
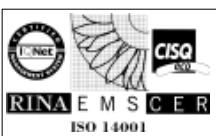


AUTV/2000LD
LDMOS - UHF TV Amplifier
User's manual


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WARNING

The apparatus described in this manual has been designed and manufactured with devices to safeguard the users. In any case it is recommended that during any operation of installation, maintenance, miscellaneous interventions and calibrations requiring the apparatus to be switched on,

THE USER TAKES ALL THE PRECAUTIONS AGAINST INCIDENTS

It is required to use the proper clothes and protection gloves in order to prevent damages from incidental contacts with high-voltage parts.

The manufacturer declines every responsibility in case the recommendations above are not followed.

IMPORTANT

The component lists attached to the relevant electrical diagrams indicate for each item the reference, the description and the type normally used.

The ***Eletronika S.r.l.*** though reserves the right to use or supply as spare parts components with equivalent characteristics but of a different type, assuring anyway the optimal work of the apparatus in accordance with the specifications.

The enclosed monographs are solely owned by ***Eletronika S.r.l.***

The use of anything enclosed in this technical manual without explicit authorization given by ***Eletronika S.r.l.*** will be prosecuted by the law.

The data and technical characteristics of the apparatus described in this manual are not compelling for the manufacturer.

The ***Eletronika S.r.l.*** reserves the right to make, without previous notice, modifications or updates in order to improve the quality of the product.

The general conditions of supply and sale are described in the contracts.

The delivery time are in accordance with the products and quantities ordered.

Summary of warranty

We, ELETTRONIKA S.r.l., SS096 Km 113 Z.I. PALO DEL COLLE (BA) ITALY, warrant to the ORIGINAL PURCHASER of a NEW product, for a period of one (1) year from the date of purchase by the original purchaser (the "warranty period") that the new ELETTRONIKA product is free of defects in materials and workmanship and will meet or exceed all advertised specifications for such a product. This warranty does not extend to any subsequent purchaser or user, and automatically terminates upon sale or other disposition of our product.

Items excluded from this ELETTRONIKA warranty

We are not responsible for product failure caused by misuse, accident, or neglect. This warranty does not extend to any product on which the serial number has been defaced, altered, or removed. It does not cover damage to loads or any other products or accessories resulting from ELETTRONIKA product failure. It does not cover defects or damage caused by use of unauthorized modifications, accessories, parts, or service.

What we will do

We will remedy any defect, in material or workmanship (except as excluded), in our sole discretion, by repair, replacement, or refund. If a refund is elected, then you must make the defective or malfunctioning component available to us free and clear of all liens or other encumbrances. The refund will be equal to the actual purchase price, not including interest, insurance, closing costs, and other finance charges less a reasonable depreciation on the product from the date of original purchase. Warranty work can only be performed at our authorized service centers or at our factory. Expenses in remedying the defect will be borne by ELETTRONIKA, including one-way surface freight shipping costs within the United States. (Purchaser must bear the expense of shipping the product between any foreign country and the port of entry in the United States and all taxes, duties, and other custom's fee(s) for such foreign shipments).

How to obtain warranty service

You must notify us of your need for warranty service not later than ninety (90) days after the expiration of the warranty period. We will give you an authorization to return the product for service. All components must be shipped in a factory pack or equivalent which, if needed, may

Disclaimer of consequential and incidental damages

You are not entitled to recover from us any consequential or incidental damages resulting from any defect in our product. This includes any damage to another product or products resulting from such a defect.

Warranty alterations

No person has the authority to enlarge, or modify this warranty. The warranty is not extended by the length of time for which you are deprived of the use of the product. Repairs and replacement parts are provided under the terms of this warranty shall carry only the unexpired portion of this warranty.

Design changes

We reserve the right to change the design of any product from time to time without notice and with no obligation to make corresponding changes in products previously manufactured.

Legal remedies of purchaser

There is no warranty which extends beyond the terms hereof. This written warranty is given in lieu of any oral or implied warranties not contained herein. We disclaim all implied warranties, including without limitation any warranties of merchantability or fitness for a particular purpose. No action to enforce this warranty shall be commenced later than ninety (90) days after expiration of the warranty period.

Warranty for electronic tubes

The warranty applied for electronic tubes is the one given by the manufacturer of the tube. In the event that the product shows anomalies within the deadline of the validity of the warranty given by the manufacturer of the product itself, the buyer will have to return it to the seller with the needed documents and the written description of the defect. The seller will ship the broken tube to the manufacturer in order to effect the necessary technical tests to find out the cause of the anomaly. Meanwhile the buyer of the tube who needs to use, and as such to replace immediately the product, will have to buy a new one and provide to the relevant payment, further to the issuing by the seller of a regular commercial invoice. After the adequate tests made by the manufacturer, should the result be positive, that is confirm the defect in manufacturing, the seller will issue a regular credit note in the name of the buyer and return the amount paid. Should the result be negative, that is detect a negligence in the installation or use by the buyer, he will have no right against the seller.

INTRODUCTION

The apparatus described in this manual is the latest of this series, offering high performances, remarkable reliability and a wide range of characteristics, it all at a low cost.

Its is easy to install and use. It only takes to follow the installation procedure as shown in this manual: after having removed all from the package, you only have to follow step by step the description in the various sections.

Before starting to use the apparatus, remember to:

- read carefully the general safety information contained in this section;
- follow the instructions for the installation and set up of the apparatus;
- read all the remaining sections of this manual in order to know well the apparatus and learn how to obtain the best of its characteristics.

CONTENTS OF THE MANUAL

The chapter composing this manual contain all the information concerning the use of the apparatus. For more information refer to ELETTRONIKA S.r.l.

This manual is made up of different chapters, each made up of various sections. Each individual chapter represents a single apparatus composing the whole station.

WARNING!

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

This manual is intended as a general guide for trained and qualified personnel who are aware of the dangers inherent in handling potentially hazardous electrical and electronic circuits.

It is not intended to contain a complete statement of all safety precautions which should be observed by personnel in using this or other electronic equipment.

The installation, operation, maintenance and service of this equipment involves risks both to personnel and equipment, and must be performed only by qualified personnel exercising due care.

Elettronika S.r.l. shall not be responsible for injury or damage resulting from improper procedures or from the use of improperly trained or inexperienced personnel performing such tasks.

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

WARNING!

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

Do not remove, short-circuit or tamper with interlock switches on access covers, doors, enclosures, gates, panels or shields.

Keep away from live circuits, know your equipment and don't take chances.

WARNING!

In case of emergency ensure that power has been disconnected.

Treatment of electrical shock

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

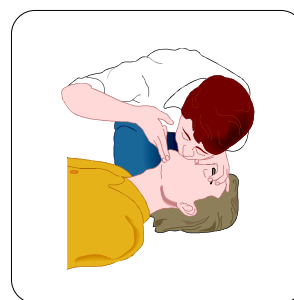
PLACE VICTIM FLAT ON HIS BACK ON A HARD SURFACE

A - AIRWAY



If unconscious, open airway lift up neck, push forehead back, clear out mouth if necessary, observe for breathing.

B - BREATHING

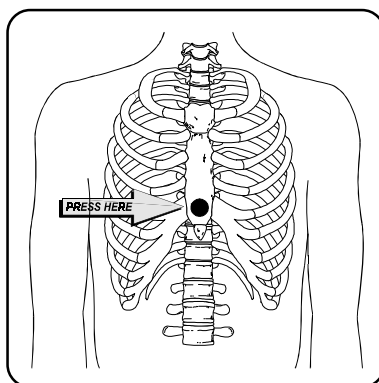


If not breathing, begin artificial breathing. Tilt head, pinch nostrils, make airtight seal, 4 quick full breaths. Remember mouth to mouth resuscitation must be commenced as soon as possible.

C - CIRCULATION



Check carotid pulse. If pulse absent, begin artificial circulation.



Approx. 80sec.: 1 rescuer, 15 compressions, 2 quick breaths.

Approx. 60sec.: 2 rescuers, 5 compressions, 1 breath.

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

Call for medical assistance as soon as possible.

2) If victim is responsive:

- keep them warm;
- keep them as quiet as possible;
- loosen their clothing (a reclining position is recommended).

FIRST-AID

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

TREATMENT OF ELECTRICAL BURNS

1) Extensive burned and broken skin.

- Cover area with clean sheet or cloth (cleansed available cloth article);
- do not break blisters, remove tissue, remove adhered particles of clothing, or apply any salve or ointment;
- treat victim for shock as required;
- arrange transportation to a hospital as quickly as possible;
- if arms or legs are effected keep them elevated.

NOTE

If medical help will not be available within an hour and the victim is conscious and not vomiting, give him a weak solution of salt and soda: 1 level teaspoonful of salt and 1/2 level teaspoonful of baking soda to each quart of water (neither hot or cold).

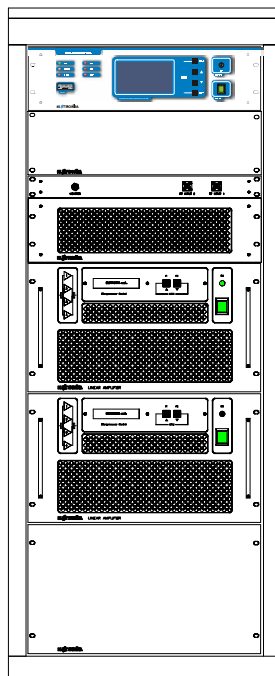
Allow victim to sip slowly about 4 ounces (half a glass) over a period of 15 minutes.

Discontinue fluid if vomiting occurs (do not give alcohol).

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

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

LDMOS - UHF AMPLIFIER



AUTV/2000LD

User's manual

AUTV/2000LD

LDMOS - UHF TV AMPLIFIER

DESCRIPTION

The AUTV/2000LD is a TV amplifier that can be used in the IV/V Bd UHF. Tutti gli stadi di amplificazione utilizzano componenti con tecnologia LDMOS, ottenendo eccellenti prestazioni in termini di guadagno e soprattutto di linearità.

Thanks to the high-quality components used and the strong structure it can be used even in the most hostile environments with the minimum maintenance.

It is composed by two amplifiers AUTV/1000LD coupled by means of 3dB/90° hybrid couplers ensuring an high insulation between the apparatuses and a very good input return loss.

The amplifier AUTV/2000LD has been designed using advanced technologies made for broadcasting applications. All of its components have been tested with thermic shocks in order to obtain a very high reliability and an high MTBF.

A microprocessor control unit controls the apparatus, checking the thermic, electric and RF parameters, intervening in case of problems and showing the whole functioning status on a large LCD display.

The purity of the spectrum is ensured by a band-pass filter which removes all the out-of-band spurious emissions far beyond the level required by the regulations.

The transmitter is provided with linearity pre-corrector to compensate the distortions of the final stage.

TECHNICAL CHARACTERISTICS

RF SECTION

Frequency range	470 - 860MHz
Vision/Sound amp.	Common
Output power	2000W peak sync.
Output power control	Automatic or manual (switch-selected)
Output frequency stability	2,5ppm (option 0,05ppm)
Out stage technology	LDMOS Solid State
I.M.D.	< -54dB (with IF-Precorrector)
Spurious and harmonics level	< -60dB
RF Output impedance	50Ω
RF Output connector	EIA 7/8"
Intermediate frequency	38.9 or 45.75MHz on request

SOUND SECTION

Input level	1Vpp (adj.)
Input impedance	600Ω Balanced
Input connector	Twinax
Pre-emphasis	50μs
Frequency response	30Hz - 15kHz, ±0.5dB
Total harmonic distortion	< -0.5%
FM Signal noise ratio	> -68dB
(referred to +/-50kHz dev. f = 400Hz)	> -60dB (unweighted)

VIDEO SECTION

Input level	1Vpp
Input impedance	75Ω
Return loss	26dB
Differential gain	< 5%
Differential phase	< 5°
Group delay	±40ns
Input connector	BNC Female
Sideband spectrum response	According to the standard
Amplitude frequency response	According to the standard

GENERAL

Power supply	230Vac, ±10%, 50/60Hz 400Vac 3P+N (on request)
RS232 Socket	DB9 Connector (on Amplifier Control)
Telemeasuring socket	DB25 Connector (on Amplifier Control)
AGC Socket	DB9 Connector (on Amplifier Control)
I ² C BUS Socket	2xDB9 Connector (on Amplifier Control)

Ambient temperature	-5° to +45°C
Humidity	20% - 90%
Cabinet	Rack 19"-28U
Dimensions	560x1000x1460mm
Weight	300kg

PROTEC. THR. (AUTV/1000LD)

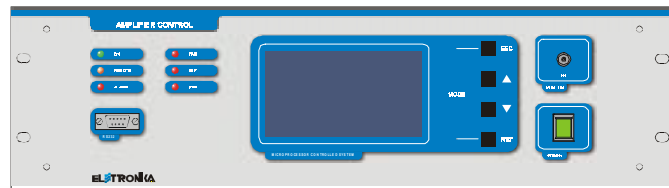
FWD Power	1200W
REF Power	100W
Temperature	70°C
IDC _{DRIVER}	12A
IDC _{AMPLIFIER}	20A
VDC _{DRIVER}	31V
VDC _{AMPLIFIER}	33V

Component list**APT088A - AUTV/2000LD**

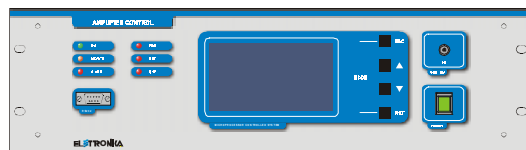
Part Name Code	Description	Qty
APT084ASF	CASSETTO AMPLIF. UHF 1kW LDMOS 220V	2
APG016A	CARICO FITTIZIO 50Ω 1kW UHF	1
06641	BAND PASS FILTER UHF 1kW CL4NL22 7/16	1
APG012B	CASSETTO CONTROLLO AMPLIFICATORE	1
06816A	ACCOP. 3dB IBRIDO 2.5kW UHF m/f	1
MTG0045AR0	ACCOP. DIR. CON PRELIEVO -50/-40dB	1
CMS6006	CAVO 1/2" DA 1mt CONN. 7/16(M) BN203391	1
CMS6007	CAVO 1/2" DA 2mt CONN. 7/16(M) BN203388	1
06811B	ACCOP. IBRIDO 3dB 300W CON CARICO 20W	1
02408	SP 10/12 90° 7/16 M+F 90°	1
08510	CABLE RG213 50Ω	3,20
02201	CONNET. Nm x RG213 GE 15015 C4	5
02230	R161270000 (N flg. RG213)	1
08504	CABLE RG58 50Ω	5,50
02015	R141082161 BNC A CRIMP. x RG58	5
02502	J01150A0041 SMA x RG58/c	1
02576	TAPPO RIV. CON HP 2800	2
02205	NM 90° x RG58 CRIMPARE GE 15142 D/60	2
08503	CABLE RG303 50Ω	0,20
07625A	CONDENSATORE 3uF CON FILI	1
07620	GRIGLIA ALTA G025001-00-01	1
07625	VENTOLA EBM A2E250-AM06-13	1
07622	BOCCAGLIO BOCC. 250 AL	1
02871	CALOTTE PER DB9 cod. 525-2620	2
02791	CONNETTORE DB9M x CAVO 525-2600	2
V0762	TAPPI NERI O 15.9 PLASTICA DP-625	1
M0800	GUIDA DIN PROFILATA OMEGA Z002 SEM	3
V0958	ACCESSORIO GUIDA DIN ELECO E205	6
05597	POST. x RACK 28U VER CON0099R0	1
CON0057	CON0057R1 CHIUS. SUP. RACK PER AUTV 2kW	1
Z0500	TAV. 1081/E GUIDA RACK 3000W P.2328 ZN	10
DET0462	DET0462R0 BARRA x RACK SOSTEGNO P. CAV ZN	2
DET0434	DET0434R2 ANCORAGGIO FLANG. 7/8 CON RACK	1
DET0391	DET0391R0 BARRA FISS. ACC. INP AUDIO 5kW	1
DET0538	DET0538R0 PIASTRA ANCOR. ACC. DIR. FIL. 2kW	1
DET0537	DET0537R0 PIASTRA ANCOR. ACC. DIR. FIL. 2kW	1
DET0536	DET0536R0 ANGOLARE FISS. FILTRO 2kW COMT.	2
DET0535	DET0535R0 BARRA FISS. FILTRO 2kW COMT.	2
V0962	MORSETTIERA/GIUNZIONE ELECO E806	3
09627	CASSETTO TRASF. SEPARAT. DI RETE 8kVA	1
07627B	SPINA PROT.B.T. 32A 2P+T 220V GW60015	1
07627C	PRESA VOL. 32A 2PT 220V GW62015	1
R0154	RACK 28U 565x1000	1
PAN0017	PAN0017R0 PANNELLO AVANTI DIETRO	1
02571	CARICO BNC 1/2W 50Ω	2

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AMPLIFIER CONTROL



AMPLIFIER CONTROL



1.1 FUNCTIONS

The control system is made up by some “*Slave*” boards, which check locally the amplifier modules, and a “*Master*” board to monitor the status of the *Slave* boards in each module and show on a graphic display all the checked parameters. The number of the *Slaves* changes depending on the output power of the amplifier. The communication between Master and Slaves is made via I²Cbus standard. The *Master* board reads the overall parameters of the equipment (forward and reflected power and unbalancing), *polls* (interrogates in sequence) the local boards, shows on the display the values requested by the user and indicates alarm conditions, if any. Besides it realizes a serial data interface to an external system able to analyse the working parameters of the equipment, using the RS232 and RS485 communication protocols.

At start-up, the display of the Amplifier Control shows an informational message concerning the equipment and the firmware version.

The main menu has: a list of the amplifier modules, the measure of some parameters of the powers in antenna, a window with icons to show the alarm status and some general information, that is date, time, temperature inside the module and, for FM equipment, transmission frequency.

In the Amplifier List, next to each module, you can find the following symbols:



if the communication with the slave is correct and then



if the amplifier module is ON



if the amplifier module is OFF



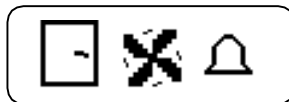
if the communication with the slave is interrupted

The *UP* and *DOWN* arrow keys allow to select one of the slave or the alarm list; the *RET* key is used to confirm the selection.

By selecting one of the slaves, it is possible to see all the parameters of that amplifier module, that is voltages and currents of the power supply, forward and reflected power, temperature and, for some amplifiers, unbalancing powers. The *UP* and *DOWN* keys allow to scroll the local measures of all the slaves. The *ESC* key is used to go back to the main menu.

By selecting the Alarm List, two pages listing the latest 20 alarms saved are shown. Each line in these pages includes the progressive number of the alarm, starting with the most recent, the number of the module in which the alarm occurred (the indication “AC” means that the alarm occurred in the Amplifier Control module), the parameter in alarm and the date and time of the alarm. The saved alarm can be deleted by keeping simultaneously pressed the *UP* and *DOWN* keys. The *ESC* key is used to go back to the main menu.

In the main menu there is the Alarm Status Window:



displays the status of the INTERLOCK, in case of alarm this icon blinks and the buzzer rings. The INTERLOCK signal is a control available to the user to manage an On/Off sensor.

When the relevant PIN is grounded, the Master board does not signal any alarm, as soon as the PIN is left floating, an alarm is detected;



shows the status of the FANS: works normally;



in case of alarm this icon blinks and the buzzer rings;



this icon blinks in case of ALARM.

If one of the parameters of a *Slave* or any of the ones directly checked by the *Master* is alarmed, the general alarm LED and the alarm icon blink until the Alarm List is checked to see the type of alarm occurred.

Besides, if an alarm for any of the powers of the signals in antenna occurs, the relevant measure in the *Antenna* window of the display and the relevant LED on the front panel of the Master module blink until the measure decreases below the threshold level, determined by the nominal power of the amplifier.

If the slave modules are working and an INTERLOCK or FANS alarm occurs, aside from the indication explained above, the amplifiers are switched off. This happens immediately after an INTERLOCK alarm, or about 7 seconds after a FANS alarm is detected.

In case the amplifiers are communicating but switched off, or they are not communicating and the INTER-LOCK alarm contact is open, a WARNING condition occurs: buzzer on and blinking ALARM LED on the front panel; while if it is the FANS alarm contact to be open, the icon of the alarm appears in the box. Further to any of these two alarms it is possible to choose whether to turn off or not the amplifiers. In fact, if the DIP-switch n. 2 (see mounting plan BOTTOM - SCH0109BR0) is set to OFF before turning on the transmitter, the amplifiers will be switched off after a FAN alarm occurs, while it will be kept on if the switch is set to ON. The DIP-switch n. 3 has the same effect for what concerns the Interlock alarm.

1.2 PROGRAMMING MODE

To access the “*Programming Mode*”, press simultaneously the *ESC* and *RET* keys. The “*Setting Time*” menu or the “*Setting Frequency*” menu can be selected by using the arrow keys, while the *RET* key confirms the choice. While this menu is open, no alarm will be signalled until the return to the main menu. If no key is pressed for about 50 seconds, the main menu is automatically displayed.

The **Setting Time** menu allows to set the following functions: hour, minute, day, month and year. The selected parameter blinks and can be modified with the arrow keys; the *RET* key confirms the changes, while the *ESC* key cancels them.

The “**Setting Frequency**” menu appears only in the FM amplifiers. To visualize the power emitted by the antenna correctly, set the frequency nearest to the working frequency of the transmitter in the frequency programming menu. The selected parameter blinks and can be modified with the arrow keys; the *RET* key confirms the changes, while the *ESC* key cancels them.

1.3 SETTING

Set the RS232-RS485 mode on the SCH0109BR0 Control board:

RS232 MODE - DIP-switch n. 1 set to ON before turning on the transmitter: the RS232 mode allows a direct access to the equipment via PC and a remote access via modem or switched telephone line.

RS485 MODE - DIP-switch n. 1 set to OFF before turning on the transmitter. The RS485 mode allows a remote access to the equipment via modem over switched telephone line or GSM network. It allows the connection to the Remote Control System, designed to monitor several apparatuses located at the same site.

- FWD Power calibration

Disconnect the antenna and connect a wattmeter to the antenna connector. Give power to the amplifier until you will read on the wattmeter a value corresponding to the equipment nominal power. Then turn the trimmer

A (see mounting plan BOTTOM - SCH0109BR0, it is a variable resistor used to adjust the A analog input measure) until you read approximately the same FWD power value on the display.

- REF Power calibration

Disconnect the antenna and connect a wattmeter to the antenna connector. Connect the Forward power monitoring cable to the Reflected power input connector. Give power to the amplifier until you will read on the wattmeter a value corresponding to 10% of the equipment nominal power. Then turn the trimmer B (see mounting plan BOTTOM - SCH0109BR0, it is a variable resistor used to adjust the B analog input measure) until you read approximately the same REF power value on the display.

- UNB Calibration

Connect a wattmeter before the dummy load. Give power to the amplifier then turn off one slave module: you will read an amount of unbalancing power on the wattmeter. Turn the trimmer C (see mounting plan BOTTOM - SCH0109BR0, it is a variable resistor used to adjust the C analog input measure) until you read approximately the same UNB power value on the display.

1.4 REMOTE CONTROL

It is possible to remotely control the apparatus, thus to monitor the parameters shown on the display of the Amplifier Control and check the status of the transmitter. This is done through RS232 and RS485 standard serial communication, digital and analog inputs through the DB25 telemetering connector on the rear panel of the Amplifier Control.

The pins n. 1 and n. 14 of this connector are used to receive the ON (pin n. 1) and OFF (pin n. 14) commands, both impulsive and stationary. The digital level on these contacts is usually high, becoming low when the remote control is active. When a remote command to turn off the amplifiers is received while the transmitters is ON, the LED ON of the frontal panel blinks and the REMOTE LED lights up.

1.5 RS232 AND RS485 PIN TABLES

PIN N°	SYGNAL TYPE	IN/OUT	FUNCTION
1	-	-	-
2	Digital	Input	RX232
3	Digital	Output	TX232
4	VDC +12V	-	-
5	GND	-	-
6	VDC +12V	-	-
7	-	-	-
8	-	-	-
9	-	-	-

RS232 - DB9 Connector

PIN N°	SYGNAL TYPE	IN/OUT	FUNCTION
1	GND	-	-
2	Digital	Input	RX2_485B-
3	Digital	Input	RX2_485A+
4	VDC +12V	-	-
5	GND	-	-
6	VDC +12V	-	-
7	Digital	Output	TX2_485Z-
8	Digital	Output	TX2_485Y+
9	-	-	-

RS485 - DB9 Connector

1.6 TELEMESURING PINS TABLE

PIN N°	SIGNAL TYPE	IN / OUT	FUNCTION
1	Digital	-	REMOTE ON/OFF TTL: GND = REMOTE ON +5V = REMOTE OFF
2	Digital	Output	-
3	Digital	Output	-
4	Digital	Output	-
5	Digital	Output	-
6	Digital	Output	-
7	Digital	Output	AGC alarm TTL: GND = AGC alarm, +5V = no AGC alarm
8	Digital	Output	-
9	GND	-	-
10	Analog	Output	-
11	Analog	Output	-
12	Analog	Output	-
13	Analog	Output	-
14	Digital	Input	REMOTE AMPLIFIER ON/OFF TTL: if REMOTE ON then GND = AMPLIFIER OFF +5V = AMPLIFIER ON
15	Digital	Output	-
16	Digital	Output	-
17	Digital	Output	-
18	Digital	Output	-
19	Digital	Output	AGC alarm TTL: GND = AGC alarm, +5V = no AGC alarm
20	GND	-	-
21	+5V	-	-
22	Analog	Output	FWD Power [0,+ 5V]
23	Analog	Output	REF Power [0,+ 5V]
24	Analog	Output	UNB Power [0,+ 5V]
25	Analog	Output	-

1.7 OTHER TABLES

	SYGNAL TYPE	IN/OUT	FUNCTION
A	Analog	Input	FWD Power monitoring
B	Analog	Input	REF Power monitoring
C	Analog	Input	UNB Power monitoring
D	-	-	-
E	-	-	-
F	-	-	-
G	-	-	-

BNC Connectors

PIN N°	SYGNAL TYPE	IN/OUT	FUNCTION
1	GND	-	-
2	Digital	Output	AGC alarm TTL: GND = AGC alarm, +5V = no AGC alarm
3	Digital	Output	AGC alarm TTL: GND = AGC alarm, +5V = no AGC alarm
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	Analog	Output	FWD Power (range 0 - +5V)
9	Analog	Output	FWD Power (range 0 - +5V)

AGC Connector

BNC	SYGNAL TYPE	IN/OUT	FUNCTION
Contact	Digital	Input	FANS control Switch or TTL: closed/GND = no FANS alarm open/+5V = FANS alarm
Body	GND	-	-

FANS CONTROL

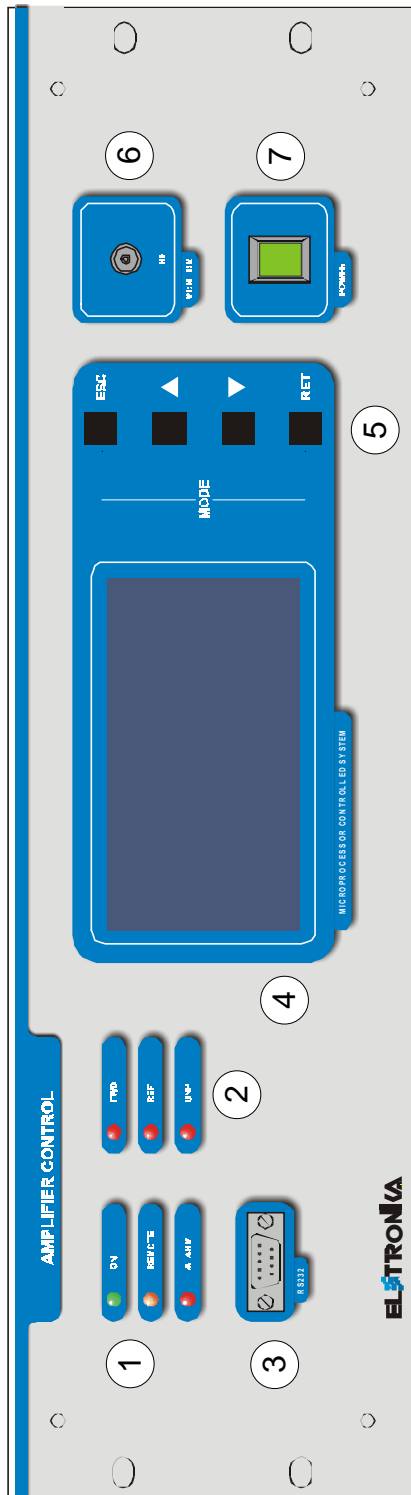
PIN N°	SYGNAL TYPE	IN/OUT	FUNCTION
1	-	-	-
2	Digital	Output	SCL
3	GND	-	-
4	Digital	Output	SDA
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-

I²C BUS Connector

PIN N°	SYGNAL TYPE	IN/OUT	FUNCTION
1	GND	-	-
2	VDC +24V	-	-

24VDC LOAD FAN Connector

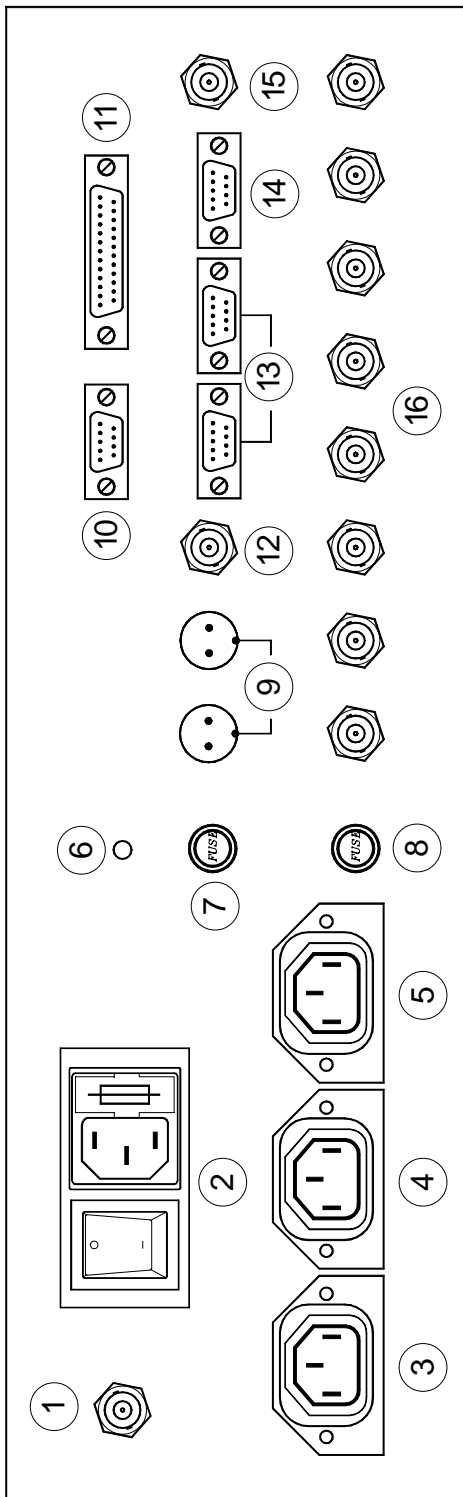
Frontal panel



DESCRIPTION

1	Status LEDs
2	Alarm LEDs
3	RS232 Socket
4	LCD Display
5	Function keys
6	RF Monitor connector
7	ON/OFF Switch

Rear panel



DESCRIPTION

1	RF Input connector
2	Main Power supply socket with Fuse-Holder by 10A
3	Driver1 Power socket
4	Driver2 Power socket
5	Fans Power socket
6	GND
7	Fuse by 1A
8	Fuse by 8A
9	24Vdc Connectors
10	AGC Socket
11	Telemeasures socket
12	Fans Control connector
13	PC Bus connectors
14	RS485 Socket
15	Interlock connector
16	Power measurement connector

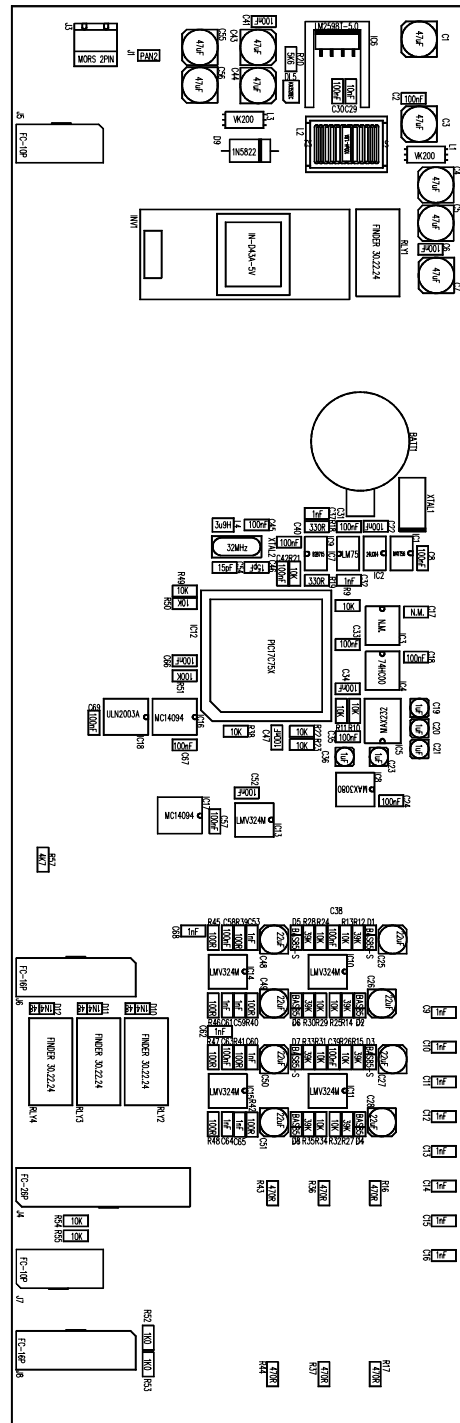
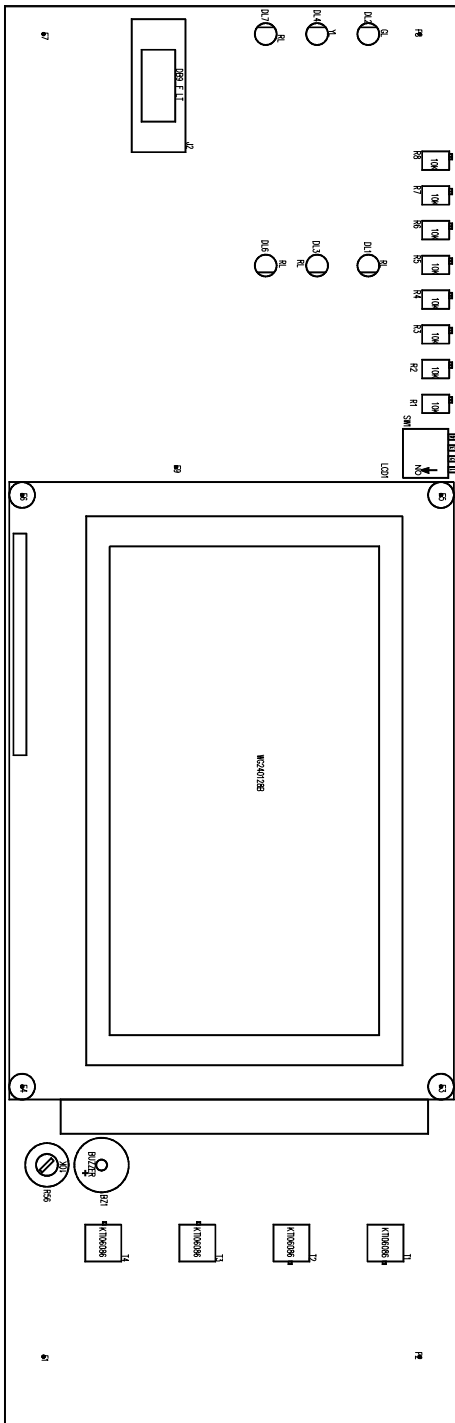
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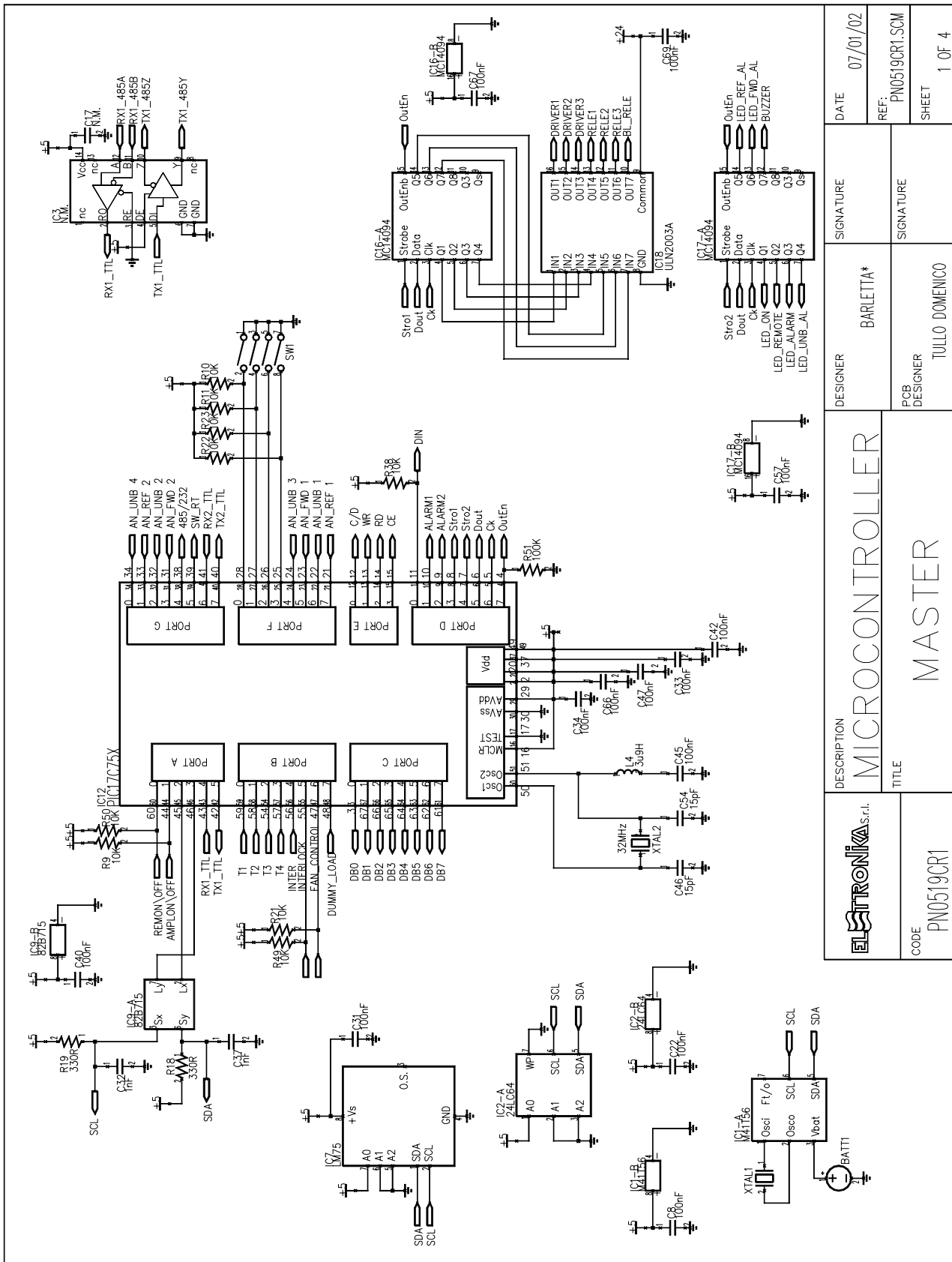
Component list**APG012B - Amplifier Control**

Part Name Code	Description	Qty
CON0145	CON0145R0 POST.CASS.CONTROLLO APG012B	1
05504	CON0134R0 PIANO prof.260 ARE.p.02047 ZN	1
05525	LAT. 3U PROF.260 TAV.424/A p.2033 ZN	2
PAN0066	PAN0066AR0 PANNELLO CONTR.APG012B 3U	1
CON0135	CON0135AR0 BASE CASS.CONTR.X APG012 ZN	1
05552B	KIT MANIGLIE 3-4U cod 235.12	2
02880	SPINA VDE 10A + INT.+FUS DA PANN.BZ15011	1
SCH0109BR0	SCHEDA MASTER CON DISPLAY	1
SCH0110BR0	SCHEDA 3 IN.ANALOGICI MASTER APG012B	1
SCH0152AR0	SCHEDA COMMUTAZIONE 220VAC X APG012B	1
SCH0153AR0	SCHEDA IN/OUT DIGITAL SIGNAL X APG012B	1
E0016	ALIM. SWITCHING S-50-24	1
07926	PROTEZIONE IN GOMMA PVC PG 987	1
02843	SPINA SCHERM. 2 POLI cod. 525.2552	2
02844	PRESA SCHERMATA 2 POLI cod.525.2542	2
02695	CONNETTORE DB9F X CAVO 525-2810	1
02856	CONNETTORE DB25F X CAVO 525-2812	1
07925	PROTEZIONE IN GOMMA PVC PG 075	1
07524A	INTERR. NERI I3910	1
02018	GE 35145D/22 BN(UG909/cxRG174)	1
02035	PRESA BNC/F X RG 316 COD.60140	1
08500	CAVORG 174 50Ohm	0,3
02700	CONNETTORE COD.534-2303 FEM.16 VIE	1

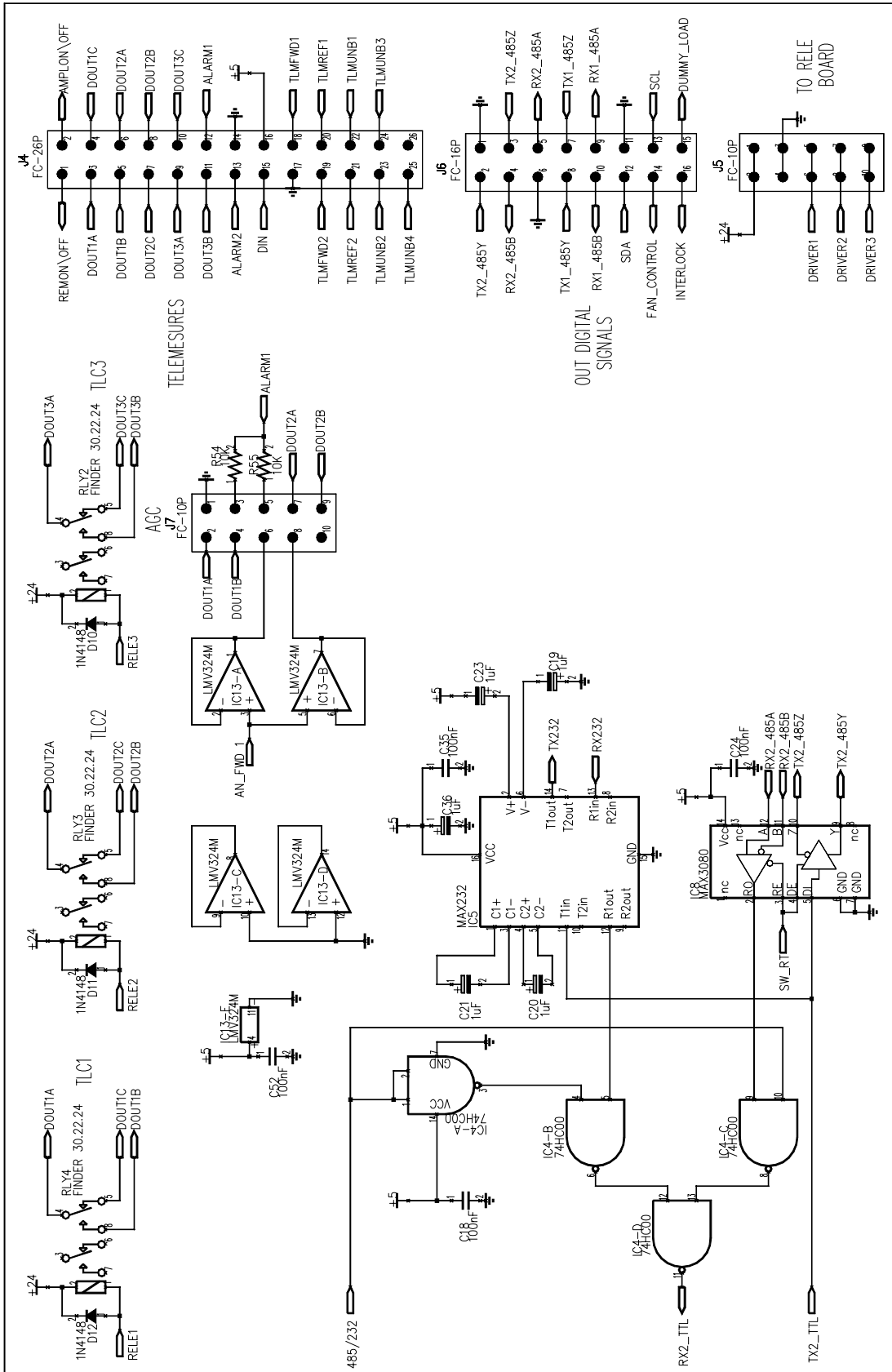
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Component layout SCH0109BR0 (Bottom and Top layer)

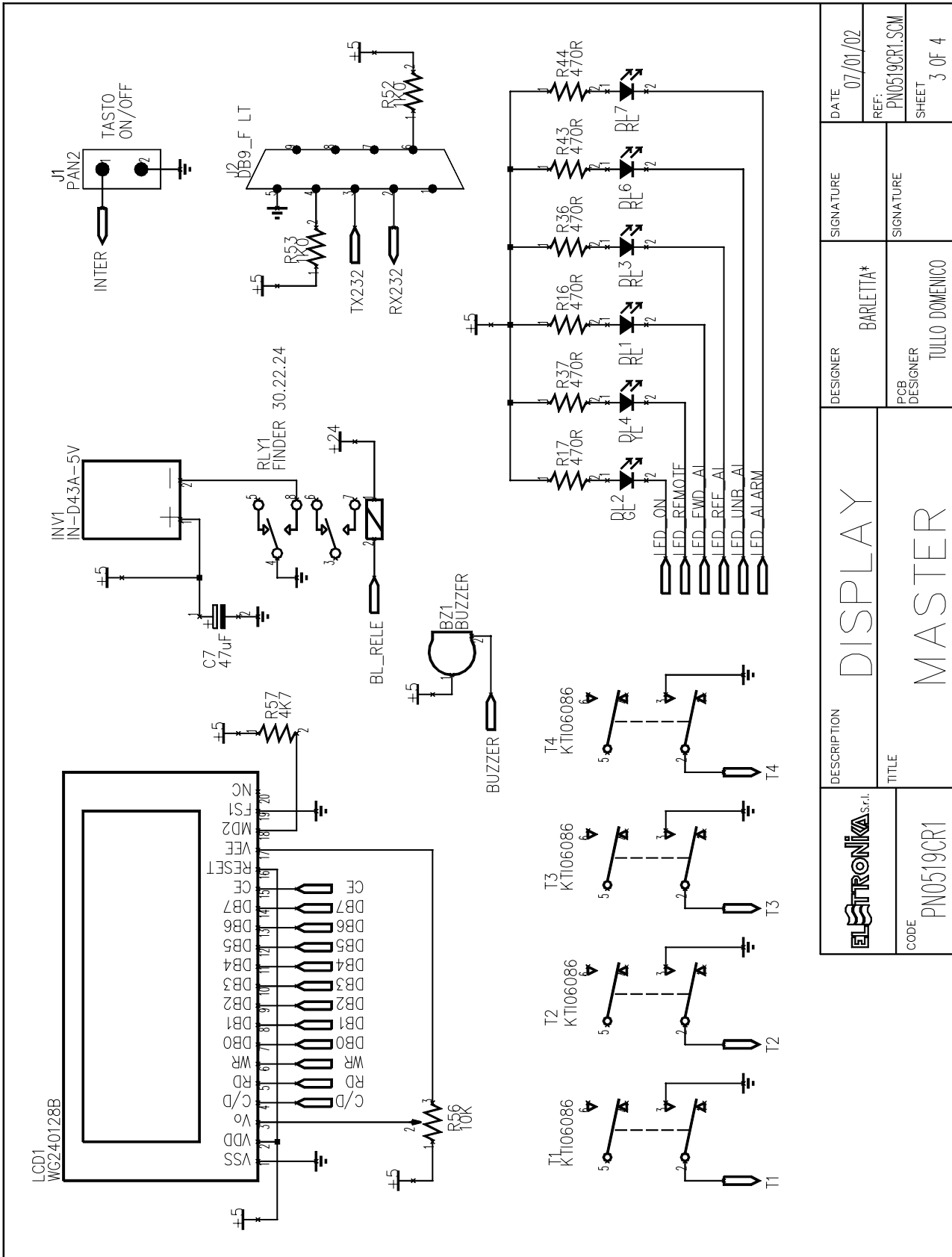





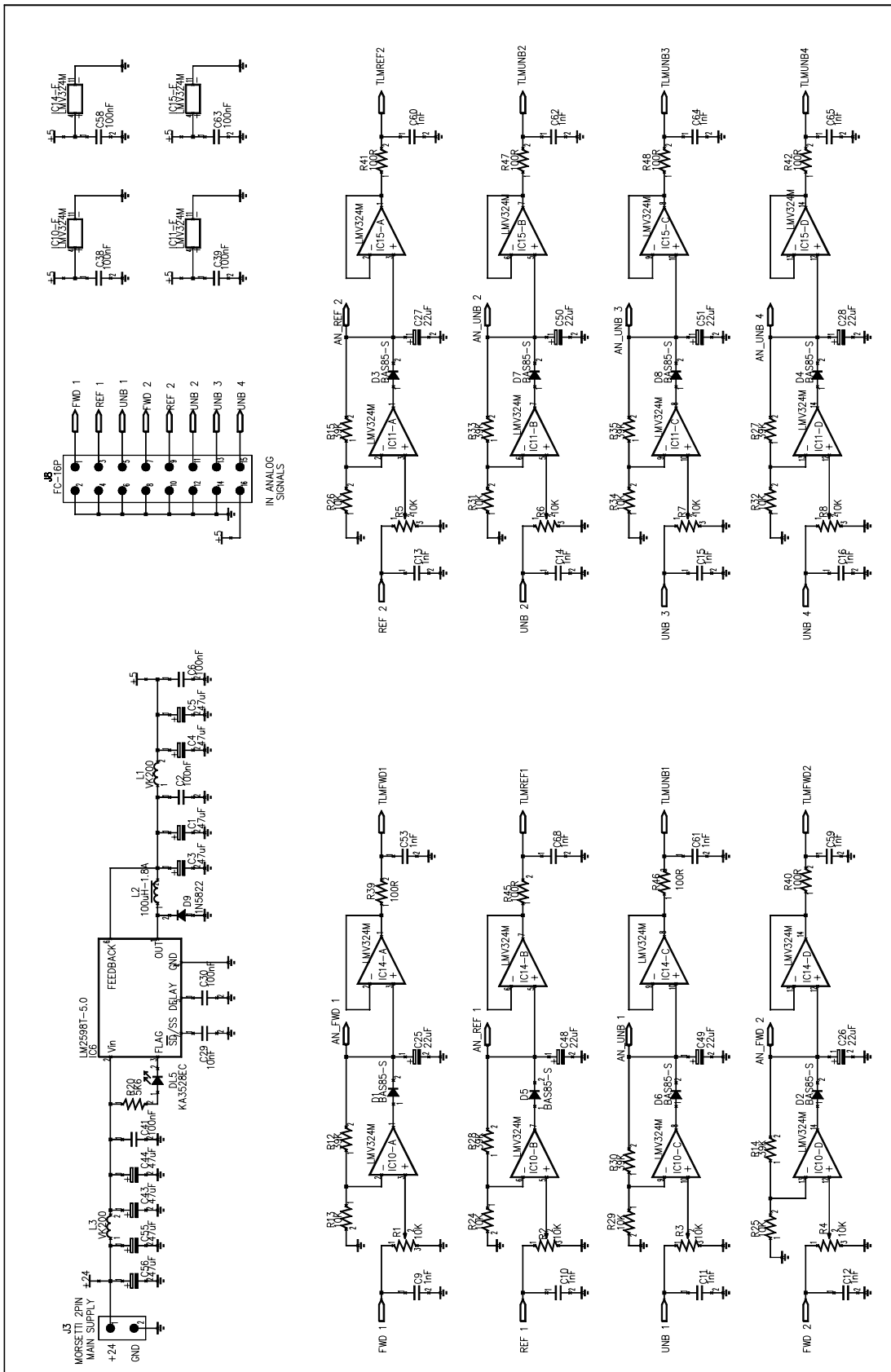
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CODE PN0519CR1		TITLE MASTER		PCB DESIGNER TULLO DOMENICO		SIGNATURE	REF: PN0519CR1.SCM
						SHEET 1 OF 4	




ELSTRONIKA S.r.l.	DESCRIPTION	OUTPUTS	
	TITLE	MASTER	
CODE	PN0519CR1	DESIGNER	BARLETTA*
		PCB DESIGNER	TULLO DOMENICO
		SIGNATURE	SIGNATURE
		DATE	07/01/02
		REF:	PN0519CR1.SCM
		SHEET	2 OF 4



	DESCRIPTION	DESIGNER	SIGNATURE	DATE
	TITLE	PCB DESIGNER	SIGNATURE	REF.
CODE	TULLO DOMENICO		SHEET	3 OF 4
PN0519CR1	MASTER			07/01/02
				PN0519CR1.SOM



	DESCRIPTION	INPUT SIGNAL	
	TITLE	MASTER	
CODE	PN0519CR1	DESIGNER	BARLETTA*
		PCB DESIGNER	TULLO DOMENICO
		SIGNATURE	
		SIGNATURE	
		DATE	07/01/02
		REF:	PN0519CR1.SCM
		SHEET	4 OF 4

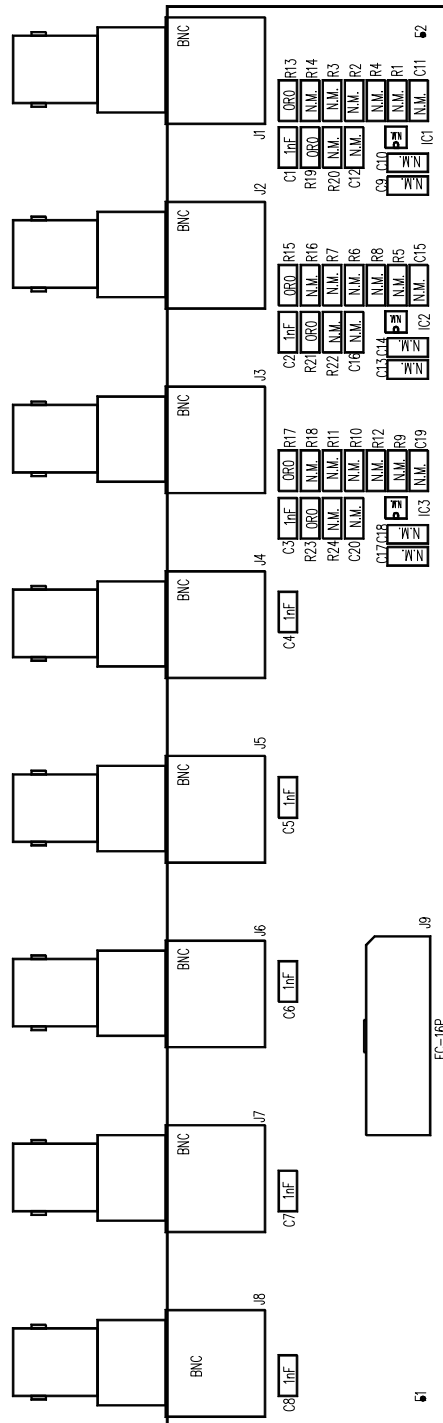
COMPONENT LIST SCH0109BR0

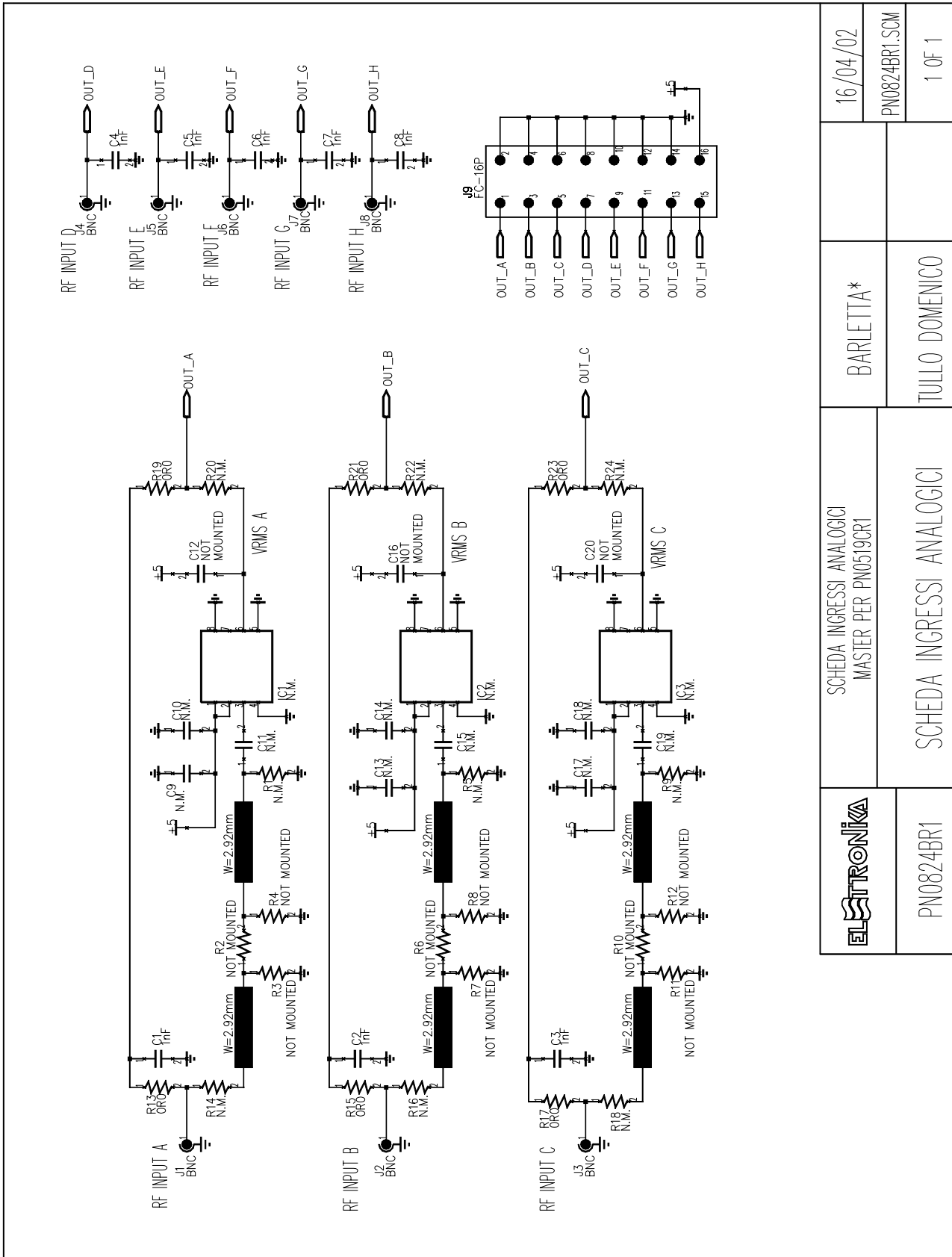
Part Name/Number	Description	Qty.	Comps.	Page 1/3
BATT BH001RB 3093_90	03093 03090 BATTERY HOLDER	1	BATT1	
BZ AI-155 03705	03705 5VDC BUZZER	1	BZ1	
CC 100nF-S 01065C	01065C Y5V 1206 COND	25	C2 C6 C8 C18 C22 C24 C30-31 C33-35 C38-42 C45 C47 C52 C57-58 C63 C66-67 C69	
CC 10nF-S 01053B	01053B SMD 1206 COND	1	C29	
CC 1206 NOT MOUNTED	NOT MOUNTED SMD 1206 COND	1	C17	
CC 15pF-S 01088	01088 SMD 1206 COND	2	C46 C54	
CC 1nF-S 01096	01096 SMD 1206 COND	18	C9-16 C32 C37 C53 C59-62 C64-65 C68	
CE 1uF50V-S 01763A	01763A ELETTR SMD COND	5	C19-21 C23 C36	
CE 22uF35V-S 01782A	01782A ELETTR SMD COND	8	C25-28 C48-51	
CE 47uF50V-S 01791C	01791C ELETTR SMD COND	9	C1 C3-5 C7 C43-44 C55-56	
D 1N4148-S 03002	03002 SMD DIODE	3	D10-12	
D 1N5822 03022	03022 SCHOTTKY DIODE	1	D9	
D BAS85-S	03024 SMD DIODE SCHOTTKY	8	D1-8	

Part Name/Number	Description	Qty.	Comps.	Page 2/3
DIS WG240128B	03083 240/128 DOT MATRIX LCD	1	LCD1	
DL KA-3528EC 03056	03056 RED SMD LED DIODE	1	DL5	
DL LEDG3 03053	03053 GREEN LED DIODE 3mm	1	DL2	
DL LEDR3 03058	03058 RED LED DIODE 3mm	4	DL1	
			DL3	
			DL6-7	
DL LEDY3 03051	03051 YELLOW LED DIODE 3mm	1	DL4	
IC 24LC64 04815	04815 SMD INTEG CIRCUIT	1	IC2	
IC 74HC00-S 4762A	4762A SMD INTEG CIRCUIT	1	IC4	
IC 82B715-S 04734A	04734A SMD INTEG CIRCUIT	1	IC9	
IC LM2598T-5.0 4871	04871 INTEG CIRCUIT	1	IC6	
IC LM75-S 00668	00668 SMD INTEG CIRCUIT	1	IC7	
IC LMV324M-S 04658B	04658B SMD INTEG CIRCUIT	5	IC10-11	
			IC13-15	
IC M41T56 04611	04611 SMD INTEG CIRCUIT	1	IC1	
IC MAX232-S 04804B	04804B SMD INTEG CIRCUIT	1	IC5	
IC MAX3080-S 04770	04770 SMD INTEG CIRCUIT	1	IC8	
IC MAX3080-S N.M.	NOT MOUNTED SMD INTEG CIRCUIT	1	IC3	
IC MC14094BD 04718	04718 SMD INTEG CIRCUIT	2	IC16-17	
IC PIC17C75X 04807A	04807A 7510B---SMD INTEG CIRCU	1	IC12	
IC ULN2003A 4870	04870 SMD INTEG CIRCUIT	1	IC18	
IND 3u9H-S 05030	05030 INDUCTOR	1	L4	
IND T100uH-1.8A 4958	04958 TOROIDAL-STORAGE CHOKES	1	L2	
IND VK200 05013	05013 INDUCTOR	2	L1	
			L3	
INV IN-D43A-5V	03085 DC/AC MODULE	1	INV1	
J DB9_F-0° LT	02794 PCB CONNECTOR DB9 LONG T	1	J2	
J FC-10P 02697-02699	02697+02699 PCB CONNECTOR POL	2	J5	
			J7	
J FC-16P 02701-02700	02701+02700 PCB CONNECTOR POL	2	J6	
			J8	
J FC-26P 02855-02854	02855+02854 PCB CONNECTOR POL	1	J4	
J PAN2 02739-40-41	02739+02740+02741 PCB CONNECTO	1	J1	
J SCREWCONN2 02853	02853 PCB SCREW CONNECTOR	1	J3	
R 100K-S 00065A	00065A RES 1/4W 5% SMD 1206	1	R51	
R 100R-S 00029A	00029A RES 1/4W 5% SMD 1206	8	R39-42	
			R45-48	
R 10K-S 00053A	00053A RES 1/4W 5% SMD 1206	19	R9-11	
			R13	
			R21-26	
			R29	
			R31-32	
			R34	
			R38	
			R49-50	

Part Name/Number	Description	Qty.	Comps.	Page 3/3
R 1K0-S 00041A	00041A RES 1/4W 5% SMD 1206	2	R54-55 R52-53	
R 330R-S 00035B	00035B RES 1/4W 5% SMD 1206	2	R18-19	
R 39K-S 00060A	00060A RES 1/4W 5% SMD 1206	8	R12 R14-15 R27-28 R30 R33 R35	
R 470R-S 00037A	00037A RES 1/4W 5% SMD 1206	6	R16-17 R36-37 R43-44	
R 4K7-S 00049A	00049A RES 1/4W 5% SMD 1206	1	R57	
R 5K6-1%-S 00050B	00050B RES 1/4W 1% SMD 1206	1	R20	
RL 30.22.24 07569	07569 RELE	4	RLY1-4	
RV 10K-3266X 00807	00807 VARIABLE RESISTOR	8	R1-8	
RV 10K-S-H 00715	00715 VARIABLE RESISTOR	1	R56	
SW SWITCH-4DIP 90°	07531A PCB DIP SWITCH 90°	1	SW1	
T 06086 N 7630 7632	7630 7632 KTI06086 PULSANTE 2	4	T1-4	
XTAL 32.768k-S 05146	05146 QUARTZ	1	XTAL1	
XTAL 32MHz-S 05291	05291 QUARTZ	1	XTAL2	

Component layout SCH0110BR0



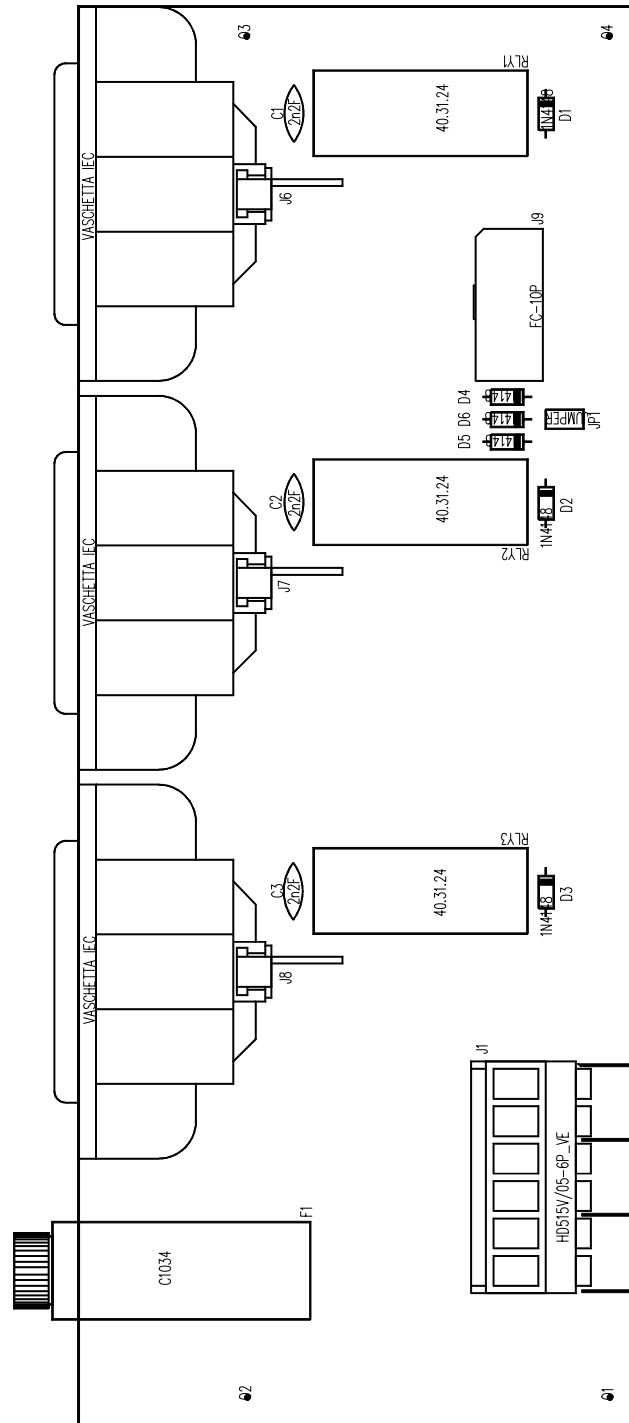


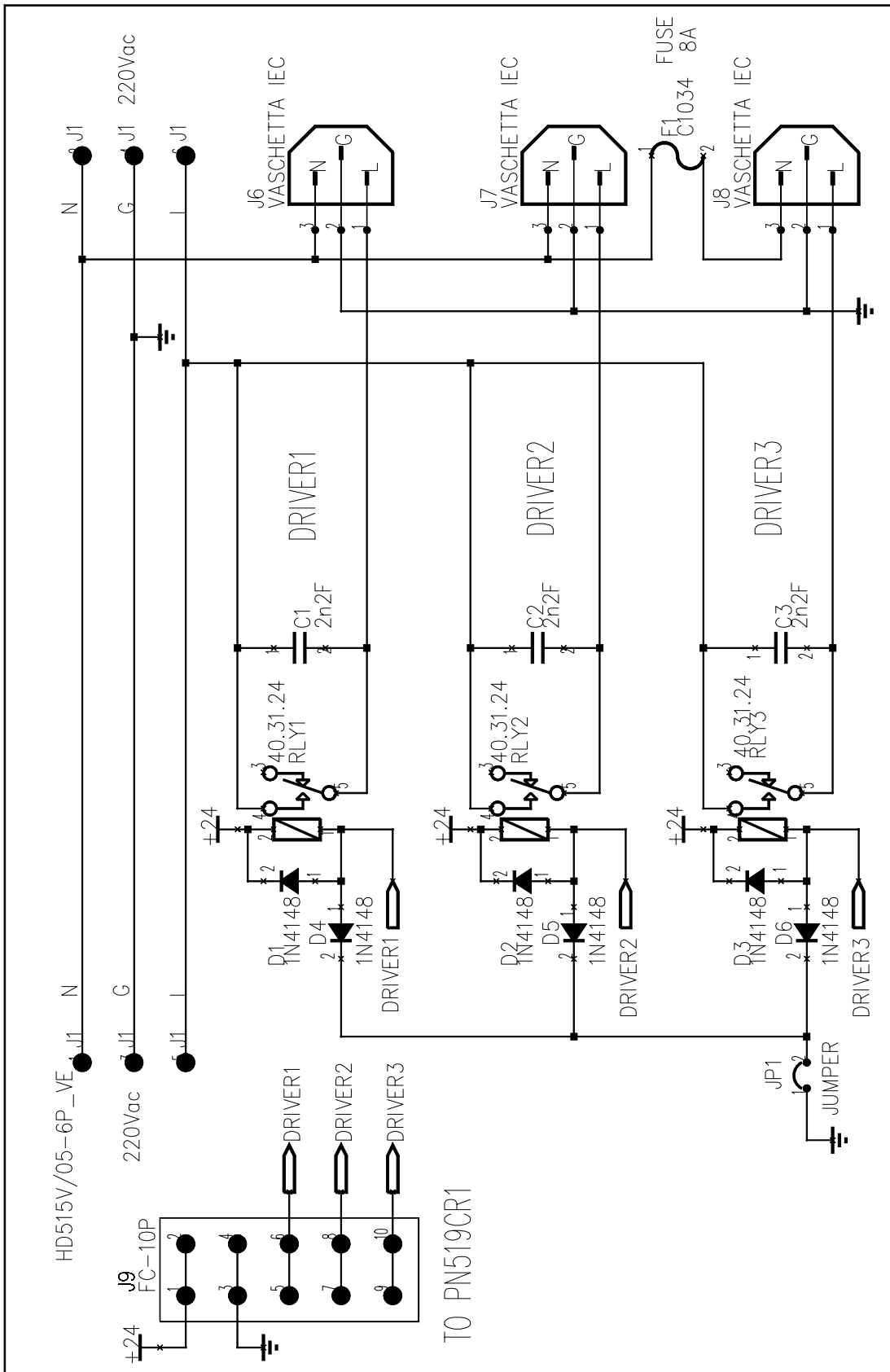
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	SCHEDA INGRESSI ANALOGICI	TULLO DOMENICO	PN0824BR1.SCM 1 OF 1

COMPONENT LIST SCH0110BR0

Part Name/Number	Description	Qty.	Comps.
CC 1206 NOT MOUNTED	NOT MOUNTED SMD 1206 COND	12	C9-20
CC 1nF-S 01096	01096 SMD 1206 COND	8	C1-8
J BNC-90G-PCB 2034	02034 PCB CONNECTOR	8	J1-8
J FC-16P 02701-02700	02701+02700 PCB CONNECTOR POL	1	J9
R 0R0-S 00001	00001 RES 1/4W 5% SMD 1206	6	R13 R15 R17 R19 R21 R23
R 1206 NOT MOUNTED	NOT MOUNTED RES 1/4W 5% SMD 12	18	R1-12 R14 R16 R18 R20 R22 R24
Z MICRO SOIC 8P N.M.	SMD INTEG CIRCUIT NOT MOUNTED	3	IC1-3

Component layout SCH0152AR0



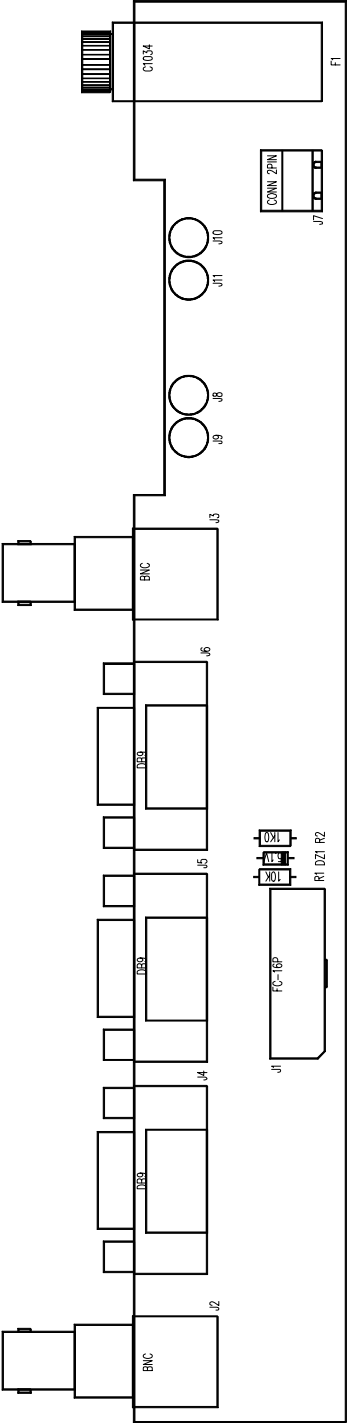


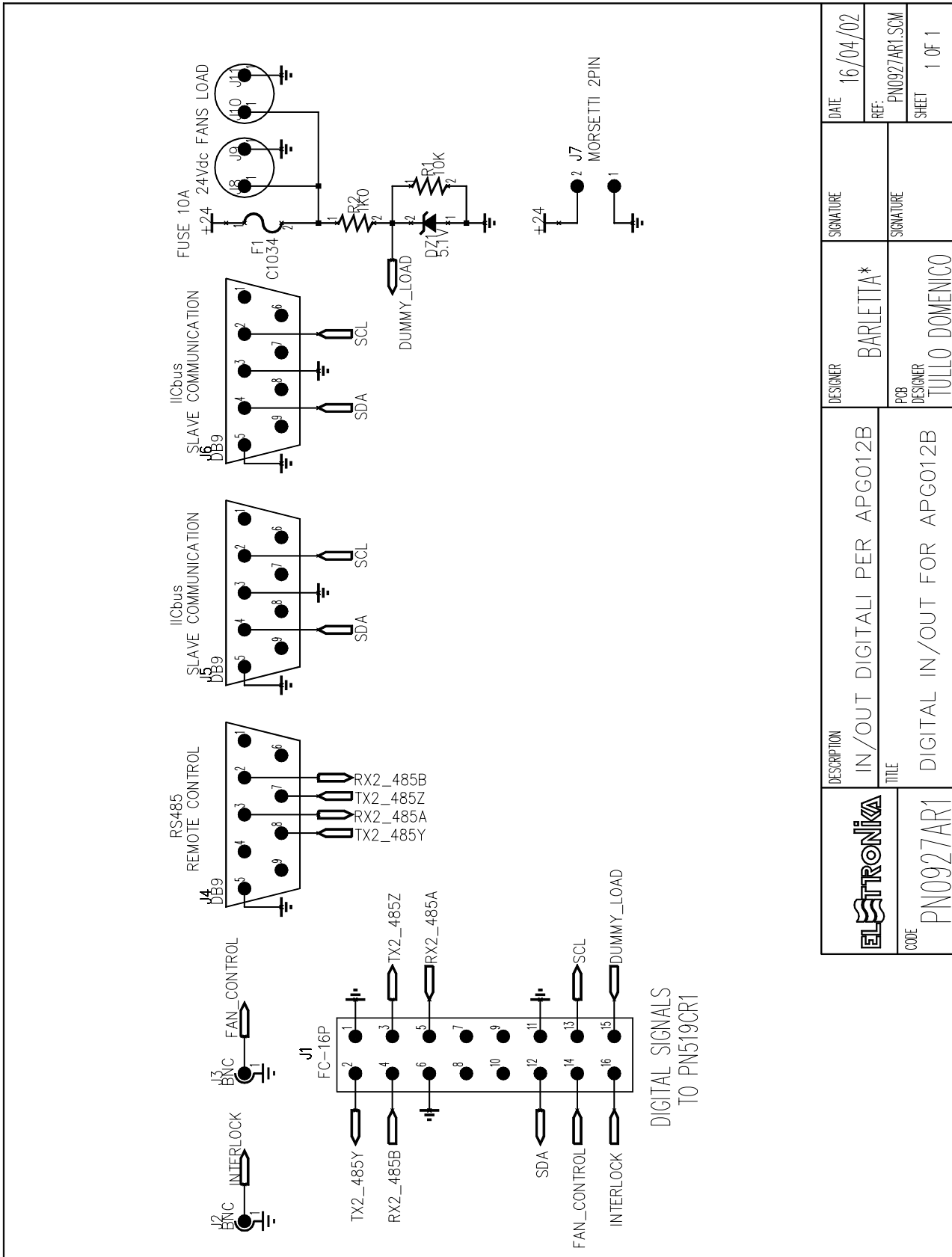
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	SCH. COMMUTAZIONE 220Vac	BARLETTA*		16/04/02
CODE	TITLE	PCB DESIGNER	SIGNATURE	REF.
PN0926AR1	SCHEDA DI RETE	TULLO DOMENICO		PN0926AR1.SCM
				SHEET
				1 OF 1


COMPONENT LIST SCH0152AR0

Part Name/Number	Description	Qty.	Comps.
CC 2nF2 2kV 01045A	01045A CERAMIC COND	3	C1-3
D 1N4148 03001	03001 DIODE	6	D1-6
FUSE OMEGA C1034	FUS00008 PORTA FUSIBILE 5x20 D	1	F1
J CON HD515V/05-6PVE	02883 + 02884 PANDUIT PCB CONN	1	J1
J FC-10P 02697-02699	02697+02699 PCB CONNECTOR POL	1	J9
J VASCHETTA IEC	02879 VASCHETTA FEMALE PCB	3	J6-8
JU JUMP2 02739-02742	02739+02742 MASCHIO PAN2	1	JP1
RL 40.31.24	7567C RELE	3	RLY1-3

Component layout SCH0153AR0





	DESCRIPTION	DESIGNER	SIGNATURE	DATE
	IN/OUT DIGITALI PER APG012B	BARLETTA*		16/04/02
CODE	TITLE	PCB DESIGNER	SIGNATURE	REF:
PN0927AR1	DIGITAL IN/OUT FOR APG012B	TULLO DOMENICO		PN0927AR1.SCM
				SHEET 1 OF 1

COMPONENT LIST SCH0153AR0

Part Name/Number	Description	Qty.	Comps.
DZ 5V1 03109	03109 ZENER DIODE	1	DZ1
FUSE OMEGA C1034	FUS00008 PORTA FUSIBILE 5x20 D	1	F1
J BNC-90G-PCB 2034	02034 PCB CONNECTOR	2	J2-3
J DB9-90G 02797	02797 PCB CONNECTOR	3	J4-6
J FC-16P 02701-02700	02701+02700 PCB CONNECTOR POL	1	J1
J SCREWCONN2 02853	02853 PCB SCREW CONNECTOR	1	J7
J TESTP2.5mm 07912	07912 TEST POINT	4	J8-11
R 10K 0053	0053 RES 1/4W 5%	1	R1
R 1K0 0041	0041 RES 1/4W 5%	1	R2

SPECIFICATION

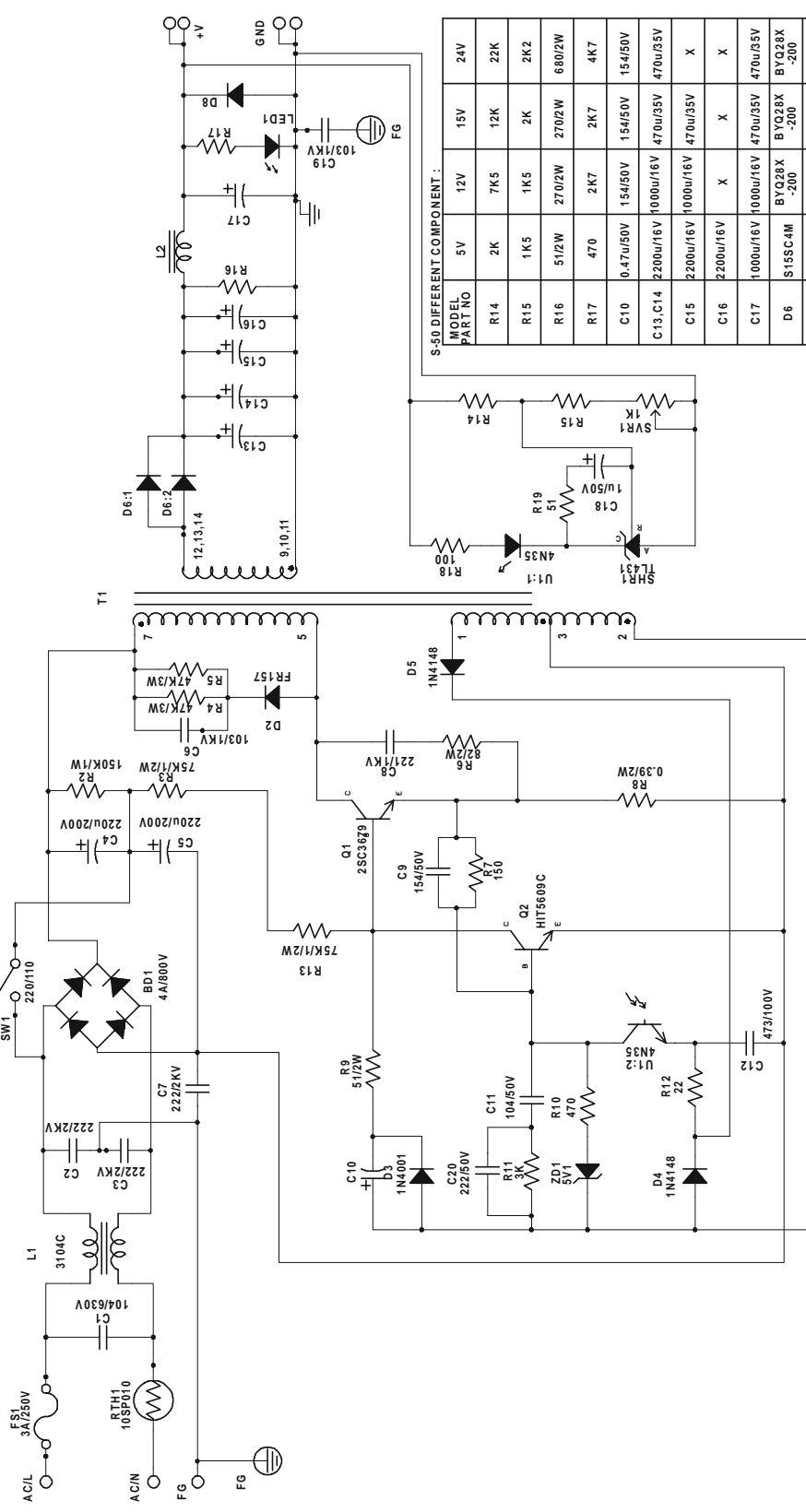
MODEL

S-50-24

Input voltage	85 ~ 132VAC/ 170 ~ 264VAC selected by sw.
Input frequency	47-63Hz
Inrush current	Cold start, 15A/115V, 30A/230V
Output voltage	Refer to below table (+/-10% ADJ.)
Overload protection	105% ~ 150% output foldback limiting
Setup, rise, hold up time	200ms, 100ms, 20ms
Withstand voltage	I/P-O/P:1.5kV,I/P-FG:1.5KV, 1min.
Working temp	0-50°C@100%, -10°C@80%, 60°C@80%
Safety standards	Design refer to UL 1012 requirement
Connection	5P/9.5mm pitch terminal block
Weight	0.5kgs
Packing	30PCS/1CUFT

Type No	Output	Tol.	R&N	Effi.	P.P.
S-50-5	5V, 10A	+/-2%	75mV	71%	46
S-50-12	12V, 4.2A	+/-1%	100mV	78%	46
S-50-15	15V, 3.4A	+/-1%	100mV	78%	46
S-50-24	24V, 2.1A	+/-1%	100mV	82%	46





S-50 DIFFERENT COMPONENT :

MODEL PART NO	5V	12V	15V	24V
R14	2K	7K5	12K	22K
R15	1K5	1K5	2K	2K2
R16	51/2W	270/2W	270/2W	680/2W
R17	470	2K7	2K7	4K7
C10	0.47u/50V	154/50V	154/50V	154/50V
C13, C14	2200u/16V	1000u/16V	470u/35V	470u/35V
C15	2200u/16V	1000u/16V	470u/35V	X
C16	2200u/16V	X	X	X
C17	1000u/16V	1000u/16V	470u/35V	470u/35V
D6	S15SC4M	BYQ28X -200	BYQ28X -200	BYQ28X -200
T1	TF-069N	TF-060N	TF-074N	TF-061N
L2	RB-011	RB-009	RB-003	RB-003
D8	X	FR102	FR102	FR102

DESIGNER	SIGNATURE	DATE
		04/09/02
DESIGNER	SIGNATURE	REF:
DESIGNER	SIGNATURE	SHEET
		1/2

DESCRIPTION	TITLE
ELECTRICAL DIAGRAM	S-50-R2
	SWITCHING POWER SUPPLY

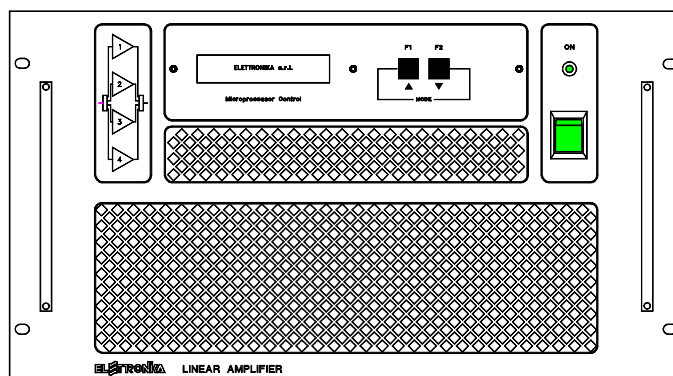
CODE

COMPONENT LIST S-50-24

SPECIFICATIONS	QUANTITY	POSITION
BOMFOR S-50N-24 ON CASE	1	
CASE 901-D-R1 M	1	
CASE 901-T-R2 M	1	
HS YS004W-045-R4 71268W-045	1	HS2
MHS002-R1 25mm	1	D6
PR-7.5	1	
BOX901 168x105x45mm	1	1
SCREW F 3x6 ISO NI	2	HS2
SCREW F 3x18 ISO NI	1	HS2
SCREW T 3x6 ISO NI	2	CASE
SCREW P 3x6 ISO NI	1	FG
LABEL S-50-24-R2	1	
LABEL IN/OUT UL B017-R1 S-60N	1	
LABEL SWITCH C002-R2 110/220	1	
CARTON 901 0.97CUFT	1	30
BOMFOR S-50N-24 ON PCB	1	
R/C 1/4W 22Ω 5% HP=10 T-52mm	1	R12
R/C 1/4W 51Ω 5% HP=10 T-52mm	1	R19
R/C 1/4W 100Ω 5% HP=10 T-52mm	1	R18
R/C 1/4W 150Ω 5% HP=10 T-52mm	1	R7
R/C 1/4W 470Ω 5% HP=10 T-52mm	1	R10
R/C 1/4W 2.2kΩ 5% HP=10 T-52mm	1	R15
R/C 1/4W 3kΩ 5% HP=10 T-52mm	1	R11
R/C 1/4W 4.7kΩ 5% HP=10 T-52mm	1	R17
R/C 1/4W 22kΩ 5% HP=10 T-52mm	1	R14
R/C 1W 75kΩ 5% CFR-1WS	2	R13, R3
R/C 1W 150kΩ 5% CFR-1WS	1	R2
R/MO 2W 51Ω 5%	1	R9
R/MO 2W 82Ω 5%	1	R6
R/MO 2W 680Ω 5% KINK	1	R16
R/MO 3W 47kΩ 5% MINI KINK	2	R4, R5
R/W 2W 0.39Ω 5%	1	R8
MVR 0.3W 1kΩ 10% HP=5x5	1	SVR1
NTC 3A 10Ω SCK103 KINK	1	RTH1
JUMP 0.6P=10	2	J3, J4
JUMP 0.6P=12.5	2	J1, J2
C/M 104/630V 10% P=15	1	C1
C/C 221/1KV 10% P=5 Y5P	1	C8
C/ML 222/100V 5% P=3	1	C20
C/ML 473/100V 5% P=5	1	C12
C/ML 104/100V 5% P=7	1	C11
C/ML 154/100V 5% P=7.5	2	C10, C9
C/C 222/2KV EPOXY 20% P=7.5 Z5U	3	C2, C3, C7

SPECIFICATIONS	QUANTITY	POSITION
C/C 103/1KV EPOXY 20% P=10 Z5U	2	C19, C6
C/E 220u/200V 85°C 22x25 USP	2	C4, C5
C/E 470u/35V 105°C 13x26 TM	3	C13, C14, C17
C/E 1u/50V 105°C 5x11 KM	1	C18
BD 4A/600V GLASS D3SB60	1	BD1
RD 1A/50V 1N4001 T-52mm	1	D3
FRD 1A/100V FR102 T-52mm	1	D8
FRD 1.5A/1KV FR157 T-52mm	1	D2
SFRD BYQ28X-200 10A/200V TO220F	1	D6
HIGH-SPEED DIODE 1N4148 T-52mm	2	D4, D5
ZD 1/2W 5.1V 2% 5C2 T-52mm	1	ZD1
LED GREEN 204GD-A	1	LED1
BJT 2SC3679 5A/800V TO3P	1	Q1
BJT HIT5609C 1A/20V TO92M	1	Q2
SHR 431 2.5V 2% MM1431AT	1	SHR1
PHOTO 4N35	1	U1
RB-COIL RB003A-R1 6x25 4uH	1	L2
LF 3104C A8222-1	1	L1
MT TF061N EI-40 S-50-24	1	T1
SW 110/220 04-3S6P/SS-22F15-G4	1	SW1
FUSE 3 L 250 5x20 G-	1	FS1
FUSE CLIP 5x20	2	FS1
TB HB951-05P/DT49-B01W-05P	1	TB1
HS HS001-R2	1	HS1
MHS002-R1 25mm	1	Q1
TCBS-5	1	
PCB S-50N-R1 CEM-1 1OZ SS M1	1	PCB
SCREW F 3x12 ISO NI	1	Q1
SCREW P 3x6 ISO ZN	2	HS1

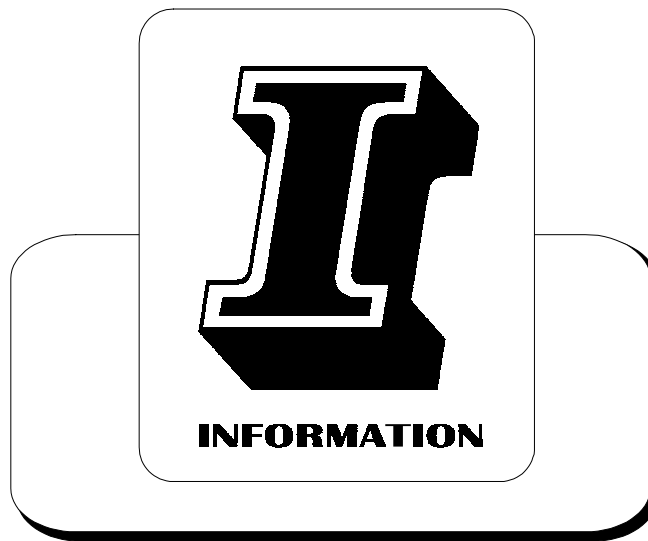
LDMOS - UHF TV AMPLIFIER



AUTV/1000LD

User's manual

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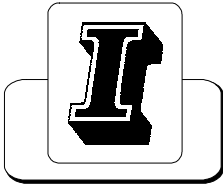


Section 1 - Information

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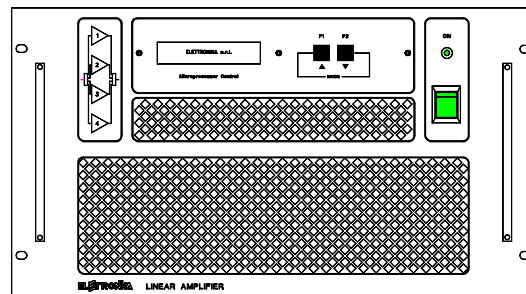
1.1 Description

1.2 Technical characteristics



AUTV/1000LD

LDMOS - UHF TV AMPLIFIER



1.1 DESCRIPTION

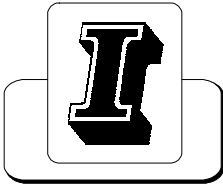
The AUTV/1000LD is an amplifier operating into Band IV-V for common amplification process of the Vision and Sound carriers.

The amplifier has been designed to offer to the customer high performances, high reliability and greater simplicity in his operation and maintenance procedures.

The amplifiers modules employ all solid state LDMOS technology in order to obtain high gain, wide-band performances, very good linearity, reliability and high efficiency.

The equipment design allows the soft degradation (RF power loss) for several transistor faulty: in fact the output combiner uses RF power resistors for unbalancing power dissipation.

The amplifier is put in a 20U rack just ready for a double driver use. Inside the rack there is also the output band-pass filter.



1.5 TECHNICAL CHARACTERISTICS

RF

Frequency range	470 - 860MHz
Output power	1kW peak sync.
Video/Sound power ratio	10/1
Out stage technology	Solid State LDMOS
Vision-Sound amplification	Common
I.M.D. (-8, -10, -16dB)	Better than -54dB
Standards	B, G, D, K, I, M, N
Spurious and harmonics level	In compliance with CCIR rec.
RF Output impedance	50Ω
RF Output connector	EIA 7/8"

GENERAL

Power supply	230Vac, ±10%, 50/60Hz 400Vac 3P+N (on request)
Power consumption	3500VA at black level
Power factor	>= 0.9
Ambient temperature	-5° to +45°C
Relative humidity	20% - 90%
Altitude	Up to 2.500 meters
Cooling	Forced air
Cabinet	Rack 19"-6U

PROTEC. THR.

FWD Power	1200W
REF Power	100W
Temperature	70°C
IDC _{DRIVER}	12A
IDC _{AMPLIFIER}	20A
VDC _{DRIVER}	31V
VDC _{AMPLIFIER}	33V

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