature, load variations etc.

The system works by comparing the value set by the PWR ADJ control with the actual power output of the unit and compensating accordingly.

The final stage driveris composed of two separate parts, the input part is supplied with +12V voltage, and the output part is supplied by the switching power supply with 4-12V variable voltage obtained dividing the 10-28V variable voltage. A power limiting circuit intervenes in the event of excess SWR on the output, thus protecting the final stage.

9.2 Audio Input Card

This card is situated on the rear panel of the exciter.

The card filters all audio signal inputs to the unit, removing RF interference, before supplying them to the encoder mixer or Mono\MPX card. The main operating parameters of the exciter are available for remote monitoring via a telemetry connector.

9.3 Coder mixer (only for stereo version)

This card is situated in the lower part of the unit.

The card can function either as a stereo encoder or as a simple mixer for the various audio inputs. The function may be selected by a control situated on the front panel.

In stereo encoder mode, the 19KHz pilot tone is derived from a quartz crystal reference oscillator. So too is the sampling frequency which allows the L and R signals to be separated from the multiplexed signal, plus the suppression of the 38KHz frequency.

The level of the left and right signals is set by the corresponding selector situated on the front panel. The signals are then filtered at 15KHz and pre-emphasized (50µS CCIR, 75µS FCC) before being sent to the multiplex circuit.

The audio signals from the two SCA inputs are mixed in to provide the output. In mixer mode (Mono MPX) the stereo encoder is bypassed, the right input accepts a mono signal and the left input accepts a multiplex signal upto 100KHz. The SCA inputs remain unchanged.

Three rectifiers allow the peak levels of the two inputs "Left/MPX" and "right/mono" to be displayed on the analog meter, and provide the audio detector circuit with the deviation level.

9.4 R.F. Power Amplifier

The final power stage is mounted on a heat sink to dissapate waste heat and is enclosed in a totally screened, metal container, fixed to the upper-middle part of the central section of the unit.

The RF signal coming from the Stereo Decoder or Mono\MPX at a power level of about 300 mW, reaches the driver stage (BGY33) and is amplified to a level from about 1W to 20 W before being further amplified by the final stage (two MRF317 or two SD1480) to a level of up to 150 W.

The resultant signal is then filtered by a low-pass filter which removes any harmonic content.

A directional coupler allows the direct and reflected power levels to be measured and displayed on the analog multimeter and also fedback to the power supply for automatic control of the output power (see Power Supply description).

A BNC connector situated on the rear panel provides a power signal at -40 dB of the amplifier output power.

9.5 Meter Card

This card is situated centrally on the front panel. The card receives direct and reflected power signals from the power supply which, in turn, come from the final power stage. The Stereo encoder card supplies deviation and left and right signal levels.

These signal levels are then displayed on the analog meter according to the position of the rotary selector situated on the front panel.

9.6 Contraves Card

This card is fixed to the left-hand side of the front panel.

The operating frequency selected by the frequency control is represented by a signal which is supplied to the frequency dividers that form part of the PLL circuits found on the PLL card.

9.7 Alarms Card

This card is fixed in the lower part of the unit.

This circuit allows to adjust, through 7 trimmers, the threeshold of the external and internal output level, internal and external VSWR level, temperature and to preset the maximum value of the output power.

In case of fault there isn't an automatic reset, because the transmitter provides to decrease the output power to continue the transmission without stops, even if at minimum power.

9.8 Mono/MPX Coder Card (mono version)

This card is fixed in the lower part of the unit.

The Mono\MPX card is an Audio Mixer at four inputs, two balanced (Mono and MPX) and two unbalanced (SCA1 and SCA2).

Mono and MPX input level can be setted through relative switches placed on front panel, on 5 fixed positions and on a variable position from -12dBm to +9dBm (presetted at 0dBm).

It's possible to set the pre-enphasis value at 50µS, 75µS or linear. Then, it's possible to insert or remove a low pass filter at 15KHz.

9.9 Clipper Card (optional)

This card is fixed with a sandwich structure on the coder card and is accesible from lower part of the equipment.

Its function is that to limit drastically any audio signal that exceeds a prefixed threshold. Therefore, it's used to avoid any type of over-modulation as to maximum peak permitted of ± 75KHz.

With an exceeding signal, immediately too, of 6 dB the nominal level for a deviation of ± 75KHz, this card allows to contain deviation increasing within 1dB.

9.10 PLL Card

The PLL card is situated internally, in the upper part of the unit.

The circuit includes a reference cristal oscillator (optional high stability), a logic section that includes the frequncy dividers and comparator.

The reference cristal oscillator generates a 4MHz frequency that is divided to generate a 1KHz fixed signal.

This signal is compared to the operating frequency generated by the VCO divided opportunely on the ground of the frequency setted on the Contraves.

An indicator situated on the front panel signals the "unlocked" condition.

The comparator output (AFC signal) is sent to the varicap diodes situated on the VCO Card.

9.11 VCO Card

The VCO card is situated internally, in the upper part of the unit.

This module includes an audio input stage at low frequency, a voltage controlled oscillator at low noise (VCO) and a driver stage.

The audio signal supplied by the encoder mixer is amplified and then injected into the VCO to provide class F3 modulation.

The voltage controlled oscillator (VCO) generates the signal on the frequency setted on the Contraves.

This signal is amplified to 300 mW level (25dBm) to drive the final stage and to be sent to PLL circuit situated on the PLL card.

The operating frequency genereted by the VCO is divided down before being compared to a reference frequency, generated by a high stability oscillator (standard 5ppm). The error voltage is filtered and used to compensate the VCO frequency and guarantee its stability.

A trimmer is present on this card for adjustment of deviation.

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10. Calibration Procedure

10.1 Internal Adjustment

Please note that this kind of operations should only be done by skilled technical people. Remember that this operation is not normally needed. Opening the device may void you're warranty.

10.1.1 Stereo coder adjustment

It will be necessary to check and recalibrate the following parameters after replacement of the Stereo Encoder card (see the setup below):

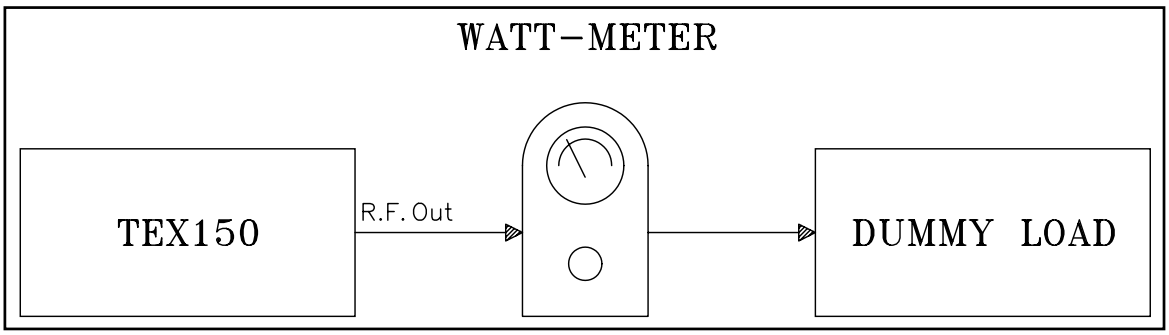

figure 10.1

- Select 0dBm on the INPUT LEVEL selector (encoder and pilot tone inserted).
- Connect a low distortion, sine-wave, audio generator to the left and right inputs.
- Connect a 50 Ohm 300 W load to the RF output of the TEX150.
- Connect the -40dB tap to the F.A.M. (or other modulation analyzer).
- Connect a stereo MEAS-decoder to the rear FM-MPX output of the F.A.M.
- Switch on the TEX150 and wait for the PLL to lock.
- Adjust the audio output of the generator to 0dBm (2.2Vpp = 775mVRMS 400Hz).
- Select, with the appropriate control, a reading of Right (MONO) and adjust P8 on the encoder to obtain 0dB.
- Repeat the operation for Left (MPX), adjusting P7.
- With the FAM in FM, P+ mode, and with a 30Hz-200KHz audio filter, check that the deviation is 75KHz. If not, adjust trimmer R35, situated on the Main card, accordingly.
- Remove the audio signal from both channels, leaving the pilot tone inserted,and check that the deviation is between 6.5KHz and 8KHz (typically 7.5KHz). Adjust P6 if necessary.
- Remove the audio signal from one channel.

NOTE: Check that the generator output is still at 0db.

Now measure the stereo separation with the Stereo Meas-Decoder, which, with a 400Hz signal, should be better than 45dB. Repeat the operation for the other channel. Should the separation figure be different for the two channels (a difference of upto 3dB is acceptable), adjust trimmer P4 on the Encoder card accordingly.

10.1.2 VCO card adjustment

After having replaced the VCO Card and relevant connectors, carry out the following procedure:

MONO VERSION

- Connect an audio generator to the Mono input or MPX.

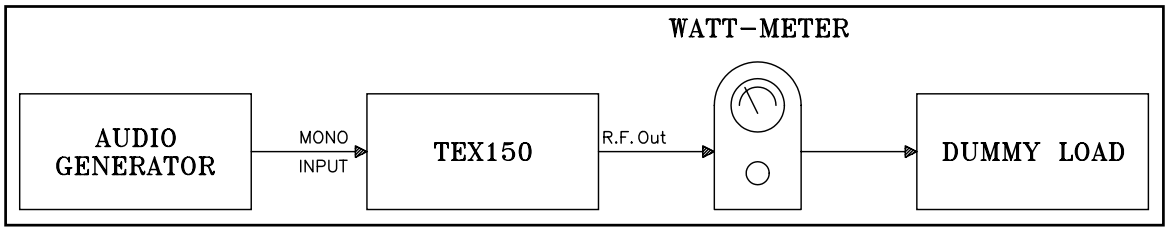

figure 10.2

- Switch on TEX150, select a frequency at 98MHz and select 0dBm on the INPUT LEVEL selector (pilot tone inserted).
- Connect a 50 Ohm, 300 W dummy load to the RF output.
- Connect the F.A.M. or other modulation analyzer to the -40dB tap.
- Inject a 400Hz, 0dBm (775mVrms = 2.2Vpp) tone into the Mono (or MPX) input.
- Configure the FAM to measure deviation with the 30Hz-200KHz/FM/P+ filters and check that it is 75KHz. If not, adjust trimmer R15 accordingly.
- Verify correct value on TEX150's analog meter.

STEREO VERSION

- Connect an audio generator to the Left and Right inputs (together), see SETUP below:

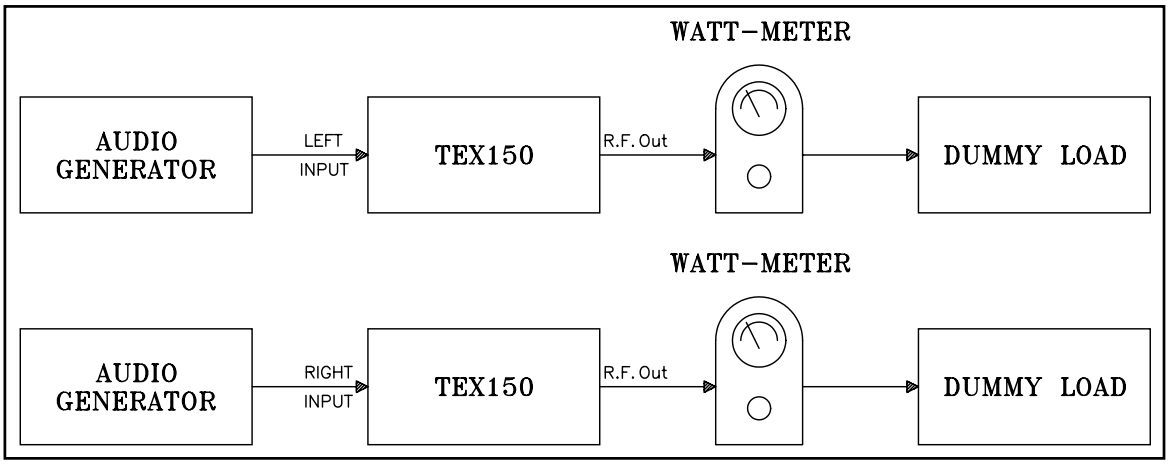

figure 10.3

- Switch on TEX150, select a frequency at 98MHz and select 0dBm on the INPUT LEVEL selector (pilot tone inserted).
- Connect a 50 Ohm, 300 W dummy load to the RF output.
- Connect the F.A.M. or other modulation analyzer to the -40dB tap.
- Inject a 400Hz, 0dBm (775Vrms=2.2Vpp) tone into Left and Right.
- Configure the F.A.M. to measure deviation with the 30Hz-200KHz/FM/P+ filters and check that it is 75KHz. If not, adjust trimmer R15 accordingly.
- Verify correct value on TEX150's analog meter.

NOTE: The audio generator used in these tests must have a distortion figure better than 0.01%. Perform this test at the operating frequency of the exciter.

10.1.3 RF power amplifier module adjustment

No calibration is required after the replacement of this card.

10.1.4 Power supply adjustment

No calibration is required after the replacement of these two cards (Main power supply and switching power supply).

10.1.5 Audio input card adjustment

No calibration is required after the replacement of this card.

10.1.6 Meter card adjustment

All meter readings should be calibrated after the replacement of any card:

- Inject a 400 Hz, 0dBm pilot tone into the Left (or Right) input. (see fig. 10.3 for Stereo Version, or see fig. 10.2 for Mono Version).

- Connect a bypass wattmeter between the RF output and a 50 Ohm, 300W dummy load.
- Adjust the power output to 150W.
- With the selector, select the following measurements and make adjustments according to the table below:

MEASUREMENT	VALUE	FSD	TRIMMER	NOTE
R(MONO)	0dB	+3dB	R6	
L(MPX)	0dB	+3dB	R5	
FWD PWR	150W	200W	R8	
REF PWR	10W	50W	R7	1
DEV	VAR	100KHz	R4	
SWR LED	---	---	R23	

NOTA: 1 - Disconnect the load for this measurement only and adjust PWR ADJ for 50W of direct output power.

10.1.7 Frequency selector card adjustment

No calibration is required after the replacement of this card.

10.1.8 PLL card adjustment

After having replaced the PLL card, carry out the following procedure (see the setup below):

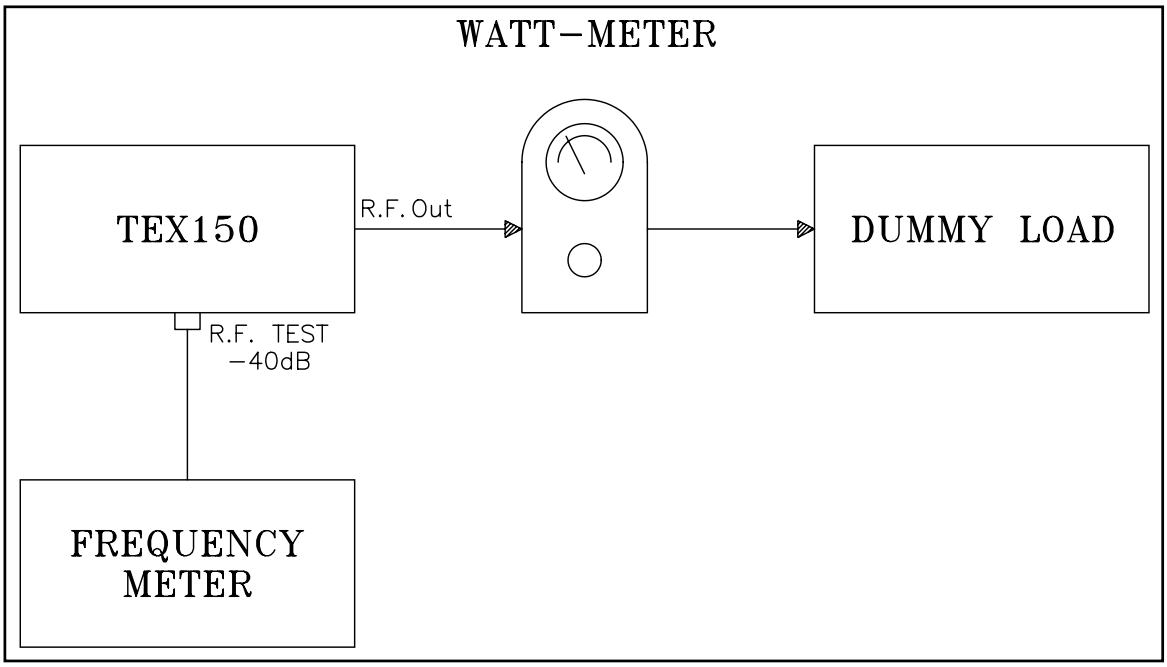

figure 10.4

- Switch on the equipment and select the frequency of 98MHz.
- Wait 10 minutes to have thermal stabilization of the equipment.
- Unscrew the fixing screws of PLL's metal box and open the cover near to VCO metal box.
- Check with frequency meter if the frequency setted is right.

  If the frequency read on frequency meter is different from frequency setted on the contraves , adjust variable capacitor C2 on PLL card.

10.1.9 Alarms card adjustment

After having replaced the alarms card, carry out the following procedure:

Internal AGC Adjustment

- Connect a 50 Ohm, 300 W dummy load to the RF output.
- Adjust output power at minimum turning PWR ADJ trimmer completely anticlockwise and then switch on the equipment.
- Turn trimmer R2, placed on Alarms card, completely clockwise.
- Increase output power until maximum through PWR ADJ trimmer (clockwise).
- Adjust variable capacitor C2 on Directional Coupler to read, through a voltmeter between Directional Coupler's REF contact and GND (see as reference Directional Coupler Layout), minimum voltage value.
- Adjust R2 to obtain a reading of 150W on external wattmeter.
- Select with Meter Selector the FWD position.

- Adjust trimmer R8 on METER card to read 150W on TEX150's analog meter.

Internal VSWR Adjustment

- Connect a 50 Ohm, 300 W dummy load to the RF output.
- Adjust output power at minimum turning PWR ADJ trimmer completely anticlockwise and then switch on the equipment.
- Turn trimmer R7, placed on Alarms card, completely clockwise.
- Disconnect external dummy load, increase output power until 150W turning PWR ADJ trimmer clockwise.

  Output power must increase slowly because the protection is working. (If this doesn't happen, suspend all operation e contact the seller)
- Adjust R7 to obtain a reading of 10W on external wattmeter.
- Select with Meter Selector the REF position.
- Adjust trimmer R7 on METER card to read 10W on TEX150's analog meter.

External AGC Adjustment

- Perform the setups below (fig. 10.5 and 10.6).

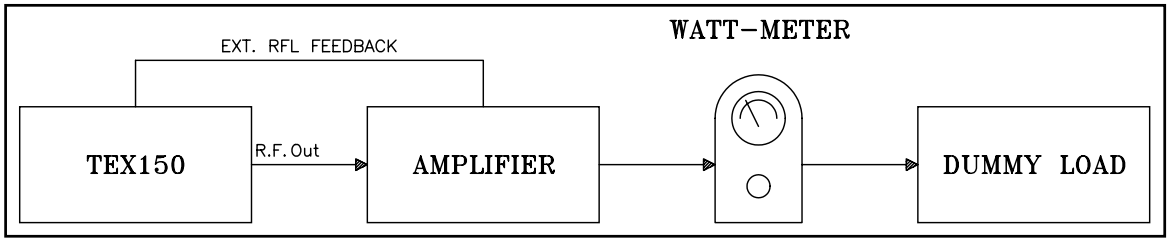

figure 10.5

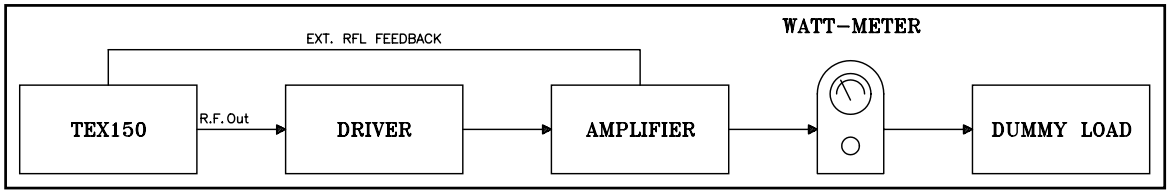

figure 10.6

- Adjust output power at minimum turning PWR ADJ trimmer completely anticlockwise and then switch on the equipment.
- This adjustment it's necessary when TEX150 is connected as exciter or driver for a power amplifier. Therefore, it's necessary to have on last amplifier of the system an output voltage proportional with antenna output forward power and connect this signal to REMOTE1. Increase TEX150's output power with PWR ADJ to have the necessary output power to drive the next stage of the system (e.g. for a 1KW amplifier, read 1050W on external wattmeter).
- Turn trimmer R16, until to have maximum output power of the power amplifier on external wattmeter (e.g. 1000W). In these conditions is possible to control output power into the range of 50W presetted, protecting the equimpment against voltage variations).

External VSWR Adjustment

- Perform the setup below:

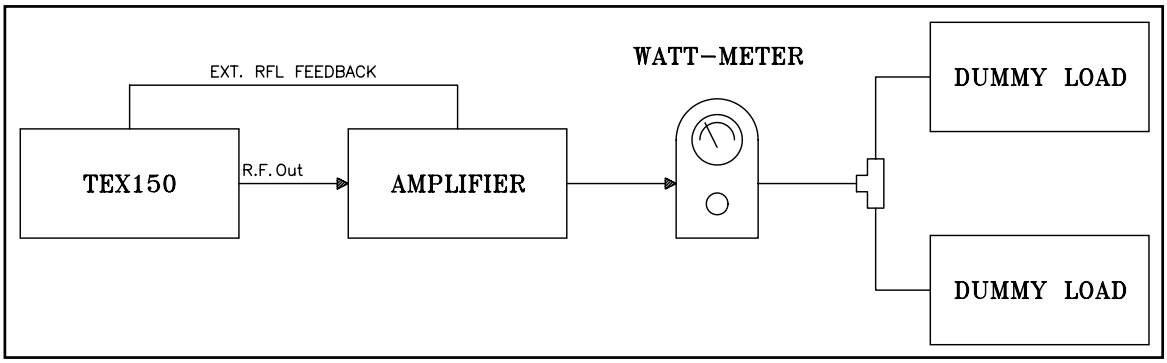

figure 10.7

- Adjust output power at minimum turning PWR ADJ trimmer completely anticlockwise and then switch on the equipment.

- This adjustment it's necessary when TEX150 is connected as exciter or driver for a power amplifier.

  Therefore, it's necessary to have on last amplifier of the system an output voltage proportional with antenna output reflected power and connect this signal to REMOTE2.

- Turn trimmer R12, until to have an output power of the power amplifier on external wattmeter (e.g. 900W, -10%). In these conditions is possible to control output power into the range of ±10% presetted, protecting the equimpment against VSWR variations).

Temperature Alarm Adjustment

- Perform the setup below:

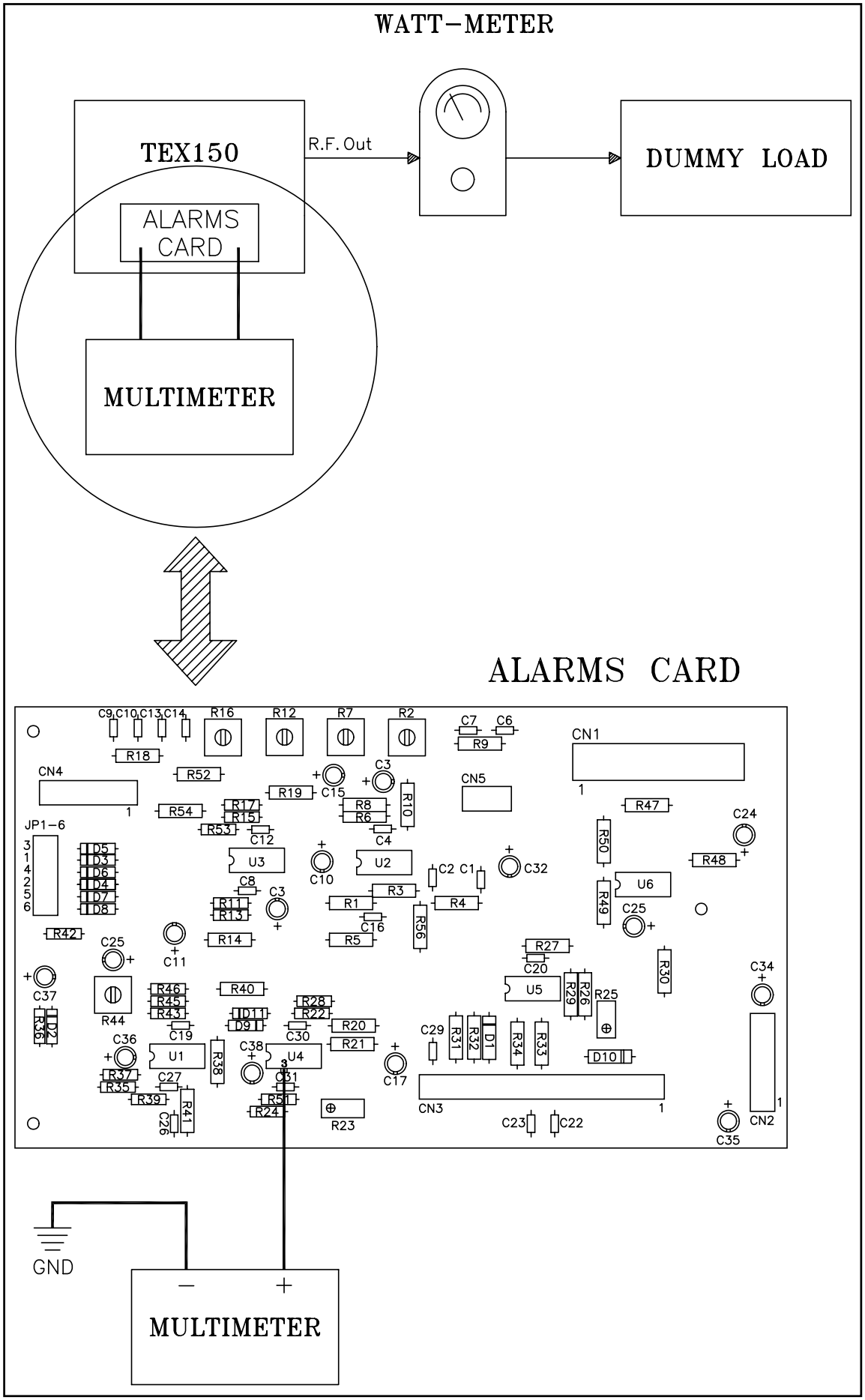
WATT−METER
TEX150
R.F. Out
DUMMY LOAD
ALARMS
CARD
MULTIMETER
ALARMS CARD
GND
MULTIMETER

figure 10.8

- Adjust output power at minimum turning PWR ADJ trimmer completely anticlockwise and then switch on the equipment.
- Increase output power until 150W turning PWR ADJ trimmer clockwise.
- Turn trimmer R23, until to have on pin 3 of U4 a voltage included between 265 and 275 mV. In these conditions temperature protection starts at 70°C. Adjust R23 until output power begins to decrease.
- Then, adjust R25 until SWR/TEMP led indicator starts to blink.

Maximum Output Power Adjustment

Can be necessary to set maximum output power at maximum value included between 10 and 150W.

- Connect a 50 Ohm, 300 W dummy load to the RF output.
- Adjust output power at minimum turning PWR ADJ trimmer completely anticlockwise and then switch on the equipment.
- Increase output power until 150W turning PWR ADJ trimmer clockwise.
- Turn trimmer R44, until to have maximum output power presetted on external wattmeter.
- Then, adjust output power turning PWR ADJ trimmer and note that output power can be increased over presetted value.

NOTE: The jumpers shown in table , disable all protections (all enabled from firm). A no-correct use of these jumpers can cause seroius damage to the unit and will automatically make the warranty void.

ALARMS CARD TRIMMERS AND JUMPERS

REF.	DESCRIPTION
R2	*Internal AGC Adjustment*
R7	*Max Power Output Adjustment (VSWR INFINITE)*
R12	*External VSWR Threshold Adjustment*
R16	*External AGC Adjustment*
R23	*Temperature Threshold Adjustment*
R25	*Temperature Led Lighting Adjustment*
R44	*Max Power Output Adjustment*
JP1	*Internal AGC Insertion (DON'T REMOVE)*
JP2	*Internal AGC Insertion (DON'T REMOVE)*
JP3	*External VSWR Insertion*
JP4	*External AGC Insertion*
JP5	*Temperature Threshold Insertion*
JP6	*Maximum Output Power Threshold Insertion*

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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 TEX150. L'appendice è composta dalle seguenti sezioni:

This part of the manual contains the technical details about the different boards of the TEX150. This appendix is composed of the following sections:

Description	RVR Code	Vers.	Pages
Main power supply	CSALMTEX100	1.0	4
Power amplifier	CSFIN150W03	1.0	4
Power supply 2812b	PSSW2812B	1.0	4
Audio input	CSAUDIOCTE	1.0	4
Stereo coder	CSSDC30A003	1.0	6
Mono/MPX	CSCSAFMMPX002	1.0	4
PLL	CSSINTEX100	1.0	4
TCXO card	CSTCXO02	1.0	4
Directional coupler	SLWSTDTEX100	1.0	4
Filtro passa basso	CSLPF3TEX100	1.0	4
VCO	CSVCODRVTX02	1.1	4
Meter	CSMETER100	1.0	4
Contraves	CSCONTRAVES	1.0	6
Alarms card	CSP100	1.0	4

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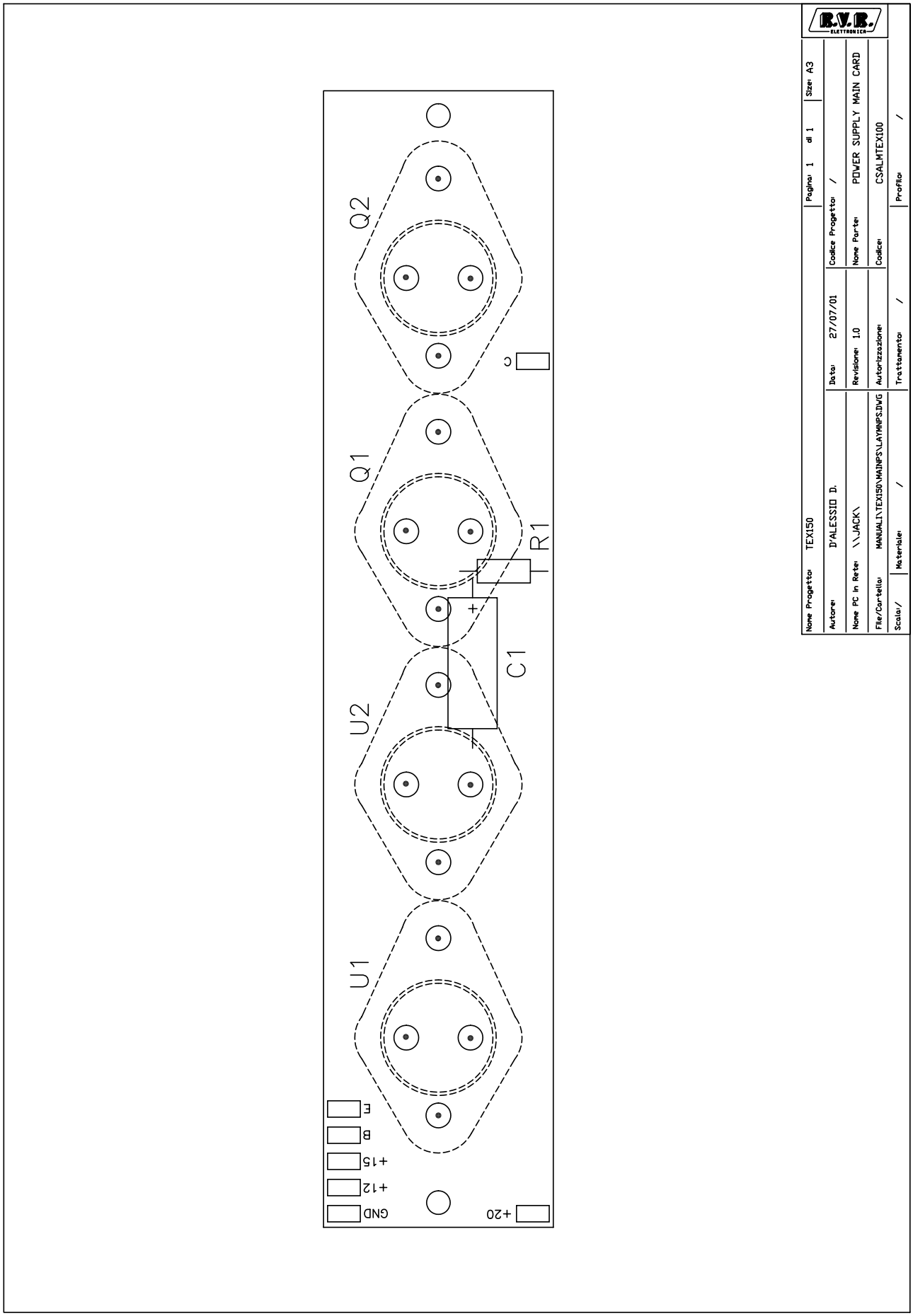
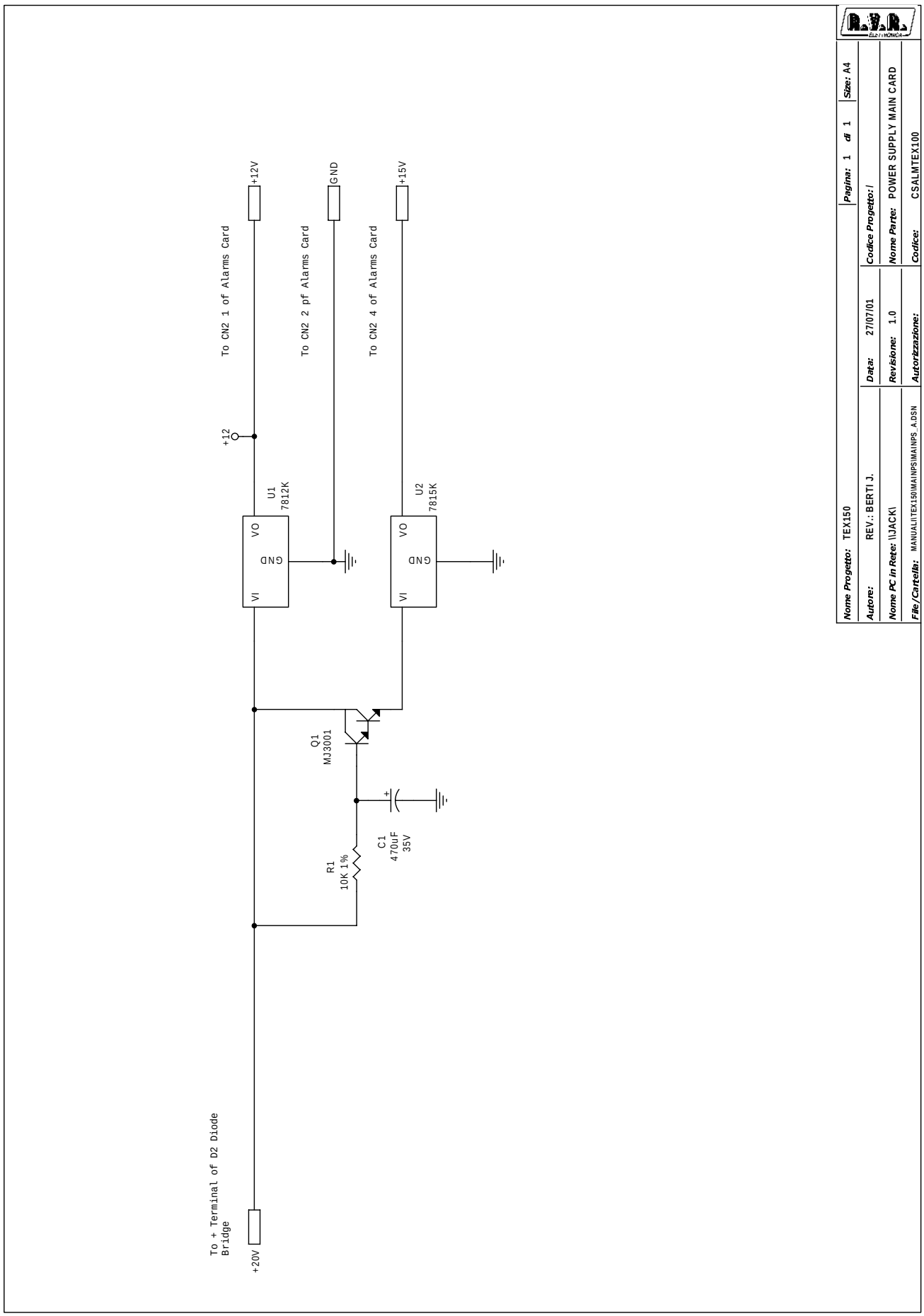

Q2
Q1
U2
U1
R1
C1
C
E
B
+15
+12
GND
+20
R.V.R. ELETTRONICA
Pagina: 1 di 1
Size: A3
Nome Progetto: TEX150
Data: 27/07/01
Codice Progetto: /
Autore: D'ALESSIO D.
Revisione: 1.0
Nome Parte: POWER SUPPLY MAIN CARD
Nome PC in Rete: \\JACK\
Autorizzazione:
Codice: CSALMTEX100
File/Cartella: MANUALI\TEX150\MAINPS\LAYMNPS.DVG
Trattamento: /
Profilo: /
Scala: /
Materiale: /


+12V
GND
+15V
To CN2 1 of Alarms Card
To CN2 2 pf Alarms Card
To CN2 4 of Alarms Card
+12
U1
7812K
VO
GND
VI
U2
7815K
VO
GND
VI
Q1
MJ3001
C1
470uF
35V
R1
10K 1%
To + Terminal of D2 Diode
Bridge
+20V
Pagina: 1 di 1
Size: A4
Nome Progetto: TEX150
Autore: REV.: BERTI J.
Data: 27/07/01
Codice Progetto: /
Nome PC in Rete: \\JACK\
Revisione: 1.0
Nome Parte: POWER SUPPLY MAIN CARD
File/Cartella: MANUALI\TEX150\MAINPS\MAINPS_A.DSN
Autorizzazione:
Codice: CSALMTEX100

TEX 150 Bill Of Materials Page 1

Item	Quantity	Reference	Part	DESCRIPTION	PART ORDER CDE
1	1	R1	10K 1%	RESISTOR 1/4W 1%	
2	1	C1	470UF	ELECTROLYTIC CAPACITOR	
3	1	SW1	1V 2P	DEVIATORE 1 VIA 2 POS	
4	1	U1	7812K	POS. STABILIZER 1.5A	
5	1	U2	7815K	POS. STABILIZER 1.5A	
6	1	Q1	MJ3001	POWER TRANSISTOR	

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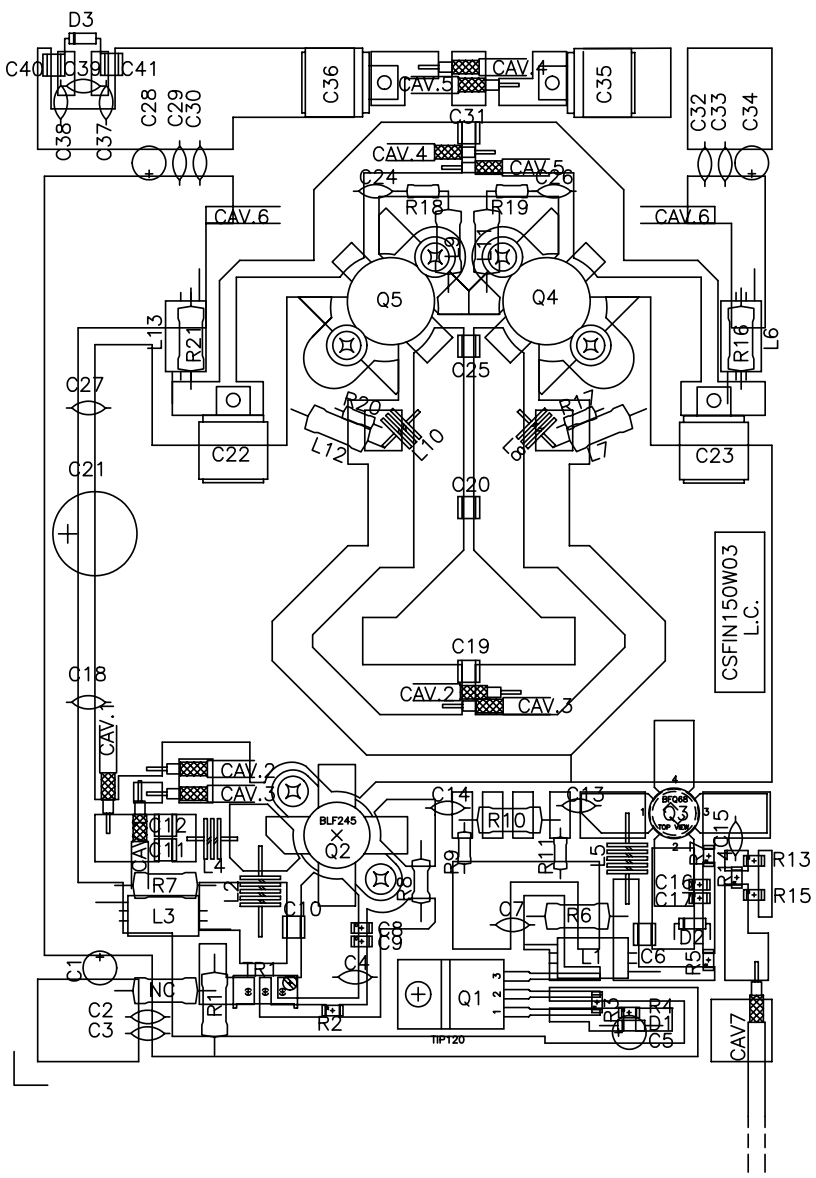
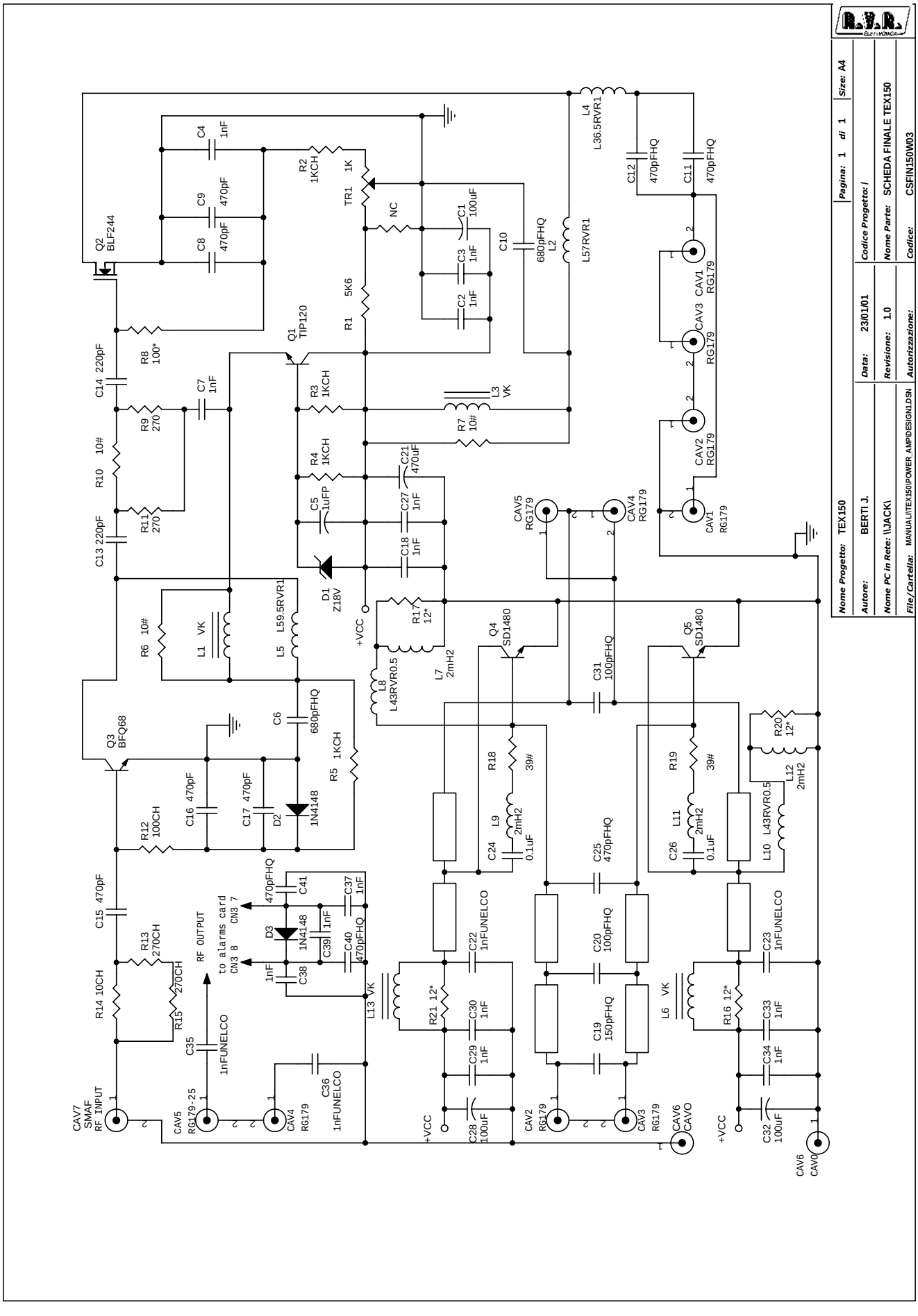

LATO COMPONENTI VISTA LATO COMPONENTI
D3
C40
C39
C41
C38
C37
C28
C29
C30
C36
C35
C31
C32
C33
C34
CAV.4
CAV.5
CAV.6
C24
C26
R18
R19
Q5
Q4
L13
R21
R16
L6
C27
C25
R20
R17
C22
C23
L12
L10
L8
L7
C21
C20
CSFIN150W03
L.C.
C19
C18
CAV.1
CAV.2
CAV.3
BLF245
Q2
C14
R10
C13
BFQ68
Q3
C12
C11
L4
R7
L3
C10
C8
C9
R9
R11
L5
R13
R15
C16
C17
R6
C7
D2
C6
L1
R5
C4
IR1
C1
NC
C2
C3
R1
R2
Q1
TIP120
R4
D1
C5
CAV7
Pagina: 1 di 1
Size: A4
Data: 13/09/2000
Codice Progetto: /
Revisione: <Rev.>
Nome Parte: SCHEDA FINALE TEX150
Autorizzazione:
Codice: CSFIN150V03
Nome Progetto: TEX150
Autore: BERTI J.
Nome PC in Rete: \\JACK\
File/Cartella: MANUALI\TEX150\PDWER_AMP\PVRAMP.DVG
Scala: /
Materiale: /
Trattamento: /
Profilo: /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Pagina: 1 di 1
Size: A4
Autore: BERTI J.
Data: 23/01/01
Codice Progetto: /
Nome PC in Rete: \\JACK\
Revisione: 1.0
Nome Parte: SCHEDA FINALE TEX150
File/Cartella: MANUALITEX150\POWER AMP\DESIGN1.DSN
Autorizzazione:
Codice: CSFIN150W03
Q1 TIP120
Q2 BLF244
Q3 BFQ68
Q4 SD1480
Q5 SD1480
D1 Z18V
D2 1N4148
D3 1N4148
L1 VK
L2 L57RVR1
L3 VK
L4 L36.5RVR1
L5 L59.5RVR1
L6 VK
L7 2mH2
L8 L43RVR0.5
L9 2mH2
L10 L43RVR0.5
L11 2mH2
L12 2mH2
L13 VK
TR1 1K
R1 5K6
R2 1KCH
R3 1KCH
R4 1KCH
R5 1KCH
R6 10#
R7 10#
R8 100*
R9 270
R10 10#
R11 270
R12 100CH
R13 270CH
R14 10CH
R15 270CH
R16 12*
R17 12*
R18 39#
R19 39#
R20 12*
R21 12*
C1 100uF
C2 1nF
C3 1nF
C4 1nF
C5 1uFP
C6 680pFHQ
C7 1nF
C8 470pF
C9 470pF
C10 680pFHQ
C11 470pFHQ
C12 470pFHQ
C13 220pF
C14 220pF
C15 470pF
C16 470pF
C17 470pF
C18 1nF
C19 150pFHQ
C20 100pFHQ
C21 470uF
C22 1nFUNELCO
C23 1nFUNELCO
C24 0.1uF
C25 470pFHQ
C26 0.1uF
C27 1nF
C28 100uF
C29 1nF
C30 1nF
C31 100pFHQ
C32 100uF
C33 1nF
C34 1nF
C35 1nFUNELCO
C36 1nFUNELCO
C37 1nF
C38 1nF
C39 1nF
C40 470pFHQ
C41 470pFHQ
CAV1 RG179
CAV2 RG179
CAV3 RG179
CAV4 RG179
CAV5 RG179
CAV6 CAVO
CAV7 SMAF RF INPUT
RF OUTPUT
to alarms card CN3 8 CN3 7
+VCC
NC

TEX 150 (150 F.M. EXCITER) Bill Of Materials Page1

Item	Q.ty	Reference	Part	Description Part	Order Code
1	1	CAV1	RG179	CAVO SCHERMATO 25Ohm 23cm	
2	2	CAV2,CAV3	RG179	CAVO SCHERMATO 25Ohm 13cm	
3	2	CAV4,CAV5	RG179	CAVO SCHERMATO 25Ohm 24cm	
4	1	CAV6	CAVO	CAVO DIA 1.5 11.5cm	
5	1	CAV7	SMAF	CONN. SMA F TELAIO	
7	3	C1,C28,C32	100Uf	ELECTROLYTIC CAPACITOR	
8	13	C2,C3,C4,C7,C18,C27, C29,C30,C33,C34,C37, C38,C39	1nf	CERAMIC CAPACITOR	
9	1	C5	1uFT	TANATALIUM CAPACITOR	
10	2	C6,C10	680pFHQ	HIGH Q CAPACITOR ATC	
11	4	C8,C9,C16,C17	470pF		
13	5	C11,C12,C25,C40,C41	470pFHQ	HIGH Q CAPACITOR ATC	
14	2	C13,C14	220pF	CERAMIC CAPACITOR NP0	
16	1	C15	470pF	CERAMIC CAPACITOR	
17	1	C19	150pFHQ	HIGH Q CAPACITOR ATC	
18	2	C20,C31	100pFHQ	HIGH Q CAPACITOR ATC	
19	1	C21	470uF	ELECTROLYTIC CAPACITOR	
20	4	C22,C23,C35,C36	1nFUNELCO	SILVER MICA CAPACITOR	
21	2	C26,C24	0.1uF	CERAMIC CAPACITOR	
24	1	D1	Z18V	ZENER DIODE 18V 0.4W	
25	2	D2,D3	1N4148	SILICON DIODE	
26	4	L1,L3,L6,L13	VK	RF CHOKE	
27	1	L2	L57RVR1	5SP DIA7 RAME AR 1mm	
28	1	L4	L36.5RVR1	3SP DIA6.5 RAME AR 1mm	
29	1	L5	L59.5RVR1	5SP DIA9.5 RAME AR 1mm	
30	4	L7,L9,L11,L12	2mH2	IMPEDENZA	
31	2	L10,L8	L43RVR0.5	4 SP DIA3 RAME SM 0.5mm	
32	1	NC	N.C.	NON CONNESSO	
33	1	Q1	TIP120	NPN DARLINGTON	
34	1	Q2	BLF244	TRANSISTOR BLF244	
35	1	Q3	BFQ68	NPN RF TRANSISTOR	
36	2	Q4,Q5	SD1480	RF POWER TRANSISTOR	
37	1	R1	5K6	RESISTOR 1/4W 5%	
38	4	R2,R3,R4,R5	1KCH	CHIP RESISTOR	
39	3	R6,R7,R10	10#	RESISTOR 2W	
40	1	R8	100*	RESISTOR 1/2W 5%	
41	2	R11,R9	270	RESISTOR 1/4W 5%	
42	1	R12	100CH	CHIP RESISTOR	
43	2	R15,R13	270CH	CHIP RESISTOR	
44	1	R14	10CH	CHIP RESISTOR	
45	4	R16,R17,R20,R21	12*	RESISTOR 1/2W 5%	
46	2	R19,R18	39#	RESISTOR 2W	
47	1	TR1	1K		

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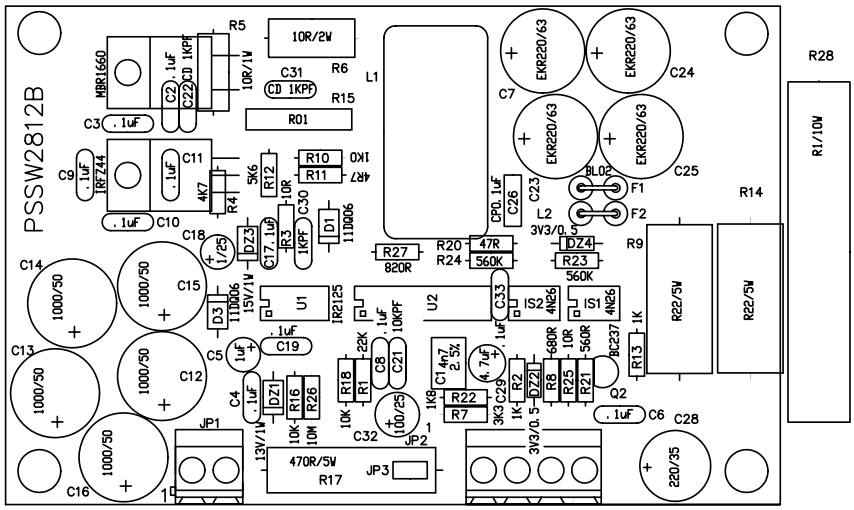
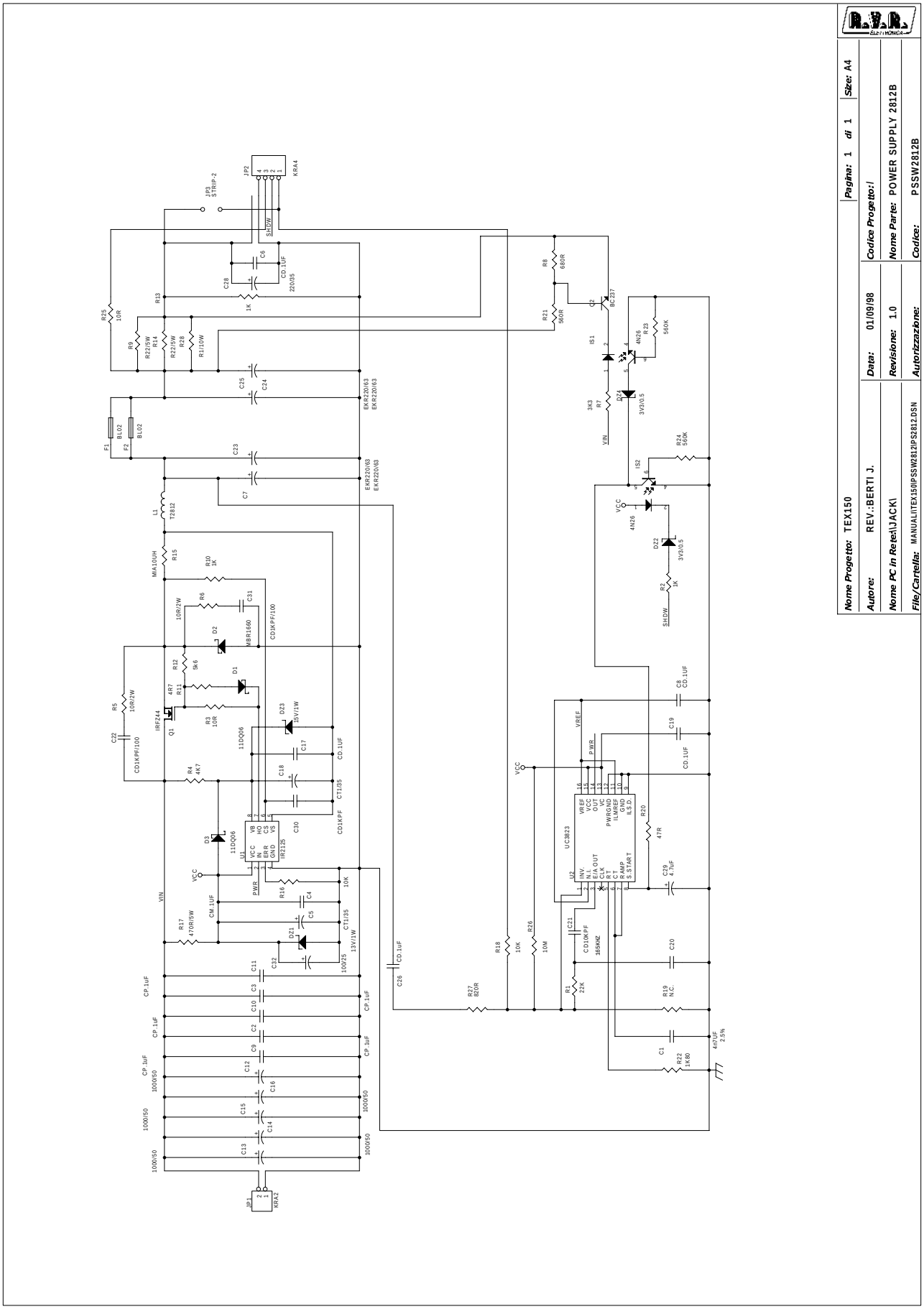

PSSW2812B
R5
10R/2W
R6
10R/1W
C31
CD 1KPF
R15
R01
L1
C7
EKR220/63
C24
C25
C2
.1uF
C22
CD 1KPF
MBR1660
C3
.1uF
C9
.1uF
IRF744
C11
.1uF
C10
.1uF
4K7
R4
5K6
R12
10R
R3
C30
1KPF
D1
11DQ06
R10
1K0
R11
4R7
C18
1/25
D23
C17.1uF
C26
.1uF
C23
CP0.1uF
L2
3V3/0.5
BL02
F1
F2
R14
R28
R1/10W
R27
820R
R20
47R
R24
560K
DZ4
R23
560K
R9
C14
1000/50
C15
1000/50
C13
1000/50
C12
1000/50
C16
1000/50
D3
11DQ06
15V/1W
U1
IR2125
U2
C33
.1uF
IS2
4N26
IS1
4N26
1K
R13
R22/5W
R22/5W
C5
1uF
C19
.1uF
C4
.1uF
DZ1
R16
10K
R26
10W
13V/1W
R18
22K
R1
C8
.1uF
C21
10KPF
C1
4n7
2.5%
R22
R7
3K3
C29
.1uF
4.7uF
R2
1K
DZ2
3V3/0.5
R8
680R
R25
10R
R21
560R
Q2
BC237
C6
.1uF
C28
220/35
C32
100/25
1K8
JP1
JP2
JP3
470R/5W
R17
Nome Progetto: TEX150
Autore: REV.:BERTI J.
Nome PC in Rete: \\JACK\
File/Cartella:
Scala: /
Materiale: /
Data: 01/09/98
Revisione: <Rev.>
Autorizzazione:
Trattamento: /
Pagina: 1 di 1
Size: A4
Codice Progetto: /
Nome Parte: POWER SUPPLY 2812B
Codice: PSSW2812B
Profilo: /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Pagina: 1 di 1
Size: A4
Autore: REV.:BERTI J.
Data: 01/09/98
Codice Progetto:/
Nome PC in Rete\\JACK\
Revisione: 1.0
Nome Parte: POWER SUPPLY 2812B
File/Cartella: MANUALI\TEX150\PSSW2812\PS2812.DSN
Autorizzazione:
Codice: PSSW2812B

PS2812B.SCH Bill Of Materials Page 1

Item	Quantity	Reference	Part
1	1	C1	4n7UF
2	5	C2,C3,C9,C10,C11	CP.1uF
3	1	C4	CM.1UF
4	2	C18,C5	CT1/35
5	5	C6,C8,C17,C19,C26	CD.1UF
6	4	C7,C23,C24,C25	EKR220/63
7	5	C12,C13,C14,C15,C16	1000/50
8	1	C20	N.C.
9	1	C21	CD10KPF
10	2	C22,C31	CD1KPF/100
11	1	C28	220/35
12	1	C29	4.7uF
13	1	C30	CD1KPF
14	1	C32	100/25
15	1	DZ1	13V/1W
16	2	DZ2,DZ4	3V3/0.5
17	1	DZ3	15V/1W
18	2	D1,D3	11DQ06
19	1	D2	MBR1660
20	2	F2,F1	BL02
21	2	IS2,IS1	4N26
22	1	JP1	KRA2
23	1	JP2	KRA4
24	1	JP3	STRIP-2
25	1	L1	T2812
26	1	Q1	IRFZ44
27	1	Q2	BC237
28	1	R1	22K
29	3	R2,R10,R13	1K
30	2	R3,R25	10R
31	1	R4	4K7
32	2	R6,R5	10R/2W
33	1	R7	3K3
34	1	R8	680R
35	2	R14,R9	R22/5W
36	1	R11	4R7
37	1	R12	5k6
38	1	R15	MIA10UH
39	2	R16,R18	10K
40	1	R17	470R/5W
41	1	R19	N.C.
42	1	R20	47R
43	1	R21	560R
44	1	R22	1K80
45	2	R24,R23	560K
46	1	R26	10M
47	1	R27	820R
48	1	U1	IR2125
49	1	U2	UC3823
50	1	R28	R1/10W

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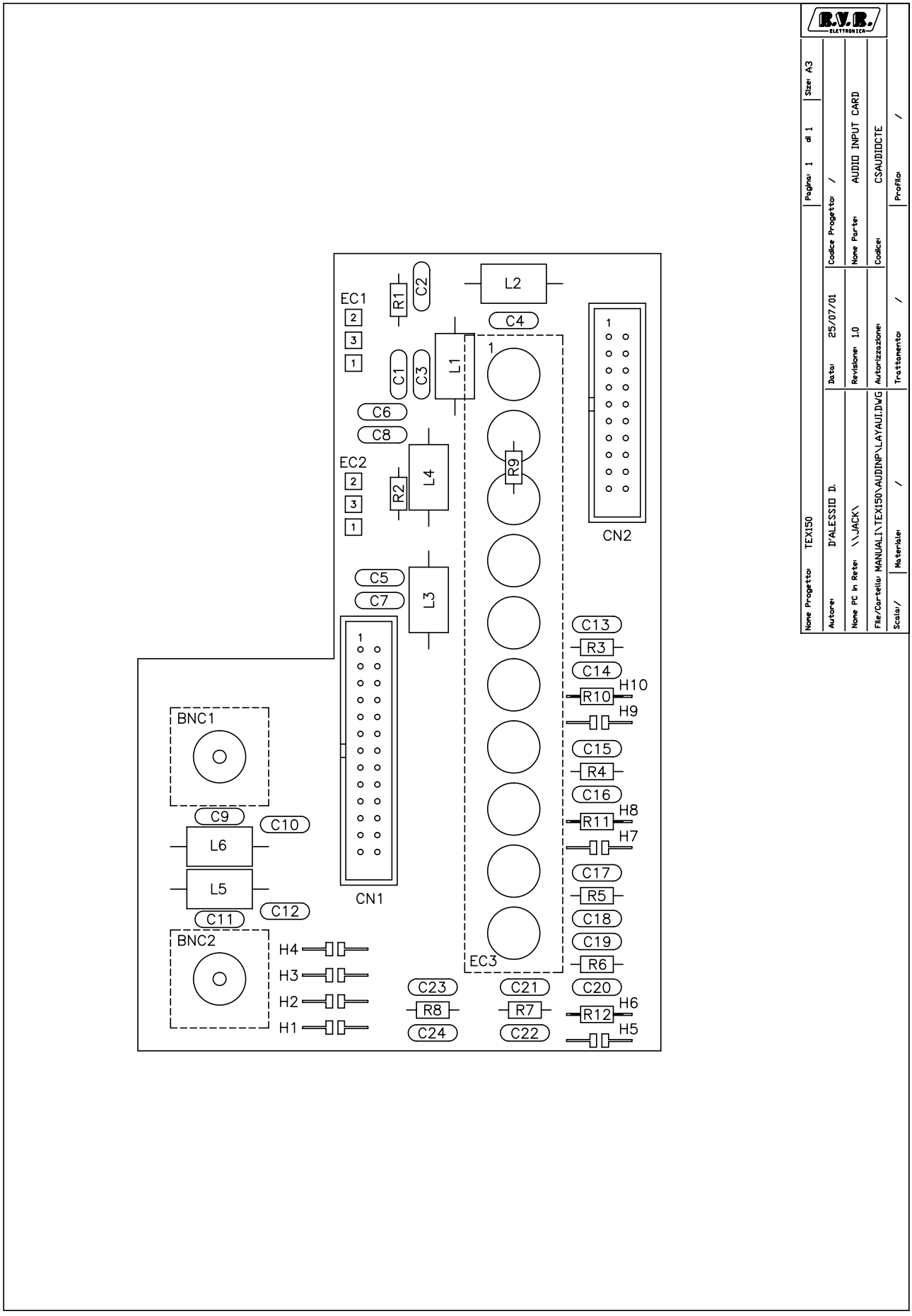
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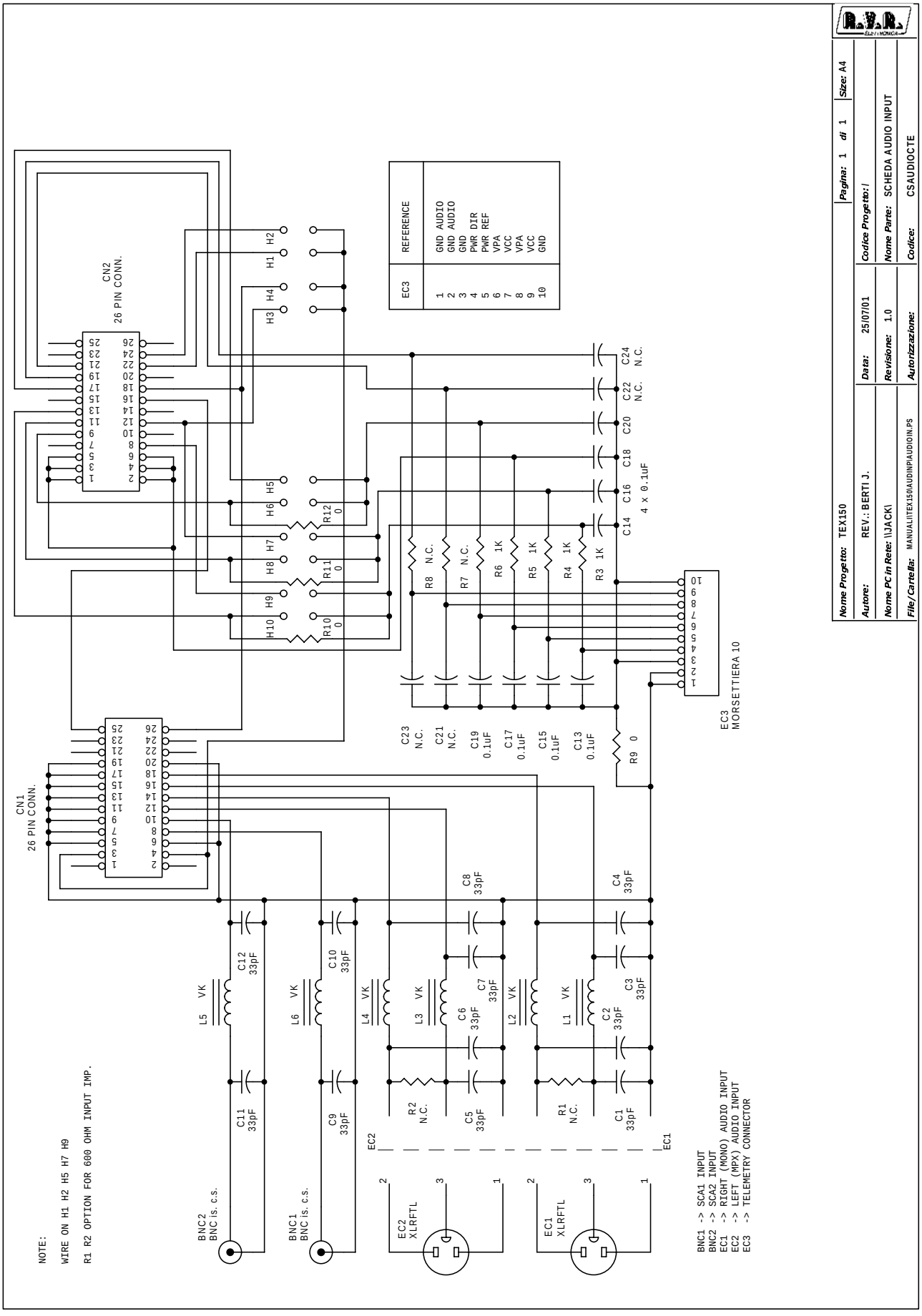
Autore: D'ALESSIO D.
Nome PC in Rete: \\JACK\
File/Cartella: MANUALI\TEX150\AUDINP\LAYAUI.DWG
Scala: /
Materiale: /
Data: 25/07/01
Revisione: 1.0
Autorizzazione:
Trattamento: /
Pagina: 1 di 1
Size: A3
Codice Progetto: /
Nome Parte: AUDIO INPUT CARD
Codice: CSAUDIOCTE
Profilo: /
EC1
EC2
EC3
L1
L2
L3
L4
L5
L6
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
C21
C22
C23
C24
H1
H2
H3
H4
H5
H6
H7
H8
H9
H10
BNC1
BNC2
CN1
CN2


Nome Progetto: TEX150
Autore: REV.: BERTI J.
Nome PC in Rete: \\JACK\
File/Cartella: MANUALI\TEX150\AUDIN\PAUDIOIN.PS
Data: 25/07/01
Revisione: 1.0
Autorizzazione:
Pagina: 1 di 1
Size: A4
Codice Progetto: /
Nome Parte: SCHEDA AUDIO INPUT
Codice: CSAUDIOCTE
CN1 26 PIN CONN.
CN2 26 PIN CONN.
EC3 REFERENCE
1 GND AUDIO
2 GND AUDIO
3 GND
4 PWR DIR
5 PWR REF
6 VPA
7 VCC
8 VPA
9 VCC
10 GND
EC3 MORSETTIERA 10
BNC2 BNC i.s. c.s.
BNC1 BNC i.s. c.s.
EC2 XLRFTL
EC1 XLRFTL
NOTE:
WIRE ON H1 H2 H5 H7 H9
R1 R2 OPTION FOR 600 OHM INPUT IMP.
BNC1 -> SCA1 INPUT
BNC2 -> SCA2 INPUT
EC1 -> RIGHT (MONO) AUDIO INPUT
EC2 -> LEFT (MPX) AUDIO INPUT
EC3 -> TELEMETRY CONNECTOR

CSAUDIOCTE Bill Of Materials Page 1

Item	Quantity	Reference	Part	Description	Part Order Code
1	4	R3,R4, R5,R6	1K	RESISTOR 1/4W 5%	
2	12	C1,C2,C3, C4,C5,C6, C7,C8,C9, C10,C11,C12	33pF	CERAMIC CAPACITOR NP0	
3	8	C13,C14, C15,C16, C17,C18, C19,C20	0.1uF	CERAMIC CAPACITOR	
4	6	L1,L2,L3, L4,L5,L6	VK	RF CHOKE	
5	2	EC1,EC2	XLRFTL	XLR FEMM. DA TELAIO	
6	1	EC3	MORSET. 10	MORSETT. TEL. 10 CONT.	
7	2	CN1,CN2	26 P CONN.	CONN. M 2*13 P 2.54	
8	2	BNC1,BNC2	BNC IS.CS.	CONN. BNC A STAMP. IS.	
9	10	H1,H2,H3, H4,H5,H6, H7,H8, H9,H10	WIRE JUMP.	PONTICELLO A FILO	
10	8	R1,R2,R7, R8,C21,C22, C23,C24	N.C.	RESISTOR 0OHM	
11	4	R9,R10,R11, R12	0	NOT CONNECTED	

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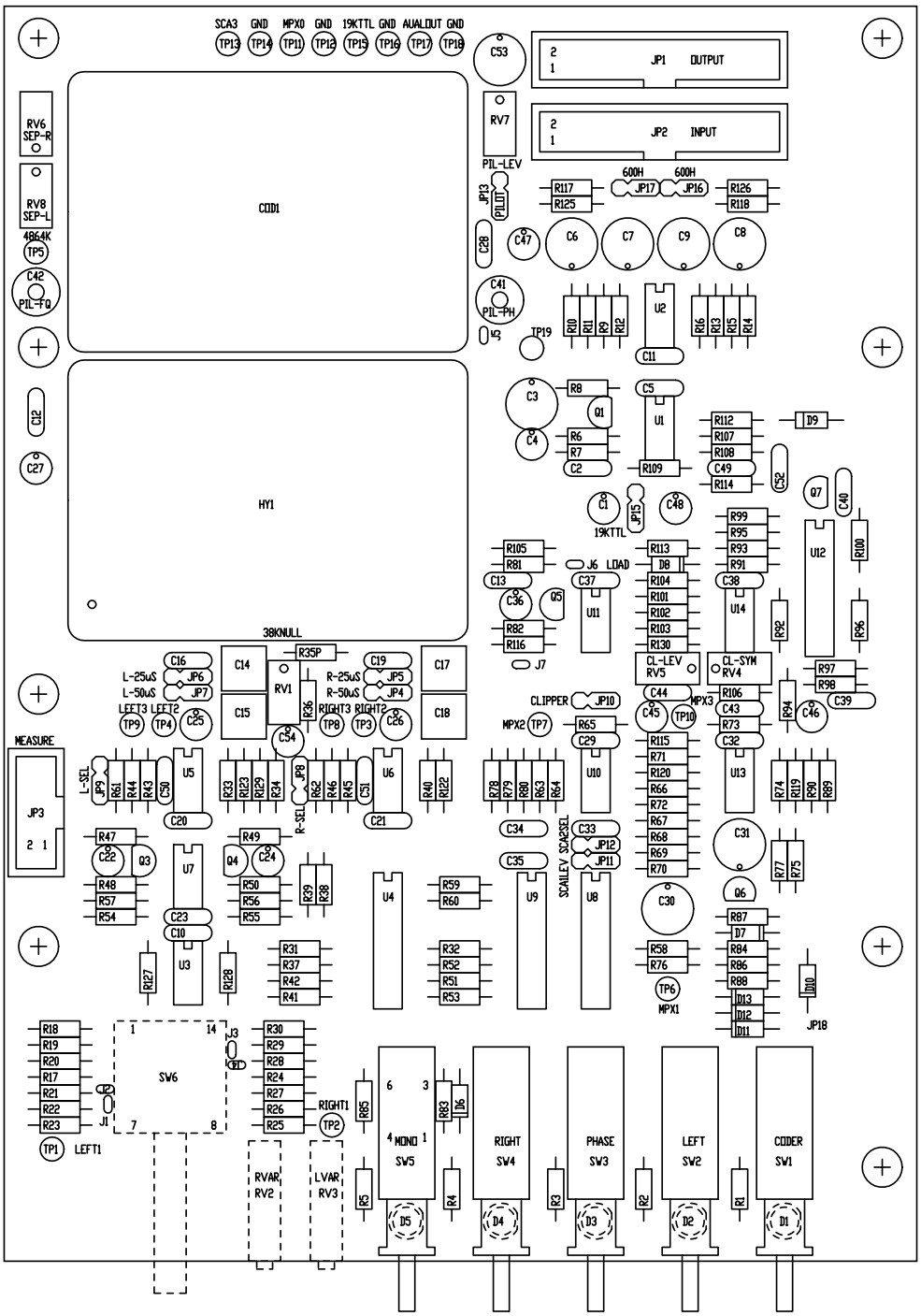
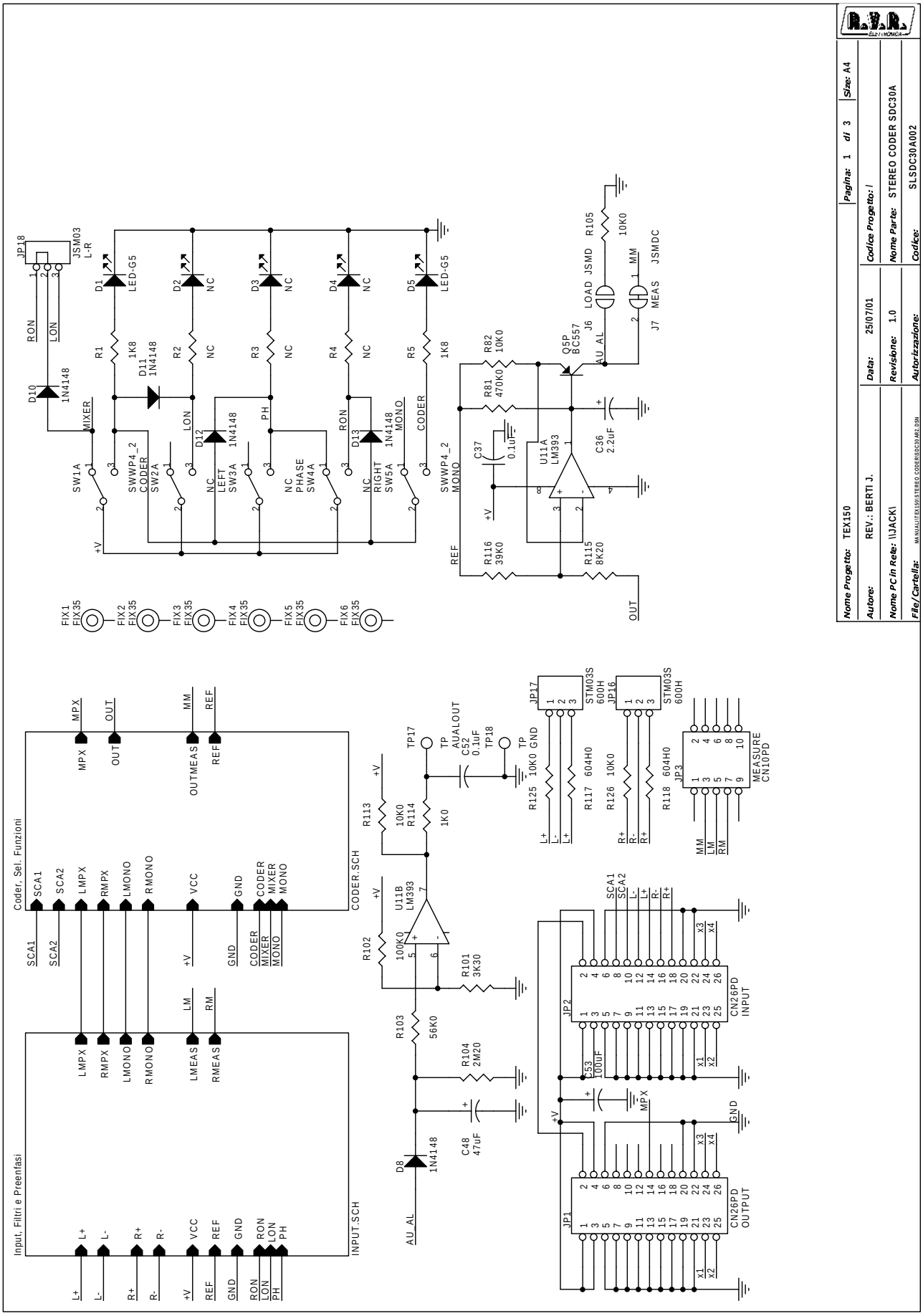
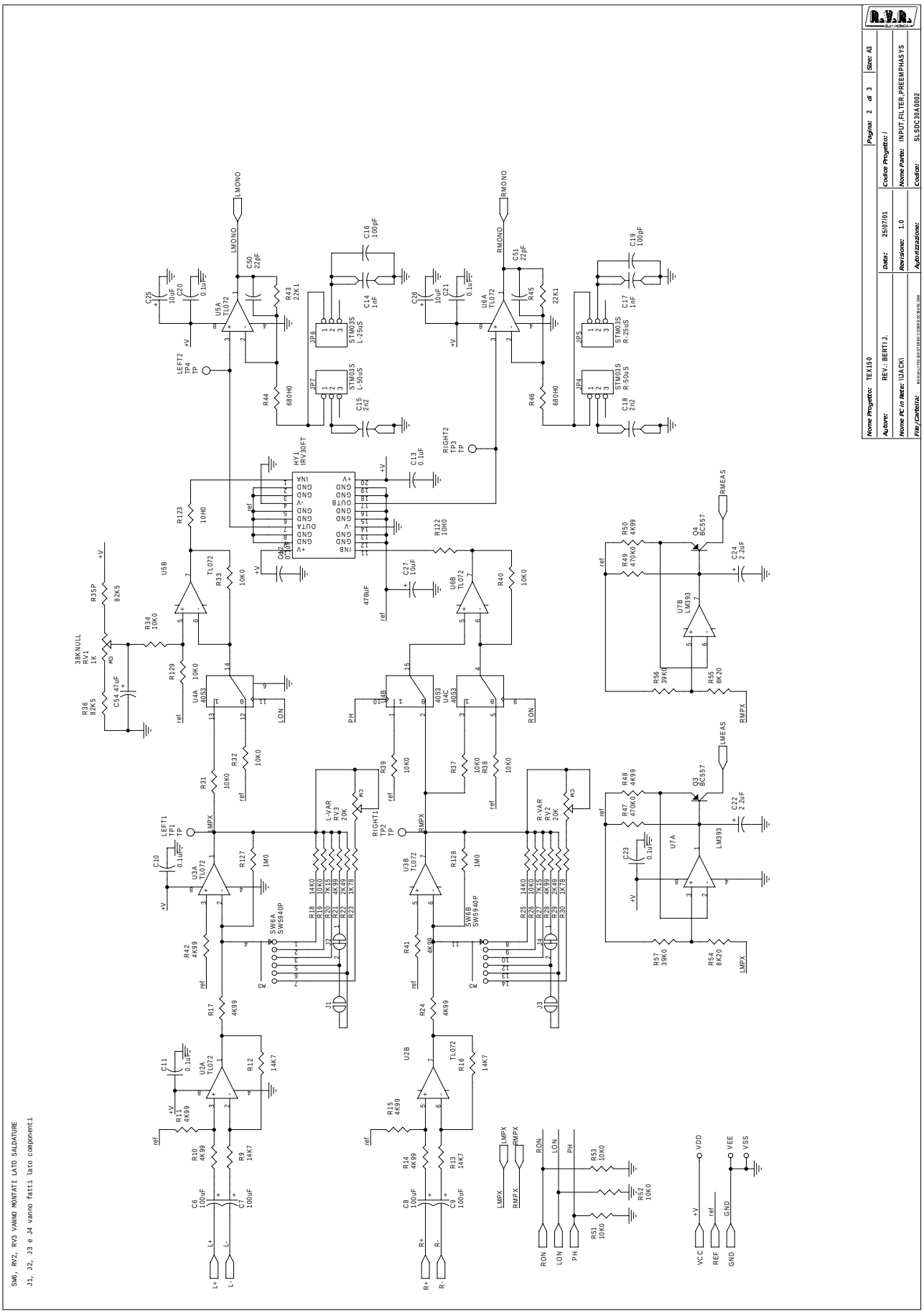
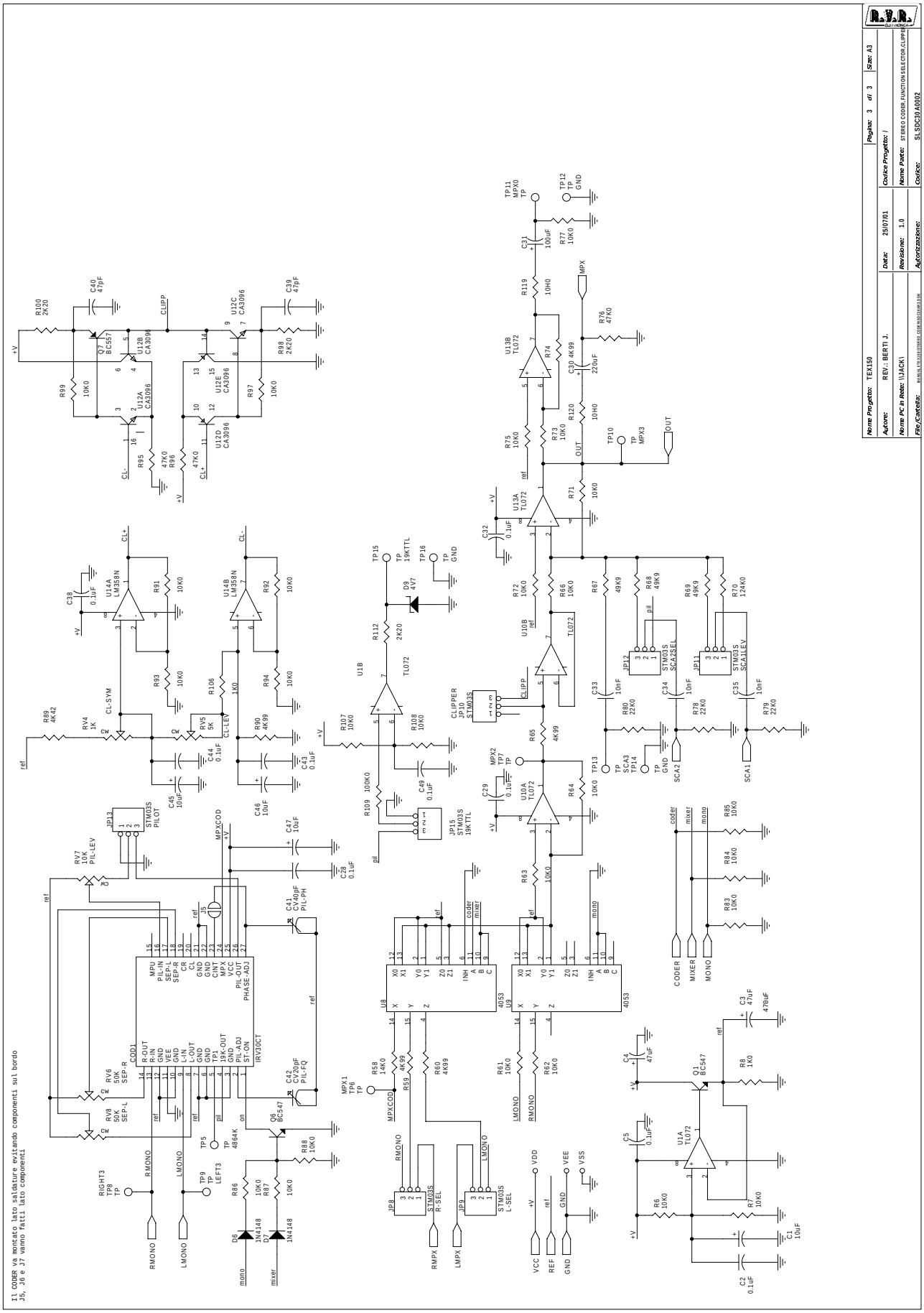


Nome Progetto: TEX150		Pagina: 1 di 1	Size: A4
Autore: REV. BERTI J.	Data: 26/05/01	Codice Progetto: /	
Nome PC in Rete: \\JACK\	Revisione: A4	Nome Parte: SCHEDA CDDER SDC30A/3	
File/Cartella: MANUALI\TEX150\STEREO CDDER\SDC30A_3.DVG	Autorizzazione:	Codice: CSSDC30A0003	
Scala: /	Materiale: /	Trattamento: /	Profilo: /


Nome Progetto: TEX150
Pagina: 1 di 3
Size: A4
Autore: REV.: BERTI J.
Data: 25/07/01
Codice Progetto: I
Nome PC in Rete: \\JACK\
Revisione: 1.0
Nome Parte: STEREO CODER SDC30A
File/Cartella: MANUALI\TEX150\STEREO CODER\SDC30.PRJ; DBN
Autorizzazione:
Codice: SLSDC30A002
JP18
JSM03
L-R
RON
LON
D10
1N4148
MIXER
R1
1K8
D1
LED-G5
D11
1N4148
LON
R2
NC
D2
NC
D12
1N4148
PH
R3
NC
D3
NC
D13
1N4148
RON
R4
NC
D4
NC
MONO
R5
1K8
D5
LED-G5
CODER
SW1A
SWWP4_2
CODER
SW2A
SW3A
SW4A
SW5A
SWWP4_2
MONO
NC
LEFT
NC
PHASE
NC
RIGHT
+V
REF
R116
39K0
R115
8K20
OUT
R82
10K0
R81
470K0
C37
0.1uF
U11A
LM393
Q5P
BC557
AU AL
J6
LOAD JSMD
R105
10K0
MM
J7
MEAS JSMDC
C36
2.2uF
FIX1
FIX35
FIX2
FIX35
FIX3
FIX35
FIX4
FIX35
FIX5
FIX35
FIX6
FIX35
Coder, Sel. Funzioni
SCA1
SCA2
LMPX
RMPX
LMONO
RMONO
VCC
GND
CODER
MIXER
MONO
MPX
OUT
OUTMEAS
REF
MM
CODER.SCH
Input, Filtri e Preenfasi
L+
L-
R+
R-
+V
REF
GND
RON
LON
PH
LMEAS
RMEAS
LM
RM
INPUT.SCH
R113
10K0
R114
1K0
TP17
TP
AUALOUT
C52
0.1uF
TP18
TP
GND
JP17
STM03S
600H
JP16
R125
10K0
R117
604H0
R126
10K0
R118
604H0
JP3
MEASURE
CN10PD
R102
100K0
U11B
LM393
R101
3K30
R103
56K0
R104
2M20
C48
47uF
D8
1N4148
JP2
CN26PD
INPUT
C53
100UF
JP1
CN26PD
OUTPUT
MPX
GND

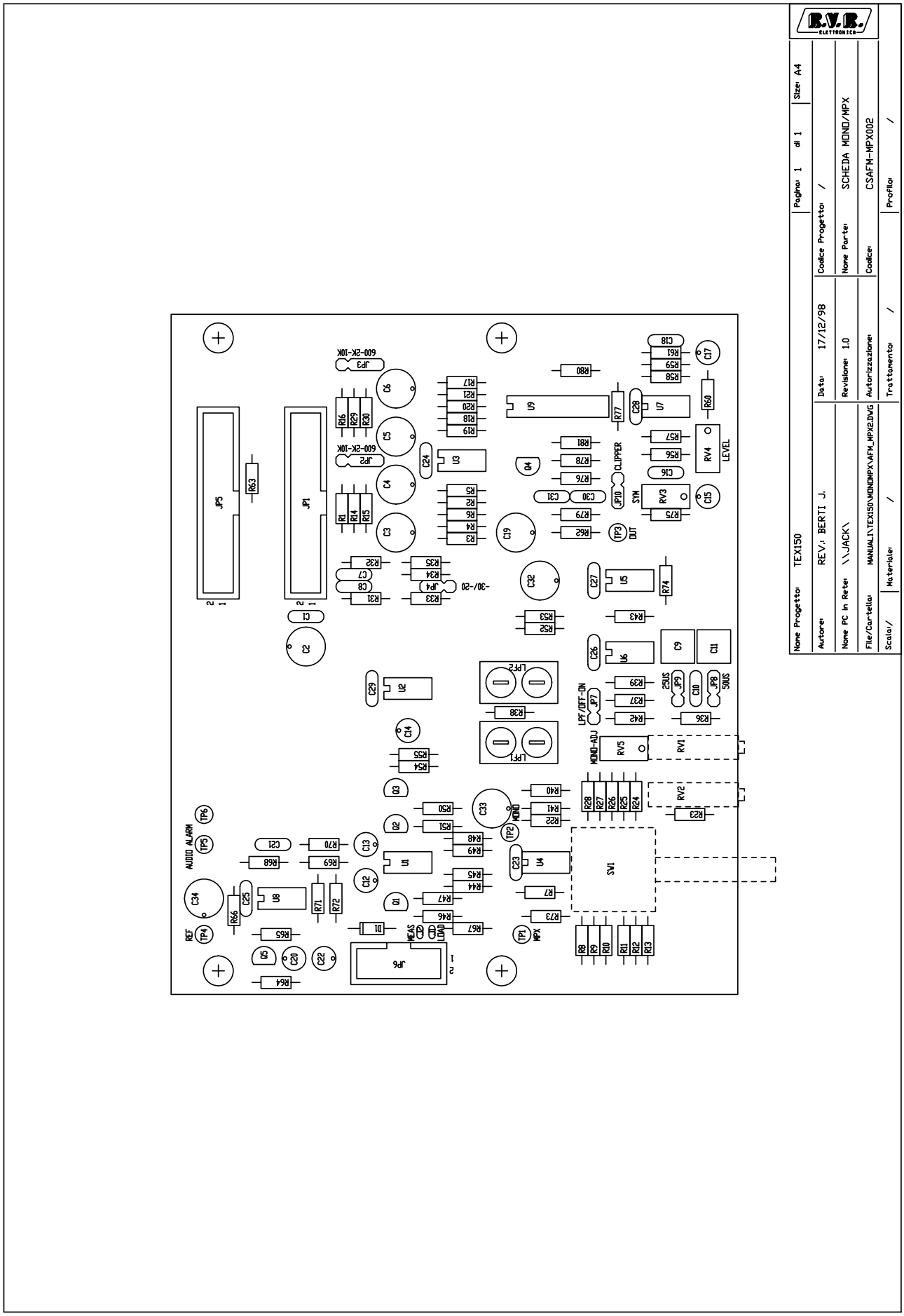

SW6, RV2, RV3 VANNO MONTATI LATO SALDATURE
J1, J2, J3 e J4 vanno fatti lato componenti
Nome Progetto: TEX150
Pagina: 2 di 3
Size: A3
Autore: REV.: BERTI J.
Data: 25/07/01
Codice Progetto: /
Nome PC in Rete: UACKI
Revisione: 1.0
Nome Parte: INPUT,FILTER,PREEMPHASYS
File /Cartella:
Autorizzazione:
Codice: SLSDC30A0002
LMONO
RMONO
LEFT1
RIGHT1
LEFT2
RIGHT2
LMPX
RMPX
LON
RON
PH
LMEAS
RMEAS
VDD
VEE
VSS
VCC
REF
GND

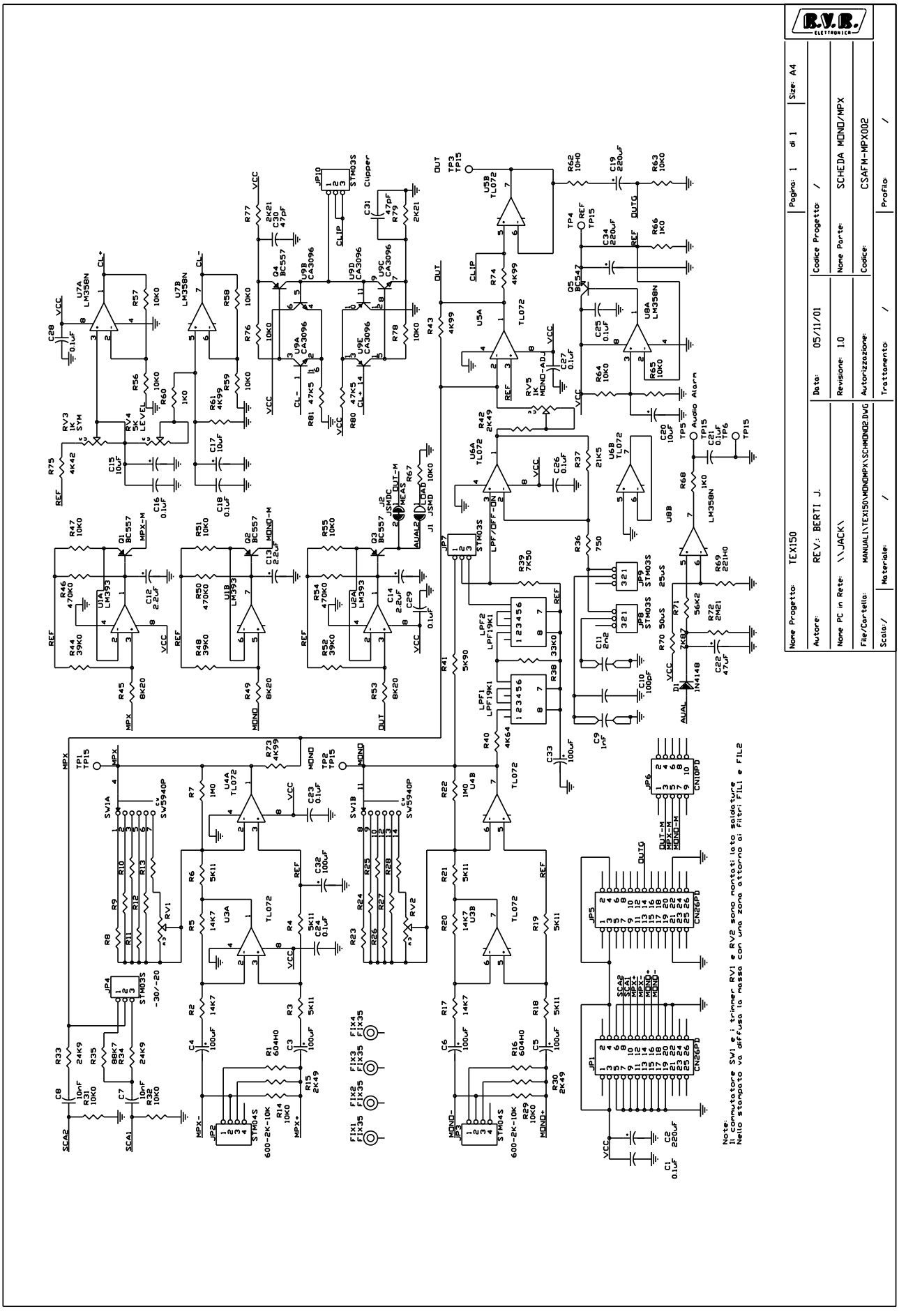

Il CODER va montato lato saldature evitando componenti sul bordo
J5, J6 e J7 vanno fatti lato componenti
Nome Progetto: TEX150
Autore: REV.: BERTI J.
Nome PC in Rete: \\JACK1
File/Cartella: MANUALI\SSSTEREO CODER\SSSMAIN.SCH
Pagina: 3 di 3
Size: A3
Data: 25/07/01
Revisione: 1.0
Codice Progetto: /
Nome Parte: STEREO CODER, FUNCTION SELECTOR, CLIPPER
Codice: SLSDC30A0002
Aggiornazione:

SLSDC30A002 Bill Of Materials Page1

Item	Quantity	Reference	Part
1	1	COD1	IRV30CT
2	7	C1,C25,C26,C27,C45,C46, C47	10uF
3	18	C2,C5,C10,C11,C12,C13, C20,C21,C23,C28,C29,C32, C37,C38,C43,C44,C49,C52	0.1uF
4	4	C3,C4,C48,C54	47uF
5	6	C6,C7,C8,C9,C31,C53	100uF
6	2	C17,C14	1nF
7	2	C18,C15	2n2
8	2	C19,C16	100pF
9	3	C22,C24,C36	2.2uF
10	1	C30	220uF
11	3	C33,C34,C35	10nF
12	2	C39,C40	47pF
13	1	C41	CV40pF
14	1	C42	CV20pF
15	2	C50,C51	22pF
16	2	D1,D5	LED-G5
17	9	SW2,R2,D2,SW3,R3,D3,SW4, R4,D4	NC
18	7	D6,D7,D8,D10,D11,D12,D13	1N4148
19	1	D9	4V7
20	6	FIX1,FIX2,FIX3,FIX4,FIX5, FIX6	FIX35
21	1	HY1	IRV30FT
22	2	JP1,JP2	CN26PD
23	1	JP3	CN10PD
24	13	JP4,JP5,JP6,JP7,JP8,JP9, JP10,JP11,JP12,JP13,JP15, JP16,JP17	STM03S
25	1	JP18	JSM03
26	4	J1,J3,J5,J6	JSMD
27	3	J2,J4,J7	JSMDC
28	2	Q1,Q6	BC547
29	4	Q3,Q4,Q5P,Q7	BC557
30	2	RV4,RV1	1K
31	2	RV2,RV3	20K
32	1	RV5	5K
33	2	RV8,RV6	50K
34	1	RV7	10K
35	2	R1,R5	1K8
36	45	R6,R7,R19,R26,R31,R32, R33,R34,R37,R38,R39,R40, R51,R52,R53,R61,R62,R63, R64,R66,R71,R72,R73,R75, R77,R82,R83,R84,R85,R86, R87,R88,R91,R92,R93,R94, R97,R99,R105,R107,R108, R113,R125,R126,R129	10K0
37	3	R8,R106,R114	1K0
38	4	R9,R12,R13,R16	14K7
39	17	R10,R11,R14,R15,R17,R21, R24,R28,R41,R42,R48,R50, R59,R60,R65,R74,R90	4K99

40	3	R18,R25,R58	14K0
41	2	R27,R20	7K15
42	2	R29,R22	2K49
43	2	R30,R23	1K78
44	2	R35P,R36	82K5
45	2	R45,R43	22K1
46	2	R46,R44	680H0
47	3	R47,R49,R81	470K0
48	3	R54,R55,R115	8K20
49	3	R56,R57,R116	39K0
50	3	R67,R68,R69	49K9
51	1	R70	124K0
52	3	R76,R95,R96	47K0
53	3	R78,R79,R80	22K0
54	1	R89	4K42
55	3	R98,R100,R112	2K20
56	1	R101	3K30
57	2	R102,R109	100K0
58	1	R103	56K0
59	1	R104	2M20
60	2	R117,R118	604H0
61	4	R119,R120,R122,R123	10H0
62	2	R127,R128	1M0
63	2	SW1,SW5	SWWP4_2
64	1	SW6	SW5940P
65	18	TP1,TP2,TP3,TP4,TP5,TP6, TP7,TP8,TP9,TP10,TP11, TP12,TP13,TP14,TP15,TP16, TP17,TP18	TP
66	7	U1,U2,U3,U5,U6,U10,U13	TL072
67	3	U4,U8,U9	4053
68	2	U11,U7	LM393
69	1	U12	CA3096
70	1	U14	LM358N

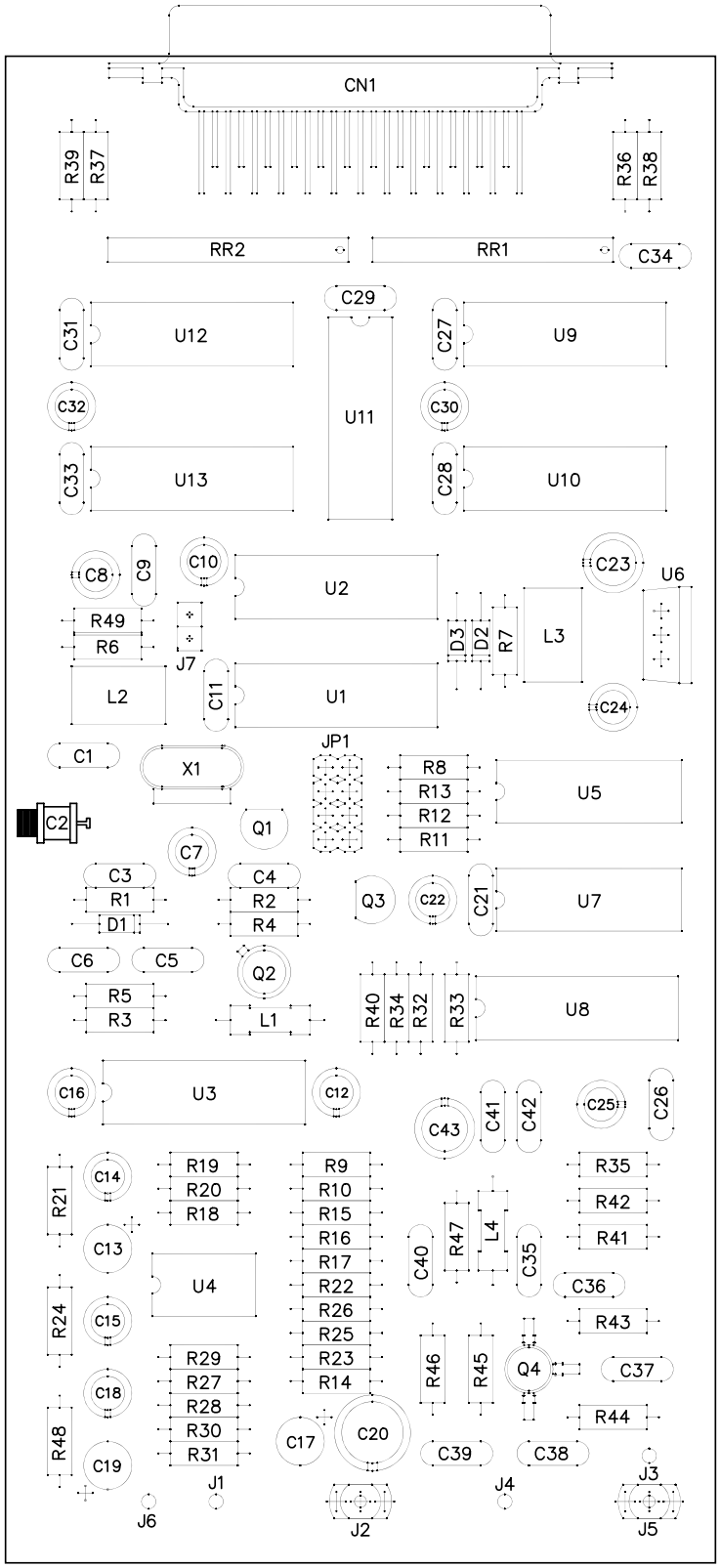

R.V.R. ELETTRONICA
Nome Progetto: TEX150
Pagina: 1 di 1
Size: A4
Autore: REV.: BERTI J.
Data: 17/12/98
Codice Progetto: /
Nome PC in Rete: \\JACK\
Revisione: 1.0
Nome Parte: SCHEDA MONO/MPX
File/Cartella: MANUALI\TEX150\MONOMPX\AFM_MPX2.DWG
Autorizzazione:
Codice: CSAFM-MPX002
Scala: /
Materiale: /
Trattamento: /
Profilo: /
JP5
JP1
JP6
JP3
JP2
JP4
U1
U2
U3
U4
U5
U6
U7
U8
U9
SW1
RV1
RV2
RV3
RV4
RV5
LPF1
LPF2
CLIPPER
SYM
LEVEL
MONO-ADJ
LPF/OFF-ON
25US
50US
AUDIO ALARM
REF
MEAS
MPX
DUT
MONO
TP1
TP2
TP3
TP4
TP5
TP6
600-2K-10K
-30/-20


R.V.R. ELETTRONICA
Nome Progetto: TEX150
Pagina: 1 di 1
Size: A4
Autore: REV.: BERTI J.
Data: 05/11/01
Codice Progetto: /
Nome PC in Rete: \\JACK\
Revisione: 1.0
Nome Parte: SCHEDA MONO/MPX
File/Cartella: MANUALI\TEX150\MONOMPX\SCHMONO2.DWG
Autorizzazione:
Codice: CSAFM-MPX002
Scala: /
Materiale: /
Trattamento: /
Profilo: /
Note:
Il commutatore SW1 e i trimmer RV1 e RV2 sono montati lato saldature
Nello stampato va diffusa la massa con una zona attorno ai Fitri FIL1 e FIL2

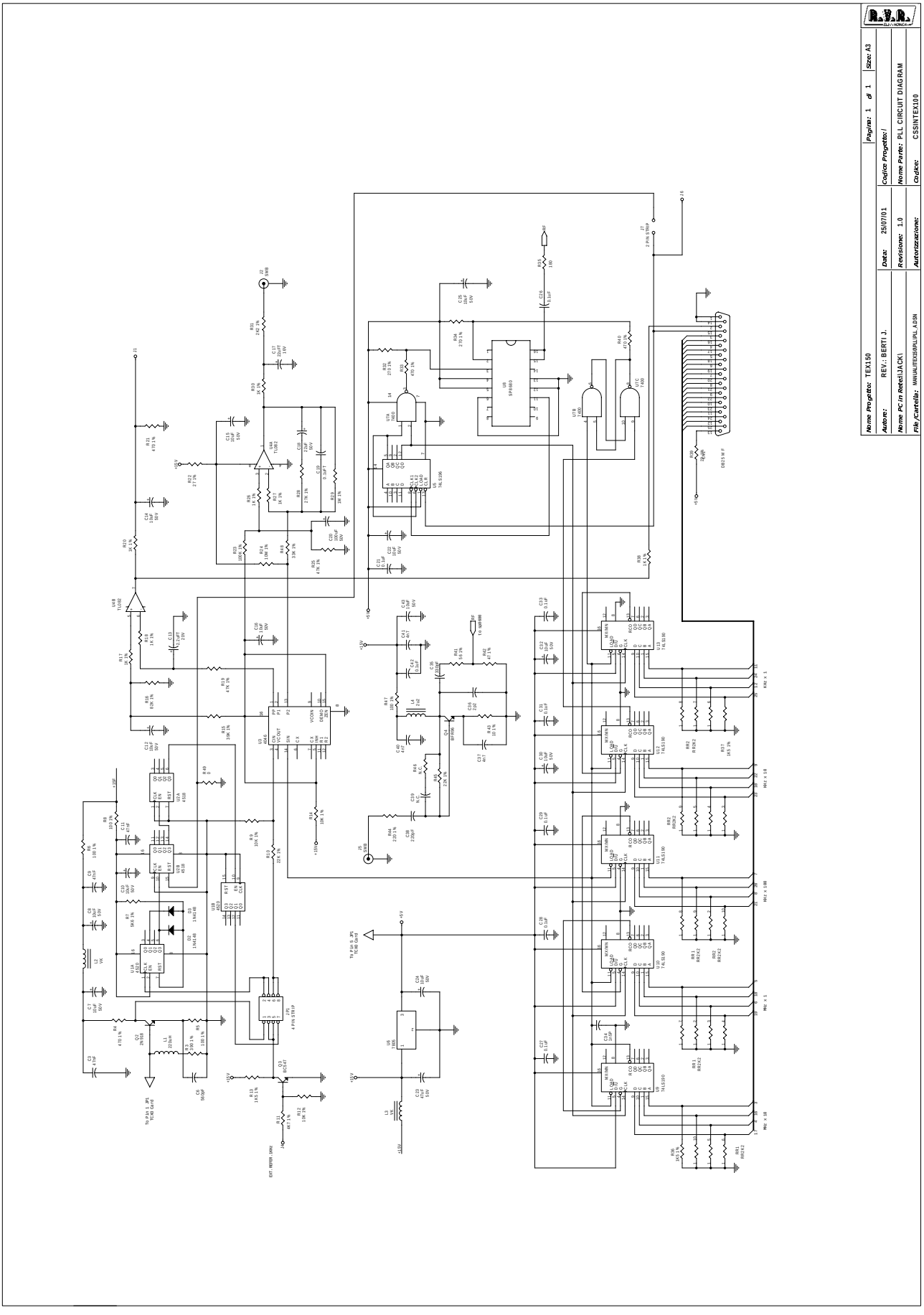
SLAFM-MPX002 Bill Of Materials Page 1

Item	Q.ty	Reference	Part
1	11	C1,C16,C18,C21,C23,C24, C25,C26,C27,C28,C29	0.1uF
2	3	C2,C19,C34	220uF
3	6	C3,C4,C5,C6,C32,C33	100uF
4	2	C7,C8	10nF
5	1	C9	1nF
6	1	C10	100pF
7	1	C11	2n2
8	3	C12,C13,C14	2.2uF
9	3	C15,C17,C20	10uF
10	1	C22	47uF
11	2	C30,C31	47pF
12	1	D1	1N4148
13	4	FIX1,FIX2,FIX3,FIX4	FIX35
14	2	JP1,JP5	CN26PD
15	2	JP2,JP3	STM04S
16	5	JP4,JP7,JP8,JP9,JP10	STM03S
17	1	JP6	CN10PD
18	1	J1	JSMD
19	1	J2	JSMDC
20	2	LPF1,LPF2	LPF19K1
21	4	Q1,Q2,Q3,Q4	BC557
22	1	Q5	BC547
23	2	RV1,RV2	20K
24	2	RV3,RV5	1K
25	1	RV4	5K
26	2	R1,R16	604H0
27	6	R2,R5,R8,R17,R20,R23	14K7
28	8	R3,R4,R6,R11,R18,R19,R21, R26	5K11
29	2	R7,R22	1M0
30	19	R9,R14,R24,R29,R31,R32, R47,R51,R55,R56,R57,R58, R59,R63,R64,R65,R67,R76, R78	10K0
31	2	R10,R25	7K15
32	5	R12,R15,R27,R30,R42	2K49
33	2	R13,R28	1K78
34	2	R33,R34	24K9
35	1	R35	88K7
36	1	R36	750
37	1	R37	21K5
38	1	R38	33K0
39	1	R39	7K50
40	1	R40	4K64
41	1	R41	5K90
42	4	R43,R61,R73,R74	4K99
43	3	R44,R48,R52	39K0
44	3	R45,R49,R53	8K20
45	3	R46,R50,R54	470K0
46	3	R60,R66,R68	1K0
47	1	R62	10H0
48	1	R69	221H0

49	1	R70	7K87
50	1	R71	56K2
51	1	R72	2M21
52	1	R75	4K42
53	2	R77,R79	2K21
54	2	R81,R80	47K5
55	1	SW1	SW5940P
56	6	TP1,TP2,TP3,TP4,TP5,TP6	TP15
57	2	U2,U1	LM393
58	4	U3,U4,U5,U6	TL072
59	2	U8,U7	LM358N
60	1	U9	CA3096



Nome Progetto: TEX150	Pagina: 1 di 1	Size: A4	
Autore: REV.: BERTI J.	Data: 25/07/01	Codice Progetto: /	
Nome PC in Rete: \\JACK\	Revisione: 1.0	Nome Parte: PLL CARD COMPONENT	
File/Cartella: MANUALI\TEX150\PLL\LAYPLL.DWG	Autorizzazione:	Codice: CSSINTEX100	Profilo: /
Scala: /	Materiale: /	Trattamento: /	


Nome Progetto: TEX150
Pagina: 1 di 1
Size: A3
Autore: REV. BERTI J.
Data: 25/07/01
Codice Progetto: /
Nome PC in Rete: \JACK\
Revisione: 1.0
Nome Parte: PLL CIRCUIT DIAGRAM
File/Cartella: MANUALITEX150\PLL.ASW
Autorizzazione:
Codice: CSSINTEX100

CSSINTEX100 Bill Of Materials Page 1

Item	Quantity	Reference	Part	DESCRIPTION	PART ORDER CODE
1	1	R49	0	0 OHM RESISTOR	
2	1	R43	10 1%	RESISTOR 1/4W 1%	
3	1	R39	22 1%	RESISTOR 1/4W 1%	
4	1	R22	27 1%	RESISTOR 1/4W 1%	
5	1	R42	47 1%	RESISTOR 1/4W 1%	
6	1	R50	47#	RESISTOR 2W	
7	1	R41	56 1%	RESISTOR 1/4W 1%	
8	4	R5,R6,R8,R47	100 1%	RESISTOR 1/4W 1%	
9	1	R35	180	RESISTOR 1/4W 5%	
10	1	R44	220 1%	RESISTOR 1/4W 1%	
11	2	R32,R34	270 1%	RESISTOR 1/4W 1%	
12	1	R3	390 1%	RESISTOR 1/4W 1%	
13	4	R4,R21,R33,R40	470 1%	RESISTOR 1/4W 1%	
14	1	R2	820 1%	RESISTOR 1/4W 1%	
15	7	R17,R18,R20,R26,R27,R30, R38	1K 1%	RESISTOR 1/4W 1%	
16	3	R13,R36,R37	1K5 1%	RESISTOR 1/4W 1%	
17	1	R31	2K2 1%	RESISTOR 1/4W 1%	
18	1	R11	4K7 1%	RESISTOR 1/4W 1%	
19	1	R7	5K6 1%	RESISTOR 1/4W 1%	
20	3	R9,R12,R14	10K 1%	RESISTOR 1/4W 1%	
21	2	R10,R45	22K 1%	RESISTOR 1/4W 1%	
22	1	R28	27K 1%	RESISTOR 1/4W 1%	
23	1	R48	33K 1%	RESISTOR 1/4W 1%	
24	1	R15	39K 1%	RESISTOR 1/4W 1%	
25	2	R19,R25	47K 1%	RESISTOR 1/4W 1%	
26	1	R16	82K 1%	RESISTOR 1/4W 1%	
27	1	R23	100K 1%	RESISTOR 1/4W 1%	
28	2	R1,R29	1M 1%	RESISTOR 1/4W 1%	
29	1	R24	10M 1%	RESISTOR 1/4W 1%	
30	2	RR1,RR2	RR2K2	RESISTOR NETWORK	
31	1	C36	2P2	CERAMIC CAPACITOR NP0	
32	1	C2	M10PF	PRECISION TRIMMER CAP.	
33	1	C1	18PF	CERAMIC CAPACITOR NP0	
34	1	C5	33PF	CERAMIC CAPACITOR NP0	
35	1	C38	220PF	CERAMIC CAPACITOR NP0	
36	1	C35	330PF	CERAMIC CAPACITOR	
37	1	C6	560PF	CERAMIC CAPACITOR	
38	1	C34	1N5P	POLIESTER CAPACITOR	
39	3	C37,C40,C41	4N7	CERAMIC CAPACITOR	
40	4	C3,C4,C9,C11	47NF	CERAMIC CAPACITOR	
41	8	C21,C26,C27,C28,C29,C31, C33,C42	0.1UF	CERAMIC CAPACITOR	
42	1	C19	0.1UFT	TANTALIUM CAPACITOR	
43	1	C13	2.2UFT	TANTALIUM CAPACITOR	
44	13	C7,C8,C10,C12,C14,C15, C16,C22,C24,C25,C30,C32, C43	10UF	ELECTROLYTIC CAPACITOR	
45	1	C18	22UF	ELECTROLYTIC CAPACITOR	
46	1	C17	22UFT	TANTALIUM CAPACITOR	
47	1	C23	47UF	ELECTROLYTIC CAPACITOR	
48	1	C20	100UF	ELECTROLYTIC CAPACITOR	
49	1	L4	2U2	RF CHOKE	
50	1	L1	220UH	RF CHOKE	
51	2	L2,L3	VK	RF CHOKE	

52	1	J7	2 PIN STRIP	STRIP M P 2.54 2 PIN
53	1	JP1	4 PIN STRIP	STRIP M P 2.54 4 PIN
54	1	J1	2 PIN JUMP	MINIJUMPER P 2.54
55	1	CN1	DB25 M F	CONN. M 25 FILTRATO MURATA
56	2	J2,J5	SMB	CONN. SMB A CRIMP. RG188
57	1	XTAL TERM1	PTH	CRYSTAL HEATER
58	1	X1	Q4MHZ	CRYSTAL
59	3	D1,D2,D3	1N4148	SILICON DIODE
60	1	U6	7805	POS. STABILIZER 1A
61	1	Q3	BC547	NPN TRANSISTOR
62	1	Q2	2N918	NPN RF TRANSISTOR
63	1	Q4	BFR96	NPN RF TRANSISTOR
64	1	Q1	BF245B	FET TRANSISTOR
65	1	U4	TL082	DOUBLE OP. AMP.
66	1	U8	SP8680	ECL DIVIDER
67	1	U3	4046	CMOS PHASE COMPARATOR
68	1	U2	4518	CMOS BCD DIVIDER
69	1	U1	4520	CMOS BIN DIVIDER
70	1	U7	7400	TTL QUAD NAND
71	5	U9,U10,U11,U12,U13	74LS190	TTL BCD DIVIDER
72	1	U5	74LS196	TTL LS DIVIDER
73	2	C39,R46	N.C.	NOT CONNECTED

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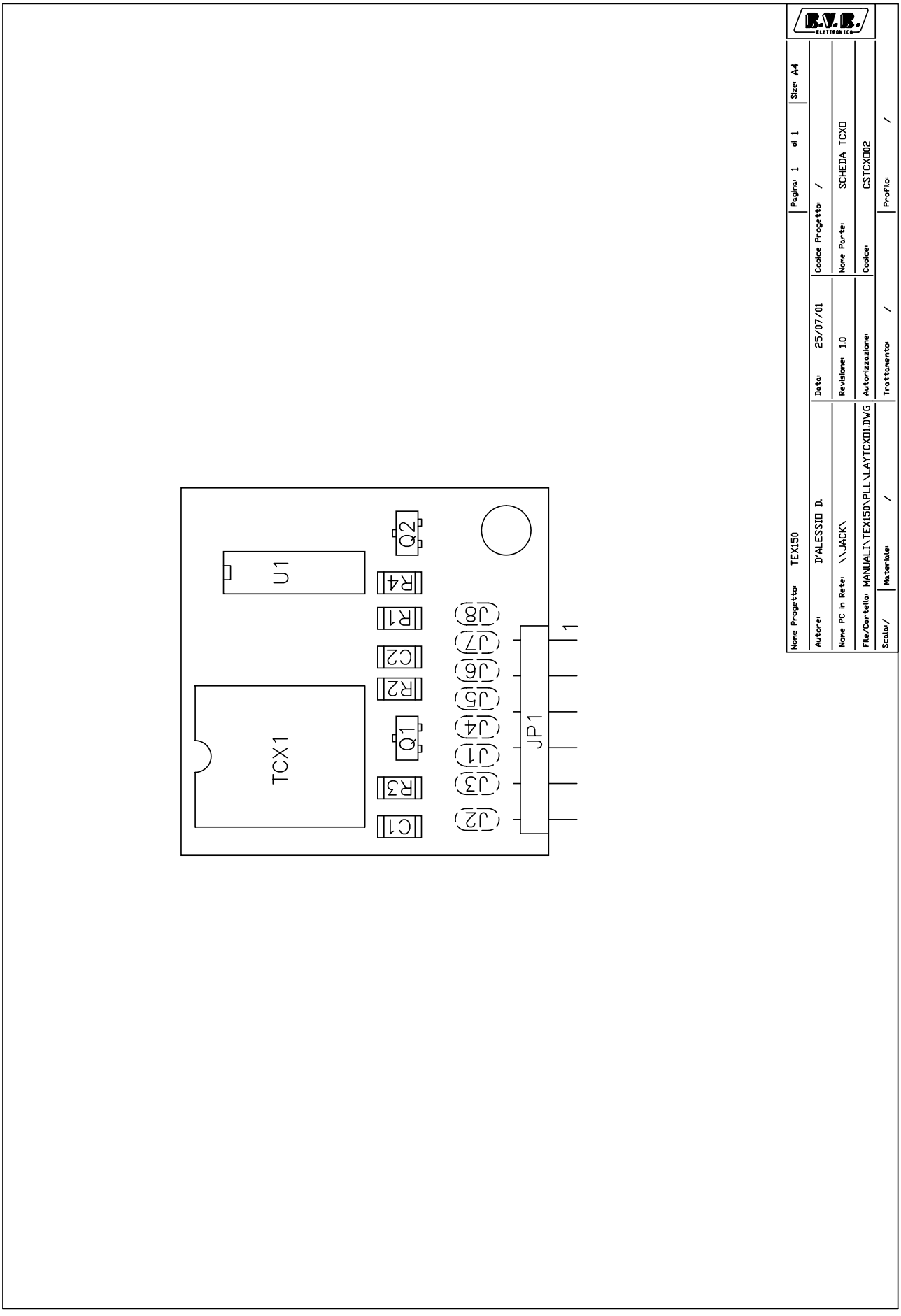
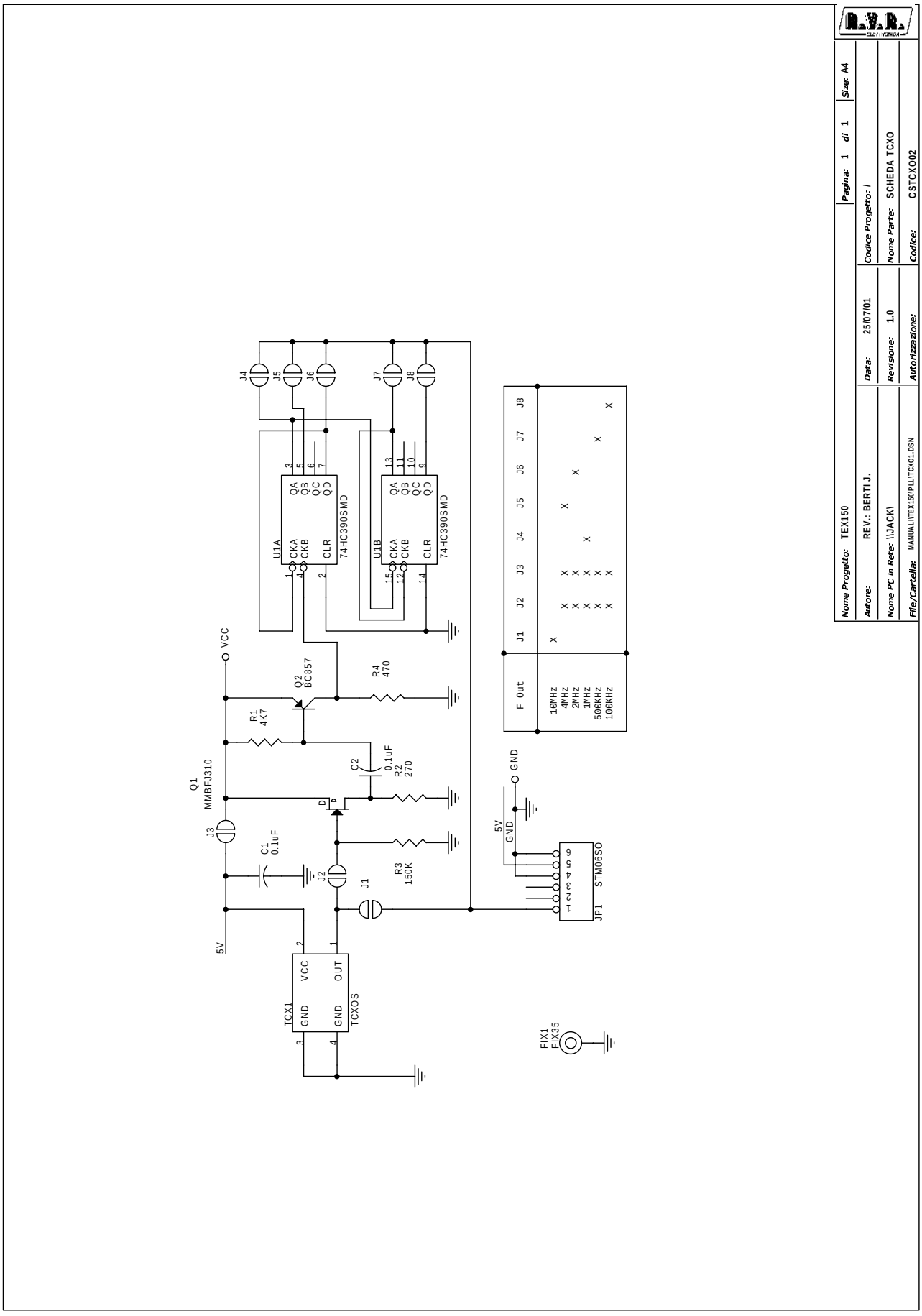

U1
Q2
R4
R1
C2
R2
Q1
R3
C1
TCX1
JP1
1
Nome Progetto: TEX150
Pagina: 1 di 1
Size: A4
Autore: D'ALESSIO D.
Data: 25/07/01
Codice Progetto: /
Nome PC in Rete: \\JACK\
Revisione: 1.0
Nome Parte: SCHEDA TCXO
File/Cartella: MANUALI\TEX150\PLL\LAYTCXO1.DVG
Autorizzazione:
Codice: CSTCXO02
Scala: /
Materiale: /
Trattamento: /
Profilo: /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Autore: REV.: BERTI J.
Nome PC in Rete: \\JACK\
File/Cartella: MANUALI\TEX150\PLL\TCXO1.DSN
Data: 25/07/01
Revisione: 1.0
Autorizzazione:
Pagina: 1 di 1
Size: A4
Codice Progetto: /
Nome Parte: SCHEDA TCXO
Codice: CSTCXO02
U1A
U1B
74HC390SMD
CKA
CKB
CLR
QA
QB
QC
QD
J4
J5
J6
J7
J8
F Out
10MHz
4MHz
2MHz
1MHz
500KHz
100KHz
VCC
5V
GND
Q1
MMBFJ310
Q2
BC857
R1
4K7
R2
270
R3
150K
R4
470
C1
0.1uF
C2
0.1uF
J1
J2
J3
TCX1
TCXOS
FIX1
FIX35
JP1
STM06SO

TCXO10MHZ Bill Of Materials Page 1

Item	Quantity	Reference	Part
1	2	C1,C2	0.1uF
2	1	FIX1	FIX35
3	1	JP1	STM06SO
4	8	J1,J2,J3,J4,J5,J6,J7,J8	JSMD
5	1	Q1	MMBFJ310
6	1	Q2	BC857
7	1	R1	4K7
8	1	R2	270
9	1	R3	150K
10	1	R4	470
11	1	TCX1	TCXOS
12	1	U1	HC390SMD

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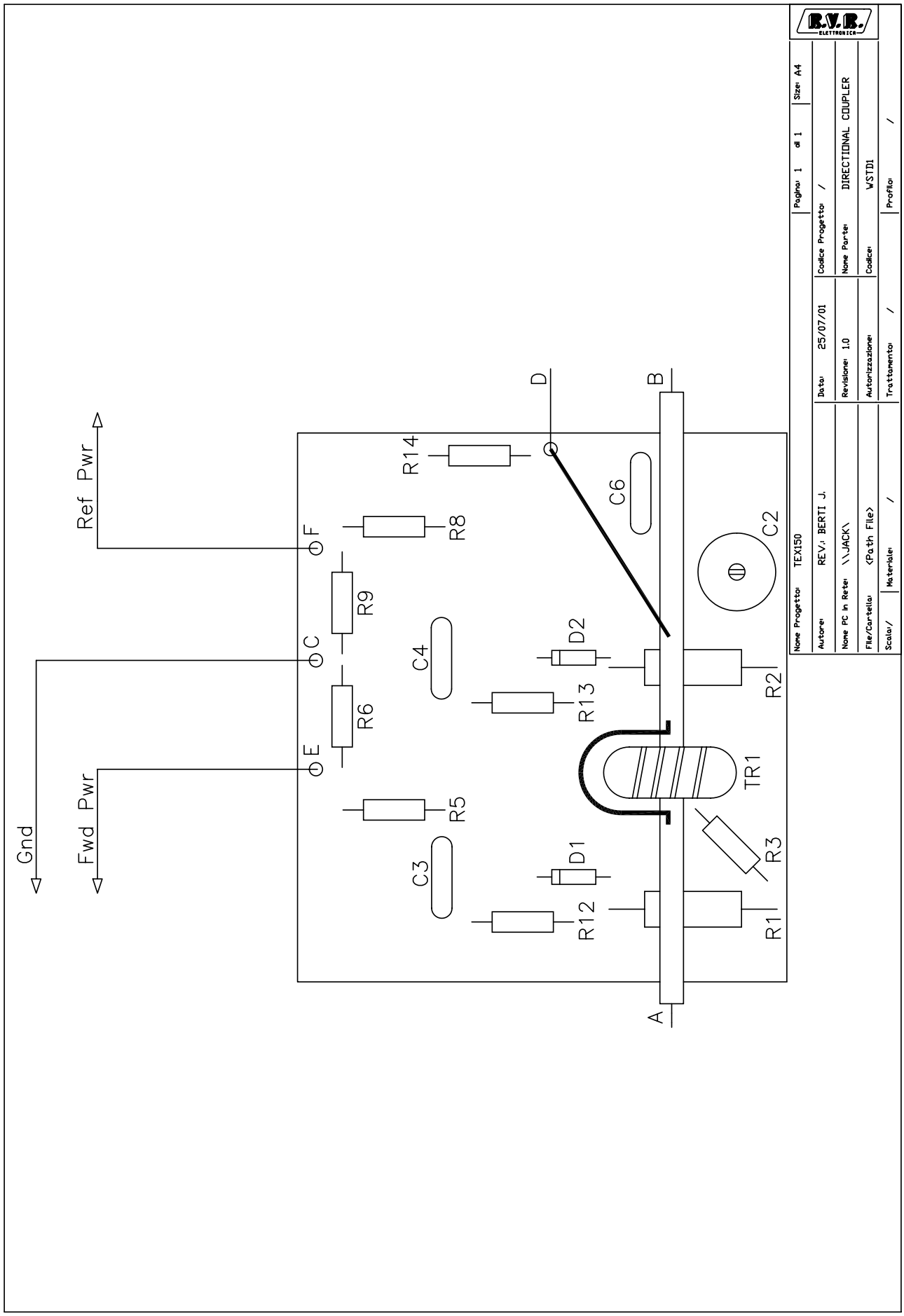
Ref Pwr
Fwd Pwr
Gnd
A
B
C
D
E
F
R1
R2
R3
R5
R6
R8
R9
R12
R13
R14
C2
C3
C4
C6
D1
D2
TR1
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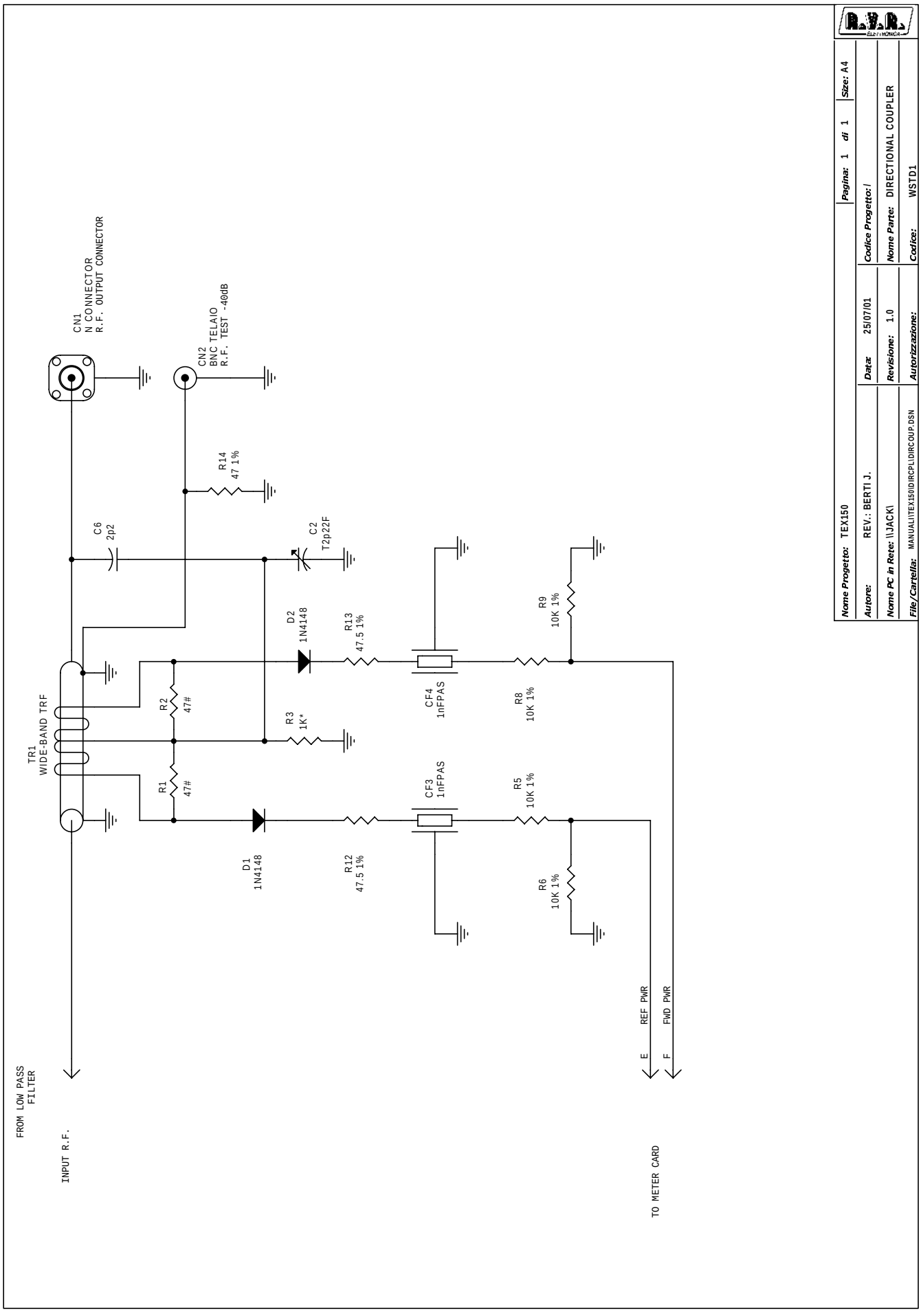
Autore: REV. BERTI J.
Nome PC in Rete: \\JACK\
File/Cartella: <Path File>
Scala: /
Materiale: /
Data: 25/07/01
Revisione: 1.0
Autorizzazione:
Trattamento: /
Pagina: 1 di 1
Size: A4
Codice Progetto: /
Nome Parte: DIRECTIONAL COUPLER
Codice: WSTD1
Profilo: /


CN1
N CONNECTOR
R.F. OUTPUT CONNECTOR
CN2
BNC TELAIO
R.F. TEST -40dB
R14
47 1%
C6
2p2
C2
T2p22F
D2
1N4148
R13
47.5 1%
R9
10K 1%
CF4
1nFPAS
R8
10K 1%
TR1
WIDE-BAND TRF
R2
47#
R3
1K*
R1
47#
CF3
1nFPAS
R5
10K 1%
D1
1N4148
R12
47.5 1%
R6
10K 1%
FROM LOW PASS
FILTER
INPUT R.F.
E REF PWR
F FWD PWR
TO METER CARD
Nome Progetto: TEX150
Pagina: 1 di 1
Size: A4
Autore: REV.: BERTI J.
Data: 25/07/01
Codice Progetto: /
Nome PC in Rete: \\JACK\
Revisione: 1.0
Nome Parte: DIRECTIONAL COUPLER
File/Cartella: MANUALI\TEX150\DIRCPL\DIRCOUP.DSN
Autorizzazione:
Codice: WSTD1

WSTD1 Bill Of Materials Page 1

Item	Quantity	Reference	Part	DESCRIPTION	PART CODE
1	1	R14	47 1%	RESISTOR 1/4W 1%	
2	2	R1,R2	47#	RESISTOR 2W	
3	2	R12,R13	47.5 1%	RESISTOR 1/4W 1%	
4	1	R3	1K*	RESISTOR 1/2W 5%	
5	4	R5,R6,R8,R9	10K 1%	RESISTOR 1/4W 1%	
6	1	C6	2P2	CERAMIC CAPACITOR NP0	
7	1	C2	T2P22F	TRIMMER CAPACITOR	
8	2	C3,C4	1NFPAS	CERAMIC THROUGH CAPACITOR	
9	1	CN2	BNC TELAIO	CONN. BNC A TELAIO	
10	1	CN1	N CONNECTOR	CONN. N A TELAIO	
11	2	D1,D2	1N4148	SILICON DIODE	
12	1	TR1	WIDE-BAND TRF	WIDE-BAND TRANSFORMER	

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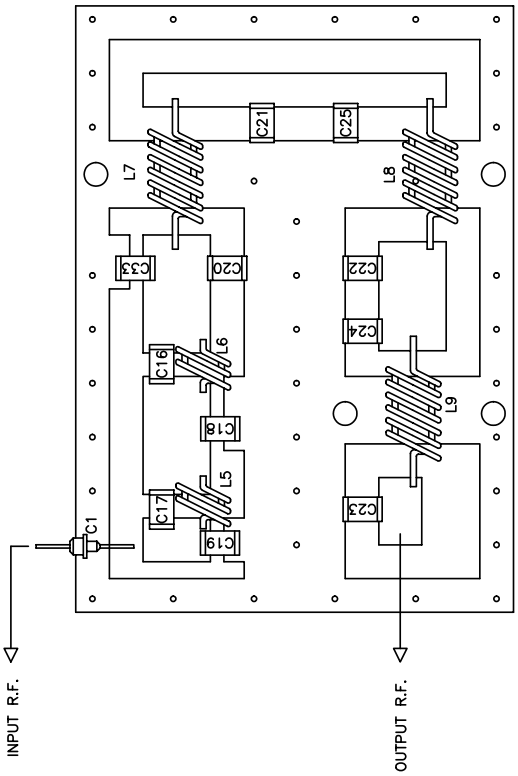

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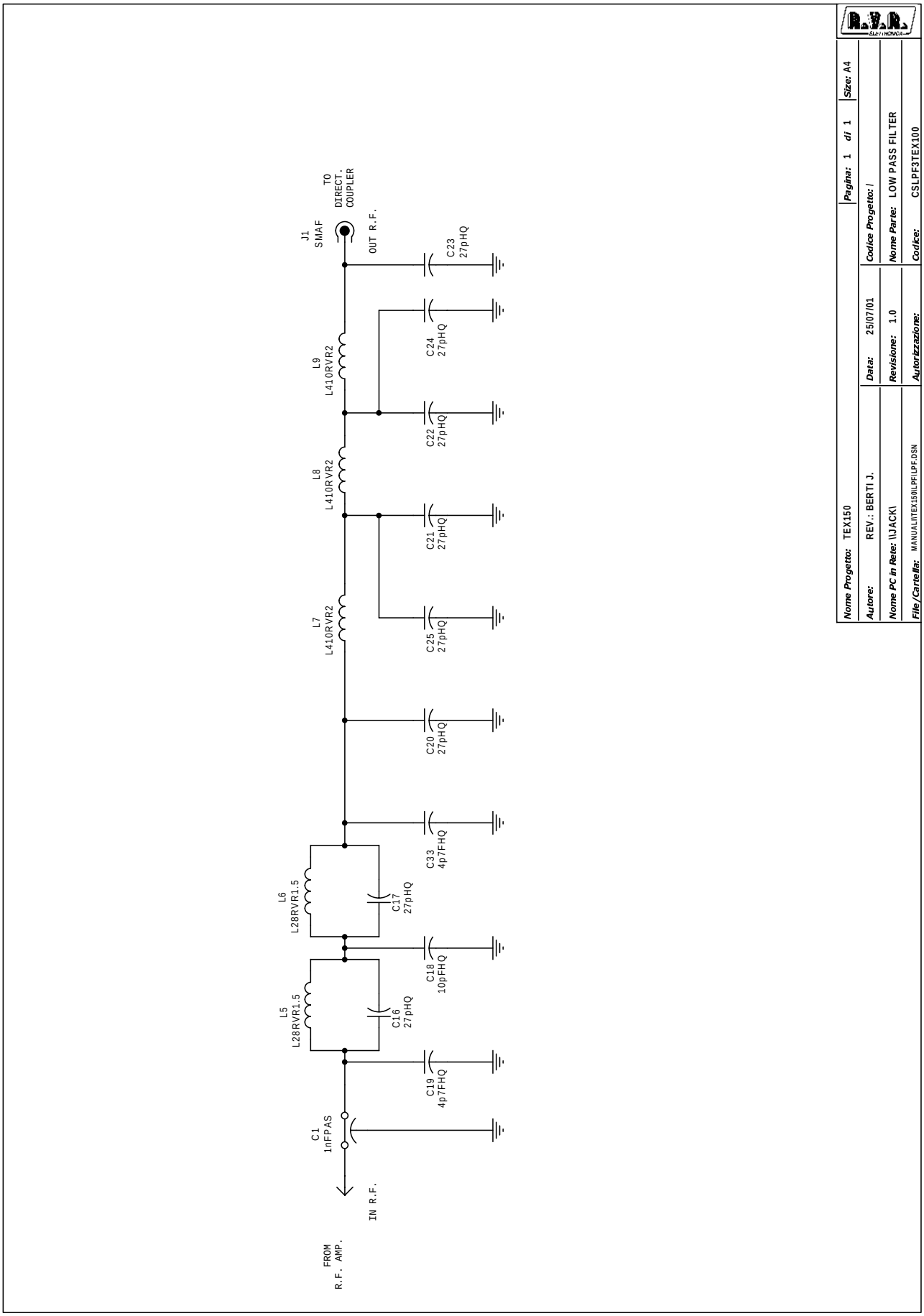
Autore: D'ALESSIO D.	Data: 25/07/01	Codice Progetto: /	
Nome PC in Rete: \\JACK\	Revisione: 1.0	Nome Parte: LOW PASS FILTER	
File/Cartella: MANUALI\TEX150\LPF\LAYLPF.DWG	Autorizzazione:	Codice: CSLPF3TEX100	
Scala: / Materiale: /	Trattamento: /		Profilo: /


T0
DIRECT.
COUPLER
J1
SMAF
OUT R.F.
C23
27pHQ
C24
27pHQ
L9
L410RVR2
C22
27pHQ
L8
L410RVR2
C21
27pHQ
L7
L410RVR2
C25
27pHQ
C20
27pHQ
C33
4p7FHQ
L6
L28RVR1.5
C17
27pHQ
C18
10pFHQ
L5
L28RVR1.5
C16
27pHQ
C19
4p7FHQ
C1
1nFPAS
IN R.F.
FROM
R.F. AMP.
Nome Progetto: TEX150
Autore: REV.: BERTI J.
Nome PC in Rete: \\JACK\
File /Cartella: MANUALI\TEX150\LPF\LPF.DSN
Data: 25/07/01
Revisione: 1.0
Autorizzazione:
Pagina: 1 di 1
Size: A4
Codice Progetto: /
Nome Parte: LOW PASS FILTER
Codice: CSLPF3TEX100

CSLPF3TEX100 Bill Of Materials Page 1

Item	Quantity	Reference	Part	DESCRIPTION	PART ORDER CODE
1	2	C19,C33	4P7FHQ	HIGHT Q CAPACITO	
2	1	C18	10PFHQ	HIGHT Q CAPACITOR	
3	8	C16,C17,C20,C21,C22,C23, C24,C25	27PHQ	SILVER MICA CAPACITOR	
4	1	C1	1NFPAS	CERAMIC THROUGH CAPACITOR	
5	2	L5,L6	L28RVR1.5	2 SP DIAM 8 RAME ARGEN 1.5mm	
6	3	L7,L8,L9	L410RVR2	4 SP DI 10 RAME ARGEN 2.0mm	
7	1	J1	SMAF	CONN. SMA F TELAIO	

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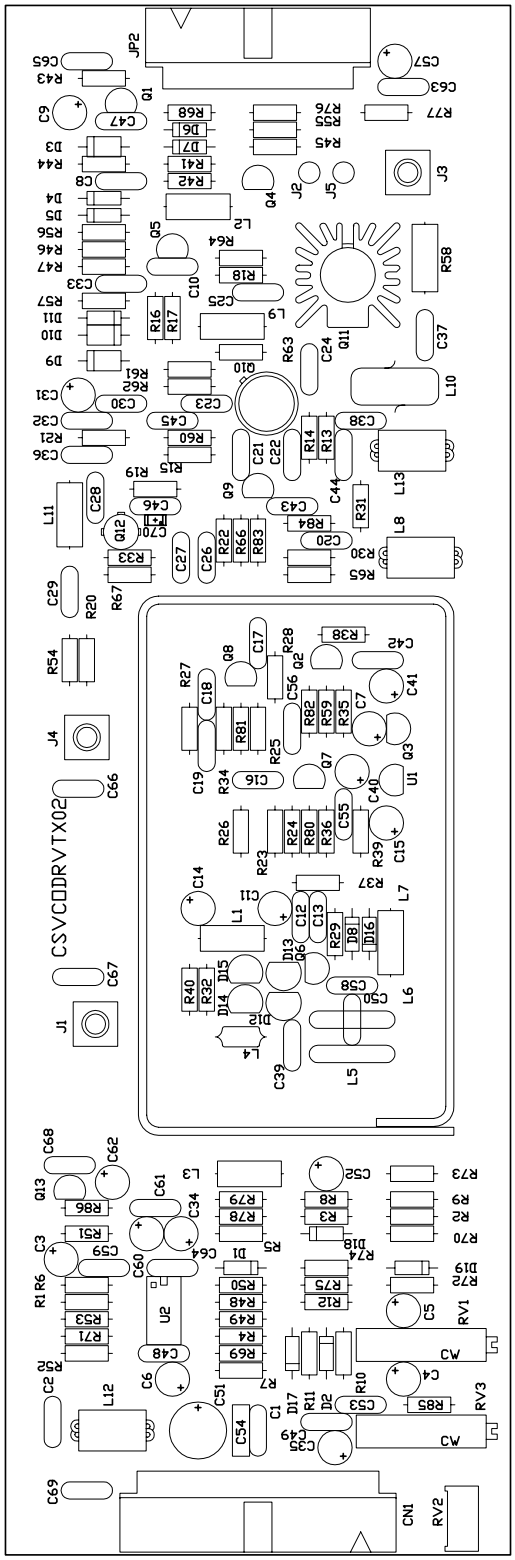

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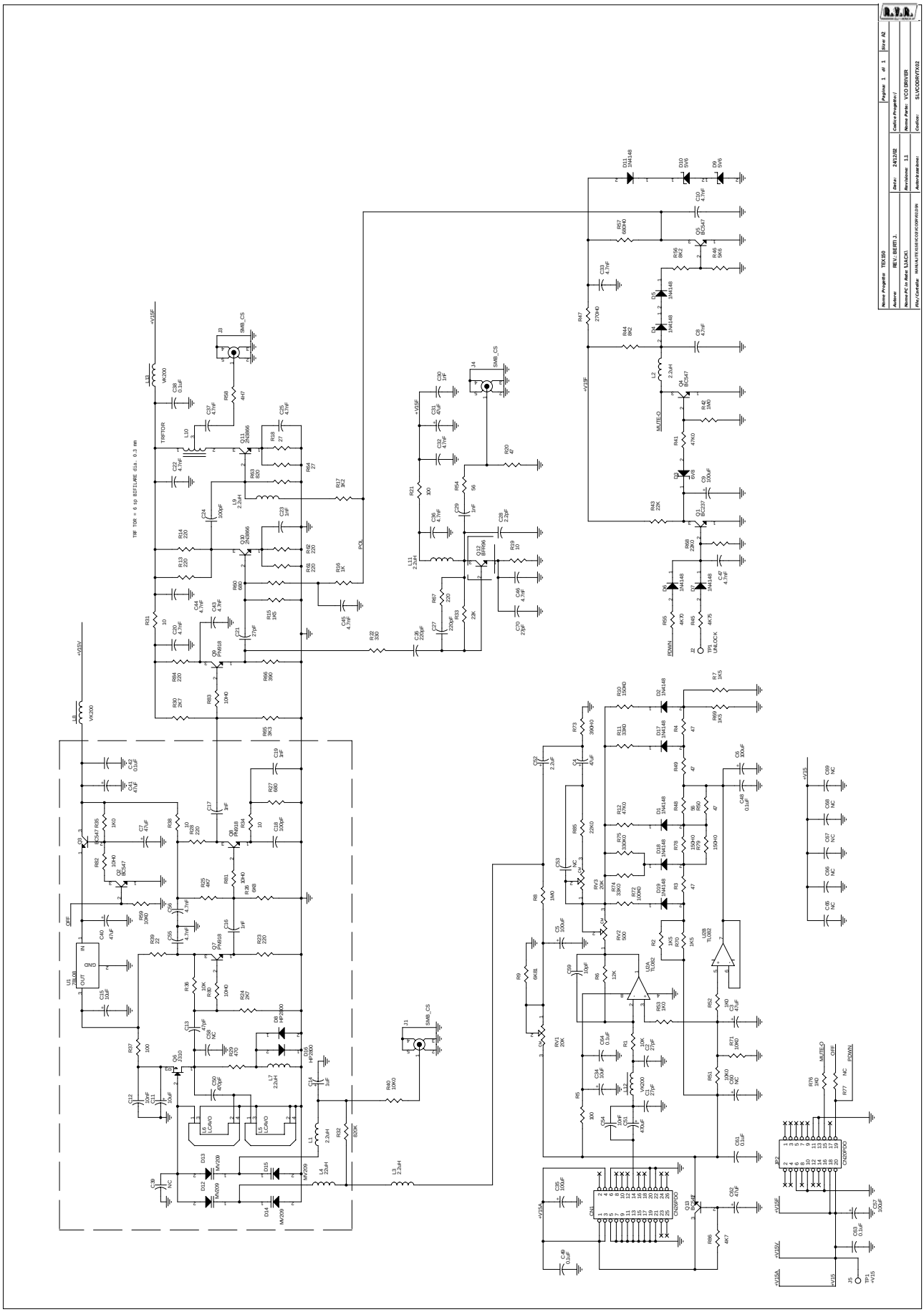
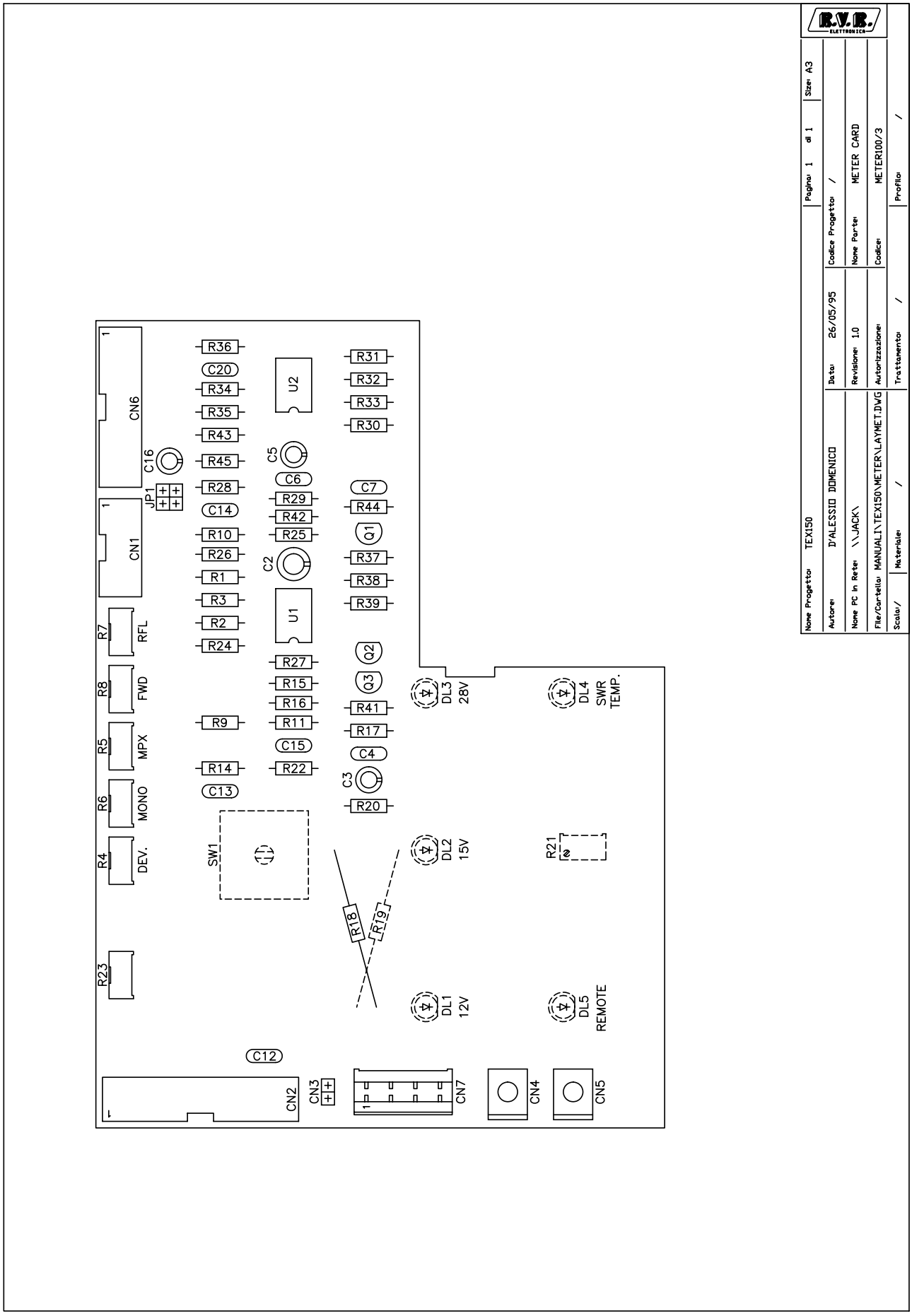
File/Cartella: MANUALI\TEX150\VCO2\LAYVCO02.DWG		Autorizzazione:	Codice: CSVCODRVTX02		
Scala: /	Materiale: /	Trattamento: /			Profilo: /



SLVCODRVTX02 Bill Of Materials Page1

Item	Quantity	Reference	Part
1	1	CN1	CN26PDO
2	4	C1,C2,C21,C70	27pF
3	7	C3,C4,C7,C31,C40,C41,C62	47uF
4	5	C5,C6,C9,C35,C57	100uF
5	16	C8,C10,C20,C22,C25,C32, C33,C36,C37,C43,C44,C45, C46,C47,C55,C56	4.7nF
6	3	C11,C15,C34	10uF
7	2	C12,C54	10nF
8	1	C13	47pF
9	1	C14	1uF
10	6	C16,C17,C19,C23,C29,C30	1nF
11	2	C18,C24	100pF
12	2	C27,C26	220pF
13	1	C28	2.2pF
14	7	C38,C42,C48,C49,C61,C63, C64	0.1uF
15	10	C39,C53,C58,C60,C65,C66, C67,C68,C69,R77	NC
16	1	C50	470pF
17	1	C51	470uF
18	1	C52	2.2uF
19	1	C59	10pF
20	10	D1,D2,D4,D5,D6,D7,D11, D17,D18,D19	1N4148
21	1	D3	6V8
22	2	D8,D16	HP2800
23	2	D10,D9	5V6
24	4	D12,D13,D14,D15	MV209
25	1	JP2	CN20PDO
26	3	J1,J3,J4	SMB_CS
27	2	J5,J2	TP1
28	6	L1,L2,L3,L7,L9,L11	2.2uH
29	1	L4	22uH
30	2	L6,L5	LCAVO
31	3	L8,L12,L13	VK200
32	1	L10	TRFTOR
33	1	Q1	BC237
34	5	Q2,Q3,Q4,Q5,Q13	BC547
35	1	Q6	J310
36	3	Q7,Q8,Q9	PN918
37	2	Q10,Q11	2N3866
38	1	Q12	BFR96
39	2	RV3,RV1	20K
40	1	RV2	500
41	2	R1,R36	10K
42	5	R2,R7,R15,R69,R70	1K5
43	5	R3,R4,R20,R49,R50	47
44	3	R5,R21,R37	100
45	1	R6	12K
46	2	R42,R8	1M0
47	1	R9	6K81
48	1	R10	150K0
49	2	R74,R11	33K0

50	2	R41,R12	47K0
51	8	R13,R14,R23,R28,R61,R62, R67,R84	220
52	1	R16	1K
53	1	R17	1K2
54	2	R64,R18	27
55	4	R19,R31,R34,R38	10
56	1	R22	330
57	2	R24,R30	2K7
58	2	R86,R25	4K7
59	1	R26	6K8
60	2	R60,R27	680
61	1	R29	470
62	1	R32	820K
63	2	R43,R33	22K
64	4	R35,R52,R53,R76	1K0
65	1	R39	22
66	4	R40,R51,R59,R71	10K0
67	2	R44,R56	8K2
68	1	R45	4K75
69	1	R46	5K6
70	1	R47	270H0
71	2	R48,R54	56
72	1	R55	4K70
73	1	R57	680H0
74	1	R58	4H7
75	1	R63	820
76	1	R65	3K3
77	1	R66	390
78	2	R68,R85	22K0
79	1	R72	100K0
80	1	R73	390H0
81	1	R75	330K0
82	2	R78,R79	150H0
83	4	R80,R81,R82,R83	10H0
84	1	U1	78L08
85	1	U2	TL082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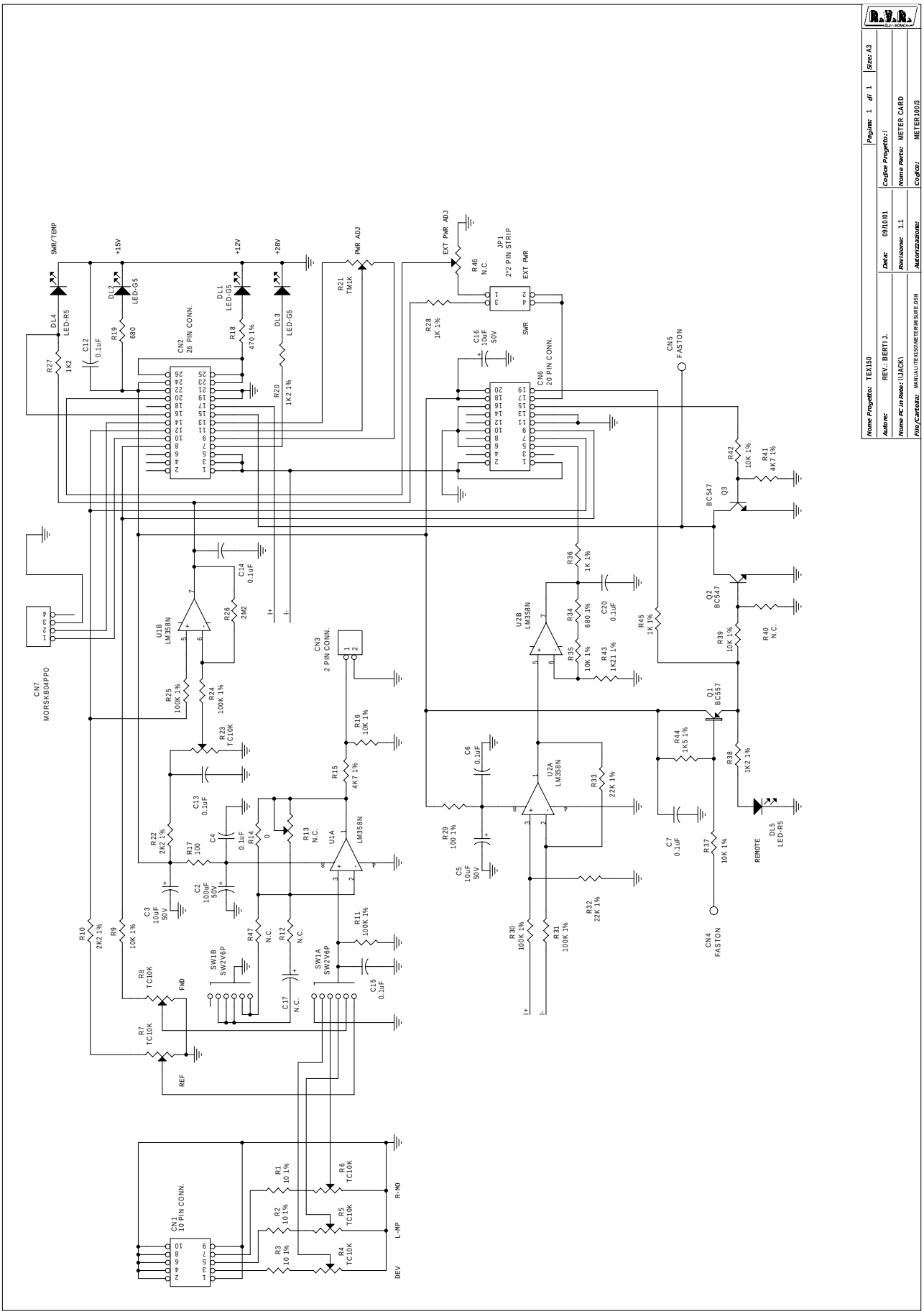
Size: A3
Autore: D'ALESSIO DOMENICO
Data: 26/05/95
Codice Progetto: /
Nome PC in Rete: \\JACK\
Revisione: 1.0
Nome Parte: METER CARD
File/Cartella: MANUALI\TEX150\METER\LAYMET.DWG
Autorizzazione:
Codice: METER100/3
Scala: /
Materiale: /
Trattamento: /
Profilo: /
CN6
CN1
JP1
C16
C5
C6
C2
U2
U1
R36
C20
R34
R35
R43
R45
R28
C14
R10
R26
R1
R3
R2
R24
R31
R32
R33
R30
C7
R44
Q1
R37
R38
R39
Q2
Q3
R41
R17
C4
C3
R20
R27
R15
R16
R11
C15
R22
R9
R14
C13
R7
RFL
R8
FWD
R5
MPX
R6
MONO
R4
DEV.
R23
SW1
R18
R19
DL3
28V
DL2
15V
DL1
12V
DL4
SWR
TEMP.
DL5
REMOTE
R21
C12
CN2
CN3
CN7
CN4
CN5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Nome PC in Rete: \\JACK\
File/Cartella: MANUALI\TEX150\METER\SURE.DSN
Data: 09/10/01
Revisione: 1.1
Autorizzazione:
Pagina: 1 di 1
Size: A3
Codice Progetto: /
Nome Parte: METER CARD
Codice: METER100/3
SWR/TEMP
+15V
+12V
+28V
PWR ADJ
EXT PWR ADJ
JP1
2*2 PIN STRIP
EXT PWR
SWR
CN1
10 PIN CONN.
CN2
26 PIN CONN.
CN3
2 PIN CONN.
CN4
FASTON
CN5
FASTON
CN6
20 PIN CONN.
CN7
MORSKB04PPO
U1A
LM358N
U1B
LM358N
U2A
LM358N
U2B
LM358N
Q1
BC557
Q2
BC547
Q3
BC547
REMOTE
FWD
REF
R-MD
L-MP
DEV

METER CARD Revised: October 26, 1995
Revision:
Bill Of Materials October 26, 1995 14:04:34 Page 1

Item	Quantity	Reference	Part	DESCRIPTION	PART ORDER CDE
1	1	R14	0	0 OHM RESISTOR	
2	3	R1,R2,R3	10 1%	RESISTOR 1/4W 1%	
3	1	R29	100 1%	RESISTOR 1/4W 1%	
4	1	R17	100	RESISTOR 1/4W 5%	
5	1	R18	470 1%	RESISTOR 1/4W 1%	
6	1	R34	680 1%	RESISTOR 1/4W 1%	
7	1	R19	680	RESISTOR 1/4W 5%	
8	3	R28,R36,R45	1K 1%	RESISTOR 1/4W 1%	
9	2	R20,R38	1K2 1%	RESISTOR 1/4W 1%	
10	1	R27	1K2	RESISTOR 1/4W 5%	
11	1	R43	1K21 1%	RESISTOR 1/4W 1%	
12	2	R10,R22	2K2 1%	RESISTOR 1/4W 1%	
13	3	R15,R40,R41	4K7 1%	RESISTOR 1/4W 1%	
14	6	R9,R16,R35,R37,R39,R42	10K 1%	RESISTOR 1/4W 1%	
15	2	R32,R33	22K 1%	RESISTOR 1/4W 1%	
16	5	R11,R24,R25,R30,R31	100K 1%	RESISTOR 1/4W 1%	
17	1	R26	2M2	RESISTOR 1/4W 5%	
18	6	R4,R5,R6,R7,R8,R23	TC10K	TRIMMER REG. VERT. CERMET	
19	1	R21	TM1K	TRIMM. MULTIGIRI REG. VERT.	
20	8	C4,C6,C7,C12,C13,C14, C15,C20	0.1UF	CERAMIC CAPACITOR	
21	3	C3,C5,C16	10UF	ELECTROLYTIC CAPACITOR	
22	1	C2	100UF	ELECTROLYTIC CAPACITOR	
23	1	JP1	2*2 PIN STRIP	STRIP M P 2.54 2*2 PIN	
24	2	CN4,CN5	FASTON	CONN. FASTON M CIRC. ST.	
25	1	CN7	MORSKB04PPO	MORS. LUMBERG FEMM. CS 04P	
26	1	CN3	2 PIN CONN.	CONN. M 2*1 P 2.54	
27	1	CN1	10 PIN CONN.	CONN. M 2*5 P 2.54	
28	1	CN6	20 PIN CONN.	CONN. M 2*10 P 2.54	
29	1	CN2	26 PIN CONN.	CONN. M 2*13 P 2.54	
30	1	SW1	SW2V6P	COMMUTATORE 2 VIE 6 POS FEME	
31	2	DL4,DL5	LED-R5	RED LED DIODE	
32	3	DL1,DL2,DL3	LED-G5	GREEN LED DIODE	
33	2	Q2,Q3	BC547	NPN TRANSISTOR	
34	1	Q1	BC557	PNP TRANSISTOR	
35	2	U1,U2	LM358N	DOUBLE OP. AMP.	
36	5	R12,R13,C17,R46,R4,R40	N.C.	NOT CONNECTED	
37	1	R44	1K5 1%	RESISTOR 1/4W 1%	

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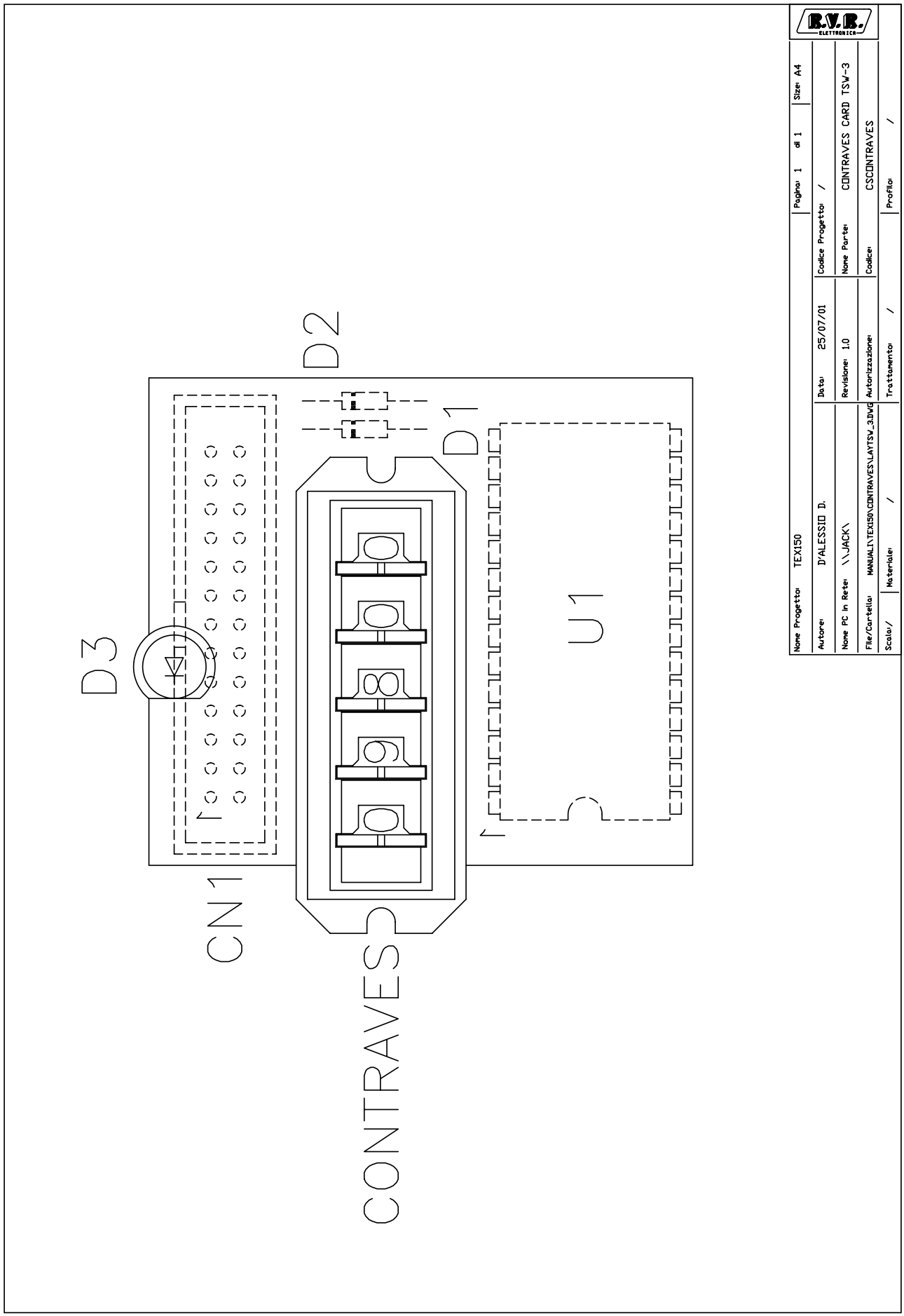
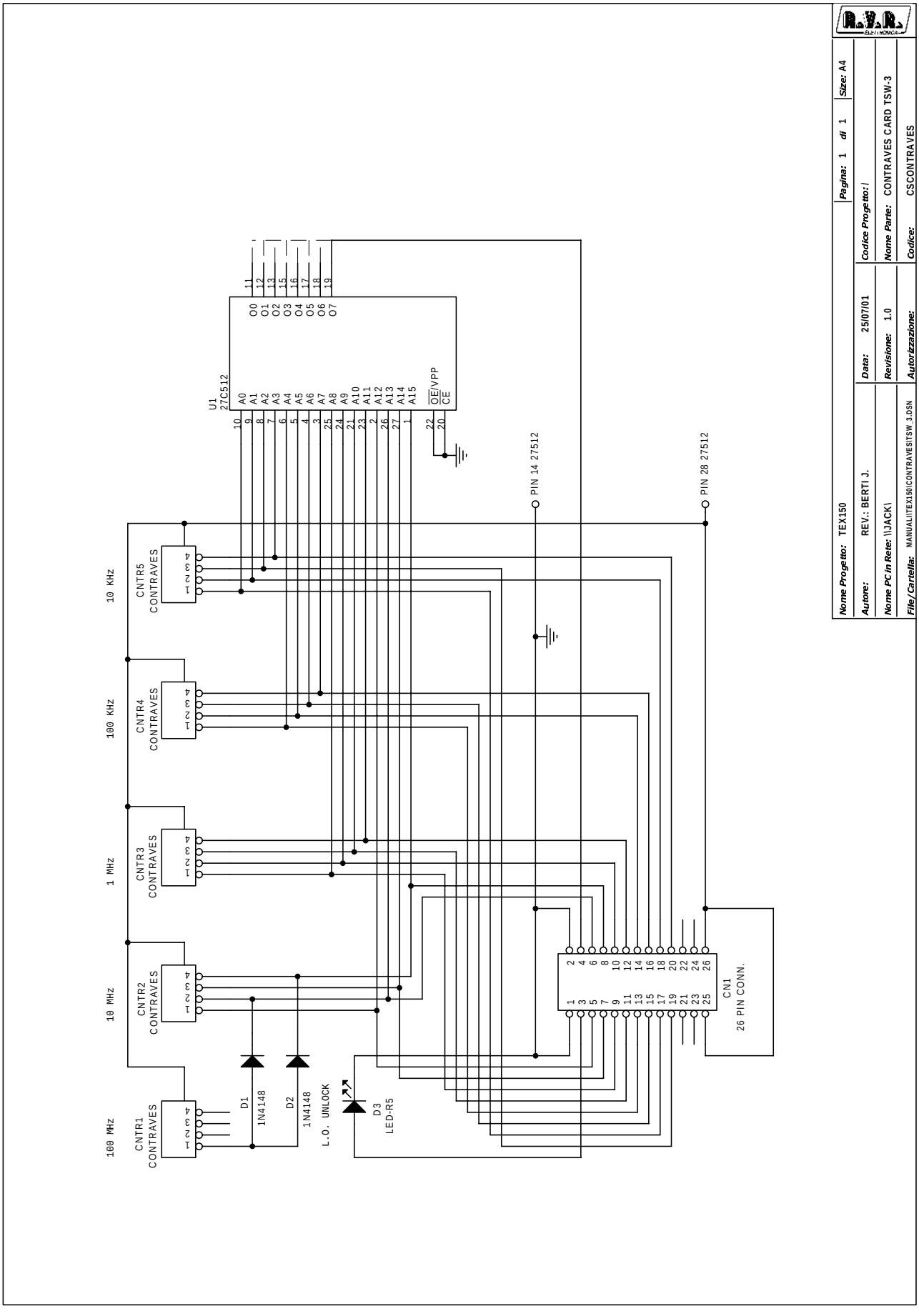
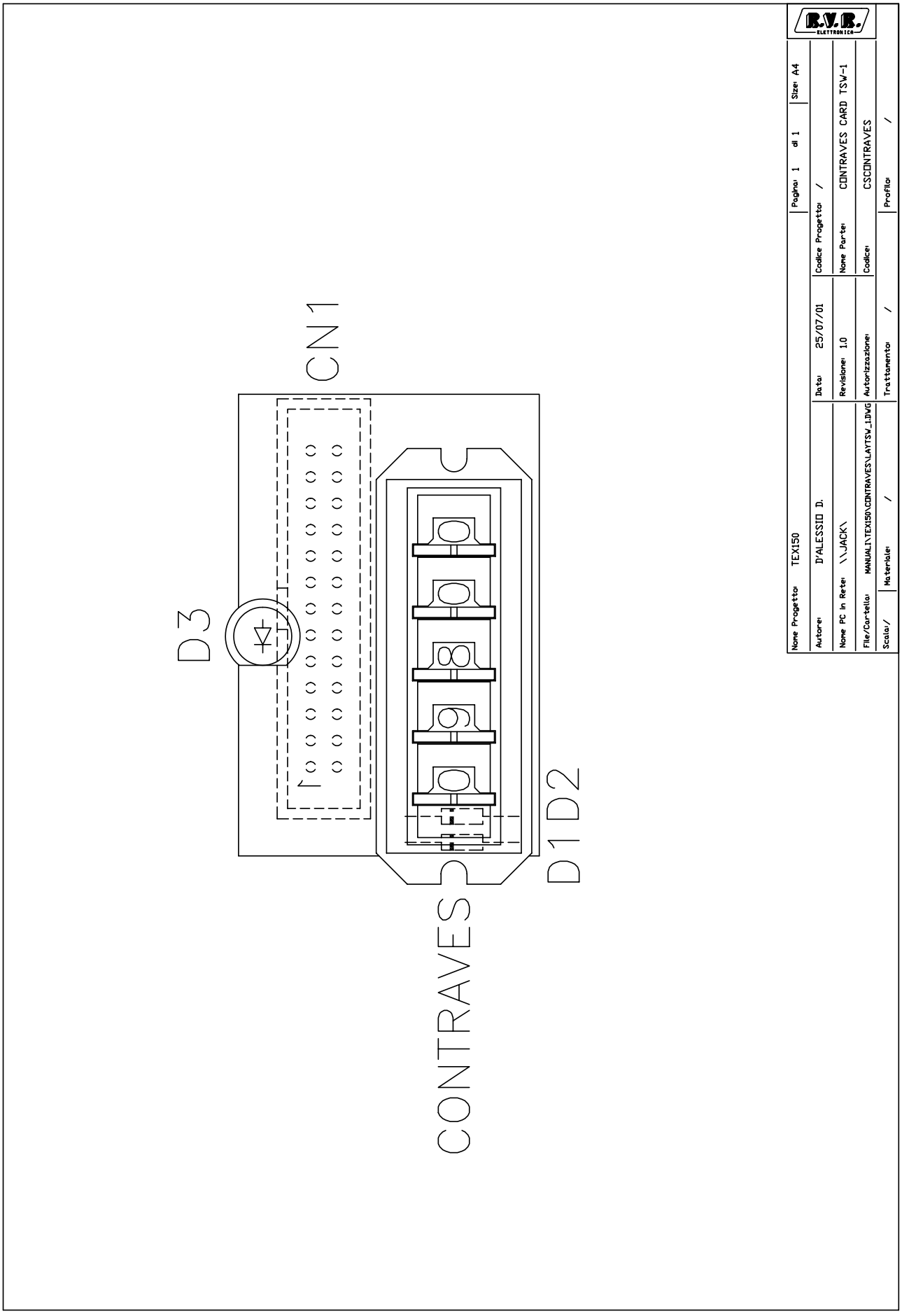
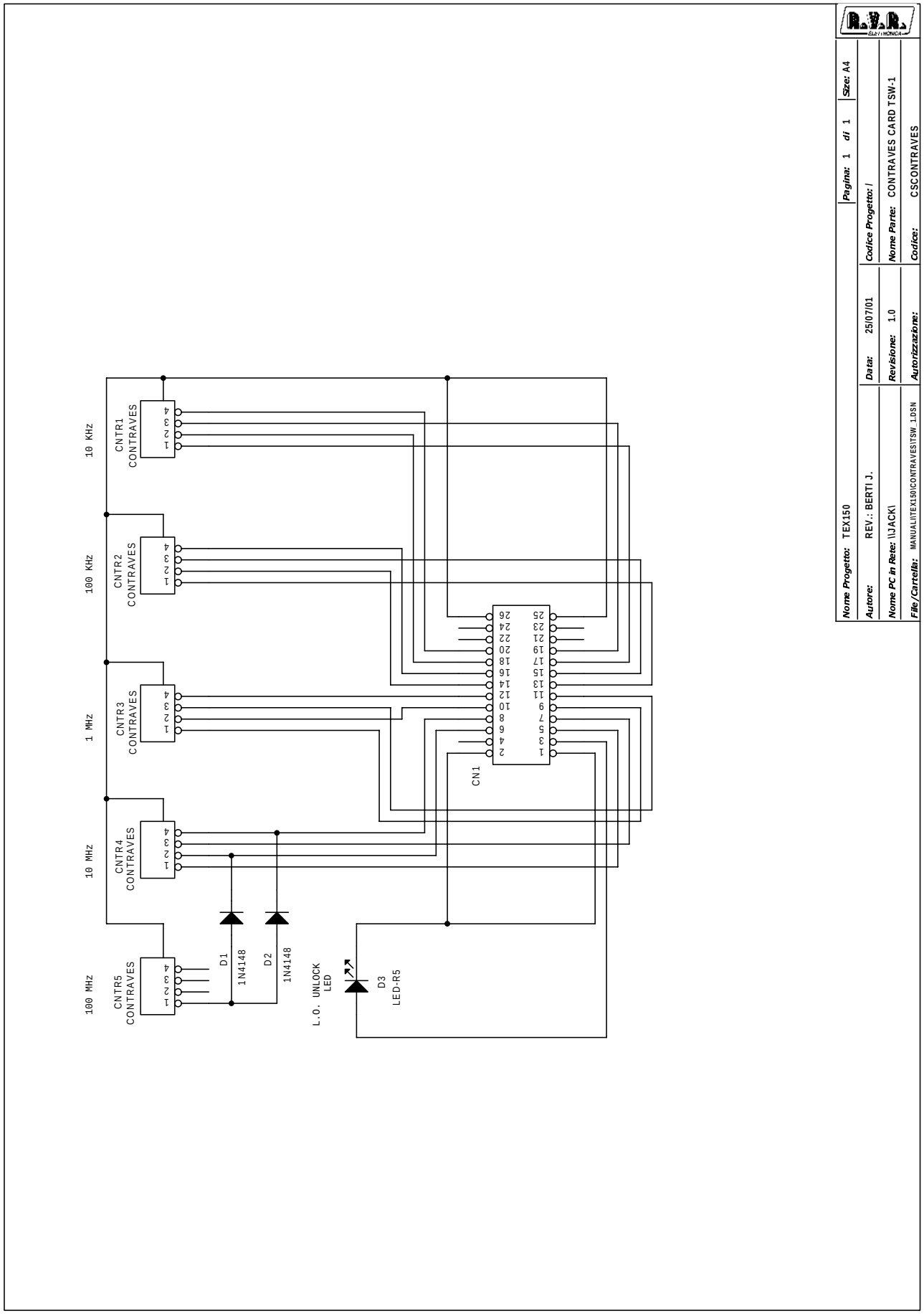

D2
D1
D3
U1
CN1
CONTRAVES
R.V.R. ELETTRONICA
Nome Progetto: TEX150
Pagina: 1 di 1
Size: A4
Autore: D'ALESSIO D.
Data: 25/07/01
Codice Progetto: /
Nome PC in Rete: \\JACK\
Revisione: 1.0
Nome Parte: CONTRAVES CARD TSW-3
File/Cartella: MANUALI\TEX150\CONTRAVES\LAYTSW_3D.VG
Autorizzazione:
Codice: CSCONTRAVES
Scala: /
Materiale: /
Trattamento: /
Profilo: /


U1
27C512
A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14 A15
O0 O1 O2 O3 O4 O5 O6 O7
OE/VPP
CE
PIN 14 27512
PIN 28 27512
CNTR5 CONTRAVES
CNTR4 CONTRAVES
CNTR3 CONTRAVES
CNTR2 CONTRAVES
CNTR1 CONTRAVES
10 KHz
100 KHz
1 MHz
10 MHz
100 MHz
D1 1N4148
D2 1N4148
D3 LED-R5
L.O. UNLOCK
CN1
26 PIN CONN.
Nome Progetto: TEX150
Autore: REV.: BERTI J.
Nome PC in Rete: \\JACK\
File/Cartella: MANUALI\TEX150\CONTRAVES\TSW_3.DSN
Data: 25/07/01
Revisione: 1.0
Autorizzazione:
Pagina: 1 di 1
Size: A4
Codice Progetto: /
Nome Parte: CONTRAVES CARD TSW-3
Codice: CSCONTRAVES

FREQUENCY SELECTOR CARD CIRCUIT DIAGRAM Revised: October 17, 1994
TSW-3 Revision:
Bill Of Materials October 17, 1994 14:55:09 Page 1

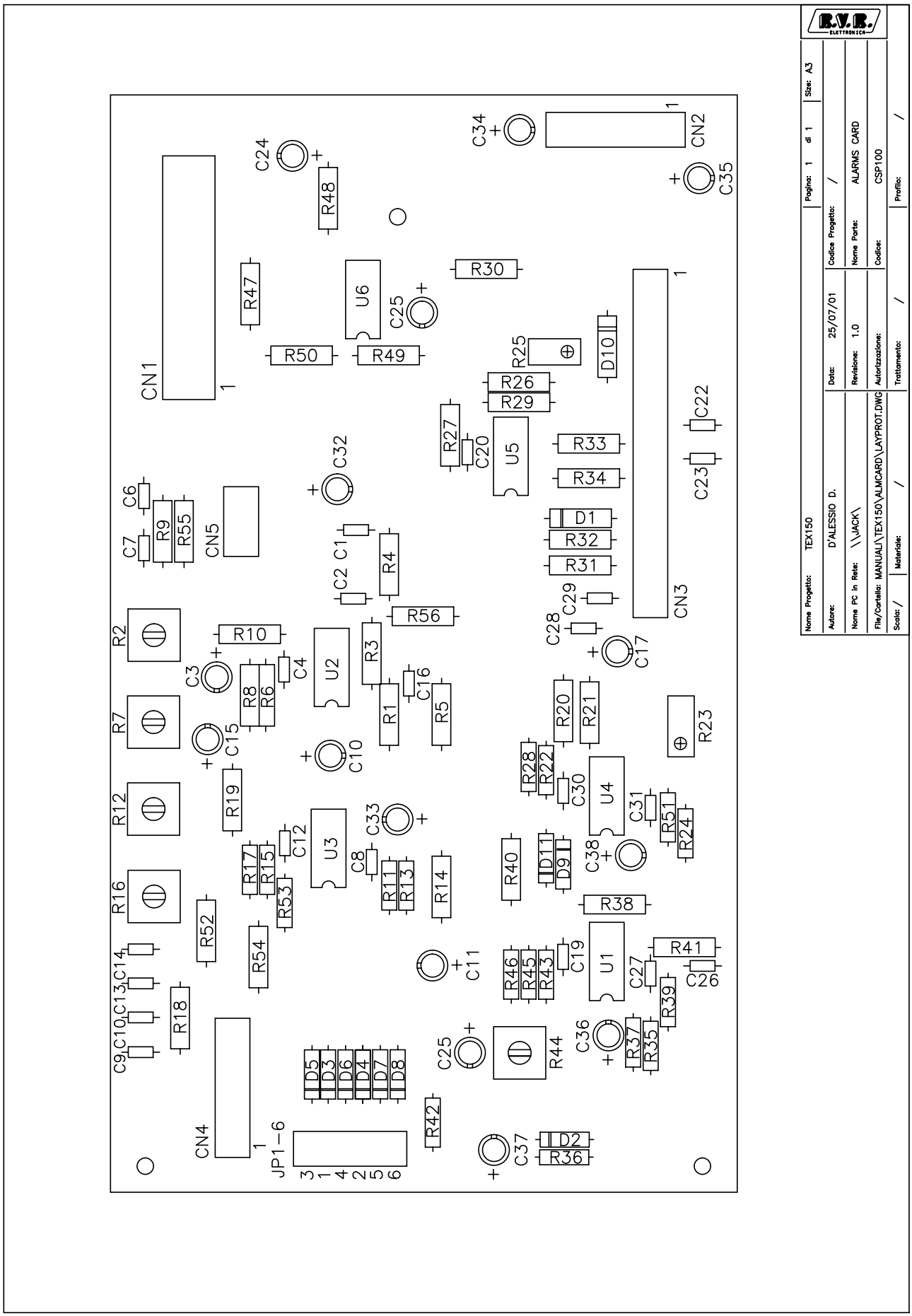
Item	Quantity	Reference	Part	DESCRIPTION	PART ORDER CODE
1	1	CN1	26 PIN CONN.	CONN. M 2*13 P 2.54	CNTMCSFC26P
2	5	CNTR1,CNTR2,CNTR3,CNTR4, CNTR5	CONTRAVES	COMMUTATORI BCD 15mm	COMBCD15
3	2	D1,D2	1N4148	SILICON DIODE	DIS1N4148
4	1	D3	LED-R5	RED LED DIODE	LEDRO05
5	1	U1	27512	65,536 X 8 BIT CMOS EPROM	CID27512


CN1
D3
D1D2
CONTRAVES
Nome Progetto: TEX150
Autore: D'ALESSIO D.
Nome PC in Rete: \\JACK\
File/Cartella: MANUALI\TEX150\CONTRAVES\LAYTSW_1.DWG
Scala: /
Materiale: /
Data: 25/07/01
Revisione: 1.0
Autorizzazione:
Trattamento: /
Pagina: 1 di 1
Size: A4
Codice Progetto: /
Nome Parte: CONTRAVES CARD TSW-1
Codice: CSCONTRAVES
Profilo: /


CNTR1 CONTRAVES
CNTR2 CONTRAVES
CNTR3 CONTRAVES
CNTR4 CONTRAVES
CNTR5 CONTRAVES
10 KHz
100 KHz
1 MHz
10 MHz
100 MHz
CN1
D1 1N4148
D2 1N4148
L.O. UNLOCK LED
D3 LED-R5
Nome Progetto: TEX150
Autore: REV.: BERTI J.
Nome PC in Rete: \\JACK\
File/Cartella: MANUALI\TEX150\CONTRAVES\TSW_1.DSN
Pagina: 1 di 1
Size: A4
Data: 25/07/01
Revisione: 1.0
Codice Progetto: /
Nome Parte: CONTRAVES CARD TSW-1
Autorizzazione:
Codice: CSCONTRAVES

CSCONTRAVES Bill Of Materials Page 1

Item	Quantity	Reference	Part	DESCRIPTION	PART CODE
1	1	CN1	26 PIN CONN.	CONN. M 2*13 P 2.54	
2	5	CNTR1,CNTR2,CNTR3,CNTR4, CNTR5	CONTRAVES	COMMUTATORI BCD 15mm	
3	2	D1,D2	1N4148	SILICON DIODE	
4	1	D3	LED-R5	RED LED DIODE	


R.V.R. ELETTRONICA
Nome Progetto: TEX150
Pagina: 1 di 1
Size: A3
Autore: D'ALESSIO D.
Data: 25/07/01
Codice Progetto: /
Nome PC in Rete: \\JACK\
Revisione: 1.0
Nome Parte: ALARMS CARD
File/Cartella: MANUALI\TEX150\ALMCARD\LAYPROT.DWG
Autorizzazione:
Codice: CSP100
Scala: /
Materiale: /
Trattamento: /
Profilo: /
CN1
CN2
CN3
CN4
CN5
JP1-6
U1
U2
U3
U4
U5
U6
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
R17
R18
R19
R20
R21
R22
R23
R24
R25
R26
R27
R28
R29
R30
R31
R32
R33
R34
R35
R36
R37
R38
R39
R40
R41
R42
R43
R44
R45
R46
R47
R48
R49
R50
R51
R52
R53
R54
R55
R56
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
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C22
C23
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C33
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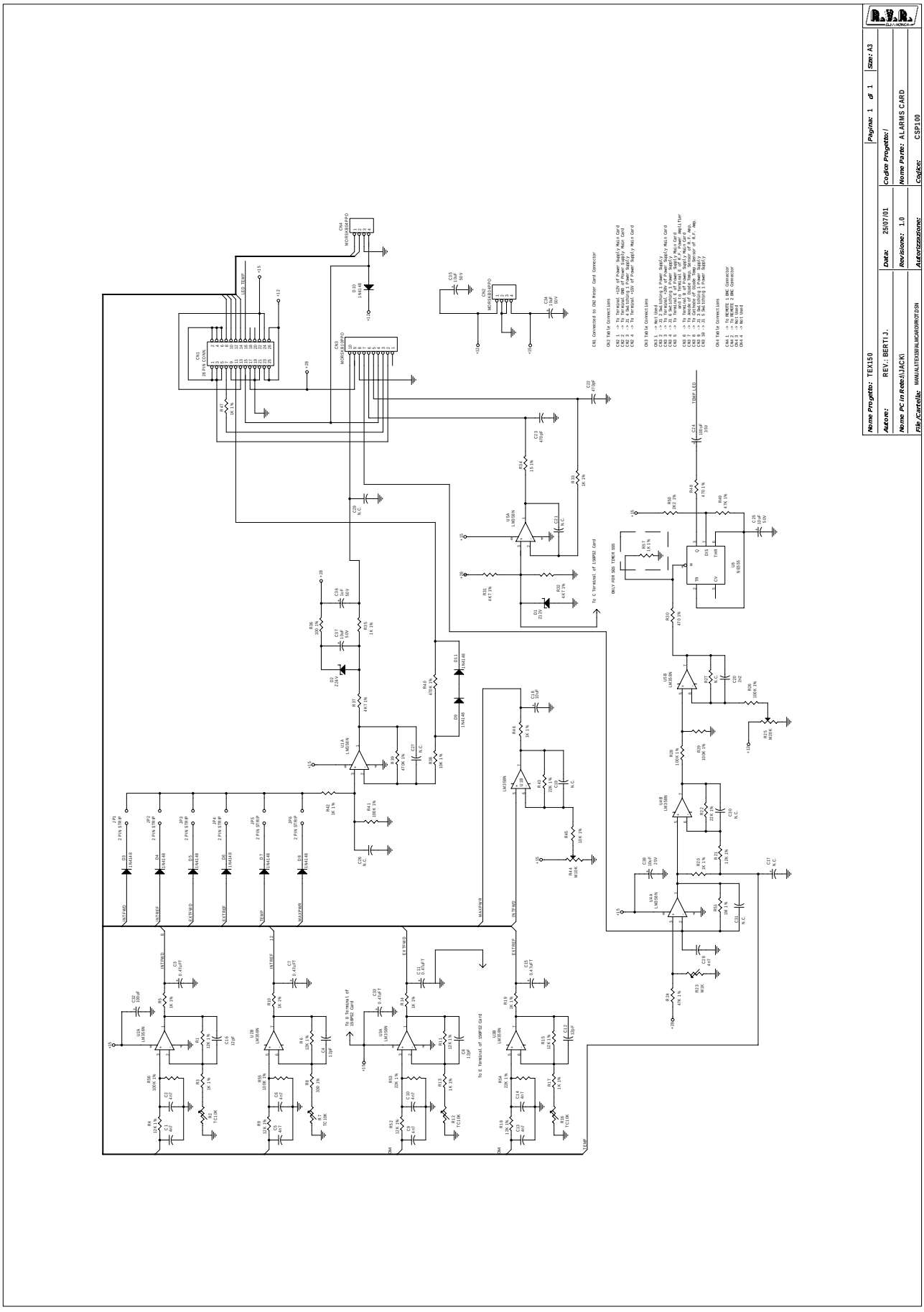
C35
C36
C37
C38


Nome Progetto: TEX150
Autore: REV. BERTI J.
Nome PC in Rete: \JACK\
File Cartella: MAIN\ALTEX\SIN\ALMCARD\ITD\SIN
Pagina: 1 di 1
Size: A3
Data: 25/07/01
Codice Progetto: /
Revisione: 1.0
Nome Parte: ALARMS CARD
Autorizzazione:
Codice: CSP100

Alarms Card Circuit Diagram Bill Of Materials Page 1

Item	Quantity	Reference	Part	DESCRIPTION	PART CODE
1	1	R34	15 1%	RESISTOR 1/4W 1%	
2	1	R36	100 1%	RESISTOR 1/4W 1%	
3	1	R8	330 1%	RESISTOR 1/4W 5%	
4	2	R30,R48	470 1%	RESISTOR 1/4W 1%	
5	14	R3,R5,R10,R13,R14,R17, R19,R20,R33,R35,R42,R46, R47,R57	1K 1%	RESISTOR 1/4W 1%	
6	1	R50	2K2 1%	RESISTOR 1/4W 1%	
7	3	R31,R32,R37	4K7 1%	RESISTOR 1/4W 1%	
8	2	R38,R45	10K 1%	RESISTOR 1/4W 1%	
9	9	R1,R4,R6,R9,R11,R15,R18, R21,R52	12K 1%	RESISTOR 1/4W 1%	
10	4	R22,R43,R53,R54	22K 1%	RESISTOR 1/4W 1%	
11	2	R24,R49	47K 1%	RESISTOR 1/4W 1%	
12	6	R26,R28,R29,R41,R55,R56	100K 1%	RESISTOR 1/4W 1%	
13	2	R39,R40	470K 1%	RESISTOR 1/4W 1%	
14	1	R51	1M 1%	RESISTOR 1/4W 1%	
15	4	R2,R7,R12,R16	TC10K	TRIMMER REG. VERT. CERMET	
16	1	R23	M1K	TRIMMER MULTIGIRI	
17	1	R44	M10K	TRIMMER MULTIGIRI	
18	1	R25	M20K	TRIMMER MULTIGIRI	
19	4	C4,C8,C12,C16	12PF	CERAMIC CAPACITOR NP0	
20	2	C22,C23	470PF	CERAMIC CAPACITOR	
21	1	C20	2N2	CERAMIC CAPACITOR	
22	9	C1,C2,C5,C6,C9,C10,C13, C14,C28	4N7	CERAMIC CAPACITOR	
23	5	C3,C7,C11,C15,C33	0.47UFT	TANTALIUM CAPACITOR	
24	1	C36	1UF	ELECTROLYTIC CAPACITOR	
25	6	C18,C25,C34,C35,C37,C38	10UF	ELECTROLYTIC CAPACITOR	
26	2	C24,C32	100UF	ELECTROLYTIC CAPACITOR	
27	6	JP1,JP2,JP3,JP4,JP5,JP6	2 PIN STRIP	STRIP M P 2.54 2 PIN	
28	1	CN3	MORSKB10PPO	MORS. LUMBERG FEMM. CS 10P	
29	2	CN2,CN4	MORSKB04PPO	MORS. LUMBERG FEMM. CS 04P	
30	1	CN1	26 PIN CONN.	CONN. M 2*13 P 2.54	
31	9	D3,D4,D5,D6,D7,D8,D9,D10, D11	1N4148	SILICON DIODE	
32	1	D1	Z12V	ZENER DIODE 12V 0.4W	
33	1	D2	Z24V	ZENER DIODE 24V 0.4W	
34	5	U1,U2,U3,U4,U5	LM358N	DOUBLE OP. AMP.	
35	1	U6	NE555	TIMER	
36	9	C17,C19,C21,C26,R27,C27, C29,C30,C31	N.C.	NOT CONNECTED	

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