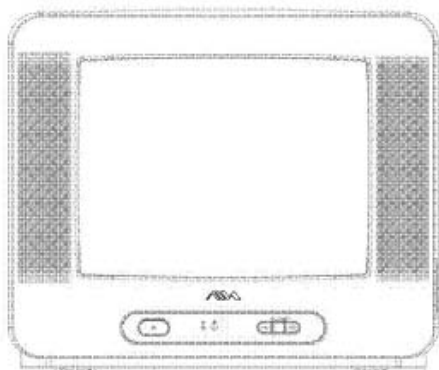


aiwa



TV-14MT11 TV-21MT11



COLOUR TELEVISION

SPECIFICATIONS

	TV-14MT11/TV-21MT11
TV Receiving System	PAL B/G, PAL D/K, PAL I, SECAM B/G, SECAM D/K, NTSC M, NTSC 3.58, NTSC 4.43
Video Input System	PAL, SECAM, NTSC, NTSC 4.43
Number of Program Numbers	100
Channel Indicator	On Screen Display
RF Antenna Input	75 Ohm, Coaxial type
Picture Tube Size	36 cm (14") diagonal (KV-14MT11) 54 cm (21") diagonal (KV-21MT11)
Sleep Timer	Television returns to standby condition after 15 to 240 minutes (30 - minute intervals)
Video Input/Output	1Vp-p, 75 ohms
Audio Input/Output	0.5Vrms, High impedance
Audio Output	0.5Vrms, 1k ohms
Audio Output Power	2.0W RMS at %10 THD (KV-14MT11) 2.5W RMS at %10 THD (KV-21MT11)
Operation Voltage Power	220-240V AC, 50-60Hz
Consumption	40 W (KV-14MT11) 55 W (KV-21MT11)
Remote Control Unit	RM-Z5401

- Design and specifications are subject to change without notice.


S/M Code No. 9-927-463-01

SERVICE MANUAL

CONTENTS	PAGE
Safety Instructions	2
Technical Specifications	3
Instructions manual	4
Block Diagram	14
ICE 1QS01 Controller For SMPS	15
IC AN5539LF Vertical Deflection Output	17
IC SDA5552/SDA5521 Microcontroller	17
IC TDA9830 Sound AM Demodulator	18
IC NN5198K Block diagram	19
Pin Voltages of IC's	20
Oscillograms	22
Electrical and Service Adjustments	24
Convergence Adjustments	27
Channel Frequency Tables	29
Parts List	31
Circuit Diagrams	Attached

SAFETY INSTRUCTIONS

GENERAL GUIDELINES

1. It is advised to insert an isolation transformer in the AC supply before servicing a hot chassis.
2. Potentials as high as 33KV 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 any one who is not competent with the precautions necessary when working on the high voltage equipment. Always discharge the anode of the tube.
3. When servicing observe the original lead dress in the high voltage circuits. If a short circuit is found, replace all the parts which have been overheated or damaged by the short circuit.
4. Always use the manufacturer's replacement safety components. The critical safety components marked with  on the schematics diagrams should not be replaced by other substitutes. Other substitute may create the electrical shock, fire or other hazards. Take attention to replace the spacers with the originals. Furthermore where a short circuit has occurred, replace those components that indicate evidence of overheating.
5. After servicing, see that all the protective devices such as insulation barriers, insulation papers, shields and isolation R-C combinations are correctly installed.
6. When the receiver is not being used for a long time of period of time, unplug the power cord from the AC outlet.
7. 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 AC cord and connect a jumper between the two prongs of the plug.
2. Turn the receiver's power switch on.
3. Measure the resistance value with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the receiver, such as screw heads, aerals,

connectors, control shafts etc. When the exposed metallic part a return path to the chassis the reading should be between 4Mohm and the 20Mohm. 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 AC cord directly in to the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 2Kohm 10W resistor in series with an exposed metallic part on the receiver and an earth, such as a water pipe.
3. Use an AC voltmeter with high impedance to measure the potential across the resistor.
4. Check each exposed metallic part and check the voltage at the each point.
5. Reverse the AC plug at the outlet and repeat each of the above measurements.
6. The potential at the any point should not exceed 1.4 Vrms. In case a measurement is outside the limits specified, there is the possibility of a shock hazard, and the receiver should be repaired and rechecked before it is returned to the customer.

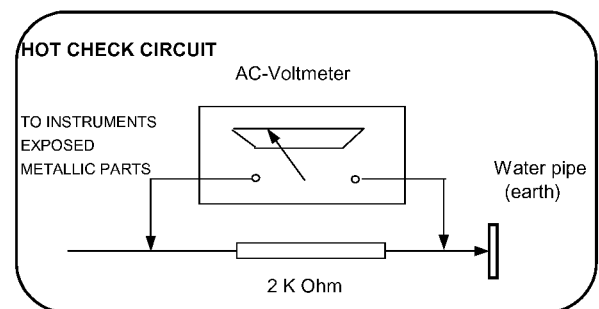


Figure 1

X-RAY RADIATION WARNING

The primary source of X-ray radiation in this receiver is the picture tube. The chassis is specially constructed to limit X-ray radiation. For continued X-ray radiation protection, replace the tube with the same type of the original one.

CAUTION


AFTER REMOVAL OF THE ANODE CAP, DISCHARGE THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR THE CARBON PAINTED ON THE CRT WITH A HIGH VOLTAGE PROBE AND MULTIMETER (SELECT VDC) AND THEN SHORT CIRCUIT DIRECTLY TO DISCHARGE COMPLETELY.

TECHNICAL SPECIFICATIONS

Power source:	220-240V AC, 50-60Hz	
Power consumption (max.) :	40 W	14"
	55 W	21"
Standby power consumption :	1 W	
Colour system:	PAL/SECAM	
	NTSC 3.58, 4.43 (only Video In)	
Aerial impedance :	75Ohm, coaxial type	
Receiving system ¹:	PAL BG	
	PAL SECAM BG	
	PAL SECAM BG DK	
	PAL SECAM BG LL'	
	PAL I	
Receiving channels:	VHF BAND I	CH2-4
	VHF BAND III	CH5-12
	CABLE TV	S1-41
	UHF BAND	CH21-69
Audio outputs :	2.0W RMS at %10 THD	14"
	2.5W RMS at %10 THD	21"
High Voltage :	23 ± 0.5 KV	14"
	25 ± 0.5 KV	21"
Focus voltage :	%25.6 ± %38 of EHT	
Grid 2 voltage :	0-1400 V	
Heater voltage :	6.2 ± 0.2 Vrms	
Video/Audio Terminals :	AV1 IN	Video : 1 Vpp, 75 Ohm Audio : 0.5 Vrms, >10 Kohm
		RGB
	AV1OUT	Video : 1 Vpp, 75 Ohm Audio : 0.5 Vrms, <1 Kohm
	AV2 IN (RCA, optional)	Video : 1 Vpp, 75 Ohm Audio : 0.5 Vrms, >10 Kohm
Operating temperature :	0-45 Degrees	
Safety :	IEC 65 /BS P2N	
X-Ray radiation :	ACC. IEC 65/BS P2N	

¹ : TV set is produced to receive "one" of these combinations of the colour and sound systems.

Special Features

- Your TV set is equipped with an “On-Screen Display” system. This system enables the user to see the functions on-screen and to control them efficiently.
- 100 Programme Memory.
- Your TV will automatically switch off if it has been programmed from 15 minutes to 4 hours, and it will automatically switch to Standby mode 30 minutes after a channel ceases to transmit.
- Scart Socket for video cassette recorder, DVD player, VCD player, satellite receiver, video disc player, TV games or a home computer can be connected to this AV (Audio/Video) socket with an appropriate connecting cable.
- Demo mode.
- NTSC video playback with tint control (NTSC 4,43 and 3,58 via scart).
- Infrared Remote control.
- Ready for Cable Channels (a decoder may be required).
- Reset function will enable your picture settings to be restored to factory set levels.
- Teletext programmes, national and international text programmes (depending on model).
- 16:9 picture format selection.
- Menu with 18 languages.
- Swapping between two programmes with single key stroke ().
- On timer function.

Overview of Remote Control Buttons

Muting the Sound

Press to mute sound.
Press again to restore the sound.

Selecting channels

Press to select channels

For double-digit programme numbers, i.e. 23, press **-/--** first, then the buttons 2 and 3. If you enter an incorrect first digit, this should be corrected by entering another digit (0-9) and then selecting **-/--** button again to enter the programme number of your choice.

Adjusting TV volume

Press to adjust the volume of the TV.

On Timer

Press repeatedly to set the on timer. Use "**↕**" buttons to select the desired programme number which will be displayed when the set is on.

Sleep Timer

Press repeatedly to set the sleep timer.

Menu selection

- When MENU is switched on:
 - Scroll Up
 - Scroll Down
 - Previous menu or selection
 - Next menu or selection
 - "**+**" confirms your selection

Displaying on Screen information

Press to display all on screen indications.

To Switch Off TV Temporarily

Press to switch off TV temporarily (the standby indicator on TV lights up). Press again to switch on TV from standby mode.

Selecting input source

Press repeatedly until the desired input symbol of the source appears on the TV screen.

Selecting TV mode

Press to switch off teletext or video input. Press to switch on TV from standby mode.

To save energy we recommend switching off completely when TV is not in use.

⚠ After 30 minutes without a signal and without any button being pressed, the TV switches automatically into standby mode.

Back to the channel last watched

Press to watch the last channel selected.

Selecting channels

Press to select the next or previous channel.

Displaying the menu system

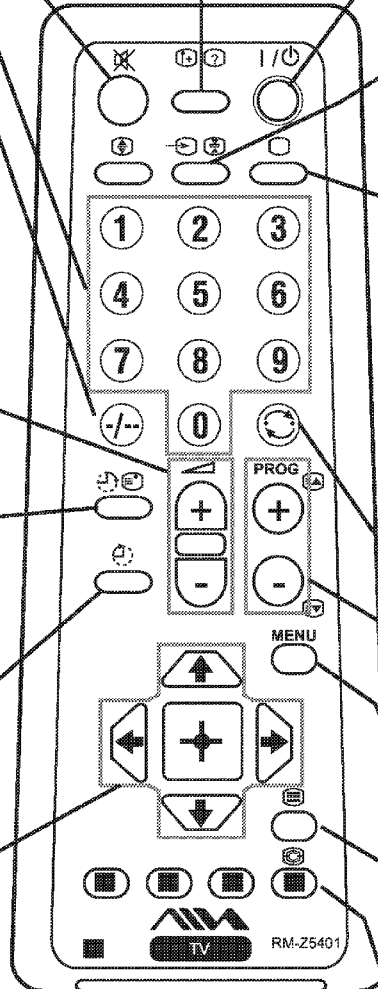
Press to display the menu on the TV screen. Press again to remove the menu display from the TV screen.

Selecting Teletext

Press to switch on teletext.

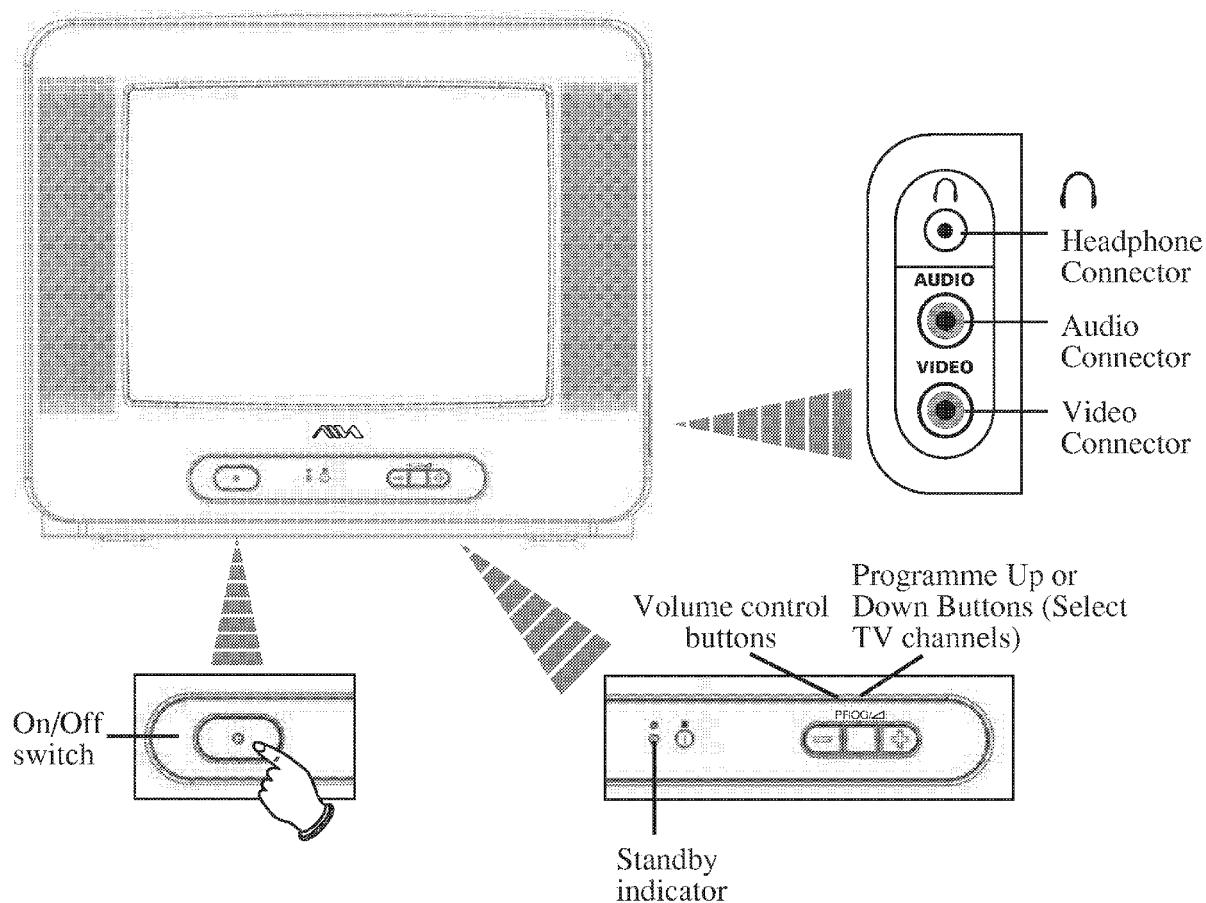
Selecting Screen format

Press to view programmes in 16:9 format. Press again to return to 4:3 format.




i Besides TV functions, all coloured buttons as well as green symbols are used for Teletext operation. For more details, please refer to "Teletext" section of this instruction manual.

Overview of TV Buttons

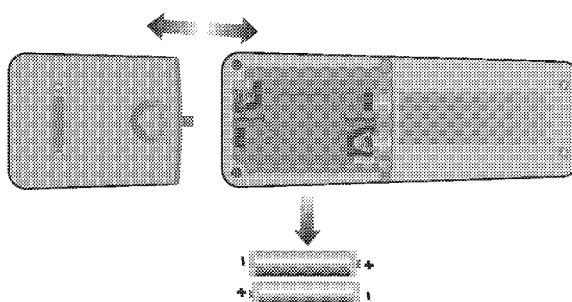


Inserting Batteries into the Remote Control

-  Make sure to insert the supplied batteries observing the correct polarity. Always remember to dispose of used batteries in an environmental friendly way.

Battery Fitting

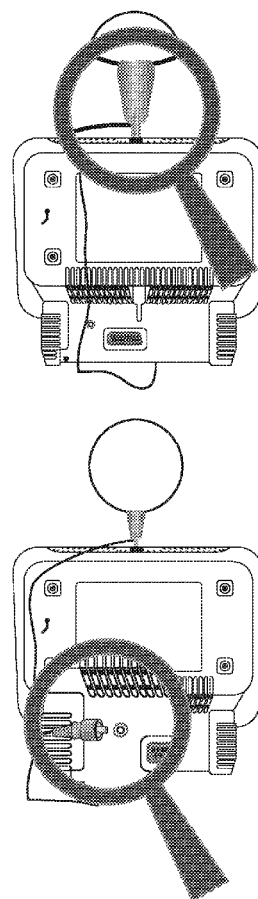
Remove the slide cover by pulling down from the lines. Install two AA size batteries observing the correct polarity and refit the cover.



Connecting an Indoor Aerial

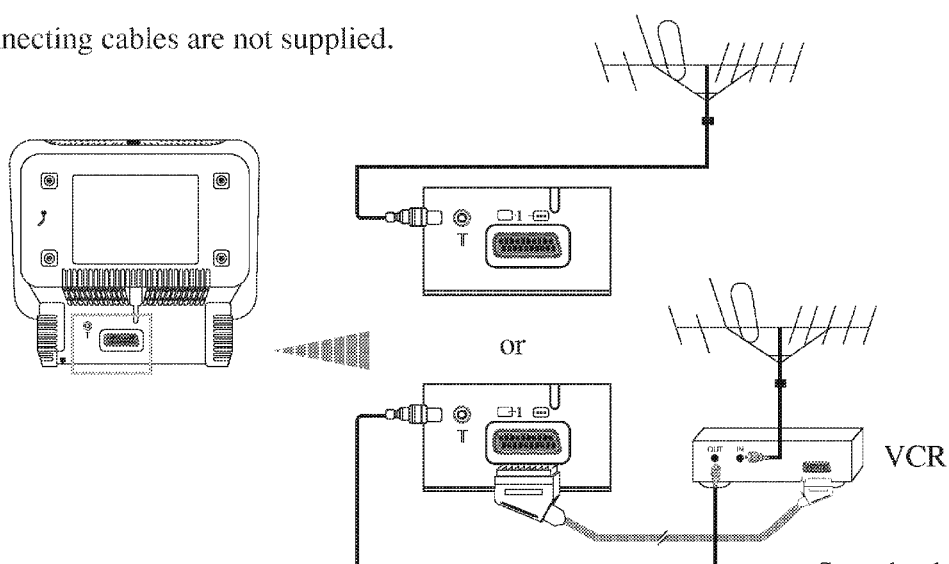
i For a better reception we recommend you use an external aerial. However, where an external aerial is not available and your local RF signal is strong you can connect the supplied loop aerial as follows:

- 1 Insert the loop aerial into the opening on top of the set until it clicks.
- 2 Connect the aerial connector to the aerial socket on the rear of the set.
- 3 After turning on the TV, adjust the aerial for optimum reception.



Connecting an Outdoor Aerial and VCR

i Connecting cables are not supplied.



A For more details of VCR connection, please refer to the section “Preparations and Connections” of this instruction manual.

Operating Your TV Standby

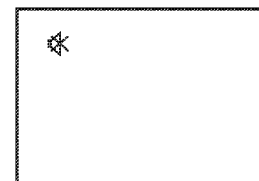
By pushing the “I/⏻” button on the upper right hand side of your remote control, the television will switch into standby. To turn your TV on again you can press “I/⏻” or any of the programme buttons on the remote control.



Always switch the television off by the TV ON/OFF switch when leaving the TV unattended.

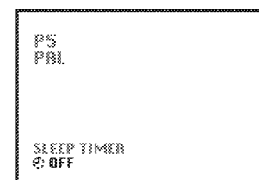
Mute

If you want to mute the sound of your TV press the “⏻” button. A red “⏻” symbol will appear on the screen. Pressing the “⏻” again will restore the sound. While your TV is in MUTE mode if you press the “◀-” button the volume will decrease without restoring the sound. But if you press the “▶+” button the sound will be restored and the volume will increase.



Info Button

By pressing the “⏻” button the programme number, colour system and sleep timer will appear on the screen. This will disappear automatically after a few seconds.



Main Menu

If you press the “MENU” button the main adjustments will appear. By pressing the “MENU” button for the first time, PICTURE menu will appear. If you press the button a second time SETUP menu will appear. Pressing a third time FEATURES menu will appear.



Tuning and Memory

You can tune the TV either automatically or manually.

1. Automatic tuning and memory :

- Press the “MENU” button twice, SETUP menu will appear on the screen.
- Select the AUTOPROGRAM by pressing “⏻” button.
- Press the “+” button. Your TV will start to search for and store programmes. Meanwhile WORKING sign will flash on and off on the AUTOPROGRAM row.
- You can follow the tuning progress on the band and search row.
- After this process has been completed, SETUP menu will disappear and the first stored programme will appear on the screen. To optimise reception fine tuning may be required. If so, please refer to the MANUAL FINE TUNING section.



To exit this mode press the “MENU” button on the remote control.

2. Manual tuning and memory:

- Press the "MENU" button twice, SETUP menu will appear on the screen.

A. If you know the channel number.

- Using "+" button select S for cable channels and C for terrestrial broadcast.
- Press "▶" button to select the channel row, then enter the channel number using the numeric keys on the remote control.

B. If you do not know the channel number.

- Select the "SEARCH" row by pressing "◀▶" button.
- Start the searching function by pressing "▶" or "◀" button.

The searching will stop when a programme has been found. If the picture quality of the display or the channel is not the one required, then continue to search by pressing "▶" button.

- If you want to store this programme, select the PROG NUMBER row by pressing "◀▶" button.
- Enter the desired programme number by using the ten key programme buttons or ;
- You can select the programme number by using the "▶" or "◀" buttons.
- Select STORE using the "◀▶" button. Press "+" to store. "STORED" will appear on the screen.
- The channel will be stored with the programme number you desired.
- Repeat the above steps until all programmes are restored. To optimise reception fine tuning may be required. If so, please refer to the MANUAL FINE TUNING section.

i To exit this mode press the "MENU" button on the remote control.

Manual Fine Tuning:

It may be necessary to fine tune your TV to optimise reception. If so, proceed as follows;

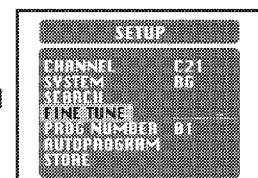
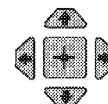
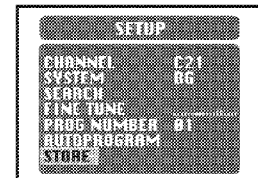
- In the SETUP menu select FINE TUNE using "◀▶" button.
- Use the "◀" or "▶" buttons to obtain the best optimum setting.
- Select RESET using the "◀▶" button.
- Press "+" to store. "STORED" will appear on the screen.

Programme Recall:



You can recall any programme by pressing the "⏮ / ⏭" buttons or numeric key pad. When the desired programme has two digits first press -/-- button and then the two digits of the programme number required.


Swap Function:

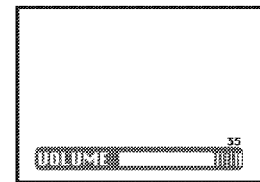
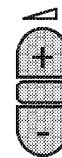
You can swap between two programmes with a single key stroke by using the "⏮" button on the remote control. This function enables you to select the previous programme number viewed.







Sound Presets

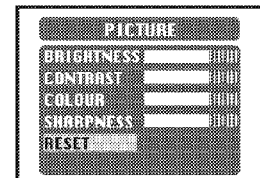
- By pressing the “-” or “+” buttons on your remote control once or by using the volume + and volume - on the front panel you can change the volume level of your TV.

 The last volume level listened will always be preset level.







Picture Presets:

- Press the “MENU” button on the remote control once to access picture presets.
- Select the desired adjustment (BRIGHTNESS, CONTRAST, COLOUR, SHARPNESS) using “ / ” buttons.
- Press the “” or “” buttons to adjust the setting to your desired level.
- The last adjusted levels will be stored.
- Select RESET and press “+” button to restore picture settings to a factory predetermined level.

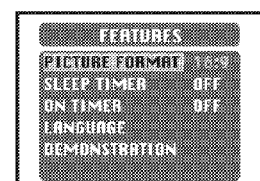
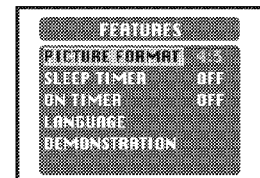


Picture Format




- The picture format of your TV set is 4:3. But some broadcasters supply 16:9 format broadcasts via satellites. In order to watch broadcast in 16:9 format;
- Select PICTURE FORMAT in the FEATURES menu.
- Choose the desired picture format by using the “” or “” buttons.



 You can also use the Picture Format () button on your remote control to change the format from 4:3 to 16:9 directly.


- “16:9” sign will appear on the lower right corner of the screen for a short while.

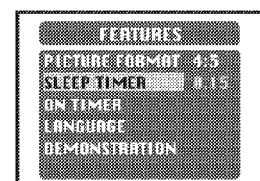



Sleep Timer

- The sleep timer automatically switches the set to stand-by after the preset time has elapsed. You can select the time from 15 minutes to 4 hours with 15 minutes steps.
- Press menu button three times to select FEATURES menu.
- Select the SLEEP TIMER in the FEATURES menu by pressing “” button.
- Select required time by using “” or “” buttons.




 1. The last 30 seconds of the desired switch off time will appear on the upper centre of the screen and begin counting from  29 to zero. When this time interval has elapsed the set will switch to STAND-BY.



2. You can also use the “” button on your remote control to activate this function. You can increase the switch off time interval by pressing this button repeatedly.

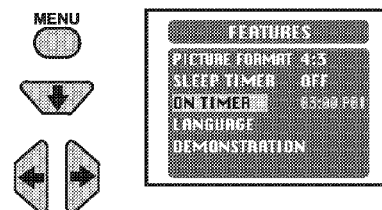


3. To see the remaining sleep time, press “” button. To cancel the sleep time select OFF in SLEEP TIMER.







On Timer

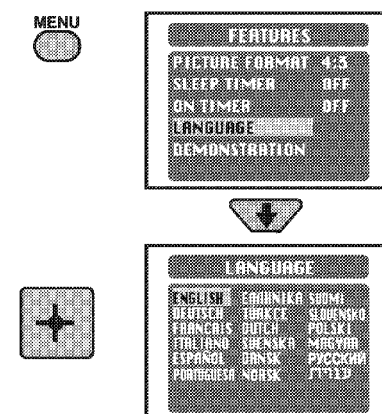
- The On Timer automatically switches the set on.
- You can select the on time from 15 minutes to 12 hours with 15 minutes steps.
- Press the MENU button three times to select FEATURES menu.
- Select the ON TIMER in FEATURES menu by pressing “” button.
- Select required time by using “” or “” buttons.
- Press numbered buttons to select the desired programme. Number will be displayed when the set is on.
- Blinking red light at front will remind you in standby, that the On Timer is activated.

 You can also use the “” button on your remote control to activate this function. You can increase the switching on time interval by pressing this button repeatedly.




Menu Language

- Press the menu button three times to select FEATURES menu.
- Press “” button to select LANGUAGE in the FEATURES menu.
- Press “+” button to enter the LANGUAGE menu.
- Select your desired language by using the “ / ” or “” or “” buttons.
- Press “+” button again. All the on screen displays will appear in the selected language.
- Press the “” button to return to normal TV viewing.



Demonstration

- Press menu button three times to select FEATURES menu
- Press “” button to select DEMONSTRATION in the FEATURES menu.
- Press “+” button to enter the DEMO MODE.





Teletext



Teletext is an information and news service available on several programme channels. It enables you to pick up information on such diverse subjects as international events, holidays, shopping or even the local weather for your area. The signal for teletext is combined with the transmitted signal which provides you with your programmes. To get best results for both, we would recommend that an outdoor aerial is used. Poor reception will cause errors in the text displayed on the screen, i.e. words missing from sentences or letters missing from words. Even with good reception some errors can occur, however, these should correct themselves within

a few seconds. Such errors or word corruptions usually indicate a reception fault rather than a fault with your television. If the channel has no Teletext “NO TEXT” sign will appear on the screen and will disappear automatically after 5 seconds.


Using the Teletext function

Press the “” button on the remote control. This will change the picture mode to TELETEXT. Ensure that the channel you are on broadcasts Teletext. When the “” button is pressed again the text and picture information will be mixed. Pressing the same button a third time it will revert back to picture mode.


Page Selection

Enter the three digit page number of your choice by using the programme key buttons. The selected page number will appear in the top left of the header page. If you want to select the next page use the “” button. To select the previous page use the “” button.


Double (Enlarge button)

This will expand the top and bottom of the page to double height when repeatedly pressed. If you press the “” button for the third time you can return to normal page size.

Reveal button

Sometimes a teletext page contains concealed information, for example, in a quiz or puzzle. To display the concealed information press “” button.

Stop


This button allows you to STOP certain pages of Teletext information if a teletext page consists of 2 or more sub pages and shows them in a circle. Press “” again to cancel and to proceed to the next page.

Fasttext


Colour coded buttons are employed for FASTEXT. When teletext is selected several subject titles will appear at the bottom of the screen in coloured form. By pressing one of the four colour coded buttons you will go directly to that particular page without having to select the page using the numeric pad.








Toptext (Pal BG Models Only)


At the bottom of the teletext screen is a row of subject headings in yellow and blue. Pressing yellow or blue buttons on the remote control selects the related Subject. Next page can be selected by pressing the red button and previous page can be selected by pressing the green button.

 Fasttext and Toptext features are not available in every program.

Troubleshooting

 Here are some simple solutions to the problems which may affect the picture and sound.

Problem	Solution
No picture (screen is dark) and no sound.	<ul style="list-style-type: none"> • Check the aerial connection. • Plug the TV in and press the  button on the front of TV. • If the standby indicator  is on, press  /  button on the remote control.
Poor or no picture (screen is dark), but good sound.	<ul style="list-style-type: none"> • Using the menu system, select the “Picture” menu and select “Reset” to return to the factory settings.
No picture or no menu information from the equipment connected to the scart connector.	<ul style="list-style-type: none"> • Check that the optional equipment is on and press the  button repeatedly on the remote control until the correct input symbol is displayed on the screen.
Good picture, no sound.	<ul style="list-style-type: none"> • Press the  + / – button on the remote control.
No colour on colour programmes.	<ul style="list-style-type: none"> • Using the menu system, select the “Picture” menu and select “Reset” to return to factory settings.
Distorted picture when changing programmes or selecting teletext.	<ul style="list-style-type: none"> • Turn off any equipment connected to the Scart connector on the rear of the TV.
Noisy picture when viewing a TV channel.	<ul style="list-style-type: none"> • Using the menu system, select the “Manual Programme Preset” menu and adjust Fine Tuning (AFT) to obtain better picture reception.
Remote control does not function.	<ul style="list-style-type: none"> • Replace the batteries.
The standby indicator  on the TV flashes even though the “On Timer” function is not in use.	<ul style="list-style-type: none"> • Contact your nearest Aiwa service centre.

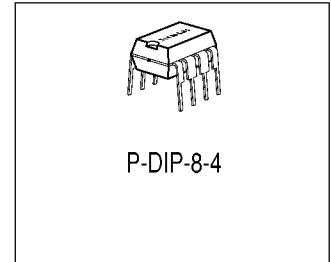
 In case of problems, have your TV serviced by qualified personnel. Never open the casing yourself.

Controller for Switch Mode Power Supplies Supporting Low Power Standby and Power Factor Correction (PFC)

ICE1QS01

Features

- Line Current Consumption with PFC
- Standby Input Power < 1 W
- Stable Standby Frequency
- Low Power Consumption
- Very Low Start-up Current
- Soft-Start for noiseless Start-up
- Standby Burst Mode with and without Control Signal for lowered Output Voltages
- Digital Frequency Reduction in small Steps at Decreasing Load
- Over- and Undervoltage Lockout
- Switch Off at Mains Undervoltage
- Mains Voltage Dependent Fold Back Point Correction
- Ringing Suppression Time Controlled from Output Voltage
- Easy Design In
- Free usable Fault Comparator



Functional Description

The ICE1QS01 is optimized to control free running flyback converters with and without Power Factor Correction (with PFC Charge Pump).

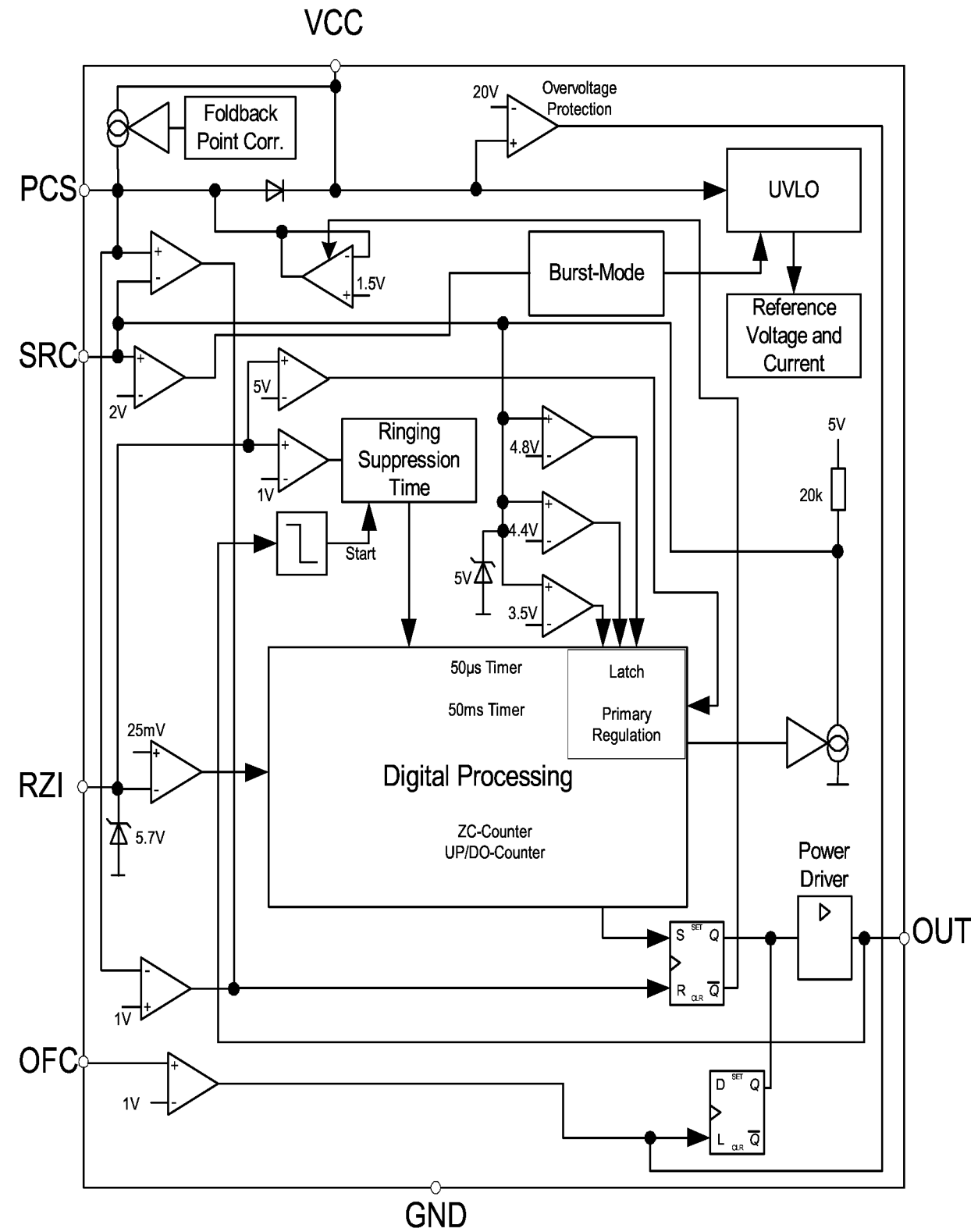
The switching frequency is reduced in small steps with decreasing load towards a minimum of 20 kHz in standby mode. This function is performed by a digital circuit to avoid any jitter also with periodically pulsed loads. To provide extremely low power consumption at light loads, this device can be switched into Standby Burst Mode. This is also possible without standby control signal (for adapter application).

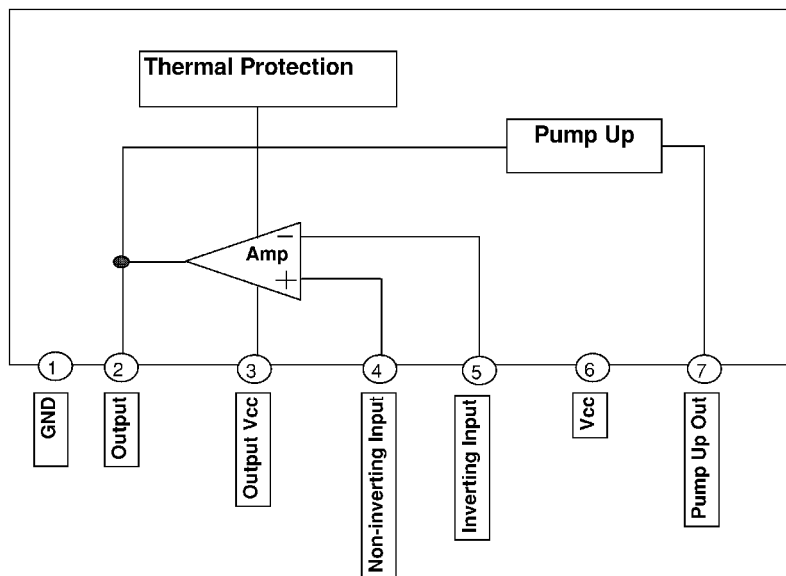
Additionally, the start up current is very low. To avoid switching stresses of the power devices, the power transistor is always switched on at minimum voltage. The device has several protection functions: V_{CC} over- and undervoltage, mains undervoltage and current limiting. Regulation can be done by using the internal error amplifier or an opto coupler feedback. The output driver is ideally suited for driving a power MOSFET.

The ICE1QS01 is suited for TV-sets, VCR- sets, SAT- receivers and other consumer applications in the power range from 0 to app. 300 W.

Pinning

Pin	Symbol	Function
1	N.C.	
2	PCS	Primary Current Simulation
3	RZI	Regulation and Zero Crossing Input
4	SRC	Soft-Start and Regulation Capacitor
5	OFC	Overvoltage Fault Comparator
6	GND	Ground
7	OUT	Output
8	VCC	Supply Voltage





Pin Descriptions

Pin No.	Pin Name
1	GND
2	Vertical Output
3	Vertical Output Power Supply
4	Non-inverting Input
5	Inverting Input
6	Power Supply
7	Pump-up Output

IC401 SDA5552/SDA5521 MICROCONTROLLER IC			
PIN NO.	Pin Description	Pin NO.	Pin Description
1	I/O PIN -open collector	27	SDA1-OUT
2	TV INT- Multimedia mode	28	SDA1-IN
3	ON-LINE-Multimedia mode	29	GND
4	LL' SWITCH	30	VDD-3.3V SUPPLY
5	BAND SELECT (no function for 12.5 models)	31	NO CONNECTION
6	BAND SELECT (no function for 12.5 models)	32	NO CONNECTION
7	LL' AV Selection	33	RESET PIN
8	SERVICE PIN (no fuction for normal operation)	34	NO CONNECTION
9	VDD_2.5 supply pin	35	XTAL1- INPUT OF THE INVERTING OSCILLATOR AMPLIFIER
10	GND	36	XTAL2- INPUT OF THE INVERTING OSCILLATOR AMPLIFIER
11	VDD_3.3 supply pin	37	VDD_2.5 supply pin
12	CVBS-TXT input	38	R OUTPUT FOR OSD AND TXT
13	VDDA_2.5 supply pin	39	G OUTPUT FOR OSD AND TXT
14	GND	40	B OUTPUT FOR OSD AND TXT
15	LOCAL KEYBOARD INPUT	41	FBL OUT
16	STATUS PIN	42	VDDA_2.5 supply pin
17	AFT	43	GND
18	POWER CTRL	44	VDD_3.3 supply pin
19	HORIZONTAL SYNC INPUT	45	AV SELECTION
20	VERTICAL SYNC INPUT	46	RGB SELECTION
21	ODD/EVEN OUTPUT	47	NO CONNECTION
22	SCL1-OUT	48	GND
23	SCL1-IN	49	STAND BY (ON-OFF) PIN
24	INFRARED RECEIVER INPUT	50	NO CONNECTION
25	SCL0-SDA0 INPUT	51	TUNING VOLTAGE (NO CONNECTION FOR 12.5 MODELS)
26	SCL0-SDA0 INPUT	52	VOLUME CONTROL PIN

IC103 TDA9830 TV SOUND AM DEMODULATOR AND AUDIO SWITCH

FEATURES

- Adjustment free wideband synchronous AM demodulator
- Audio source-mute switch (low noise)
- Audio level according EN50049
- 5 to 8 V power supply or 12 V alternative
- Low power consumption.

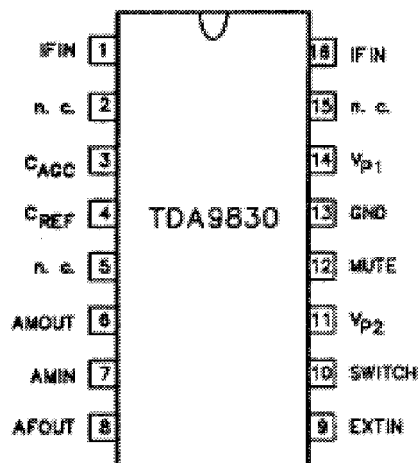
GENERAL DESCRIPTION

The TDA9830, a monolithic integrated circuit, is designed for AM-sound demodulation used in L- and L'-standard.

The IC provides an audio source selector and also mute switch.

PINNING

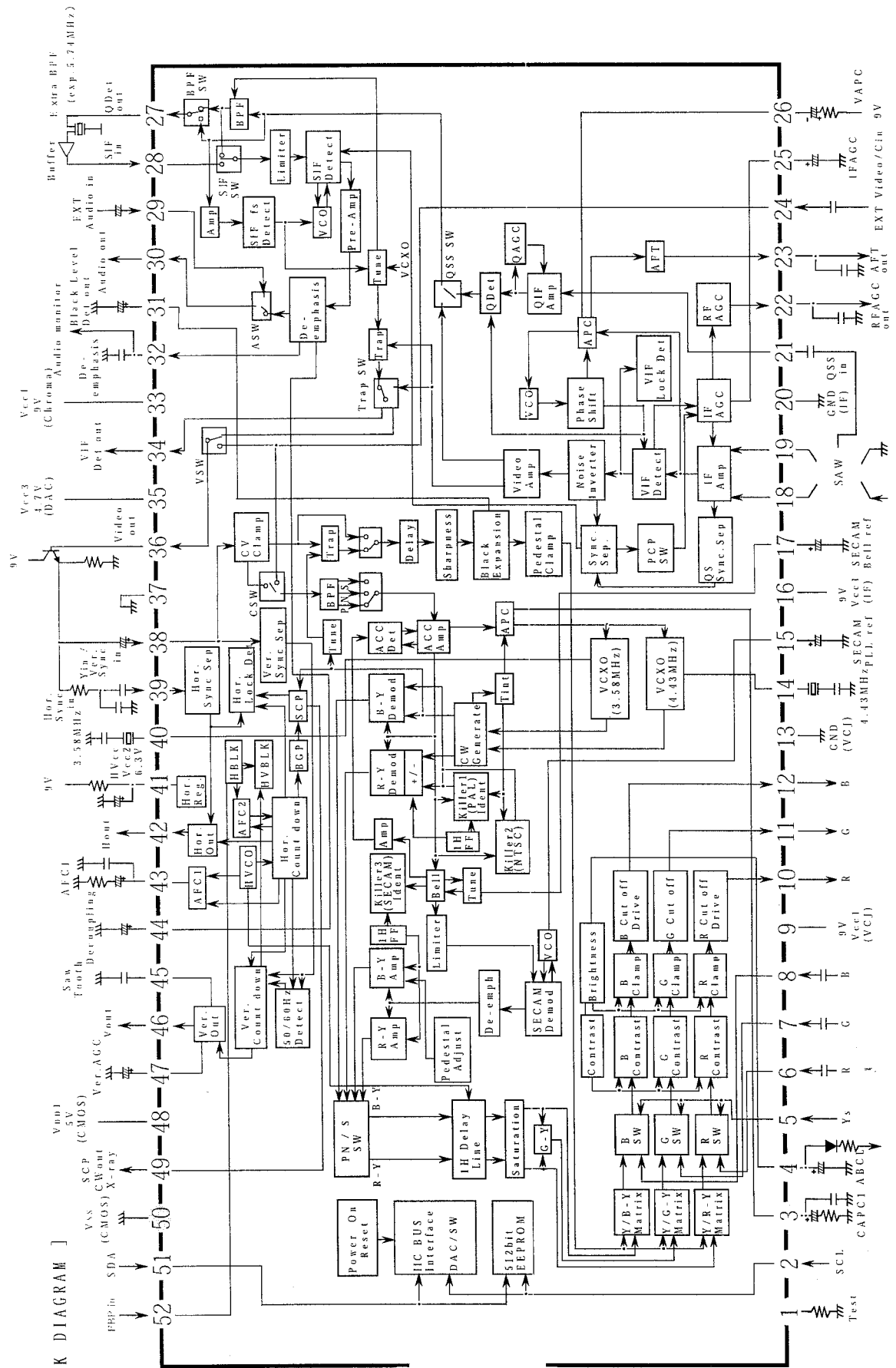
SYMBOL	PIN	DESCRIPTION
IFIN	1	sound IF differential input signal
n.c.	2	not connected
C _{AGC}	3	AGC capacitor
C _{REF}	4	REF voltage filtering capacitor
n.c.	5	not connected
AMOUT	6	AM demodulator output
AMIN	7	input signal (from AM) to audio switch
AFOUT	8	output signal from audio switch
EXTIN	9	input signal (from external) to audio switch
SWITCH	10	switch input select control
V _{p2}	11	Supply voltage +12 V (alternative)
MUTE	12	mute control
GND	13	ground (0 V)
V _{p1}	14	supply voltage +5 to +8 V
n.c.	15	not connected
IFIN	16	sound IF differential input signal



Pin configuration.

NN5198K

BLOCK DIAGRAM



PIN VOLTAGES OF IC'S

IC101 (NN5198K) BUS CONTROLLED MULTISTANDARD ONE CHIP TV PROCESSOR					
Pin	Connection	V DC (*)	Pin	Connection	
		ON			ON
1	Test	-	27	QIF Detect Output	3,77
2	SCL	3,40	28	SIF Input	3,64
3	Chroma APC Filter	6,41	29	External Audio Input	4,14
4	ABCL (Automatic Beam Current Limiter)	3,38	30	Audio Output	4,06
5	Ys (Fast Blanking) Input	0,61	31	Black Level Detect Filter	4,20
6	External R Input	5,03	32	De-emphasis Filter/Audio Monitor Output	4,28
7	External G Input	5,03	33	VCC1 (Chroma)	9,07
8	External B Input	5,03	34	VIF Detect Output	3,25
9	VCC1 (VCJ)	9,07	35	VCC3 (DAC)	4,73
10	R Output	2,66	36	Video Output	3,12
11	G Output	2,74	37	Test 2	0,00
12	B Output	2,74	38	Y Input/Vertical Sync Input	3,79
13	GND (VCJ)	0,00	39	Horizontal Sync Input	3,84
14	Chroma VCX 01 (4,43MHz)		40	Chroma VCX 02 (3,58 MHz)	2,72
15	SECAM PLL Ref. Filter	0,00	41	VCC2 (Horizontal VCC)	6,18
16	VCC1 (VIF/SIF)	8,82	42	Horizontal Pulse Output	1,29
17	SECAM Bell Ref. Filter	0,13	43	Horizontal AFC1 Filter	3,58
18	VIF Input (1)		44	Audio De-coupling Filter	3,98
19	VIF Input (2)		45	Vertical Sawtooth	1,22
20	GND (VIF/SIF)	0,00	46	Vertical Output	3,11
21	QIF Input	2,67	47	Vertical AGC Filter	5,29
22	RF AGC Output	1,74	48	VDD1 (CMOS)	4,95
23	AFT (Automatic Freq. Tuning) Output	3,19	49	SCP/CW Output/ X-ray	0,74
24	External Video/Chroma Input	3,33	50	VSS (CMOS)	0,00
25	IF AGC Filter	2,95	51	SDA	3,11
26	VIF APC Filter	3,48	52	FBP (Flyback Signal) Input	0,38

IC103 (TDA9830) TV Sound AM Demodulator and Audio Switch					
Pin	Connection	V DC	Pin	Connection	V DC
1	Sound IF Differential Input Signal		9	Input Signal (from External) to Audio Switch	
2	Not connected		10	Switch input select control	
3	AGC capacitor		11	Supply Voltage +12V (alternative)	
4	Ref. Voltage Filtering Capacitor		12	Mute Control	
5	Not connected		13	Ground	
6	AM Demodulator Output		14	Supply Voltage +5 to +8	
7	Input Signal (from AM) to Audio Switch		15	Not connected	
8	Output Signal from Audio Switch		16	Sound IF Differential Input Signal	

IC401 (SDA5552) MICRO CONTROLLER WITH OSD AND TELETEXT					
Pin	Connection		Pin	Connection	
		ON			ON
1	Standby	0.05 (2.65)	27	SDA I2C Bus Data Input	2.11 (1.92)
2	Not connected		28	SCL I2C Bus Clock Input	2.26 (1.92)
3	Not connected		29	Ground	0.00
4	LED	1.40 (1.0)	30	VDD 3.3 supply pin	3.29
5	Not connected		31	L/L'	0.00
6	Not connected		32	AV/TV	2.34
7	Not connected		33	Reset	3.29
8	Not connected		34	XTAL2	
9	VDD 2.5 supply pin	2.46 (2.55)	35	XTAL1	
10	Ground	0.00	36	Ground	0.00
11	VDD 3.3 supply pin	3.29	37	VDDA 2.5 supply pin	2.43 (2.70)
12	CVBS input for TXT	0.64 (0.00)	38	Red output for OSD and TXT	0.28
13	VDDA 2.5 supply pin	2.42 (2.43)	39	Green output for OSD and TXT	0.28
14	Ground	0.00	40	Blue output for OSD and TXT	0.28
15	Local keyboard input	2.50	41	Fast Blanking for OSD and TXT	0.33
16	Status signal input of Scart pin 8	0.00	42	VDD 2.5 supply pin	2.50
17	AFT		43	Ground	0.00
18	Power Ctrl	1.64 (0.25)	44	VDD 3.3 supply pin	3.29
19	Horizontal sync input	2.09 (2.54)	45	MM	3.29
20	Vertical sync input	3.20 (3.29)	46	Not connected	0.00
21	Odd/Even (De-interlace)	2.27	47	LNF (SW selection)	3.29
22	TV/Int	0.00	48	SDA I2C Bus for Eeprom	2.65
23	On-line	0.02	49	SCL I2C Bus Clock for Eeprom	2.64
24	Infra red input	3.29	50	Ground	0.00
25	AV selection	1.05	51	Not connected	
26	Service	3.29	52	Volume	

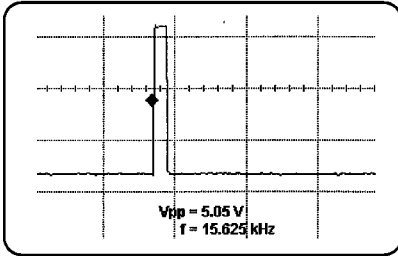
IC501 (AN5539LF) Vertical Deflection Output IC					
Pin	Connection		Pin	Connection	
		ON			ON
1	Ground	0.00	5	Inverting input	0.00
2	Vertical Output	11.16	6	Power Supply	0.00
3	Flyback	0.00	7	Pump-up Output	0.89
4	Non Inverting input	0.00			

IC601 (ICE 1QS01) Power Supply IC					
Pin	Connection		Pin	Connection	
		ON			ON
1	Not connected		5	Ground	0.00
2	Primary Current Simulation	1.75 (12.24)	6	Ground	0.00
3	Regulation and Zero Crossing Input	2.50 (0.15)	7	Output	1.87 (0.27)
4	Soft-Start and Regulation Capacitor	3.80 (1.80)	8	Supply voltage	3.00 (3.18)

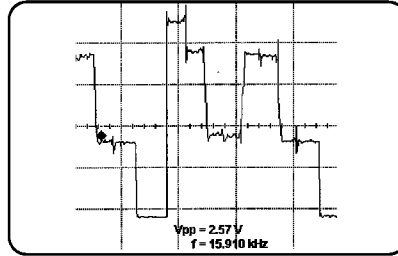
(*) Standby measurement values are given in parenthesis

WAVE FORMS

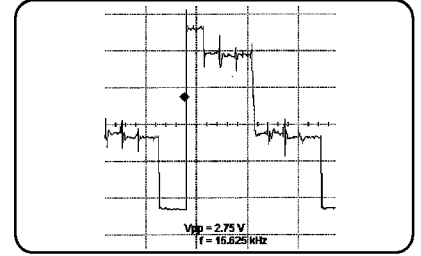
1. IC 101 (NN 5198K)



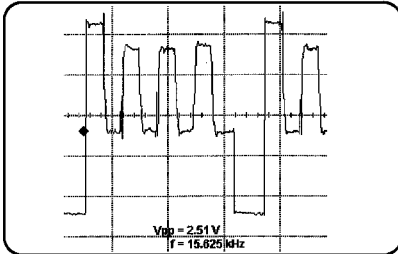
Pin no: 5 (OSD ON)



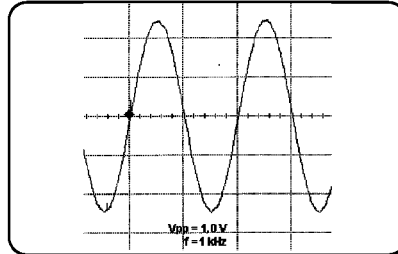
Pin no: 10



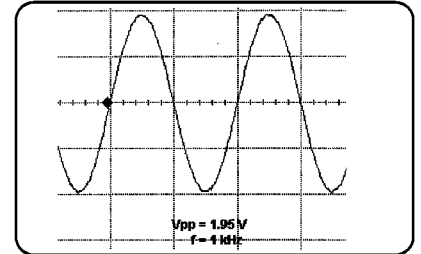
Pin no: 11



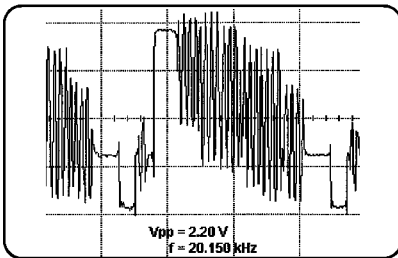
Pin no: 12



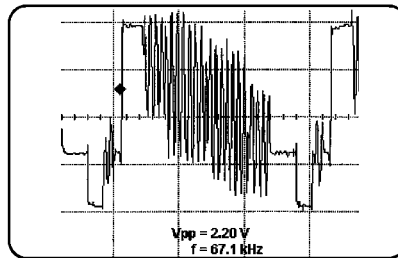
Pin no: 30



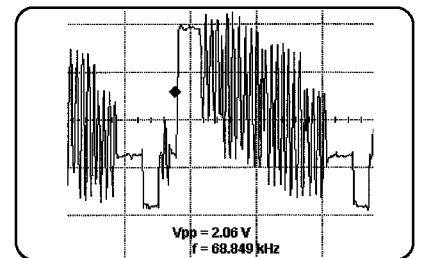
Pin no: 32



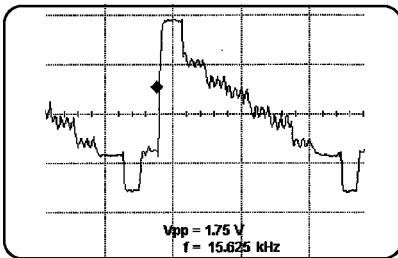
Pin no: 34



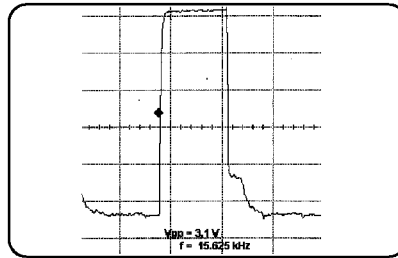
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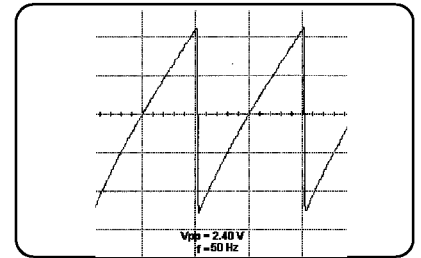
Pin no: 38



Pin no: 39

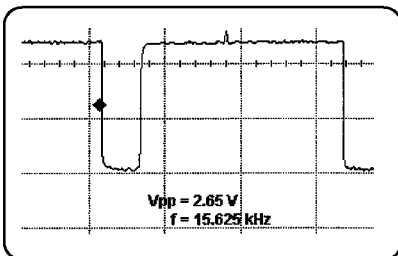


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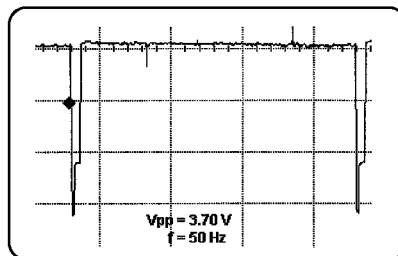


Pin no: 46

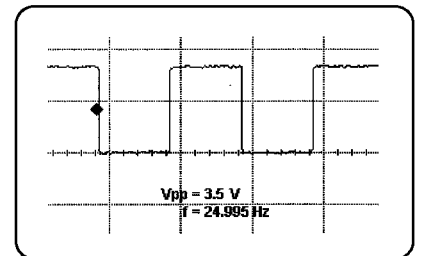
2. IC 401 (SDA 555XL)



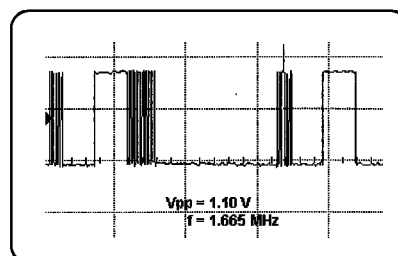
Pin no: 19



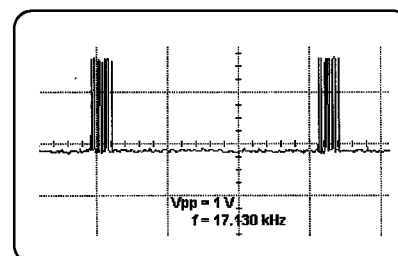
Pin no: 20



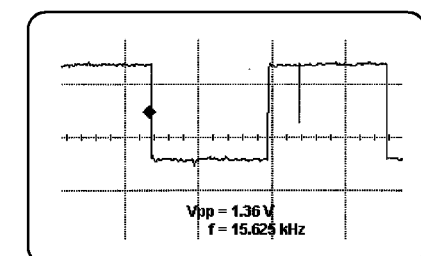
Pin no: 21



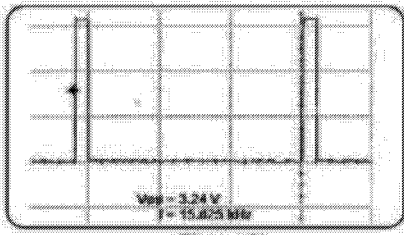
Pin no: 38



Pin no: 39

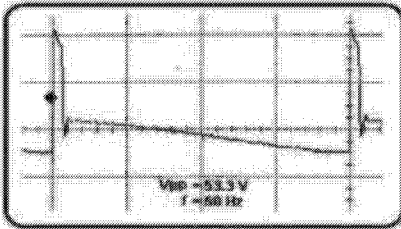


Pin no: 40

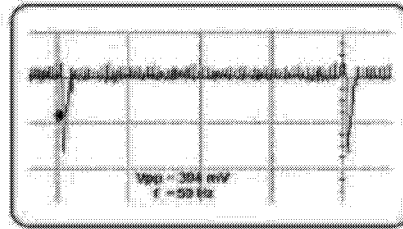


Pin no: 41

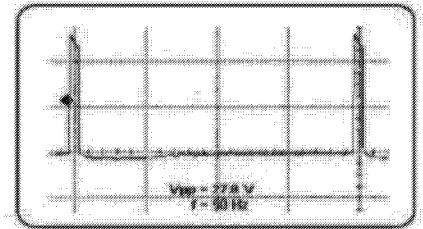
3. IC 501 (AN 5539)



Pin no: 2

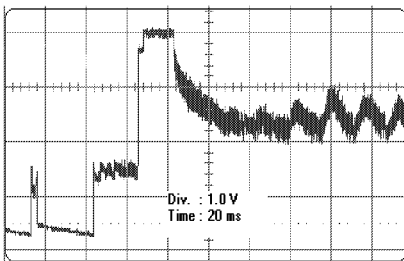


Pin no: 5



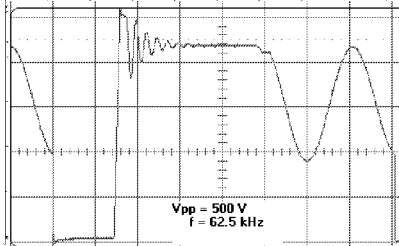
Pin no: 7

4. IC 501

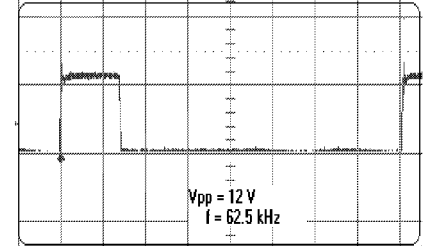


Pin no : 4 (Tv stand-by)

T 601

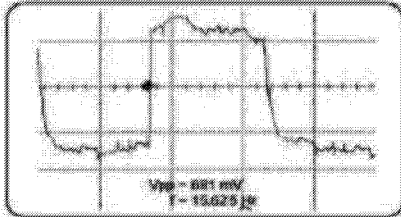


Kollektor (Tv ON)



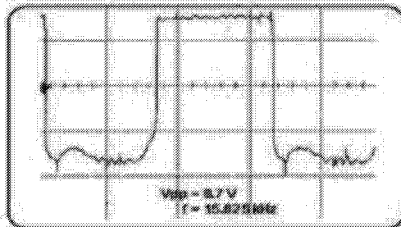
Pin no : 7 (Tv ON)

5. T 507 (BC 848 NPN)



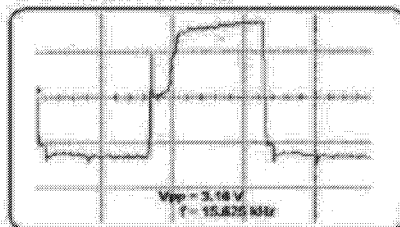
Base

6. T 505 (BC 848 NPN)



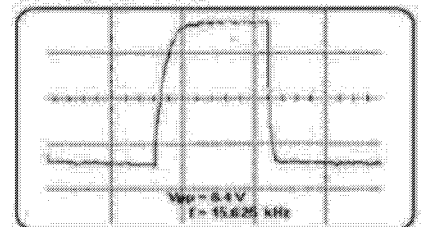
Base

7. T 506 (2 SK3065)



Drain

T 506 (2 SK3065)



Gate

ELECTRICAL ADJUSTMENTS

ACCESSING THE SERVICE MODE

To enter the Service Mode, 'Service In/Out' button on the Service Remote Control or activate the "Picture Menu" with the user remote control and press "7412".

"Red", "Green", "Yellow" and "Blue" Teletext buttons are for Feature Setup, Geometry, White Balance and AFC menus respectively.

Press "0" button to exit the Service Mode.

1. POWER SUPPLY VOLTAGE

Connect a digital voltmeter to the cathode of D607 diode at the AV1 mode of the TV and set the screen voltage to the minimum. Adjust the main supply voltage +B with P601 potentiometer to the following voltage value. Adjust the screen potentiometer to the level where a picture is just visible.

14"	A34LPE02X01	106 VDC
21"	A51EER133X41	118 VDC

2. AFC ADJUSTMENT

Before starting the adjustment follow the procedure below:

Enter service mode, change "VIDEO" header to the "NEW". Then exit from service mode.

Remarks:

1. The procedure above must always be done after replacing the Video IC (IC101) or EEPROM IC.
2. AFC adjustment must be done again when "VIDEO" header became "NEW" accidentally.

For BG, DK, I, L standards (38.9 MHz) : Supply a 471.25 MHz BG system colour bar RF signal to the set by a pattern generator and find this signal in "setup" menu (C21). In order to deactivate AFT loop, shift value of "fine tuning" from central point by one unit and then shiftback to the central point again (2 small vertical lines are seen in the scale on central point). Store the channel by selecting "Store" and pressing "OK" button. Enter Service Mode and press "Blue" Teletext button. Adjust the "AFT38" item of service menu to read a value between "78" and "7C" (hexadecimal) on the right part of the screen. For example:

AFT38 89 7B

For SECAM L' Standard (33.9 MHz): Supply a 55.75 MHz, L' system colour bar RF signal to the set by a pattern generator and find this signal in "setup" menu (C02). In order to deactivate AFT loop, shift value of "fine tuning" from central point by one unit and then shiftback to the central point again (2 small vertical lines are seen in the scale on central point). Store the channel by selecting "Store" and pressing "OK" button. Enter Service Mode and press "Blue" Teletext button. Adjust the "AFT33" item of the service menu to read a value between "78" and "7C" (hexadecimal) on the right part of value of item "AFT38". For example:

AFT38 : 76 78

AFT33 : 65

3. AGC ADJUSTMENT

Apply a signal at the channel 32 with 70 ± 1 dBuV level to the antenna input (switch sound carrier "Off" and switch "Video Ext" to the "On" state).

Connect an oscilloscope between the pin 11 (IF2) of Tuner and ground.

Enter service mode and find "AGC" header.

Adjust the amplitude which is monitored from oscilloscope to the values given below using with Volume +/Volume- key of the remote control .

PAL BG standarts : 750 mVpp \pm 20mVpp

PAL/Secam BG/DK standarts : 750 mVpp \pm 20mVpp

Secam LL' standarts : 600 mVpp \pm 20mVpp

PAL I standarts : 700 mVpp \pm 20mVpp

Adjust "2.AGC" to the same value as "AGC".

4. SCREEN ADJUSTMENT

Enter service mode and press "Yellow" teletext button. Select "SCRN" item. Press Vol + or – button. You will see white horizontal line at the bottom of the screen. Adjust the screen potentiometer to the just visibility level of horizontal line. After adjustment press Vol + or Vol – button to see the picture (The value of "SCRN" item will be "0").

5. GEOMETRY ADJUSTMENTS

Enter service mode and press "Green" Teletext button. Check that "Y.DLY" value is "1". "H.POS" is for horizontal position, "V.POS" is for vertical position "V.HEI" is for vertical size, "LNRTY" is for vertical linearity, "S.COR" is for S-correction, "OSD.H" is for OSD Horizontal Position, "OSD.V" is for OSD Vertical Position adjustment.

6. WHITE BALANCE ADJUSTMENTS

Enter the service mode and press "Yellow" teletext button. Select and adjust "G.CUT" to the "64" for 14" sets and "40" for 20" and 21" sets. Adjust "R.CUT" and "B.CUT" for cut off adjustment. Select and adjust "R.DRV" and "B.DRV" for white balance. Change the "G.CUT" value a few unit if white balance could not be adjusted. Exit from service mode.

Remark: When "VIDEO" item is selected "NEW", optimum "SECB" value (determined by the IC manufacturer) is loaded to EEPROM. Whereas if the black level of SECAM is not suitable, "SECB" can be adjusted manually by applying a SECAM pattern that includes black sections and changing value of "SECB".

7. FEATURE SETUP

TUNER	SHARP&ALPS, PHILIPS, P.SONIC, TEMIC
ST.BY	YES : Automatic switch off is active (when there is no signal for 5 min) NO : Automatic switch off is not active (can be used during repair)
AV2	NO : Single scart YES : Single scart +front AV
CLR.S	PAL, PAL/NTSC (SECAM system is automatically detected by TV)
SND.S	BG, I, BG+DK, BG+ LL' (Sound Systems)
TEXT	NON TEXT : Teletext not available DEFAULT : Teletext FASTTEXT : Fasttext
LANG	A : English, German, French, Italian, Spanish, Portugal, Greek, Turkish, Dutch, Swiss, Danish, Norwegian, Finnish, Slovenian, Polish, Hungary, Russian, Hebrew B : English, German, French, Russian, Polish, Bulgarian, Serbian, Hungarian, Romanian, Slovenian, Macedonian, Croatian, Czech, Slovakian, Albanian, Arabian, Persian, Turkish
BGBPF	INT : Video IC uses internal BG Band Pass Filter (default) EXT : Video IC uses external BG Band Pass Filter
VIDEO	OLD : Default NEW : Switch once after replacing the Video IC (IC101) or EEPROM IC (Not: If it is switched to "NEW", AFC adjustment must be done again as described in AFC Adj. Sect.).
QSS/I	QSS : INTERCARRIER : (Default)

8. PRESET VALUES OF SERVICE MENU ITEMS

Below given values are average values and can vary according to the CPT type and chassis type.

(*) Adjust "2.AGC" to the same value as "AGC".

	SIZE	
	14"	21"
AGC	46	46
2.AGC (*)	AGC	AGC
VIDEO	OLD	OLD
H.POS	14	14
V.POS	4	4
V.HEI	64	81
LNTRY	46	47
S.COR	0	0
Y.DLY	1	1
OSD.H	25	25
OSD.V	33	33
G.CUT	64	64
R.CUT	65	64
B.CUT	64	64
R.DRV	59	55
B.DRV	53	56
SCRN	0	0
SECBL	48	48
AFT38	40	40
AFT33 (Secam L')	61	61
M.CON	26	30
RGBHP	H.POS+3	H.POS+3
TXCON	20	60
TXBRI	25	32
PTIME	2	2
ASTBY	1	1
COLOR	29	29
TINT	32	32
BRI	32	29
CON	40	46
SHAR	25	25
RGBBR	3	3

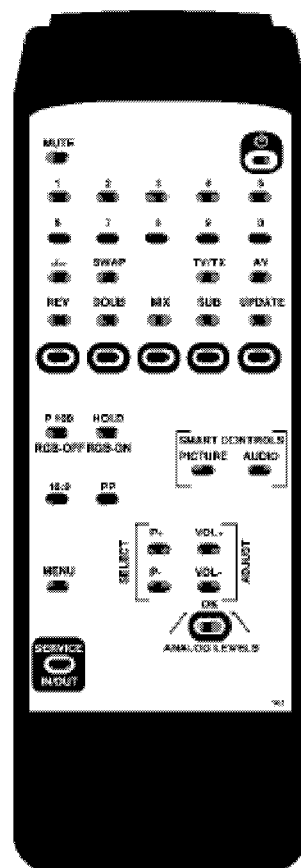


Figure. Service Remote Control

CONVERGENCE ADJUSTMENTS

Note: Before attempting any convergence adjustments, the receiver should be operated for at least fifteen minutes.

• Centre Convergence Adjustment

1. Receive crosshatch pattern with a colour bar signal generator.
2. Adjust the BRIGHTNESS and CONTRAST Controls for well defined pattern.
3. Adjust two tabs of the 4-Pole Magnets to change the angle between them (See figure 16) and superimpose red and blue vertical lines in the central area of the picture screen. (See figure).
4. Turn the both tabs at the same time keeping the constant angle to superimpose red and blue horizontal lines at the centre of the screen. (See figure)
5. Adjust two tabs of 6-Pole Magnets to superimpose red/blue line and green one. Adjusting the angle affects the vertical lines and rotating both magnets affects the horizontal lines.
6. Repeat adjustments 3,4,5 to ensure best convergence, the adjustment must be undertaken with great care because of the interaction between 4 and 6 pole magnets.

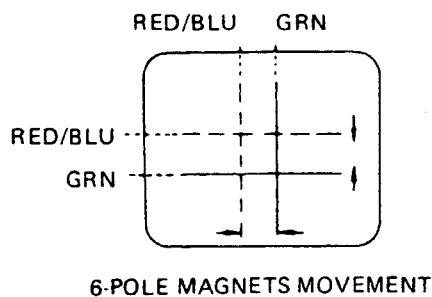
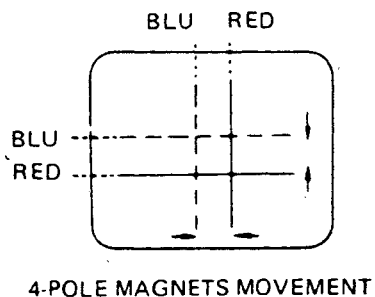
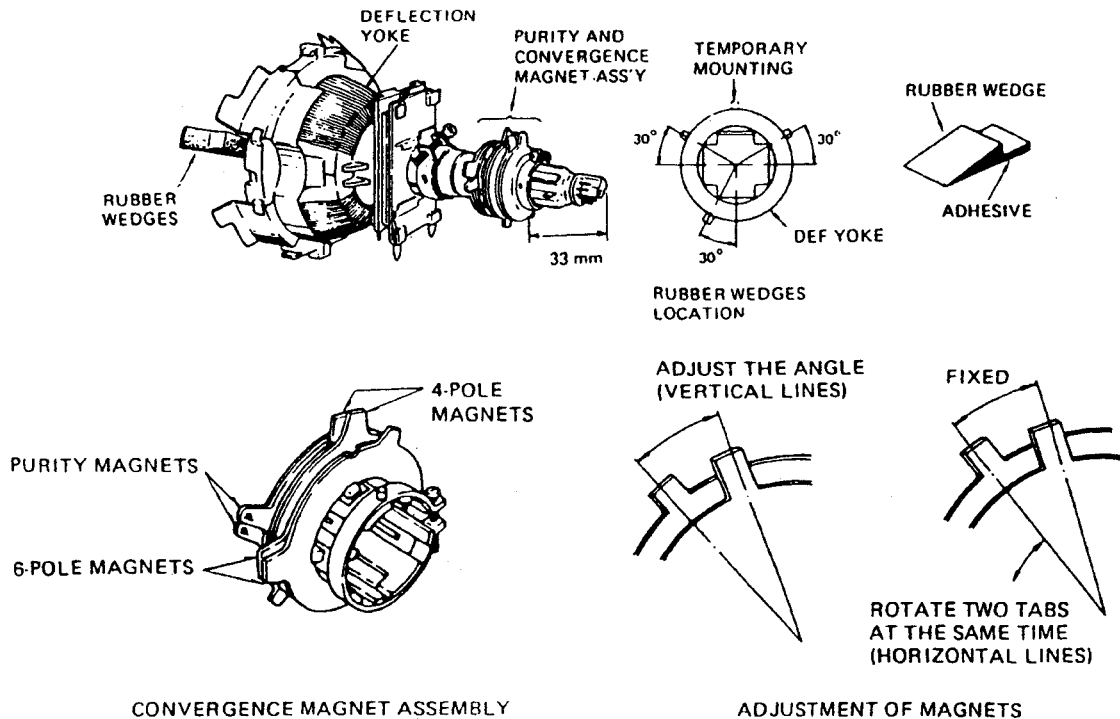
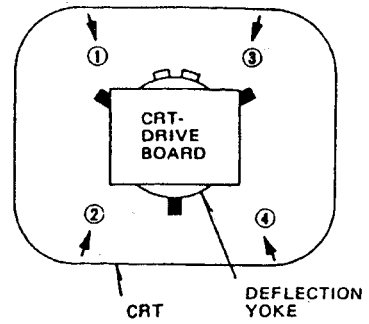
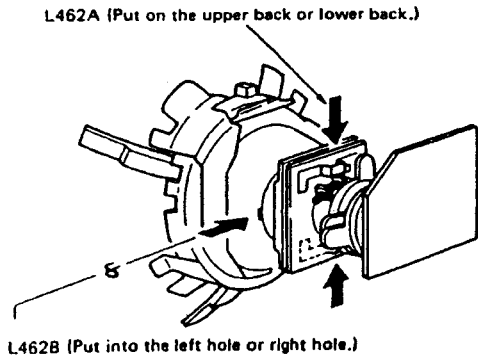
• Circumference Convergence Adjustment

1. Loosen the clamping screw of deflection yoke to allow the yoke to tilt.
2. Put a wedge as shown in figure 15 temporarily. (Do not remove cover paper on adhesive part of the wedge.)
3. Tilt front of the deflection yoke up or down to obtain better convergence in circumference. (See figure) Push the mounted wedge into the space between picture tube and the yoke to fix the yoke temporarily.
4. Put other wedge into bottom space and remove the cover paper to stick.
5. Tilt front of the yoke right or left to obtain better convergence in circumference. (See figure)
6. Keep the yoke position and put another wedge in either upper space. Remove cover paper and stick the wedge on picture tube to fix the yoke.
7. Detach the temporarily mounted wedge and put it in another upper space. Stick it on picture tube to fix the yoke.
8. After fixing three wedges, recheck overall convergence. Tighten the screw firmly to fix the yoke and check the yoke is firm.
9. Stick 3 adhesive tapes on wedges.

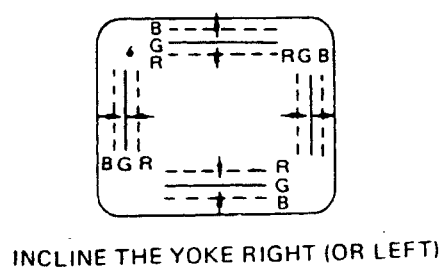
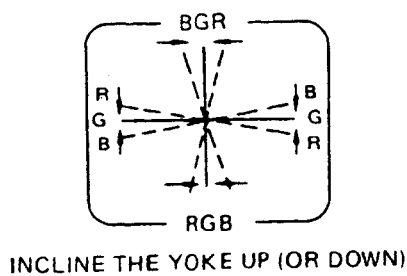
CONVERGENCE COMPENSATOR

Compensators L462A and L462B are used to correct misconvergence (Red-Green) at the top center or bottom center on screen, when the misconvergence is still evident even though the yoke adjustment is tried. Compensator L462C is also used to correct misconvergence (Vertical shift of Red or Blue) at four corners on screen.

1. To correct horizontal misconvergence (Red-Green), put compensator L462A on the yoke back (see figure right) to find a position for minimizing misconvergence. Mark the position and remove protective paper on the rear of L462A to stick it in place. Apply adhesives on both yoke and L462A.
2. To correct vertical misconvergence (Red-Green), put the tips of compensator L462B into either of the holes on the yoke core and apply adhesives.
3. To correct up or down shift of Red at top right or bottom right corner, put compensator L462C at point 1 or 2 on the picture tube (see figure right.) to find a position for minimizing misconvergence. Mark the position and remove protective paper on the rear of L462C to stick it in place.



Centre Convergence by Convergence Magnets



Circumference Convergence by DEF Yoke

Dot Movement Pattern

CHANNEL FRQENCY TABLE (BG,I,DK,LL')

CHANNEL NO	BG	I	DK	L/L'			
CH1		49.75	49.75	47.75			
CH2	48.25	59.25	59.25	55.75			
CH3	55.25	77.25	77.25	60.50			
CH4	62.25	85.25	85.25	63.75			
CH5	175.25	93.25	93.25	176.00			
CH6	182.25	175.25	175.25	184.00			
CH7	189.25	183.25	183.25	192.00			
CH8	196.25	191.25	191.25	200.00			
CH9	203.25	199.25	199.25	208.00			
CH10	210.25	207.25	207.25	216.00			
CH11	217.25	215.25	215.25	189.25			
CH12	224.25	223.25	223.25	182.25			
CH13	53.75	45.75		196.25			
CH14	62.25	53.75		210.25			
CH15	82.25	61.75					
CH16	175.25	69.75					
CH17	183.25	95.25					
CH18	192.25						
CH19	201.25						
CH20	210.25						
CH21	471.25	471.25	471.25	471.25			
CH22	479.25	479.25	479.25	479.25			
CH23	487.25	487.25	487.25	487.25			
CH24	495.25	495.25	495.25	495.25			
CH25	503.25	503.25	503.25	503.25			
CH26	511.25	511.25	511.25	511.25			
CH27	519.25	519.25	519.25	519.25			
CH28	527.25	527.25	527.25	527.25			
CH29	535.25	535.25	535.25	535.25			
CH30	543.25	543.25	543.25	543.25			
CH31	551.25	551.25	551.25	551.25			
CH32	559.25	559.25	559.25	559.25			
CH33	567.25	567.25	567.25	567.25			
CH34	575.25	575.25	575.25	575.25			
CH35	583.25	583.25	583.25	583.25			
CH36	591.25	591.25	591.25	591.25			
CH37	599.25	599.25	599.25	599.25			
CH38	607.25	607.25	607.25	607.25			
CH39	615.25	615.25	615.25	615.25			
CH40	623.25	623.25	623.25	623.25			
CH41	631.25	631.25	631.25	631.25			
CH42	639.25	639.25	639.25	639.25			
CH43	647.25	647.25	647.25	647.25			
CH44	655.25	655.25	655.25	655.25			
CH45	663.25	663.25	663.25	663.25			
CH46	671.25	671.25	671.25	671.25			
CH47	679.25	679.25	679.25	679.25			
CH48	687.25	687.25	687.25	687.25			
CH49	695.25	695.25	695.25	695.25			
CH50	703.25	703.25	703.25	703.25			
CH51	711.25	711.25	711.25	711.25			
CH52	719.25	719.25	719.25	719.25			
CH53	727.25	727.25	727.25	727.25			
CH54	735.25	735.25	735.25	735.25			
CH55	743.25	743.25	743.25	743.25			
CH56	751.25	751.25	751.25	751.25			
CH57	759.25	759.25	759.25	759.25			
CH58	767.25	767.25	767.25	767.25			
CH59	775.25	775.25	775.25	775.25			

CH60	783.25	783.25	783.25	783.25			
CH61	791.25	791.25	791.25	791.25			
CH62	799.25	799.25	799.25	799.25			
CH63	807.25	807.25	807.25	807.25			
CH64	815.25	815.25	815.25	815.25			
CH65	823.25	823.25	823.25	823.25			
CH66	831.25	831.25	831.25	831.25			
CH67	839.25	839.25	839.25	839.25			
CH68	847.25	847.25	847.25	847.25			
CH69	855.25	855.25	855.25	855.25			
CH70				863.25			
CH71							
CH72							
CH73							
CH74	69.25						
CH75	76.25						
CH76	83.25						
CH77	90.25						
CH78	97.25						
CH79	59.25						
CH80	93.25						
S1	105.25	103.25	103.25	116.75			
S2	112.25	111.25	111.25	128.75			
S3	119.25	119.25	119.25	140.75			
S4	126.25	127.25	127.25	152.75			
S5	133.25	135.25	135.25	164.75			
S6	140.25	143.25	143.25	176.75			
S7	147.25	151.25	151.25	188.75			
S8	154.25	159.25	159.25	200.75			
S9	161.25	167.25	167.25	212.75			
S10	168.25	231.25	231.25	224.75			
S11	231.25	239.25	239.25	236.75			
S12	238.25	247.25	247.25	248.75			
S13	245.25	255.25	255.25	260.75			
S14	252.25	263.25	263.25	272.75			
S15	259.25	271.25	271.25	284.75			
S16	266.25	279.25	279.25	296.75			
S17	273.25	287.25	287.25	55.75			
S18	280.25	295.25	295.25	60.50			
S19	287.25	303.25	303.25	63.75			
S20	294.25						
S21	303.25			303.25			
S22	311.25	311.25	311.25	311.25			
S23	319.25	319.25	319.25	319.25			
S24	327.25	327.25	327.25	327.25			
S25	335.25	335.25	335.25	335.25			
S26	343.25	343.25	343.25	343.25			
S27	351.25	351.25	351.25	351.25			
S28	359.25	359.25	359.25	359.25			
S29	367.25	367.25	367.25	367.25			
S30	375.25	375.25	375.25	375.25			
S31	383.25	383.25	383.25	383.25			
S32	391.25	391.25	391.25	391.25			
S33	399.25	399.25	399.25	399.25			
S34	407.25	407.25	407.25	407.25			
S35	415.25	415.25	415.25	415.25			
S36	423.25	423.25	423.25	423.25			
S37	431.25	431.25	431.25	431.25			
S38	439.25	439.25	439.25	439.25			
S39	447.25	447.25	447.25	447.25			
S40	455.25	455.25	455.25	455.25			
S41	463.25	463.25	463.25	463.25			

SPARE PARTS LIST

PART NO	DESCRIPTION	NOTES	POSITION NUMBERS
273471	C-PEM 47NF K 63V R:5		C0001 C0002
201222	CC 220PF K 50V NPO R:5		C0003 C0004
252111	EC 100UF 10V 11*5 R:5		C103 C147 C623
250475	EC 4.7UF 63V 11*5 R:5		C104 C123
293113	CC-CHIP 10NF K 50V /0603 X7R		C10 C128 C131 C136 C137 C146 C151 C156 C167 C409 C433 C504 C610 C620 C621 C633
294118	CC-CHIP 100NF K 16V /0603 X7R		C12 C14 C117 C121 C125 C126 C127 C148
250479	EC 4.7UF 50V 11*5 R:5		C11 C15 C164 C419
293478	CC-CHIP 47NF K 25V /0603 X7R TAPE		C13 C20 C22 C102 C122 C159 C160 C166 C403 C406 C408 C412 C421 C422 C423 C427 C431 C622 C625 C626 C628 C629 C630 C631
292114	CC-CHIP 1NF K 50V /0603 X7R		C16 C17 C201 C202 C404 C410 C508 C417 C432 C434 C615
294235	CC-CHIP 220NF Z 16V /0603 Y5V TAPE		C118
291226	CC-CHIP 220PF J 50V /0603 NPO TAPE		C119 C134 C149 C157 C203 C205 C209 C210 C413 C416
252482	EC 470UF 16V 12.5*10 R:5		C120
251221	EC 22UF-M 50V 11*5 R:5		C124
290107	CC-CHIP 10PF J 50V /0603 NPO TAPE		C130
252112	EC 100UF 16V 11*6 R:5		C132
259471	EC 0.47UF 50V 11*5 R:5	21"	C133 C135
179005	RC-CHIP 0R /0603 1.6*0.8 TAPE	14"	C134
291226	CC-CHIP 220PF J 50V /0603 NPO TAPE	21"	C134
251478	EC 47UF 16V 11*5 R:5		C138 C129 C155 C161 C207 C402 C405 C407 C415 C501
290562	CC-CHIP 56PF J 50V/0603 NPO TAPE		C139
294231	CC-CHIP 220NF K 16V /0805 X7R		C141 C401
201124	CC 120PF K 50V NPO R:5		C142
259471	EC 0.47UF 50V 11*5 R:5		C143 C158
291561	CC-CHIP 560PF J 50V /0603 NPO TAPE		C144
294476	CC-CHIP 470NF K 16V /0805 X7R		C145
251116	EC 10UF 63V 11*5 R:5		C150 C152 C502
290223	CC-CHIP 22PF J 50V /0603 NPO TAPE		C153
292228	CC-CHIP 2.2NF K 50V/0603 X7R		C154 C418
292153	CC-CHIP 1.5NF K 50V /0603 X7R TAPE		C162
250220	EC 2.2UF 50V RS 11*5 R:5 TAPING		C163
291476	CC-CHIP 470PF J 50V /0603 NP0		C165 C168 C169 C172 C204 C206
293478	CC-CHIP 47NF K 25V /0603 X7R TAPE	21"	C166
293113	CC-CHIP 10NF K 50V /0603 X7R	21"	C167
251222	EC 22UF 50V RS 11*6.3 TAPING		C18 C19
251115	EC 10UF 25V 11*5 R:5		C21 C101 C208 C426
293234	CC-CHIP 22NF K 50V/0603 X7R TAPE		C411
292114	CC-CHIP 1NF K 50V /0603 X7R		C417 C432 C434
291124	CC-CHIP 120PF J 50V /0603 NPO TAPE		C420
290335	CC-CHIP 33PF J 50V /0603 NPO TAPE		C424 C425 C525
291104	CC-CHIP 100PF J 50V /0603 NPO		C428 C429 C430
293478	CC-CHIP 47NF K 25V /0603 X7R TAPE		C431
293113	CC-CHIP 10NF K 50V /0603 X7R		C433 C633
252238	EC 100UF-M 35V 12*8 R:5		C503

SPARE PARTS LIST

PART NO	DESCRIPTION	NOTES	POSITION NUMBERS
273105	C-PEM 10NF K 100V R:5		C505
274332	C-PEM 330NF K 63V R:5		C506
290159	CC-CHIP 15PF J 50V /0603 NPO		C507
251123	EC 10UF 63V 11*5 R:5 105		C509
253106	EC 1000UF 25V 20*13 R:5		C510
292476	CC-CHIP 4.7NF K 50V /0805 X7R		C511 C524
251484	EC 47UF 35V 11*6.3 R:5		C512
9-948-018-31	C-PPM 12NF J 1.5/1.6KV DIP R:15 CLAS-B	21"	C513
9-948-018-32	C-PPM 11NF J 1.5/1.6KV R:15 DIP CLASS-B	14"	C513
201226	CC 220PF K 2KV Y5P R:5		C514
239490	EC 4.7UF 160V 11*6.3 R:5		C515
271392	C-PPM 390NF J 250V DIP TY R:15 CLA-B		C516
221571	CC 560PF 500V TAPE R:5		C517
273333	C-PEM 33NF K 100V R:5		C519
274107	C-PEM 100NF J 100V R:5		C520
274102	C-PEM 100NF J 63V R:5		C521
251109	EC 10UF 250V 16*10 R:5		C522 C709
253101	EC 1000UF 35V 25*13 R:5		C523
294232	CC-CHIP 220NF K 25V /0805 X7R	21"	C526
294231	CC-CHIP 220NF K 16V /0805 X7R	14"	C526
253109	EC 1000UF 35V 30*10 R:5	21"	C527
252112	EC 100UF 16V 11*6 R:5	14"	C527
290688	CC-CHIP 68PF J 50V /0603 NPO TAPE		C528
292475	CC-CHIP 4.7NF K 50V /0603 X7R		C529
250100	EC 1UF 160V 11*6.3 R:5		C531
274340	C-PEM 330NF K 275V-AC R:22.5 CLASS-B		C601
274119	C-PEM 100NF M 275V-AC R:15 CLASS-B		C602
202105	CC 1NF K 1KV Y5P R:5		C603 C604
9-948-018-33	C-ELA 68UF 450V 25*22 R:10 (METAL TOP)		C605
203330	C-PPM 33NF J 630V R:15		C606
273115	C-PPM 10NF K 275 VAC R:10		C607
9-948-018-35	CC 470PF K 2KV +15%, -30% 105C R:5		C608
294122	CC-CHIP 100NF K 50V /0603 X7R		C609
251339	EC 33UF 25V 11*5 R:5		C611
291477	CC-CHIP 470PF J 50V /0805 NP0	14"	C612
291561	CC-CHIP 560PF J 50V /0603 NPO TAPE	21"	C612
291103	CC-CHIP 100PF J 50V /0805 NPO		C613
292391	CC-CHIP 3.9NF J 50V /0805 X7R		C614
292114	CC-CHIP 1NF K 50V /0603 X7R		C615
202220	CC 2.2NF M 250VAC Y5U R:10 AH/NSA		C616
201226	CC 220PF K 2KV Y5P R:5		C617
251489	C-ELA 47UF 160V 21*13 R:5		C618
251337	C-ELA 33UF 160V 21*10 R:5		C619
253228	C-ELA 2200UF 25V 25*13 R:5		C624
252223	EC 220UF 16V 11*8 105 R:5		C627
252127	EC 100UF 10V 11*5 105 R:5		C632
291104	CC-CHIP 100PF J 50V /0603 NPO		C636
220330	CER.CAP RT-HE50TKCH330J-T		C701 C703 C705
201390	CC 390PF J 50V SL R:5		C702 C704 C706
9-948-018-34	C-CE 2.2NF K 2KV Y5P R:7.5		C707
274105	C-PEM 100NF J 250V R:10		C708

SPARE PARTS LIST

PART NO	DESCRIPTION	NOTES	POSITION NUMBERS					
302289	DIODE 1N4148 52MM		D10	D402	D403	D404	D405	D407
			D409	D410	D411	D412	D503	D506
			D606	D612				
302948	DIODE 1N4007		D105	D701				
303195	DIODE 4148 MELF		D106					
303295	LED L-513LR1D KIRM. L=25.4 (PARALIGHT)		D401					
303217	DIODE RGP10J		D408	D605				
302289	DIODE 1N4148 52MM		D409	D612				
303308	DIODE RF2007		D501	D601	D602	D603	D604	
300305	DIODE BA157		D502	D504				
303227	DIODE RGP15J		D505					
9-948-018-30	DIODE RGP30MS	21"	D607					
9-948-018-29	DIODE RGP15J	14"	D607					
9-948-018-28	DIODE RGP30D		D608					
303209	DIODE BAV21		D613	D614				
056749	SAW FILTER OFW G1985M		F103					
056767	SAW FILTER OFW K9456M	21"	F104					
056773	CER.FILTER SFSRA6M50CF00-A0	21"	F105					
030402	FUSE HOLDER, TK79A PLA		F601					
9-948-018-15	FUSE 2.5AT (215 SER.)		F601					
452510	IC 4053B CMOS 16SOIC		IC10					
9-948-018-20	IC NN5198K	21"	IC101					
452808	IC NN5099K	14"	IC101					
452597	IC-CHIP TDA7056AT		IC102					
453002-01	IC-CHIP AT24C04N-10SI-2.7 (ATMEL) TAPE&R		IC402					
9-948-018-22	IR RECEIVER TSOP 1838		IC403					
9-948-018-19	IC AN5539-LF		IC501					
9-948-018-21	IC ICE1QS01		IC601					
451518-GP	IC KA317TU T0220CASE (GRE.PART)		IC602	IC604				
50S312	INSULATOR SILICON 19.5*12*.25		IC602					
451517-GP	IC TDB7805CT T0220CASE(GRE.PART)		IC603					
055139	CHOKE COIL 50MHZ 600R PH-WBC3/R-3B1		L0001	L0002				
053500	COIL 10UH K AXIAL LAL04		L101	L401	L402	L403		
053331	COIL 10UH LAL02	21"	L102					
053778	COIL 47UH J LAL03		L104	L103				
053805	COIL-CHIP 1UH K /0805		L105					
053805	COIL-CHIP 1UH K /0805	21"	L107					
053726	COIL-CHIP 22UH %20/0805		L108					
053711	COIL 10UH K (TAIYO) LAL03		L404	L0003				
053781	COIL 2.2UH LAL04		L501					
9-948-018-16	COIL H-LIN 55UH NEOSID		L502					
053500	COIL 10UH K AXIAL LAL04	21"	L503					
053711	COIL 10UH K (TAIYO) LAL03		L602					
051687-10	LINE FILTER 27MH E-TYPE OPEN		L601					
053739-10	COIL CHOKE 50UH		L603					
053352	COIL- CHOKE 10UH R0814 14.1		L701					

SPARE PARTS LIST

PART NO	DESCRIPTION	NOTES	POSITION NUMBERS
132209	R-VAR 2.2K (V) 5*3		P601
056723	CRYSTAL 4.433619MHZ		Q101
056660	CRYSTAL 3.579545 90OHM BULK		Q102
056620	CRYSTAL 6MHZ (CL 30PF)		Q401
101221	CFR 220R J 1/2W 52MM		R0001 R0003
102141	CFR 1K J 1/4W /6 26MM		R0004 R14 R104 R402 R413 R423
101471	CFR 470R J 1/2W /9 52MM		R0005 R155 R523
141222	CFR 220R J 1/4W /3.2 26MM		R101 R102 R148 R424 R702 R721 R709 R715
103155	CFR 15K J 1/4W 52MM		R103 R143 R415
173114	RC-CHIP 100K J 1/16W /0603		R106 R428 R508 R520
173108	RC-CHIP 10K J 1/16W /0603		R10 R107 R108 R146 R228 R229 R238 R239 R240 R241 R414 R418 R430 R433 R438 R445 R484 R490 R511 R528 R537 R602 R618 R625
172105	RC-CHIP 1K J 1/8W /1206		R11
173685	RC-CHIP 68K J 1/16W /0603		R12 R16 R20 R22 R492
102487	CFR 4.7K J 1/4W /6 26MM		R126 R412 R519
103136	CFR 10K J 1/4W /6 26MM		R127 R419 R505 R510 R512 R528
173332	RC-CHIP 33K J 1/16W /0603 TAPE		R128 R225 R226 R417 R421
119227-01	RMF 2.2R J 1W	21"	R129
119476	RMF 4.7R J 1W	14"	R129
170154	RC-CHIP 150R J 1/16W /0603 TAPE		R13 R482
171107	RC-CHIP 100R J 1/16W /0603		R131 R141 R145 R159 R209 R431 R455 R458 R459 R460 R469 R470
170754	RC-CHIP 75R J 1/16W /0603		R134 R135 R136
179005	RC-CHIP 0R /0805 2*1.25	14"	R137
101470	CFR 470R J 1/4W /6 52MM		R138
144180	CFR 180K J 1/4W /3.2 26MM		R139
103823	CFR 82K J 1/4W 52MM		R140
172686	RC-CHIP 6.8K J 1/16W /0603		R147 R416 R609
101271	CFR 270R J 1/2W /9 52MM		R149
175472	RC-CHIP 4.7M J 1/16W/0603 TAPE		R151
171336	RC-CHIP 330R J 1/16W /0603 TAPE		R154 R453 R456
101494	CFR 470R J 1/4W /6 26MM		R155 R237 R432
171224	RC-CHIP 220R J 1/16W/0603 TAPE		R157
172104	RC-CHIP 1K J 1/16W /0603	21"	R161 R163 R165
171562	RC-CHIP 560R J 1/16W/0603 TAPE	21"	R162
172154	RC-CHIP 1.5K J 1/16W /0603 TAPE	21"	R164
172104	RC-CHIP 1K J 1/16W /0603		R15 R25 R27 R142 R153 R156 R160 R210 R212 R220 R405 R534
171472	RC-CHIP 470R J 1/16W /0603 TAPE		R17 R150
173153	RC-CHIP 15K J 1/16W /0603 TAPE		R18 R144 R201 R211 R213 R444
172567	RC-CHIP 5.6K J 1/16W /0603 TAPE		R19 R533
172393	RC-CHIP 3.9K J 1/16W/0603 TAPE		R202 R501
170822	RC-CHIP 82R J 1/10W /0805		R203 R204 R205 R206
171562	RC-CHIP 560R J 1/16W/0603 TAPE		R207 R208 R236 R406
170750	RC-CHIP 75R J 1/10W /0805		R21 R217
172479	RC-CHIP 4.7K J 1/16W /0603 TAPE		R23 R24 R133 R468 R471 R411 R467 R472 R524

SPARE PARTS LIST

PART NO	DESCRIPTION	NOTES	POSITION NUMBERS					
179005	RC-CHIP 0R /0603 1.6*0.8 TAPE		R26 R218 R478	R105 R221 R479	R125 R234 R529	R130 R403 R624	R137 R427 R625	R172 R443
100684	CFR 68R J 1/4W /6 52MM		R215					
172224	RC-CHIP 2.2K J 1/16W/0603 TAPE		R216	R223	R227	R420		
171395	RC-CHIP 390R J 1/16W /0603 TAPE		R230	R231	R232			
102101	CFR 1K J 1/4W /6 52MM		R233	R234	R235	R422		
172336	RC-CHIP 3.3K J 1/16W /0603		R401	R535				
103116	CFR 10K J 1/4W /6 52MM		R404	R619				
171562	RC-CHIP 560R J 1/16W/0603 TAPE		R406					
175105	RC-CHIP 1M 1/16W/0603		R407					
172154	RC-CHIP 1.5K J 1/16W /0603 TAPE		R408	R409	R152	R491		
171683	RC-CHIP 680R J 1/16W /0603		R410	R457	R536			
102228	CFR 2.2K J 1/4W /6 26MM		R426					
179005	RC-CHIP 0R /0603 1.6*0.8 TAPE		R427					
173114	RC-CHIP 100K J 1/16W /0603		R428					
172479	RC-CHIP 4.7K J 1/16W /0603 TAPE		R429					
173108	RC-CHIP 10K J 1/16W /0603		R430	R433	R438	R484	R485	R602
172567	RC-CHIP 5.6K J 1/16W /0603 TAPE		R435					
172276	RC-CHIP 2.7K J 1/16W /0603		R436					
171107	RC-CHIP 100R J 1/16W /0603		R437					
119114	RMF 12R J 1/2W		R439					
102227	CFR 2.2K J 1/4W /6 52MM		R441					
172824	RC-CHIP 8.2K J 1/16W /0603 TAPE		R464	R507				
101106	CFR 100R J 1/4W 52MM		R465					
172276	RC-CHIP 2.7K J 1/16W /0603		R483	R488	R502			
172104	RC-CHIP 1K J 1/16W /0603		R486	R487	R610			
173563	RC-CHIP 56K J 1/16W /0603		R503	R504				
109104	CFR 1R K 1/2W/9 52MM		R506					
173229	RC-CHIP 22K J 1/16W /0603		R509	R516	R532			
101271	CFR 270R J 1/2W /9 52MM	14"	R513					
101471	CFR 470R J 1/2W /9 52MM	21"	R513					
119220	RM 2.2R J 1/2W	21"	R514	R515				
119271	RM 2.7R J 1/2W	14"	R514	R515				
110823	RMO 82R J 3W R:20	14"	R517					
120472	RW 47R J 7W SQM-7 CEMENT H:39 R:5	21"	R517					
100271	CFR 27R J 1/2W/9 52MM		R518					
113225	RM 22K J 1/2W 52MM		R522					
119110	RMF 1R J 1W		R525					
113161	RM 15K %1 1/4W R:10	14"	R526					
112834	RM 8.2K %1 1/4W R:10	21"	R526					
102338	CFR 3.3K J 1/4W /6 52MM		R527					
103136	CFR 10K J 1/4W /6 26MM		R528					
119337	RMO 3.3R J 2W R:27.5 TAPE		R530					
179002	RC-CHIP 0R /1206		R531	R244	R174			
114110	RM 100K %1 1/4W 26MM		R538	R539				
113336	RM 33K %1 1/4W 26MM		R540					
102487	CFR 4.7K J 1/4W /6 26MM		R541					
103396	CFR 39K J 1/2W /9 52MM		R542	R543				
179001	RC-CHIP 0R /0805 2*1.25		R543	R481	R242	R175	R173	
129272	RW 2.7R K 5W R:15 MM		R601					
9-948-018-37	RMO 68K J 1.5W 73MM		R603					
9-948-018-36	PTC 9R/2 PIN - 3 CYCLE BOX TYPE		R604					

SPARE PARTS LIST

PART NO	DESCRIPTION	NOTES	POSITION NUMBERS
100220	CFR 22R J 1/2W 52MM		R605
173478	RC-CHIP 47K J 1/16W /0603 TAPE		R606
115121	RM 1.2M J 1W 52MM		R608
172154	RC-CHIP 1.5K J 1/16W /0603 TAPE		R611
100271	CFR 27R J 1/2W/9 52MM		R612
115470	RM 4.7M J 1/2W 52MM 'SAFETY '		R613
114152	RM 150K F 1/4W 52MM	14"	R614
114471	RM 470K F 1/4W 52MM	21"	R614
119109	RNF 0.1R J 0.4W (UFLB) 52MM		R615
171241	RC-CHIP 240R %1 1/16W /0603 TAPE		R616 R621
172155	RC-CHIP 1.5K %1 1/16W /0603 TAPE		R617
120234	RMF 22R J 1/2W		R620
171392	RC-CHIP 390R %1 1/16W/0603 TAPE		R622
115110	RM 1M J .5W 52MM SAFETY		R623
172276	RC-CHIP 2.7K J 1/16W /0603		R624
173108	RC-CHIP 10K J 1/16W /0603		R625
172824	RC-CHIP 8.2K J 1/16W /0603 TAPE		R626
172336	RC-CHIP 3.3K J 1/16W /0603		R627
113153	RMO 15K J 1W R:15		R701 R707 R713
113153	RMO 15K J 1W R:15		R701
141222	CFR 220R J 1/4W /3.2 26MM	21"	R702 R709
142272	CFR 2.7K J 1/4W /3.2 52MM		R703 R710 R716
102159	CFR 1.5K J 1/2W /9 52MM		R704 R708 R714
141472	CFR 470R J 1/4W /3.2 26MM		R705 R711 R717
141103	CFR 100R J 1/4W /3.2 26MM		R706 R712 R718
141222	CFR 220R J 1/4W /3.2 26MM		R715
141222	CFR 220R J 1/4W /3.2 26MM	14"	R719 R720
104103	CFR 100K J 1/2W 52MM		R722
054301	ROLE RT424-012		RL601
31244	SCART SOCKET 12.6/12.7		SK201
10860	TACT SW LONG STEN		SW401 SW402 SW403
10861	ON/OFF SWITCH BK98		SW601
401282	TRN-CHIP BC848C SOT23		T10
401141	TRN-CHIP BC848B SOT23		T11 T101 T107 T109 T201 T202 T203 T204 T205 T206 T402 T403 T404 T405 T411 T415 T416 T417 T418 T501 T502 T505 T507 T602
401141	TRN-CHIP BC848B SOT23	21"	T109
401142	TRN-CHIP BC858B SOT23		T401 T410
401047	TRN BC337-25		T407
401342-01	TRN-CHIP BC847B		T419 T420
9-948-018-25	TRN BU808DFI		T504
9-948-018-26	TRN-CHIP 2SK3065		T506
9-948-018-23	TRN- 2SK2750 TO- 220FP (2-10R1B)		T601
401025	TRN BC547B		T604
401142	TRN-CHIP BC858B SOT23		T605 T406
9-948-018-24	TRN 2SC 2482		T701 T702 T703
040003-JV1	FBT JV/LAYER CJ28979 12.6 14" AIWA	14"	TR501
9-948-018-17	FBT JV/LAYER CJ28980 12.6 21" AIWA	21"	TR501

SPARE PARTS LIST

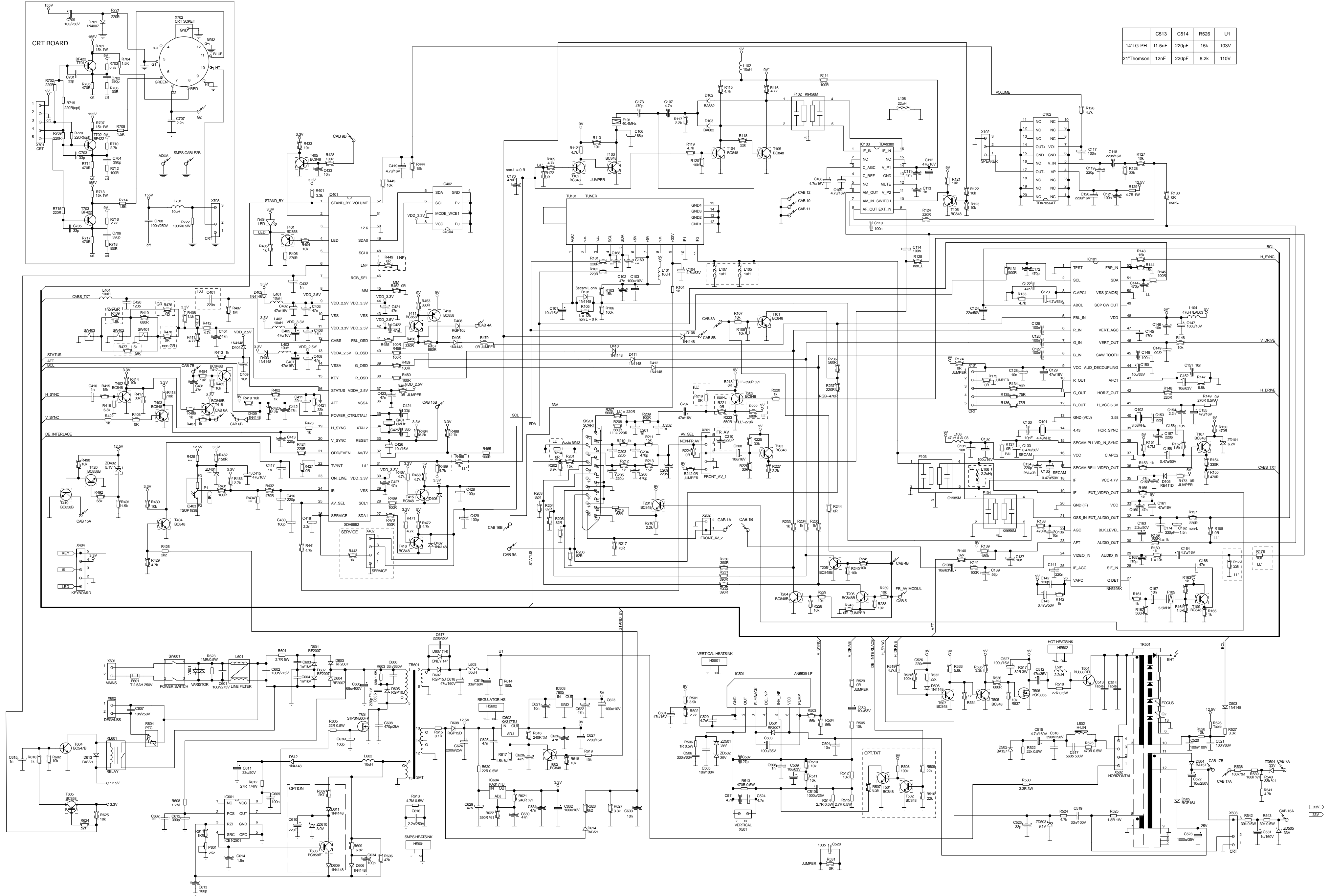
PART NO	DESCRIPTION	NOTES	POSITION NUMBERS
050011-EL1	SMPS 21/SLOT EL/2074.5070 12.6 (AIWA)	21"	TR601
050012-EL1	SMPS 14/SLOT EL/2414.0027 12.6 (AIWA)	14"	TR601
G99136-PH2	TUNER PH ASM.PLL UV1316/AIG-3 SV22		TU101
160108	VARISTOR ILJIN 621D-14A 620V		V601
160110	CAP VARISTOR 5006V00001A		V601
031176	CONN.CINCH 12.1 FRONT-AV YELLOW		X0002
031092	CONN.CINCH AIWA FRONT-AV BLACK		X0003
031180	CONN.HEADPHONE 12.1 FRONT-AV		X0004
D50511-AS	CN.CABLE WITH HOLDER PVC 5'LI L=375	21"	X101
D50512-AS	CONN.CABLE WITH HOLDE PVC 5'LI L=275	14"	X101
D50513-AS	CONN.CABLE WITH HOLDE PVC 3+1 L=375	14"	X503
D50514-AS	CONN.CABLE WITH HOLDE PVC 3+1 L=275	21"	X503
031309	CONN.HOUSING 2.5TMK VW-1/LEV3 2005GREE	14"	X701
9-948-018-18	INCHANG/CRT SOCKET ISHM23S-W	21"	X702
031533	CRT SOCKET MINI INCHANG	14"	X702
302786	DIODE Z. MTZJ6.2B 52MM		ZD101
303778	DIODE-CHIP Z. ZMM5.1		ZD402
303814	DIODE Z.MTZJ39B		ZD501 ZD502
300193	DIODE Z. BZX55C9V1-GPS(VISHAY)		ZD503
9-948-018-27	DIODE Z. UZT33V		ZD504 ZD505
056321-VC6	CPT VC A51EFS13X191	21"	
056314-PH3	CPT PH A34EAC01X06 DY-BRZ	14"	
5FZ107-AS	SPEAKER 8R 3W(N)/5W(M) 50X90..21"	21"	
D50107-AS	SPEAKER 8R 2W(N)/3W(M) 70X40....14"	14"	
7ZB135	AV+HP ASSY 12.6 AIWA 21" T98	21"	
D50135	AV+HP ASSY 12.6 AIWA 14" T97	14"	
D50130	AV SWITCHING MODULE ASSY 12.6 AIWA		
7ZB110	A9 CHASSIS 21"PS/DK/X/AV/HP/FZ/NT/A-OSD	21"	
D50110	A9 CHASSIS 14" P/TX/AV/NTSC-PL/FZ A-OSD	14"	
9-948-018-14	CRT MODUL NARROW 12.6 AIWA (A9)	21"	
D50165	CRT MODUL MINI 12.6 AIWA	14"	
7ZB167-AS	DEGAUSSING COIL ASSY 21" BAND	21"	
D50168-AS	DEGAUSSING COIL ASSY 14" BAND	14"	
D50906	BATTERY AA 1.5V (SONY AIWA)		
D50820-01	CIRCUIT DIAGRAM 12.6 AIWA		

SPARE PARTS LIST

PART No.	DESCRIPTION	NOTES
9-948-018-44	Carton	14"
9-948-018-45	Carton	21"
9-948-018-46	Instruction Manual	English
9-948-018-47	Instruction Manual	Dutch, French, German, Italian
9-948-018-48	Instruction Manual	German, Greek, Dutch
9-948-018-49	Instruction Manual	Italian
9-948-018-50	Instruction Manual	English, German, Spanish
9-948-018-51	Instruction Manual	English, Russian, Polish, Czech, Hungarian

AIWA CTV CHASSIS

D50820-01



	C513	C514	R526	U1
14" LG-PH	11.5nF	220pF	15k	103V
21" Thomson	12nF	220pF	8.2k	110V

