TM 12.2 ACTIVE

BI-AMPLIFIED DIGITALLY PROCESSED LOUDSPEAKER SYSTEM

SERVICE MANUAL

Schematic Diagrams

CODE : 277304

Index & Warnings

GENERALMUSIC S.p.A. Sales Division: 47048 S.Giovanni in Marignano (RN) ITALY - Via delle Rose, 12 - tel. 0541/959511 - tlx 550555 GMUSIC I - fax 0541/957404

Notice

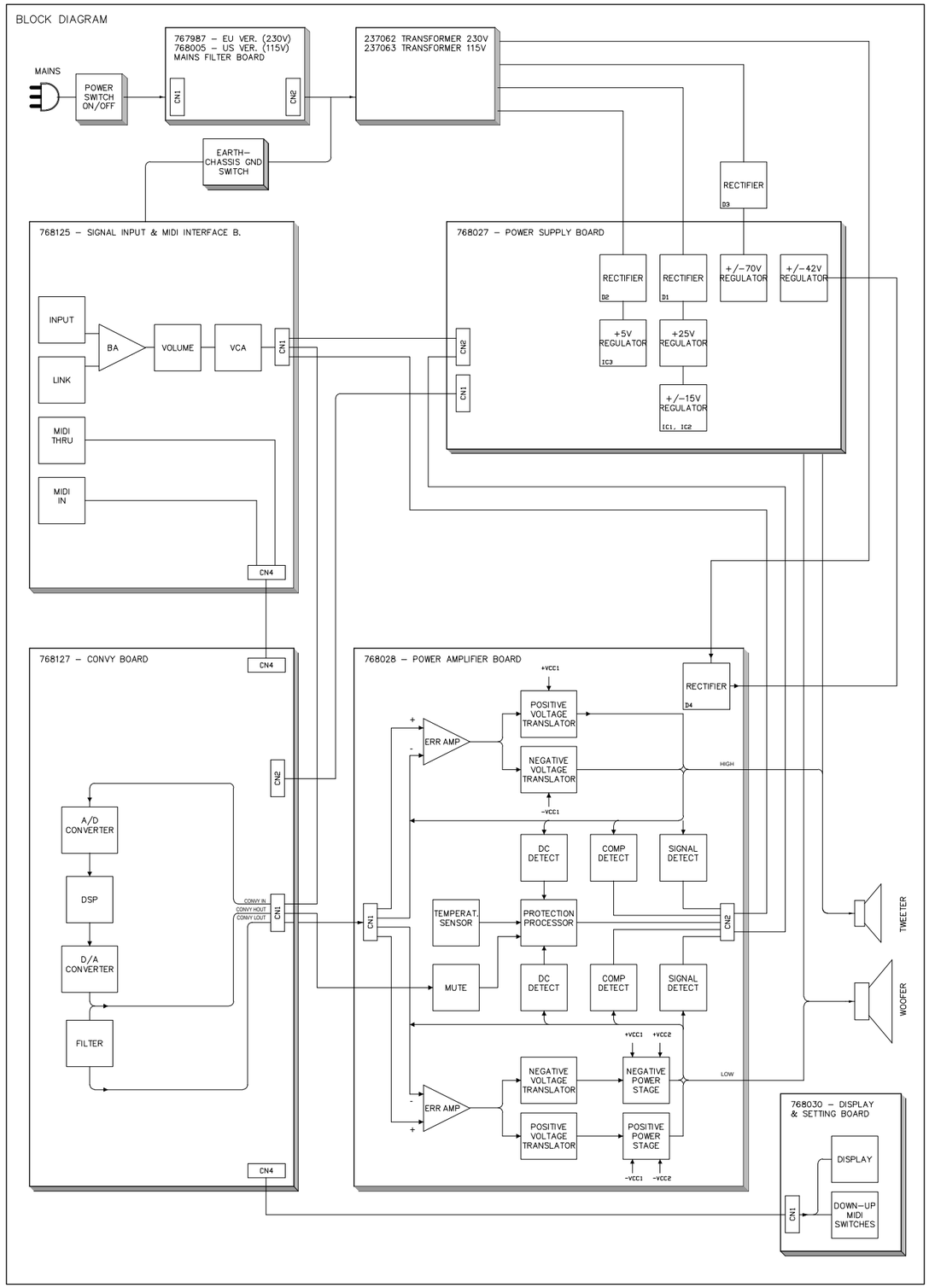
Service must be carried out by qualified personnel only.Any tampering carried out by unqualified personnel during the guarantee period will forfeit the right to guarantee.
For a correct operation of the instrument, after having switched off, be careful to wait at least 3 seconds before switching on again.
To improve the device's specifications, the schematic diagrams may be subject to change without prior notice.

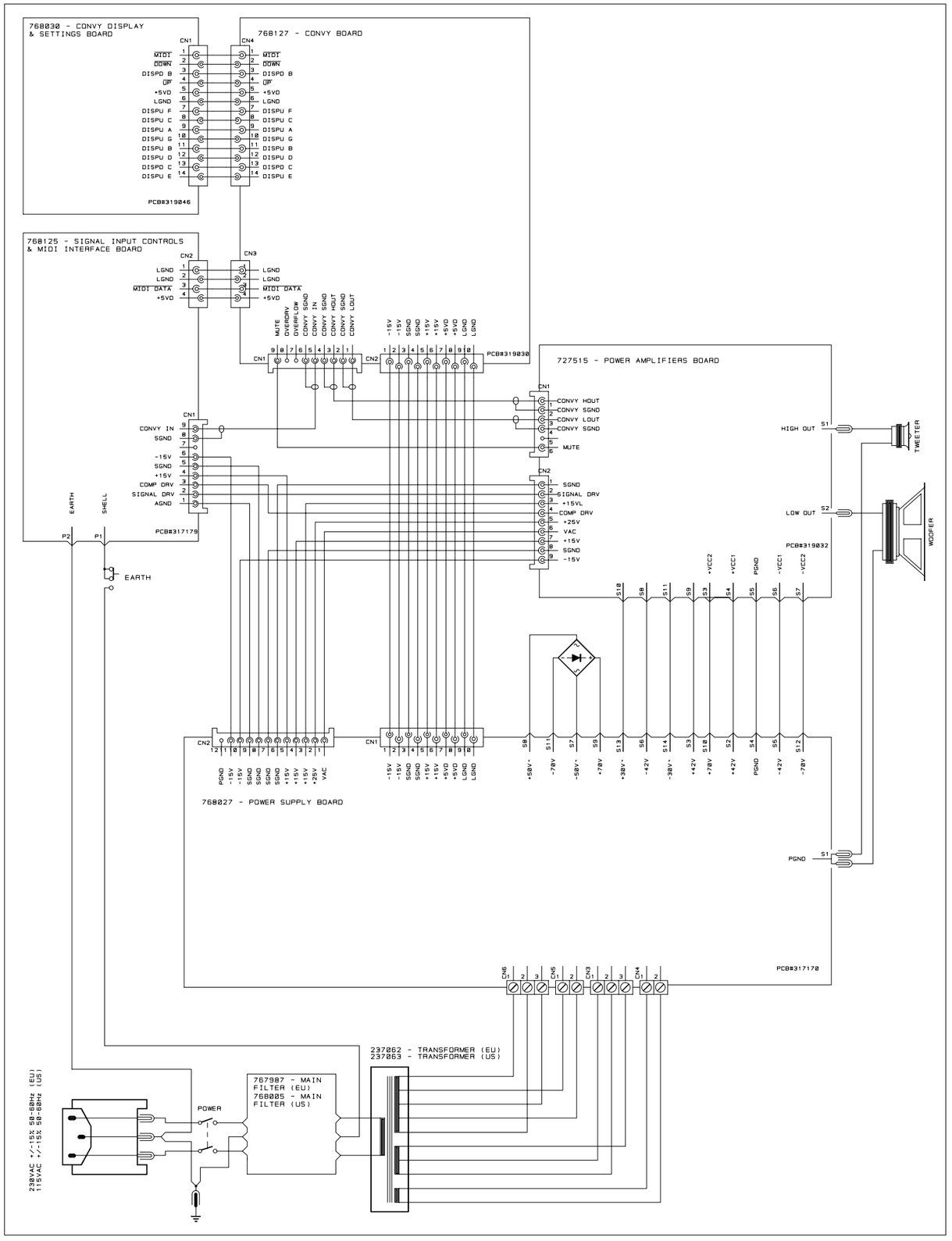
Schematic Notes

⚠ All components marked by this symbol have special safety characteristics, when replacing any of these components use only manufacturer's specified parts.
The (❍) micro symbol of capacitance value is substituted by U. The (Ω) omega symbol of resistance value is substituted by E.
The electrolytic capacitors are 25Vdc rated voltage unless otherwise specified. All resistors are 1/8W unless otherwise specified.
All switches shown in the "OFF" position. All DC voltages measured to ground with a voltmeter 20KOhm/V.

- Soldering point.
- Male connector.
- Female connector.
- M/F faston connector.
- Test point.
- Supply voltage.
- Logic supply ground.
- Analog supply ground.
- Signal ground.
- Chassis ground.
- Flag joined with one or more flags with the same signal name inscribed.

ATTENTION
Observe precautions when handling electrostatic sensitive devices





DRW M.PALANGHI	DWG# 550543	PCB#	GENERALMUSIC S.p.A. ITALY
CKD M.PALANGHI	DSK# 45 PART: 1/1	SCHEMATIC DIAGRAM	ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC.
APP.C.ZUCCATTI	REV: 07-03-97	BLOCK & WIRING DIAGRAM	

768028 - POWER AMLIFIERS BOARD

SIGNALS TO CONVY BOARD CN1

CN1: HOUT, GND, LOUT, GND, MUTE

SPEAKER

SPEAKER

HIGH OUT

LOW OUT

BIAS ADJ

BIAS ADJ

DC

COMP

SIGNAL

COMP

DC

PROT

CN2: LGND, SIGNAL DRV, +15VL, COMP DRV, +25V, VAC, +15V, AGND, -15V

PCB#319032

768.027 - POWER SUPPLY B. (TM 12.2 ACTIVE)

237062 - TRANSFORMER ASSY (EU)
237063 - TRANSFORMER ASSY (US)

50V~, 30V~, 0V~, 30V~, 50V~, 19V~, 0V~, 19V~, 10V~, 0V~

F6 T4A, F5 T2.5A, F4 T2.5A, F7 T4A, F2 630MA, F1 630MA, F3 630MA

D4 GBU8D, D3 KBPC25, D1 W02M, D2 W02M

IC1 7815, IC2 7915, IC3 7805

+70V S10, +42V S2, AGND S1, AGND S4, -42V S5, -70V S12

CN2: VAC, +25V, +15V, +15V, +15V, AGND, AGND, AGND, AGND, -15V, -15V, AGND

CN1: -15V, -15V, AGND, AGND, +15V, +15V, +5VD, +5VD, LGND, LGND

POWER SUPPLY TO CONVY PROCESSOR BOARD CN2

PCB#317170

767987 - MAINS FILTER BOARD (EU)
768005 - MAINS FILTER BOARD (US)

CN1, C1 DSR1100, F1, T6A (EU) T10A (US), L1, CN2, C3 100N 400V, BB2722 A2102N1, C2 DSR1100, CHASSIS GROUND

PCB#315016

230VAC +/-15% 50-60Hz (EU)
115VAC +/-15% 50-60Hz (US)

768125 - SIGNAL INPUT CONTROLS & MIDI INTERFACE BOARD

INPUT 0dB, IN, LINK

SIGN COMP

VOLUME

COMPRESSOR ADJ

MIDI

EARTH LIFT

CHASSIS GROUND

CN1: AGND, SIGNAL DRV, COMP DRV, +15V, AGND, -15V, AGND, CONVY IN

TO CONVY BOARD

CN2: +5VD, MIDI DATA, LGND, LGND

TO CONVY PROCESSOR BOARD CN3

PCB#313019

DRW M.PALANGHI	DWG# 550544	PCB# 319032-313019-315016-317170	GENERALMUSIC S.p.A. ITALY
CKD I.BATTELLI	DSK#45 PART:1/1	SCHEMATIC DIAGRAM TM 12.2 ACTIVE POWER AMPLIFIERS & SUPPLY B. MAIN FILTER - INPUTS BOARD	ALL RIGHTS ARE RESERVED, NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC.
APP. C.ZUCCATTI	REV: 24/02/97		

768127 - CONVY PROCESSOR BOARD (TM12.2 ACTIVE)

SIGNALS FROM SIGNAL INPUT CONTROLS & MIDI INTERFACE B. CN1 - TO POWER AMPLIFIER B. CN1

CN1
1 CONVY LOUT
2 SGND
3 CONVY HOUT
4 SGND
5 CONVY IN
6 SGND
8
9 MUTE

IC12 TL072 · IC7 AD0079 MODULATOR · IC3 CONVY DSP · IC1 AD1865N PCM D/A CONVERTER · IC2 MC33078 · IC6 MC33079 · IC11 MC33078 · UNUSED GATE

IC10 74HC374 OCTAL D-TYPE FLIP FLOP · IC5 TS93C46 EEPROM · IC8 7805 · IC9 7905 · IC4 AT89C55 · IC7 AD0079

AR2 10K X8 · AR1 10K X8 · AR3 10K X5

CN3
1 SGND
2 SGND
3 MIDI DATA
4 +5VL

MIDI DATA FROM SIGNAL INPUT CONTROLS & MIDI INTERFACE B. CN2

CN2
1 -15V
2 -15V
3 SGND
4 SGND
5 +15V
6 +15V
7 +5VL
8 +5VL
9 SGND
10 SGND

POWER SUPPLY FROM POWER SUPPLY BOARD CN1

CN4
1 MIDI
2 DOWN
3 DISPD B
4 UP
5 +5VL
6 LGND
7 DISPU F
8 DISPU C
9 DISPU A
10 DISPU G
11 DISPU B
12 DISPU D
13 DISPD C
14 DISPU E

DISPLAY FROM/TO DISPLAY & SETTING B. CN1

P2 EARTH
P1 EARTH

PCB#313020

768030 - DISPLAY & SETTING BOARD

MIDI SW3 · DOWN SW2 · UP SW1

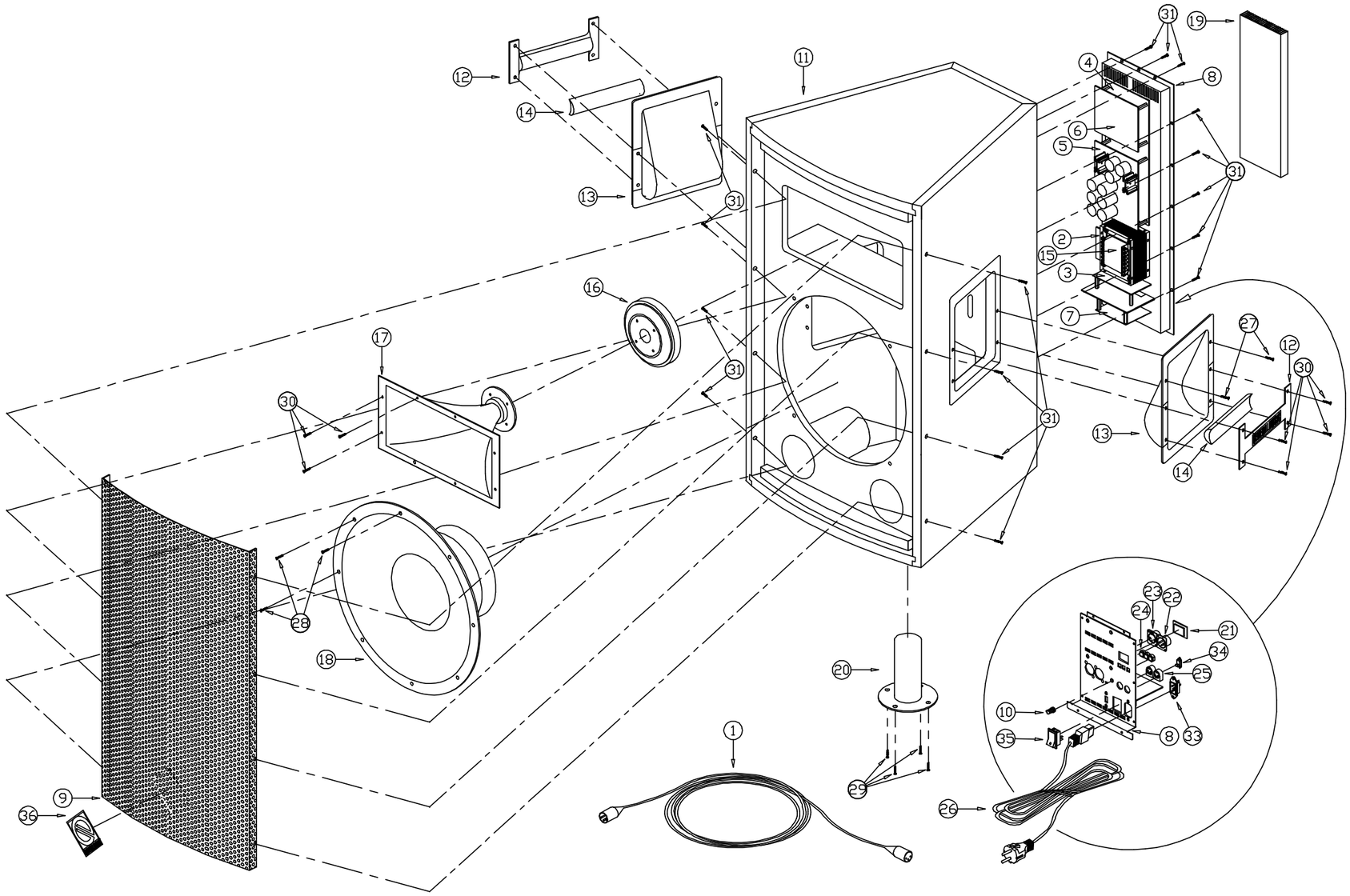
PRESET

DISPLAY FROM/TO CONVY PROCESSOR BOARD CN4

CN1
1 MIDI
2 DOWN
3 DISPD B
4 UP
5 +5VD
6 LGND
7 DISPU F
8 DISPU C
9 DISPU A
10 DISPU G
11 DISPU B
12 DISPD D
13 DISPD C
14 DISPU E

PCB#319046

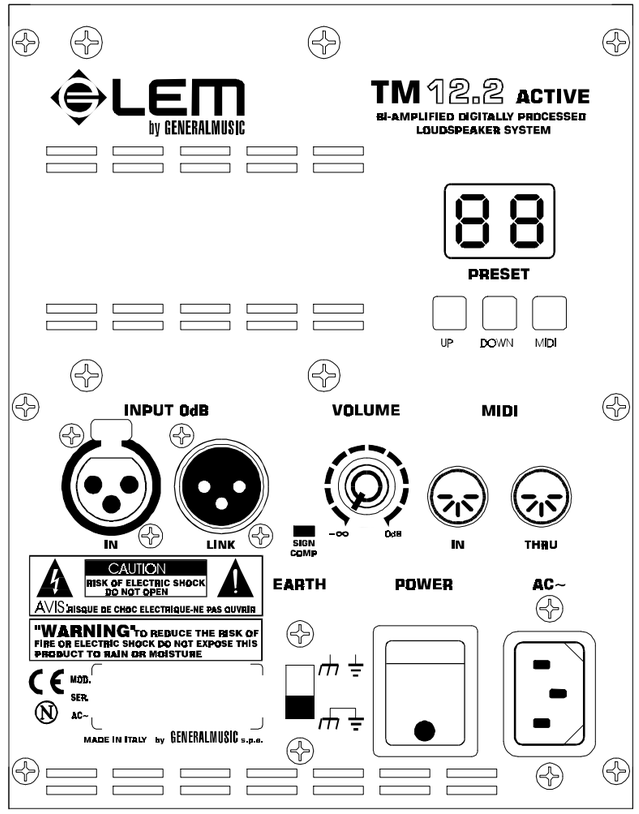
DRW M.PALANGHI	DWG# 550545	PCB# 319046 - 313020	GENERALMUSIC S.p.A. ITALY
CKD M.PALANGHI	DSK# 45 PART:1/1	SCHEMATIC DIAGRAM TOUR MASTER 12.2 CONVY PROCESSOR BOARD DISPLAY & SETTINGS BOARD	ALL RIGHTS ARE RESERVED. NO COPIES OR REPRODUCE THIS DOCUMENT WITHOUT WRITTEN CONSENT BY GENERALMUSIC.
APP.C.ZUCCATTI	REV: 03-03-97		



Spare Parts

1	887074	MALE-FEMALE SIGNAL CABLE (mt. 1.5)
2	768030	DISPLAY & SETTING BOARD
3	768019	SIGNAL INPUTS CONTROLS & MIDI INTERFACE BOARD
4	768028	POWER AMPLIFIER BOARD
5	768027	POWER SUPPLY BOARD
6	768026	CONVY PROCESSOR BOARD
7	767987	MAIN FILTER BOARD
8	727516	INPUTS & CONTROL PANEL
9	667488	METAL GRID
10	659027	CYL. KNOB WITE CAP
11	430054	WOODEN CABINET
12	347287	PLASTIC HANDLE
13	347286	HANDLE SET
14	347187	RUBBER HEANDLE
15	237062	TRANSFORMER (EU)
16	229029	1" B&C DRIVER
17	229014	M45 BBC CAST ALLUMINIUM
18	227035	12" LOUDSPEAKER
19	177476	AMPLIFIER HEAT SINK
20	177325	PLASTIC FLANGE
21	150591	RED GLASS DISPLAY
22	141202	XLR MALE CONNECTOR
23	141184	XLR FEMALE CONNECTOR
24	140526	GRAY BUTTON
25	140212	5 Ways DIN SOCKET
26	130297	EU 6A BLACK MAIN CABLE
27	120319	BLACK ZINC-PLATED WL 4x15 PAN HEAD SCREW (HEANDLES FIXING)
28	120125	BLACK ZINC-PLATED M5x35 C/SUNK SCREW (LOUDSPEAKER FIXING)
29	120111	BLACK ZINC-PLATED M6x25 PAN HEAD SCREW (BESBECO FLANGE FIXING)
30	120108	BLACK ZINC-PLATED M5x30 PAN HEAD SCREW (CAST ALLUMINIUM FIXING)
31	120099	BLACK ZINC-PLATED M4x25 PAN HEAD SCREW (METAL GRID FIXING)
32	120098	BLACK ZINC-PLATED M4x20 PAN HEAD SCREW(HEANDLE FIXING)
33	110614	10A F=6.3mm CURRENT-TAP (EU)(US)
34	110297	2 POLES 2 POS. SLIDE SWITCH
35	110291	BLACK BIPOLAR MAIN SWITCH WITH RED LED (EU)(US)
36	180637	ADHESIVE "GENERALMUSIC-LEM" BRAND

Inputs Controls Panel



TOUR MASTER 12.2 ACTIVE - Technical Specifications

SPEAKER SPECIFICATIONS			
COMPONENTS	**High**		1" driver with controlled directivity horn
	Low		12" low frequency speaker
HIGH section POWER HANDLING		W continuous	50
(EIA RS-426A)		W peak	150
LOW section POWER HANDLING		W continuous	300
(EIA RS-426A)		W peak	900
IMPEDANCE	**High**	ohm	8
	Low	(nominal)	4
CONSTRUCTION			Cabinet: bitch plywood Finish: Black scratch-resistant paint Protection grille:metal grille
WEIGHT		kg - lbs.	32 - 70,4
DIMENSIONS		mm - in.	400x610x396 - 157,5x240,2x156 (WxHxD)
PROCESSOR SPECIFICATIONS			
INPUT	**Sensitivity**	dB	0
	Impedance	Kohm	30 (balanced) - 15 (unbalanced)
A/D converter		bit	18
D/A converter		bit	18
Dynamic range		dB	105
Sampling rate		kHz	48
CROSSOVER	**Frequency**	Hz	1800
	Slope	dB/oct.	24
HIGH section POWER AMPLIFIER		W continuous	100
LOW section POWER AMPLIFIER		W continuous	300
AMPLIFIERS DISTORTION		THD + Noise	<0,02%
CONTROLS			VOLUME control UP & DOWN selector buttons MIDI button Earth Lift
DISPLAY			2-digit display SIGN/COMP LED
CONNECTORS			1 XLR-F + XLR-M (input + link) MIDI IN & MIDI THRU
POWER SUPPLY			see label on the apparatus
SYSTEM SPECIFICATIONS			
FREQUENCY RESPONSE		Hz	60÷20000 (-10dB)
SENSITIVITY MAX SPL	**SPL 1W/1m**	dB	98
	continuous		124
DISPERSION ANGLE	**orizontal**	°	80 (±5)
	vertical		50 (±10)
DIRECTIVITY Factor (Q)		dB	7
DIRECTIVITY Index Di			8,5 (+3,7, -2,3)

BIAS ADJUSTMENT

Instruments, materials and tools:

- Audio Generator
- Dual Trace Oscilloscope
- Digital Voltmeter (or Multimeter)
- 4Ω 500W and 8Ω 100W Resistors
- Temperature Meter

Setup:

- Connect the Audio Generator to the input and set it to output at 2KHz sinusoidal signal.
- Insert the temperature sensor through the interstize between the heatsink and R93 (PTC).
- Connect the 4Ω 500W resistor to the amplifier output instead of the woofer speaker and 8Ω 100W instead of tweeter speaker.
- Connect the oscilloscope probes (setting 20V/div.,1ms/div.) on the loads.
- Insert the voltmeter terminals on R107.

ADJUSTMENT PROCEDURE

1) Turn on the amplifier, pressing "UP" "DOWN" and "MIDI" simultaneously, check that the display shows "C".
2) Set the input signal to 0dB (0.775Vrms).
3) When the temperature has reaches about 45°C (109°F) set the signal input to minimum (0 or -∞).
4) Adjust the trimmer R111 to read a voltage of 6mV ±0.1 on the multimeter.
5) Check that the voltage across the R108 resistor has the same value.
6) At the same temperature condition, adjust the VR1 trimmer to read 2.2mV ±0.1 at R24 resistor.
7) Check that the voltage on the R25 resitor has the same value.

Veryfing:

1) Increase the input level to obtain an output voltage about of 0.5Vpp.
2) Check with the oscilloscope that the output signal is without a cross-talk distortion and eventually slightly adjust the R111 or VR1 position until distortion disappears.
   (Note: the voltage value across the R107 or R108 resistor must not exceed 10mV and the R24 or R25 resistor must not exceed 4mV).

LIMITER ADJUSTEMENT

1) Increase the input level to 10dB, adjust the trimmer VR1 until clipping distortion disappears.
2) Verify tha the led change colour from green to red.
3) Re-connect the speakers instead of the 4Ω and 8Ω resistors.

SPARE PARTS LIST

ACCESSORIES		
887074		XLR Female-Male Signal Cable (1.5mt)
277309		Owner's Manual
VARIOUS		
667612		Inputs & Controls Panel
659027		Cyl. Knob White Cap
237062		Transformer (EU)
237063		Transformer (US)
177477		Amplifier Fixing Square
177475		Transformer Shield
150591		Display Red Glass
110614		Mains Socket
110291		Power Switch
667487		Upper Stirrup
667486		Left Side Stirrup
667485		Right Side Stirrup
110085		T630mA Fuse 6.3x32mm (US)
110036		T4A Fuse 6.3x32mm (US)
110035		T2.5A Fuse 6.3x32mm (US)
110029		T4A Fuse 5x20mm (EU)
110014		T2.5A Fuse 5x20mm (EU)
110010		T2A Fuse 5x20mm (EU)
110009		T630mA Fuse 5x20mm (EU)
717053		Wooden Parts
657250	*	GEBERIT Black Tube
430058	*	Wooden Cabinet
667609		Metal Grid
347287		Plastic Handle
347286		Plastic Setted Handle
347187		Plastic Grip
229029		1" DE25 8 OHM B&C Driver
229014		M45 BBC Cast Alluminium
227035		12" 12/052 8 OHM B&C Speaker
130297		Mains Cord (Europe Version)
130283		Mains Cord (U.S. Version)

Convy Board

768127		**Convy Board (PCB#313020)**
230569	*	FL5R200PNT EMI Coil For Signal
141059	*	Con V M 9 C Mini Mate Burndy
141058	*	Con V M 6 C Mini Mate Burndy
141015	*	Con V F 14c P=1.27 Mmatch Amp
141013	*	Con V F 10c P=1.27 Mmatch Amp
141010	*	4 Contacts Vert Female Connector
100943	*	MC33079 Quad Ln Op Amp
100919	*	MC33078 Dual LN J-Fet Operational Amplifier
100737	*	ADMOD79 2ch Ad Delta Modulator
100643	*	AD1865N Dual 18bit Dac
100642	*	TS93C46 1Kbit Eeprom Memory
100612	*	74HC374 Octal D-Type Flip-Flop
100614	*	74HC74 Dual Flip-Flop
100611	*	74HC373 Octal D-Type Latch
100602	*	74HC04 Hex Inverter
100579	*	80C32 Cpu Fc=16MHz
100061	*	TL072 Dual J-Fet Operational Amplifier
100059	*	7805 +5V 1A Voltage Regulator
100058	*	7905 -5V 1A Voltage Regulator
080103	*	1N4148 100mA 75V Signal Diode
050494	*	Resistor Array 10K X5 1/8w 5%
050492	*	10Kx8 1/8w 5% Resistor Array
010722	*	24.576MHz Quartz Resonator
010720	*	12MHz Ceramic Resonator With Capacitors
010703	*	24MHz Quartz Resonator
557025	*	MICRO PROGRAM.CONVY
557011	*	EPROM CONVY
105001	*	CONVY Dsp Convolver
100737	*	ADMOD79 2ch Ad Delta Modulator
100643	*	AD1865N Dual 18bit Dac
100590	*	27C256 Eprom 256Kbit Ta=120ns
100579	*	80C32 Cpu Fc=16MHz
090920	*	Mje803 To126 Npn Darl Transistor
090919	*	Mje15031 To220 Pnp Transistor
090918	*	MJE15030 TO220 Npn Transistor
090917	*	MJE350 TO126 Pnp Transistor
090916	*	MJE340 TO126 Npn Transistor
090913	*	MJE4352 TO218 Pnp Transistor
090912	*	MJE4342 TO218 Npn Transistor
090863	*	TIP36C TO218 Pnp Transistor
090862	*	TIP35C TO218 Npn Transistor
080819	*	Ptc 70 Pth59f04bg222ts
080607	*	Kbpc25 25a 200V Bridge Rec Dio
080606	*	GBU8D 8A Rectifier Diodes Bridge

Power Supply Board

768027		**Power Supply Board (PCB#317170)**
141060	*	Con V M 12c Mini Mate Burndy
141013	*	Con V F 10c P=1.27 Mmatch Amp
140081	*	H 2c P=10 Terminal Block
140069	*	H 3c P=10mm Terminal Block
110119	*	Fuse Clip 10A max (EU) (US)
110029	*	T4A Fuse 5x20mm (EU)
110020	*	T2.5A Fuse 5x20mm (EU)
110018	*	T630mA Fuse 5x20mm (EU)
100060	*	7815 +15V 1A Voltage Regulator
100059	*	7805 +5V 1A Voltage Regulator
100049	*	7915 -15v 1a Voltage Regulator
080168	*	W02M 1.5A Rectifier Diodes Bridge
030882	*	10000uF 50V Snap-In Electrolytic Capacitor
030858	*	4700u 25V 20% Vert Electrolytic Capacitor
030560	*	4700u 80v 20% Snap-In Electrolytic Capacitor
030554	*	4700u 35v 20% Snap-In Electrolytic Capacitor

Signal Input Controls & MIDI Interface Board

768125		**Signal Input Controls & midi Interface Board (PCB#313019)**
757942	*	Photores Coupler
230569	*	FL5R200PNT EMI Coil For Signal
141202	*	Xlr H M M21bc Nuova Asme
141184	*	Xlr H F Riten Nc3fprh Neutrik
141064	*	Con H M 9 C Mini Mate Burndy
141010	*	4 Contacts Vert Female Connector
140212	*	Horizontal Female 5 Poles Din Socket
100602	*	74HC04 Hex Inverter
100061	*	TL072 Dual J-Fet Operational Amplifier
100035	*	6N138 Optocoupler
090194	*	BC560 TO92 LN Pnp Transistor
090183	*	Bc550 To92 Ln Npn Transistor
080734	*	Led 2.5x5mm Rect Diff Red-Grn
080245	*	7V5 1w 5% Zener Diode
080103	*	1N4148 100mA 75V Signal Diode
074570	*	5K lin. 31 clicks Potentiometer
070125	*	1K 20% Vertical Linear Trimmer

Display & Setting Board

768030		**Display & Setting Board (PCB#319046)**
141015	*	Con V F 14c P=1.27 Mmatch Amp
140526	*	Microswitch 100V 100ma 0.8mm
080717	*	HDN1105 7 Segments Display

Mains Filter Board

767987		**Mains Filter Board (PCB#315016) (EU)**
768005		**Mains Filter Board (PCB#315016) (US)**
230565	*	2.5mH 250V 3A AC Line Filter
140010	*	3 Contacts P=10 Vert Terminal Block
110113	*	Fuse Clip 5x20mm 6A max (EU)
110114	*	Fuse Clip 6.3x32mm 10A max (US)
020493	*	100n 250Vac MKP EMI Capacitor "Siemens"
010719	*	2n2 250Vac 7A 20% AC Line "Y" Filter "Murata"

Power Amplifier Board

768028		**Power Amplifier Board (PCB#319032)**
141060	*	Con V M 12c Mini Mate Burndy
141059	*	Con V M 9 C Mini Mate Burndy
141058	*	Con V M 6 C Mini Mate Burndy
110316	*	Relay 24V / 1 Switch no 16A 250V
110307	*	Relay 24V / 2 Switch 5A 250V
100084	*	TL074 Quad J-Fet Operational Amplifier
100061	*	TL072 Dual J-Fet Operational Amplifier
090920	*	Mje803 To126 Npn Darl Transistor
090917	*	MJE350 TO126 Pnp Transistor
090916	*	MJE340 TO126 Npn Transistor
090201	*	2n5401 To92 Pnp Transistor
090200	*	2n5550 To92 Npn Transistor
090192	*	BC307 TO92 Pnp Transistor
090182	*	BC173C TO92 Npn Transistor
080261	*	10V1w 5% Zener Diode
080245	*	7V5 1w 5% Zener Diode
080241	*	5V6 1W 5% Zener Diode
080171	*	Fe6b 6a 100V Fast Recovery Diode
080156	*	1N4002 1A 100V Rectifier Diode
080103	*	1N4148 100mA 75V Signal Diode
070106	*	470e 20% Horizontal Linear Trimmer
070082	*	220e 20% Horizontal Linear Trimmer
030715	*	1000u 6v3 20% Vert Electrolytic Capacitor

Notes:

Each spare part is single quantity unless otherwise specified

Asterisk prefix explanation:

Omitted = First level spare part.

One asterisk = Second level, part of previous listed first level part.

Two asterisk = Third level, part of previous listed second level part.

Three asterisk =.....

Any request for not above mentioned part must encompass specific description including:

1) Model name,

2) Section,

3) Module code,

4) Reference name,

5) Quantity number.