

# Service Manual

## Colour Television



**TX-29PM1D**

**TX-29PM1F**

**TX-29PM1P**

**CP-521F Chassis**

### SPECIFICATIONS

Power Source:	220-240V a.c., 50Hz	AV2 IN	Video (21 pin) Audio (21 pin) S-Video IN (21-pin)	1V p-p 75Ω 500mV rms 10kΩ Y: 1V p-p 75Ω C: 0.3V p-p 75Ω
Power Consumption:	73W	AV2 OUT	Video (21 pin) Audio (21 pin)	1V p-p 75Ω 500mV rms 1kΩ
Stand-by Power Consumption:	1,5W	AV3 FRONT	Audio (RCAx2) Video (RCAx1)	500mV rms 10kΩ 1V p-p 75Ω
Aerial Impedance:	75Ω unbalanced, Coaxial Type	High Voltage:	28,5kV ± 1kV	
Receiving System:	PAL-I, B/G, D/K, PAL-525/60 SECAM B/G, D/K, L/L' M.NTSC (AV only) NTSC (AV only)	Picture Tube:	A68EPD10X22	68cm
Receiving Channels:	VHF E2-E12 VHF H1-H2 (ITALY) VHF A-H (ITALY) VHF R1-R2 VHF R3-R5 VHF R6-R12 UHF E21-E69 CATV (S01-S05) CATV S1-S10 (M1-M10) CATV S11-S20 (U1-U10) CATV S21-S41 (HYPERBAND)	Audio Output:	2x5W RMS, 2x10W MPO, 8Ω impedance	
Intermediate Frequency:	Video/Audio 38,9MHz, 33,9MHz Video 33,4MHz (B/G), 33,16MHz (A2) Sound 33,05MHz (NICAM B/G,D/K,L) 32,4MHz (D/K), 32,66MHz (CZ STEREO) 40,4MHz (L'), 39,75MHz (L'NICAM)	Headphones:	8Ω Impedance	
Colour	34,47MHz (PAL) 34,5MHz, 34,65MHz (SECAM) 38,3MHz, 38,15MHz (SECAM L')	Accessories supplied:	Remote Control 2 x R6 (UM3) Batteries	
Terminals:		Dimensions:	Height: 585mm Width: 781mm Depth: 490mm Net weight: 41,0kg	
AV1 IN	Video (21 pin) Audio (21 pin) RGB (21 pin)	1V p-p 75Ω 500mV rms 10kΩ 0,7V p-p 75Ω		
AV1 OUT	Video (21 pin) Audio (21 pin)	1V p-p 75Ω 500mV rms 1kΩ		

Specifications are subject to change without notice.  
Weights and dimensions shown are approximate.

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## SAFETY PRECAUTION

### GENERAL GUIDE LINES

1. It is advisable to insert an isolation transformer in the a.c. supply before servicing a hot chassis.
2. When servicing, observe the original lead dress in the high voltage circuits. If a short circuit is found, replace all parts that have been overheated or damaged by the short circuit.
3. After servicing, see that all the protective devices such as insulation barriers, insulation papers, shields and isolation R-C combinations are correctly installed.
4. When the receiver is not being used for a long period of time, unplug the power cord from the a.c. outlet.
5. Potentials as high as 29,5kV are present when this receiver is in operation. Operation of the receiver without the rear cover involves the danger of a shock hazard from the receiver power supply. Servicing should not be attempted by anyone who is not familiar with the precautions necessary when working on high voltage equipment. Always discharge the anode of the tube.
6. After servicing make the following leakage current checks to prevent the customer from being exposed to shock hazard.

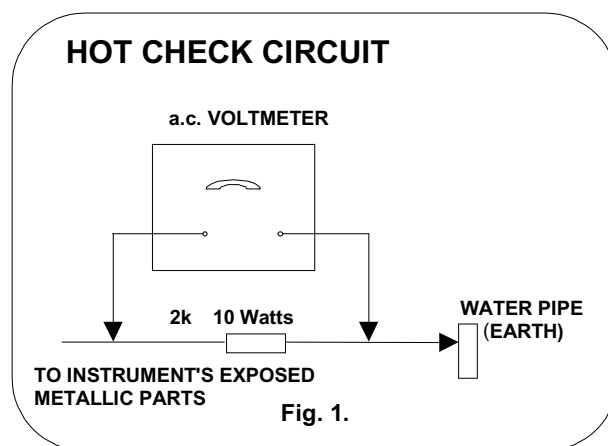
### LEAKAGE CURRENT COLD CHECK

1. Unplug the a.c. cord and connect a jumper between the two prongs of the plug.
2. Turn on the receiver's power switch.
3. Measure the resistance value with an ohmmeter, between the jumpered a.c. plug and each exposed metallic cabinet part on the receiver, such as screw heads, aerials, connectors, control shafts etc. When the exposed metallic part has a return path to the chassis, the reading should be between 4M ohm and 20M ohm. When the exposed metal does not have a return path to the chassis, the reading must be infinite.

### LEAKAGE CURRENT HOT CHECK

1. Plug the a.c. cord directly into the a.c. outlet. Do not use an isolation transformer for this check.
2. Connect a 2k 10W resistor in series with an exposed metallic part on the receiver and an earth, such as a water pipe.
3. Use an a.c. voltmeter with high impedance to measure the potential across the resistor.

4. Check each exposed metallic part and check the voltage at each point.
5. Reverse the a.c. plug at the outlet and repeat each of the previous measurements.
6. The potential at any point should not exceed 1,4 Vrms. In case a measurement is outside the limits specified, there is a possibility of a shock hazard, and the receiver should be repaired and rechecked before it is returned to the customer.



### X-RADIATION WARNING

1. The potential sources of X-Radiation in TV sets are the high voltage section and the picture tube.
2. When using a picture tube test jig for service, ensure that the jig is capable of handling 29,5kV without causing X-Radiation.

**NOTE:** It is important to use an accurate periodically calibrated high voltage meter.

1. Set the brightness to minimum.
2. Measure the high voltage. The meter should indicate: 28,5kV  $\pm$  1kV.  
If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure.
3. To prevent any X-Radiation possibility, it is essential to use the specified tube.

## VOLTAGE CHECK

SMT	2094.0108*		
MAIN B+ Voltage [V]	131,3	±1V	
12V [V]	11,95	±0,5V	
STAND BY [V]	12,1	±0,5V	
SOUND B+ [V]	12,4	±0,5V	*Volume Min.
	11,9	±0,5V	*Volume Max.

test conditions ;  
 Input voltage : 230VAC  
 TV set on ON mode (if nothing specified)  
 Picture : colour bar - Dynamic  
 Sound : 1Khz - (mode : Music)

FBT	1302.2001*		
High Voltage [kV]	27,9	±0,5kV	load Max.
	29,5	±0,5kV	load Min.
Retrace time	10,92	±0,2us	
Vcp [V]	1190	±20V	
Video Voltage [V]	192	±5%	
13.5V line [V]	12,9	±5%	
45V line [V]	38	±5%	
Heater Voltage [Vrms]	6,2	±5%	

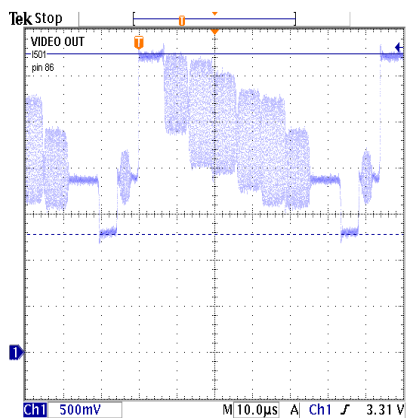
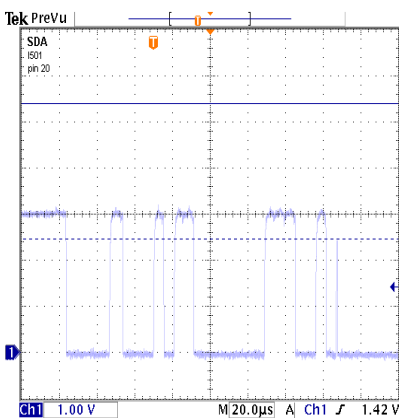
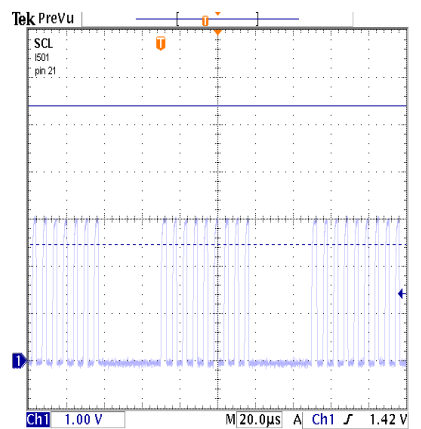
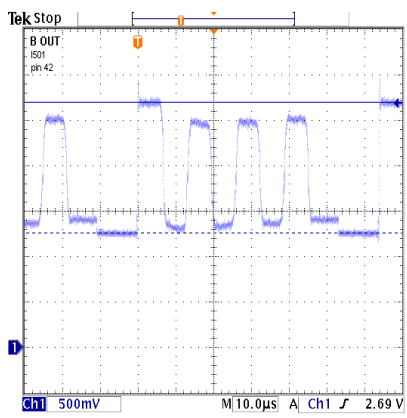
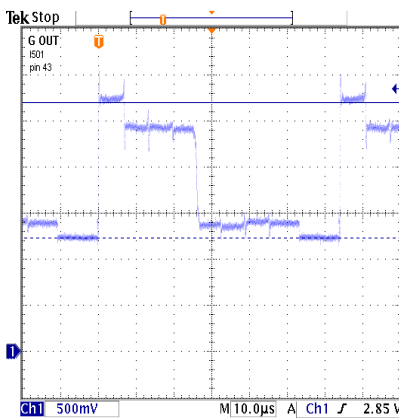
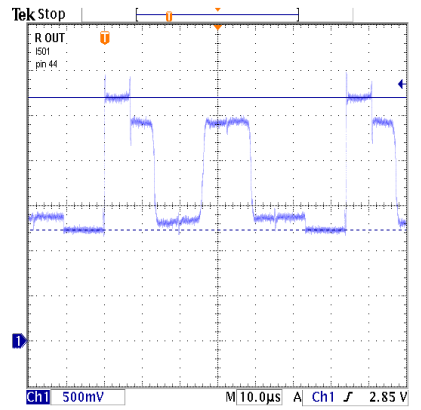
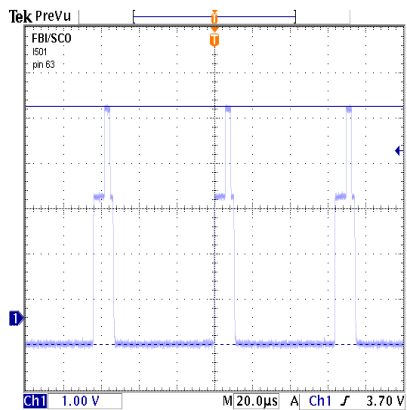
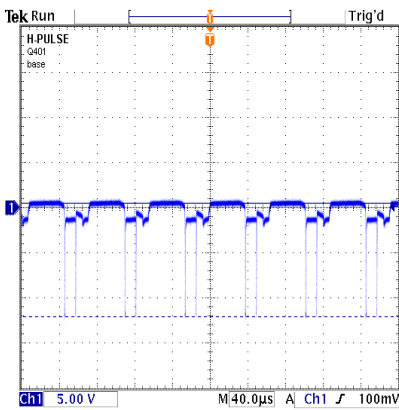
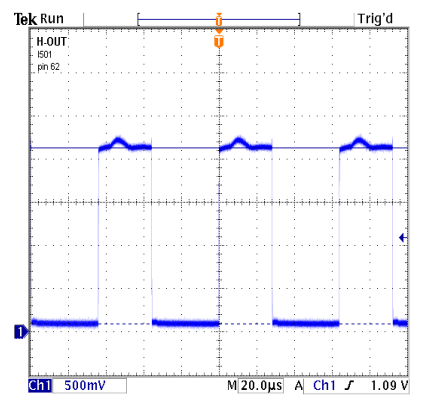
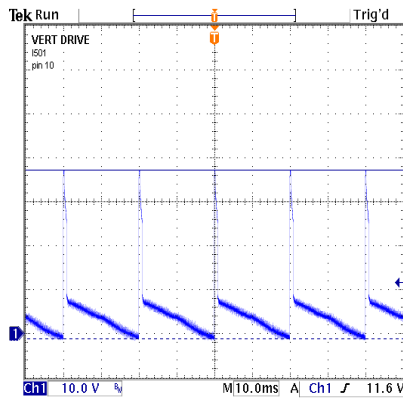
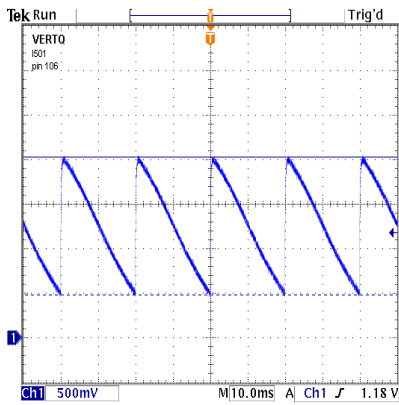
test conditions ;  
 Input voltage : 230VAC  
 Ct = 6200pF + 7500pF  
 Cs = 0,36uF  
 L linearity : TRL-400D  
 CRT : A68EPD10X22

G2 SCREEN / CUTOFF	
1. Receive a Colour bar pattern 2. Set the TV into Service mode. 3. Select G2 SCREEN item.	Adjust the screen VR till OSD is just change to GREEN square.

## OPTION BYTES

MODEL	OPTION BYTE 1		OPTION BYTE 2	
TX-29PM1D	0 0 1 1 1 1 0 0	0x3C	0 1 0 0 1 1 1 1	0x4F
TX-29PM1F	1 0 1 1 1 1 0 0	0xBC	0 1 0 0 1 1 1 1	0x4F
TX-29PM1P	1 0 1 1 1 1 0 0	0xBC	0 1 1 0 1 1 1 1	0x6F
TX-29PM1	0 0 1 1 1 1 0 0	0x3C	0 1 1 0 1 1 1 1	0x6F

# WAVEFORM PATTERN TABLE



CONDITIONS: Contrast: MAX, Brightness: MID, Colour: MID, Sharpness: MID

# ALIGNMENT SETTINGS

(The figures below are nominal and used for representative purposes only.)

To access Service Mode select program position 99 and set sharpness to minimum.

Press "MUTE" button on remote control and at the same time press the "V" button on the customer controls at the front of the TV, this will place the TV set into Service Mode.

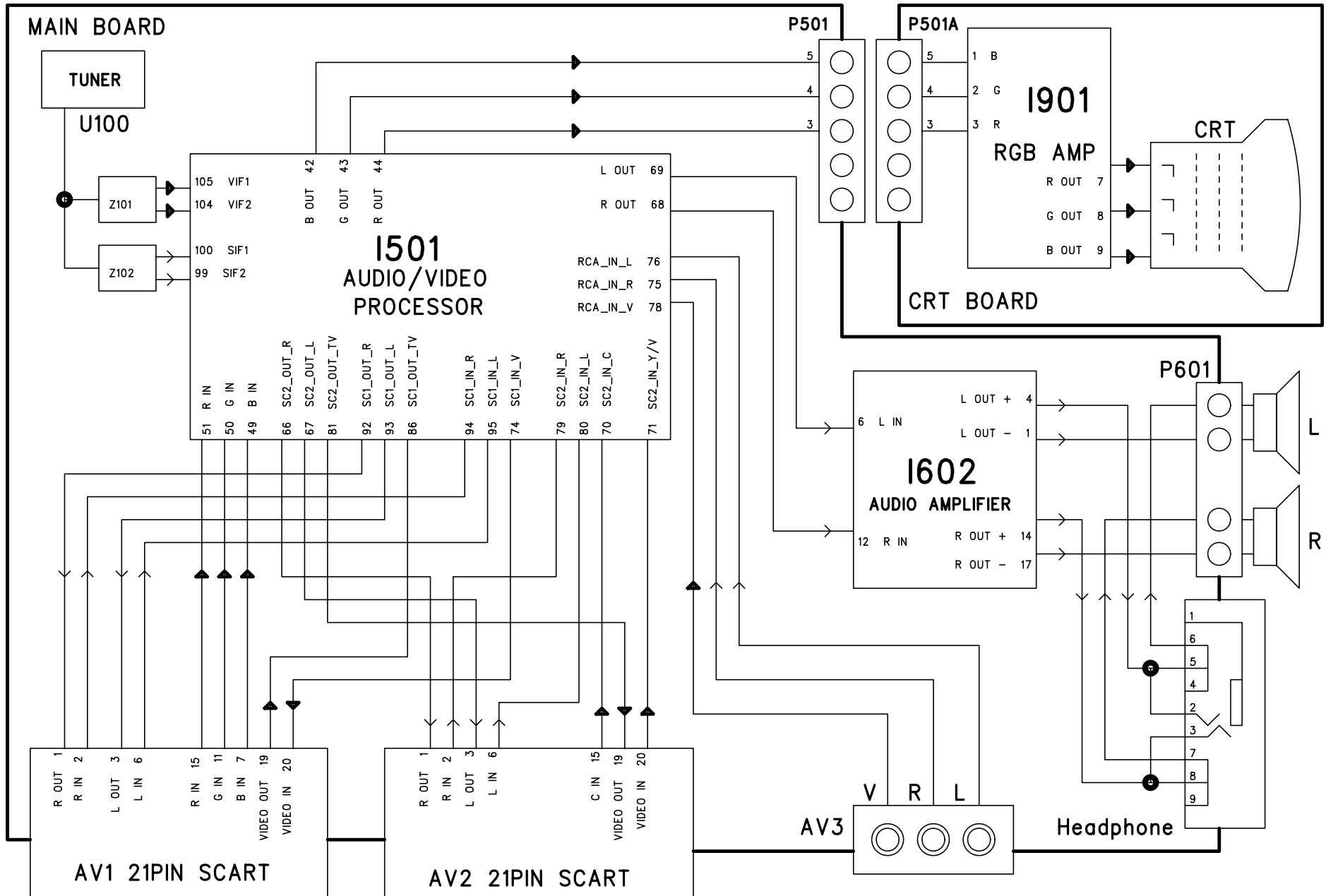
Press ▲/▼ buttons to step up / down through the functions.

Press + / - buttons to alter the function values.

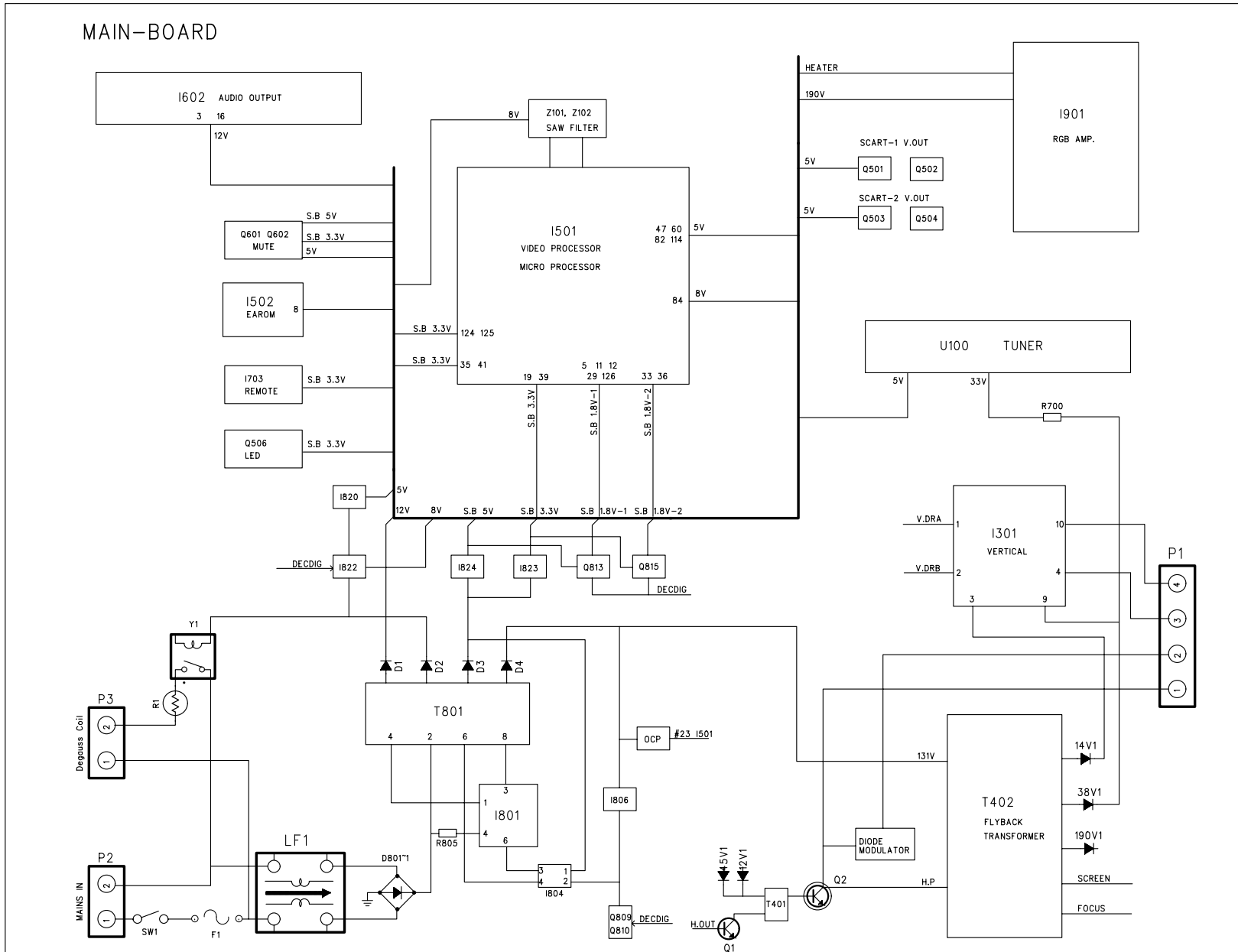
To exit Service Mode press "MENU" button.

	Setting in indication Note: All settings are approximate	Settings / Special features
1.	HOR CEN	37
2.	SHIPPING	20 67
3.	VERT SIZE	38
4.	VERT CENT	51
5.	S CORRECT	30
6.	EW TRAPEZ	22
7.	V SLOPE	27
8.	V LINEAR	42
9.	HOR PARAL	35
10.	CORNER B	47
11.	CORNER T	45
12.	HOR WIDTH	50
13.	PARABOLA	23
14.	AVL	00
15.	OPTION2	01001111 4F
16.	OPTION1	10111100 BC
17.	G2 SCREEN	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
18.	AGC LEVEL	21
19.	GRN BIAS	32
20.	RED BIAS	32
21.	BLUE GAIN	32
22.	GRN GAIN	32
23.	RED GAIN	32

# VIDEO & STEREO AUDIO BLOCK DIAGRAM















### POWER SUPPLY BLOCK DIAGRAM



# REPLACEMENT PARTS LIST

## Important Safety Notice

Components Identified by  mark have special characteristics important for safety.  
 \* When replacing any of these components, use only manufacturers specified parts.  
 In case of ordering these spare parts, please always add the complete Model-Type number to your order.

Cct Ref	Parts Number	Description
<b>COMMON PARTS</b>		
<b>EXPLODED VIEW</b>		
1	4852089314	MASK FRONT
2	4852170214	COVER BACK 
3	4852825211	DOOR
4	4854868711	BUTTON POWER
5	4855624800	MARK BRAND
6	4856017354	SCREW CRT FIX
7	4859724930	TUNER VARACTOR
8	4859810593	PCB MAIN 
9	4859810593-C	PCB CRT 
10	4859906210	POWER CORD 
11	48A8309000	SPEAKER SYSTEM
12	50H0000277	FBT 
13	58G0000149	COIL DEGAUSSING 
14	A68EPD10X22	CRT 
15	EUR7628030	REMOTE CONTROL
<b>MISCELLANEOUS COMPONENTS</b>		
M481A	4856716000	POWER BUTTON SPRING
M501	4855061600	DECO CTRL
M551	4855553500	DECO SENSOR
M791	LA701	DOOR LOCK
<b>I.C.s</b>		
I301	TDA8358J	IC VERTICAL
I602	TDA8946J	IC AUDIO
I703	TSOP1238W11	PREAMP
I801	STR-W6754	IC POWER 
I804	KP1010C	PHOTO COUPLER 
I806	DP130	IC ERROR AMP 
I820	L7805CV	IC REGULATOR
I822	KIA78R08API	IC REGULATOR
I823	LD1117V33	IC REGULATOR
I824	L7805CV	IC REGULATOR
I901	TDA6107AJ	IC VIDEO
<b>FUSES</b>		
F801	5FSCB4022R	FUSE 4A250V 
<b>DIODES</b>		
D101	DBAT85	DIODE
D102	BA282	DIODE
D313	1N4937G	DIODE
D403	DBY228	DIODE
D404	DBYW76	DIODE
D405	1N4937G	DIODE
D407	RGP15J	DIODE

Cct Ref	Parts Number	Description
D408	RGP15J	DIODE
D410	1N4004S	DIODE
D411	1N4004S	DIODE
D414	1N4004S	DIODE
D450	1N4937G	DIODE
D501	DBAT85	DIODE
D503	DTZX3V9B	DIODE
D504	DTZX5V6B	DIODE
D520	1N4148	DIODE
D521	1N4148	DIODE
D522	DTZX3V9B	DIODE
D523	DTZX3V9B	DIODE
D601	1N4148	DIODE
D602	1N4148	DIODE
D710	DTZX5V6B	DIODE
D801	LT2A05G	DIODE
D802	LT2A05G	DIODE
D803	LT2A05G	DIODE
D804	LT2A05G	DIODE
D805	1N4937G	DIODE
D806	1N4937G	DIODE
D807	1N4937G	DIODE
D808	DUZ6R8BM	DIODE ZENER
D811	DTZX5V1B	DIODE
D820	DBYW76	DIODE
D824	DTZX5V1B	DIODE
D825	1N4148	DIODE
D830	1N4937G	DIODE
D831	1N4937G	DIODE
D860	RGP30J	DIODE
D904	DBAV21	DIODE
D905	DBAV21	DIODE
D906	DBAV21	DIODE
D997	LT2A05G	DIODE
DA01	1N4148	DIODE
DA02	DTZX5V6B	DIODE
DA03	1N4148	DIODE
DA04	DTZX5V6B	DIODE
DA06	DTZX5V6B	DIODE
DA08	DTZX5V6B	DIODE
DA09	DTZX5V6B	DIODE
DA10	DTZX5V6B	DIODE
DA11	DTZX5V6B	DIODE
DA13	DTZX5V6B	DIODE
DA14	DTZX5V6B	DIODE
DA15	DTZX5V6B	DIODE
DA20	DTZX5V6B	DIODE
DA21	DTZX5V6B	DIODE
DA22	DTZX5V6B	DIODE
I805	DTZX33B	DIODE ZENER



Cct Ref	Parts Number	Description
<b>TRANSISTORS</b>		
Q120	2SC5343Y	TRANSISTOR
Q401	2SD2578	TRANSISTOR
Q402	2SD1207	TRANSISTOR
Q501	2SC5343Y	TRANSISTOR
Q502	2SA1980Y	TRANSISTOR
Q503	2SC5343Y	TRANSISTOR
Q504	2SA1980Y	TRANSISTOR
Q506	2SC5343Y	TRANSISTOR
Q508	2SC5343Y	TRANSISTOR
Q513	2SA1980Y	TRANSISTOR
Q515	H2N7000	TRANSISTOR
Q601	2SC5343Y	TRANSISTOR
Q602	2SA1980Y	TRANSISTOR
Q807	KSA1013Y	TRANSISTOR
Q809	2SC5343Y	TRANSISTOR
Q810	2SC5343Y	TRANSISTOR
Q812	KTC3203-Y	TRANSISTOR
Q813	2SA1980Y	TRANSISTOR
Q814	2SC5343Y	TRANSISTOR
Q815	2SA1980Y	TRANSISTOR
Q816	2SC5343Y	TRANSISTOR
<b>TRANSFORMERS</b>		
T401	TD-19A1	TRANSFORMER DRIVE
T801	50M4242C7-	TRANSFORMER SMPS
<b>COILS</b>		
L101	5CPZ100K02	PEAKING COIL
L350	5CPZ109K04	COIL PEAKING
L351	5CPZ109K04	COIL PEAKING
L401	58H0000041	COIL H-LINEARITY
L402	58C7070085	COIL CHOKE
L505	PZ479K02	PEAKING COIL
L506	PZ479K02	PEAKING COIL
L507	PZ479K02	PEAKING COIL
L508	PZ479K02	PEAKING COIL
L509	PZ479K02	PEAKING COIL
L510	PZ479K02	PEAKING COIL
L512	PZ479K02	PEAKING COIL
L513	PZ479K02	PEAKING COIL
L514	5CPZ100K04	PEAKING COIL
L515	5CPZ100K02	PEAKING COIL
L516	PZ479K02	PEAKING COIL
L517	5CPZ479K04	COIL PEAKING
L518	5CPZ479K04	COIL PEAKING
L519	5CPZ479K04	COIL PEAKING
L523	PZ479K02	PEAKING COIL
L650	5MC0000100	COIL BEAD
L801	5MC0000100	COIL BEAD
L802	58CX430599	COIL CHOKE
L803	5MC0000100	COIL BEAD
R713	5CPZ560K02	PEAKING COIL
<b>FILTERS</b>		
LF801	5PLF24A3	FILTER LINE
Z101	K3953M	FILTER SAW
Z102	5PK9650M--	FILTER SAW
Z601	5PEFST471Y	FILTER EMI
Z602	5PEFST471Y	FILTER EMI
Z603	5PEFST471Y	FILTER EMI
Z604	5PEFST471Y	FILTER EMI
Z605	5PEFST471Y	FILTER EMI
Z606	5PEFST471Y	FILTER EMI
Z607	5PEFST471Y	FILTER EMI
Z608	5PEFST471Y	FILTER EMI
Z609	5PEFST471Y	FILTER EMI
Z610	5PEFST471Y	FILTER EMI

Cct Ref	Parts Number	Description
Z611	5PEFST471Y	FILTER EMI
Z612	5PEFST471Y	FILTER EMI
<b>CRYSTALS</b>		
X501	5XJ24R576E	CRYSTAL QUARTZ
<b>RESISTORS</b>		
J7	ERD25TJ101	CARBON 0.25W 5% 100 Ω
J25	ERD25TJ101	CARBON 0.25W 5% 100 Ω
J26	ERD25TJ101	CARBON 0.25W 5% 100 Ω
J50	ERD25TJ101	CARBON 0.25W 5% 100 Ω
J76	ERD25TJ202	CARBON 0.25W 5% 2K Ω
J83	ERD25TJ101	CARBON 0.25W 5% 100 Ω
J84	ERD25TJ101	CARBON 0.25W 5% 100 Ω
R103	ERD25TJ393	CARBON 0.25W 5% 39K Ω
R104	ERD25TJ683	CARBON 0.25W 5% 68K Ω
R105	ERD25TJ103	CARBON 0.25W 5% 10K Ω
R106	ERD25TJ101	CARBON 0.25W 5% 100 Ω
R107	ERD25TJ101	CARBON 0.25W 5% 100 Ω
R114	ERD25TJ473	CARBON 0.25W 5% 47K Ω
R115	ERD25TJ101	CARBON 0.25W 5% 100 Ω
R120	ERD25TJ101	CARBON 0.25W 5% 100 Ω
R131	ERD25TJ472	CARBON 0.25W 5% 4K7 Ω
R310	ERD25TJ471	CARBON 0.25W 5% 470 Ω
R311	ERD25TJ471	CARBON 0.25W 5% 470 Ω
R331	ERDS1TJ201	CARBON 0.5W 5% 200 Ω
R340	ERD25TJ473	CARBON 0.25W 5% 47K Ω
R350	RN-AZ2201F	METAL 0.17W - 2K2 Ω
R351	RN-AZ2201F	METAL 0.17W - 2K2 Ω
R370	ERD25TJ159	CARBON 0.25W 5% 1.5 Ω
R394	ERD25TJ272	CARBON 0.25W 5% 2K7 Ω
R395	ERD25TJ394	CARBON 0.25W 5% 390K Ω
R396	ERD25TJ103	CARBON 0.25W 5% 10K Ω
R397	ERD25TJ823	CARBON 0.25W 5% 82K Ω
R398	RS02Y129JS	METAL 2W - 1R2 Ω
R399	RS02Y120JS	METAL 2W - 12 Ω
R401	ERD25TJ272	CARBON 0.25W 5% 2K7 Ω
R402	ERD25TJ220	CARBON 0.25W 5% 22 Ω
R403	ERD25TJ102	CARBON 0.25W 5% 1K Ω
R404	ERD25TJ109	CARBON 0.25W 5% 1 Ω
R405	ERD25TJ102	CARBON 0.25W 5% 1K Ω
R406	RS02Y471JS	METAL 2W - 470 Ω
R407	ERD25TJ182	CARBON 0.25W 5% 1K8 Ω
R415	RN02B112JS	METAL 2W - 1K1 Ω
R420	ERDS1TJ103	CARBON 0.5W 5% 10K Ω
R422	ERD25TJ102	CARBON 0.25W 5% 1K Ω
R423	ERD25TJ392	CARBON 0.25W 5% 3K9 Ω
R444	RS02Y478JS	METAL 2W - R47 Ω
R450	ERG2FJ473	METAL 2W 5% 47K Ω
R451	ERG2FJ473	METAL 2W 5% 47K Ω
R500	ERD25TJ101	CARBON 0.25W 5% 100 Ω
R501	ERD25TJ332	CARBON 0.25W 5% 3K3 Ω
R502	ERD25TJ332	CARBON 0.25W 5% 3K3 Ω
R503	ERD25TJ102	CARBON 0.25W 5% 1K Ω
R504	ERD25TJ152	CARBON 0.25W 5% 1K5 Ω
R505	ERD25TJ101	CARBON 0.25W 5% 100 Ω
R506	ERD25TJ103	CARBON 0.25W 5% 10K Ω
R507	ERD25TJ332	CARBON 0.25W 5% 3K3 Ω
R508	ERD25TJ332	CARBON 0.25W 5% 3K3 Ω
R510	ERD25TJ103	CARBON 0.25W 5% 10K Ω
R511	ERD25TJ103	CARBON 0.25W 5% 10K Ω
R512	ERD25TJ101	CARBON 0.25W 5% 100 Ω
R513	ERD25TJ101	CARBON 0.25W 5% 100 Ω
R514	ERD25TJ101	CARBON 0.25W 5% 100 Ω
R515	ERD25TJ101	CARBON 0.25W 5% 100 Ω
R516	ERD25TJ153	CARBON 0.25W 5% 15K Ω
R517	ERD25TJ101	CARBON 0.25W 5% 100 Ω
R518	ERD25TJ101	CARBON 0.25W 5% 100 Ω

Cct Ref	Parts Number	Description				
R519	ERD25TJ102	CARBON	0.25W	5%	1K Ω	
R527	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R528	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R529	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R530	ERD25TJ221	CARBON	0.25W	5%	220 Ω	
R532	ERD25TJ102	CARBON	0.25W	5%	1K Ω	
R534	ERD25TJ472	CARBON	0.25W	5%	4K7 Ω	
R537	ERD25TJ123	CARBON	0.25W	5%	12K Ω	
R538	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R539	ERD25TJ471	CARBON	0.25W	5%	470 Ω	
R540	ERD25TJ471	CARBON	0.25W	5%	470 Ω	
R541	RN-AZ3902F	METAL	0.17W	-	39K Ω	
R542	ERD25TJ682	CARBON	0.25W	5%	6K8 Ω	
R543	ERD25TJ222	CARBON	0.25W	5%	2K2 Ω	
R544	ERD25TJ222	CARBON	0.25W	5%	2K2 Ω	
R545	ERD25TJ473	CARBON	0.25W	5%	47K Ω	
R546	ERD25TJ681	CARBON	0.25W	5%	680 Ω	
R547	ERD25TJ563	CARBON	0.25W	5%	56K Ω	
R551	ERD25TJ823	CARBON	0.25W	5%	82K Ω	
R552	ERD25TJ103	CARBON	0.25W	5%	10K Ω	
R553	ERD25TJ103	CARBON	0.25W	5%	10K Ω	
R554	ERD25TJ103	CARBON	0.25W	5%	10K Ω	
R555	ERD25TJ103	CARBON	0.25W	5%	10K Ω	
R556	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R557	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R558	ERD25TJ391	CARBON	0.25W	5%	390 Ω	
R559	ERD25TJ222	CARBON	0.25W	5%	2K2 Ω	
R560	ERD25TJ222	CARBON	0.25W	5%	2K2 Ω	
R561	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R562	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R563	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R564	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R565	ERD25TJ154	CARBON	0.25W	5%	150K Ω	
R566	ERD25TJ103	CARBON	0.25W	5%	10K Ω	
R567	ERD25TJ103	CARBON	0.25W	5%	10K Ω	
R568	ERD25TJ103	CARBON	0.25W	5%	10K Ω	
R569	ERD25TJ103	CARBON	0.25W	5%	10K Ω	
R571	ERD25TJ102	CARBON	0.25W	5%	1K Ω	
R572	ERD25TJ103	CARBON	0.25W	5%	10K Ω	
R573	ERD25TJ103	CARBON	0.25W	5%	10K Ω	
R574	ERD25TJ103	CARBON	0.25W	5%	10K Ω	
R575	ERD25TJ103	CARBON	0.25W	5%	10K Ω	
R576	ERD25TJ102	CARBON	0.25W	5%	1K Ω	
R577	ERD25TJ102	CARBON	0.25W	5%	1K Ω	
R578	ERD25TJ102	CARBON	0.25W	5%	1K Ω	
R579	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R580	ERD25TJ183	CARBON	0.25W	5%	18K Ω	
R581	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R582	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R583	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R584	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R585	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R586	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R587	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R588	ERD25TJ102	CARBON	0.25W	5%	1K Ω	
R589	ERD25TJ102	CARBON	0.25W	5%	1K Ω	
R590	ERD25TJ334	CARBON	0.25W	5%	330K Ω	
R598	ERD25TJ182	CARBON	0.25W	5%	1K8 Ω	
R599	ERD25TJ224	CARBON	0.25W	5%	220K Ω	
R601	ERD25TJ152	CARBON	0.25W	5%	1K5 Ω	
R602	ERD25TJ104	CARBON	0.25W	5%	100K Ω	
R608	ERDS1TJ151	CARBON	0.5W	5%	150 Ω	
R609	ERDS1TJ151	CARBON	0.5W	5%	150 Ω	
R610	ERD25TJ103	CARBON	0.25W	5%	10K Ω	
R611	ERD25TJ563	CARBON	0.25W	5%	56K Ω	
R612	ERD25TJ563	CARBON	0.25W	5%	56K Ω	

Cct Ref	Parts Number	Description				
R650	ERD25TJ473	CARBON	0.25W	5%	47K Ω	
R660	ERD25TJ473	CARBON	0.25W	5%	47K Ω	
R661	RN-AZ1202F	METAL	0.17W	1%	12K Ω	
R662	RN-AZ1202F	METAL	0.17W	1%	12K Ω	
R700	ERDS1TJ332	CARBON	0.5W	5%	3K3 Ω	
R720	ERD25TJ122	CARBON	0.25W	5%	1K2 Ω	
R721	ERD25TJ181J	CARBON	0.25W	5%	180 Ω	
R722	ERD25TJ221	CARBON	0.25W	5%	220 Ω	
R723	ERD25TJ331	CARBON	0.25W	5%	330 Ω	
R724	ERD25TJ471	CARBON	0.25W	5%	470 Ω	
R801	DDB7R0M290	POSISTOR	-	-	- Ω	⚠
R803	RW02Y508FS	WOUND	2W	-	R5 Ω	
R804	ERD25TJ220	CARBON	0.25W	5%	22 Ω	
R805	ERDS1TJ104	CARBON	0.5W	5%	100K Ω	
R806	RS02Y278JS	METAL	2W	-	R27 Ω	
R807	ERD25TJ221	CARBON	0.25W	5%	220 Ω	
R808	ERD25TJ182	CARBON	0.25W	5%	1K8 Ω	
R809	ERD25TJ102	CARBON	0.25W	5%	1K Ω	
R810	ERD25TJ220	CARBON	0.25W	5%	22 Ω	
R811	ERDS1TJ825	CARBON	0.5W	5%	8M2 Ω	⚠
R812	ERD25TJ473	CARBON	0.25W	5%	47K Ω	
R813	ERD25TJ473	CARBON	0.25W	5%	47K Ω	
R814	ERD25TJ472	CARBON	0.25W	5%	4K7 Ω	
R815	ERD25TJ472	CARBON	0.25W	5%	4K7 Ω	
R817	ERD25TJ473	CARBON	0.25W	5%	47K Ω	
R818	ERD25TJ683	CARBON	0.25W	5%	68K Ω	
R819	RX07C339JF	SOLID	7W	-	3R3 Ω	
R820	ERD25TJ363	CARBON	0.25W	5%	36K Ω	
R821	ERD25TJ563	CARBON	0.25W	5%	56K Ω	
R822	RN02B510JS	METAL	2W	-	51 Ω	
R823	ERD25TJ102	CARBON	0.25W	5%	1K Ω	
R824	RN02B510JS	METAL	2W	-	51 Ω	
R827	ERD25TJ103	CARBON	0.25W	5%	10K Ω	
R828	ERDS2TJ752	CARBON	0.25W	5%	7K5 Ω	
R829	ERD25TJ103	CARBON	0.25W	5%	10K Ω	
R830	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R831	ERD25TJ472	CARBON	0.25W	5%	4K7 Ω	
R832	ERD25TJ473	CARBON	0.25W	5%	47K Ω	
R833	ERDS1TJ105	CARBON	0.5W	5%	1M Ω	
R834	ERD25TJ470	CARBON	0.25W	5%	47 Ω	
R840	ERD25TJ472	CARBON	0.25W	5%	4K7 Ω	
R841	RS02Y479JS	METAL	2W	-	4R7 Ω	
R842	RS02Y240JS	METAL	2W	-	24 Ω	
R850	RS02Y479JS	METAL	2W	-	4R7 Ω	
R870	ERD25TJ102	CARBON	0.25W	5%	1K Ω	
R901	ERD25TJ561	CARBON	0.25W	5%	560 Ω	
R910	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R911	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R912	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
R913	ERDS1TJ102	CARBON	0.5W	5%	1K Ω	
R914	ERDS1TJ102	CARBON	0.5W	5%	1K Ω	
R915	ERDS1TJ102	CARBON	0.5W	5%	1K Ω	
R920	RS01Y229J	FILM	1W	5%	2R2 Ω	
R921	ERD25TJ221	CARBON	0.25W	5%	220 Ω	
R922	ERD25TJ221	CARBON	0.25W	5%	220 Ω	
R923	ERD25TJ221	CARBON	0.25W	5%	220 Ω	
R996	ERDS1TJ105	CARBON	0.5W	5%	1M Ω	
R997	ERDS1TJ102	CARBON	0.5W	5%	1K Ω	
RA02	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
RA03	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
RA04	ERD25TJ101	CARBON	0.25W	5%	100 Ω	
RA05	ERD25TJ103	CARBON	0.25W	5%	10K Ω	
RA06	ERD25TJ750	CARBON	0.25W	5%	75 Ω	
RA07	ERD25TJ332	CARBON	0.25W	5%	3K3 Ω	
RA08	ERD25TJ750	CARBON	0.25W	5%	75 Ω	
RA09	ERD25TJ750	CARBON	0.25W	5%	75 Ω	

Cct Ref	Parts Number	Description			
RA10	ERD25TJ680	CARBON	0.25W	5%	68 Ω
RA11	ERD25TJ750	CARBON	0.25W	5%	75 Ω
RA12	ERD25TJ102	CARBON	0.25W	5%	1K Ω
RA13	ERD25TJ222	CARBON	0.25W	5%	2K2 Ω
RA14	ERD25TJ220	CARBON	0.25W	5%	22 Ω
RA15	ERD25TJ750	CARBON	0.25W	5%	75 Ω
RA16	ERD25TJ750	CARBON	0.25W	5%	75 Ω
RA17	ERD25TJ103	CARBON	0.25W	5%	10K Ω
RA18	ERD25TJ332	CARBON	0.25W	5%	3K3 Ω
RA19	ERD25TJ750	CARBON	0.25W	5%	75 Ω
RA23	ERD25TJ220	CARBON	0.25W	5%	22 Ω
RA24	ERD25TJ222	CARBON	0.25W	5%	2K2 Ω
RA25	ERD25TJ102	CARBON	0.25W	5%	1K Ω
RA29	ERD25TJ101	CARBON	0.25W	5%	100 Ω
RA32	ERD25TJ680	CARBON	0.25W	5%	68 Ω
RA35	ERD25TJ750	CARBON	0.25W	5%	75 Ω

### CAPACITORS

C102	ECEA1ES470	ELECT	25V		47μF
C103	ECCR1H102J	CERAMIC	50V		1nF
C104	ECCR1H102J	CERAMIC	50V		1nF
C106	ECEA1H220	ELECT	50V		22μF
C107	ECKR1H470	CERAMIC	50V		47pF
C108	ECKR1H470	CERAMIC	50V		47pF
C120	ECCR1H102J	CERAMIC	50V		1nF
C121	ECEA1H100	ELECT	50V		10μF
C122	ECEA1H100	ELECT	50V		10μF
C123	ECKC1H103J	CERAMIC	50V		10nF
C305	ECEA1ES221	ELECT	25V		220μF
C313	CMXM2A104J	MYLAR	100V		100nF
C315	ECA2AHG470	ELECT	100V		47μF
C320	CBXF1H104Z	CERAMIC	50V		0.1μF
C350	CMXM2A683J	FILM	100V		68nF
C351	CMXM2A473J	MYLAR	100V		47nF
C370	ECCR1H473J	CERAMIC	50V		47nF
C401	ECEA1H101	ELECT	50V		100μF
C402	CMYH3C752J	FILM	1.6kV		7.5nF
C404	CMYH3C622J	MYLAR	1K6V		6200pF
C408	ECWF2364JBB	FILM	250V		360nF
C412	ECEA2CS339	ELECT	160V		3.3μF
C414	CMXM2A104J	MYLAR	100V		100nF
C415	ECA2EM4R7B	ELECT	250V		4.7μF
C418	ECCR1H102J	CERAMIC	50V		1nF
C420	ECCR2H222J	CERAMIC	500V		2.2nF
C421	ECCR1H473J	CERAMIC	50V		47nF
C430	CCYR3D681K	CERAMIC	2kV		680pF
C431	CMXB2G472J	FILM	400V		4.7nF
C440	ECQM4223JZB	FILM	400V		22nF
C499	CEYD1H689W	ELECT	50V		6.8μF
C501	ECEA1CS470	ELECT	16V		47μF
C502	ECEA1CS470	ELECT	16V		47μF
C503	ECCR1H102J	CERAMIC	50V		1nF
C504	ECCR1H102J	CERAMIC	50V		1nF
C505	CMXL1J224J	FILM	63V		0.22μF
C507	CMXL1J224J	FILM	63V		0.22μF
C508	ECEA1CS470	ELECT	16V		47μF
C509	CMXL1J224J	FILM	63V		0.22μF
C510	ECEA1ES101	ELECT	25V		100μF
C511	ECCR1H102J	CERAMIC	50V		1nF
C512	CBZF1H104Z	CERAMIC	50V		100nF
C513	CMXL1J224J	FILM	63V		0.22μF
C514	ECCR1H102J	CERAMIC	50V		1nF
C515	CMXL1J224J	FILM	63V		0.22μF
C516	CMXL1J224J	FILM	63V		0.22μF
C517	ECEA1CS101	ELECT	16V		100μF
C518	CBXF1H104Z	CERAMIC	50V		0.1μF
C519	CMXL1J224J	FILM	63V		0.22μF


Cct Ref	Parts Number	Description			
C520	ECEA1H100	ELECT	50V		10μF
C521	ECCR1H222J	CERAMIC	50V		2.2nF
C522	CBXF1H104Z	CERAMIC	50V		0.1μF
C523	ECCR1H102J	CERAMIC	50V		1nF
C524	ECQB1682JFB	FILM	100V		6.8nF
C525	ECEA1H479	ELECT	50V		4.7μF
C526	CMXL1J224J	FILM	63V		0.22μF
C527	ECEA1H100	ELECT	50V		10μF
C528	ECCR1H223J	CERAMIC	50V		22nF
C529	ECQV1J154JM3	FILM	63V		150nF
C530	ECKC1H101J	CERAMIC	50V		100pF
C531	ECKC1H103J	CERAMIC	50V		10nF
C532	ECCR1H102J	CERAMIC	50V		1nF
C533	ECCR1H102J	CERAMIC	50V		1nF
C534	ECEA1H229	ELECT	50V		2.2μF
C535	ECQV1J474JMW	FILM	63V		470nF
C536	ECQV1J474JMW	FILM	63V		470nF
C537	ECEA1H229	ELECT	50V		2.2μF
C538	ECEA1H229	ELECT	50V		2.2μF
C539	CMXM2A332J	FILM	100V		3.3nF
C540	CMXL1J104J	MYLAR	63V		100nF
C541	CBZF1H104Z	CERAMIC	50V		100nF
C542	ECEA1H100	ELECT	50V		10μF
C543	ECEA1H229	ELECT	50V		2.2μF
C544	CBZF1H104Z	CERAMIC	50V		100nF
C545	ECEA1H229	ELECT	50V		2.2μF
C546	CBZF1H104Z	CERAMIC	50V		100nF
C547	ECEA1H100	ELECT	50V		10μF
C548	ECEA1H100	ELECT	50V		10μF
C549	ECQV1J474JMW	FILM	63V		470nF
C550	ECKC1H103J	CERAMIC	50V		10nF
C551	CBZF1H104Z	CERAMIC	50V		100nF
C552	ECQV1J474JMW	FILM	63V		470nF
C553	ECQV1J474JMW	FILM	63V		470nF
C554	ECQV1J474JMW	FILM	63V		470nF
C555	ECCR1H102J	CERAMIC	50V		1nF
C556	ECCR1H102J	CERAMIC	50V		1nF
C557	CBZF1H104Z	CERAMIC	50V		100nF
C558	CBXF1H104Z	CERAMIC	50V		0.1μF
C560	ECEA1H229	ELECT	50V		2.2μF
C561	ECEA1H229	ELECT	50V		2.2μF
C563	ECEA1H100	ELECT	50V		10μF
C564	CBZF1H104Z	CERAMIC	50V		100nF
C565	CBZF1H104Z	CERAMIC	50V		100nF
C566	CBZF1H104Z	CERAMIC	50V		100nF
C567	ECEA1H100	ELECT	50V		10μF
C568	CBXF1H104Z	CERAMIC	50V		0.1μF
C569	ECEA1ES470	ELECT	25V		47μF
C574	CMXL1J224J	FILM	63V		0.22μF
C575	ECCR1H102J	CERAMIC	50V		1nF
C576	CMXL1J224J	FILM	63V		0.22μF
C577	ECEA1CS101	ELECT	16V		100μF
C578	CBZF1H104Z	CERAMIC	50V		100nF
C579	ECCR1H102J	CERAMIC	50V		1nF
C581	CMXL1J224J	FILM	63V		0.22μF
C582	ECEA1CS101	ELECT	16V		100μF
C587	ECCR1H102J	CERAMIC	50V		1nF
C589	ECKC1H472J	CERAMIC	50V		4.7nF
C590	CBZF1H104Z	CERAMIC	50V		100nF
C591	CMXL1J224J	FILM	63V		0.22μF
C592	ECKC1H103J	CERAMIC	50V		10nF
C602	ECEA1ES470	ELECT	25V		47μF
C603	ECEA1H228	ELECT	50V		0.22μF
C604	ECEA1ES102	ELECT	25V		1000μF
C608	ECCR1H222J	CERAMIC	50V		2.2nF
C609	ECCR1H222J	CERAMIC	50V		2.2nF

Cct Ref	Parts Number	Description		
C625	ECEA1H479	ELECT	50V	4.7µF
C660	ECEA1H100	ELECT	50V	10µF
C661	CMXM2A224J	FILM	100V	0.22µF
C662	CMXM2A224J	FILM	100V	0.22µF
C665	ECCR1H472J	CERAMIC	50V	4.7nF
C666	CBXF1H104Z	CERAMIC	50V	0.1µF
C667	ECCR1H472J	CERAMIC	50V	4.7nF
C668	CMXM2A224J	FILM	100V	0.22µF
C669	CMXM2A224J	FILM	100V	0.22µF
C690	ECEA1H479	ELECT	50V	4.7µF
C691	ECEA1H479	ELECT	50V	4.7µF
C770	ECEA1CS101	ELECT	16V	100µF
C801	CL1UC3474M	CERAMIC	250V	470nF
C803	ECCR3A472J	CERAMIC	1kV	4.7nF
C804	ECCR3A472J	CERAMIC	1kV	4.7nF
C805	ECA2GM181B	ELECT	400V	180µF
C806	CCXR3A102K	CERAMIC	1kV	1nF
C807	ECEA1H109	ELECT	50V	1µF
C809	ECKC1H101J	CERAMIC	50V	100pF
C810	ECEA1H220	ELECT	50V	22µF
C811	CMXM2A473J	MYLAR	100V	47nF
C812	CH1BFE472M	CERAMIC	400V	4.7nF
C813	CEYF2E470V	ELECT	250V	47µF
C814	ECA2EM101	ELECT	250V	100µF
C820	CCYR3D221K	CERAMIC	2kV	220pF
C823	ECEA1ES471	ELECT	25V	470µF
C830	ECEA1H479	ELECT	50V	4.7µF
C831	ECEA1H330	ELECT	50V	33µF
C833	CCXB1H821K	CERAMIC	50V	820pF
C834	ECCR1H103J	CERAMIC	50V	10nF
C835	ECEA1ES470	ELECT	25V	47µF
C840	ECEA1CS332	ELECT	16V	3300µF
C844	ECEA1ES101	ELECT	25V	100µF
C861	ECEA1ES102	ELECT	25V	1000µF
C862	ECEA1ES101	ELECT	25V	100µF
C863	ECEA1CS101	ELECT	16V	100µF
C866	ECKC3A471J	CERAMIC	1KV	470pF
C901	ECCR1H221J	CERAMIC	50V	220pF
C905	ECA2EM4R7B	ELECT	250V	4.7µF
C965	ECKC3D102J	CERAMIC	2KV	1nF
C968	CMXL2E104K	MYLAR	250V	100nF
C997	ECA2EM100B	ELECT	250V	10µF
CA01	ECKC1H101J	CERAMIC	50V	100pF
CA02	ECKC1H101J	CERAMIC	50V	100pF
CA03	ECKC1H101J	CERAMIC	50V	100pF
CA04	ECKC1H101J	CERAMIC	50V	100pF
CA05	ECKC1H101J	CERAMIC	50V	100pF
CA06	ECKC1H101J	CERAMIC	50V	100pF
CA10	ECCR1H102J	CERAMIC	50V	1nF
CA28	ECCR1H102J	CERAMIC	50V	1nF
<b>TERMINALS AND LINKS</b>				
JP01	4859102130	HEADPHONE SOCKET		
JPA1	4859200401	AV TERMINAL		
JPA2	4859200401	AV TERMINAL		
JPA3	4859108450	JACK PIN BOARD		
SCT1	4859303530	SOCKET CRT		
<b>SWITCHES</b>				
SW700	5S50101Z90	SWITCH		
SW701	5S50101Z90	SWITCH		
SW702	5S50101Z90	SWITCH		
SW703	5S50101Z90	SWITCH		
SW704	5S50101Z90	SWITCH		
SW801	5S40101143	SWITCH		
<b>RELAYS</b>				
Y801	5SC0101003	RELAY		



Cct Ref	Parts Number	Description		
<b>DIFFERENCES FOR MODEL TX--29PM1D</b>				
<b>EXPLODED VIEW</b>				
16	DMP4502500	S/PLATE		
<b>INSTRUCTION BOOKS</b>				
.	TQB0E0051A1M	GERMAN		
.	TQB0E0051C1M	ITALIAN		
.	TQB0E0051D1M	FRENCH		
<b>I.C.s</b>				
I501	TDA21HD01-W	IC MICOM FLASH		
I502	X24C29PM1D	IC MEMORY		
<b>DIFFERENCES FOR MODEL TX--29PM1F</b>				
<b>EXPLODED VIEW</b>				
16	DMP4502600	S/PLATE		
<b>INSTRUCTION BOOKS</b>				
.	TQB0E0052A1M	GERMAN		
.	TQB0E0052B1M	DUTCH		
.	TQB0E0052D1M	FRENCH		
.	TQB0E0052E1M	SPANISH		
.	TQB0E0052F1M	SWEDISH		
.	TQB0E0052G1M	NORWEGIAN		
.	TQB0E0052H1M	FINNISH		
.	TQB0E0052J1M	PORTUGUESE		
.	TQB0E0052K1M	DANISH		
<b>I.C.s</b>				
I501	TDA21HD01-W	IC MICOM FLASH		
I502	X24C29PM1F	IC MEMORY		
<b>DIFFERENCES FOR MODEL TX--29PM1P</b>				
<b>EXPLODED VIEW</b>				
16	DMP4502700	S/PLATE		
<b>INSTRUCTION BOOKS</b>				
.	TQB0E0053M1M	BULGARIAN		
.	TQB0E0053N1M	ROMANIAN		
.	TQB0E0053P1M	POLISH		
.	TQB0E0053Q1M	HUNGARIAN		
.	TQB0E0053R1M	CZECH		
.	TQB0E0053U1M	ENGLISH		
.	TQB0E0053W1M	SLOVAKIAN		
<b>I.C.s</b>				
I501	TDA21HD01-E	IC MICOM FLASH		
I502	X24C29PM1P	IC MEMORY		

# SCHEMATIC DIAGRAMS FOR MODELS TX-29PM1D, TX-29PM1F, TX-29PM1P (CP-521F CHASSIS)

## IMPORTANT SAFETY NOTICE

Components identified by  mark have special characteristics important for safety. When replacing any of these components, use only manufacturers' specified parts.

## NOTE

1. RESISTOR  
All resistors are carbon  $\frac{1}{4}W$  resistor, unless marked otherwise.  
Unit of resistance is OHM ( $\Omega$ ) (k=1,000, M=1,000,000)
2. CAPACITORS  
All capacitors are ceramic 50V unless marked otherwise.  
Unit of capacitance is  $\mu F$  unless otherwise stated.
3. COIL  
Unit of inductance is  $\mu H$ , unless otherwise stated.
4. EARTH SYMBOL  
 Chassis Earth (Cold)  
 Line Earth (Hot)
5. VOLTAGE MEASUREMENT  
Voltage is measured by a d.c. voltmeter.  
Measurement conditions are as follows:  
Power source            a.c. 220V-240V, 50Hz  
Receiving Signal       Colour Bar signal (RF)  
All customer controls   Maximum position

These schematic diagrams are the latest at time of printing and are subject to change without notice.

## REMARKS

- a. Do not touch the hot part, or the hot and cold parts at the same time, as you are liable to a shock hazard.
- b. Do not short circuit the hot and cold circuits as electrical components may be damaged.
- c. Do not connect an instrument, such as an oscilloscope, to the hot and cold circuits simultaneously as this may cause fuse failure. Connect the earth of the instruments to the earth connection of the circuit being measured.
- d. Make sure to disconnect the power plug before removing the chassis.

## NOTE

1. The Power Supply Circuit contains a circuit area, which uses a separate power supply to isolate the earth connection. The circuit is defined by HOT and COLD indications in the schematic diagram. All circuits, except the Power Circuit, are COLD.

