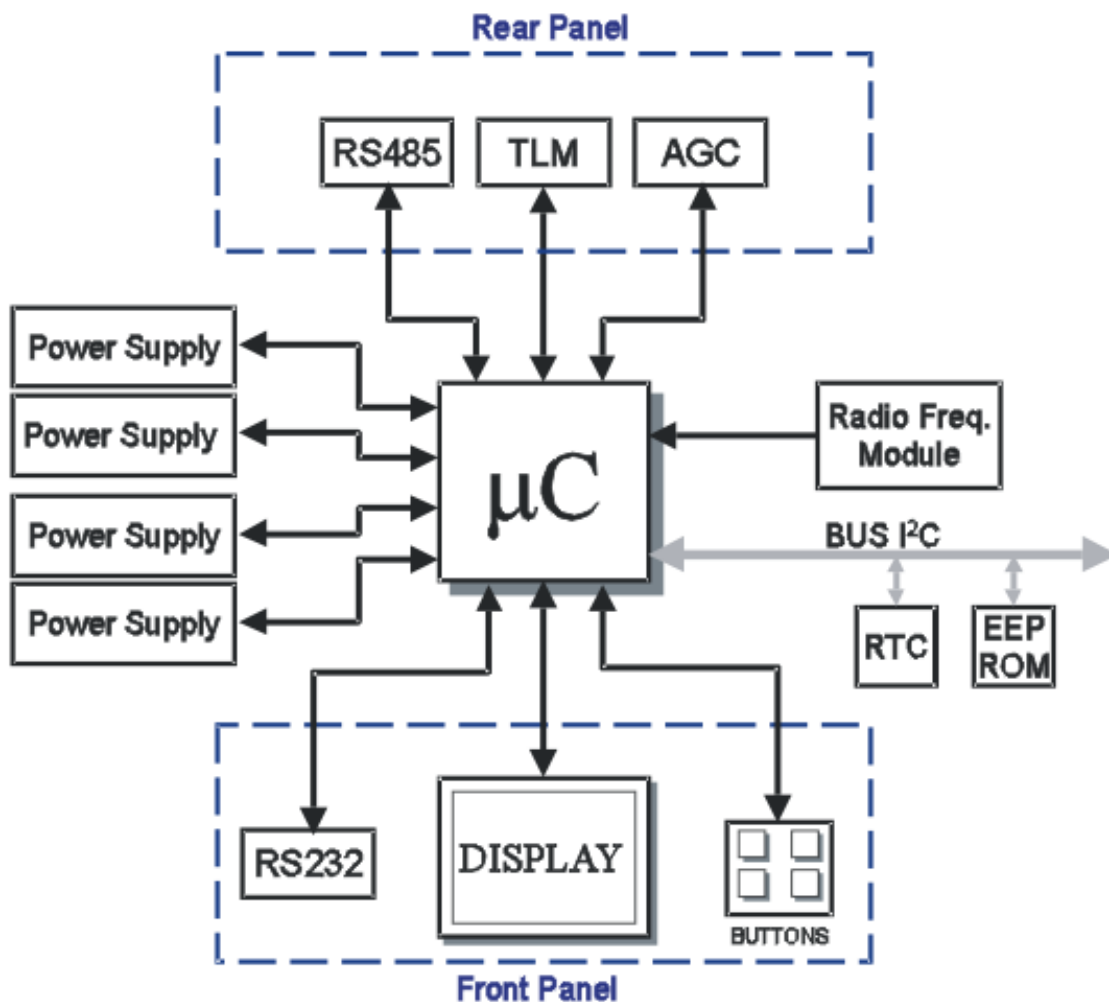


DESCRIPTION

The control board SCH0223AR1 manages the operational logic of the amplifier: switching on and off, power supply and fans, alarms and protections, remote control, human-machine interface. There are managed by a modern and powerful 16 bit micro-controller (MB90F543), made by Fujitsu, which is the main part of the board.

Picture 1 shows the block diagram.



Picture 1: Simplified block diagram of the control and display board

It can be seen that the micro-controller is the heart of the control system, to which the various peripherals (power supply, serial ports, telemeasure socket, AGC port, RF amplifier module, ROM, clock, display and keys) are interfaced.

- Power Supply

The board is powered with a continuous +24V voltage from which the +5V voltage powering the most of the chips (micro-controller, operational amplifiers, display, etc.) is derived by means of a switching converter (see IC19). A +12Vdc voltage is obtained from it as well, by means of a linear conversion provided by the integrated circuit IC8. From this, a -12Vdc voltage is obtained by means of the integrated circuit IC5. The -12V voltage is also used to adjust the contrast of the display.

- Connectors

On the board SCH0223AR1 there are several connectors used as interfaces for the peripherals of the apparatus and the ports for external communication.

POWER SUPPLY

The connectors J1, J6, J8 e J12 are connected to the power supply powering the RF amplifier modules. The number of power supply used changes depending on the amplifier, up to four power supply. They are connected in the order shown in Table 1 below. Remaining connectors, if any, are left unused.

CONNECTOR	POWER SUPPLY N°
J1	1
J6	2
J8	3
J12	4

Table 1: Interface connectors for the power supply

Through this connection, each power supply provides the two levels of voltage and current acquired by the micro-controller by means of an internal ADC. Besides the connectors allow the control board to turn on or off the individual power supply (for instance when an alarm occurs). The used power supply are protected

against voltage surges or temperature increases. If one of these events occurs, the power supply is switched off and the event is signalled to the micro-controller through the connection with the control board.

RF AMPLIFICATION

The J3 connector interfaces the control board with the RF amplification section. Through this connector the micro-controller acquires the sample of forward and reflected power, unbalancing (if any), and temperature of the critic amplification area. It also allows to inhibit the transistors in case of reflected power alarm, by means of a totally hardware, thus extremely fast protection.

Depending on the apparatus, this connector may also allow to enable or disable the cooling fans of the critic area.

RS485

The J11 connector (10 pin socket) is directly wired to a DB9 female connector placed on the rear panel of the apparatus. This communication bus allows to connect the amplifier to the control (Amplifier Control) module of a high-power transmitter composed by several individual amplifiers. In this case, each amplifier and the Amplifier Control are connected to the same 4-wires RS485 bus and each of them as a unique address (which can be set by means of the keys and the display) for correct communication.

In case of single (stand-alone) amplifier, the RS485 connector can be used for connection to the Remote Control Unit (RCU) made by Elettronika S.r.l. This unit allows to monitor and control the remote transmitter from any site provided with PSTN or GSM¹ phone connection.

Table 2 shows the wiring between the J11 connector on the board and the DB9 female connector on the rear panel, along with the description of the lines.

PIN N° ON DB9	PIN N° ON J11	DESCRIPTION
1	1	Not used
2	3	Rx-
3	5	Rx+
4	7	+5V
5	9	GND
6	2	Not used
7	4	Tx-
8	6	Tx+
9	8	Not used

Table 2: Description of the RS485 connector

¹ For more details about the control system contact the distributor or the manufacturer.

TELEMEASURES

The J9 telemeasure connector (10 pins socket) is directly wired on a DB9 female connector placed on the rear panel. There are input and output digital lines (TTL level) and analog output lines on this connector, which are used to monitor and control the amplifier by means of a general-purpose remote control system.

The correspondende between the pins of the J9 connector on the board and the DB9 female connector on the rear panel, as well as the meaning of the various lines, is shown in table 3 below (the directions refers to the position of the micro-controller on the board).

PIN N° ON DB9	PIN N° ON J9	TYPE	DIRECTION	DESCRIPTION
1	1	Analog	Output	Forward power (*)
2	3	Analog	Output	Reflected power (*)
3	5	Analog	Output	Temperature
4	7	Digital	Input	Interlock: 0V = Interlock Alarm 5V = Normal
5	9	-	-	Ground
6-7	2-4	Digital	Output	Free Contact (closed when amplifier is in alarm)
8	6	Digital	Input	Turning-on control (usually high, active when low)
9	8	Digital	Input	Turning-off control (usually high, active when low)

(*) You can select by means of two jumpers on the board (JP1 and JP2) RMS or peak power. If there are two jumpers on pins 1 and 2 of JP1 and JP2 connector, RMS power is selected. Otherwise, if there are two jumpers on pins 2 and 3 of the same connectors, peak power is selected.

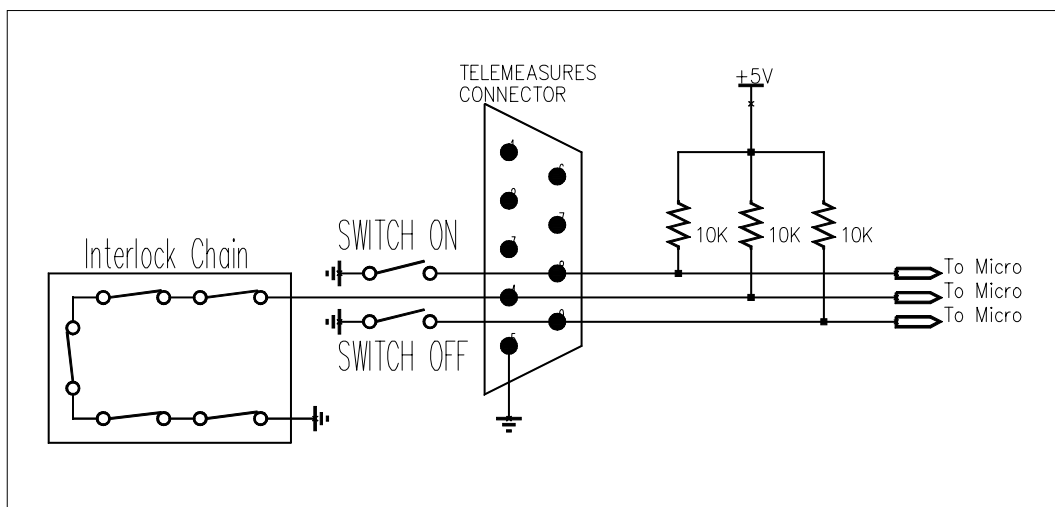
Table 3: Description of the telemeasures connector

The input stage of the digital controls has an internal pull-up towards the 5V power supply voltage. To use this lines it only takes setting a switch to close to earth, when closed, the relevant control (turning on or off) is enabled and the switch may be switched open again (impulse controls).

The interlock pin may be used as protection so that the amplifier is switched off the digital input level is low. It is possible to use several serially connected switches to make an interlock chain. Usually all switches are closed and the interlock level is low, thus the amplifier is on. If even only one of the switches is opened, the

level of the interlock signal becomes high (this line has a pull-up towards the +5V power supply voltage as well) and the protection for interlock alarm is activated for the amplifier, which is switched off. Note that in case the interlock protection is not used, the pin 4 of the DB9 telemeasures connector and the earth pin (pin 5) must be short circuited. Otherwise it is possible to disable the monitoring of the interlock chain from menu (see user manual).

Picture 2 shows a usage for the digital input signals to turn on and off the amplifier and for the interlock alarm.



Picture 2: Usage of the digital input signals of the telemeasures connector

AGC / EXCITER

The connector called J10, as the telemeasures connector and the RS485 bus, is wired to a DB9 female connector placed on the rear panel of the amplifier. This connectors allow the implementation of an automatic gain control between an exciter and the amplifier. A voltage signal related to the forward output power supplied by the amplifier is provided through two pins of the AGC connector. Connecting one of these to the relevant input pin of the exciter, this can pursuit a given voltage level, so that the output power is always constant. In order to avoid that, in case of an alarm decreasing the forward power, the exciter strongly increases the output level due to the AGC, thus damaging the amplification stages, the connector is provided with two digital output lines called AGC Alarm. Under alarm conditions, this lines are brought by the micro-controller at a low level, so that the exciter can stop the AGC.

Table 4 shows the connection between the J10 connector on the board and the DB9 connector on the rear panel, along with the description of each pin (the direction of the pin is referred to the position of the micro-controller on the board).

PIN N° ON DB9	PIN N° ON J10	TYPE	DIRECTION	DESCRIPTION
1	1	-	-	Ground
2	3	Digital	Output	AGC Alarm 0V = Alarm 5V = Normal
3	5	Digital	Output	AGC Alarm 0V = Alarm 5V = Normal
4	7	-	-	Not used
5	9	-	-	Not used
6	2	-	-	Not used
7	4	-	-	Not used
8	6	Analog	Output	Forward power
9	8	Analog	Output	Forward power

Table 4: Description of the AGC connector

RS232

The DB9 female connector on the front panel is an external communication RS232 serial port, through which a PC can be connected directly to the amplifier in order to perform operations such as the remote control (by means of an adequate software²) and the update of the microcontroller firmware.

The used communication protocol is asynchronous, at a 19200bps speed, 1 start bit, 8 data bits, 1 stop bit, no parity. No hardware flow is used. The connector is DCE type and the pin used are shown in Table 5.

PIN N° ON DB9	1	2	3	4	5	6	7	8	9
DESCRIPTION	-	TxD	RxD	-	GND	-	-	-	-

Table 5: Description of the RS232 connector

MISCELLANEOUS

The J2 (called AUX), J4, J5 and J17 connectors are not used and are there only for future updates. The SW1 dip-switches are partially used for the configuration of the correct mode for the micro-controller. The other switches are not used. It is important that the position of the dip-switches is left unchanged, because changing it may set a wrong mode for the micro-controller, affecting the work of the whole amplifier.

² For more information about this application contact the distributor of the manufacturer.

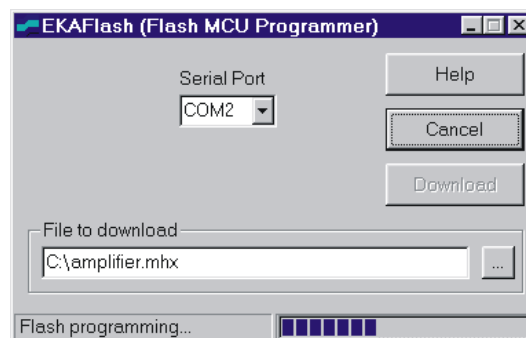
FIRMWARE UPDATE

The micro-controller MB90F543 is provided with a built-in Flash memory containing the firmware. The firmware can be updated to later versions without removing the apparatus from the rack and/or replacing the chip.

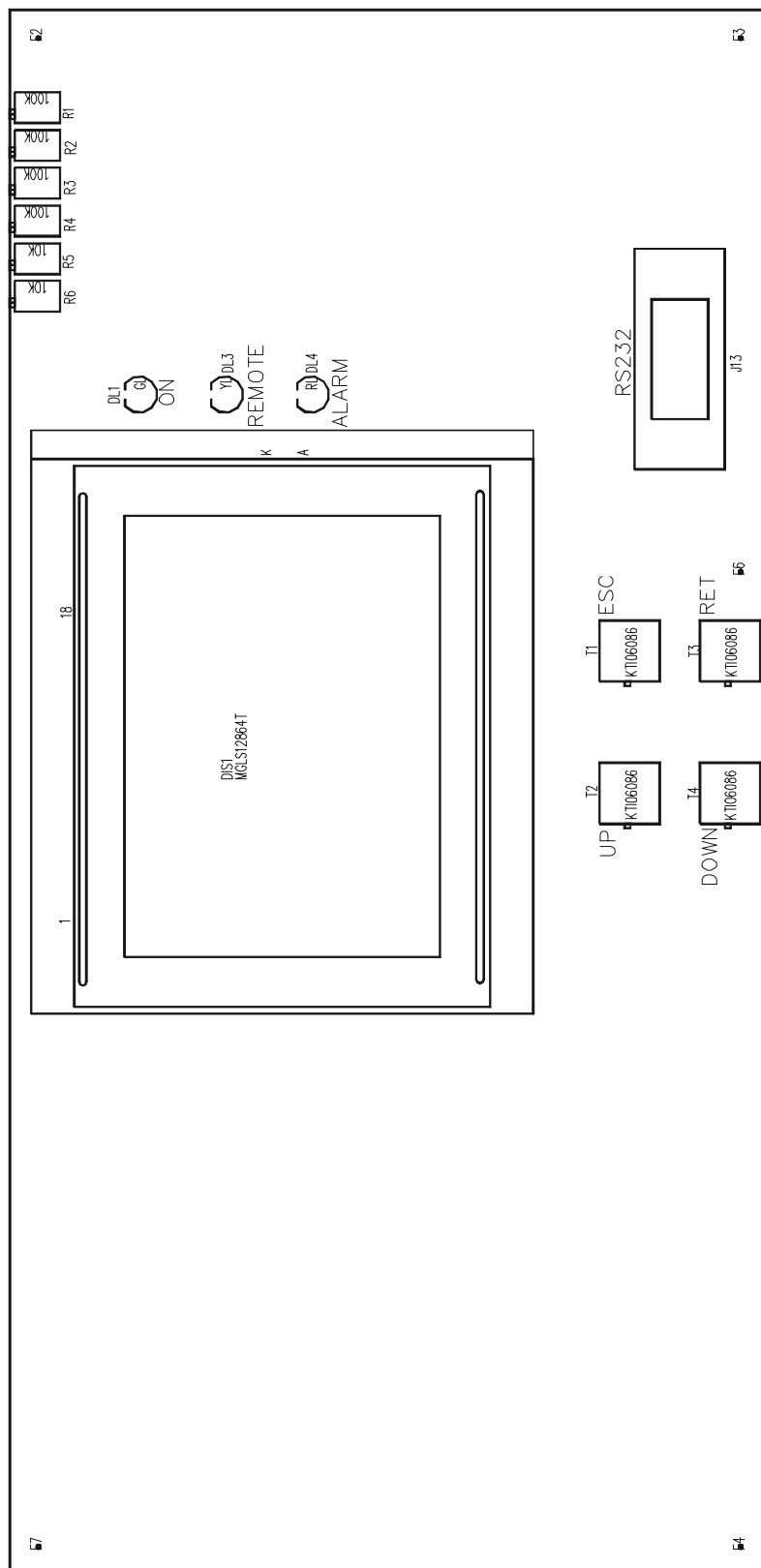
To upgrade it, connect a PC to the RS232 socket on the front panel of the apparatus by means of a cable DB9 male - DB9 female (pin-to-pin).


Launch on the PC the EKAFlash application, select the serial port in use of the PC and choose the update file by pressing the “...” key and click on Download button.

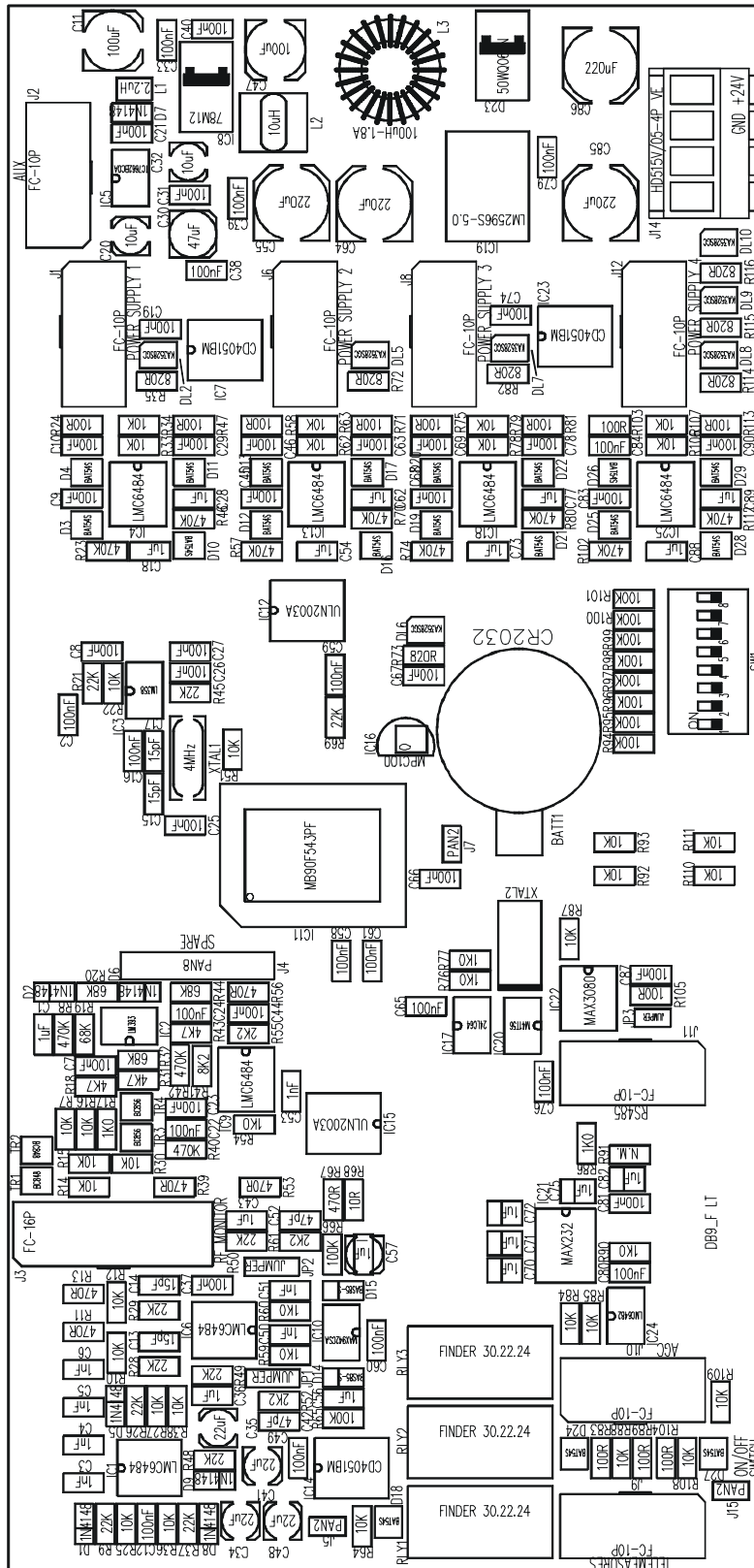
Eventually, turn off the amplifier from the main switch and then turn it on again. The upgrade of the firmware begins on the EKAFlash window. Picture 3 shows this window while a firmware is being updated.




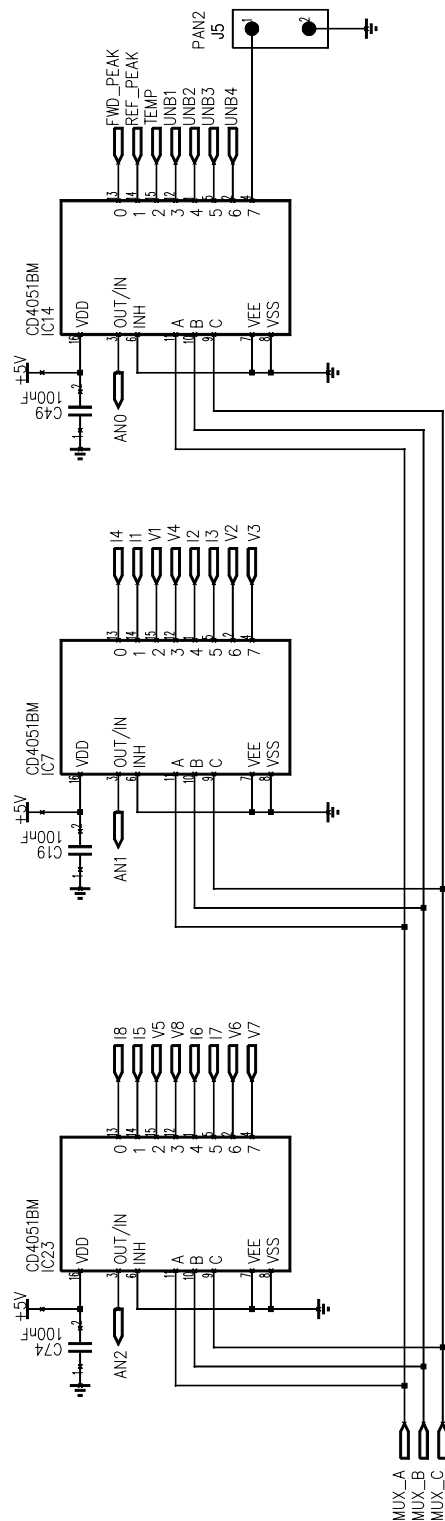
Picture 3: The EKAFlash window while updating a firmware




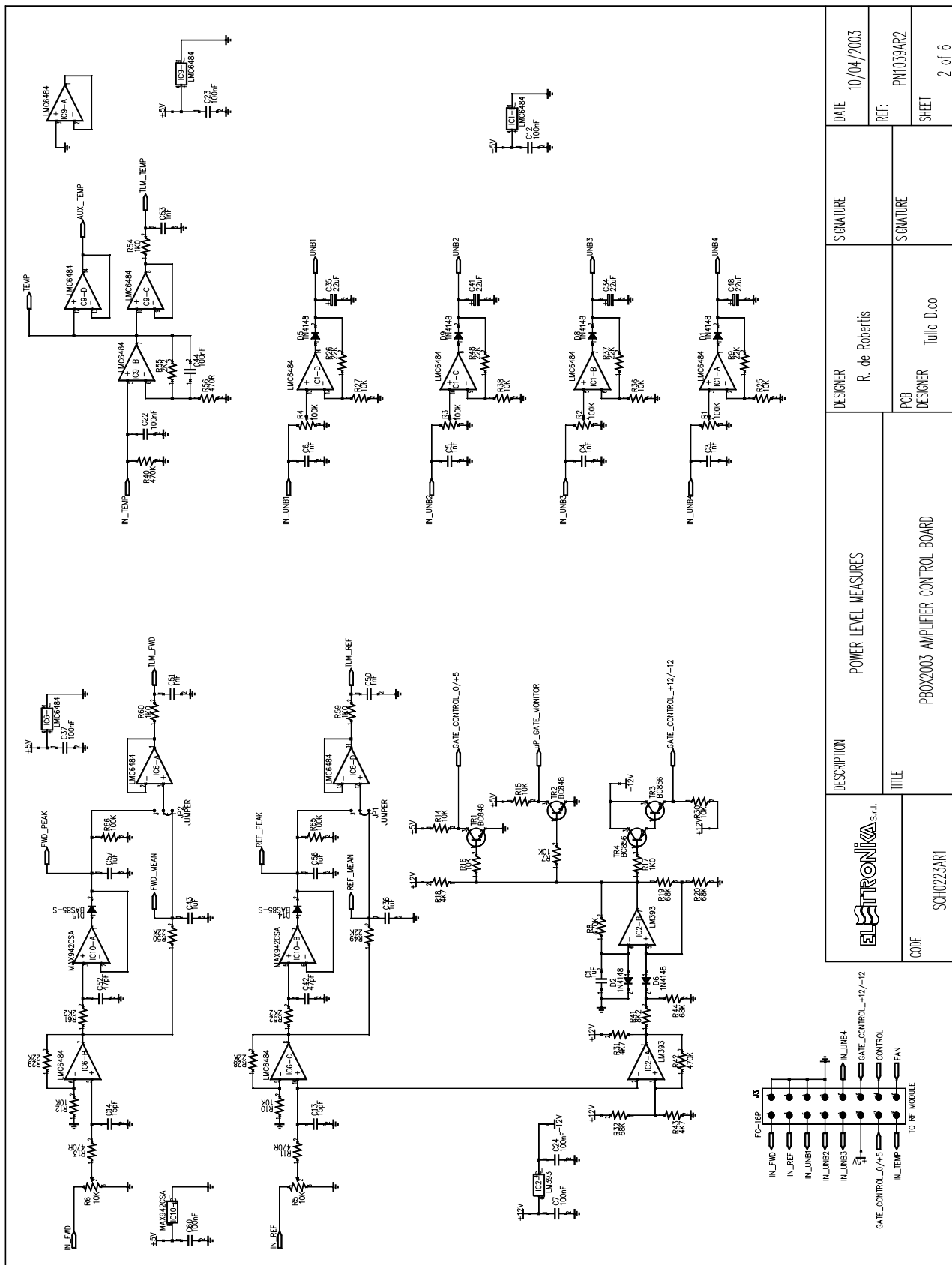
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CODE SCH0223AR1	TITLE				PCB DESIGNER	SIGNATURE	REF:
	CONTROL BOARD AND DISPLAY Top layer Component Layout				TULLO D.co		PN1039AR2
					QUALITY CONTROL	SIGNATURE	SHEET 1/1



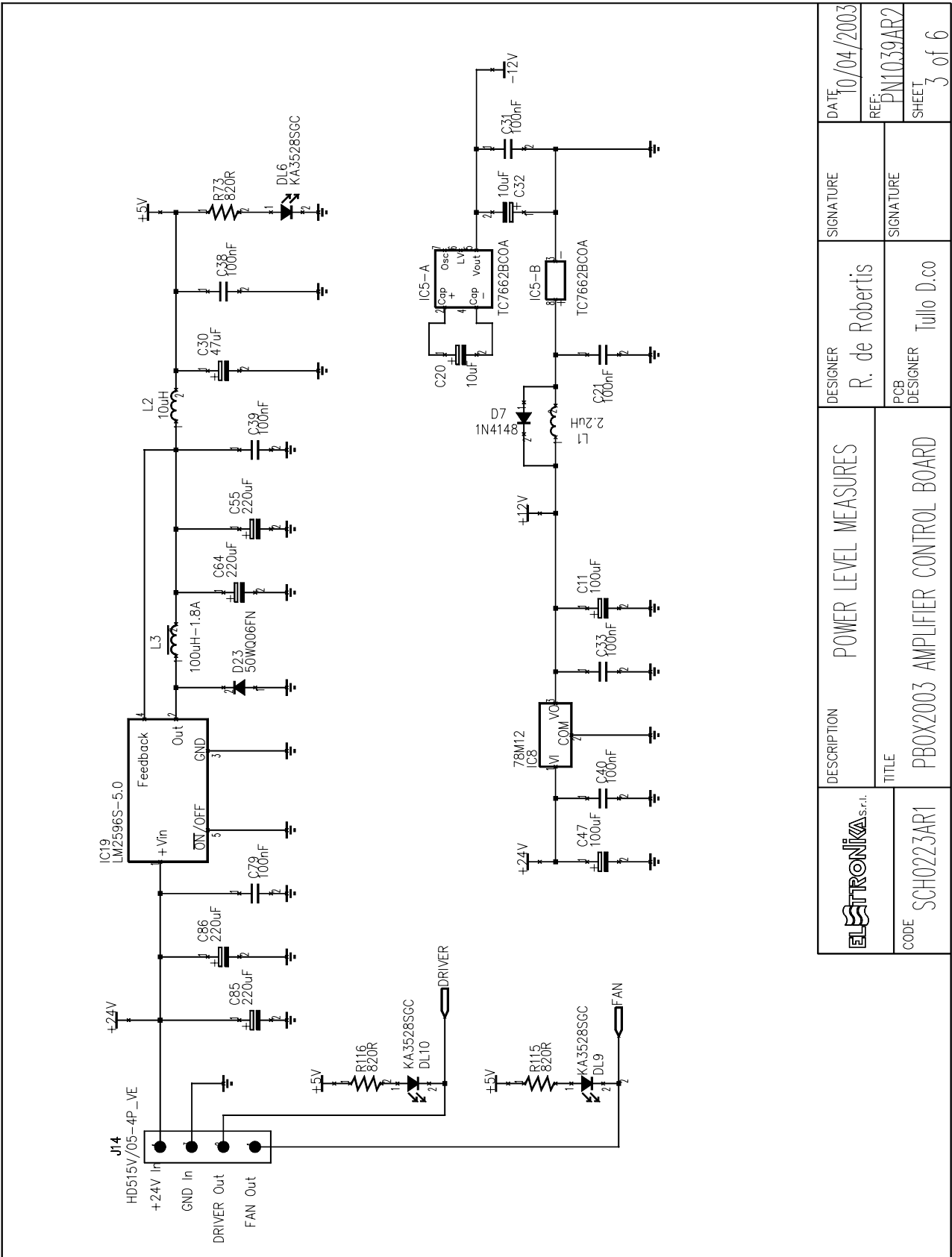
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	CONTROL BOARD AND DISPLAY Bot layer Component Layout		QUALITY CONTROL	SIGNATURE	SHEET 1/1



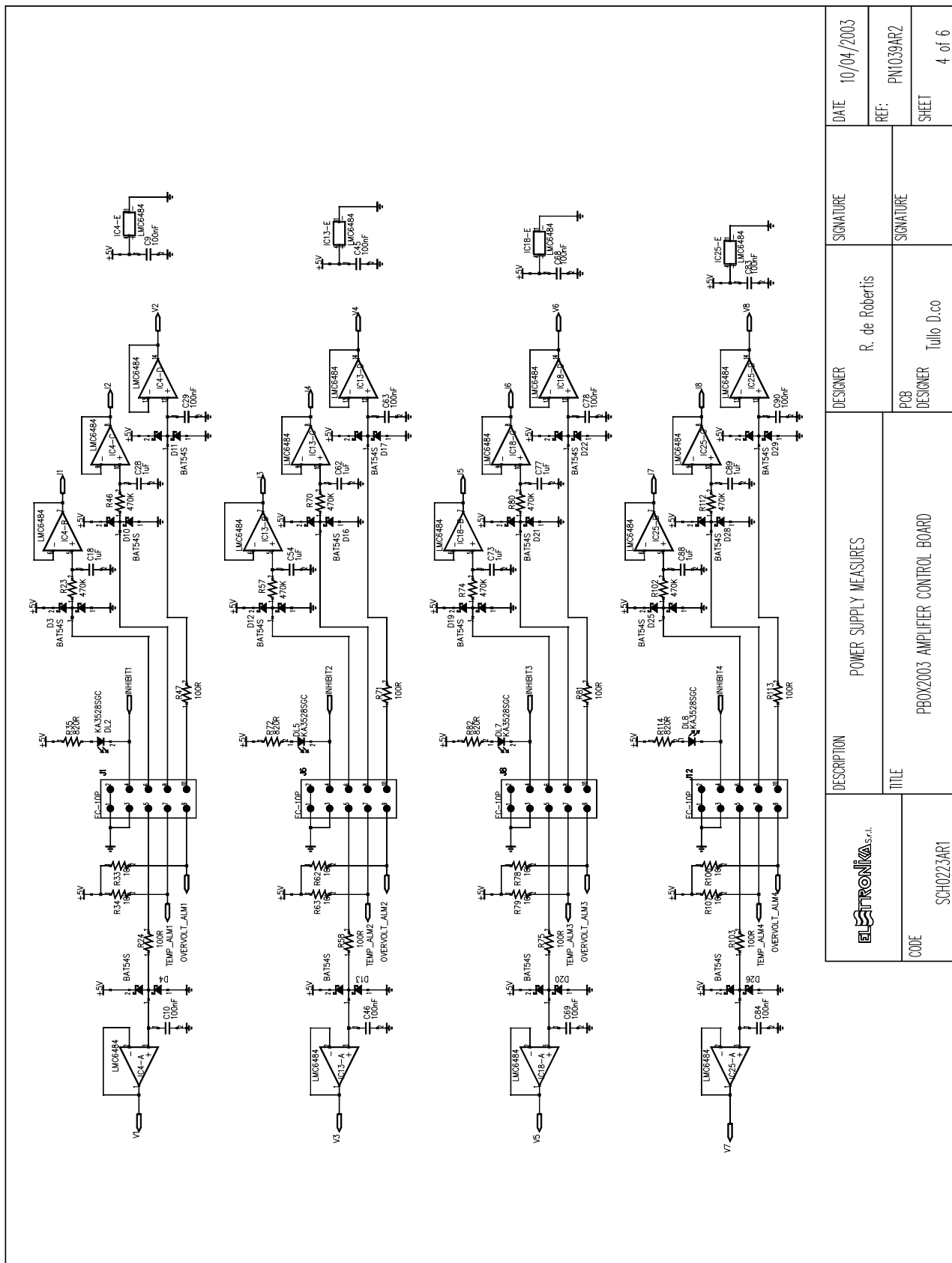
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SCH0273AR1					SHEET
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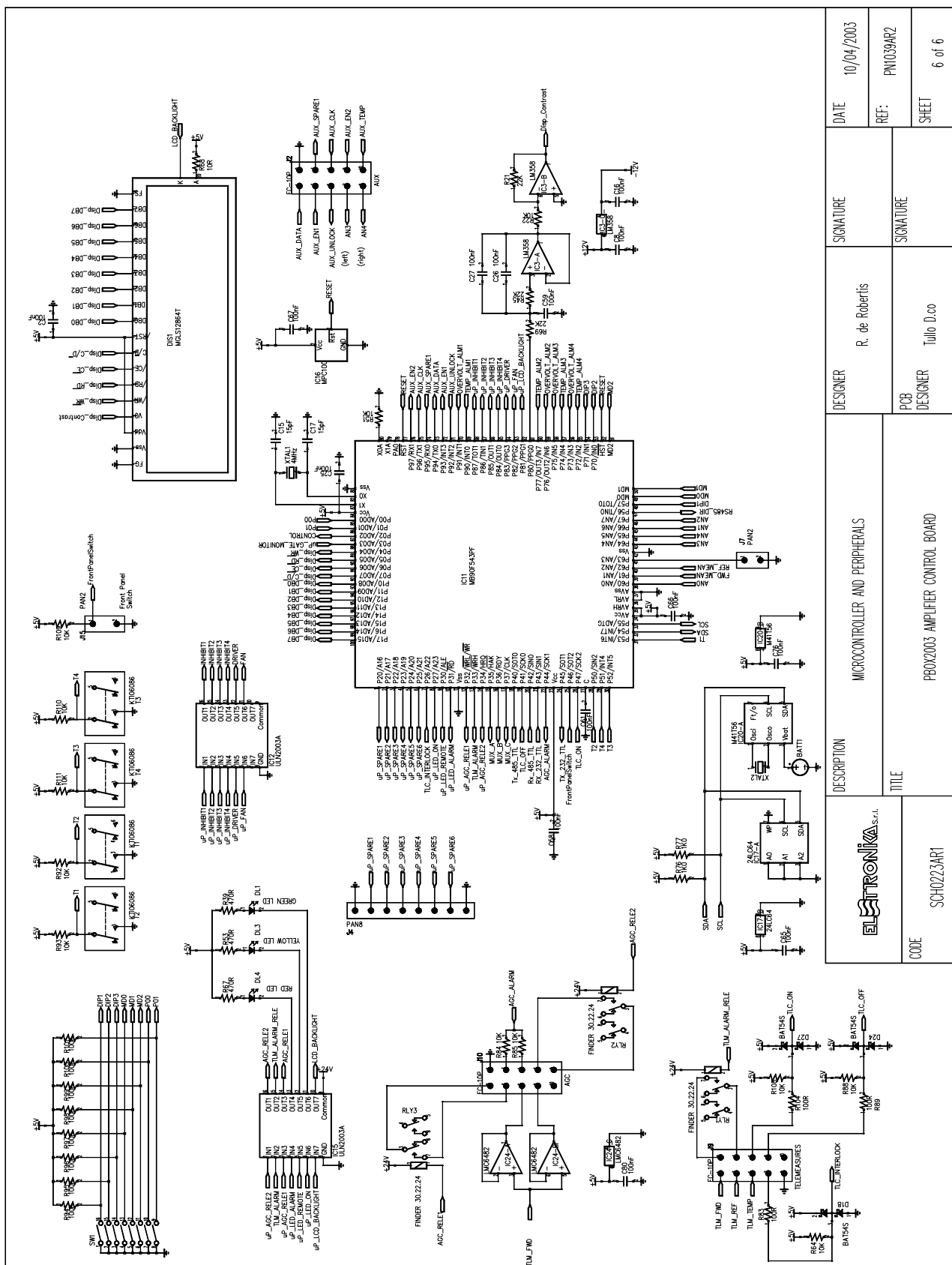
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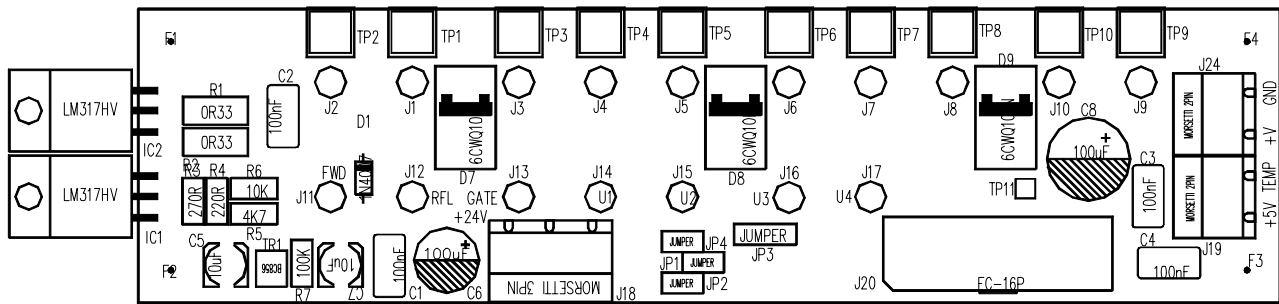
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MICROCONTROLLER AND PERIPHERALS		R. de Robertis		10/04/2003
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PBOX2003 AMPLIFIER CONTROL BOARD		Tullio D'co		PW039AR2
CODE			SHEET	6 of 6

COMPONENT LIST SCH0223AR1

Part Name/Number	Description	Qty.	Comps.	Page 1/2
BATT BH001RB 3093_90	03093 03090 BATTERY HOLDER	1	BATT1	
CC 100nF-S 01065C	01065C Y5V 1206 COND	46	C2, C7-10, C12, C16, C19, C21-27, C29, C31, C33, C37-40, C44-46, C49, C58-61, C63, C65-69, C74, C76, C78-81, C83-84, C87, C90	
CC 15pF-S 01088	01088 SMD 1206 COND	4	C13-15, C17	
CC 1nF-S 01096	01096 SMD 1206 COND	7	C3-6, C50-51, C53	
CC 1uF100V-S 01760A	01760A Y5V 1206 COND	13	C1, C18, C28, C36, C43, C54, C56-57, C62, C73, C77, C88-89	
CC 47pF-S 01100	01100 SMD 1206 COND	2	C42, C52	
CE 100uF25V-S 01793B	01793B ELETTR SMD COND	2	C11, C47	
CE 10uF35V-S 01778A	01778A ELETTR SMD COND	2	C20, C32	
CE 1uF35V-S 01613A	01613A TANTALIUM ELETTR SMD CO	5	C70-72, C75, C82	
CE 220uF50V LOW ESR	1799A ELETTR SMD COND LOW ESR	4	C55, C64, C85-86	
CE 22uF16V-S	01780A ELETTR SMD COND	4	C34-35, C41, C48	
CE 47uF35V-S 01790A	01790A ELETTR SMD COND	1	C30	
D 1N4148-S 03002	03002 SMD DIODE	7	D1-2, D5-9	
D 50WQ06FN	03019A SMD DIODE SCHOTTKY 5,5A	1	D23	
D BAS85-S	03024 SMD DIODE SCHOTTKY	2	D14-15	
D BAT54S	03199 SMD SCHOTTKY DIODE A-K T	19	D3-4, D10-13, D16-22, D24-29	
DIS MGLS12864T	03083A 128x64 DOT (BLUE-LED WH	1	DIS1	
DL KA-3528SGC 03057	03057 GREEN SMD LED DIODE	7	DL2, DL5-10	
DL LEDG5 03060	03060 GREEN LED DIODE 5mm	1	DL1	
DL LEDR5 03061	03061 RED LED DIODE 5mm	1	DL4	
DL LEDY5 03054B	03054B YELLOW LED DIODE 5mm	1	DL3	
IC 24LC64 04815	04815 SMD INTEG CIRCUIT	1	IC17	
IC 78M12 4307B	04307B SMD VOLTAGE REGULATOR	1	IC8	
IC CD4051BM-S	04615 SMD INTEG CIRCUIT	3	IC7, IC14, IC23	
IC LM2596S-5.0	04580 SMD INTEG CIRCUIT	1	IC19	
IC LM358M-S 04660	04660 SMD INTEG CIRCUIT	1	IC3	
IC LM393-S 04639	04639 SMD INTEG CIRCUIT	1	IC2	
IC LMC6482-S	04632 SMD INTEG CIRCUIT	1	IC24	
IC LMC6484-S	04634 SMD INTEG CIRCUIT	7	IC1, IC4, IC6, IC9, IC13, IC18, IC25	
IC M41T56 04611	04611 SMD INTEG CIRCUIT	1	IC20	
IC MAX232-S 04804B	04804B SMD INTEG CIRCUIT	1	IC21	
IC MAX3080-S 04770	04770 SMD INTEG CIRCUIT	1	IC22	
IC MAX942CSA-S	04572 SMD INTEG CIRCUIT	1	IC10	
IC MB90F543PF	04596 SMD INTEG CIRCUIT	1	IC11	
IC MPC100-450DI-TO	04608 INTEG CIRCUIT	1	IC16	
IC TC7662BCOA 04758A	04758A SMD INTEG CIRCUIT	1	IC5	
IC ULN2003A 4870	04870 SMD INTEG CIRCUIT	2	IC12, IC15	
IND 2u2H-S 05020A	05020A INDUCTOR	1	L1	

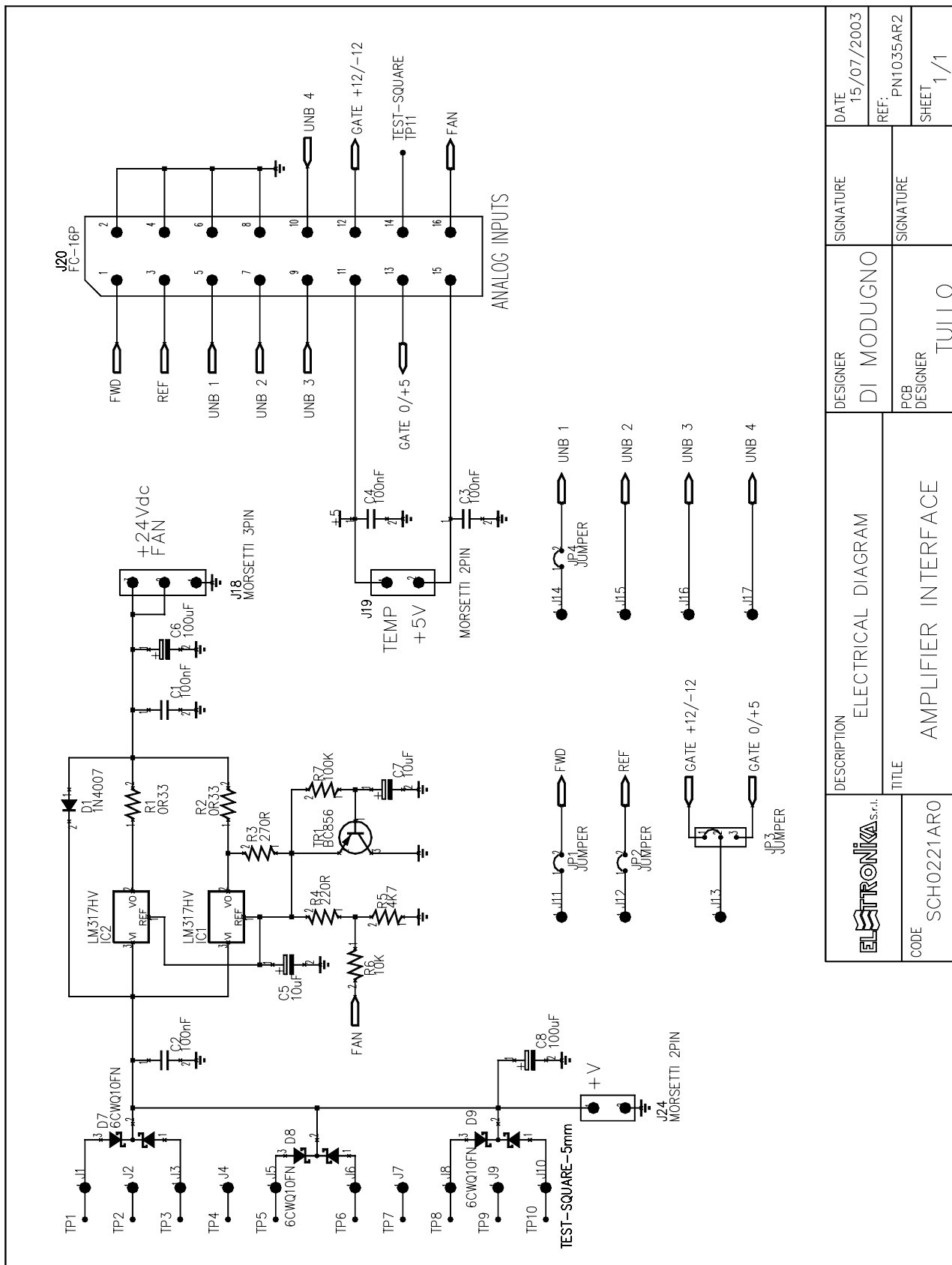
Part Name/Number	Description	Qty.	Comps.	Page 2/2
IND MS85 10uH-S	04948 INDUCTOR 2,7 A	1	L2	
IND T100uH-1.8A 4958	04958 TOROIDAL-STORAGE CHOKES	1	L3	
J CON HD515V/05-4PVE	02881 + 02882 PANDUIT PCB CONN	1	J14	
J DB9 F-0° LT	02794 PCB CONNECTOR DB9 LONG T	1	J13	
JFC-10P 02697-02699	02697+02699 PCB CONNECTOR POL	8	J1-2, J6, J8-12	
JFC-16P 02701-02700	02701+02700 PCB CONNECTOR POL	1	J3	
J PAN2 02739-40-41	02739+02740+02741 PCB CONNECTO	3	J5, J7, J15	
J PAN8 02716	02716 PCB CONNECTOR	1	J4	
JU JUMP2 02739-02742	02739+02742 MASCHIO PAN2	1	JP3	
JU JUMP3 02707-02742	02707+02742 MASCHIO PAN3	2	JP1-2	
R 100K-1%-S 00065B	00065B RES 1/4W 1% SMD 1206	10	R65-66, R94-101	
R 100R-1%-S 00029D	00029D RES 1/4W 1% SMD 1206	12	R24, R47, R58, R71, R75, R81, R83, R89, R103-105, R113	
R 10K-1%-S 00053B	00053B RES 1/4W 1% SMD 1206	32	R7, R10, R12, R14-16, R22, R25, R27, R30, R33-34, R36, R38, R51, R62-64, R78-79, R84-85, R87-88, R92-93, R106-111	
R 10R-S 00017A	00017A RES 1/4W 5% SMD 1206	1	R68	
R 1206 NOT MOUNTED	NOT MOUNTED RES 1/4W 5% SMD 12	1	R91	
R 1K0-1%-S 00041B	00041B RES 1/4W 1% SMD 1206	8	R17, R54, R59-60, R76-77, R86, R90	
R 22K-1%-S 00057B	00057B RES 1/4W 1% SMD 1206	11	R9, R21, R26, R28-29, R37, R45, R48-50, R69	
R 2K2-1%-S 00045B	00045B RES 1/4W 1% SMD 1206	3	R52, R55, R61	
R 470K-S 00073A	00073A RES 1/4W 5% SMD 1206	11	R8, R23, R40, R42, R46, R57, R70 R74, R80, R102, R112	
R 470R-1%-S 00037B	00037B RES 1/4W 1% SMD 1206	6	R11, R13, R39, R53, R56, R67	
R 4K7-1%-S 00049B	00049B RES 1/4W 1% SMD 1206	3	R18, R31, R43	
R 68K-1%-S 00063B	00063B RES 1/4W 1% SMD 1206	4	R19-20, R32, R44	
R 820R-S 00040A	00040A RES 1/4W 5% SMD 1206	7	R35, R72-73, R82, R114-116	
R 8K2-1%-S 00052B	00052B RES 1/4W 1% SMD 1206	1	R41	
RL 30.22.24 07569	07569 RELE	3	RLY1-3	
RV 100K-3266X	00814 VARIABLE RESISTOR	4	R1-4	
RV 10K-3266X 00807	00807 VARIABLE RESISTOR	2	R5-6	
SW SWITCH-8DIP	07530A PCB DIP SWITCH SMD	1	SW1	
T 06086 N 7630 7632	7630 7632 KTI06086 PULSANTE 2	4	T1-4	
TR BC848 03457	03457 NPN SMD TRANSISTOR	2	TR1-2	
TR BC856 03455	03455 PNP SMD TRANSISTOR	2	TR3-4	
XTAL 32.768k-S 05146	05146 QUARTZ	1	XTAL2	
XTAL 4MHz-S 05101A	05101A QUARTZ	1	XTAL1	

Component layout SCH0221AR0



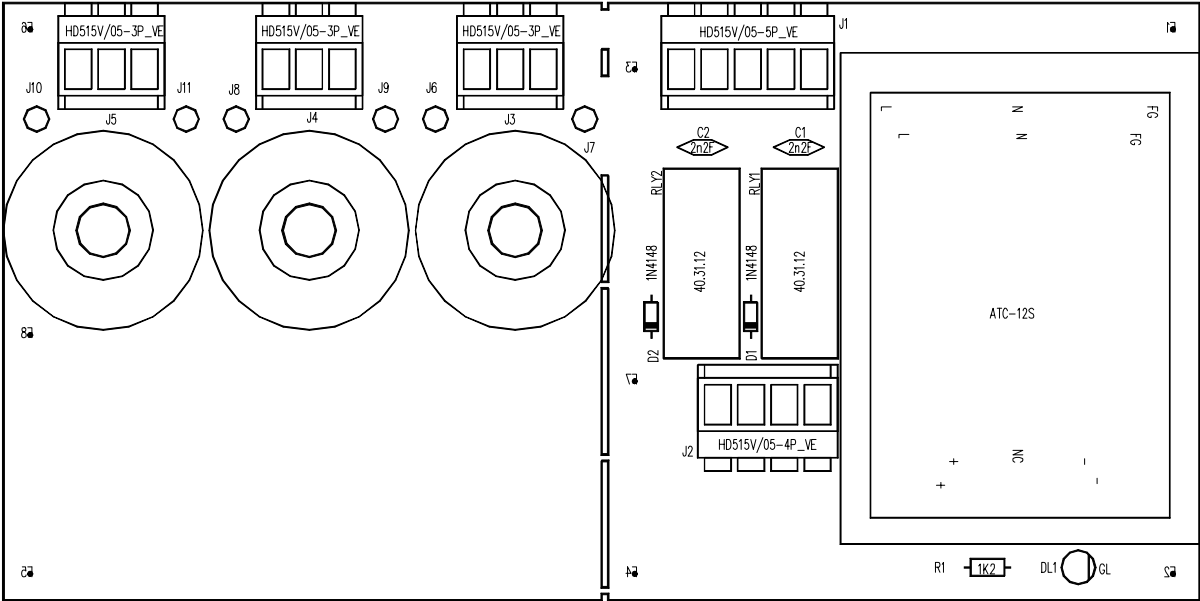
COMPONENT LIST SCH0221AR0

Part Name/Number	Description	Qty.	Comps.
CC 100nFAVX 01065A	01065A CERAMIC COND	4	C1-4
CE 100uF100V	01795B ELETT. COND.	1	C8
CE 100uF50V 01795	01795 ELETT. COND.	1	C6
CE 10uF35V-S 01778A	01778A ELETTR SMD COND	2	C5, C7
D 1N4007 03009	03009 DIODE	1	D1
D 6CWQ10FN	03026 SMD DIODE SCHOTTKY 3,5A	3	D7-9
IC LM317HV	04340A INTEG CIRCUIT	2	IC1-2
J FC-16P 02701-02700	02701+02700 PCB CONNECTOR POL	1	J20
J SCREWCONN2 02853	02853 PCB SCREW CONNECTOR	2	J19, J24
J SCREWCONN3 02860	02860 PCB SCREW CONNECTOR	1	J18
J TESTP1.3mm 07913	07913 TEST POINT	17	J1-17
JU JUMP2 02739-02742	02739+02742 MASCHIO PAN2	3	JP1-2, JP4
JU JUMP3 02707-02742	02707+02742 MASCHIO PAN3	1	JP3
R 0R33-1W-S	00380 RES 1W 5% SMD 2512	2	R1-2
R 100K-S 00065A	00065A RES 1/4W 5% SMD 1206	1	R7
R 10K-S 00053A	00053A RES 1/4W 5% SMD 1206	1	R6
R 220R-S 00033A	00033A RES 1/4W 5% SMD 1206	1	R4
R 270R-S 00034A	00034A RES 1/4W5% SMD 1206	1	R3
R 4K7-S 00049A	00049A RES 1/4W 5% SMD 1206	1	R5
TR BC856 03455	03455 PNP SMD TRANSISTOR	1	TR1



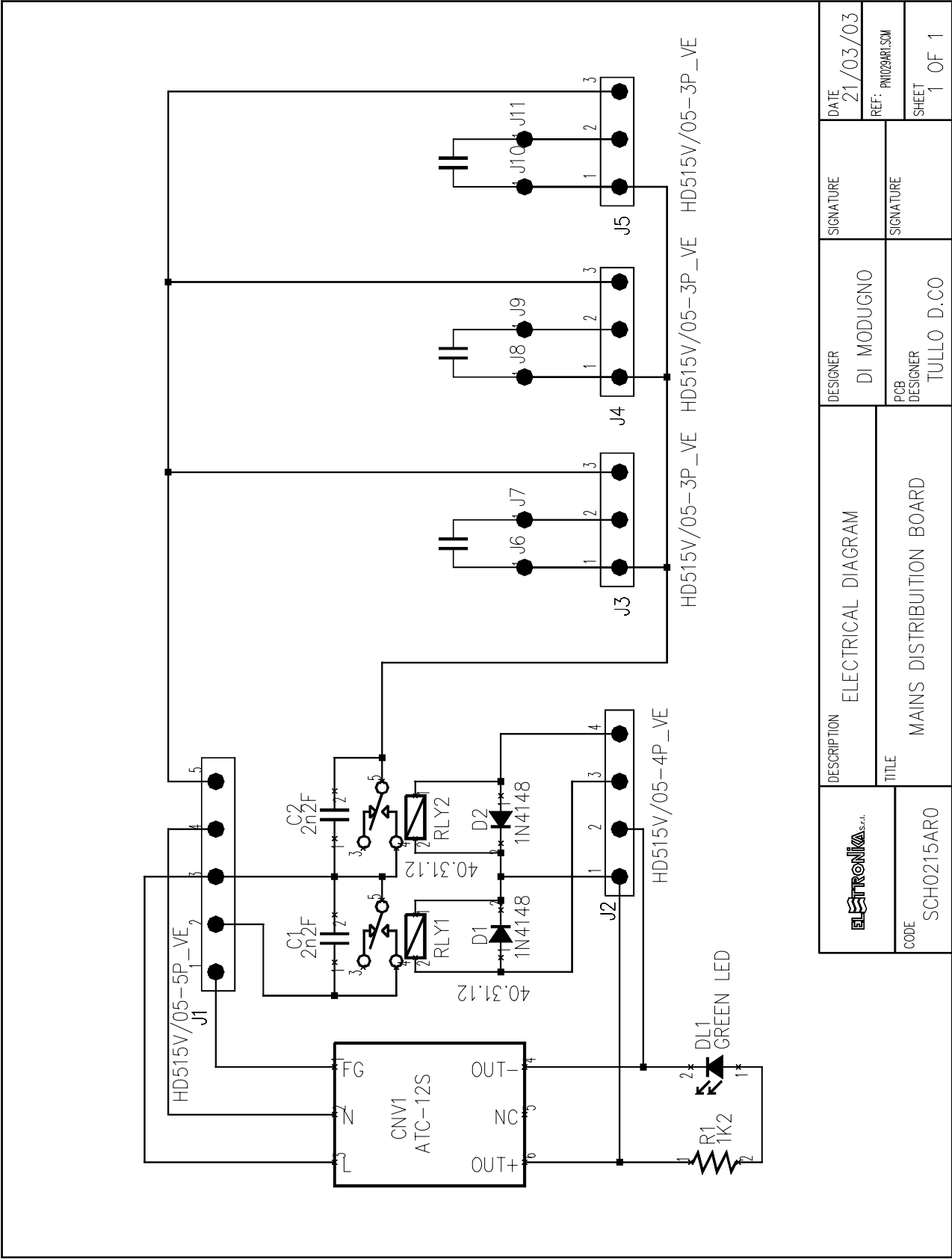
ELSTRONIKA S.r.l.	DESCRIPTION	DESIGNER	SIGNATURE	DATE
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				SHEET
				1/1


Component layout SCH0215AR0



COMPONENT LIST SCH0215AR0

Part Name/Number	Description	Qty.	Comps.
CC 2nF2 2kV 01045A	01045A CERAMIC COND	2	C1-2
CNV AC-DC ATC-12S	AC DC CONVERTER	1	CNV1
D 1N4148 03001	03001 DIODE	2	D1-2
DL LEDG3 03053	03053 GREEN LED DIODE 3mm	1	DL1
J CON HD515V/05-3PVE	PANDUIT PCB CO	3	J3-5
J CON HD515V/05-4PVE	02881 + 02882 PANDUIT PCB CONN	1	J2
J CON HD515V/05-5PVE	PANDUIT PCB CO	1	J1
J TESTP1.3mm 07913	07913 TEST POINT	6	J6-11
R 1K2 0042	0042RES 1/4W 5%	1	R1
RL 40.31.12 07567	07567 RELE	2	RLY1-2



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	TULLO D.CO				
			SHEET		1 OF 1

TECHNICAL CHARACTERISTICS

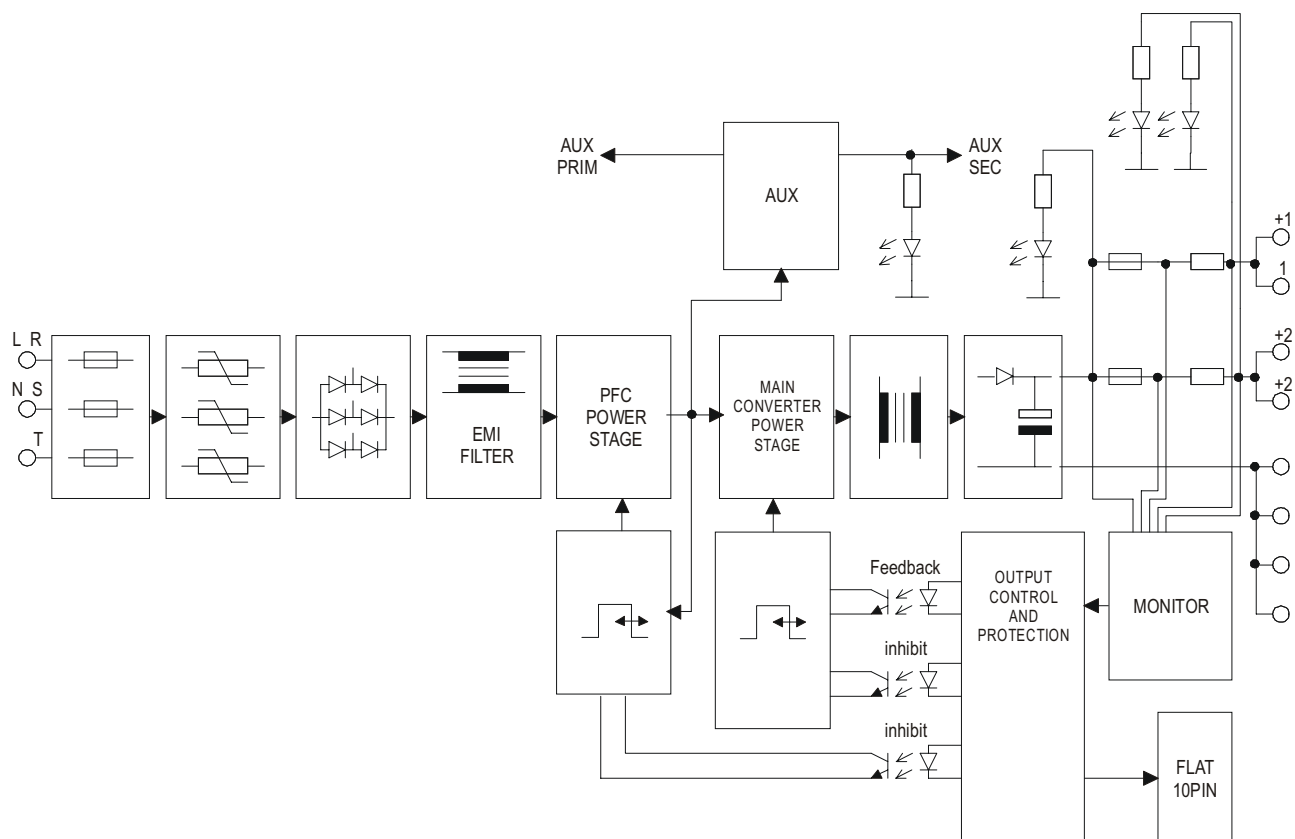
- Input characteristics

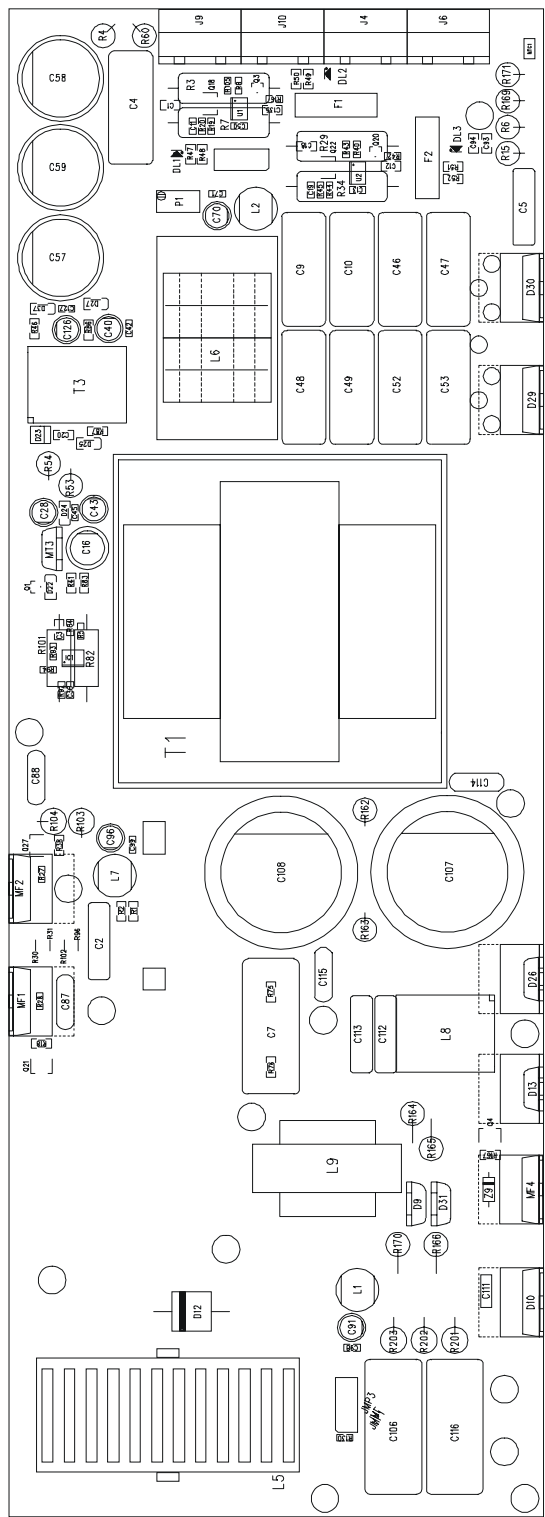
V_{in} : 100..240Vrms
 $REND$.: 80%
 $I_{in@FL}$: 16..6,5Arms
 $PF > 0.95@FL$ (PFC)


- Output characteristics

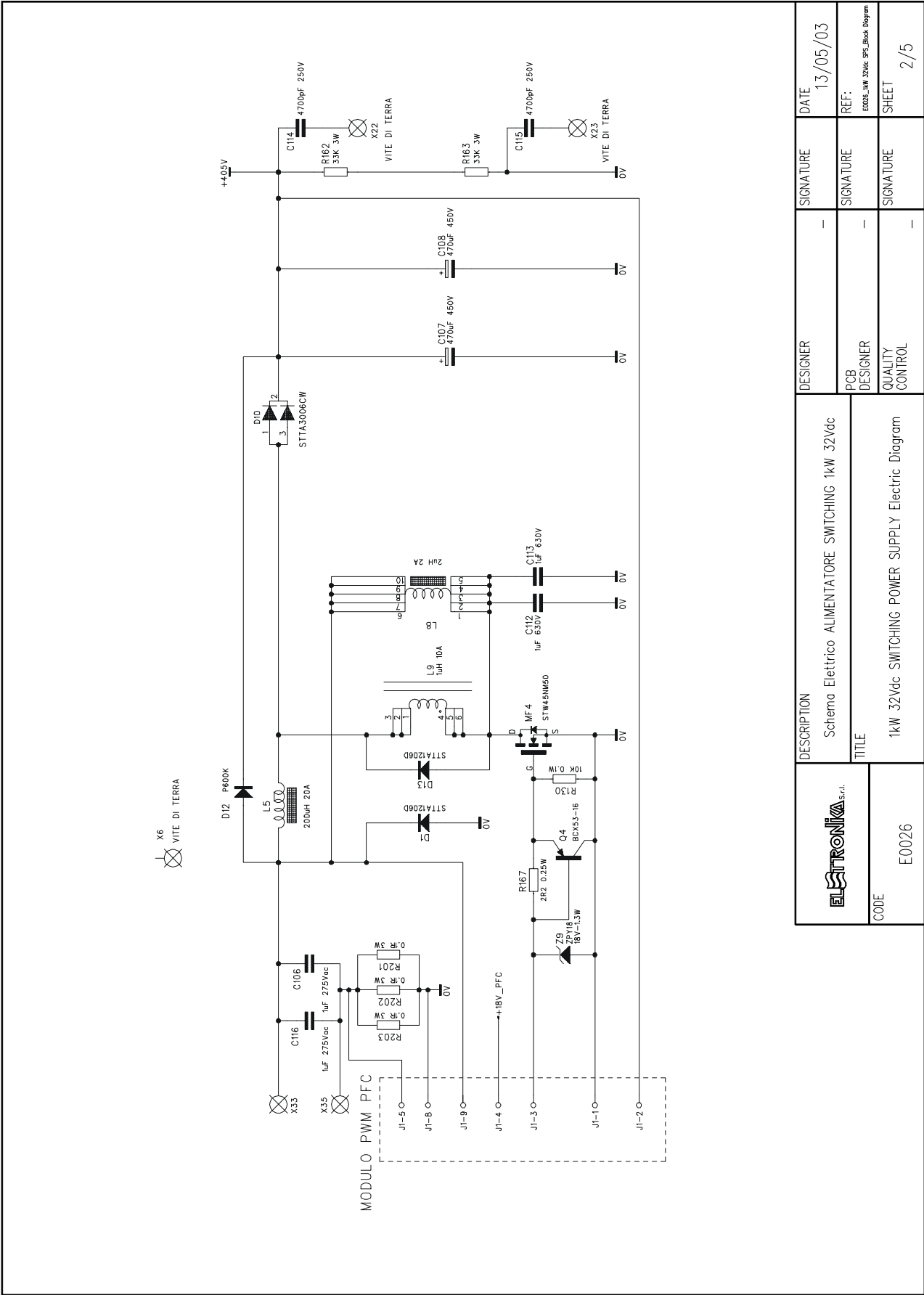
P_{out} : 1300W on 2 outputs
 V_{out} : 2 options a) 32Vdc 40A on 2 outputs
 b) 52Vdc 25A on 2 outputs

Block Diagram

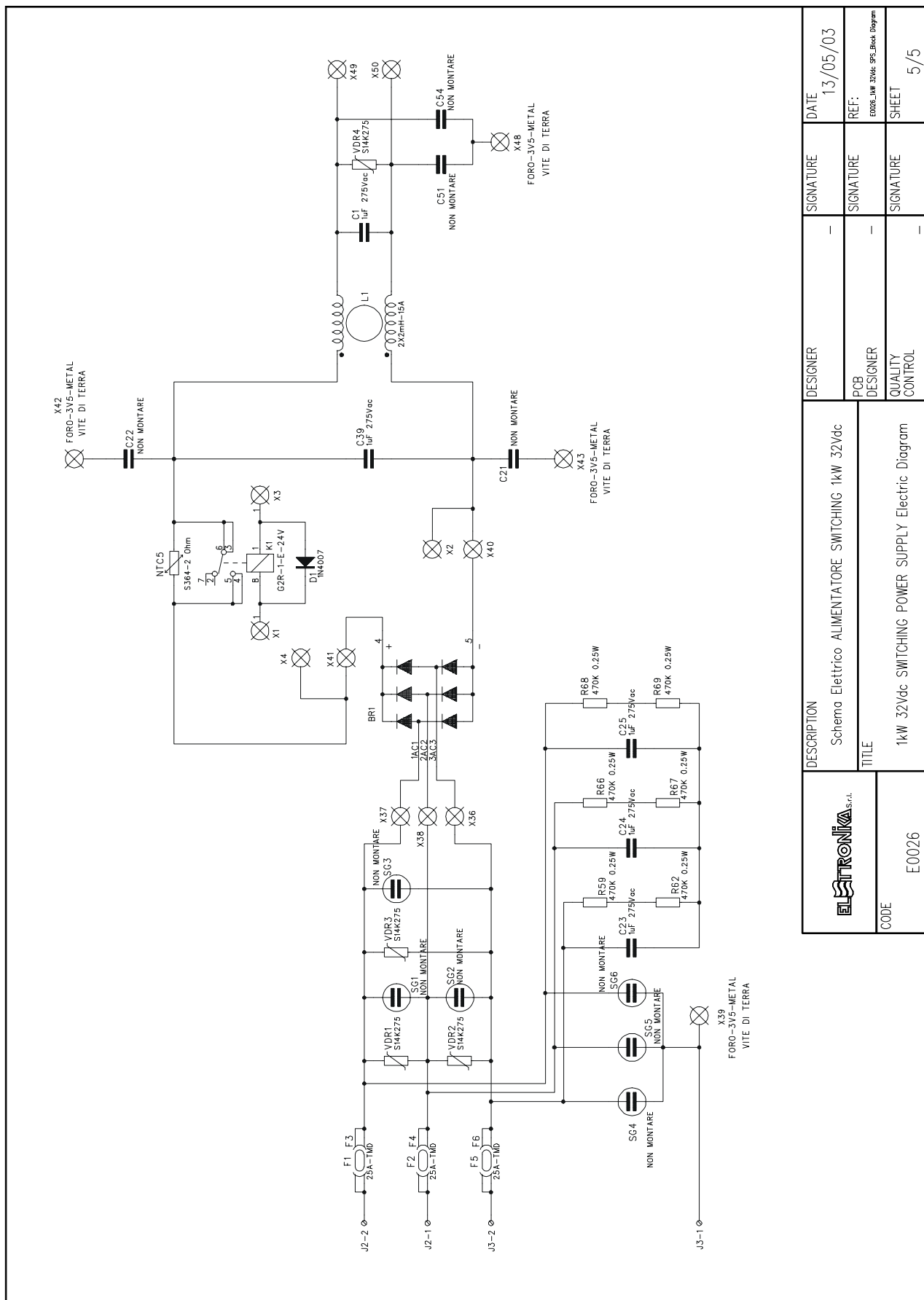


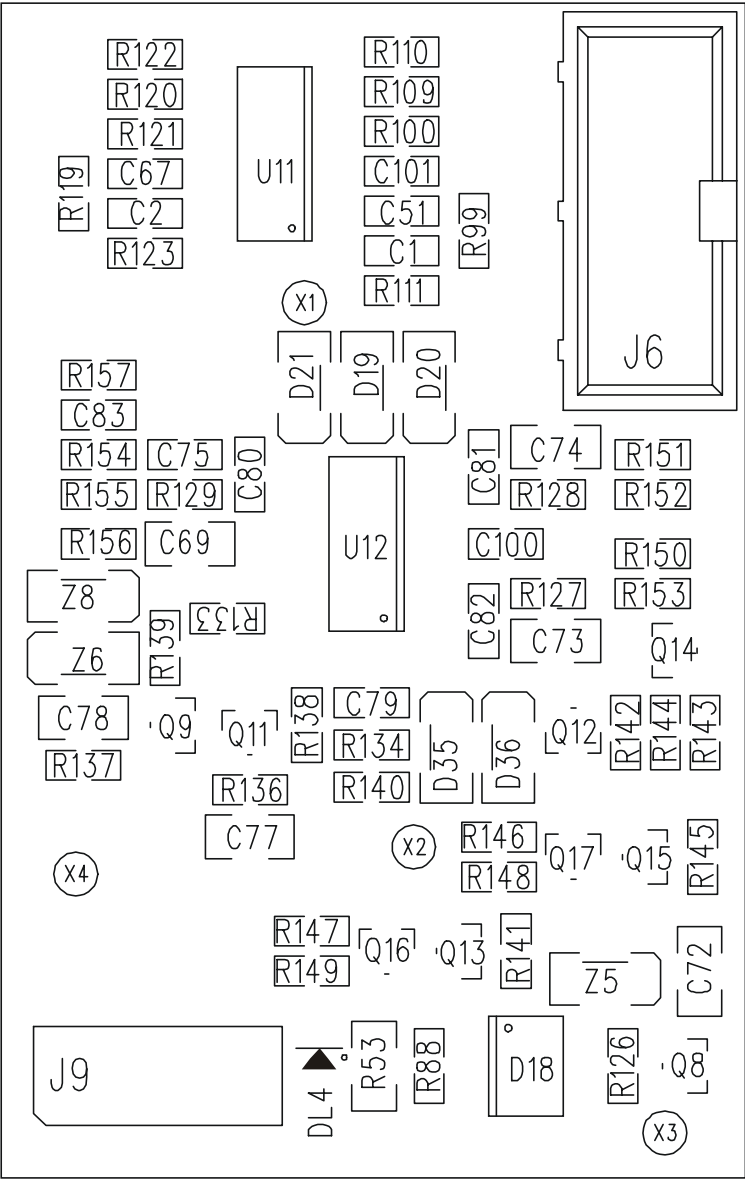



<div>  </div>	DESCRIPTION		DESIGNER	SIGNATURE	DATE
	Piano di Montaggio ALIMENTATORE SWITCHING 1kW 32Vdc		—	—	13/05/03
	TITLE		PCB DESIGNER	SIGNATURE	REF:
CODE	1kW 32Vdc SWITCHING POWER SUPPLY Component Layout		QUALITY CONTROL	SIGNATURE	E0026_1kW_32Vdc_SPS_Board Diagram
E0026			—	—	SHEET 1/1

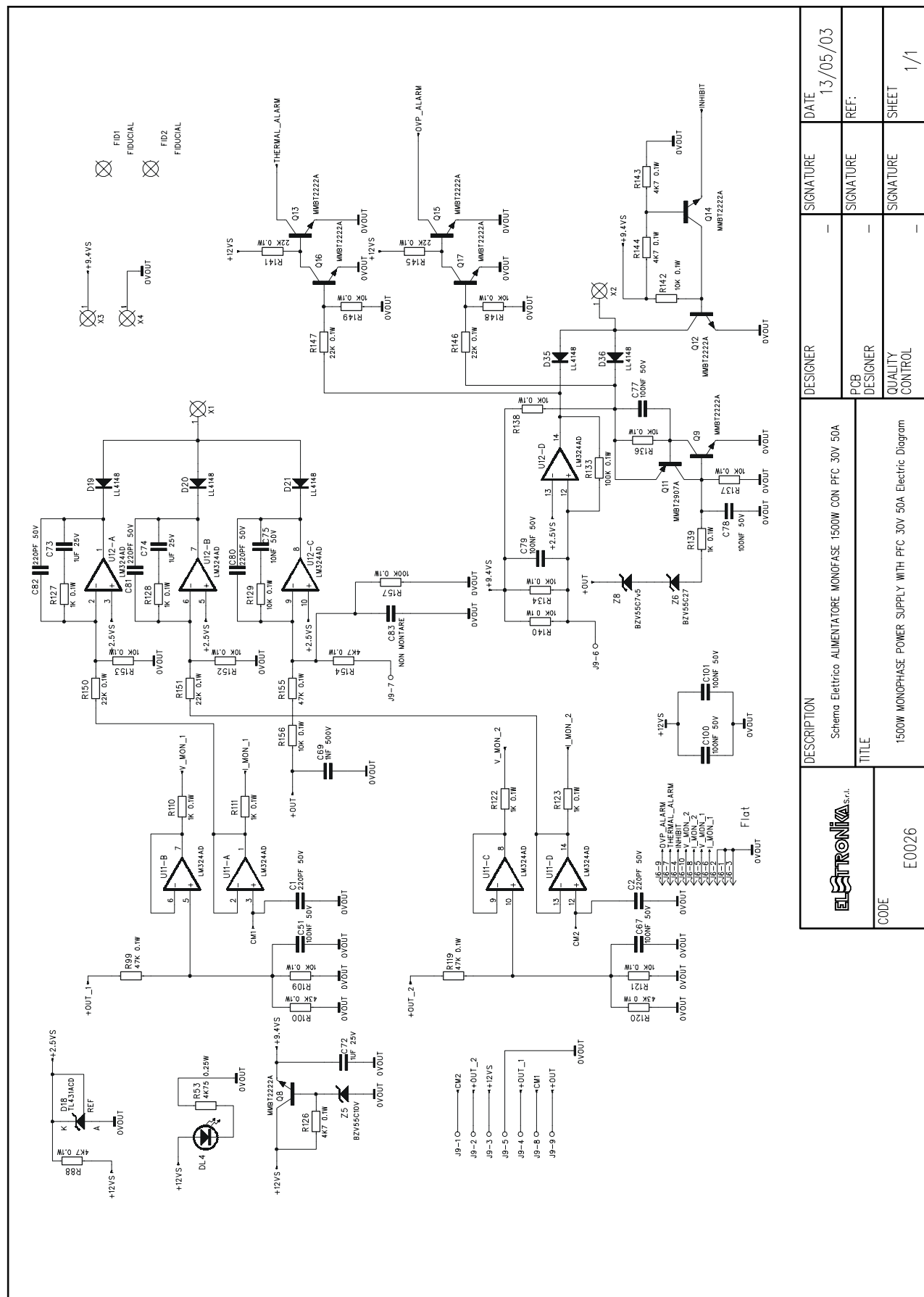


 CODE E0026	DESCRIPTION Schema Elettrico ALIMENTATORE SWITCHING 1kW 32Vdc		DESIGNER —	SIGNATURE —	DATE 13/05/03
	TITLE 1kW 32Vdc SWITCHING POWER SUPPLY Electric Diagram		PCB DESIGNER —	SIGNATURE —	REF: E0026_1kW_32Vdc_9PS_Block Diagram
			QUALITY CONTROL —	SIGNATURE —	SHEET 2/5





	DESCRIPTION		DESIGNER	SIGNATURE	DATE
	Piano di Montaggio ALIMENTATORE MONOFASE 1500W CON PFC 30V 50A		-	-	13/05/03
	TITLE		PCB DESIGNER	SIGNATURE	REF:
CODE	E0026		QUALITY CONTROL	SIGNATURE	SHEET
					1/1



ELATRONIKA S.r.l.	DESCRIPTION		DESIGNER	SIGNATURE	DATE
	Schema Elettrico ALIMENTATORE MONOFASE 1500W CON PFC 30V 50A		PCB DESIGNER	SIGNATURE	13/05/03
CODE	TITLE		QUALITY CONTROL		REF:
	1500W MONOPHASE POWER SUPPLY WITH PFC 30V 50A Electric Diagram		SIGNATURE		SHEET
E0026				1/1	

COMPONENT LIST *1kW 32Vdc Switching Power Supply*

SMT COMPONENT

IT	QTY	STORE-CODE	DESCRIPTION	REF.	Page 1/2
1	1	03.B04.0000A	CHIP RES.0805 STR.MET.0.10W 0Ohm 5%	R92	
2	2	03.B05.0003B	100R 1% 0.1W RES. SMD 0805 100PPM	R16, R42	
3	3	03.B05.0006B	10K 1% 0.1W RES. SMD 0805 100PPM	R27-28, R130	
4	4	03.B05.0009B	1K 1% 0.1W RES. SMD 0805 100PPM	R8, R40, R43, R105	
5	3	03.B05.0014B	27K 1% 0.1W RES. SMD 0805 100PPM	R20, R45, R93	
6	1	03.B05.0020B	47K 1% 0.1W RES. SMD 0805 100PPM	R5	
7	3	03.B05.0061B	4K7 1% 0.1W RES. SMD 0805 100PPM	R19, R44, R94	
8	1	03.B05.0150B	150R 1% 0.1W RES. SMD 0805 100PPM	R84	
9	6	03.B10.0267B	4K75 1% 1% 25W RES. SMD 1206 100PPM	R47-52	
10	9	03.B17.0003B	2R2 1% 0.25W RES. SMD MINIMELF 100PPM	R1-2, R18, R38, R41, R46, R86-87, R167	
11	2	03.B17.0010B	100K 1% 0.25W RES. SMD MINIMELF 100PPM	R75-76	
12	1	03.B25.0002A	0.01R 1% 3W RES. SMD 4527 WSR3 100PPM	R31	
13	8	03.D02.0004A	COND. CRM MSTR Z5U 100NF 50V 20% SMT-0805	C13, C42, C45, C50, C71, C98-99, C127	
14	3	03.D02.0012A	220PF 50V 5% 0805 SMD COND. CMR X7R	C11, C19, C36	
15	3	03.D04.0004A	1NF 500V 10% 1206 SMD COND. CRM MSTR	C8, C93-94	
16	5	03.D04.0007A	1uF 25V 10% 1206 SMD GRM42-6 (MURATA)	C1, C3, C12, C18, C135	
17	1	05.B02.0014A	L6565D FLYBACK QUASI-RESONANT CONTROL.	IC1	
18	2	05.B04.0010A	LMC6482AIM DUAL CMOS SOP-8 OP.AMP	UI-2	
19	2	04.D00.0001A	MMBT2222A BJT NPN 40V 1A 0.35W Hfe100-300	Q3, Q20	
20	1	04.D00.0501A	MMBT2907A BJT PNP -60V 0.8A 0.35W Hfe100-300	Q1	
21	5	04.D00.0502A	BJT PNP -80V -1A 1W Hfe 100 Ty. BCX53-16 Pk. SOT-89 (M.code: AL)	Q4, Q18, Q21-22, Q27	
22	6	04.B01.0001A	BAV103 SMD DIODO SILICIO 200MA 250V PKG. SOD80	D1, D22, D24-25, D27, D37	
23	3	04.K00.0002A	DIODO LED VERDE SMD 1206 BRIGHTLED	DL1-3	

THT COMPONENT

IT	QTY	STORE-CODE	DESCRIPTIO	REF.	Page 1/2
24	1		CIRCUITO STAMPATO D.N. D06.0203A_00R02		
25	4		Morsetto Phoenix MKDS5/2-9.5	J4, J6, J9-10	
26	1		RELAY 24VDC 16A G2R-1-E-24VDC OMRON	K1	
27	5		0,1R 5% 3W RES. OSSIDO. MET.	R103-104, R201-203	
28	2		220R 5% 3W RES. OSSIDO. MET.	R4, R60	
29	2		33KOhm 5% 3W RES. OSSIDO MET.	R162-163	
30	4		39R 5% 2W RES. OSSIDO MET. 250ppm	R6, R15, R169, R171	
31	2		100K 5% 2W RES. OSSIDO MET. 250ppm	R82, R101	

IT	QTY	STORE-CODE	DESCRIPTION	REF	Page 2/2
32	4		RESISTORE A FILO 0,01R 2W 5%	R3, R7, R29, R34	
33	1		Potenziometro Cermet 20Giri 2KOhm 0.5W 10% 100ppm Ty: 67W	P1	
34	5		4700pF 250W COND. CRM CLASSE X1 Y2 P.7,5	C6, C15, C17, C87-88	
35	1		100nF 600V 5% Cond. film mylar scat 7.5x17.5mm P.15	C2	
36	2		1uF 275Vac X2COND. FILM. SCAT. 12.5x32.5mm P27.5	C106, C116	
37	1		COND. FILM MYLAR SCATOLINO 4.7nF 250V 10% 5x17.5 P. 15 (mm)	C5	
38	2		1uF 630V COND. FILM SCAT. 18x32.5mm P.27.5	C112-113	
39	9		10uF 63 COND. RAD. POLIES. 10% P22.5 10x25 (mm)	C4, C9-10, C46-49, C52, C53	
40	1		Condensatore FILM SCATOLINO 2.2uF 400V 10% P.27,5	C7	
41	2		470uF 450V 20% ETL SNAP-IN 20% ins. Radiale d35 / h52mm	C107-108	
42	7		COND. ETL AL 100uF 25V d6,3x11mm P.2,5	C28, C40, C43, C70, C91, C96, C126	
43	3		COND. ETL AL 220uF 63V 20% ins. Radiale d20 / h42mm P7.5	C57-59	
44	1		COND. ETL 1uF 450V 20% ins. Radiale d8 / h11.5 P.3.8 (mm)	C16	
45	3		INDUTTORE 22uH I-MAX 2A PASSO 200	L1-2, L7	
46	1		TRASF. DI POT. T0203.04R01 D.N. STT0203_04R01	T1	
47	1		TRASF. AUX T0203.05R02 D.N. STT0203_05R02	T3	
48	1		BOBINA SNUBBER PFC T0211.03R01 D.N. STT0211_03R01	L9	
49	1		BOBINA CLAMPER PFC T0211.02R02 D.N. STT0211_02R02	L8	
50	1		BOBINA PFC T0203.01R00 D.N. STT0203_01R00	L5	
51	1		BOBINA DI MODO COMUNE T0203.06R00 D.N. STT0203	L6	
52	1		NTC 10R DIAM. 9,5mm P.5 B57-235-S100M	NTC5	
53	1		NTC EPCOS B57045K0103K000	NTC1	
54	2		FUSIBILE AUTO AL 25A 32V	F3-4	
55	4		CLIP PORTAFUSIBILE PER AUTO PZ1011 (OMEGA)	F1-2	
56	1		P600K DIODO RADDRIZZ. SILICIO 6A 800V	D12	
57	1		STTA3006CW DOPPIO DIODO ULTRA FAST TO247	D10	
58	2		STT1206D TO220 D. TURBOSWITCH 600V 12A	D9, D13	
59	2		STPS80H100CY 100V 4X20 MAX TO247	D29, D30	
60	1		DIODO ZENER 1,3W 18V ZPY18 DO-41 5%	Z9	
61	1		STP6NC90Z 900V 6A ENHAN. MODE N-MOSFET	MT3	
62	3		STW45NM50 TO247 500V 45A MOSFET	MF1-2, MF4	
63	1		COND. CER. MULTISTRATO 1uF 50V P.5	C14	

Note:

within the notes:

- the 'V' prefix is for Vertical mounting

- the 'M' prefix stands for Mechanical details

**FEATURES**

- UHF 3kW analog TV output filter
- 3D electromagnetic CAD exclusive design
- 4 poles elliptical response;
two transmission zeros for IMD suppression
- Foreshorten combline resonators structure;
iris couplings with fine bandwidth regulation
- High selectivity and low loss (Typ. 0.22dB @
V.C. Ch. 69G)
- Exclusive thermal compensation technology
providing high temperature stability (< 4kHz / K)
- Very compact, lightweight (9.1kg) and extremely
reliable

SPECIFICATIONS

Frequency Range	474 - 862MHz	Selectivity*	> 40dB @ V.C. -5.5 / +11MHz > 25dB @ V.C. -11 / +16.5MHz
Max Input Power	3kW Analog TV	Temperature Stability	< 4kHz / K
Insertion Loss*	< 0.26dB @ V.C. Ch. 69 < 0.24dB @ V.C. Ch. 21	Connectors°	7/8" Female
Return Loss	> 28dB	Weight (Approx)	9.1kg
Group Delay Variation	< 30ns	Operating Temp.	-10 to +50°C
Bandwidth	6 to 8MHz		

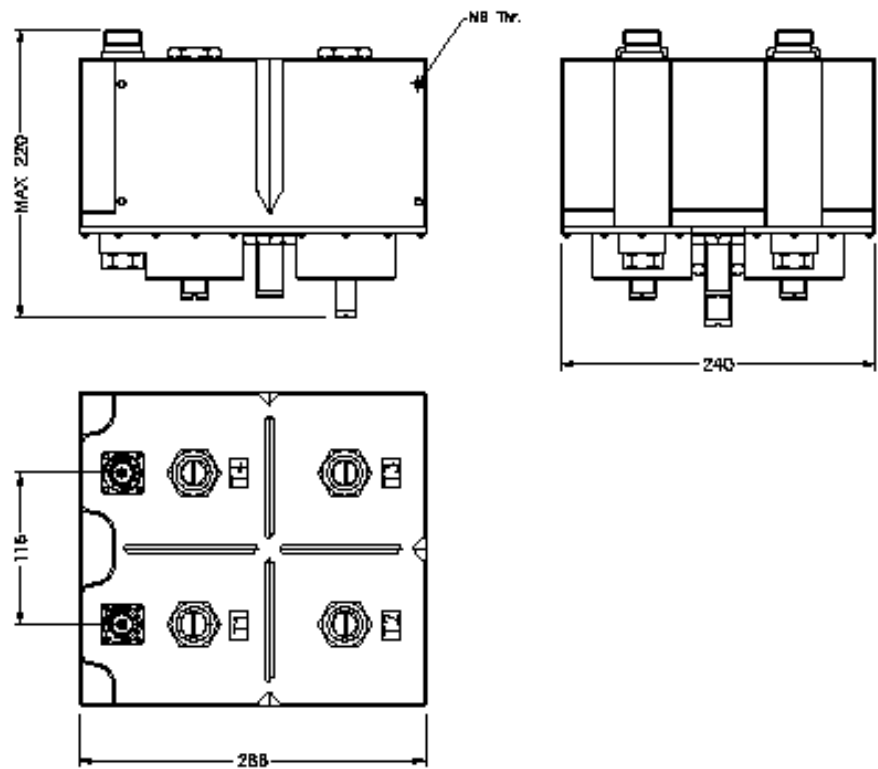
(* Values referred to G Standards)

(° See options table below)

AVAILABLE OPTIONS

A	SMA Output Monitor Probe	B	SMB Output Monitor Probe
E	7/16 Female Connectors	I	EIA 1+5/8" Flange Connect.
J	EIA 1+5/8" Socket Connect.		

MECHANICAL LAYOUT



CURVE RESPONSE

