

JVC

SERVICE MANUAL

LCD PANEL TELEVISION

**LT-20E50SJ,
LT-20E50SU,
LT-20E50SU_{IZ}**

InteriArt

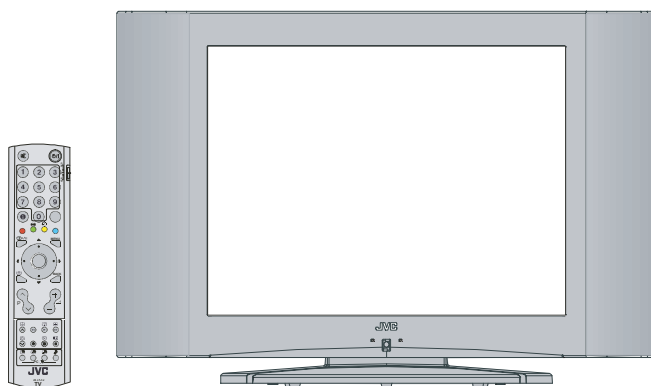


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SPECIFICATION

Items		Contents
Dimensions (W × H × D)		61.7cm × 43.0cm × 23.5cm [Included stand] 61.7cm × 39.6cm × 7.3cm [TV only]
Mass		8.6kg [Included stand] 7.0kg [TV only]
Power Input		AC100V to AC240 V, 50 Hz
Power Consumption		54W (Standby: 3.0W)
TV RF System		CCIR B/G, I, D/K, L
Colour System		PAL / SECAM / NTSC 3.58 / NTSC 4.43 (NTSC: EXT only).
Stereo System		A2 (B/G, D/K), NICAM (B/G, I, D/K, L)
Teletext System		FLOF (Fastext), TOP, WST (World Standard System)
Receiving Frequency	VHF UHF CATV	47MHz to 470MHz 470MHz to 862MHz 116MHz to 172MHz / 220MHz to 469MHz
Intermediate Frequency	VIF SIF	38.9MHz(B/G, D/K, I) 33.4MHz(5.5MHz:B/G) / 32.9MHz(6.0MHz:I) / 32.4MHz(6.5MHz:L,D/K)
Colour Sub Carrier Frequency	PAL SECAM NTSC	4.43MHz 4.40625MHz / 4.25MHz 3.58MHz / 4.43MHz
LCD Panel		20V-inch
Screen Size		Diagonal : 51.1cm (H:41.1cm × V : 30.9cm)
Display Pixels		Horizontal : 800 dots × Vertical : 600 dots (SVGA)
Audio Power Output		5W + 5W(10% THD)
Speaker		5.0cm, oval type × 2
Aerial Terminal (VHF/UHF)		75Ω unbalanced, coaxial
EXT-1 / EXT-2 (Input / Output)		21-pin Euro connector (SCART socket) × 2
EXT-3(Input)	Component Video 625p / 525p / 625i / 525i Audio	RCA pin jack × 3 Y : 1V (p-p), Positive (Negative sync provided), 75 Ω Cb/Cr : 0.7V(p-p), 75 Ω 500mV(rms) (-4dBs), high impedance, RCA pin jack × 2
EXT-4 (Input)	S-Video Video Audio	Mini-DIN 4 pin × 1 Y: 1V (p-p), Positive (Negative sync provided), 75 Ω C: 0.286V (p-p) (Burst signal), 75 Ω 1V (p-p), Positive (Negative sync provided), 75 Ω, RCA pin jack × 1 500mV (rms), High impedance, RCA pin jack × 2
PC (RGB) Input		D-sub 15pin × 1 R/G/B : 0.7V (p-p), 75Ω HD / VD : 1V (p-p) to 5V (p-p), high impedance < Available signal > VGA : 640 pixels × 480 pixels (Horizontal : 31.5kHz / Vertical : 60Hz) XGA : 1024 pixels × 768 pixels (Horizontal : 48.4kHz / Vertical : 60Hz)
PC AUDIO Input		3.5mm stereo mini jack × 1
Audio Output		500mV (rms), Low impedance, RCA pin jack × 2
Subwoofer Output		More than 0 to 1000mV (rms) (+2.2dBs), low impedance (80Hz when modulated 100%), RCA pin jack × 1
Headphone		3.5mm stereo mini jack × 1
Remote Control Unit		RM-C1860 (AA/R6 dry cell battery × 2)

Design & specifications are subject to change without notice.

SECTION 1

PRECAUTION

1.1 SAFETY PRECAUTIONS

- (1) The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
- (2) Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
- (3) Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (Δ) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.
- (4) **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground or EARTH side ground when repairing.**
Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : ($\perp$) side GND, the ISOLATED (NEUTRAL) : ($\equiv$) side GND and EARTH : ($\oplus$) side GND.
Don't short between the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND and never measure the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND at the same time with a measuring apparatus (oscilloscope etc.). If above note will not be kept, a fuse or any parts will be broken.
- (5) When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.

(6) Isolation Check (Safety for Electrical Shock Hazard)

After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screw heads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

a) Dielectric Strength Test

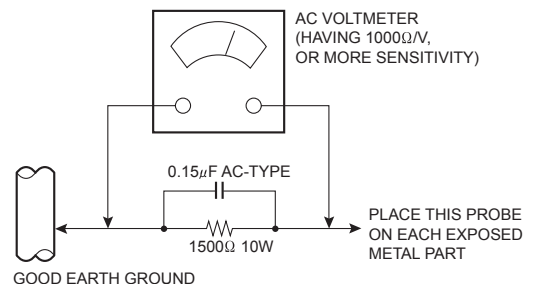
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3000V AC (r.m.s.) for a period of one second. (. . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.) This method of test requires a test equipment not generally found in the service trade.

b) Leakage Current Check

Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.). However, in tropical area, this must not exceed 0.2mA AC (r.m.s.).

Alternate Check Method

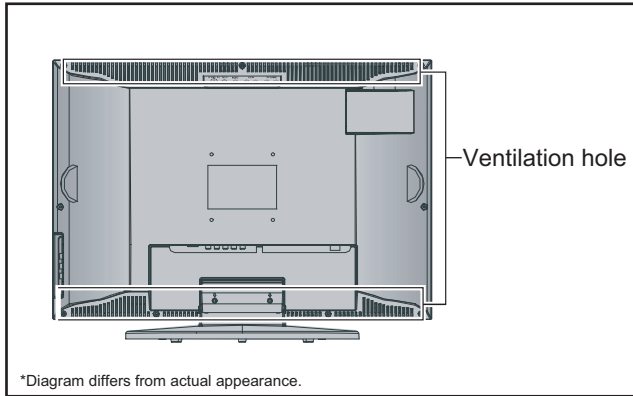
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1000 Ω per volt or more sensitivity in the following manner. Connect a 1500 Ω 10W resistor paralleled by a 0.15 μ F AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.). However, in tropical area, this must not exceed 0.3V AC (r.m.s.). This corresponds to 0.2mA AC (r.m.s.).



1.2 INSTALLATION

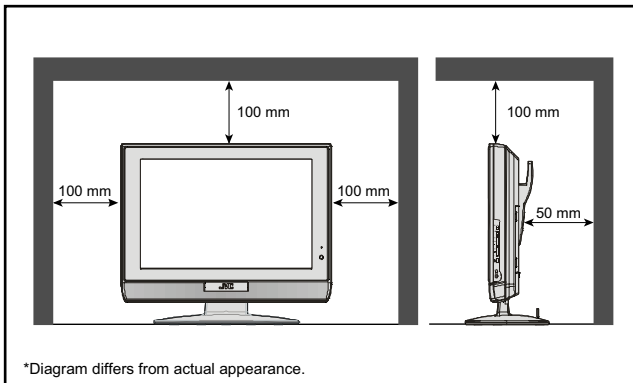
1.2.1 HEAT DISSIPATION

If the heat dissipation vent behind this unit is blocked, cooling efficiency may deteriorate and temperature inside the unit will rise. The temperature sensor that protects the unit will be activated when internal temperature exceeds the pre-determined level and power will be turned off automatically. Therefore, please make sure pay attention not to block the heat dissipation vent as well as the ventilation outlet behind the unit and ensure that there is room for ventilation around it.



1.2.2 INSTALLATION REQUIREMENTS

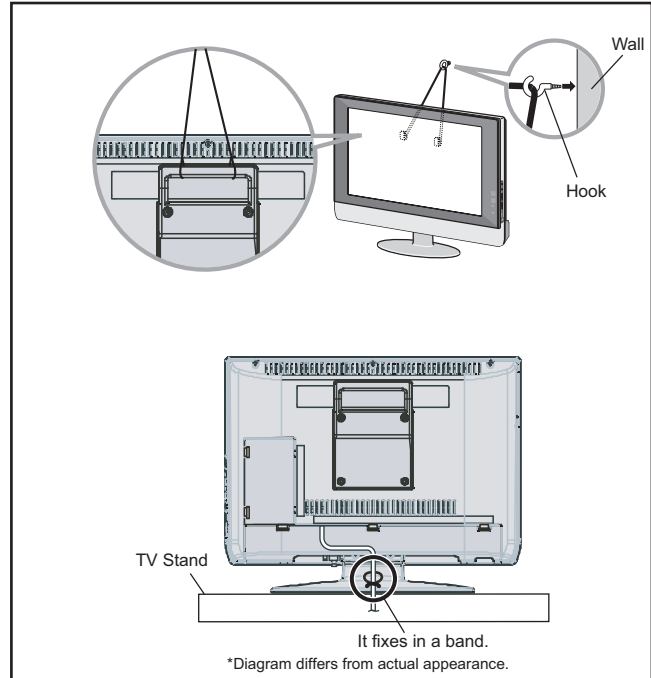
Ensure that the minimal distance is maintained, as specified below, between the unit with and the surrounding walls, as well as the floor etc. Install the unit on stable flooring or stands. Take precautionary measures to prevent the unit from tipping in order to protect against accidents and earthquakes.



1.2.3 INSTALLATION REQUIREMENTS

To ensure safety in an emergency such as an earthquake, and to prevent accidents, ensure that measures are taken to prevent the TV dropping or falling over.

Use the supplied screws to firmly attach the supplied hooks (OPTION) to the back of the TV, and use commercially available cord to fix the TV to rigid components such as walls and columns.



1.2.4 NOTES ON HANDLING

(1) WHEN TAKING UNIT OUT OF A PACKING CASE

When taking the unit out of a packing case, do not grasp the upper part of the unit. If you take the unit out while grasping the upper part, the LCD PANEL may be damaged because of a pressure. Instead of grasping the upper part, put your hands on the lower backside or sides of the unit.

(2) AS FOR PRESSING OR TOUCHING A SPEAKER

Be careful not to press the opening of the speaker in the lower part of the unit and around them since the decorative sheet on the surface of the openings may be deformed.

1.3 HANDLING LCD PANEL

1.3.1 PRECAUTIONS FOR TRANSPORTATION

When transporting the unit, pressure exerted on the internal LCD panel due to improper handling (such as tossing and dropping) may cause damages even when the unit is carefully packed. To prevent accidents from occurring during transportation, pay careful attention before delivery, such as through explaining the handling instructions to transporters.

Ensure that the following requirements are met during transportation, as the LCD panel of this unit is made of glass and therefore fragile:

(1) **USE A SPECIAL PACKING CASE FOR THE LCD PANEL**

When transporting the LCD panel of the unit, use a special packing case (packing materials). A special packing case is used when a LCD panel is supplied as a service spare part.

(2) **ATTACH PROTECTION SHEET TO THE FRONT**

Since the front (display part) of the panel is vulnerable, attach the protection sheet to the front of the LCD panel before transportation. Protection sheet is used when a LCD panel is supplied as a service spare part.

(3) **AVOID VIBRATIONS AND IMPACTS**

The unit may be broken if it is toppled sideways even when properly packed. Continuous vibration may shift the gap of the panel, and the unit may not be able to display images properly. Ensure that the unit is carried by at least 2 persons and pay careful attention not to exert any vibration or impact on it.

(4) **DO NOT PLACE EQUIPMENT HORIZONTALLY**

Ensure that it is placed upright and not horizontally during transportation and storage as the LCD panel is very vulnerable to lateral impacts and may break. During transportation, ensure that the unit is loaded along the traveling direction of the vehicle, and avoid stacking them on one another. For storage, ensure that they are stacked in 2 layers or less even when placed upright.

1.3.2 OPTICAL FILTER (ON THE FRONT OF THE LCD PANEL)

- (1) Avoid placing the unit under direct sunlight over a prolonged period of time. This may cause the optical filter to deteriorate in quality and COLOUR.
- (2) Clean the filter surface by wiping it softly and lightly with a soft and lightly fuzz cloth (such as outing flannel).
- (3) Do not use solvents such as benzene or thinner to wipe the filter surface. This may cause the filter to deteriorate in quality or the coating on the surface to come off. When cleaning the filter, usually use the neutral detergent diluted with water. When cleaning the dirty filter, use water-diluted ethanol.
- (4) Since the filter surface is fragile, do not scratch or hit it with hard materials. Be careful enough not to touch the front surface, especially when taking the unit out of the packing case or during transportation.

1.3.3 PRECAUTIONS FOR REPLACEMENT OF EXTERIOR PARTS

Take note of the following when replacing exterior parts (REAR COVER, FRONT PANEL, etc.):

- (1) Do not exert pressure on the front of the LCD panel (filter surface). It may cause irregular COLOUR.
- (2) Pay careful attention not to scratch or stain the front of the LCD panel (filter surface) with hands.
- (3) When replacing exterior parts, the front (LCD panel) should be placed facing downward. Place a mat, etc. underneath to avoid causing scratches to the front (filter surface).

SECTION 2

SPECIFIC SERVICE INSTRUCTIONS

2.1 FEATURES

T-V LINK

When you have a T-V LINK compatible VCR connected to the EXT-2 Terminal on the TV, it is easier to set up the VCR and to view videos.

ZOOM

This function can change the screen size according to the picture aspect ratio.

OFF TIMER

This function can set the TV to automatically turn off after a set time.

COLOUR SYSTEM

If the picture is not clear or no colour appears, change the current colour system to another colour system.

2.2 MAIN DIFFERENCE LIST

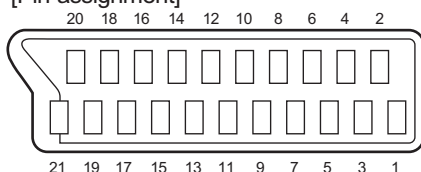
Items	LT-20E50SJ	LT-20E50SU	LT-20E50SU/Z
POWER CORD	UK type(3-pin)	EU type(2-pin)	SWE Type(3-pin)

2.3 21-PIN EURO CONNECTOR (SCART) : EXT-1 / EXT-2

Pin No.	Signal designation	Matching value	EXT-1	EXT-2
1	AUDIO R output	500mV(rms) (Nominal),, Low impedance	Used (TV OUT)	Used (LINE OUT)
2	AUDIO R input	500mV(rms) (Nominal),, High impedance	Used (R1)	Used (R2)
3	AUDIO L output	500mV(rms) (Nominal),, Low impedance	Used (TV OUT)	Used (LINE OUT)
4	AUDIO GND		Used	Used
5	GND (B)		Used	Used
6	AUDIO L input	500mV(rms) (Nominal),, High impedance	Used (L1)	Used (L2)
7	B input	700mV _(B-W) , 75Ω	Used	Used
8	FUNCTION SW (SLOW SW)	Low : 0V-3V High : 8V-12V, High impedance	Used	Used
9	GND (G)		Used	Used
10	SCL / T-V LINK		Not used	Used (SCL2 / TV-LINK)
11	G input	700mV _(B-W) , 75Ω	Used	Used
12	SDA		Not used	Used (SDA2)
13	GND (R)		Used	Used
14	GND (YS)		Used	Not used
15	R / C input	R : 700mV _(B-W) , 75Ω C : 300mV _(P-P) , 75Ω	Used (R)	Used (C2/R)
16	Ys input (FAST SW)	Low : 0V-0.4V, High : 1V-3V, 75Ω	Used	Used
17	GND (VIDEO output)		Used	Used
18	GND (VIDEO input)		Used	Used
19	VIDEO output	1V _(P-P) (Negative sync), 75Ω	Used (TV OUT)	Used (LINE OUT)
20	VIDEO / Y input	1V _(P-P) (Negative sync), 75Ω	Used	Used
21	COMMON GND		Used	Used

(P-P= Peak to Peak, B-W= Blanking to white peak)

[Pin assignment]



2.4 TECHNICAL INFORMATION

2.4.1 LCD PANEL

This unit uses the flat type panel LCD (Liquid Crystal Display) panel that occupies as little space as possible, instead of the conventional CRT (Cathode Ray Tube), as a display unit.

Since the unit has the two polarizing filter that are at right angles to each other, the unit adopts "normally black" mode, where light does not pass through the polarizing filter and the screen is black when no voltage is applied to the liquid crystals.

2.4.1.1 SPECIFICATIONS

The following table shows the specifications of this unit.

Item	Specifications	Remarks
Displayed colour	16777216 colours	256 colours for R, G, and B
Brightness	500cd/m ²	
Contrast ratio	500: 1	
Response time	16ms	
View angle	Horizontally: 160°, Vertically: 120°	

2.4.1.2 PIXEL FAULT

There are three pixel faults - bright fault , dark fault and flicker fault - that are respectively defined as follows.

■ BRIGHT FAULT

In this pixel fault, a cell that should not light originally is lighting on and off.

For checking this pixel fault, input ALL BLACK SCREEN and find out the cell that is lighting on and off.

■ DARK FAULT

In this pixel fault, a cell that should light originally is not lighting or lighting with the brightness twice as brighter as originally lighting.

For checking this pixel fault, input 100% of each R/G/B colour and find out the cell that is not lighting.

■ FLICKER FAULT

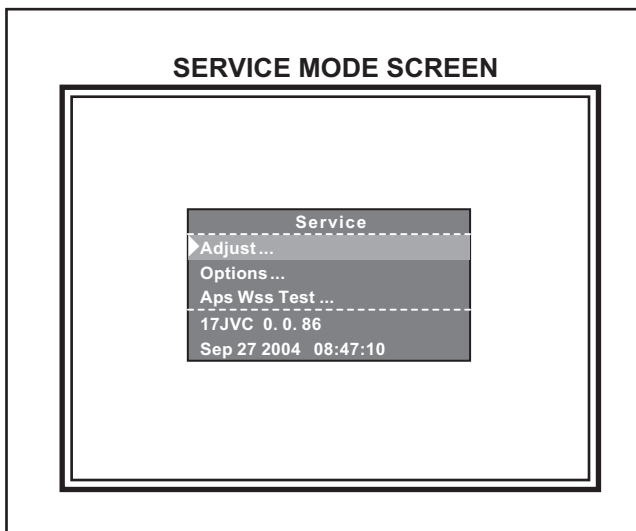
In the pixel fault, a cell that should light originally or not light originally is flashing on and off.

For checking this pixel fault, input ALL BLACK SCREEN signal or 100% of each RGB colour and find out the cell that is flashing on and off.

2.5 BASIC OPERATION OF SERVICE MODE

2.5.1 HOW TO ENTER THE SERVICE MODE

- (1) Press **[INFORMATION]** key and **[MUTING]** key on the remote control unit simultaneously to enter the SERVICE MODE SCREEN.



2.5.2 HOW TO EXIT THE SERVICE MODE

Press the **[MENU]** key to exit the Service mode.

2.5.3 CHANGE AND MEMORY OF SETTING VALUE

■ SELECTION OF SETTING MENU & ITEM

- **[FUNCTION ▲/▼]** key : Select the SETTING MENU & ITEM
- **[OK]** key : Decision the SETTING MENU & ITEM

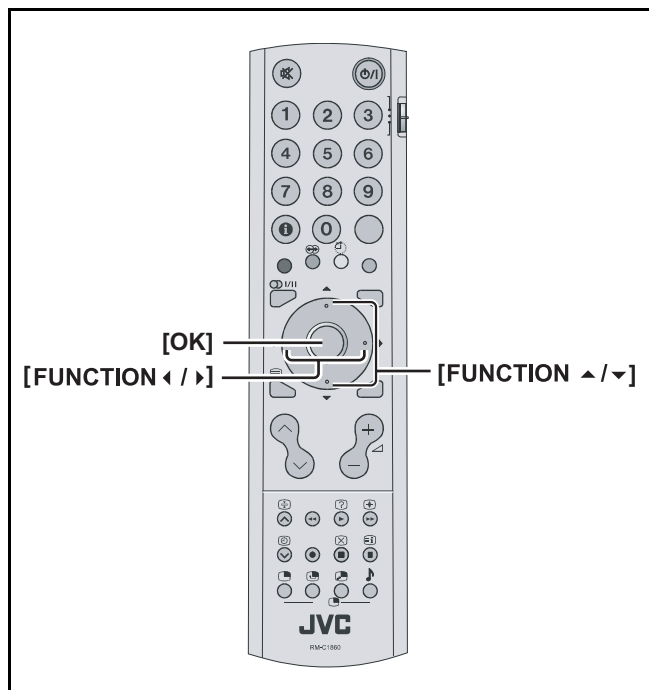
■ CHANGE OF SETTING VALUE (DATA)

- **[FUNCTION ◀/▶]** key.

■ MEMORY OF SETTING VALUE (DATA)

The setting value will be stored automatically when release the REMOTE CONTROL UNIT keys

2.5.4 SERVICE MODE SELECT KEY LOCATION



2.5.5 SERVICE MODE SETTING ITEMS

Setting menu	Setting items	Contents
Adjust	Group	----
	Mode	----
	Col. Temp.	----
	Contrast	----
	Brightness	----
	Colour	----
	Sharpness	----
	Red	----
	Green	----
	Blue	----
	Aps Volume	----
Option 1	First APS	If ON, TV starts with APS menu at Start-up
	BG	----
	DK	----
	I	----
	L	----
	L'	----
	FM Prs Avl On	Adjusts the FM Prescaler value, when Automatic Volume Levelling is On
	Nicam Prs Avl On	Adjusts the Nicam Prescaler value, when Automatic Volume Levelling is On
	Scart Prs Avl On	Adjusts the Scart Volume value, when Automatic Volume Levelling is On
	Scart Volume Avl On	Adjusts the Scart Volume value, when Automatic Volume Levelling is On
Option 2	FM Prs Avl Off	Adjusts the FM Prescaler value, when Automatic Volume Levelling is Off
	Nicam Prs Avl Off	Adjusts the Nicam Prescaler value, when Automatic Volume Levelling is Off
	Scart Prs Avl Off	Adjusts the Scart Prescaler value, when Automatic Volume Levelling is Off
	Scart Volume Avl Off	Adjusts the Scart Volume value, when Automatic Volume Levelling is On
	Avl	Enable/disable Automatic Volume Levelling System
	Sound	----
	Carrier	----
	LDLY	----
	AGC	----
	Aps Wss Test	Programme
Aps Wss Test	VPS	----
	Scart Volume Avl Off	----
	Pdc Format 1	----
	Pdc Format 2	----
	Name	----
	WSS	----

SECTION 3 DISASSEMBLY

3.1 DISASSEMBLY PROCEDURE

NOTE:

- Make sure that the power cord is disconnected from the outlet.
- Pay special attention not to break or damage the parts.
- When removing each board, remove the connectors as required. Taking notes of the connecting points (connector numbers) makes service procedure manageable.
- Make sure that there is no bent or stain on the connectors before inserting, and firmly insert the connectors.

3.1.1 REMOVING THE STAND

- (1) Remove the 2 screws **[A]**, then remove the STAND COVER.
- (2) Remove the 4 screws **[B]**, then remove the STAND.

3.1.2 REMOVING THE REAR COVER

- Remove the STAND.
 - (1) Remove the JACK COVER (L/R).
 - (2) Remove the 7 screws **[C]**, then remove the REAR COVER.

3.1.3 REMOVING THE MAIN PWB

- Remove the STAND.
- Remove the REAR COVER.
 - (1) Remove the 2 screws **[D]**, then remove the TERMINAL BASE.
 - (2) Remove the 7 screw **[E]**, then remove the MAIN PWB.

3.1.4 REMOVING THE INVERTER PWB

- Remove the STAND.
- Remove the REAR COVER.
 - (1) Remove the 2 screws **[F]** then remove the SHIELD COVER.
 - (2) Remove the 2 screws , then remove the INVERTER PWB.

3.1.5 REMOVING THE AV JACK PWB

- Remove the STAND.
- Remove the REAR COVER.
 - (1) Remove the 2 screws **[H]**, then remove the SIDE CONTROL BASE with AV JACK PWB.
 - (2) Remove the 2 screws **[J]**, then remove the AV JACK PWB.

3.1.6 REMOVING THE SIDE CONTROL PWB

- Remove the STAND.
- Remove the REAR COVER.
 - (1) Remove the 3 screws **[K]**, then remove the SIDE CONTROL PWB.

3.1.7 REMOVING THE SPEAKER

- Remove the STAND.
- Remove the REAR COVER.
 - (1) Remove the 4 screws **[L]**, then remove the SPEAKER.

3.1.8 REMOVING THE LED PWB

- Remove the STAND.
- Remove the REAR COVER.
 - (1) Remove the 1 screw **[M]**, then remove the LED PWB.

3.1.9 REMOVING THE LCD PANEL UNIT

- Remove the STAND.
- Remove the REAR COVER.
 - (1) Remove the 4 screws **[P]** and the 2 screws **[Q]**, then remove the MAIN BASE.
 - (2) Remove the 4 screws **[R]**. then remove the LCD PANEL UNIT.

NOTE:

- Pay special attention not to break or damage on the LCD PANEL face or frame.
- The LCD PANEL UNIT is fixed to the FRONT COVER (at the back side) by using double-side adhesive tapes. To remove the LCD PANEL UNIT, remove the adhesive tape on the FRONT PANELS slowly.

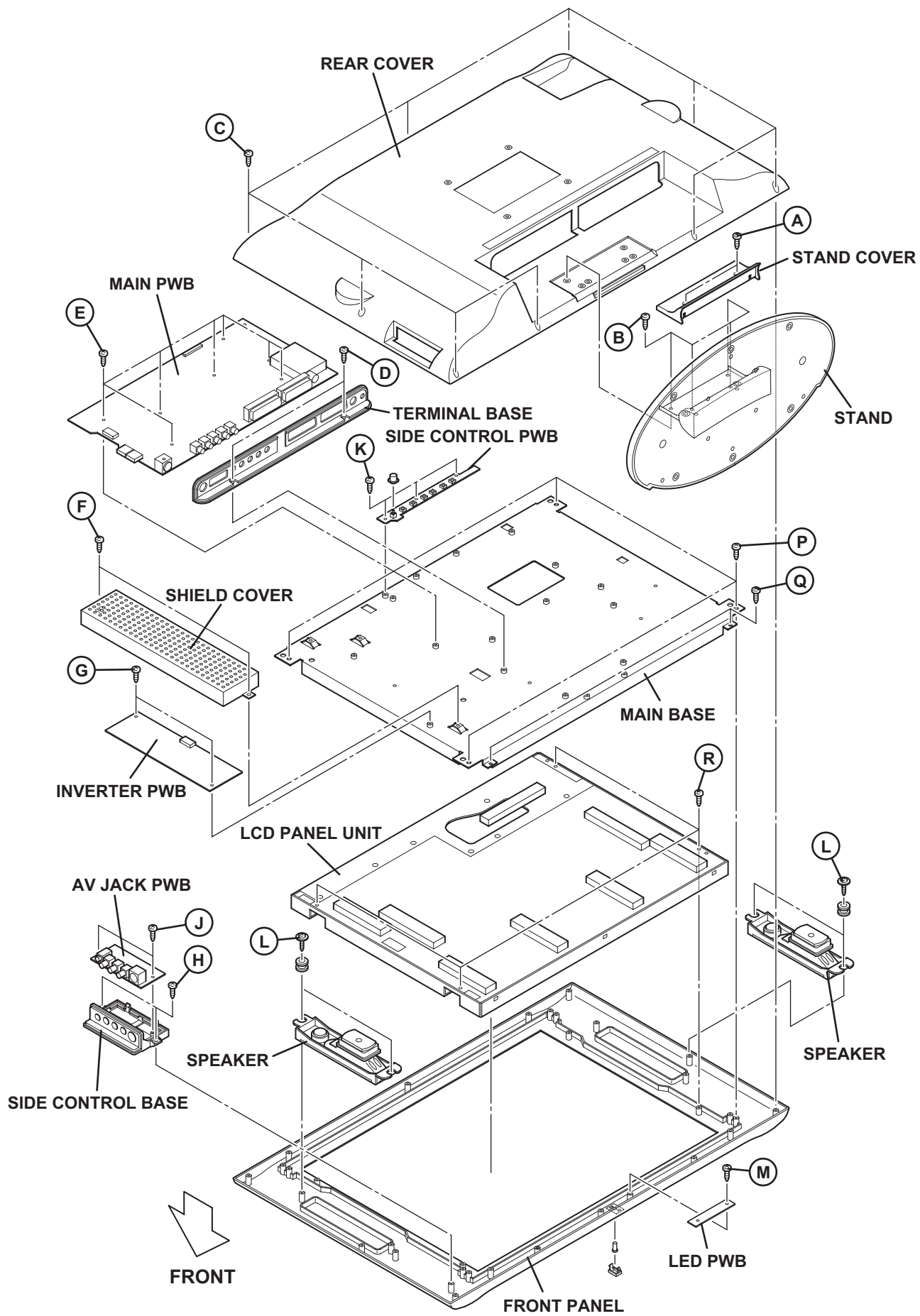


Fig.1

3.2 MEMORY IC REPLACEMENT

- This model uses the memory IC.
- This memory IC stores data for proper operation of the video and drive circuits.
- When replacing, be sure to use an IC containing this (initial value) data.

3.2.1 SETTINGS OF FACTORY SHIPMENT

3.2.1.1 BUTTON OPERATION

Setting item	Setting position
POWER	Off
TV/AV	TV

3.2.1.2 REMOTE CONTROL DIRECT OPERATION

Setting item	Setting position
ZOOM	AUTO

3.2.1.3 REMOTE CONTROL MENU OPERATION

(1) PICTURE

Setting item	Setting position
MODE	Bright
Contrast	36 Step
Bright-1	26 Step
Sharpness	11 Step
Colour	39 Step
Bright-2	31 Step
Colour Temp.	Cool
Noise Red.	Min

(2) SOUND

Setting item	Setting position
Volume	10 Step
Bass	16 Step
Treble	15 Step
Balance	16 Step
Hyper Sound	Off
Sound Mode	Mono

(3) FEATURES

Setting item	Setting position
Sleep Timer	Off
Child Lock	Off
Language	English
EXT-2 Output	TV
Blue Back	Off

(4) Install [TV MODE]

Setting item	Setting position
Colour System	Auto
Decorder(EXT-2)	Off
VCR	Off

(5) Install [EXT MODE]

Setting item	Setting position
Colour System	Auto
VCR	Off

3.3 REPLACEMENT OF CHIP COMPONENT

3.3.1 CAUTIONS

- (1) Avoid heating for more than 3 seconds.
- (2) Do not rub the electrodes and the resist parts of the pattern.
- (3) When removing a chip part, melt the solder adequately.
- (4) Do not reuse a chip part after removing it.

3.3.2 SOLDERING IRON

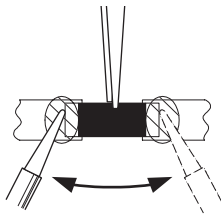
- (1) Use a high insulation soldering iron with a thin pointed end of it.
- (2) A 30w soldering iron is recommended for easily removing parts.

3.3.3 REPLACEMENT STEPS

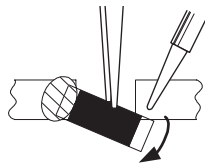
1. How to remove Chip parts

[Resistors, capacitors, etc.]

- (1) As shown in the figure, push the part with tweezers and alternately melt the solder at each end.



- (2) Shift with the tweezers and remove the chip part.

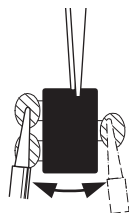


[Transistors, diodes, variable resistors, etc.]

- (1) Apply extra solder to each lead.



- (2) As shown in the figure, push the part with tweezers and alternately melt the solder at each lead. Shift and remove the chip part.



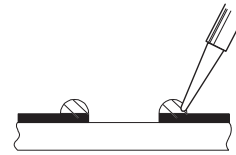
NOTE :

After removing the part, remove remaining solder from the pattern.

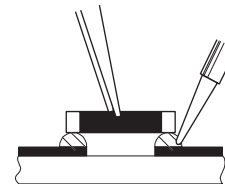
2. How to install Chip parts

[Resistors, capacitors, etc.]

- (1) Apply solder to the pattern as indicated in the figure.

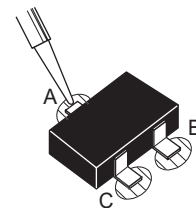


- (2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.

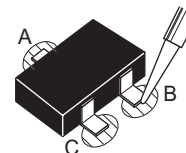


[Transistors, diodes, variable resistors, etc.]

- (1) Apply solder to the pattern as indicated in the figure.
- (2) Grasp the chip part with tweezers and place it on the solder.
- (3) First solder lead **A** as indicated in the figure.



- (4) Then solder leads **B** and **C**.



SECTION 4 ADJUSTMENT

This service manual does not describe ADJUSTMENT.

SECTION 5 TROUBLESHOOTING

This service manual does not describe TROUBLESHOOTING.



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(No.YA235)



Printed in Japan
VPT

JVC

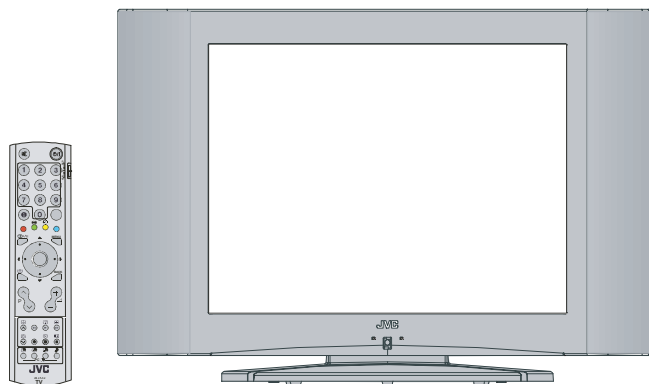
SCHEMATIC DIAGRAMS

LCD PANEL TELEVISION

**LT-20E50SJ,
LT-20E50SU,
LT-20E50SU_{/Z}**

CD-ROM No.SML200508

InteriArt



LT-20E50SJ, LT-20E50SU, LT-20E50SU/z

STANDARD CIRCUIT DIAGRAM

■ NOTE ON USING CIRCUIT DIAGRAMS

1.SAFETY

The components identified by the $\triangle$ symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

2.SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

- (1)Input signal : Colour bar signal
- (2)Setting positions of each knob/button and variable resistor : Original setting position when shipped
- (3)Internal resistance of tester : DC 20k Ω /V
- (4)Oscilloscope sweeping time : H $\Rightarrow$ 20 μ s / div
: V $\Rightarrow$ 5ms / div
: Others $\Rightarrow$ Sweeping time is specified
- (5)Voltage values : All DC voltage values

* Since the voltage values of signal circuit vary to some extent according to adjustments, use them as reference values.

3.INDICATION OF PARTS SYMBOL [EXAMPLE]

- In the PW board : R209 $\rightarrow$ R209

4.INDICATIONS ON THE CIRCUIT DIAGRAM

(1)Resistors

● Resistance value

- No unit : [Ω]
- K : [k Ω]
- M : [M Ω]

● Rated allowable power

- No indication : 1/16 [W]
- Others : As specified

● Type

- No indication : Carbon resistor
- OMR : Oxide metal film resistor
- MFR : Metal film resistor
- MPR : Metal plate resistor
- UNFR : Uninflammable resistor
- FR : Fusible resistor

* Composition resistor 1/2 [W] is specified as 1/2S or Comp.

(2)Capacitors

● Capacitance value

- 1 or higher : [pF]
- less than 1 : [μ F]

● Withstand voltage

- No indication : DC50[V]
- Others : DC withstand voltage [V]
- AC indicated : AC withstand voltage [V]

* Electrolytic Capacitors

47/50[Example]: Capacitance value [μ F]/withstand voltage[V]

● Type

- No indication : Ceramic capacitor
- MM : Metalized mylar capacitor
- PP : Polypropylene capacitor
- MPP : Metalized polypropylene capacitor
- MF : Metalized film capacitor
- TF : Thin film capacitor
- BP : Bipolar electrolytic capacitor
- TAN : Tantalum capacitor

(3)Coils

- No unit : [μ H]
- Others : As specified

(4)Power Supply

-  : B1
-  : B2 (12V)
-  : 9V
-  : 5V

* Respective voltage values are indicated

(5)Test point

-  : Test point
-  : Only test point display

(6)Connecting method

-  : Connector
-  : Wrapping or soldering
-  : Receptacle

(7)Ground symbol

-  : LIVE side ground
-  : ISOLATED(NEUTRAL) side ground
-  : EARTH ground
-  : DIGITAL ground

5.NOTE FOR REPAIRING SERVICE

This model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE : () side GND and the ISOLATED(NEUTRAL) : () side GND. Therefore, care must be taken for the following points.

- (1)Do not touch the LIVE side GND or the LIVE side GND and the ISOLATED(NEUTRAL) side GND simultaneously. if the above caution is not respected, an electric shock may be caused. Therefore, make sure that the power cord is surely removed from the receptacle when, for example, the chassis is pulled out.
- (2)Do not short between the LIVE side GND and ISOLATED(NEUTRAL) side GND or never measure with a measuring apparatus (oscilloscope, etc.) the LIVE side GND and ISOLATED(NEUTRAL) side GND at the same time. If the above precaution is not respected, a fuse or any parts will be broken.

◆ Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

NOTE

◆ Due improvement in performance, some part numbers show in the circuit diagram may not agree with those indicated in the part list.

When ordering parts, please use the numbers that appear in the Parts List.

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 AV JACK/ HEADPHONE PWB PATTERN 2-25

 CONTROL PWB PATTERN 2-25

 LED PWB PATTERN 2-25

USING P.W. BOARD

P.W.B ASS'Y name	LT-20E50SJ	LT-20E50SU	LT-20E50SU/Z
CONTROL P.W. BOARD	VE-20180094	←	←
LED P.W. BOARD	VE-20180117	←	←
AV JACK/ HEADPHONE P.W. BOARD	VE-20180067	←	←
MAIN P.W. BOARD	VE-20177794	←	←

SEMICONDUCTOR SHAPES

TRANSISTOR

BOTTOM VIEW	FRONT VIEW				TOP VIEW
					CHIP TR

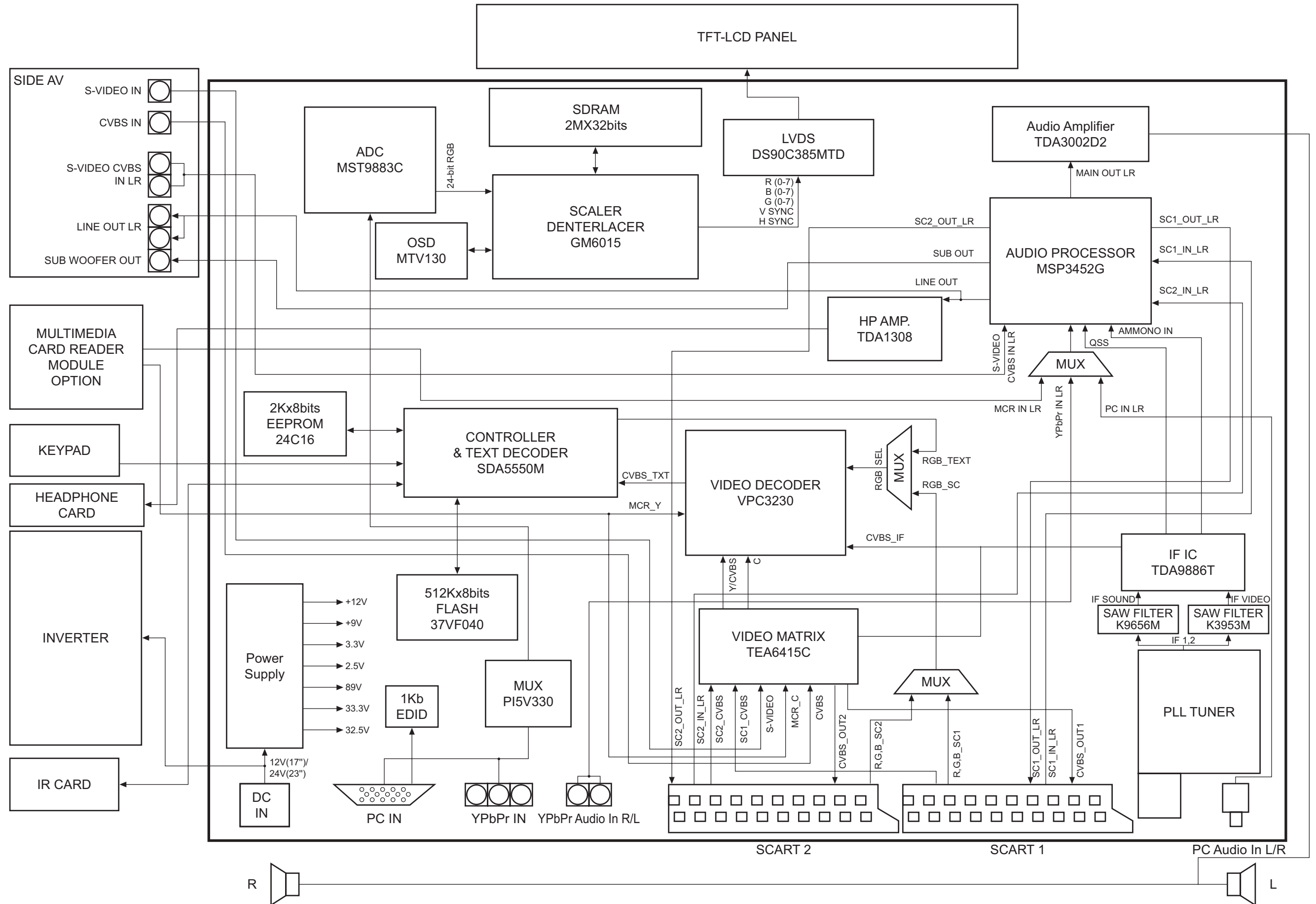
IC

BOTTOM VIEW	FRONT VIEW			TOP VIEW

CHIP IC

TOP VIEW		

BLOCK DIAGRAM

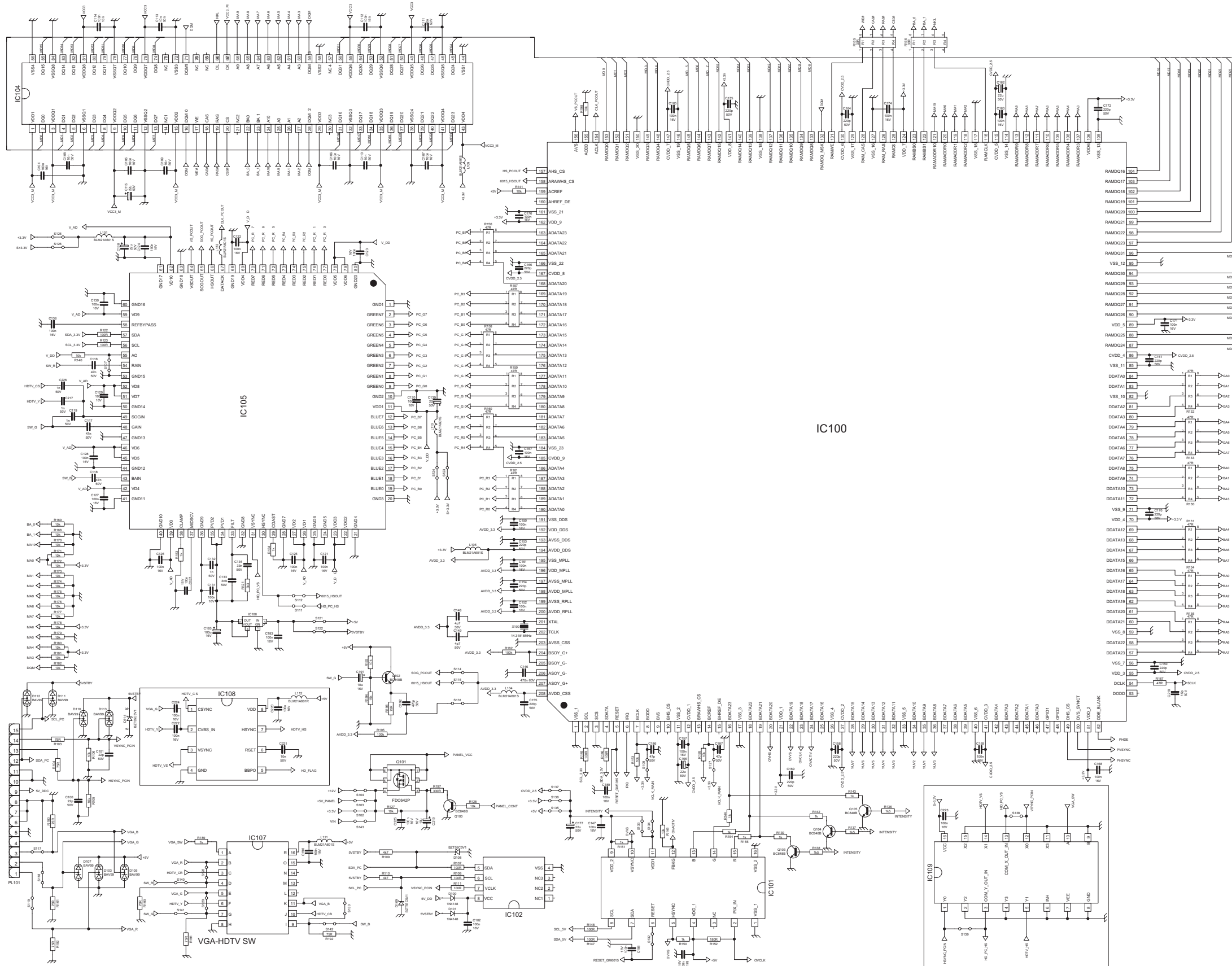


CIRCUIT DIAGRAMS

MAIN PWB CIRCUIT DIAGRAM (1/8)

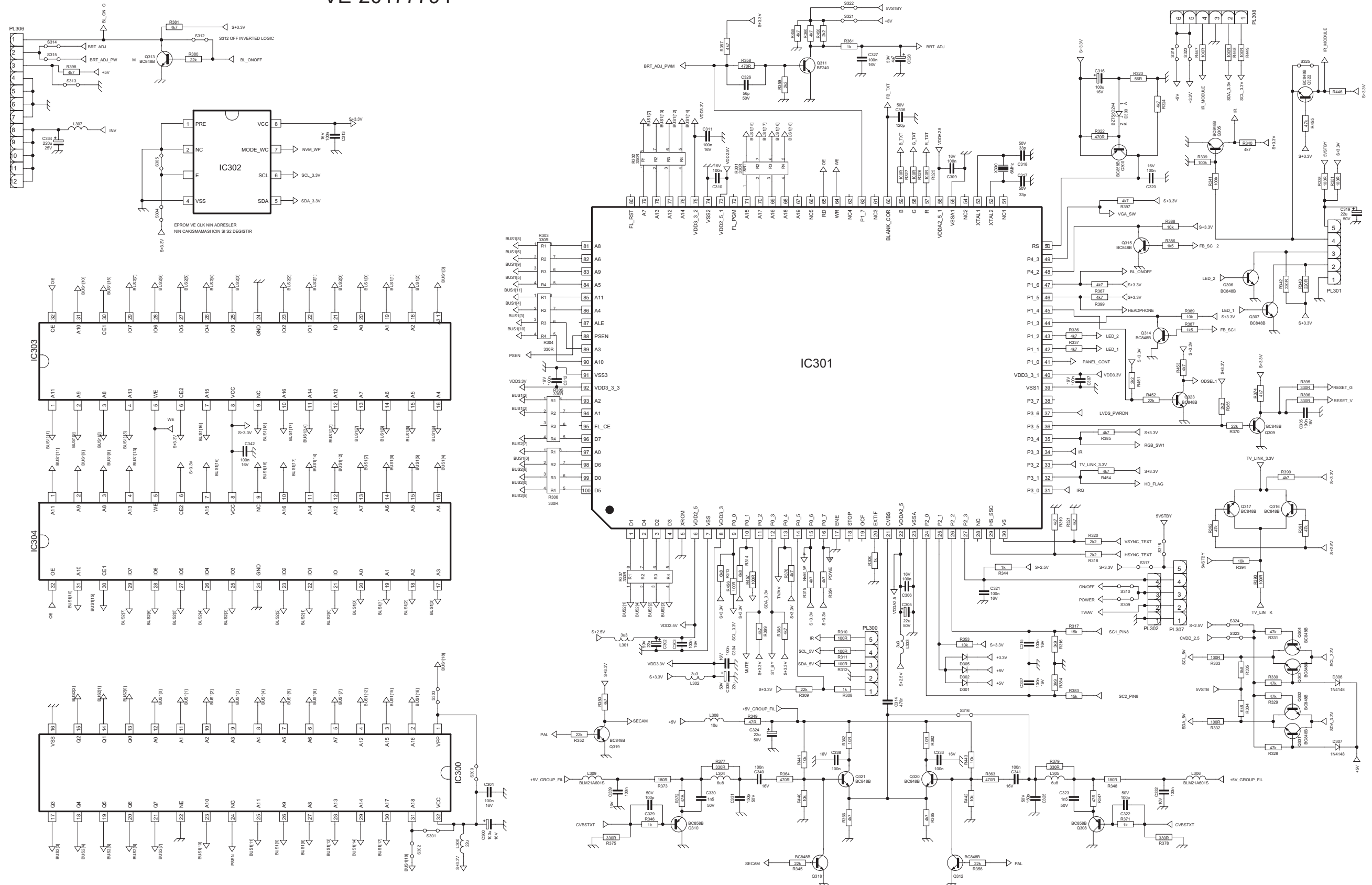
MAIN PWB ASS'Y (1/8)

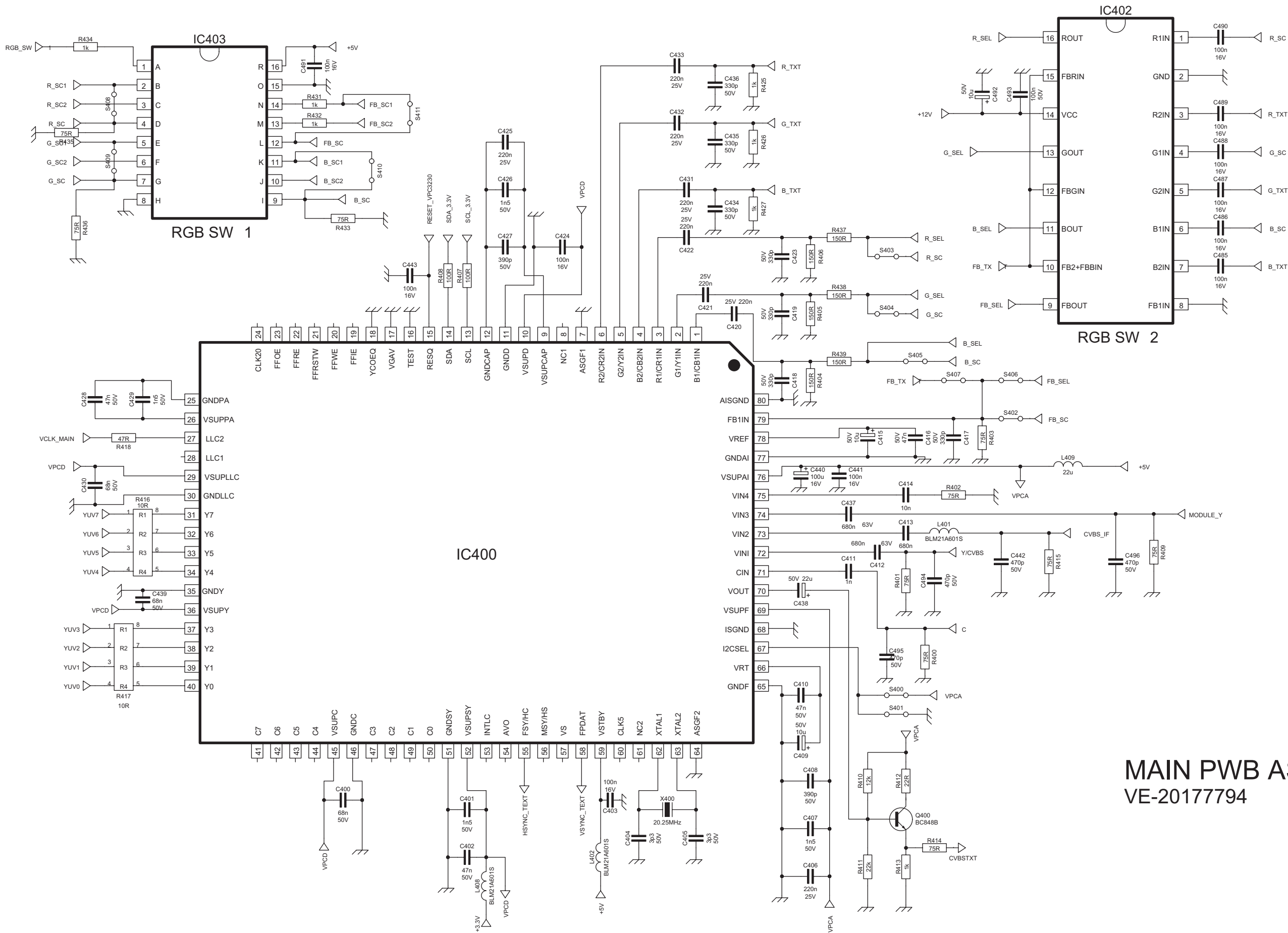
VE-20177794



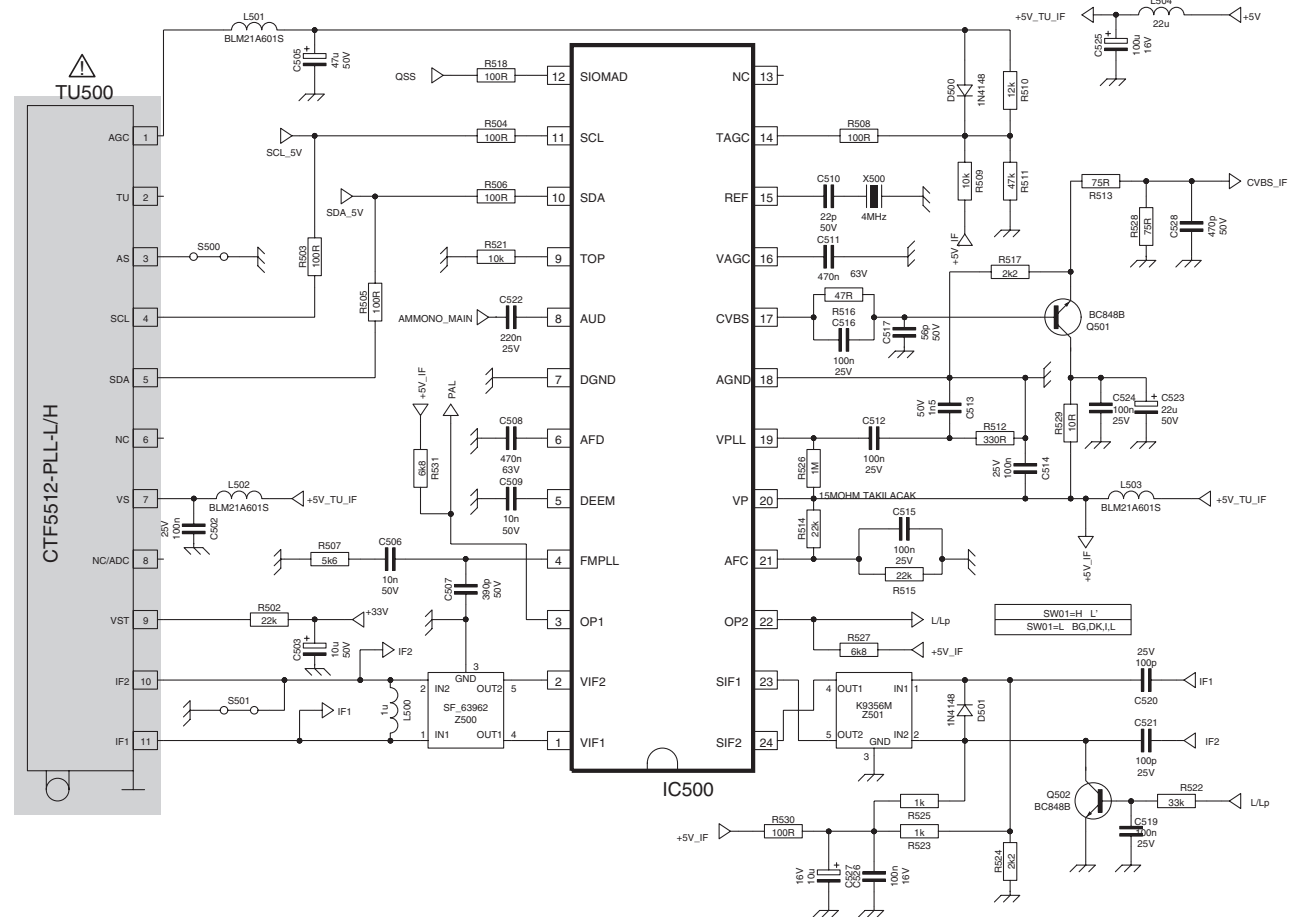
NOTE : Refer to the part list for the part number of IC301 and IC302.

MAIN PWB ASS'Y (2/8)
VE-20177794



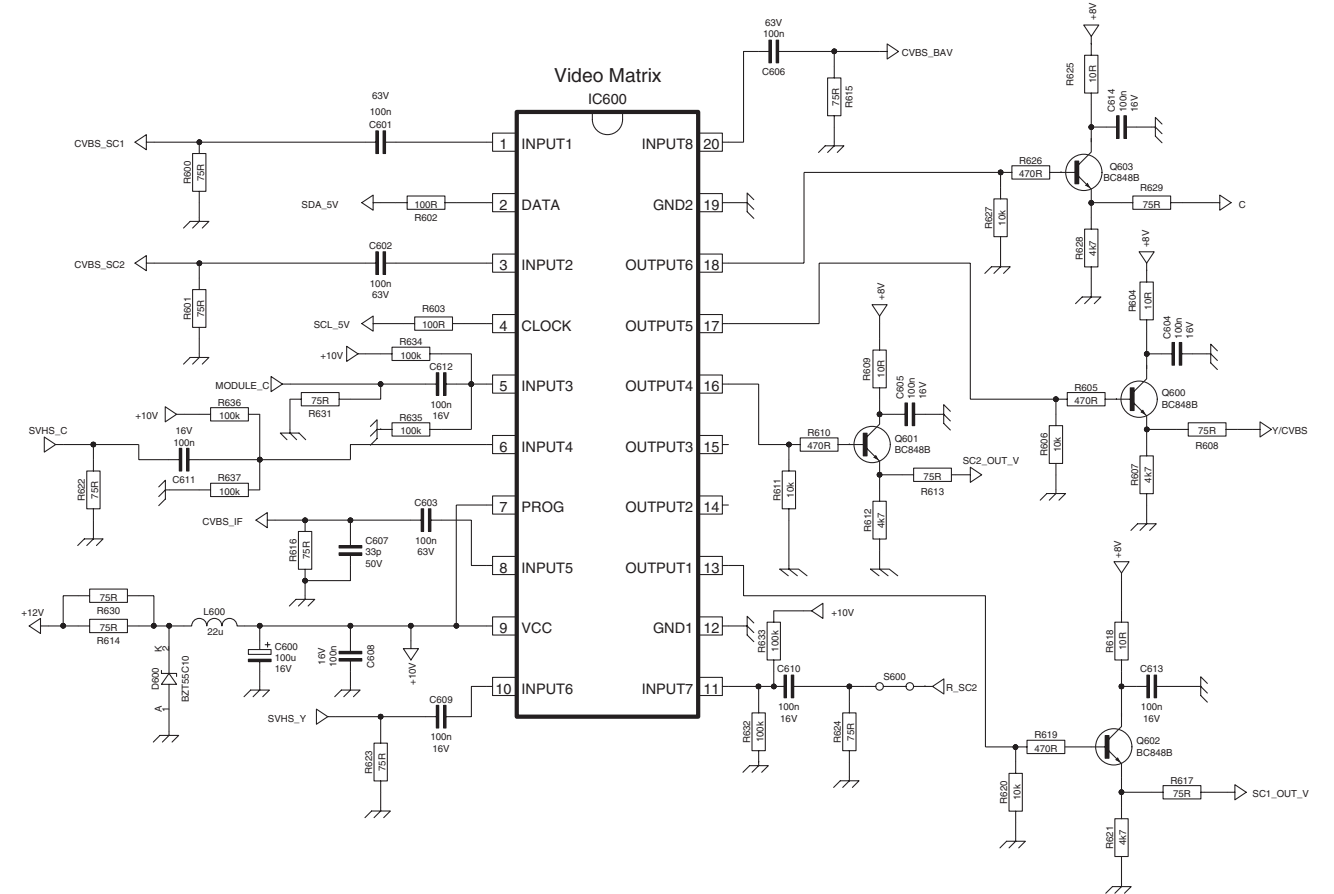


MAIN PWB CIRCUIT DIAGRAM (4/8)



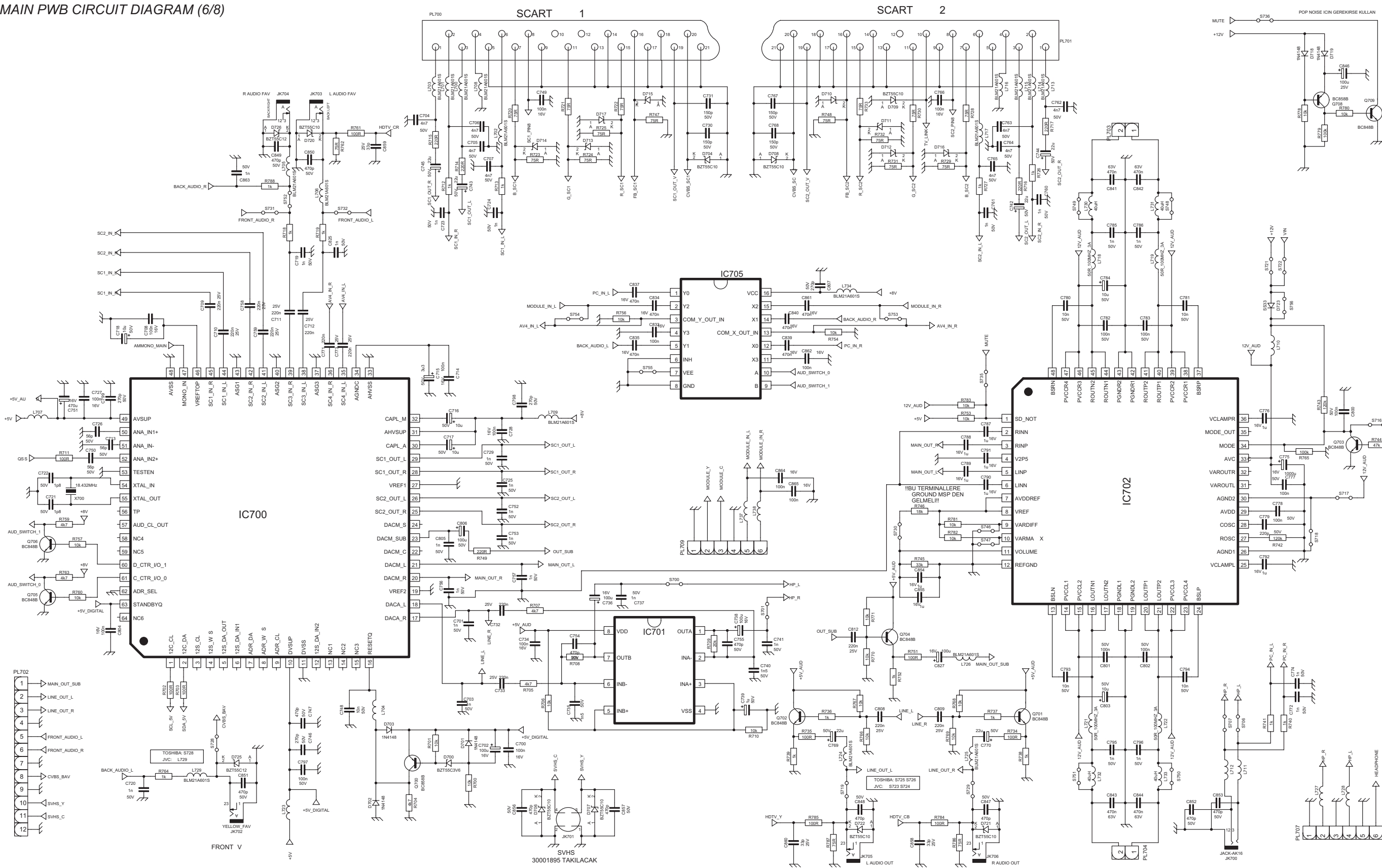
MAIN PWB ASS'Y (4/8)
VE-20177794

MAIN PWB CIRCUIT DIAGRAM (5/8)



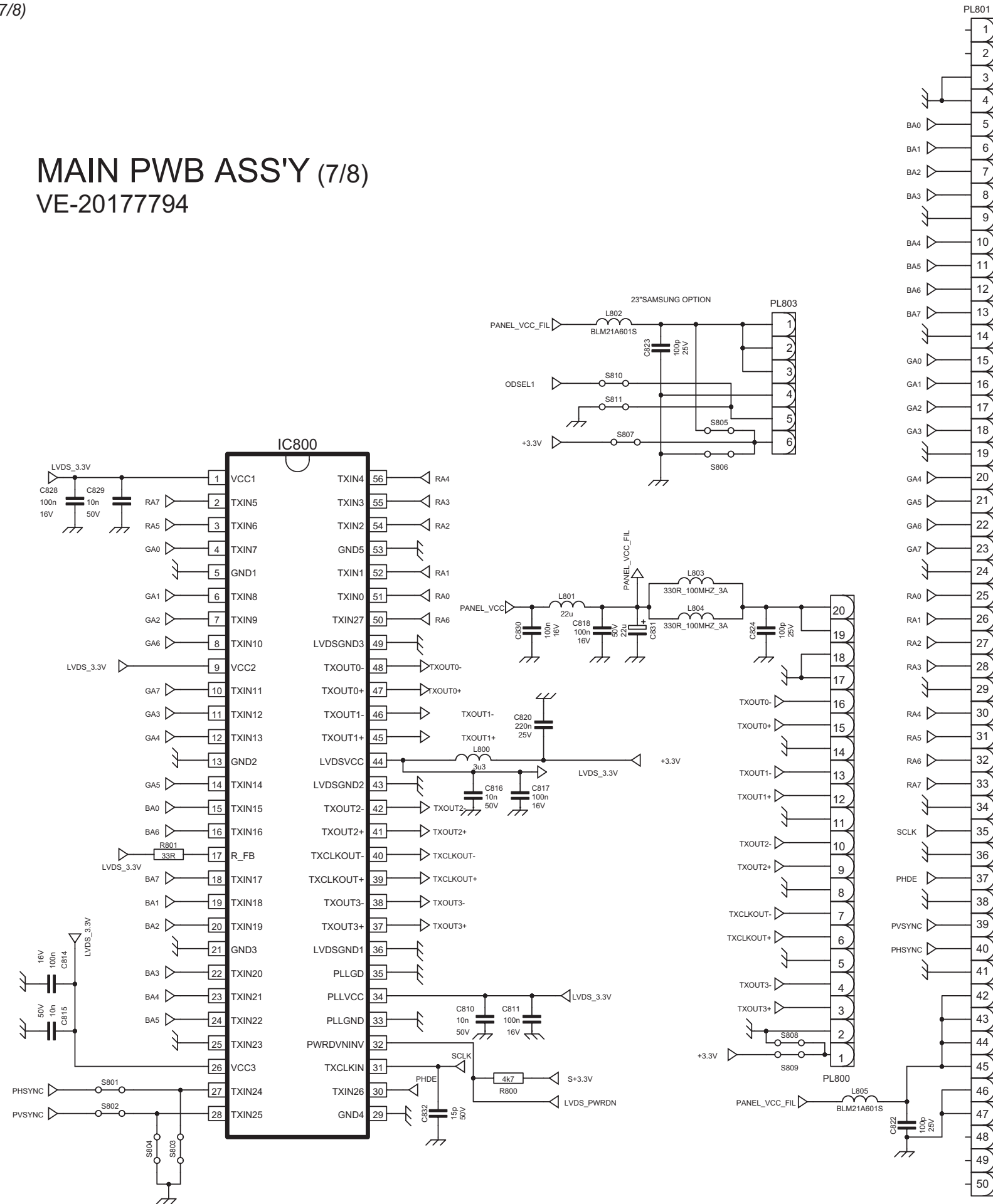
MAIN PWB ASS'Y (5/8)
VE-20177794

MAIN PWB CIRCUIT DIAGRAM (6/8)

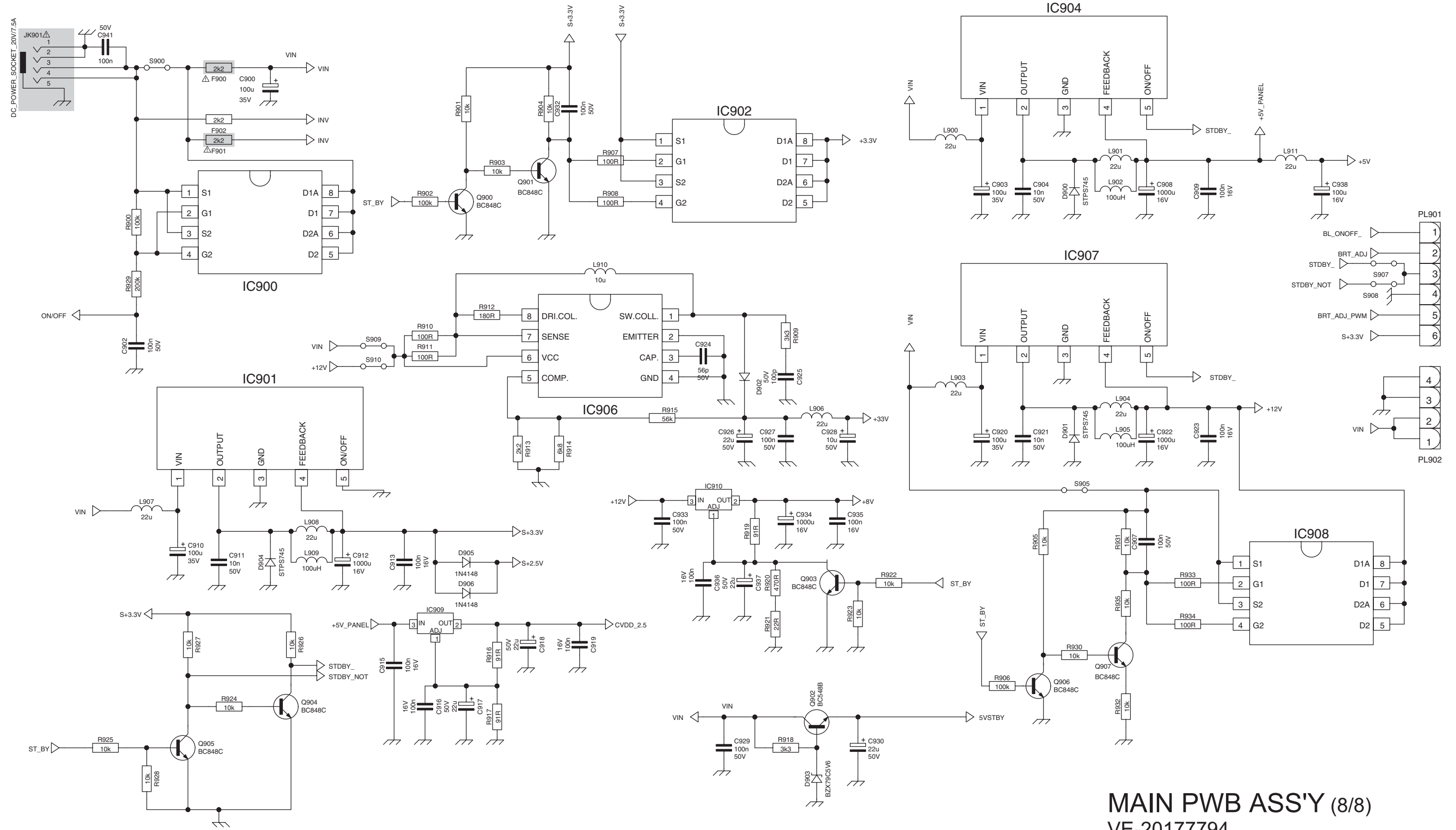


MAIN PWB ASS'Y (6/8)
VE-20177794

MAIN PWB ASS'Y (7/8)
VE-20177794

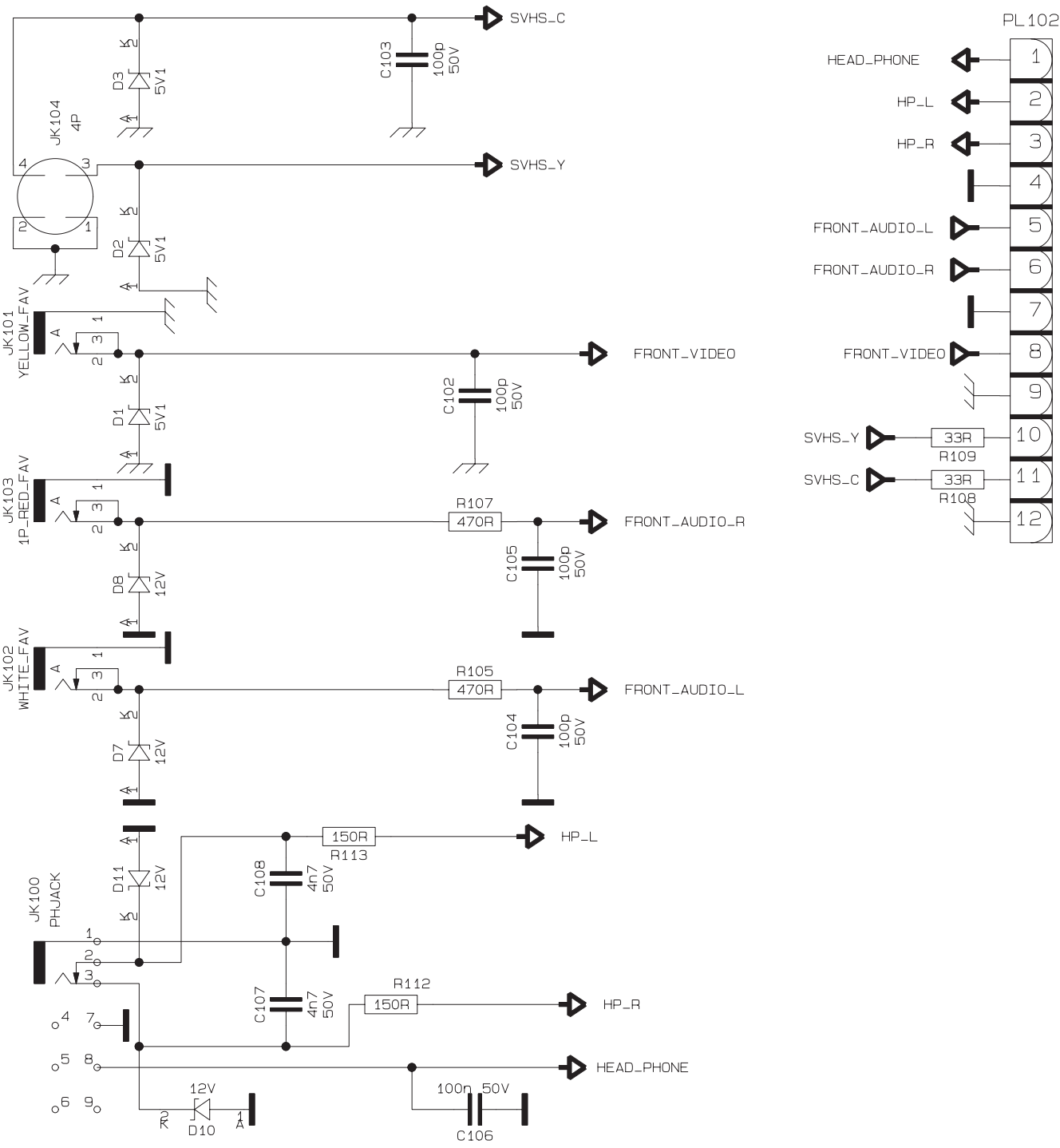


MAIN PWB CIRCUIT DIAGRAM (8/8)



MAIN PWB ASS'Y (8/8)
VE-20177794

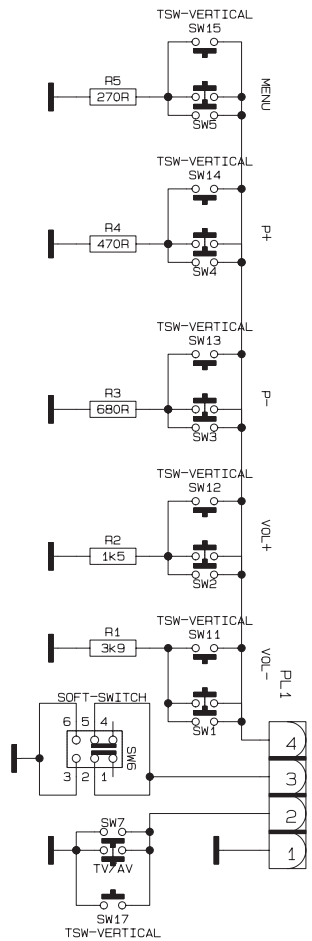
AV JACK/ HEADPHONE PWB CIRCUIT DIAGRAM



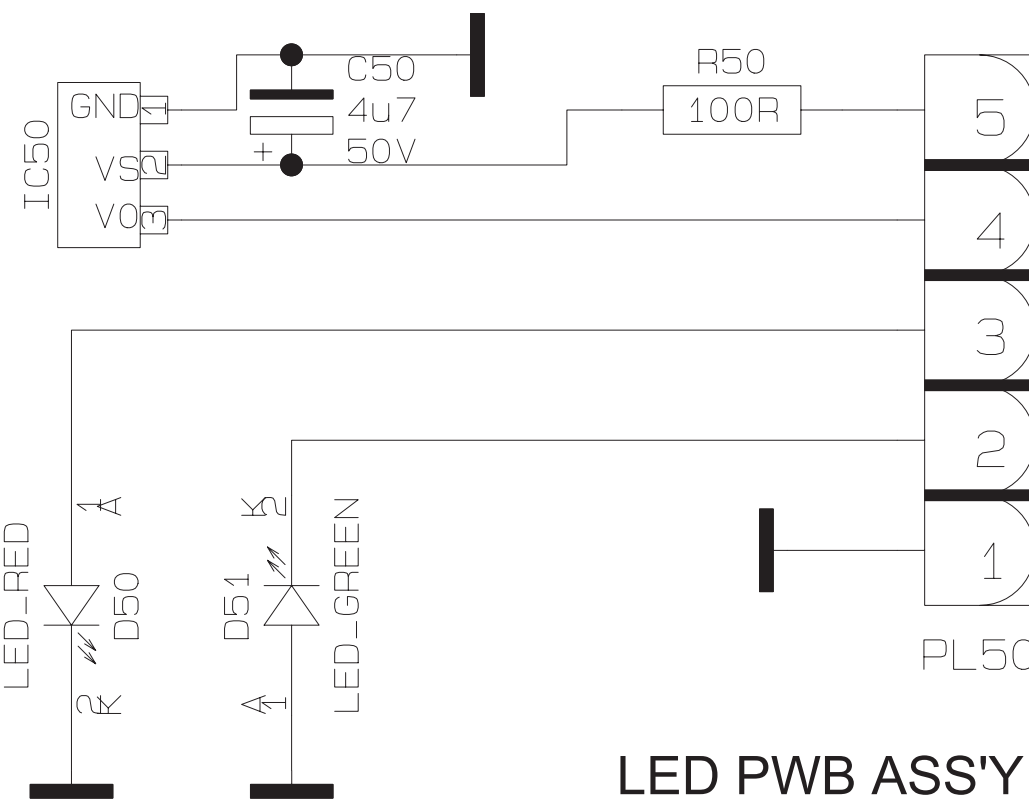
AV JACK/ HEADPHONE PWB ASS'Y
VE-20180067

CONTROL PWB CIRCUIT DIAGRAM

CONTROL
PWB ASS'Y
VE-20180094

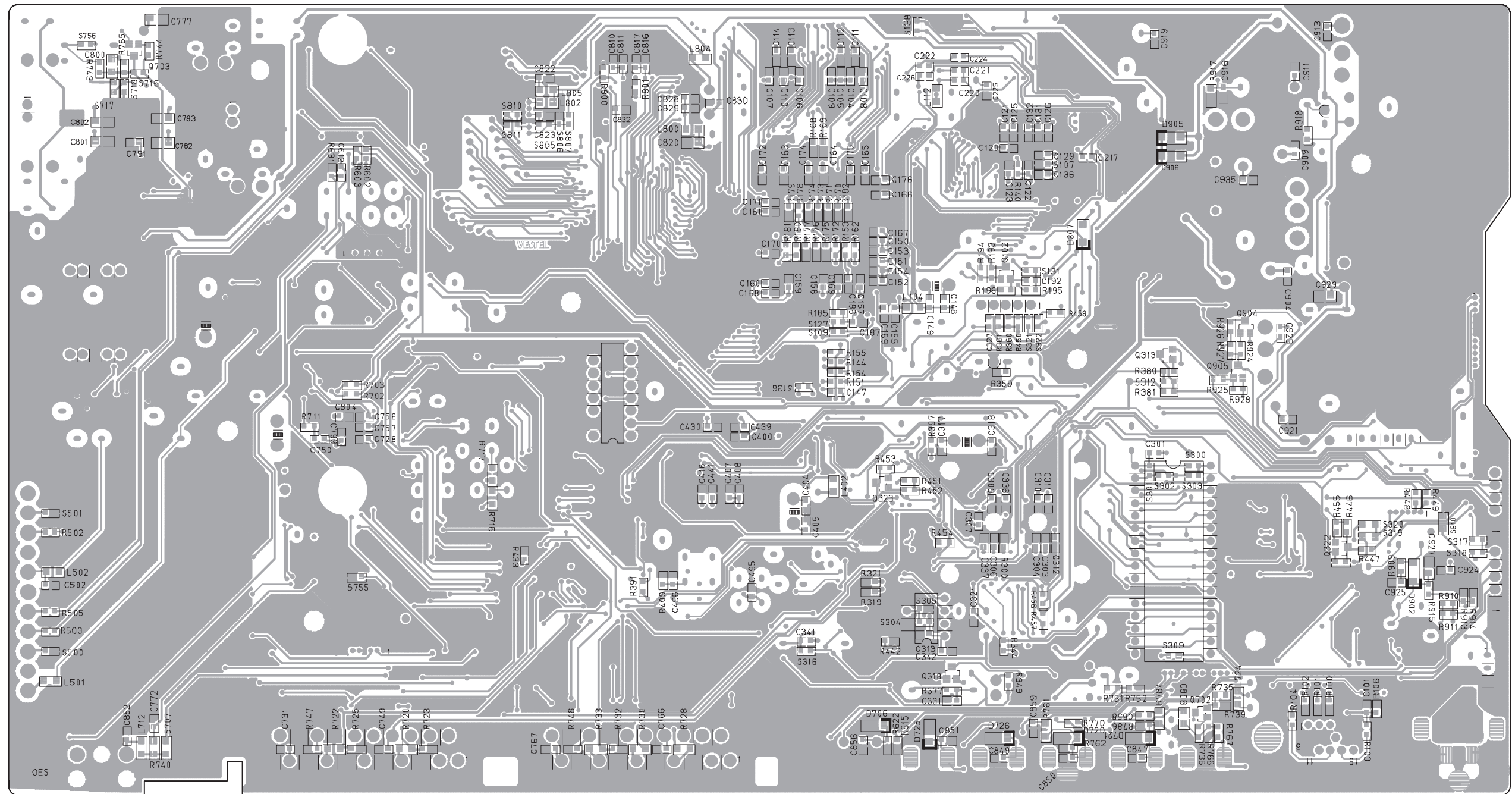


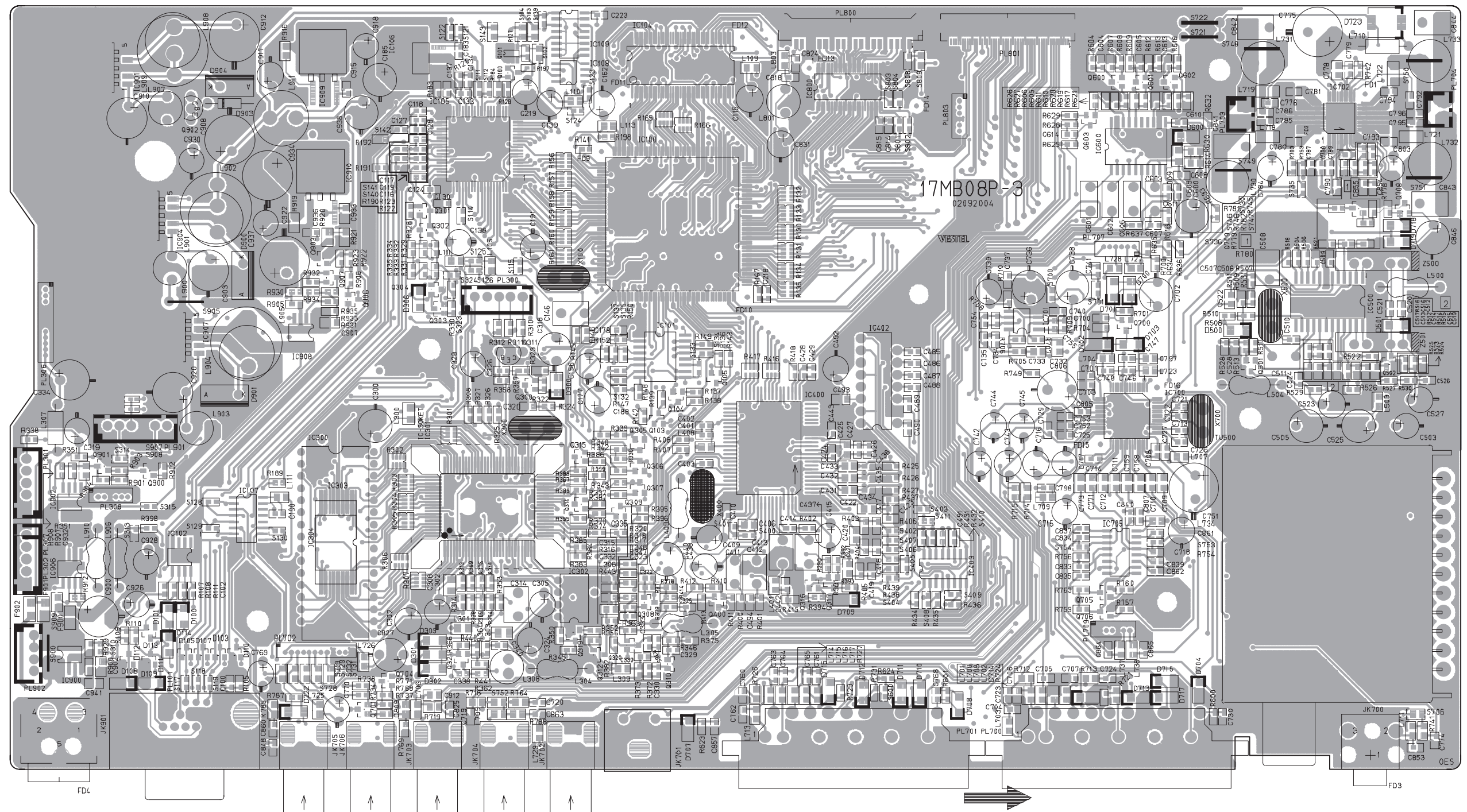
LED PWB CIRCUIT DIAGRAM



LED PWB ASS'Y
VE-20180117

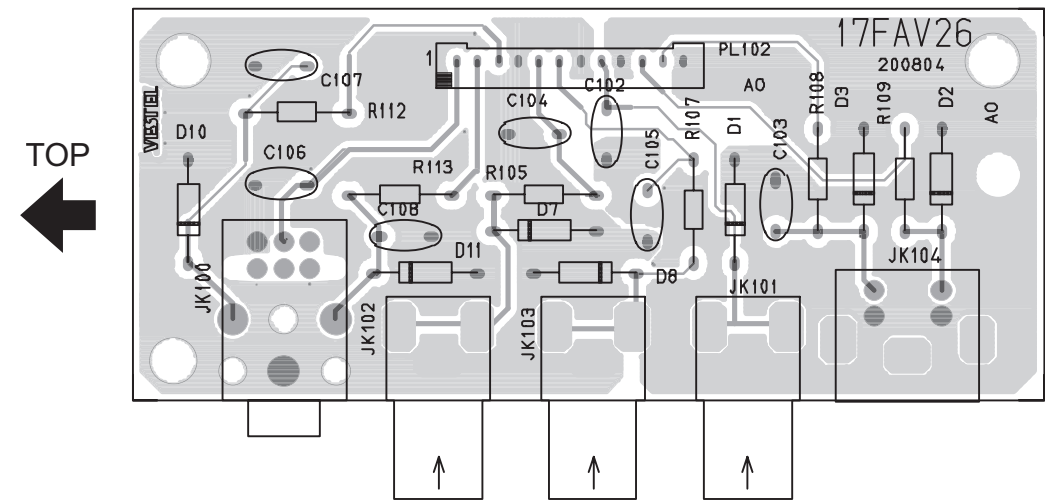
MAIN PWB PATTERN [SOLDER SIDE]



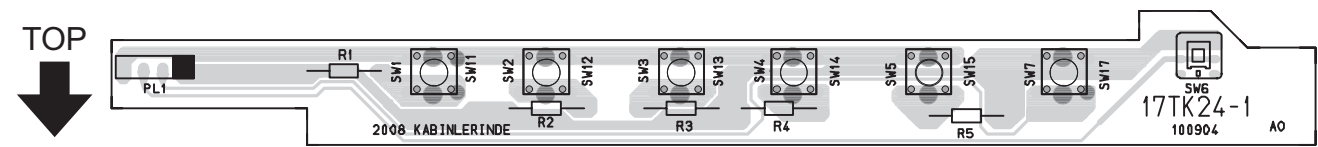


TOP
↑

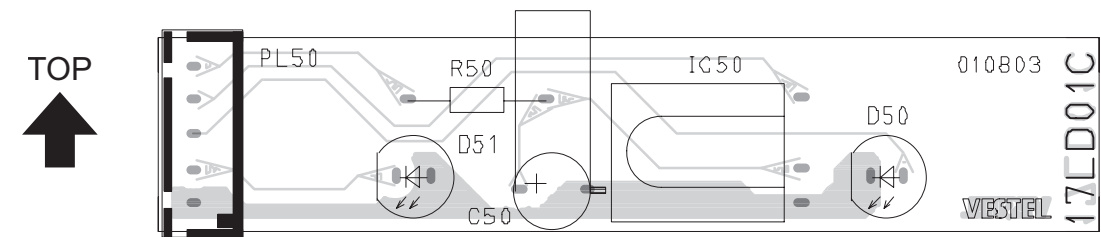
AV JACK/ HEADPHONE PWB PATTERN



CONTROL PWB PATTERN



LED PWB PATTERN





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(No.YA235)



Printed in Japan
VPT

PARTS LIST

CAUTION

- The parts identified by the Δ symbol are important for the safety . Whenever replacing these parts, be sure to use specified ones to secure the safety.
- The parts not indicated in this Parts List and those which are filled with lines --- in the Parts No. columns will not be supplied.
- P.W. BOARD Ass'y will not be supplied, but those which are filled with the Parts No. in the Parts No. columns will be supplied.

ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

RESISTORS		CAPACITORS	
CR	Carbon Resistor	C CAP.	Ceramic Capacitor
FR	Fusible Resistor	E CAP.	Electrolytic Capacitor
PR	Plate Resistor	M CAP.	Mylar Capacitor
VR	Variable Resistor	CH CAP.	Chip Capacitor
HV R	High Voltage Resistor	HV CAP.	High Voltage Capacitor
MF R	Metal Film Resistor	MF CAP.	Metalized Film Capacitor
MG R	Metal Glazed Resistor	MM CAP.	Metalized Mylar Capacitor
MP R	Metal Plate Resistor	MP CAP.	Metalized Polystyrol Capacitor
OM R	Metal Oxide Film Resistor	PP CAP.	Polypropylene Capacitor
CMF R	Coating Metal Film Resistor	PS CAP.	Polystyrol Capacitor
UNF R	Non-Flammable Resistor	TF CAP.	Thin Film Capacitor
CH V R	Chip Variable Resistor	MPP CAP.	Metalized Polypropylene Capacitor
CH MG R	Chip Metal Glazed Resistor	TAN. CAP.	Tantalum Capacitor
COMP. R	Composition Resistor	CH C CAP.	Chip Ceramic Capacitor
LPTC R	Linear Positive Temperature Coefficient Resistor	BP E CAP.	Bi-Polar Electrolytic Capacitor
		CH AL E CAP.	Chip Aluminum Electrolytic Capacitor
		CH AL BP CAP.	Chip Aluminum Bi-Polar Capacitor
		CH TAN. E CAP.	Chip Tantalum Electrolytic Capacitor
		CH AL BP E CAP.	Chip Tantalum Bi-Polar Electrolytic Capacitor

RESISTORS									
F	G	J	K	M	N	R	H	Z	P
±1%	±2%	±5%	±10%	±20%	±30%	+30% -10%	+50% -10%	+80% -20%	+100% -0%

CONTENTS

USING P.W. BOARD & REMOTE CONTROL UNIT	3-2
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EXPLODED VIEW	3-3
PRINTED WIRING BOARD PARTS LIST	3-4
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PACKING PARTS LIST	3-10

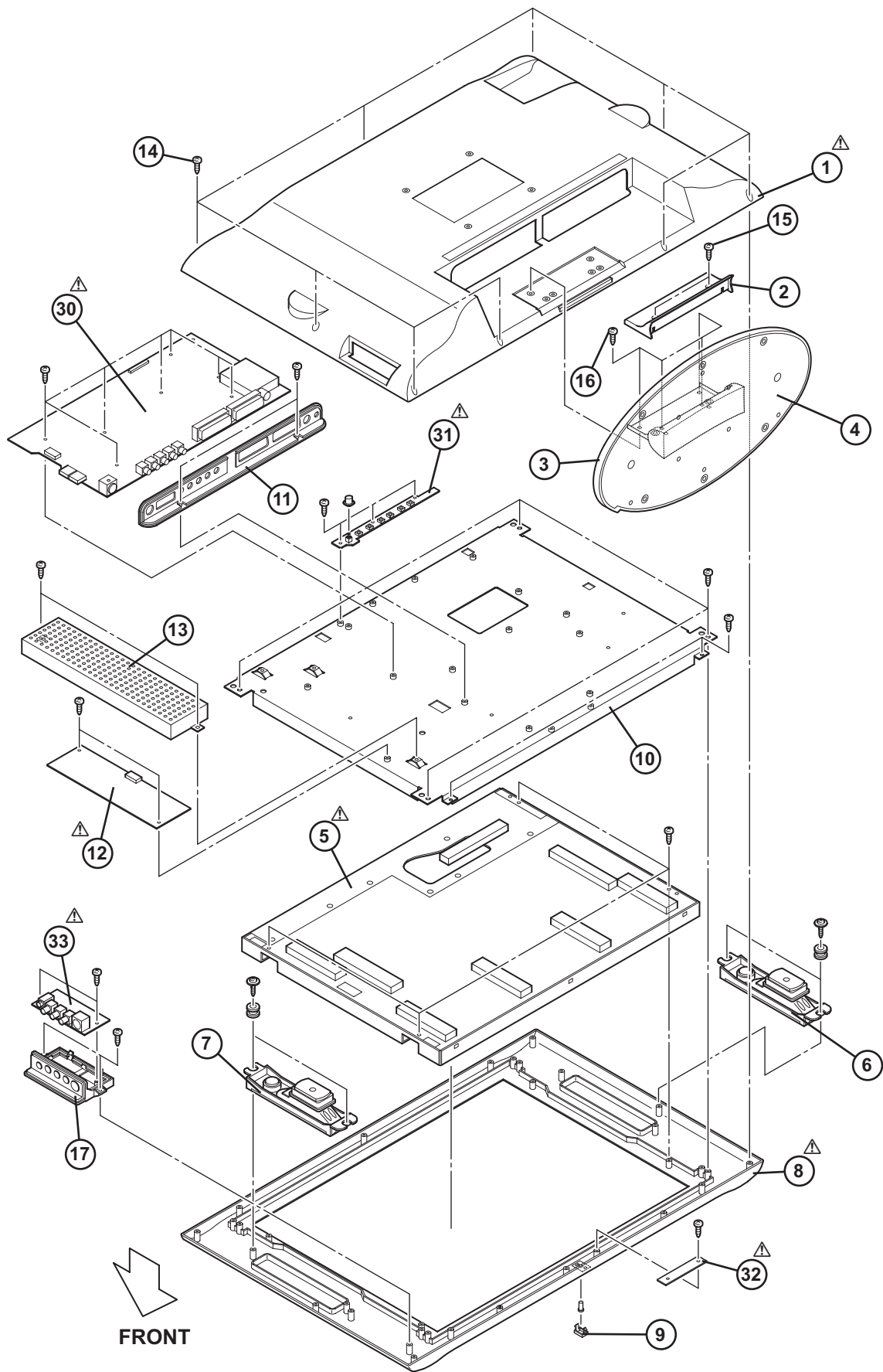
USING P.W. BOARD & REMOTE CONTROL UNIT

P.W.B ASS'Y	LT-20E50SJ	LT-20E50SU	LT-20E50SU/Z
CONTROL BUTTON PWB	VE-20180094	←	←
LED PWB	VE-20180117	←	←
AV JACK/HEADPHONE PWB	VE-20180067	←	←
MAIN PWB	VE-20177794	←	←
REMOTE CONTROL UNIT	VE-30034032	←	←

EXPLODED VIEW PARTS LIST

△ Ref.No.	Part No.	Part Name	Description	Local
△ 1	VE-20183143	REAR COVER		LT-20E50SU
△ 1	VE-20169243	REAR COVER		LT-20E50SJ,LT-20E50SU/Z
2	VE-20177635	FOOT TOP COVER		LT-20E50SJ,LT-20E50SU/Z
3	VE-20169245	FOOT BOTTOM COVER		LT-20E50SJ,LT-20E50SU/Z
4	VE-35010964	FOOT BOTTOM PLATE		
△ 5	VE-30020067	LCD PANEL UNIT		
6	VE-20180444	SPEAKER(R)		
7	VE-20180445	SPEAKER(L)		
△ 8	VE-20183102	FRONT PANEL		LT-20E50SU
△ 8	VE-20176379	FRONT PANEL		LT-20E50SJ,LT-20E50SU/Z
9	VE-20169247	POWER SWICH KNOB		LT-20E50SJ,LT-20E50SU/Z
10	VE-20173333	MAIN FRAME		
11	VE-20152323	AV JACK FRAME		LT-20E50SJ,LT-20E50SU/Z
△ 12	VE-30031727	INVERTER UNIT		
13	VE-35006732	INVERTER SHIELD		
14	VE-35000180	SCREW M3 x 6	(x9)	
15	VE-35008181	SCREW M3 x 16	(x2)	
16	VE-35000185	SCREW M4 x 8	(x4)	
17	VE-30001900	AV JACK/HEADPHONE FRAME		
△ 30	VE-20177794	MAIN PWB		
△ 31	VE-20180094	CONTROL BUTTON PWB		
△ 32	VE-20180117	LED PWB		
△ 33	VE-20180067	AV JACK/HEADPHONE PWB		

EXPLODED VIEW



PRINTED WIRING BOARD PARTS LIST

△Ref No.	Part No.	Part Name	Description	Local	△Ref No.	Part No.	Part Name	Description	Local
IC50	VE-30001670	PREAMPLIFIER TFMS5360			D7	VE-30001350	DIODE		
IC100	VE-30020865	IC			D8	VE-30001350	DIODE		
IC101	VE-30032066	IC			D10	VE-30001350	DIODE		
IC102	VE-30018006	IC			D11	VE-30001350	DIODE		
IC104	VE-30019132	IC			D50	VE-30001279	LED		
IC105	VE-30034805	IC			D51	VE-30001279	LED		
IC106	VE-30017956	IC			D100	VE-30001285	DIODE SMD		
IC107	VE-30019372	IC			D101	VE-30001285	DIODE SMD		
IC109	VE-30010822	IC			D103	VE-30007169	DIODE		
IC300	VE-30018652	IC			D105	VE-30007169	DIODE		
IC301	VE-20185387	IC(MICOM)	(SERVICE)		D107	VE-30007169	DIODE		
IC302	VE-20180593	IC(MEMORY)	(SERVICE)		D108	VE-30025773	DIODE SMD		
IC400	VE-30015059	IC			D109	VE-30025773	DIODE SMD		
IC402	VE-30004999	IC			D111	VE-30007169	DIODE		
IC403	VE-30019372	IC			D112	VE-30007169	DIODE		
IC500	VE-30021083	IC			D114	VE-30007763	DIODE SMD		
IC600	VE-30013686	IC			D300	VE-30012412	DIODE SMD		
IC700	VE-30018263	IC			D301	VE-30001285	DIODE SMD		
IC701	VE-30010024	IC			D302	VE-30001285	DIODE SMD		
IC702	VE-30027663	IC			D305	VE-30001285	DIODE SMD		
IC705	VE-30010822	IC			D306	VE-30001285	DIODE SMD		
IC900	VE-30014344	TRANSISTOR			D307	VE-30001285	DIODE SMD		
IC901	VE-30027613	IC			D500	VE-30001285	DIODE SMD		
IC902	VE-30014344	TRANSISTOR			D501	VE-30012411	DIODE SMD		
IC904	VE-30027612	IC			D600	VE-30007760	DIODE SMD		
IC906	VE-30018326	IC			D700	VE-30007761	DIODE SMD		
IC908	VE-30014344	TRANSISTOR			D701	VE-30001285	DIODE SMD		
IC909	VE-30007739	IC			D702	VE-30001285	DIODE SMD		
IC910	VE-30007739	IC			D703	VE-30001285	DIODE SMD		
Q100	VE-30001457	TRANSISTOR SMD			D704	VE-30007760	DIODE SMD		
Q101	VE-30018060	TRANSISTOR			D706	VE-30007760	DIODE SMD		
Q103	VE-30001457	TRANSISTOR SMD			D707	VE-30007760	DIODE SMD		
Q104	VE-30001457	TRANSISTOR SMD			D708	VE-30007760	DIODE SMD		
Q105	VE-30001457	TRANSISTOR SMD			D709	VE-30007760	DIODE SMD		
Q300	VE-30001458	TRANSISTOR SMD			D710	VE-30007760	DIODE SMD		
Q301	VE-30001457	TRANSISTOR SMD			D711	VE-30007760	DIODE SMD		
Q302	VE-30001457	TRANSISTOR SMD			D712	VE-30007760	DIODE SMD		
Q303	VE-30001457	TRANSISTOR SMD			D713	VE-30007760	DIODE SMD		
Q304	VE-30001457	TRANSISTOR SMD			D714	VE-30007760	DIODE SMD		
Q305	VE-30001457	TRANSISTOR SMD			D715	VE-30007760	DIODE SMD		
Q306	VE-30001457	TRANSISTOR SMD			D716	VE-30007760	DIODE SMD		
Q307	VE-30001457	TRANSISTOR SMD			D717	VE-30007760	DIODE SMD		
Q308	VE-30001458	TRANSISTOR SMD			D719	VE-30001285	DIODE SMD		
Q309	VE-30001457	TRANSISTOR SMD			D720	VE-30007760	DIODE SMD		
Q310	VE-30001458	TRANSISTOR SMD			D721	VE-30007760	DIODE SMD		
Q311	VE-30001423	TRANSISTOR			D722	VE-30007760	DIODE SMD		
Q312	VE-30001458	TRANSISTOR SMD			D723	VE-30018574	DIODE		
Q313	VE-30001457	TRANSISTOR SMD			D725	VE-30009699	DIODE SMD		
Q314	VE-30001457	TRANSISTOR SMD			D726	VE-30009699	DIODE SMD		
Q315	VE-30001457	TRANSISTOR SMD			D900	VE-30001313	DIODE		
Q316	VE-30001457	TRANSISTOR SMD			D902	VE-30001285	DIODE SMD		
Q317	VE-30001457	TRANSISTOR SMD			D903	VE-30001343	DIODE		
Q318	VE-30001458	TRANSISTOR SMD			D904	VE-30001313	DIODE		
Q319	VE-30001458	TRANSISTOR SMD			D905	VE-30001285	DIODE SMD		
Q400	VE-30001457	TRANSISTOR SMD			D906	VE-30001285	DIODE SMD		
Q501	VE-30001457	TRANSISTOR SMD			C50	VE-30000413	E CAPACITOR	4.7uF 50V M	
Q502	VE-30001457	TRANSISTOR SMD			C100	VE-30012566	CAPACITOR SMD	22pF 50V J	
Q600	VE-30001457	TRANSISTOR SMD			C101	VE-30012566	CAPACITOR SMD	22pF 50V J	
Q601	VE-30001457	TRANSISTOR SMD			C102	VE-30000190	C CAPACITOR	100pF 50V J CH	
Q602	VE-30001457	TRANSISTOR SMD			C102	VE-30016654	CAPACITOR SMD	100nF 16V K R	
Q603	VE-30001457	TRANSISTOR SMD			C103	VE-30000190	C CAPACITOR	100pF 50V J CH	
Q700	VE-30001458	TRANSISTOR SMD			C104	VE-30000190	C CAPACITOR	100pF 50V J CH	
Q701	VE-30001457	TRANSISTOR SMD			C104	VE-30016654	CAPACITOR SMD	100nF 16V K R	
Q702	VE-30001457	TRANSISTOR SMD			C105	VE-30000190	C CAPACITOR	100pF 50V J CH	
Q703	VE-30001457	TRANSISTOR SMD			C105	VE-30016654	CAPACITOR SMD	100nF 16V K R	
Q704	VE-30001457	TRANSISTOR SMD			C106	VE-30000295	C CAPACITOR	100nF 50V Z F	
Q705	VE-30001457	TRANSISTOR SMD			C106	VE-30016654	CAPACITOR SMD	100nF 16V K R	
Q706	VE-30001457	TRANSISTOR SMD			C107	VE-30000330	C CAPACITOR	4.7nF 50V K B	
Q707	VE-30001457	TRANSISTOR SMD			C107	VE-30016654	CAPACITOR SMD	100nF 16V K R	
Q708	VE-30001458	TRANSISTOR SMD			C108	VE-30000330	C CAPACITOR	4.7nF 50V K B	
Q709	VE-30001457	TRANSISTOR SMD			C108	VE-30012582	CAPACITOR SMD	10nF 50V K R	
Q900	VE-30001457	TRANSISTOR SMD			C109	VE-30012582	CAPACITOR SMD	10nF 50V K R	
Q901	VE-30001457	TRANSISTOR SMD			C110	VE-30012582	CAPACITOR SMD	10nF 50V K R	
Q902	VE-30001454	TRANSISTOR			C111	VE-30012582	CAPACITOR SMD	10nF 50V K R	
Q904	VE-30001457	TRANSISTOR SMD			C112	VE-30016654	CAPACITOR SMD	100nF 16V K R	
Q905	VE-30001457	TRANSISTOR SMD			C113	VE-30012582	CAPACITOR SMD	10nF 50V K R	
Q906	VE-30001457	TRANSISTOR SMD			C114	VE-30016654	CAPACITOR SMD	100nF 16V K R	
Q907	VE-30001457	TRANSISTOR SMD			C115	VE-30000371	E CAPACITOR	22uF 50V M	
D1	VE-30016020	DIODE			C116	VE-30012590	CAPACITOR SMD	47nF 50V K	
D2	VE-30016020	DIODE			C117	VE-30012590	CAPACITOR SMD	47nF 50V K	
D3	VE-30016020	DIODE			C118	VE-30012590	CAPACITOR SMD	47nF 50V K	
					C120	VE-30016654	CAPACITOR SMD	100nF 16V K R	
					C121	VE-30016654	CAPACITOR SMD	100nF 16V K R	

△Ref No.	Part No.	Part Name	Description	Local	△Ref No.	Part No.	Part Name	Description	Local
C122	VE-30016654	CAPACITOR SMD	100nF 16V K R		C334	VE-30000354	E CAPACITOR	100uF 35V M	
C123	VE-30016654	CAPACITOR SMD	100nF 16V K R		C335	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C124	VE-30016654	CAPACITOR SMD	100nF 16V K R		C336	VE-30012611	CAPACITOR SMD	120pF 50V J	
C125	VE-30016654	CAPACITOR SMD	100nF 16V K R		C337	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C126	VE-30016654	CAPACITOR SMD	100nF 16V K R		C338	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C127	VE-30016654	CAPACITOR SMD	100nF 16V K R		C339	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C128	VE-30016654	CAPACITOR SMD	100nF 16V K R		C340	VE-30020694	CAPACITOR SMD	1uF 16V Z Y5V	
C129	VE-30016654	CAPACITOR SMD	100nF 16V K R		C400	VE-30012609	CAPACITOR SMD	68nF 50V K	
C130	VE-30016654	CAPACITOR SMD	100nF 16V K R		C401	VE-30012583	CAPACITOR SMD	1.5nF 50V K	
C131	VE-30016654	CAPACITOR SMD	100nF 16V K R		C402	VE-30012590	CAPACITOR SMD	47nF 50V K	
C132	VE-30012581	CAPACITOR SMD	1nF 50V K R		C403	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C133	VE-30012587	CAPACITOR SMD	3.3nF 50V K		C404	VE-30012613	CAPACITOR SMD	3.3pF 50V C CH	
C134	VE-30012605	CAPACITOR SMD	39nF 50V M		C405	VE-30012613	CAPACITOR SMD	3.3pF 50V C CH	
C136	VE-30016654	CAPACITOR SMD	100nF 16V K R		C406	VE-30000315	CAPACITOR SMD	220nF 25V Z	
C137	VE-30016654	CAPACITOR SMD	100nF 16V K R		C407	VE-30012583	CAPACITOR SMD	1.5nF 50V K	
C138	VE-30000371	E CAPACITOR	22uF 50V M		C408	VE-30012572	CAPACITOR SMD	390pF 50V J	
C139	VE-30000371	E CAPACITOR	22uF 50V M		C409	VE-30000345	E CAPACITOR	10uF 50V M	
C146	VE-30000109	CAPACITOR MKT	470nF 63V J		C410	VE-30012590	CAPACITOR SMD	47nF 50V K	
C147	VE-30016654	CAPACITOR SMD	100nF 16V K R		C411	VE-30000068	CAPACITOR MKT	1nF 63V K	
C148	VE-30012575	CAPACITOR SMD	4.7pF 50V C CH		C412	VE-30007082	CAPACITOR MKT	680nF 63V J	
C149	VE-30012575	CAPACITOR SMD	4.7pF 50V C CH		C413	VE-30007082	CAPACITOR MKT	680nF 63V J	
C150	VE-30016654	CAPACITOR SMD	100nF 16V K R		C414	VE-30012582	CAPACITOR SMD	10nF 50V K R	
C151	VE-30016654	CAPACITOR SMD	100nF 16V K R		C415	VE-30000345	E CAPACITOR	10uF 50V M	
C152	VE-30016654	CAPACITOR SMD	100nF 16V K R		C416	VE-30012590	CAPACITOR SMD	47nF 50V K	
C153	VE-30012567	CAPACITOR SMD	220pF 50V J		C420	VE-30000294	CAPACITOR SMD	100nF 50V K	
C154	VE-30012567	CAPACITOR SMD	220pF 50V J		C421	VE-30000294	CAPACITOR SMD	100nF 50V K	
C155	VE-30012567	CAPACITOR SMD	220pF 50V J		C422	VE-30000294	CAPACITOR SMD	100nF 50V K	
C156	VE-30000371	E CAPACITOR	22uF 50V M		C424	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C157	VE-30016654	CAPACITOR SMD	100nF 16V K R		C425	VE-30000315	CAPACITOR SMD	220nF 25V Z	
C158	VE-30012567	CAPACITOR SMD	220pF 50V J		C426	VE-30012583	CAPACITOR SMD	1.5nF 50V K	
C159	VE-30016654	CAPACITOR SMD	100nF 16V K R		C427	VE-30012572	CAPACITOR SMD	390pF 50V J	
C160	VE-30012567	CAPACITOR SMD	220pF 50V J		C428	VE-30012590	CAPACITOR SMD	47nF 50V K	
C161	VE-30012567	CAPACITOR SMD	220pF 50V J		C429	VE-30012583	CAPACITOR SMD	1.5nF 50V K	
C162	VE-30000371	E CAPACITOR	22uF 50V M		C430	VE-30012609	CAPACITOR SMD	68nF 50V K	
C163	VE-30016654	CAPACITOR SMD	100nF 16V K R		C431	VE-30000315	CAPACITOR SMD	220nF 25V Z	
C164	VE-30012567	CAPACITOR SMD	220pF 50V J		C432	VE-30000315	CAPACITOR SMD	220nF 25V Z	
C165	VE-30016654	CAPACITOR SMD	100nF 16V K R		C433	VE-30000315	CAPACITOR SMD	220nF 25V Z	
C166	VE-30012567	CAPACITOR SMD	220pF 50V J		C434	VE-30012570	CAPACITOR SMD	330pF 50V J	
C167	VE-30016654	CAPACITOR SMD	100nF 16V K R		C435	VE-30012570	CAPACITOR SMD	330pF 50V J	
C168	VE-30016654	CAPACITOR SMD	100nF 16V K R		C436	VE-30012570	CAPACITOR SMD	330pF 50V J	
C169	VE-30012567	CAPACITOR SMD	220pF 50V J		C437	VE-30007082	CAPACITOR MKT	680nF 63V J	
C170	VE-30012567	CAPACITOR SMD	220pF 50V J		C438	VE-30000371	E CAPACITOR	22uF 50V M	
C171	VE-30016654	CAPACITOR SMD	100nF 16V K R		C439	VE-30012609	CAPACITOR SMD	68nF 50V K	
C172	VE-30012567	CAPACITOR SMD	220pF 50V J		C440	VE-30000352	E CAPACITOR	100uF 16V M	
C174	VE-30016654	CAPACITOR SMD	100nF 16V K R		C441	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C175	VE-30012567	CAPACITOR SMD	220pF 50V J		C442	VE-30012569	CAPACITOR SMD	33pF 50V J	
C176	VE-30016654	CAPACITOR SMD	100nF 16V K R		C443	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C177	VE-30000371	E CAPACITOR	22uF 50V M		C485	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C178	VE-30016654	CAPACITOR SMD	100nF 16V K R		C486	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C183	VE-30016654	CAPACITOR SMD	100nF 16V K R		C487	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C185	VE-30000352	E CAPACITOR	100uF 16V M		C488	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C187	VE-30012573	CAPACITOR SMD	47pF 50V J		C489	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C189	VE-30016654	CAPACITOR SMD	100nF 16V K R		C490	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C190	VE-30016654	CAPACITOR SMD	100nF 16V K R		C491	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C217	VE-30012581	CAPACITOR SMD	1nF 50V K R		C492	VE-30000345	E CAPACITOR	10uF 50V M	
C218	VE-30012575	CAPACITOR SMD	4.7pF 50V C CH		C493	VE-30000294	CAPACITOR SMD	100nF 50V K	
C219	VE-30024742	E CAPACITOR	10uF 16V N		C494	VE-30012569	CAPACITOR SMD	33pF 50V J	
C300	VE-30000352	E CAPACITOR	100uF 16V M		C495	VE-30012569	CAPACITOR SMD	33pF 50V J	
C301	VE-30016654	CAPACITOR SMD	100nF 16V K R		C496	VE-30012569	CAPACITOR SMD	33pF 50V J	
C302	VE-30000371	E CAPACITOR	22uF 50V M		C502	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C303	VE-30016654	CAPACITOR SMD	100nF 16V K R		C503	VE-30000345	E CAPACITOR	10uF 50V M	
C304	VE-30016654	CAPACITOR SMD	100nF 16V K R		C505	VE-30000400	E CAPACITOR	47uF 50V M	
C305	VE-30000371	E CAPACITOR	22uF 50V M		C506	VE-30012582	CAPACITOR SMD	10nF 50V K R	
C306	VE-30016654	CAPACITOR SMD	100nF 16V K R		C507	VE-30012572	CAPACITOR SMD	390pF 50V J	
C307	VE-30016654	CAPACITOR SMD	100nF 16V K R		C508	VE-30000109	CAPACITOR MKT	470nF 63V J	
C308	VE-30000371	E CAPACITOR	22uF 50V M		C509	VE-30012582	CAPACITOR SMD	10nF 50V K R	
C309	VE-30016654	CAPACITOR SMD	100nF 16V K R		C510	VE-30012566	CAPACITOR SMD	22pF 50V J	
C310	VE-30016654	CAPACITOR SMD	100nF 16V K R		C511	VE-30000109	CAPACITOR MKT	470nF 63V J	
C311	VE-30016654	CAPACITOR SMD	100nF 16V K R		C512	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C312	VE-30016654	CAPACITOR SMD	100nF 16V K R		C513	VE-30012583	CAPACITOR SMD	1.5nF 50V K	
C313	VE-30016654	CAPACITOR SMD	100nF 16V K R		C514	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C314	VE-30000109	CAPACITOR MKT	470nF 63V J		C515	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C315	VE-30016654	CAPACITOR SMD	100nF 16V K R		C517	VE-30012569	CAPACITOR SMD	33pF 50V J	
C316	VE-30000352	E CAPACITOR	100uF 16V M		C519	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C317	VE-30012569	CAPACITOR SMD	33pF 50V J		C520	VE-30012582	CAPACITOR SMD	10nF 50V K R	
C318	VE-30012569	CAPACITOR SMD	33pF 50V J		C522	VE-30000315	CAPACITOR SMD	220nF 25V Z	
C319	VE-30000371	E CAPACITOR	22uF 50V M		C523	VE-30000371	E CAPACITOR	22uF 50V M	
C320	VE-30016654	CAPACITOR SMD	100nF 16V K R		C524	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C321	VE-30016654	CAPACITOR SMD	100nF 16V K R		C525	VE-30000407	E CAPACITOR	470uF 16V M	
C324	VE-30000371	E CAPACITOR	22uF 50V M		C526	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C325	VE-30012611	CAPACITOR SMD	120pF 50V J		C527	VE-30000345	E CAPACITOR	10uF 50V M	
C326	VE-30012576	CAPACITOR SMD	56pF 50V J CH		C600	VE-30000352	E CAPACITOR	100uF 16V M	
C327	VE-30016654	CAPACITOR SMD	100nF 16V K R		C601	VE-30000074	CAPACITOR MKT	100nF 63V J	
C328	VE-30000393	E CAPACITOR	3.3uF 50V M		C602	VE-30000074	CAPACITOR MKT	100nF 63V J	
C331	VE-30012607	CAPACITOR SMD	150pF 50V J		C603	VE-30000074	CAPACITOR MKT	100nF 63V J	
C332	VE-30016654	CAPACITOR SMD	100nF 16V K R		C604	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C333	VE-30016654	CAPACITOR SMD	100nF 16V K R		C605	VE-30016654	CAPACITOR SMD	100nF 16V K R	

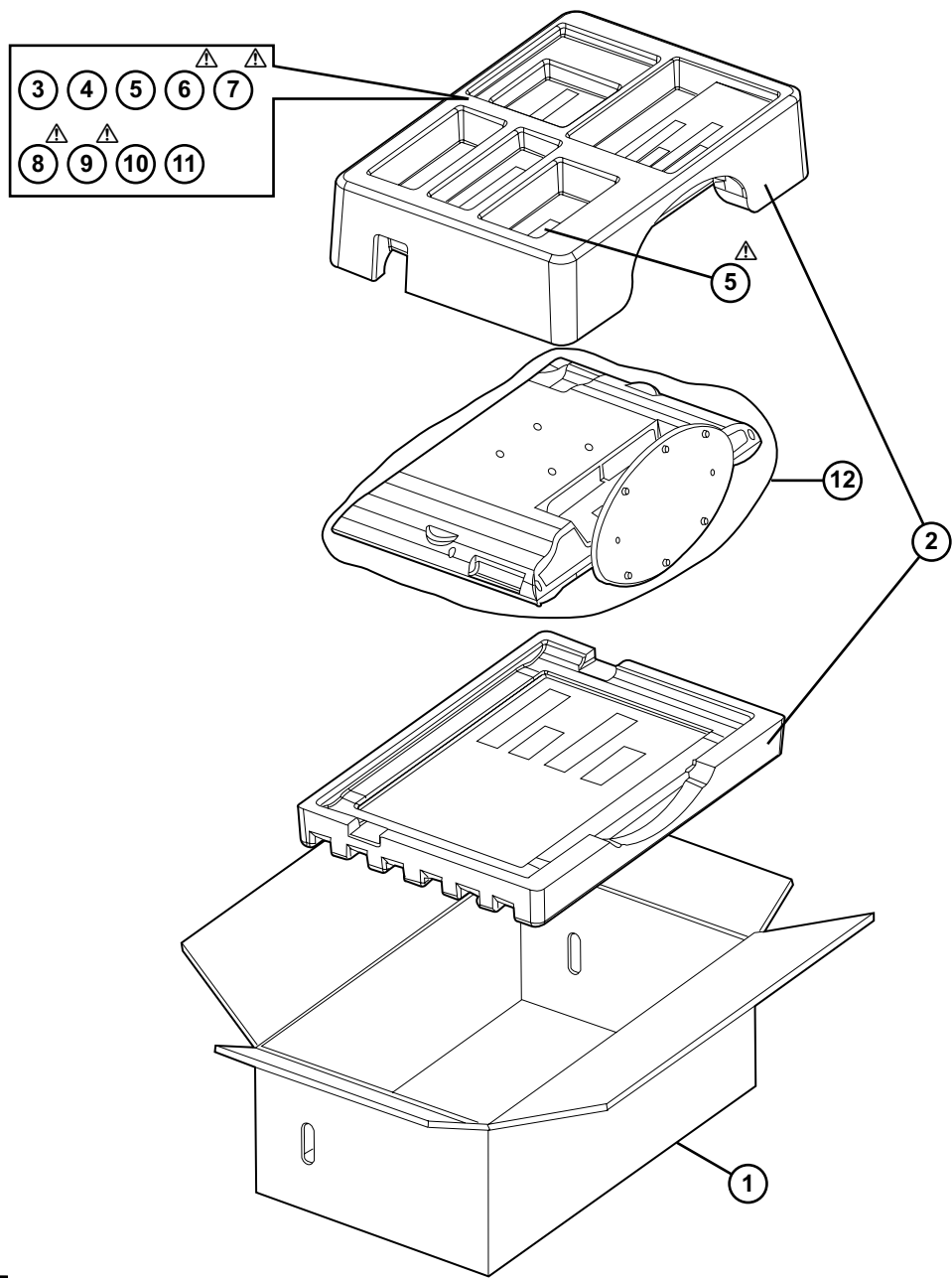
△Ref No.	Part No.	Part Name	Description	Local	△Ref No.	Part No.	Part Name	Description	Local
C606	VE-30000074	CAPACITOR MKT	100nF 63V J		C778	VE-30000294	CAPACITOR SMD	100nF 50V K	
C607	VE-30012569	CAPACITOR SMD	33pF 50V J		C779	VE-30012567	CAPACITOR SMD	220pF 50V J	
C608	VE-30016654	CAPACITOR SMD	100nF 16V K R		C780	VE-30012582	CAPACITOR SMD	10nF 50V K R	
C609	VE-30016654	CAPACITOR SMD	100nF 16V K R		C781	VE-30012582	CAPACITOR SMD	10nF 50V K R	
C610	VE-30016654	CAPACITOR SMD	100nF 16V K R		C782	VE-30000294	CAPACITOR SMD	100nF 50V K	
C611	VE-30016654	CAPACITOR SMD	100nF 16V K R		C783	VE-30000294	CAPACITOR SMD	100nF 50V K	
C612	VE-30016654	CAPACITOR SMD	100nF 16V K R		C784	VE-30000345	E CAPACITOR	10uF 50V M	
C613	VE-30016654	CAPACITOR SMD	100nF 16V K R		C785	VE-30012581	CAPACITOR SMD	1nF 50V K R	
C614	VE-30016654	CAPACITOR SMD	100nF 16V K R		C786	VE-30012581	CAPACITOR SMD	1nF 50V K R	
C700	VE-30016654	CAPACITOR SMD	100nF 16V K R		C787	VE-30020694	CAPACITOR SMD	1uF 16V Z Y5V	
C701	VE-30012587	CAPACITOR SMD	3.3nF 50V K		C788	VE-30020694	CAPACITOR SMD	1uF 16V Z Y5V	
C702	VE-30000352	E CAPACITOR	100uF 16V M		C789	VE-30020694	CAPACITOR SMD	1uF 16V Z Y5V	
C703	VE-30012587	CAPACITOR SMD	3.3nF 50V K		C790	VE-30020694	CAPACITOR SMD	1uF 16V Z Y5V	
C704	VE-30012589	CAPACITOR SMD	4.7nF 50V K		C791	VE-30020694	CAPACITOR SMD	1uF 16V Z Y5V	
C705	VE-30012589	CAPACITOR SMD	4.7nF 50V K		C792	VE-30000294	CAPACITOR SMD	100nF 50V K	
C706	VE-30012589	CAPACITOR SMD	4.7nF 50V K		C793	VE-30012582	CAPACITOR SMD	10nF 50V K R	
C707	VE-30012589	CAPACITOR SMD	4.7nF 50V K		C794	VE-30012582	CAPACITOR SMD	10nF 50V K R	
C708	VE-30016654	CAPACITOR SMD	100nF 16V K R		C795	VE-30012581	CAPACITOR SMD	1nF 50V K R	
C709	VE-30000315	CAPACITOR SMD	220nF 25V Z		C796	VE-30012581	CAPACITOR SMD	1nF 50V K R	
C710	VE-30000315	CAPACITOR SMD	220nF 25V Z		C797	VE-30000294	CAPACITOR SMD	100nF 50V K	
C711	VE-30000315	CAPACITOR SMD	220nF 25V Z		C798	VE-30012574	CAPACITOR SMD	470pF 50V J	
C712	VE-30000315	CAPACITOR SMD	220nF 25V Z		C799	VE-30012567	CAPACITOR SMD	220pF 50V J	
C713	VE-30012576	CAPACITOR SMD	56pF 50V J CH		C801	VE-30000294	CAPACITOR SMD	100nF 50V K	
C714	VE-30016654	CAPACITOR SMD	100nF 16V K R		C802	VE-30000294	CAPACITOR SMD	100nF 50V K	
C715	VE-30000393	E CAPACITOR	3.3uF 50V M		C803	VE-30000345	E CAPACITOR	10uF 50V M	
C716	VE-30000345	E CAPACITOR	10uF 50V M		C804	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C717	VE-30000345	E CAPACITOR	10uF 50V M		C805	VE-30012581	CAPACITOR SMD	1nF 50V K R	
C718	VE-30000345	E CAPACITOR	10uF 50V M		C806	VE-30000354	E CAPACITOR	100uF 35V M	
C719	VE-30012581	CAPACITOR SMD	1nF 50V K R		C807	VE-30012574	CAPACITOR SMD	470pF 50V J	
C720	VE-30012581	CAPACITOR SMD	1nF 50V K R		C812	VE-30000315	CAPACITOR SMD	220nF 25V Z	
C721	VE-30012565	CAPACITOR SMD	1.8pF 50V J CH		C818	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C722	VE-30012565	CAPACITOR SMD	1.8pF 50V J CH		C820	VE-30000315	CAPACITOR SMD	220nF 25V Z	
C723	VE-30012581	CAPACITOR SMD	1nF 50V K R		C822	VE-30012560	CAPACITOR SMD	100pF 50V J	
C724	VE-30012581	CAPACITOR SMD	1nF 50V K R		C823	VE-30012560	CAPACITOR SMD	100pF 50V J	
C725	VE-30012585	CAPACITOR SMD	2.2nF 50V K R		C824	VE-30012560	CAPACITOR SMD	100pF 50V J	
C726	VE-30012576	CAPACITOR SMD	56pF 50V J CH		C825	VE-30012581	CAPACITOR SMD	1nF 50V K R	
C727	VE-30016654	CAPACITOR SMD	100nF 16V K R		C827	VE-30000352	E CAPACITOR	100uF 16V M	
C728	VE-30016654	CAPACITOR SMD	100nF 16V K R		C828	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C729	VE-30012585	CAPACITOR SMD	2.2nF 50V K R		C829	VE-30012582	CAPACITOR SMD	10nF 50V K R	
C730	VE-30012607	CAPACITOR SMD	150pF 50V J		C830	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C731	VE-30012607	CAPACITOR SMD	150pF 50V J		C831	VE-30000371	E CAPACITOR	22uF 50V M	
C732	VE-30000315	CAPACITOR SMD	220nF 25V Z		C832	VE-30012562	CAPACITOR SMD	15pF 50V J	
C733	VE-30000315	CAPACITOR SMD	220nF 25V Z		C833	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C734	VE-30016654	CAPACITOR SMD	100nF 16V K R		C834	VE-30020694	CAPACITOR SMD	1uF 16V Z Y5V	
C735	VE-30012583	CAPACITOR SMD	1.5nF 50V K		C835	VE-30020694	CAPACITOR SMD	1uF 16V Z Y5V	
C736	VE-30000352	E CAPACITOR	100uF 16V M		C837	VE-30020694	CAPACITOR SMD	1uF 16V Z Y5V	
C737	VE-30012589	CAPACITOR SMD	4.7nF 50V K		C839	VE-30020694	CAPACITOR SMD	1uF 16V Z Y5V	
C738	VE-30000352	E CAPACITOR	100uF 16V M		C840	VE-30020694	CAPACITOR SMD	1uF 16V Z Y5V	
C739	VE-30000362	E CAPACITOR	1uF 50V M		C846	VE-30000407	E CAPACITOR	470uF 16V M	
C740	VE-30012583	CAPACITOR SMD	1.5nF 50V K		C847	VE-30012569	CAPACITOR SMD	33pF 50V J	
C741	VE-30012589	CAPACITOR SMD	4.7nF 50V K		C848	VE-30012569	CAPACITOR SMD	33pF 50V J	
C742	VE-30000371	E CAPACITOR	22uF 50V M		C849	VE-30012574	CAPACITOR SMD	470pF 50V J	
C743	VE-30000371	E CAPACITOR	22uF 50V M		C850	VE-30012569	CAPACITOR SMD	33pF 50V J	
C744	VE-30000371	E CAPACITOR	22uF 50V M		C851	VE-30012574	CAPACITOR SMD	470pF 50V J	
C745	VE-30000371	E CAPACITOR	22uF 50V M		C852	VE-30012574	CAPACITOR SMD	470pF 50V J	
C746	VE-30012567	CAPACITOR SMD	220pF 50V J		C853	VE-30012574	CAPACITOR SMD	470pF 50V J	
C747	VE-30012574	CAPACITOR SMD	470pF 50V J		C858	VE-30012569	CAPACITOR SMD	33pF 50V J	
C748	VE-30012582	CAPACITOR SMD	10nF 50V K R		C859	VE-30012569	CAPACITOR SMD	33pF 50V J	
C749	VE-30016654	CAPACITOR SMD	100nF 16V K R		C860	VE-30012569	CAPACITOR SMD	33pF 50V J	
C750	VE-30012576	CAPACITOR SMD	56pF 50V J CH		C861	VE-30020694	CAPACITOR SMD	1uF 16V Z Y5V	
C751	VE-30000407	E CAPACITOR	470uF 16V M		C862	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C752	VE-30012585	CAPACITOR SMD	2.2nF 50V K R		C863	VE-30012581	CAPACITOR SMD	1nF 50V K R	
C753	VE-30012585	CAPACITOR SMD	2.2nF 50V K R		C900	VE-30000354	E CAPACITOR	100uF 35V M	
C754	VE-30012574	CAPACITOR SMD	470pF 50V J		C902	VE-30000294	CAPACITOR SMD	100nF 50V K	
C755	VE-30012574	CAPACITOR SMD	470pF 50V J		C903	VE-30000354	E CAPACITOR	100uF 35V M	
C756	VE-30012585	CAPACITOR SMD	2.2nF 50V K R		C904	VE-30012582	CAPACITOR SMD	10nF 50V K R	
C757	VE-30012585	CAPACITOR SMD	2.2nF 50V K R		C907	VE-30000294	CAPACITOR SMD	100nF 50V K	
C758	VE-30000315	CAPACITOR SMD	220nF 25V Z		C908	VE-30000359	E CAPACITOR	1000uF 16V M	
C759	VE-30000315	CAPACITOR SMD	220nF 25V Z		C909	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C760	VE-30012581	CAPACITOR SMD	1nF 50V K R		C910	VE-30000354	E CAPACITOR	100uF 35V M	
C761	VE-30012581	CAPACITOR SMD	1nF 50V K R		C911	VE-30012582	CAPACITOR SMD	10nF 50V K R	
C762	VE-30012589	CAPACITOR SMD	4.7nF 50V K		C912	VE-30000359	E CAPACITOR	1000uF 16V M	
C763	VE-30012589	CAPACITOR SMD	4.7nF 50V K		C913	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C764	VE-30012589	CAPACITOR SMD	4.7nF 50V K		C915	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C765	VE-30012589	CAPACITOR SMD	4.7nF 50V K		C916	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C766	VE-30016654	CAPACITOR SMD	100nF 16V K R		C917	VE-30000371	E CAPACITOR	22uF 50V M	
C767	VE-30012607	CAPACITOR SMD	150pF 50V J		C918	VE-30000371	E CAPACITOR	22uF 50V M	
C768	VE-30012607	CAPACITOR SMD	150pF 50V J		C919	VE-30016654	CAPACITOR SMD	100nF 16V K R	
C769	VE-30000371	E CAPACITOR	22uF 50V M		C924	VE-30012576	CAPACITOR SMD	56pF 50V J CH	
C770	VE-30000371	E CAPACITOR	22uF 50V M		C925	VE-30012560	CAPACITOR SMD	100pF 50V J	
C771	VE-30000315	CAPACITOR SMD	220nF 25V Z		C926	VE-30000371	E CAPACITOR	22uF 50V M	
C772	VE-30012581	CAPACITOR SMD	1nF 50V K R		C927	VE-30000294	CAPACITOR SMD	100nF 50V K	
C773	VE-30000315	CAPACITOR SMD	220nF 25V Z		C928	VE-30000345	E CAPACITOR	10uF 50V M	
C774	VE-30012581	CAPACITOR SMD	1nF 50V K R		C929	VE-30000294	CAPACITOR SMD	100nF 50V K	
C775	VE-30000345	E CAPACITOR	10uF 50V M		C930	VE-30000371	E CAPACITOR	22uF 50V M	
C776	VE-30000294	CAPACITOR SMD	100nF 50V K		C932	VE-30000294	CAPACITOR SMD	100nF 50V K	
C777	VE-30000294	CAPACITOR SMD	100nF 50V K		C933	VE-30000294	CAPACITOR SMD	100nF 50V K	

△Ref No.	Part No.	Part Name	Description	Local	△Ref No.	Part No.	Part Name	Description	Local
C934	VE-30031594	E CAPACITOR	2200uF 10V M		R301	VE-30018409	RESISTOR SARRAY	1/16W 330R J	
C935	VE-30016654	CAPACITOR SMD	100nF 16V K R		R302	VE-30018409	RESISTOR SARRAY	1/16W 330R J	
C936	VE-30016654	CAPACITOR SMD	100nF 16V K R		R303	VE-30018409	RESISTOR SARRAY	1/16W 330R J	
C937	VE-30000371	E CAPACITOR	22uF 50V M		R304	VE-30018409	RESISTOR SARRAY	1/16W 330R J	
C938	VE-30000352	E CAPACITOR	100uF 16V M		R305	VE-30018409	RESISTOR SARRAY	1/16W 330R J	
C941	VE-30000294	CAPACITOR SMD	100nF 50V K		R306	VE-30018409	RESISTOR SARRAY	1/16W 330R J	
R1	VE-30000689	RESISTOR CF	1/4W 3.9K J		R307	VE-30018409	RESISTOR SARRAY	1/16W 330R J	
R2	VE-30000526	RESISTOR CF	1/4W 1.5K J		R308	VE-30012657	RESISTOR SMD	1/16W 1K J	
R3	VE-30000770	RESISTOR CF	1/4W 680R J		R309	VE-30012669	RESISTOR SMD	1/16W 22K J	
R4	VE-30000712	RESISTOR CF	1/4W 470R J		R310	VE-30012510	RESISTOR SMD	1/16W 100R J	
R5	VE-30000622	RESISTOR CF	1/4W 270R J		R311	VE-30012510	RESISTOR SMD	1/16W 100R J	
R50	VE-30000459	RESISTOR CF	1/4W 100R J		R312	VE-30012510	RESISTOR SMD	1/16W 100R J	
R100	VE-30012713	RESISTOR SMD	1/16W 75R J		R313	VE-30012679	RESISTOR SMD	1/16W 3.9K J	
R101	VE-30012713	RESISTOR SMD	1/16W 75R J		R314	VE-30012679	RESISTOR SMD	1/16W 3.9K J	
R102	VE-30012713	RESISTOR SMD	1/16W 75R J		R315	VE-30012692	RESISTOR SMD	1/16W 4.7K J	
R103	VE-30012713	RESISTOR SMD	1/16W 75R J		R316	VE-30012679	RESISTOR SMD	1/16W 3.9K J	
R104	VE-30012713	RESISTOR SMD	1/16W 75R J		R317	VE-30012650	RESISTOR SMD	1/16W 15K J	
R105	VE-30000712	RESISTOR CF	1/4W 470R J		R318	VE-30012659	RESISTOR SMD	1/16W 2.2K J	
R105	VE-30012641	RESISTOR SMD	1/16W 10K J		R319	VE-30012692	RESISTOR SMD	1/16W 4.7K J	
R106	VE-30012641	RESISTOR SMD	1/16W 10K J		R320	VE-30012659	RESISTOR SMD	1/16W 2.2K J	
R107	VE-30000712	RESISTOR CF	1/4W 470R J		R321	VE-30012692	RESISTOR SMD	1/16W 4.7K J	
R107	VE-30012510	RESISTOR SMD	1/16W 100R J		R322	VE-30012695	RESISTOR SMD	1/16W 470R J	
R108	VE-30000650	RESISTOR CF	1/4W 33R J		R323	VE-30012987	RESISTOR SMD	1/16W 56R J	
R108	VE-30012510	RESISTOR SMD	1/16W 100R J		R324	VE-30012692	RESISTOR SMD	1/16W 4.7K J	
R109	VE-30000650	RESISTOR CF	1/4W 33R J		R325	VE-30012695	RESISTOR SMD	1/16W 470R J	
R109	VE-30012692	RESISTOR SMD	1/16W 4.7K J		R326	VE-30012695	RESISTOR SMD	1/16W 470R J	
R110	VE-30012692	RESISTOR SMD	1/16W 4.7K J		R327	VE-30012695	RESISTOR SMD	1/16W 470R J	
R111	VE-30012510	RESISTOR SMD	1/16W 100R J		R328	VE-30012685	RESISTOR SMD	1/16W 33K J	
R112	VE-30000519	RESISTOR CF	1/4W 150R J		R329	VE-30012685	RESISTOR SMD	1/16W 33K J	
R113	VE-30000519	RESISTOR CF	1/4W 150R J		R330	VE-30012685	RESISTOR SMD	1/16W 33K J	
R121	VE-30012677	RESISTOR SMD	1/16W 3.3K J		R331	VE-30012685	RESISTOR SMD	1/16W 33K J	
R122	VE-30012510	RESISTOR SMD	1/16W 100R J		R332	VE-30012510	RESISTOR SMD	1/16W 100R J	
R123	VE-30012510	RESISTOR SMD	1/16W 100R J		R333	VE-30012510	RESISTOR SMD	1/16W 100R J	
R127	VE-30012641	RESISTOR SMD	1/16W 10K J		R334	VE-30012705	RESISTOR SMD	1/16W 6.8K J	
R128	VE-30012641	RESISTOR SMD	1/16W 10K J		R335	VE-30012705	RESISTOR SMD	1/16W 6.8K J	
R130	VE-30030692	FERRITE NET	120R/100MHz 150mA		R336	VE-30012692	RESISTOR SMD	1/16W 4.7K J	
R131	VE-30030692	FERRITE NET	120R/100MHz 150mA		R337	VE-30012692	RESISTOR SMD	1/16W 4.7K J	
R132	VE-30030692	FERRITE NET	120R/100MHz 150mA		R339	VE-30012509	RESISTOR SMD	1/16W 100K J	
R133	VE-30030692	FERRITE NET	120R/100MHz 150mA		R340	VE-30012692	RESISTOR SMD	1/16W 4.7K J	
R134	VE-30030692	FERRITE NET	120R/100MHz 150mA		R341	VE-30012644	RESISTOR SMD	1/16W 12K J	
R135	VE-30030692	FERRITE NET	120R/100MHz 150mA		R342	VE-30012668	RESISTOR SMD	1/16W 220R J	
R136	VE-30012506	RESISTOR SMD	1/16W 1.5K J		R343	VE-30012668	RESISTOR SMD	1/16W 220R J	
R137	VE-30012506	RESISTOR SMD	1/16W 1.5K J		R344	VE-30012657	RESISTOR SMD	1/16W 1K J	
R138	VE-30012506	RESISTOR SMD	1/16W 1.5K J		R345	VE-30012669	RESISTOR SMD	1/16W 22K J	
R139	VE-30012657	RESISTOR SMD	1/16W 1K J		R346	VE-30012657	RESISTOR SMD	1/16W 1K J	
R141	VE-30012641	RESISTOR SMD	1/16W 10K J		R347	VE-30014022	RESISTOR SMD	1/16W 47R J	
R142	VE-30012657	RESISTOR SMD	1/16W 1K J		R348	VE-30012655	RESISTOR SMD	1/16W 180R J	
R143	VE-30012657	RESISTOR SMD	1/16W 1K J		R349	VE-30014022	RESISTOR SMD	1/16W 47R J	
R145	VE-30012510	RESISTOR SMD	1/16W 100R J		R350	VE-30012692	RESISTOR SMD	1/16W 4.7K J	
R146	VE-30012510	RESISTOR SMD	1/16W 100R J		R352	VE-30012669	RESISTOR SMD	1/16W 22K J	
R147	VE-30012510	RESISTOR SMD	1/16W 100R J		R353	VE-30012641	RESISTOR SMD	1/16W 10K J	
R148	VE-30012510	RESISTOR SMD	1/16W 100R J		R354	VE-30012692	RESISTOR SMD	1/16W 4.7K J	
R149	VE-30012641	RESISTOR SMD	1/16W 10K J		R355	VE-30012659	RESISTOR SMD	1/16W 2.2K J	
R150	VE-30012657	RESISTOR SMD	1/16W 1K J		R356	VE-30012669	RESISTOR SMD	1/16W 22K J	
R151	VE-30012657	RESISTOR SMD	1/16W 1K J		R357	VE-30012692	RESISTOR SMD	1/16W 4.7K J	
R152	VE-30012655	RESISTOR SMD	1/16W 180R J		R358	VE-30012695	RESISTOR SMD	1/16W 470R J	
R156	VE-30017653	RESISTOR SARRAY	1/16W 47RX4 J		R359	VE-30012659	RESISTOR SMD	1/16W 2.2K J	
R157	VE-30017653	RESISTOR SARRAY	1/16W 47RX4 J		R360	VE-30012506	RESISTOR SMD	1/16W 1.5K J	
R158	VE-30017653	RESISTOR SARRAY	1/16W 47RX4 J		R361	VE-30012657	RESISTOR SMD	1/16W 1K J	
R159	VE-30017653	RESISTOR SARRAY	1/16W 47RX4 J		R362	VE-30012982	RESISTOR SMD	1/16W 10R J	
R160	VE-30017653	RESISTOR SARRAY	1/16W 47RX4 J		R363	VE-30012695	RESISTOR SMD	1/16W 470R J	
R161	VE-30017653	RESISTOR SARRAY	1/16W 47RX4 J		R364	VE-30012695	RESISTOR SMD	1/16W 470R J	
R162	VE-30012509	RESISTOR SMD	1/16W 100K J		R368	VE-30012692	RESISTOR SMD	1/16W 4.7K J	
R165	VE-30025836	FERRITE NET	240R/100MHz 150mA		R369	VE-30012692	RESISTOR SMD	1/16W 4.7K J	
R166	VE-30025836	FERRITE NET	240R/100MHz 150mA		R370	VE-30012669	RESISTOR SMD	1/16W 22K J	
R167	VE-30020529	FERRITE SMD	120R/100MHz 200mA		R371	VE-30012657	RESISTOR SMD	1/16W 1K J	
R168	VE-30012641	RESISTOR SMD	1/16W 10K J		R372	VE-30014022	RESISTOR SMD	1/16W 47R J	
R169	VE-30012641	RESISTOR SMD	1/16W 10K J		R373	VE-30012655	RESISTOR SMD	1/16W 180R J	
R170	VE-30012641	RESISTOR SMD	1/16W 10K J		R374	VE-30012692	RESISTOR SMD	1/16W 4.7K J	
R172	VE-30012641	RESISTOR SMD	1/16W 10K J		R375	VE-30012684	RESISTOR SMD	1/16W 330R J	
R173	VE-30012641	RESISTOR SMD	1/16W 10K J		R376	VE-30012692	RESISTOR SMD	1/16W 4.7K J	
R174	VE-30012641	RESISTOR SMD	1/16W 10K J		R377	VE-30012684	RESISTOR SMD	1/16W 330R J	
R175	VE-30012641	RESISTOR SMD	1/16W 10K J		R378	VE-30012684	RESISTOR SMD	1/16W 330R J	
R176	VE-30012641	RESISTOR SMD	1/16W 10K J		R379	VE-30012510	RESISTOR SMD	1/16W 100R J	
R177	VE-30012641	RESISTOR SMD	1/16W 10K J		R380	VE-30012669	RESISTOR SMD	1/16W 22K J	
R178	VE-30012641	RESISTOR SMD	1/16W 10K J		R381	VE-30012657	RESISTOR SMD	1/16W 1K J	
R179	VE-30012641	RESISTOR SMD	1/16W 10K J		R382	VE-30012982	RESISTOR SMD	1/16W 10R J	
R180	VE-30012641	RESISTOR SMD	1/16W 10K J		R383	VE-30012650	RESISTOR SMD	1/16W 15K J	
R181	VE-30012641	RESISTOR SMD	1/16W 10K J		R384	VE-30012679	RESISTOR SMD	1/16W 3.9K J	
R182	VE-30012641	RESISTOR SMD	1/16W 10K J		R385	VE-30012692	RESISTOR SMD	1/16W 4.7K J	
R183	VE-30012657	RESISTOR SMD	1/16W 1K J		R386	VE-30012506	RESISTOR SMD	1/16W 1.5K J	
R184	VE-30012657	RESISTOR SMD	1/16W 1K J		R387	VE-30012506	RESISTOR SMD	1/16W 1.5K J	
R185	VE-30012641	RESISTOR SMD	1/16W 10K J		R388	VE-30012641	RESISTOR SMD	1/16W 10K J	
R189	VE-30012657	RESISTOR SMD	1/16W 1K J		R389	VE-30012641	RESISTOR SMD	1/16W 10K J	
R197	VE-30022083	RESISTOR SMD	1/16W 330R J		R390	VE-30012692	RESISTOR SMD	1/16W 4.7K J	
R300	VE-30012657	RESISTOR SMD	1/16W 1K J		R391	VE-30012696	RESISTOR SMD	1/16W 47K J	
					R392	VE-30012696	RESISTOR SMD	1/16W 47K J	

△Ref No.	Part No.	Part Name	Description	Local	△Ref No.	Part No.	Part Name	Description	Local
R393	VE-30012510	RESISTOR SMD	1/16W 100R J		R623	VE-30012713	RESISTOR SMD	1/16W 75R J	
R394	VE-30012641	RESISTOR SMD	1/16W 10K J		R625	VE-30012982	RESISTOR SMD	1/16W 10R J	
R395	VE-30012684	RESISTOR SMD	1/16W 330R J		R626	VE-30012695	RESISTOR SMD	1/16W 470R J	
R396	VE-30012684	RESISTOR SMD	1/16W 330R J		R627	VE-30012641	RESISTOR SMD	1/16W 10K J	
R397	VE-30012692	RESISTOR SMD	1/16W 4.7K J		R628	VE-30012692	RESISTOR SMD	1/16W 4.7K J	
R399	VE-30012692	RESISTOR SMD	1/16W 4.7K J		R629	VE-30012713	RESISTOR SMD	1/16W 75R J	
R400	VE-30012713	RESISTOR SMD	1/16W 75R J		R630	VE-30000797	RESISTOR SMD	1/10W 75R J	
R401	VE-30012713	RESISTOR SMD	1/16W 75R J		R631	VE-30012713	RESISTOR SMD	1/16W 75R J	
R402	VE-30012713	RESISTOR SMD	1/16W 75R J		R632	VE-30012509	RESISTOR SMD	1/16W 100K J	
R404	VE-30012713	RESISTOR SMD	1/16W 75R J		R633	VE-30012509	RESISTOR SMD	1/16W 100K J	
R405	VE-30012713	RESISTOR SMD	1/16W 75R J		R634	VE-30012509	RESISTOR SMD	1/16W 100K J	
R406	VE-30012713	RESISTOR SMD	1/16W 75R J		R635	VE-30012509	RESISTOR SMD	1/16W 100K J	
R407	VE-30012510	RESISTOR SMD	1/16W 100R J		R636	VE-30012509	RESISTOR SMD	1/16W 100K J	
R408	VE-30012510	RESISTOR SMD	1/16W 100R J		R637	VE-30012509	RESISTOR SMD	1/16W 100K J	
R409	VE-30012713	RESISTOR SMD	1/16W 75R J		R700	VE-30012641	RESISTOR SMD	1/16W 10K J	
R410	VE-30012644	RESISTOR SMD	1/16W 12K J		R701	VE-30012641	RESISTOR SMD	1/16W 10K J	
R411	VE-30012669	RESISTOR SMD	1/16W 22K J		R702	VE-30012510	RESISTOR SMD	1/16W 100R J	
R412	VE-30014078	RESISTOR SMD	1/16W 22R J		R703	VE-30012510	RESISTOR SMD	1/16W 100R J	
R413	VE-30012657	RESISTOR SMD	1/16W 1K J		R704	VE-30012692	RESISTOR SMD	1/16W 4.7K J	
R414	VE-30012713	RESISTOR SMD	1/16W 75R J		R705	VE-30012712	RESISTOR SMD	1/16W 8.2K J	
R415	VE-30012510	RESISTOR SMD	1/16W 100R J		R706	VE-30012641	RESISTOR SMD	1/16W 10K J	
R416	VE-30018254	RESISTOR SARRAY	1/16W 10R J		R707	VE-30012712	RESISTOR SMD	1/16W 8.2K J	
R417	VE-30018254	RESISTOR SARRAY	1/16W 10R J		R708	VE-30012665	RESISTOR SMD	1/16W 20K J	
R425	VE-30012695	RESISTOR SMD	1/16W 470R J		R709	VE-30012665	RESISTOR SMD	1/16W 20K J	
R426	VE-30012695	RESISTOR SMD	1/16W 470R J		R710	VE-30012641	RESISTOR SMD	1/16W 10K J	
R427	VE-30012695	RESISTOR SMD	1/16W 470R J		R711	VE-30012510	RESISTOR SMD	1/16W 100R J	
R431	VE-30012657	RESISTOR SMD	1/16W 1K J		R712	VE-30012657	RESISTOR SMD	1/16W 1K J	
R432	VE-30012657	RESISTOR SMD	1/16W 1K J		R713	VE-30012657	RESISTOR SMD	1/16W 1K J	
R434	VE-30012657	RESISTOR SMD	1/16W 1K J		R714	VE-30012702	RESISTOR SMD	1/16W 560R J	
R437	VE-30012713	RESISTOR SMD	1/16W 75R J		R715	VE-30012702	RESISTOR SMD	1/16W 560R J	
R438	VE-30012713	RESISTOR SMD	1/16W 75R J		R716	VE-30012702	RESISTOR SMD	1/16W 560R J	
R439	VE-30012713	RESISTOR SMD	1/16W 75R J		R717	VE-30012702	RESISTOR SMD	1/16W 560R J	
R440	VE-30012641	RESISTOR SMD	1/16W 10K J		R718	VE-30012657	RESISTOR SMD	1/16W 1K J	
R441	VE-30012641	RESISTOR SMD	1/16W 10K J		R719	VE-30012657	RESISTOR SMD	1/16W 1K J	
R442	VE-30012641	RESISTOR SMD	1/16W 10K J		R723	VE-30012713	RESISTOR SMD	1/16W 75R J	
R443	VE-30012641	RESISTOR SMD	1/16W 10K J		R724	VE-30012713	RESISTOR SMD	1/16W 75R J	
R450	VE-30012659	RESISTOR SMD	1/16W 2.2K J		R725	VE-30012713	RESISTOR SMD	1/16W 75R J	
R454	VE-30012692	RESISTOR SMD	1/16W 4.7K J		R726	VE-30012657	RESISTOR SMD	1/16W 1K J	
R456	VE-30012510	RESISTOR SMD	1/16W 100R J		R727	VE-30012657	RESISTOR SMD	1/16W 1K J	
R457	VE-30012510	RESISTOR SMD	1/16W 100R J		R729	VE-30012713	RESISTOR SMD	1/16W 75R J	
R503	VE-30012510	RESISTOR SMD	1/16W 100R J		R731	VE-30012713	RESISTOR SMD	1/16W 75R J	
R504	VE-30012510	RESISTOR SMD	1/16W 100R J		R732	VE-30012713	RESISTOR SMD	1/16W 75R J	
R505	VE-30012510	RESISTOR SMD	1/16W 100R J		R734	VE-30012510	RESISTOR SMD	1/16W 100R J	
R506	VE-30012510	RESISTOR SMD	1/16W 100R J		R735	VE-30012510	RESISTOR SMD	1/16W 100R J	
R507	VE-30012698	RESISTOR SMD	1/16W 5.6K J		R736	VE-30012657	RESISTOR SMD	1/16W 1K J	
R508	VE-30012510	RESISTOR SMD	1/16W 100R J		R737	VE-30012657	RESISTOR SMD	1/16W 1K J	
R509	VE-30012641	RESISTOR SMD	1/16W 10K J		R738	VE-30012657	RESISTOR SMD	1/16W 1K J	
R510	VE-30012644	RESISTOR SMD	1/16W 12K J		R739	VE-30012657	RESISTOR SMD	1/16W 1K J	
R511	VE-30012696	RESISTOR SMD	1/16W 47K J		R740	VE-30012657	RESISTOR SMD	1/16W 1K J	
R512	VE-30012684	RESISTOR SMD	1/16W 330R J		R741	VE-30012657	RESISTOR SMD	1/16W 1K J	
R513	VE-30012713	RESISTOR SMD	1/16W 75R J		R742	VE-30012642	RESISTOR SMD	1/16W 120K J	
R514	VE-30012669	RESISTOR SMD	1/16W 22K J		R743	VE-30012644	RESISTOR SMD	1/16W 12K J	
R515	VE-30012669	RESISTOR SMD	1/16W 22K J		R744	VE-30012696	RESISTOR SMD	1/16W 47K J	
R516	VE-30012695	RESISTOR SMD	1/16W 470R J		R745	VE-30012689	RESISTOR SMD	1/16W 39K J	
R517	VE-30012659	RESISTOR SMD	1/16W 2.2K J		R746	VE-30012674	RESISTOR SMD	1/16W 27K J	
R518	VE-30012510	RESISTOR SMD	1/16W 100R J		R747	VE-30012713	RESISTOR SMD	1/16W 75R J	
R522	VE-30012685	RESISTOR SMD	1/16W 33K J		R748	VE-30012713	RESISTOR SMD	1/16W 75R J	
R523	VE-30012677	RESISTOR SMD	1/16W 3.3K J		R749	VE-30012668	RESISTOR SMD	1/16W 220R J	
R524	VE-30012643	RESISTOR SMD	1/16W 120R J		R751	VE-30012510	RESISTOR SMD	1/16W 100R J	
R525	VE-30012707	RESISTOR SMD	1/16W 680R J		R752	VE-30012657	RESISTOR SMD	1/16W 1K J	
R527	VE-30012705	RESISTOR SMD	1/16W 6.8K J		R753	VE-30012641	RESISTOR SMD	1/16W 10K J	
R528	VE-30012574	CAPACITOR SMD	470pF 50V J		R754	VE-30012641	RESISTOR SMD	1/16W 10K J	
R529	VE-30012982	RESISTOR SMD	1/16W 10R J		R756	VE-30012641	RESISTOR SMD	1/16W 10K J	
R530	VE-30014022	RESISTOR SMD	1/16W 47R J		R757	VE-30012641	RESISTOR SMD	1/16W 10K J	
R531	VE-30012692	RESISTOR SMD	1/16W 4.7K J		R759	VE-30012692	RESISTOR SMD	1/16W 4.7K J	
R600	VE-30012713	RESISTOR SMD	1/16W 75R J		R760	VE-30012641	RESISTOR SMD	1/16W 10K J	
R601	VE-30012713	RESISTOR SMD	1/16W 75R J		R761	VE-30010560	CAPACITOR SMD	220nF 25V K R	
R602	VE-30012510	RESISTOR SMD	1/16W 100R J		R762	VE-30012713	RESISTOR SMD	1/16W 75R J	
R603	VE-30012510	RESISTOR SMD	1/16W 100R J		R763	VE-30012692	RESISTOR SMD	1/16W 4.7K J	
R604	VE-30012982	RESISTOR SMD	1/16W 10R J		R764	VE-30012657	RESISTOR SMD	1/16W 1K J	
R605	VE-30012695	RESISTOR SMD	1/16W 470R J		R765	VE-30012641	RESISTOR SMD	1/16W 10K J	
R606	VE-30012641	RESISTOR SMD	1/16W 10K J		R770	VE-30012641	RESISTOR SMD	1/16W 10K J	
R607	VE-30012692	RESISTOR SMD	1/16W 4.7K J		R771	VE-30012641	RESISTOR SMD	1/16W 10K J	
R608	VE-30012713	RESISTOR SMD	1/16W 75R J		R778	VE-30012641	RESISTOR SMD	1/16W 10K J	
R609	VE-30012982	RESISTOR SMD	1/16W 10R J		R779	VE-30012509	RESISTOR SMD	1/16W 100K J	
R610	VE-30012695	RESISTOR SMD	1/16W 470R J		R780	VE-30012669	RESISTOR SMD	1/16W 22K J	
R611	VE-30012641	RESISTOR SMD	1/16W 10K J		R784	VE-30010560	CAPACITOR SMD	220nF 25V K R	
R612	VE-30012692	RESISTOR SMD	1/16W 4.7K J		R785	VE-30010560	CAPACITOR SMD	220nF 25V K R	
R613	VE-30012713	RESISTOR SMD	1/16W 75R J		R786	VE-30012713	RESISTOR SMD	1/16W 75R J	
R614	VE-30000797	RESISTOR SMD	1/10W 75R J		R787	VE-30012713	RESISTOR SMD	1/16W 75R J	
R615	VE-30012713	RESISTOR SMD	1/16W 75R J		R788	VE-30012657	RESISTOR SMD	1/16W 1K J	
R617	VE-30012713	RESISTOR SMD	1/16W 75R J		R900	VE-30012509	RESISTOR SMD	1/16W 100K J	
R618	VE-30012982	RESISTOR SMD	1/16W 10R J		R901	VE-30012641	RESISTOR SMD	1/16W 10K J	
R619	VE-30012695	RESISTOR SMD	1/16W 470R J		R902	VE-30012509	RESISTOR SMD	1/16W 100K J	
R620	VE-30012641	RESISTOR SMD	1/16W 10K J		R903	VE-30012641	RESISTOR SMD	1/16W 10K J	
R621	VE-30012692	RESISTOR SMD	1/16W 4.7K J		R904	VE-30012641	RESISTOR SMD	1/16W 10K J	
R622	VE-30012713	RESISTOR SMD	1/16W 75R J		R905	VE-30012641	RESISTOR SMD	1/16W 10K J	

△Ref No.	Part No.	Part Name	Description	Local	△Ref No.	Part No.	Part Name	Description	Local
R906	VE-30012509	RESISTOR SMD	1/16W 100K J		L805	VE-30001971	FERRITE SMD	600R/100MHz 200mA	
R907	VE-30012510	RESISTOR SMD	1/16W 100R J		L900	VE-30002170	FERRITE CORE	1A RAD (FTZ)	
R908	VE-30012510	RESISTOR SMD	1/16W 100R J		L901	VE-30019475	FIXED COIL	47uH 2A RAD SH 14X16	
R909	VE-30012677	RESISTOR SMD	1/16W 3.3K J		L906	VE-30001996	FIXED COIL	22uH Q40 K	
R910	VE-30012510	RESISTOR SMD	1/16W 100R J		L907	VE-30002170	FERRITE CORE	1A RAD (FTZ)	
R911	VE-30012510	RESISTOR SMD	1/16W 100R J		L908	VE-30019475	FIXED COIL	47uH 2A RAD SH 14X16	
R912	VE-30012655	RESISTOR SMD	1/16W 180R J		L910	VE-30002002	FIXED COIL	47uH Q60 K	
R913	VE-30012659	RESISTOR SMD	1/16W 2.2K J		L911	VE-30011450	FIXED COIL	22uH 5.4A RAD 11.5*15.5	
R915	VE-30012703	RESISTOR SMD	1/16W 56K J		△F900	VE-30018031	FUSE	4A/24VDC UF 1206	
R916	VE-30000833	RESISTOR SMD	1/10W 91R J		△F901	VE-30028331	FUSE	7A/32VDC 1206	
R917	VE-30000833	RESISTOR SMD	1/10W 91R J		JK100	VE-30001900	HEADPHONE JACK	HP01/2/3/4/5/6	
R918	VE-30012705	RESISTOR SMD	1/16W 6.8K J		JK101	VE-30001893	RCA JACK	1P YELLOW 28 FAV	
R919	VE-30000833	RESISTOR SMD	1/10W 91R J		JK102	VE-30001891	RCA JACK	1P WHITE 28 FAV	
R920	VE-30000717	RESISTOR SMD	1/10W 470R J		JK103	VE-30001892	RCA JACK	1P RED 28 FAV	
R921	VE-30006462	RESISTOR SMD	1/10W 22R J		JK104	VE-30001895	JACK	4P DIN TYPE FOR SVHS	
R922	VE-30012641	RESISTOR SMD	1/16W 10K J		JK700	VE-30001902	HEADPHONE JACK	STEREO WO/SW	
R923	VE-30012641	RESISTOR SMD	1/16W 10K J		JK702	VE-30001891	RCA JACK	1P WHITE 28 FAV	
R924	VE-30012641	RESISTOR SMD	1/16W 10K J		JK703	VE-30001892	RCA JACK	1P RED 28 FAV	
R925	VE-30012641	RESISTOR SMD	1/16W 10K J		JK704	VE-30001892	RCA JACK	1P RED 28 FAV	
R926	VE-30012641	RESISTOR SMD	1/16W 10K J		JK705	VE-30032233	RCA JACK	1P GREEN 28 FAV	
R927	VE-30012641	RESISTOR SMD	1/16W 10K J		JK706	VE-30032234	RCA JACK	1P BLUE 28 FAV	
R928	VE-30012641	RESISTOR SMD	1/16W 10K J		△JK901	VE-30027932	DC POWER SOCKET 7.5A		
R929	VE-30012669	RESISTOR SMD	1/16W 22K J		PL101	VE-30032051	D SOCKET	D-SUB 15P FOR TFT	
R930	VE-30012641	RESISTOR SMD	1/16W 10K J		S310	VE-30012509	RESISTOR SMD	1/16W 100K J	
R931	VE-30012641	RESISTOR SMD	1/16W 10K J		S730	VE-30012695	RESISTOR SMD	1/16W 470R J	
R933	VE-30012510	RESISTOR SMD	1/16W 100R J		SW1	VE-30002181	TACT SWITCH		
R934	VE-30012510	RESISTOR SMD	1/16W 100R J		SW2	VE-30002181	TACT SWITCH		
R935	VE-30012659	RESISTOR SMD	1/16W 2.2K J		SW3	VE-30002181	TACT SWITCH		
L101	VE-30001971	FERRITE SMD	600R/100MHz 200mA		SW4	VE-30002181	TACT SWITCH		
L104	VE-30001971	FERRITE SMD	600R/100MHz 200mA		SW5	VE-30002181	TACT SWITCH		
L105	VE-30001971	FERRITE SMD	600R/100MHz 200mA		SW6	VE-30027440	PUSH SWITCH	ON/OFF 0.1A/12	
L109	VE-30001971	FERRITE SMD	600R/100MHz 200mA		SW7	VE-30002181	TACT SWITCH		
L110	VE-30001971	FERRITE SMD	600R/100MHz 200mA		△TU500	VE-30020654	TUNER WSP (PLL)		
L111	VE-30001971	FERRITE SMD	600R/100MHz 200mA		X100	VE-30017946	CLYSTAL	14.318 MHZ	
L113	VE-30020896	FERRITE SMD	120R/100MHz 200mA		X300	VE-30006662	CLYSTAL	6.000 20p HC49U	
L300	VE-30017143	FIXED COIL SMD	22uH J Q25 125mA		X400	VE-30008778	CLYSTAL	20.250 13p HC49U	
L301	VE-30018093	FIXED COIL SMD	3.3uH J Q30 185mA		X500	VE-30021113	CLYSTAL	4MHZ LOW PROFILE	
L302	VE-30018093	FIXED COIL SMD	3.3uH J Q30 185mA		X700	VE-30001756	CLYSTAL	18.432 12p HC49U	
L303	VE-30018093	FIXED COIL SMD	3.3uH J Q30 185mA		Z500	VE-30001692	SAW FILTER	OFWK3953M	
L304	VE-30001990	FIXED COIL	6.8uH Q75 K		Z501	VE-30012545	SAW FILTER	K9656M	
L305	VE-30001990	FIXED COIL	6.8uH Q75 K						
L306	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L307	VE-30006712	FERRITE BEAD	3.5X4.7X0.8						
L308	VE-30002170	FERRITE CORE	1A RAD (FTZ)						
L309	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L401	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L402	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L408	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L409	VE-30001996	FIXED COIL	22uH Q40 K						
L501	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L502	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L503	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L504	VE-30001996	FIXED COIL	22uH Q40 K						
L600	VE-30017143	FIXED COIL SMD	22uH J Q25 125mA						
L700	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L701	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L702	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L703	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L704	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L705	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L707	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L708	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L709	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L710	VE-30006712	FERRITE BEAD	3.5X4.7X0.8						
L711	VE-30013412	FERRITE SMD	1.5K/100MHz						
L712	VE-30013412	FERRITE SMD	1.5K/100MHz						
L713	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L714	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L715	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L716	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L717	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L718	VE-30024779	FERRITE SMD	50R/100MHz 3A						
L719	VE-30024779	FERRITE SMD	50R/100MHz 3A						
L721	VE-30024779	FERRITE SMD	50R/100MHz 3A						
L722	VE-30024779	FERRITE SMD	50R/100MHz 3A						
L723	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L724	VE-30013412	FERRITE SMD	1.5K/100MHz						
L725	VE-30013412	FERRITE SMD	1.5K/100MHz						
L726	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L727	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L728	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L729	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L734	VE-30001971	FERRITE SMD	600R/100MHz 200mA						
L801	VE-30002170	FERRITE CORE	1A RAD (FTZ)						
L802	VE-30020394	FERRITE SMD	330R/100MHz 3A						
L803	VE-30020394	FERRITE SMD	330R/100MHz 3A						

PACKING



PACKING PARTS LIST

△	Ref.No.	Part No.	Part Name	Description	Local
	1	VE-20183863	CARTON BOX		LT-20E50SJ
	1	VE-20194256	CARTON BOX	For Germany	LT-20E50SU
	1	VE-20185673	CARTON BOX	For Netherland	LT-20E50SU
	1	VE-20185601	CARTON BOX	For Italy	LT-20E50SU
	1	VE-20185814	CARTON BOX		LT-20E50SU/Z
	2	VE-20175250	SNOW BOX ASSY	2pcs in 1set	
	3	VE-30034032	REMOTE CONTROL UNIT	RM-C1860	
	4	VE-35010931	HANG METAL		
△	5	VE-30029332	AC ADAPTER	12VDC 6A C14 4PO W/PFC SAFE-PKG	
△	6	VE-50058427	INST BOOK	German/French/English/Spanish/Portuguese/Italian/Dutch	
△	7	VE-50058428	INST BOOK	Swedish/Danish/Norwegian/Finn	
△	8	VE-50058429	INST BOOK	Russian/Romanian/Czech/Polish/Hungarian/Bulgarian	
△	9	VE-30028238	POWER CORD	For AC ADAPTER	LT-20E50SJ
△	9	VE-30024540	POWER CORD	For AC ADAPTER	LT-20E50SU
△	9	VE-30035135	POWER CORD	For AC ADAPTER	LT-20E50SU/Z
	10	-----	WARANTY CARD	BT-54023-1E	
	11	-----	BATTERY	AA/R06(x2)	
	12	VE-50000007	POLY BAG		



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InteríArt

LT-20E50SJ

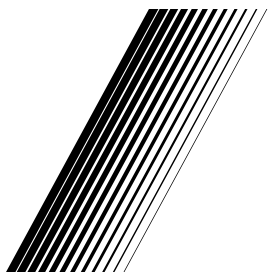
LCD PANEL TV

INSTRUCTIONS



50060725

1004MKH-VT-VT



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Important Instruction

For your own safety read following instruction carefully before attempting to connect this unit to the mains supply.

MAINS (AC) OPERATION

The wires in this mains lead are coloured in accordance with the following code :

BLUE-NEUTRAL

BROWN-LIVE

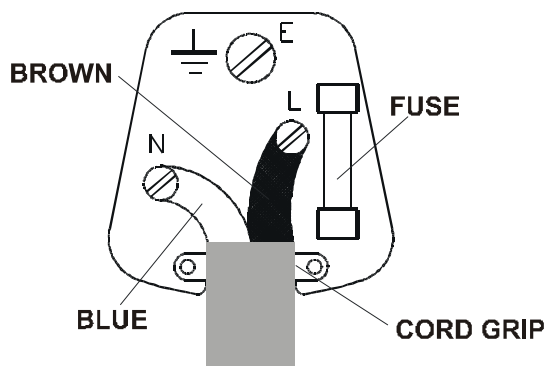
As the colours of the wires in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

No connection is to be made to the earth terminal of the plug.

If a 13 Amp (BS 1363) Plug is used a 5 Amp Fuse must be fitted, or if any other type of Plug is used a 5 Amp Fuse must be fitted, either in the Plug or Adaptor, or on the Distribution Board.



CAUTION

TO PREVENT ELECTRIC SHOCK DISCONNECT FROM THE MAINS BEFORE REMOVING COVER. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

SAFETY PRECAUTION

THIS EQUIPMENT MUST BE DISCONNECTED FROM THE MAINS WHEN NOT IN USE. DO NOT ALLOW THIS UNIT TO BE EXPOSED TO RAIN OR MOISTURE.

For your safety

This equipment has been designed and manufactured to meet international safety standards but, like any electrical equipment, care must be taken if you are to obtain the best results and safety is to be assured. So, please read the points below for your own safety. They are of a general nature, intended to help you with all your electronic consumer products and some points may not apply to the goods you have just purchased.

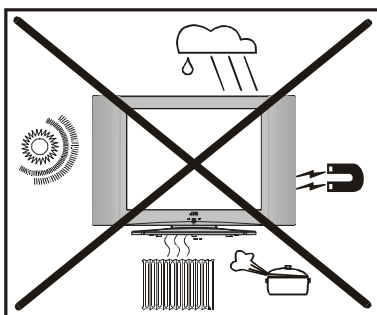
Some “DOs” and “DON'Ts” for you

Air Circulation...

Leave at least 10cm clearance around the television to allow adequate ventilation. This will prevent the TV from overheating and consequential possible damage to the TV. Dusty places should also be avoided.

Heat Damage...

Damage may occur if you leave the TV in direct sunlight or near a heater. Avoid places subject to extremely high temperatures or humidity, or locations where the temperature is likely to fall below 5°C (41°F).



Mains Supply...

The mains supply required for this equipment is **100-240 V AC, 50/60 Hz**. Never connect to a DC supply or any other power source. DO ensure that the TV is not standing on the mains lead. DO NOT cut off the mains plug from this equipment, this incorporates a special Radio Interference Filter, the removal of which will impair its performance.

Hot / Moderate Climate Conditions

This device is suitable for working in hot and moderate climate conditions.

IF IN DOUBT PLEASE CONSULT A COMPETENT ELECTRICIAN.

DO...

DO read the operating instructions before you attempt to use the equipment.

DO ensure that all electrical connections (including the mains plug, extension leads and inter-connections between pieces of equipment) are properly made and in accordance with the manufacturers' instructions.

Switch off and withdraw the mains plug before making or changing connections.

DO consult your dealer if you are ever in doubt about the installation, operation or safety of your equipment.

DO be careful with glass panels or doors on equipment.

DO NOT...

DON'T remove any fixed cover as this may expose dangerous voltages.

DON'T obstruct the ventilation openings of the equipment with items such as newspapers, table-cloths,

curtains etc. Overheating will cause damage and shorten the life of the equipment.

DON'T allow electrical equipment to be exposed to dripping or splashing or objects filled with liquids, such as vases, to be placed on the equipment.

DON'T place hot objects or naked flame sources, such as lighted candles or night-lights on, or close to the equipment. High temperatures can melt plastic and lead to fires.

DON'T use makeshift stands and NEVER fix legs with wood screws. To ensure complete safety, always fit the manufacturer's approved stand or legs with the fixings provided according to the instructions.

DON'T listen to headphones at high volume, as such use can permanently damage your hearing.

DON'T leave equipment switched on when it is unattended, unless it is specifically stated that it is designed for unattended operation or has a standby mode. Switch the equipment off and make sure your family know how to do

this. Special arrangements may need to be made for infirm or handicapped people.

DON'T continue to operate the equipment if you are in any doubt about it working normally, or it is damaged in any way – switch off, withdraw the mains plug and consult your dealer.

DON'T put the empty batteries into garbage instead of recycle bin to reduce harmful effects to the environment.

ABOVE ALL – NEVER let anyone, especially children, push anything into holes, slots or any other openings in the case – this could result in a fatal electric shock.

NEVER guess or take chances with electrical equipment of any kind – it is better to be safe than sorry.

To fully disconnect the TV, switch off the mains socket and remove the Power plug.

Safety Precautions for Power adapter

- Be careful! May become hot.
- For indoor and dry location use only.
- Risk of electric shock.
- Shock hazard, do not open.
- Keep all power adapters away from any other heat source.
- Always use power adapter(s) well-ventilated area.

**** Cold cathode fluorescent lamp in LCD PANEL contains a small amount of mercury, please follow local ordinances or regulations for disposal.**

"The LCD panel is very high technology product with about a million thin film transistors, giving you fine picture details. Occasionally, a few non-active pixels may appear on the screen as a fixed point of blue, green or red. Please note that this does not affect the performance of your product." Please note that certain light guns used with games consoles may not work on this product.

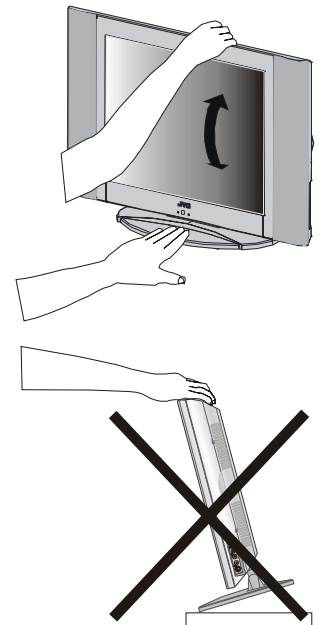
Warning:

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

WARNING : TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

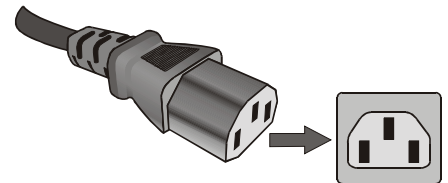
WARNING

- *Fingers may be trapped under the TV causing injuries. Hold the TV at the bottom in the middle, and do not allow it to tilt up or down.*
- *The TV may fall causing injuries. Hold the bottom of the stand with your hand and tilt the TV up and down.*
- *Do not allow children to hang from the TV, place their elbows on the TV or lean against the TV. Doing so may cause the TV to fall over and lead to injuries.*



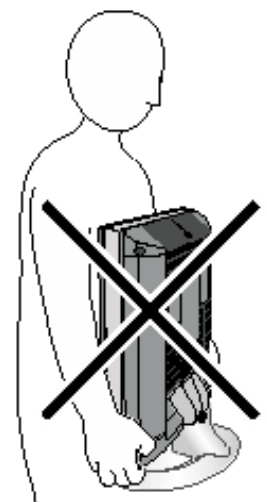
CAUTION:

- *To avoid electric shock or damage to the unit, first firmly insert the small end of the power cord into the AC Adapter unit it is no longer wobbly, and then plug the larger end of power cord into an AC outlet.*



CAUTION:

- *The TV screen may be damaged if the TV is carried as shown in the diagram below.*
- The TV should always be carried by two people*



Important Information

Please take note

EXCLUSION CLAUSE

JVC shall under no circumstances be liable for loss and/or damage to the product caused by:

- fire;
- earthquake;
- accidental damage;
- intentional misuse of the product;
- use of the product in improper conditions;
- loss and/or damage caused to the product whilst in the possession of a third party;
- any damage or loss caused as a result of the owner's failure and/or neglect to follow the instructions set out in the owner's manual;
- any loss or damage caused directly as a result of misuse or malfunction of the product when used simultaneously with associated equipment;

Furthermore, under no circumstances shall JVC be liable for any consequential loss and/or damage including but not limited to the following, loss of profit, interruption of business, the loss of recorded data whether caused during normal operation or misuse of the product.

WARNING! NEVER LEAVE A STATIONARY IMAGE ON THE SCREEN

If stationary images generated by TELETEXT, CHANNEL IDENTIFICATION LOGOS, COMPUTER DISPLAYS, VIDEO GAMES, ON SCREEN MENUS, etc. are left on the TV screen for any length of time, they could become permanently ingrained.

If you use your television to display completely still images, or moving pictures which have a permanent still image superimposed e.g. broadcast network logos, it is always advisable to reduce BOTH the brightness and contrast settings.

Care and disposal

Cleaning the screen and cabinet...

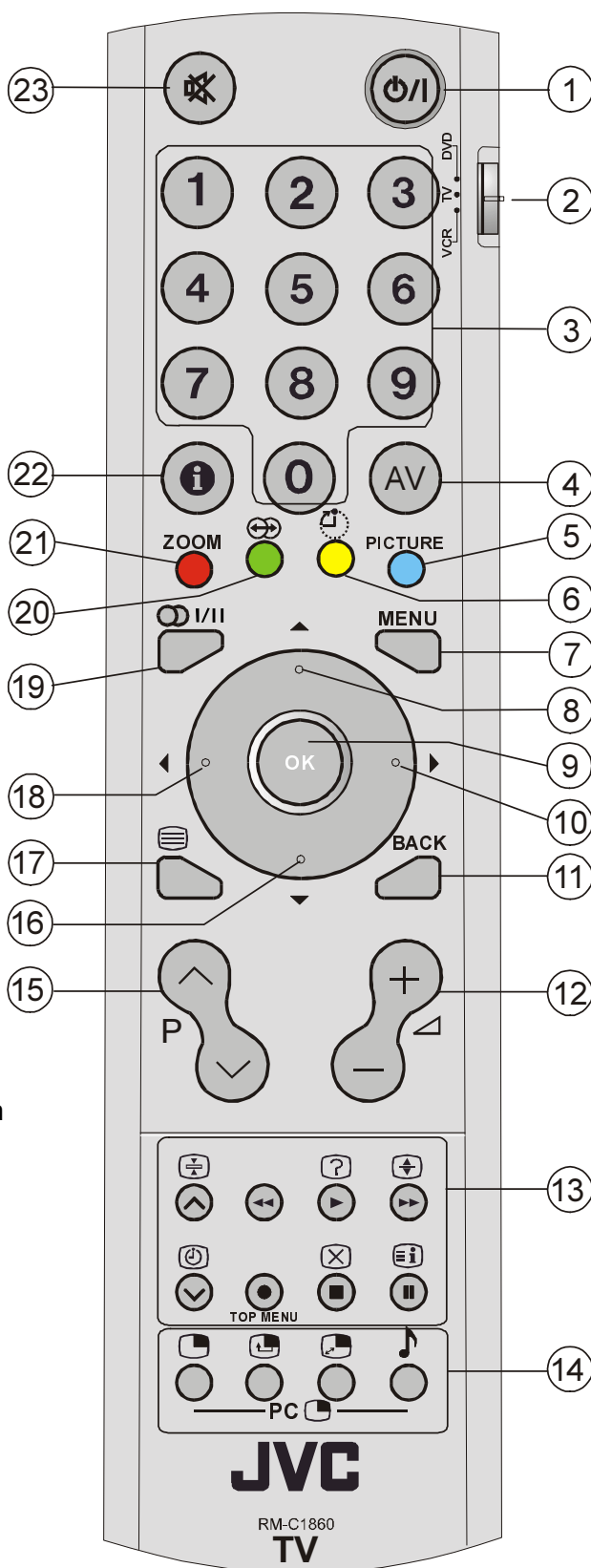
Turn off the power, clean the screen and cabinet with a soft, dry cloth. We recommend that you do not use any proprietary polishes or solvents on the screen or cabinet as this may cause damage.

Disposal...

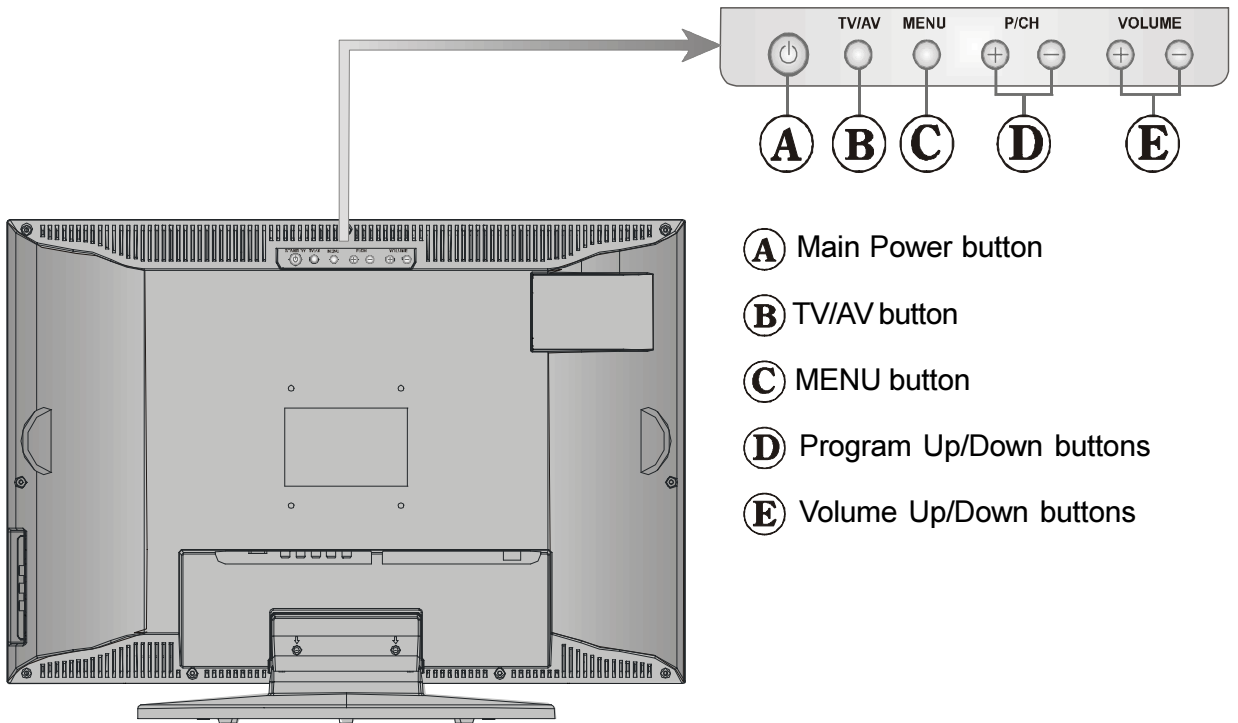
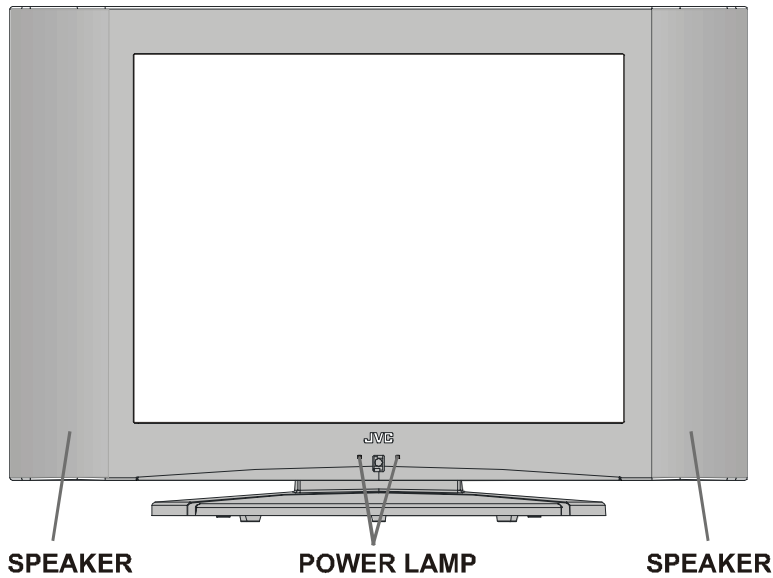
When the set reaches the end of its useful life please dispose of it in accordance with Local Government Regulations or at a recycling centre.

Remote Control Buttons

- ① = (Stand By) button
- ② TV / VCR / DVD Switch
- ③ Number buttons
- ④ **AV** button (TV, EXT-1, EXT-2, EXT-2 S, EXT-3, EXT-4, EXT-4 S or PC)
- ⑤ **BLUE / PICTURE** Mode button
- ⑥ **YELLOW /** Sleep Timer button
- ⑦ **MENU** button
- ⑧ = Cursor Up button
- ⑨ **OK** button
- ⑩ = Cursor Right button
- ⑪ **BACK** button
- ⑫ = Volume + / - buttons
- ⑬ Teletext / VCR / DVD Control buttons
- ⑭ PC Control Buttons
- ⑮ P / buttons
- ⑯ = Teletext Button
- ⑰ = Cursor Left button
- ⑱ I/II = Stereo / Bilingual button
- ⑲ **GREEN /** Hyper Sound On/Off button
- ⑲ **RED / ZOOM** Mode button
- ⑲ = Information Button / T-V Link in Program Menu
- ⑲ = Mute button



Control Panel Buttons



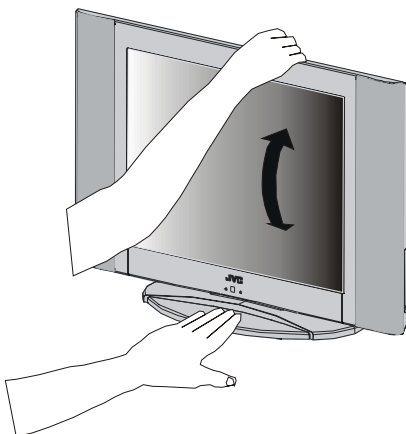
Using the stand

This TV comes with a Table Top Stand already attached.

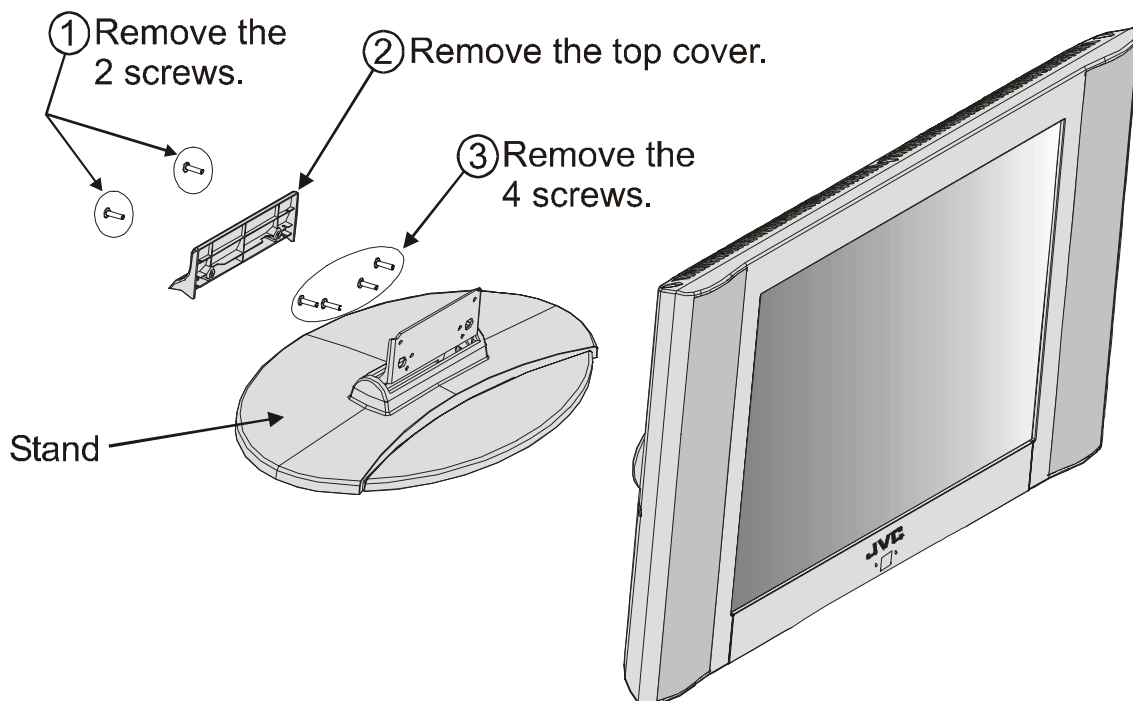
This stand can be used to adjust the direction of the TV screen.

Tilt the TV up and down:

While holding the stand with one hand which should be on lower level of the stand for avoiding trapping, use your other hand to hold the middle of the top of the TV and slowly tilt the TV up and down.



How to remove the stand



Installing TV on the wall

WARNING

- When you install the TV on the wall, only use a JVC wall mounting unit (optional) which is designed for this TV.
- Make sure that the TV is installed on the wall by a skilled installer.

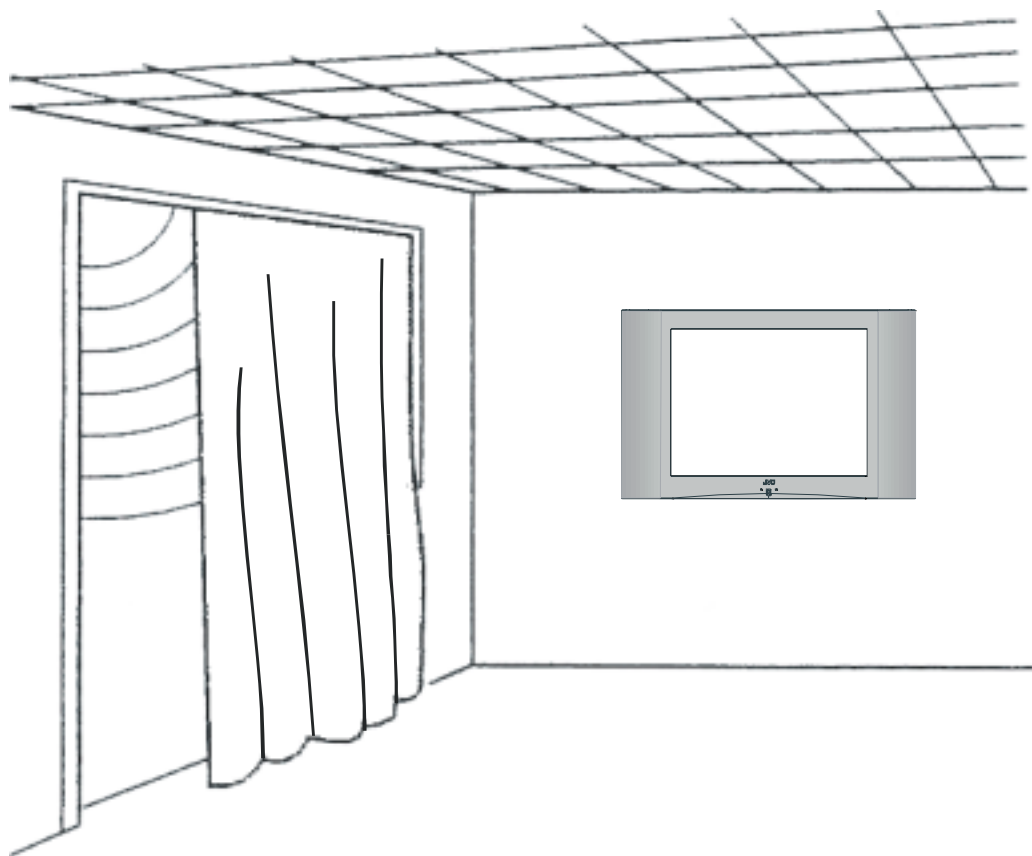
Locate the TV away from direct sunlight and strong lights, soft, indirect lighting is recommended for comfortable viewing. Place on a sturdy platform, the mounting surface should be flat and steady, it should then be secured to the wall with a sturdy tie using the hook on the back of the TV, this will prevent it from falling over. Use curtains or blinds to prevent direct sunlight falling on the screen.

A floor and table top stand are available for this television, or an angled bracket which enables the TV to be wall-mounted.

The LCD display panels are manufactured using an extremely high level of precision technology, however sometimes some parts of the screen may be missing picture elements or have luminous spots. This is not a sign of a malfunction.

Make sure the TV is located in a position where it cannot be pushed or hit by objects, as pressure will break or damage the screen.

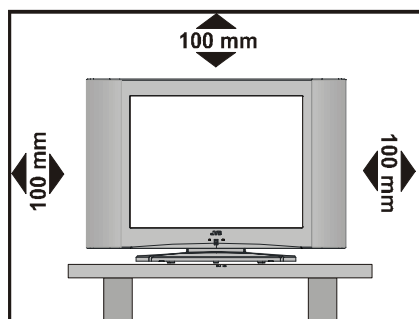
- 100 mm mount based on VESA regulation is equipped.



Preparation

Install Display on solid horizontal surface such as a table or desk.

For ventilation, leave a space of at least 10 cm free all around the set. To prevent any fault and unsafe situations, please do not place any objects on top of the set.



Features

- It is a remote controlled colour television and PC monitor.
- 100 programmes from VHF, UHF bands or cable channels can be preset.
- It can tune cable channels.
- Controlling the TV is very easy by its menu driven system.
- It has 2 pieces of Euroconnector socket for external devices (such as video, video games, audio set, etc.)
- To use as a PC monitor, 15 Pin Mini D-Sub connector for computer.
- Optional stereo sound systems (German or German+Nicam) are available.
- Multilanguage OSD.
- Teletext (Fastext, 7 pages).
- It is possible to connect headphone.
- A.P.S. (Automatic programming system)
- All programmes can be named.
- Forward or backward automatic tuning.
- Sleep timer.
- Child lock
- Auto, 4:3, 16:9
- Automatic sound mute when no transmission.
- When no valid signal is detected, after 5 min-

utes the TV switches itself automatically to stand-by mode.

- NTSC Playback.
- Universal power supply range is a standard feature on this model.
- TV Picture in PC (if PC input available).
- PLL (Channel Search)
- PC input (Support Up to 1024 x 768)

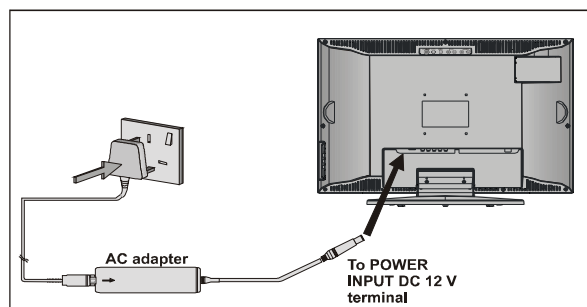
Panel Features

- High resolution (800 x 600), 20" TFT LCD display.
- High contrast ratio (500:1 Typical)
- Brightness: 500 cd/m²
- High-speed response time < 16 msec.
- Wide viewing angle (typical) 160° (horizontal) and 120° (vertical).
- 8-bit colour depth, display 16.7 M colours.

Before Switching on your TV

Power connection

Only use the adaptor supplied with this product.



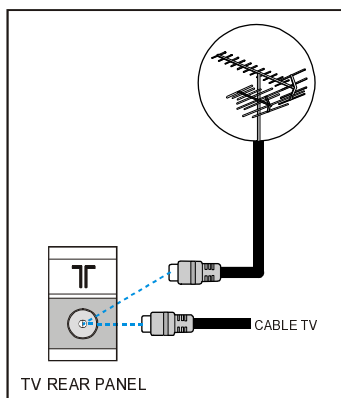
IMPORTANT: The TV set is designed to operate on 12 V DC. For this, an adaptor is used which gives 12V DC voltage. Connect this adaptor to a system that supplies 100 -240V AC, 50/60 Hz.

- After unpacking, allow the TV set to reach the ambient room temperature before you connect the set to the mains.

Connections to the RF input socket

- Connect the aerial or cable TV plug to the RF input socket located at the back of the TV and connect the cable plug coming out from

the TV out socket located at the devices (VCR, DVB etc.) to this socket as well.



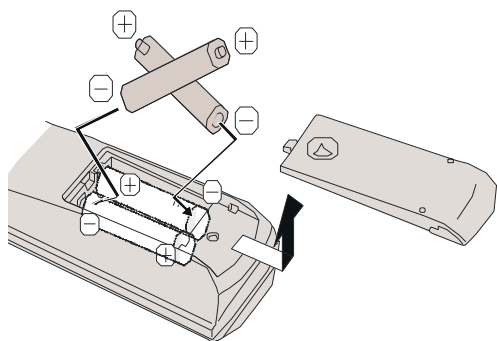
How to connect other devices

IMPORTANT: Switch off the TV before connecting any external device.

Sockets for external connections are at the back of the TV. For connection of other devices via Euroconnector refer to the manuals of the related devices.

Inserting batteries in the remote control handset

- Remove the battery cover located on the back of the handset by gently pulling upwards from the indicated part.
- Insert two AA/R6 dry cell or equivalent type of batteries inside.
- Replace the battery cover.



NOTE: Remove the batteries from remote control handset when it is not to be used for a long period. Otherwise it can be damaged due to any leakage of battery.

Old batteries must be disposed in a designated area. If performance of the remote con-

trol reduces, replace the batteries with the correct type. Do not combine a used, old battery or a new one or mixed battery types. Remove dead batteries immediately to prevent acid from leaking into the battery compartment.

Switching the TV ON/OFF

To switch the TV on

Your TV will switch on in two steps:

- 1- Connect the mains plug to the system. Press the main power button on the top of the TV, then the TV will switch to the last programme (or EXT mode) that it was switched off and the power lamp becomes green.
- 2- To switch on the TV from stand-by mode either:

Press the “ / I” button on the remote control or.

Press a digit button on the remote control so that a programme number is selected, or,

Press “**P** ” or “**P** ” buttons on the remote control, so that last switched off programme is selected.

Either way the TV will switch on and the power lamp will become green.

To switch the TV off

- Press the “ / I” button on the remote control, so the TV will switch to stand-by mode and the power lamp will become red.

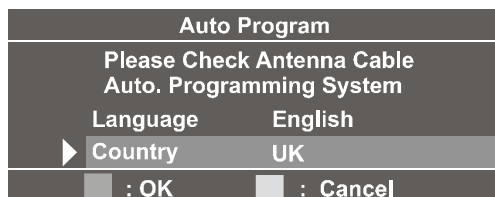
NOTE: When you turn on the TV for the first time, pressing the main power button turns the TV on and the first APS menu appears. See [page 12](#) for the **Initial Settings**. To switch the TV off completely, press the main power button and withdraw the mains plug.

Initial Settings

You can operate your TV both using the remote control handset and onset buttons.

First A.P.S. (Automatic Programming System)

APS, searches and sorts all channels and stores them automatically on your TV, according to the transmission of programme systems in your area.



To cancel APS before starting, press BLUE button.

First of all choose the “**Language**” which the menus of the TV will appear. As soon as you change the language, the menu items will be displayed in the selected language. . By pressing the “▲” or “▼” button, come to the “**Country**” item and select the country. This will effect the sort process in APS . Press red button to start A.P.S.

After APS is finalized, a programme list will appear on the screen. In the programme list you will see the programme numbers and names assigned to the programmes.

If you press the BLUE button at any time while the A.P.S. is running, the A.P.S. will be ended.

If you do not accept the locations and / or the programme names of programmes, you can change them in Program menu. For details see **Program** menu on [page 18](#).

If you do not have a T-V Link compatible VCR, press BLUE button to exit the menu.

If you have a T-V Link compatible VCR connected to the EXT-2 terminal, press “**i**” button to display T-V Link menu. Then follow the operating procedure “**Downloading data to VCR**” in the following T-V Link section.

T-V Link

When a T-V Link compatible VCR connected to the EXT-2 terminal on the TV, it is easier to set up the VCR and to view videos. T-V Link uses the following features:

To use T-V Link functions

A “**T-V Link compatible VCR**” means a JVC video cassette recorder with the T-V Link logo, or with one of the following logos. For details see your VCR instruction manual.

“**Q-LINK**” (A trademark of Panasonic Corporation)

“**Data Logic**” (A trademark of Metz Corporation)

“**Easy Link**” (A trademark of Phillips Corporation)

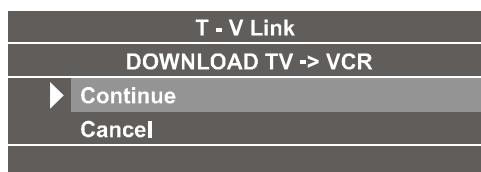
“**Megalologic**” (A trademark of Grundig Corporation)

“**SMARTLINK**” (A trademark of Sony Corporation)

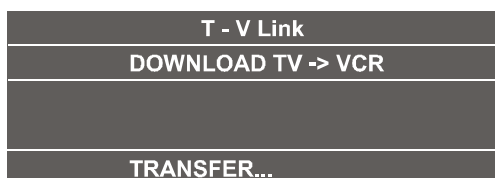
Downloading data to VCR:

The VCR will automatically download the registered data on the TV channels from the TV. This means you do not need to set up the programme channels on your VCR manually.

The “**T-V Link**” menu will be displayed when you press the “**i**” button while **Program** menu is displayed.



Press “▶” or “**OK**” button to start downloading data to VCR. “**TRANSFER**” is displayed in the menu



If you do not want to continue press the BLUE button to exit the menu.

If “**FEATURE NOT AVAILABLE**” is displayed,

download was not performed correctly. Before trying to download again, check that:

- The VCR power is turned on.
- The VCR is T-V Link compatible.
- The VCR is connected to the EXT-2.
- The scart cable is fully wired.

Direct REC:

You can easily record to VCR the images that you are watching on the TV. For details, read the manual for your VCR. Use your VCR controls you can not carry out Direct REC using your TV control.

When the VCR is not ready (For example when there is no tape inserted), “**NO RECORDING**” is displayed. In the following situations, the VCR will stop recording if the Tv is turned off, if the TV channel or input is changed, or if the menu is displayed on the TV:

- When recording images from an external device connected to TV (For example camcorder).
- When recording a TV channel after it has been unscrambled on a decoder.
- When recording a TV channel by using the TV's output because the VCR's own tuner can not properly receive that channel.

TV autopower on/VCR image view:

When the VCR starts playing, the TV automatically turns on and images from EXT-2 appear on the screen.

This function does not happen if your TV's main power is turned off. Set your TV's main power to on (StandBy Mode).

Operating the TV

You can operate your TV both using the remote control handset and onset buttons.

Volume setting and programme selection can be made by using the buttons on the top of the TV.

Volume Setting

- Press “**VOLUME -**” button to decrease volume or “**+VOLUME**” button to increase volume, so a volume level scale (slider) will be displayed at the middle of the bottom on the screen.

Programme Selection

- Press “**+ P/CH**” button to select the next programme or “**P/CH -**” button to select the previous programme.

Entering Main Menu

- Press “**MENU**” button to enter Main menu. In the Main menu select submenu using “**P/CH -**” or “**+ P/CH**” button and enter the submenu using “**VOLUME -**” or “**+ VOLUME**” button. To learn the usage of the menus, refer to the Menu System sections.

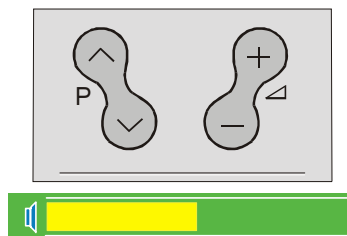
Operating with Remote Control

The remote control handset of your TV is designed to control all the functions of the model you selected. The functions will be described in accordance with the menu system of your TV.

Functions of the menu system are described in following sections.

Volume Setting

Press “**▲ +**” button to increase volume. Press “**▲ -**” button to decrease volume. A volume level scale (slider) will be displayed in the middle at the bottom of the screen.



Programme Selection (Previous or next programme)

- Press “**P**↘” button to select the previous programme.
- Press “**P**↗” button to select the next programme.

Programme Selection (direct access)

Press digit buttons on the remote control handset to select programmes between 0 and 9. TV will switch to the selected programme. To select programmes between 10 - 99, press the digit buttons consecutively which programme you want to select (eg. for programme 27, first press 2 and then 7). When it is late to press second digit button only the first digit programme will be displayed. The limit of the delay time is 3 seconds

.Example: PR6 → press 6, PR12 → press 1 and 2 , PR123 →press 1,2 and 3.

Press directly the programme number to reselect single digit programmes.

Hint: The channel list numbers are assigned by the broadcasters. Because not all channels are broadcast free-to-air and stored by the receiver, the channel list numbers do not run continuously. The fifteenth channel in the list, for example, may not be channel number 15 but channel number 17.

Menu System

Your TV has been designed with a menu system to provide an easy manipulation of a multi-function system. The TV is controlled by choosing the commands, which are displayed on the screen.

MAIN MENU

Press the “**MENU**” button. The main menu will be displayed in the middle of the screen.



To select a sub-menu use “▲” or “▼” button, and press “◀” or “▶” button or directly press “**OK**” button.

In EXT-1, EXT-2 and EXT-4 modes, main menu appears the same as in TV mode but without Program sub-menu.

In EXT-3 mode, Main Menu appears as follows:



Menu does not disappear automatically if it is left on the screen.

Press “**MENU**” button again to remove menu.

Picture Menu

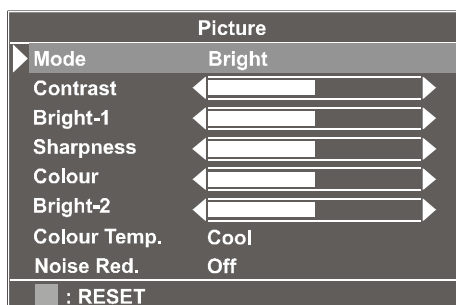
Press “**MENU**” button, now you are in main menu. In the Main menu, select “**Picture**” using “▲” or “▼” button, then enter the Picture menu pressing “◀” / “▶” or “**OK**” button.

Setting Mode

- As you enter the picture menu, Mode will be the first item.

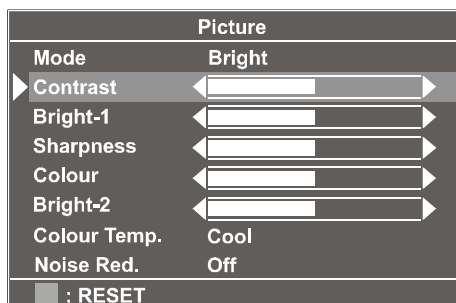
- By pressing “◀” or “▶” button you may choose one of these options:

Soft, Standard and Bright.



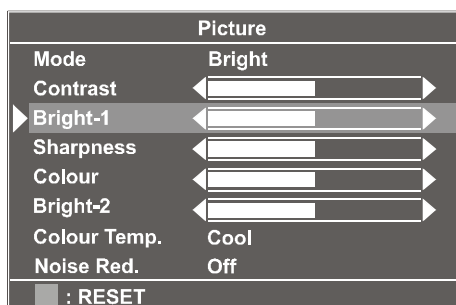
Setting Contrast

- Using “▲” or “▼” button select **Contrast**.
- Press “▶” button to increase contrast level.
- Press “◀” button to decrease contrast level.



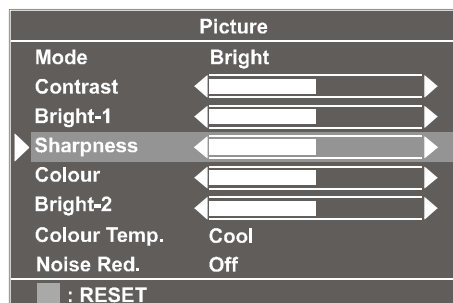
Setting Bright-1

- Using “▲” or “▼” button select **Bright-1**.
- Press “▶” button to increase brightness.
- Press “◀” button to decrease brightness.



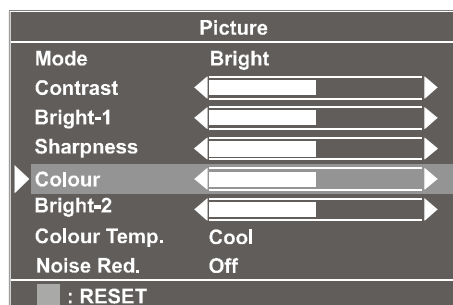
Setting Sharpness

- Using “▲” or “▼” button select **Sharpness**.
- Press “▶” button to increase sharpness level.
- Press “◀” button to decrease sharpness level.



Setting Colour

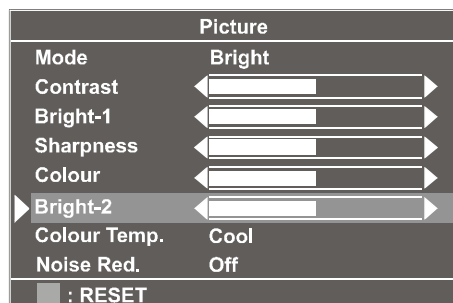
- Using “▲” or “▼” button select **Colour**.
- Press “▶” button to increase colour level.
- Press “◀” button to decrease colour level.



Setting Bright-2

Using “▲” or “▼” button select **Bright-2**.

- Press “▶” button to increase the back light.
- Press “◀” button to decrease the back light.



Setting Colour Temp.

- Using “▲” or “▼” button select **Colour Temp.**
- Press “◀” or “▶” button to select “Warm”, “Cool” or “Normal”.

Setting Noise Reduction

- Using “▲” or “▼” button select **Noise Red.**
- Press “◀” or “▶” button to select Noise Reduction level “Off” or “Minimum” or “Medium” or “Maximum”.

Note 1:

At low signal level, the changings on the Noise Reduction function are not effective when there is menu on the screen. If the menu is removed, the effect of this function is seen. At normal broadcasting, Noise Reduction changings are effective at once.

Note 2:

At moving pictures, while Noise Reduction is at maximum level, some picture distortions may occur. If Noise Reduction is set to medium or minimum, the picture will improve.

Setting Hue

During Playback NTSC system, this will appear in AV mode only when NTSC video source is applied. Otherwise, Hue option is invisible in Picture menu in TV mode :

- Using “▲” or “▼” button select **Hue**.
- Press “▶” button to increase hue level.
- Press “◀” button to decrease hue level.

Center value is indicated with one arrow.

Reset

Press BLUE button to reset the picture modes to factory default settings.

To Store the Settings

In the Picture Menu, all settings are stored automatically.

Sound Menu

To change sound settings

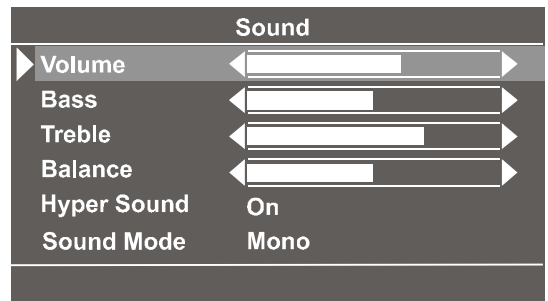
As you enter the main menu, sound will be the second item. In the main menu, select **Sound** using “▲” or “▼” button, then enter the sound menu pressing “◀” / “▶” or “OK” button.

Setting Volume

As you enter the sound menu, **Volume** will be the first selected option.

- Press “▶” button to increase volume.
- Press “◀” button to decrease volume.

Or you can directly change the volume settings using “▲ +” (to increase) or “- ▲” (to decrease) button.



Setting Bass Level

- Using “▲” or “▼” button select **Bass** Level.
- Press “▶” button to increase bass level.
- Press “◀” button to decrease bass level.

Setting Treble Level

- Using “▲” or “▼” button select **Treble**.
- Press “▶” button to increase treble level.
- Press “◀” button to decrease treble level

Setting Balance

It allows adjusting the distribution between the left and right speakers.

- Using “▲” or “▼” button select **Balance**.
- Press “▶” button to change balance rightward.
- Press “◀” button to change balance leftward.

Hyper Sound

- Using “▲” or “▼” button select **Hyper Sound**
- Pressing “◀” or “▶” button will turn on or off this feature.

Pseudo/spatial effect can be turned on or off via the Hyper Sound item in the Sound menu or by remote control. In Mono transmission the left and right channels will be added at left channel and dummy stereo effect will introduced to end-user.

In stereo transmission it yields a phase difference between left and right channels. Hyper Sound selection will be displayed on the screen when the TV Status button is pressed or programme is changed.

Selecting Sound Mode

- Using “▲” or “▼” button select **Sound Mode**.

- Press “◀” or “▶” button to change Sound Mode.

You can choose **Mono**, **Stereo** or **Dual (I-II)** mode, only if the selected channel supports that Sound Mode.

You can also change sound mode directly pressing “I-II” button on your remote control.

In case of bilingual broadcast (Dual Sound), you can select original or dubbed language using mode option. So when somebody listens to the original language from the loudspeakers, somebody else can listen to the dubbed language from headphone.

To Store The Settings

In the Sound Menu, all settings are stored automatically.

Feature Menu

Press “**MENU**” button, now you are in mainmenu. In the main menu, select **Feature** using “▲” or “▼” button. Then enter the Feature menu pressing “◀” / “▶” or “**OK**” button.

Feature	
▶ Sleep Timer	Off
Child Lock	Off
Language	English
EXT-2 Output	TV
Blue Back	Off

Sleep Timer

The **Sleep Timer** is used to turn the TV off after a defined period of time after selecting this item. The timer can be programmed between Off and 120 minutes in steps of 10 minutes. (Off, 010, 020, 030, 040, ... , 120)

If sleep timer is activated, at the end of the selected the time, the TV goes automatically to stand-by mode.

Child Lock

You can use this feature to prevent children turning on/off TV or changing programmes or adjustments etc. without remote control.

- Using “▲” or “▼” button select **Child Lock**.
- Press “◀” / “▶” button to select Child Lock On or Off.

The **Child Lock** feature can be set **On** or **Off** by “◀” / “▶” button. When **Off** is selected, there will be no difference in the operation of your TV. When **On** is selected, the TV can only be controlled by the remote control handset. In this case the control panel buttons except “⏻ / I” button on the right side of the TV will not work.

Selecting Menu Language

- Using “▲” or “▼” button select **Language**.
- Press “◀” or “▶” button to select menu language.

EXT-2 Output

From EXT-2 Output; TV, EXT-1 or EXT-4 can be given. These modes can be chosen by pressing “◀” or “▶” button on “**EXT-2 Output**”.

Feature	
Sleep Timer	Off
Child Lock	Off
Language	English
▶ EXT-2 Output	TV
Blue Back	Off

Blue Back (During No Signal)

The **Blue Back** Feature can be set by “▲” or “▼” button to either **On** or **Off**.

To Store Settings

In Feature menu all settings are stored automatically.

Install Menu

Press “**MENU**” button, now you are in main menu. In the main menu, select “**Install**” using “▲” or “▼” button. Then enter the Install menu pressing “◀” / “▶” or “**OK**” button.

Install	
▶ Programme	P 02
Band	C
Channel	02
Colour System	Auto
Sound System	I
Fine Tuning	◀-----+-----▶
Search	048.25
Decoder(EXT-2)	Off
VCR	Off
Store	

In EXT mode, Install menu appears like this:

Install	
► Colour System	Auto
VCR	Off

You can change only Colour system and VCR.

Selecting Programme

- Using “▲” or “▼” button select Programme.
- To select programme number, you can use “◀” / “▶” button or Digit Buttons

Selecting Band

Band, can be chosen either,

- “C” or “S” by “◀” or “▶” button.

Selecting Channel

Channel can be changed by “◀” or “▶” button or by Digit Buttons.

Selecting Colour System

Using “◀” or “▶” button on **Colour System**, you can change the colour system to **PAL**, **SECAM** or **Auto**.

Note: In EXT mode, you can choose NTSC 3.58 and NTSC 4.43 as well)

Selecting Sound System

Using “◀” or “▶” button on **Sound System**, you can change the standard to **BG**, **DK**, **I**, **L**, **Lp**.

Selecting Fine Tuning

You can use the Fine Tuning process for fine adjustment (after coarse adjustment), if you are not happy about the image on the screen.

Use “◀” or “▶” button on **Fine Tuning** item, until getting the best image on the screen.

Selecting Search

To start the search process, press “▶” button for forward search or “◀” button for backward search. If a signal is found or reaches to end of the band after searching, press “◀” or “▶” buttons to continue search process. To stop the search process when you want, press “◀” or “▶” buttons at any time.

Decoder(EXT-2)

You can use this mode to connect any decoder to your TV.

- Press the “◀” or “▶” buttons to set it “On” or “Off”.

When you select Decoder(EXT-2) “On”, EXT-2 output will be chosen as TV mode only and any scrambled channels will be unscrambled through decoder connected your TV via EXT-2 output.

Setting VCR (Video Cassette Recorder) Mode

- This item can be seen in **TV**, **EXT-1**, **EXT-2**, **EXT-3** and **EXT-4** modes.
- If you want to watch a **VCR** source from one of these modes, then it will be better to set **VCR** mode “on”. For this, while the cursor is on this item press the “◀” or “▶” buttons to set it “On”.
- If you want to watch a **DVD**, then you must set this item “off”; because **DVD** is not a source like a **VCR** and to see the picture better, you must set the **VCR** mode “Off”.

To Store Settings

- Press “◀” / “▶” or “OK” button on **Store** option to store Install menu settings.
- After stored, T-V Link menu will appear. If you do not need to do T-V Link, press **BLUE** button to exit the menu.

Program Menu

Press “**MENU**” button, now you are in main menu. In the main menu, select “**Program**” using “▲” or “▼” button. Then enter the Programme menu, press “◀” / “▶” or “OK” button.

Note: There is no Program menu in any EXT modes.

Program		P01
▶ 01	BBC	11
02	RTL	12
03	XXXXX	13
04	-----	14
05	-----	15
06	-----	16
07	-----	17
08	-----	18
09	-----	19
10	-----	20
Name		Insert
Delete		Autostore
i : T-V Link		

Program Menu is used to delete a channel, to change the programme number of a channel, to give a channel name to a channel, and to start the A.P.S (Autostore) function.

To choose a channel in the PROGRAM menu

Press “▲” / “▼” / “◀” / “▶” button. The programme number that you choose is highlighted in the Program.

Caution:

Using “Delete” or “Insert” function rewrite the current channel list in the Program menu. Therefore, the programme numbers of some of channels will change.

When you complete the settings of Program menu:

If you have a T-V LINK compatible VCR, press “i” button to display the T-V LINK menu. then follow the operating procedure “**Downloading the data to VCR**”

T - V Link	
DOWNLOAD TV -> VCR	
▶	Continue
	Cancel

If you do not have a T-V LINK compatible VCR, press BLUE button to exit the menu.

To give a channel name (Name):

1. Choose the channel you want to give a channel name.
2. Press the RED button to enter the Name mode.
3. Press “◀” or “▶” button to choose the

position, and press “▲” or “▼” button to choose each character of channel name.

4. Press the RED button to store the channel name.

- To cancel the NAME mode, press the BLUE button.

To delete a channel (Delete):

1. Choose the channel you want to delete.
2. Press the YELLOW button to enter the Delete mode.

3. Press the YELLOW button to delete it.

- To cancel the Delete mode, press the BLUE button.

To change the programme number of a channel (Insert)

1. Choose the channel you want to change the programme number.

2. Press the GREEN button to enter the Insert mode.

3. Press “▲” / “▼” / “◀” / “▶” button to choose new programme number.

4. Press the GREEN button to insert the channel to the chosen programme number.

Autostore:

To enter Autostore menu, press the BLUE button. To learn the features of this function see “**Autostore**” below.

Autostore, searches and stores all channels automatically on your TV, according to the transmission of programme systems in your area.

Warning	
All Prestored Programmes Will Be Deleted	
▶	Country UK
OK	Cancel

First of all choose the “**Country**” by using “◀” or “▶” button.

After Autostore is finalized, a programme list will appear on the screen. In the program list you will see the programme numbers and names assigned to the programmes.

If you do not accept the locations and/or the

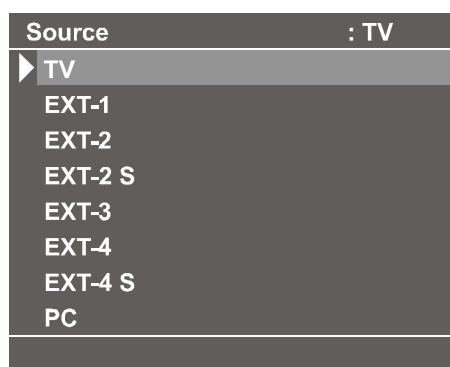
programme names of programmes, you can change them in Programme menu.

Source Menu

You can switch your TV to EXT modes by pressing directly to “AV” button or by selecting in source menu from the main menu.

While in EXT mode, you can also switch your TV to TV or other EXT modes by selecting in source menu from the main menu.

In main menu, firstly use “▲” or “▼” button then use “◀” / “▶” or “OK” button to enter Source menu. In source menu, move the cursor by “▲” or “▼” button and then press “OK” button or “◀” / “▶” buttons when the cursor is on the required item. The selected mode comes automatically on the screen.



Other Features

TV Status

Programme Number, Programme Name (or EXT), (they are displayed on the upper left of the screen). The **sound indicator** is displayed with them too. They are displayed after programme change during 3 seconds.

Sound Indicator

The alternatives of the indicator are Mono, Stereo, Dual I and Dual II. This indicator is displayed under the programme number indicator on the screen. “I-II” button is used to select Mono or Stereo, or Dual I or Dual II.

Mono

In Mono broadcast or in forced-mono (for stereo broadcast).

Stereo

In **Stereo** broadcast.

Dual I

If dual broadcast detected. Dual I is selected in default and also can be selected after Dual II by Remote Control.

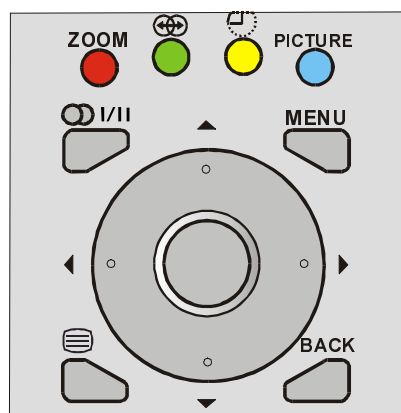
Dual II

If Dual II selected by Remote Control.

Hyper Sound

By selecting Hyper Sound in sound menu or by pressing the “⊕⊖” button on your remote control, Pseudo/Spatial effect can be turned on or off. In Mono transmission the left and right channels will be added at left channel and dummy stereo effect will introduced to end-user.

In stereo transmission it yields a phase difference between left and right channels. Hyper Sound selection will be displayed on the screen when the TV Status button is pressed or programme is changed.



Picture Mode

Picture mode OSD is displayed when BLUE button is pressed. Picture mode can be changed to standard, soft, and bright.

Sleep Timer

Sleep Timer mode OSD is displayed when YELLOW button is pressed.

The Sleep Timer is used to turn the TV off after a defined period of time after selecting this item. The timer can be programmed between Off and 120 minutes in steps of 10 minutes. (Off, 010, 020, 030, 040, ... , 120)

If sleep timer is activated, at the end of the

selected the time, the TV goes automatically to stand-by mode.

Mute Indicator

It is placed in the upper middle of the screen when enabled, and it stays there until it is disabled.



To cancel mute, there are two alternatives; the first one is by pressing the "X" button, this volume is set to the preceding value, and the second one is increasing the volume level. By decreasing the volume level in mute state, mute will not be ignored, only the volume level will decrease.

No-Signal Detection (TV mode)

If no valid signal detected, it takes 5 minutes to switch to the Stand-By mode unless any signal detected or any Remote Control command is accessed.

After a Remote Control command (if No-Signal Timer is active) the timer stops and if no signal detected again the timer is initialized to 5 minutes and starts 3 seconds later again to count down.

It is not valid in EXT modes.

No-Signal and Out Of Range Detection (PC mode)

In PC Mode, as no menu is displayed, in case that there is no PC input to the TV, it is displayed an OSD message:

No input signal detected

then the power lamp turns to amber and PC will be in PC standby mode. Press "AV" button, digit buttons or "P V" / "P ^" buttons to exit standby mode.

In PC Mode, as no menu is displayed, in case that there is no PC input to the TV, but the resolution and the vertical frequency is not supported by the concept, it is displayed an OSD message:

Signal out of range

Volume Bar

It is displayed in the lower middle of the screen. When a volume command is received (pressing "▲ +" or "▲ -" by Remote Control or Control panel at the top of the TV) and no menu is active, it stays on the screen for 3 seconds, after the last volume command or until another command is received in between.



EXT Modes

By pressing the "AV" button you can switch your TV to EXT modes (except being in Teletext). Pressing this button consecutively will switch the TV in one of the optional EXT modes: **EXT-1**, **EXT-2**, **EXT-2 S**, **EXT-3**, **EXT-4**, **EXT-4 S** and **PC**.

In order to quit the EXT mode press any digit buttons or "P V" or "P ^"

Zoom Modes

Zoom mode can be changed by pressing Red button. You can change the screen size according to the picture aspect ratio. Select the optimum one from the following **ZOOM** modes: **Auto**, **4:3** and **16:9**.

AUTO

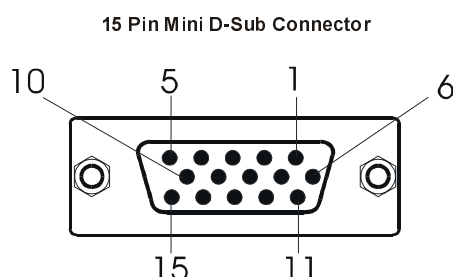
When a **WSS (Wide Screen Signalling)** signal, which shows the aspect ratio of the picture, is included in the broadcast signal or the signal from an external device, the TV automatically changes the **ZOOM** mode to **4:3** or **16:9** according to the **WSS** signal.

- When the **AUTO** mode does not function correctly due to poor **WSS** signal quality or when you want to change the **ZOOM** mode, change to another **ZOOM** mode manually.

PC Mode

Installation

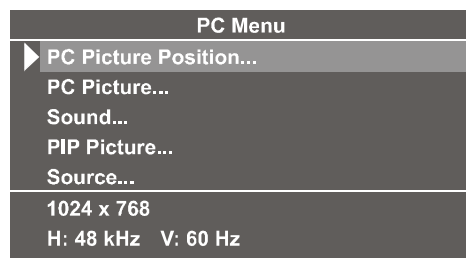
- Power off both Computer and Display before making any connections.
- Set your PC's resolution correctly before connecting to the TV. See the table in [page 29](#) for supported modes.
- Use a D-SUB cable to connect the TV's PC input to the computer's RGB output terminal. If you want to listen to the sound from the computer, use an audio cable to connect the PC AUDIO IN to the computer's sound output terminal.



- Tighten the screws of the Display cable until the connectors are fastened securely (finger-tighten only).

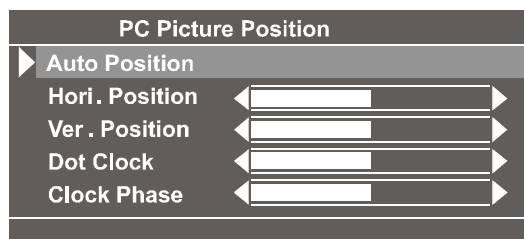
Main Menu in PC mode

Enter the main menu by pressing the “**MENU**” button on the remote control.



PC Picture Position Menu

In the Main menu, select “**PC Picture Position**” using “**▲**” or “**▼**” button, then enter the menu pressing “**◀**” / “**▶**” or “**OK**” buttons..



Auto Position

If you shift the picture horizontally or vertically to an unwanted position, use this item to put the picture into correct place automatically.

- Select **Auto position** item by using “**▲**” or “**▼**” buttons.
- Press “**OK**” button.
- Press “**MENU**” button or “**BACK**” button to store the value.

Warning: Auto position adjustment recommended to be done with the full screen image for the proper adjustment.

Horizontal Position

This item shifts the image horizontally to right hand side or left hand side of the screen.

- Select **Hori. Position** item by using “**▲**” or “**▼**” button.
- Use “**◀**” or “**▶**” button to adjust the value.
- Press “**MENU**” button or “**BACK**” button to store the value.

Vertical Position

This item shifts the image vertically towards the top or bottom of the screen.

- Select **Ver. Position** item by using “**▲**” or “**▼**” button.
- Use “**◀**” or “**▶**” button to adjust the value.
- Press “**MENU**” button or “**BACK**” button to store the value.

Dot Clock

Dot Clock adjustments correct interference that appear as vertical banding in dot intensive presentations like spreadsheets or paragraphs or text in smaller fonts.

- Use “**◀**” or “**▶**” button to adjust the value.

Clock Phase

Depending on the resolution and scan frequency that you input to the TV Set, you may see a muddy or noisy picture on the screen. In such a case you can use this item to get a clear picture by trial and error method.

- Use “**◀**” or “**▶**” button to adjust the value.

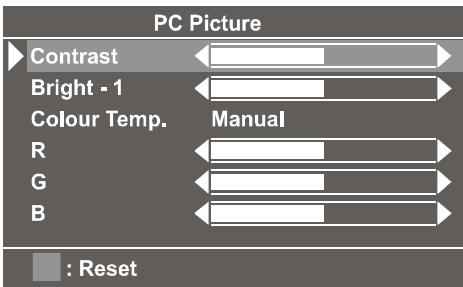
PC Picture Menu

In the Main menu, select “**PC Picture**” using “▲” or “▼” button, then enter the PC Picture menu pressing “◀” / “▶” or “OK” buttons.

Contrast, Bright-1 and Colour Temp. adjustments in this menu are identical to adjustments defined in TV picture menu.

R, G, and B adjust the TV image colour in PC mode. You can change the TV colour to your desired colour: R (Red), G (Green), B (Blue)

Press the BLUE button to reset the PC picture settings to default factory settings.



Sound Menu

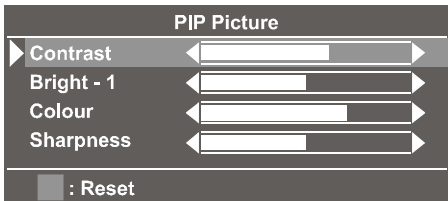
In the main menu select “**Sound**” using “▲” or “▼” button then enter the Sound menu pressing “◀” / “▶” or “OK” buttons.

The items in this menu are described at **Sound menu** starting [page 16](#).

PIP Picture

In the Main menu, select “**PIP Picture**” using “▲” or “▼” button, then enter the PIP Picture menu pressing “◀” / “▶” or “OK” buttons.

This menu is displayed when PIP is displayed on the screen and otherwise “**PIP No Signal**” message will be displayed at the bottom of menu.



PIP picture is displayed on the screen with “” button. By pressing “OK” button, PIP window is selected. PIP position is changed

by “” button. There are four different PIP positions. PIP size is changed by “” button. Two different PIP size are available.

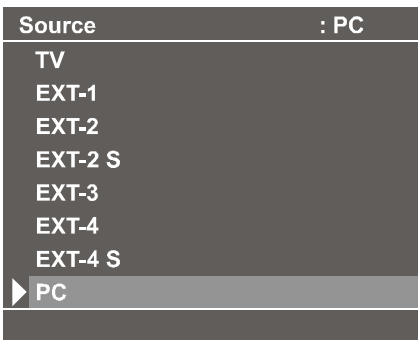
Programme in the PIP window is increased / decreased by “P▼ / P▲”, digit buttons or AV button. All EXT modes (Except EXT-3) are also available in PIP window. PIP window is removed from the screen by “” button.

Press the BLUE button to reset the PIP picture settings to default factory settings.

The items in this menu are described at **Picture menu** starting [page 14](#).

Source Menu

In the Main menu, select “**Source**” using “▲” or “▼” button, then enter the Source menu pressing “◀” / “▶” or “OK” buttons.



Select the available sources of TV, EXT-1, EXT-2, EXT-2 S, EXT-3, EXT-4, EXT-4 S or PC using “▲” or “▼” button and by pressing “◀” / “▶” or “OK” buttons.

Sound in PC mode

- Connect the PC’s Audio output to the TV’s **PC Audio In** socket with an audio cable.
- On your remote control, using “” button to select sound source from TV, EXT-1, EXT-2, EXT-3, EXT-4 and PC options.
- When PIP is displayed on the screen, “” allows you to switch sound between PC and selected PIP source.

Teletext

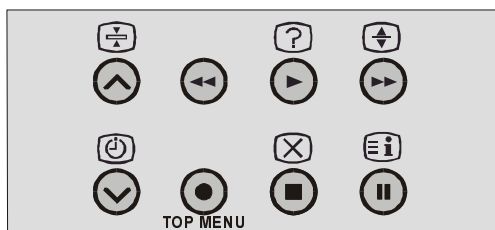
Teletext is an information system that displays text on your TV screen. Using the Teletext information system you can view a page of information on a subject that is available in the list of contents (index).

On screen display is not available in text mode.

Contrast, brightness or colour control is not available, but volume control is available in text mode.

To operate Teletext

- Select a TV station on which Teletext is being transmitted.
- Press (TELETEXT) “” button. Usually the list of contents (index) is displayed on the screen.



To select a page of Teletext

- Press the appropriate digit buttons for the required Teletext page number.

The selected page number is displayed at the top left corner of the screen. The Teletext page counter searches until the selected page number is located, so that the desired page is displayed on the screen.

- Press “” button to move the Teletext screen forward one page at a time.
- Press “” button to move the Teletext screen backward one page at a time.

To Select Index Page

- To select the page number of the index (generally page 100), press “” button.

Searching for a teletext page while watching TV

- In the Teletext mode pressing “” button will switch the screen to the TV mode. In the TV mode enter a page number using digit

buttons. As you enter last digit of page number, “” sign will replace the page number and flash until the entered page number is found. Then the page number will replace “” sign again. Now you can display this teletext page pressing “” button.

To Select Double Height Text

- Press “” button for the top half of the information page to be displayed in double height text.
- Press “” button again for the bottom half of the information page to be displayed in double height text.
- Press “” button once more for the full page of normal height text.

To Reveal “concealed” Information

- Pressing “” button once will reveal answers on a quiz or games page.
- Pressing “” button again will conceal the revealed answers.

To Stop Automatic Page Change

The teletext page you have selected may contain more information than what is on the screen; the rest of the information will be displayed after a period of time.

- Press “” button to stop the automatic page change.
- Press “” button again to allow the next page to be displayed.

To Select a Subcode Page

Subcode pages are subsections of long Teletext pages that can only be displayed on the screen one section at a time.

- Select the required Teletext page.
- Press “” button.
- Select the required subcode page number by pressing four digit buttons (e.g. 0001).
- If the selected subcode page is not displayed in a short time, press “” button. TV programme will be displayed on the screen.

- Teletext page number will be displayed on the upper left corner of the screen when the selected page is found.
- Press “

To exit Teletext

- Press “

Fastext and Toptext

Your TV supports the 7 page Teletext system. When the page number of any of the 7 pages in memory is entered, the system will not search for the requested page; instead it will display the page automatically.

- Press “**P**

For Fastext and Toptext

The subject-heading for the information may have a particular colour.

- Press an appropriate **RED, GREEN, YELLOW** or **BLUE** button in order to reach the relevant page quickly.

For TOPTXT

If Toptext transmission is present, colour coded buttons will appear in status row.

If Toptext transmission is not present, status row will not appear.

In Toptext mode the “**P**

Peripheral Equipment Connections

There is a wide range of audio and video equipment that can be connected to your TV.

Connection diagrams at the end of this section show you where the different equipment should be connected at the back side of the TV.

Via the Euroconnector

Your TV set has 2 Euroconnector sockets. If you want to connect peripherals (e.g. video, decoder, etc.) which have Euroconnectors, to your TV, use **SCART** input.

If an external device is connected via Euroconnector sockets TV is switched to AV mode automatically. In this case if both sockets are connected **SCART** has the precedence.

T-V Link compatible VCR

Be sure to connect the T-V Link compatible VCR to the **EXT.2** terminal. If not, the T-V Link function will not work properly.

- When connecting a T-V Link compatible VCR to the EXT.2 terminal, be sure to connect the decoder to the VCR. If not, the **T-V Link** function may not work properly. And then set the **Decoder(EXT-2)** function for the channel to On to unscramble a scrambled channel.

RGB mode

If an equipment can output the **RGB** signals, connect it to the **EXT-1** or **EXT-2** terminal.

EXT-2 S Mode

If the equipment connected to your TV set supports S-Video (Y/C) output from Euroconnector, you can have a better picture quality by selecting **EXT-2 S** mode and connecting your equipment to the **EXT.2 (EXT-2 S)** terminal of TV. See your equipment's booklet to check if your equipment has such feature.

Via the RCA jacks

If you have an equipment (such as a Camcorder) which has the RCA jacks, connect it to the **EXT-4** terminal with the video and audio cables.

If you have a device which outputs component signal, connect it to the EXT-3 terminal with a component video cable.

Via the ANT (aerial) socket

If your equipment does not have an Euroconnector or RCA jacks, connect it to the TV with an aerial cable. For details, see the manual provided with the equipment.

- To store the test signal that comes from the equipment, see “Install Menu” on [page 17](#) and store it to the program number 0. You can watch images from that equipment to select the program number which you stored the test signal.

Decoder

Cable TV offers you a wide choice of programmes. Most of them are free, others are to be paid for by the viewer. This means that you will need to subscribe to the broadcasting organisation whose programmes you wish to receive. This organisation will supply you a corresponding decoder unit to allow the programmes to be unscrambled.

For further information ask your dealer. See also the booklet supplied with your decoder.

Connect a decoder with an aerial socket to the TV

- Connect the aerial cable.

Connect a decoder without an aerial socket to the TV

- Connect the decoder to your TV with a eurocable (RCA Jack Cable) to **EXTERNAL** (RCA Jack). When your decoder has a Euroconnector / RCA Jack you can obtain better picture quality if you connect a eurocable (RCA Jack Cable) to **EXTERNAL** (RCA Jack).

TV and Video Recoder (VCR)

- Connect the Video Recorder to the ANT (antenna input) socket of the TV with the aerial cable.
- Connect the Video Recorder to the **EXT-1** or **EXT-2** terminal with the SCART cable, or connect it to the **EXT-4** terminal with the audio and video cables.

NTSC Playback

Connect a NTSC video recorder to a terminal. Then press “AV” button to select the corresponding AV mode.

INTSC 3.58/4.43 system is detected automatically in AV mode.

Camera and Camcorder

To connect to the EXT-4 terminal

Connect your camera or camcorder at the back side of your TV.

- Connect your equipment to the TV via **VIDEO** (yellow), **AUDIO R** (red) and **AUDIO L** (white) inputs. You should connect the jacks to the input in the same colour.

Connect the decoder to the video recorder

Some video recorders have a special euroconnector for decoder.

- Connect a eurocable to the euroconnector of your decoder and to the special euroconnector of your video recorder. See also the handbook of your video recorder.
- To connect your video recorder to the TV, see TV and Video Recorder section.

If you want to connect more equipment to your TV, consult your dealer.

Connecting Headphones

Use the stereo headphone socket on the right side of your TV, to connect headphones.

Connecting the PC

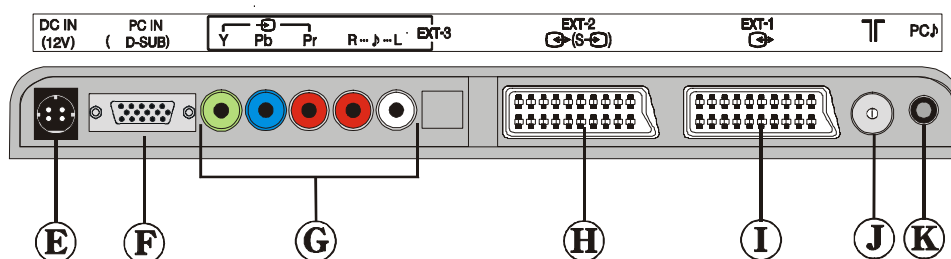
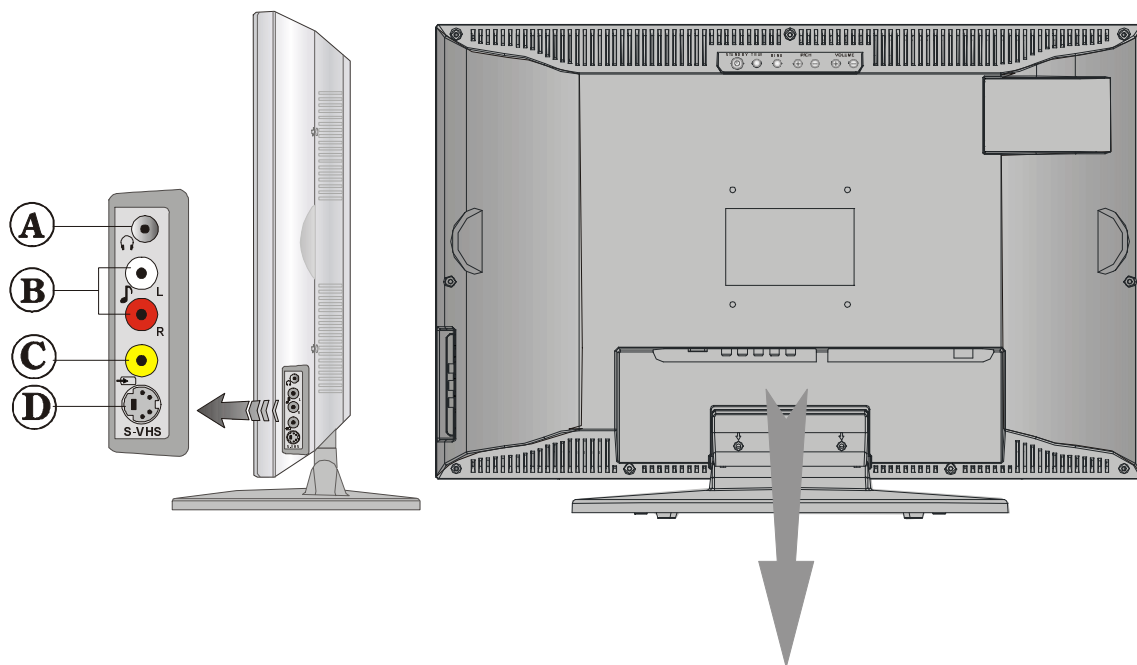
Connect PC monitor with 15-pin PC cable to the 15-pin connector on the rear of the computer. For detail installation procedure see **Installation** in PC mode.

To connect to S-Video input

Connect your camera or camcorder at the back side of your TV.

- Connect your equipment to the TV via S-Video input at the back side by using S-Video cables.

Peripheral Equipment Connections

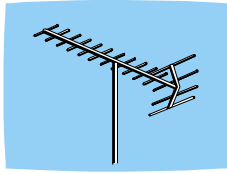


- Ⓐ HEADPHONE
 - Ⓑ AUDIO L/R
 - Ⓒ VIDEO IN
 - Ⓓ S-VIDEO IN
 - Ⓔ DC 12 V
 - Ⓕ PC INPUT
 - Ⓖ EXT-3
 - Ⓗ EXT-2
 - Ⓘ EXT-1
 - Ⓙ ANTENNA
 - Ⓚ PC AUDIO IN
- EXT-4
- Y
Pb
Pr
Component Audio In R
Component Audio In L

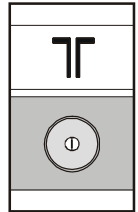
Antenna Connections

Outdoor Antenna Connections

VHF antenna

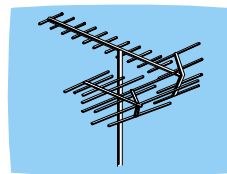


Round 75 ohm coaxial cable



Rear of TV

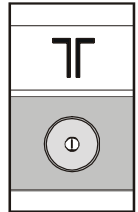
VHF/UHF antenna



Flat 300-ohm twin lead cable



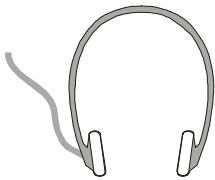
Round 75-ohm coaxial cable



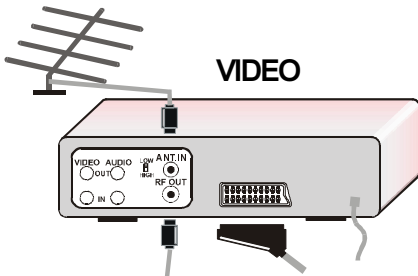
Rear of TV

Peripheral Equipment Connections

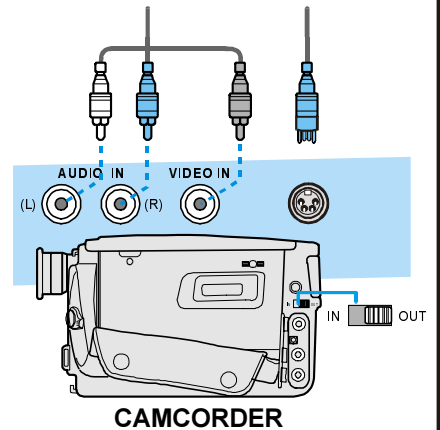
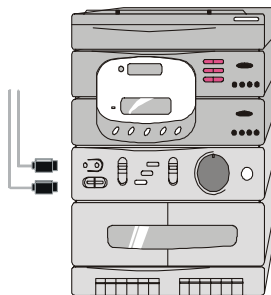
HEADPHONE



VIDEO

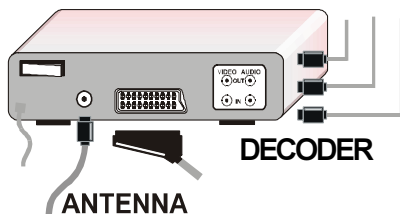


AUDIO



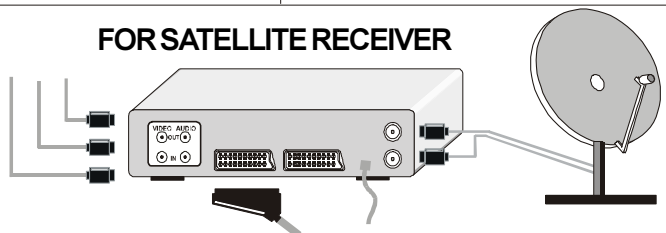
CAMCORDER

DECODER



ANTENNA

FOR SATELLITE RECEIVER



PC Input Typical Display Modes

The display has a maximum resolution of 1024 x 768, vertical sync. frequency range of 50-75 Hz and a horizontal sync. frequency range of 30-69 KHz.

The following table is an illustration of some of the typical video display modes.

Mode	Resolution		Frequency	
	Horizontal	Vertical	Hor. (kHz)	Ver. (Hz)
1	640	400	31.5	70
2	640	480	31.5	60
3	640	480	37.9	72
4	640	480	37.5	75
5	720	400	31.5	70
6	800	600	35.2	56
7	800	600	37.9	60
8	800	600	48.1	72
9	800	600	46.9	75
10	1024	768	48.4	60
11	1024	768	56.5	70
12	1024	768	60.0	75

When Mode 10 to Mode 12 signals are input, thin lines may become obscure for their signal frequencies are higher than the display resolution.

Tips

Care of the Screen

Clean the screen with a slightly damp, soft cloth. Do not use abrasive solvents as they may damage the TV screen coating layer

Colors of image on screen are abnormal

Have you selected the correct TV system? Is your TV set or house aerial located too close to the loudspeakers, non-earthed audio equipment or neon lights, etc. ?

Mountains or high buildings can cause double pictures or ghost images. Sometimes you can improve the picture quality by changing the direction of the aerial.

Is the picture or Teletext unrecognisable? Check if you have entered the correct frequency.

The picture quality may degrade when two peripherals are connected to the TV at the same time. In such a case, disconnect one of the peripherals.

No Image on Display Screen

Is the aerial connected properly? Are the plugs connected tightly to the aerial socket? Is the aerial cable damaged? Are suitable plugs used to connect the aerial? If you are in doubt, consult your dealer.

No Image means that your TV is not receiving any transmission. Have you pressed the correct buttons on the remote control? Try once more.

PC Picture

If no PC picture appears, check that the D-SUB cable is connected properly. Check that your PC's resolution set correctly. See [page 29](#) for supported modes.

Sound

You can not hear any sound. Did you perhaps interrupt the sound, pressing "X" button? Are external speakers connected to the TV?

Sound is coming from only one of the speakers. Is the balance set to one direction extreme? See **Sound** menu.

Remote Control

If your TV no longer responds to the remote control, perhaps the batteries are exhausted. Replace the batteries.

Have you selected the wrong menu? Press **MENU** button to return to normal screen or press **BACK** button to return to the previous menu.

No solution

Switch your TV set off and on. If this does not work, switch off, remove the mains plug and call the service personnel; never attempt to repair it yourself.

For users in the UK:

If you have any problems setting up your new TV, please call the **JVC** Helpline on 0870330 5000

For users in the Republic of Ireland:

If you have any problems setting up your new TV, please call the **JVC** Helpline on 1890 - 582500

Specifications

Item	Model	LT-20E50SJ
Broadcasting Systems		PAL SECAM BG, DK, I, L, Lp
Channels and Frequencies		VHF (VL) : 46,25 MHz - 168,25 MHz VHF (VH) : 175,25 MHz - 463,25 MHz UHF : 471,25 MHz - 863,25 MHz Cable TV : (S1-S20/ S21-S41)
Input Signal		Video: Analog 0,7 Vp-p 75 ohm positive Sync: TTL Level positive or negative, Seperate sync.
Horizontal Timing		30 - 69 KHz
Vertical Timing		50 - 75 Khz
Dot Rate		78,75 MHz max.
Panel Size		20,1" (511 mm) (measured diagonally)
Visible Picture Size		411 mm horizontal x 309.5 mm vertical
Display Resolution		800 x 600 max. (SVGA)
Number of Preset Channels		100
Channel Indicator		On Screen Display (OSD)
RF Aerial Output		75 Ohm (unbalanced)
Power Requirements		Adaptor: 100-240 V AC, 50/60 Hz / TV: 12 V DC
Power Consumption (W)		54 W (max) / STAND-BY <3W
Sound Systems		German , Nicam Stereo
Audio Output		2 x 5 W _{RMS} (%10 THD)
EXT-1 Terminal		Euroconnector (21-pin, SCART 1) (bottom of the cabinet) • Video Input, Audio L/R Inputs and RGB inputs are available. • TV broadcast outputs (Video and Audio L/R) are available.
EXT-2 Terminal		Euroconnector (21-pin, SCART 2) (bottom of the cabinet) • Video Input, S-VIDEO (Y/C) input, Audio L/R and RGB inputs are available. • Video and Audio L/R outputs are available. • T-V Link functions are available.
EXT-3 Terminal		RCA connectors x 5 (bottom of the cabinet) • Component video (Pr, Pb, Y) inputs and Audio L-R inputs are available
EXT-4 Terminal		RCA connectors x 3 (side of the cabinet) S-VIDEO connector x 1 (side of the cabinet) • Video input, S-VIDEO (Y/C) input and Audio L/R inputs are available.
PC IN terminal		Analog RGB D-SUB 15 x 1 • PC signal is available (refer to page 29 for details of the signals which can be input)
PC AUDIO IN terminal		Stereo mini-jack (3.5 mm diameter)
Dimensions (W x H x D)		617 mm x 430 mm x 235 mm 617 mm x 396 mm x 73 mm (TV only)
Weight		8,6 kg (with stand) / 7,0 kg (TV only)
Accessories		Remote control unit x 1 (RM-C1860) / AA/R6 dry cell battery x 2 AC adapter x 1 Power cord x 1
Headphone jack		Stereo mini-jack (3.5 mm diameter)



JVC

ENGLISH
DEUTSCH
FRANÇAIS
ITALIANO

JVC

InteríArt
LT-20E50SU

LCD PANEL TV

INSTRUCTIONS

LCD-TV-GERÄT
PANNEAU LCD TELEVISEUR
TV A SCHERMO LCD

BEDIENUNGSANLEITUNG
MANUEL D'INSTRUCTIONS
ISTRUZIONI



50068427

1004MKH-VT-VT

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For your safety

This equipment has been designed and manufactured to meet international safety standards but, like any electrical equipment, care must be taken if you are to obtain the best results and safety is to be assured. So, please read the points below for your own safety. They are of a general nature, intended to help you with all your electronic consumer products and some points may not apply to the goods you have just purchased.

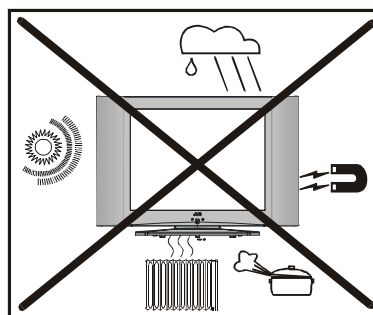
Some “DOs” and “DON'Ts” for you

Air Circulation...

Leave at least 10cm clearance around the television to allow adequate ventilation. This will prevent the TV from overheating and consequential possible damage to the TV. Dusty places should also be avoided.

Heat Damage...

Damage may occur if you leave the TV in direct sunlight or near a heater. Avoid places subject to extremely high temperatures or humidity, or locations where the temperature is likely to fall below 5°C (41°F).



Mains Supply...

The mains supply required for this equipment is **100-240 V AC, 50/60 Hz**. Never connect to a DC supply or any other power source. DO ensure that the TV is not standing on the mains lead. DO NOT cut off the mains plug from this equipment, this incorporates a special Radio Interference Filter, the removal of which will impair its performance.

Hot / Moderate Climate Conditions

This device is suitable for working in hot and moderate climate conditions.

IF IN DOUBT PLEASE CONSULT A COMPETENT ELECTRICIAN.

DO...

DO read the operating instructions before you attempt to use the equipment.

DO ensure that all electrical connections (including the mains plug, extension leads and inter-connections between pieces of equipment) are properly made and in accordance with the manufacturers' instructions.

Switch off and withdraw the mains plug before making or changing connections.

DO consult your dealer if you are ever in doubt about the installation, operation or safety of your equipment.

DO be careful with glass panels or doors on equipment.

DO NOT...

DON'T remove any fixed cover as this may expose dangerous voltages.

DON'T obstruct the ventilation openings of the equipment with items such as newspapers, table-cloths,

curtains etc. Overheating will cause damage and shorten the life of the equipment.

DON'T allow electrical equipment to be exposed to dripping or splashing or objects filled with liquids, such as vases, to be placed on the equipment.

DON'T place hot objects or naked flame sources, such as lighted candles or night-lights on, or close to the equipment. High temperatures can melt plastic and lead to fires.

DON'T use makeshift stands and NEVER fix legs with wood screws. To ensure complete safety, always fit the manufacturer's approved stand or legs with the fixings provided according to the instructions.

DON'T listen to headphones at high volume, as such use can permanently damage your hearing.

DON'T leave equipment switched on when it is unattended, unless it is specifically stated that it is designed for unattended operation or has a standby mode. Switch the equipment off and make sure your family know how to do

this. Special arrangements may need to be made for infirm or handicapped people.

DON'T continue to operate the equipment if you are in any doubt about it working normally, or it is damaged in any way – switch off, withdraw the mains plug and consult your dealer.

DON'T put the empty batteries into garbage instead of recycle bin to reduce harmful effects to the environment.

ABOVE ALL – NEVER let anyone, especially children, push anything into holes, slots or any other openings in the case – this could result in a fatal electric shock.

NEVER guess or take chances with electrical equipment of any kind – it is better to be safe than sorry.

To fully disconnect the TV, switch off the mains socket and remove the Power plug. Safety Precautions for Power adapter

- Be careful! May become hot.
- For indoor and dry location use only.
- Risk of electric shock.
- Shock hazard, do not open.
- Keep all power adapters away from any other heat source.
- Always use power adapter(s) well-ventilated area.

*** Cold cathode fluorescent lamp in LCD PANEL contains a small amount of mercury, please follow local ordinances or regulations for disposal.*

"The LCD panel is very high technology product with about a million thin film transistors, giving you fine picture details. Occasionally, a few non-active pixels may appear on the screen as a fixed point of blue, green or red. Please note that this does not affect the performance of your product." Please note that certain light guns used with games consoles may not work on this product.

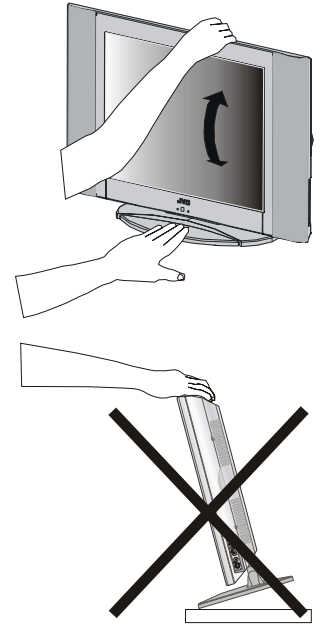
Warning:

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

WARNING : TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

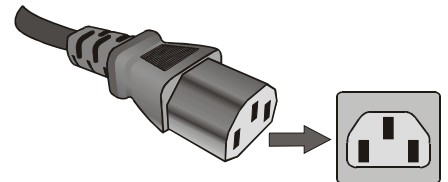
WARNING

- *Fingers may be trapped under the TV causing injuries. Hold the TV at the bottom in the middle, and do not allow it to tilt up or down.*
- *The TV may fall causing injuries. Hold the bottom of the stand with your hand and tilt the TV up and down.*
- *Do not allow children to hang from the TV, place their elbows on the TV or lean against the TV. Doing so may cause the TV to fall over and lead to injuries.*



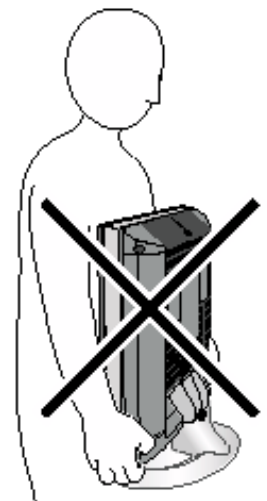
CAUTION:

- *To avoid electric shock or damage to the unit, first firmly insert the small end of the power cord into the AC Adapter unit it is no longer wobbly, and then plug the larger end of power cord into an AC outlet.*



CAUTION:

- *The TV screen may be damaged if the TV is carried as shown in the diagram below.*
- The TV should always be carried by two people*



Important Information

Please take note

EXCLUSION CLAUSE

JVC shall under no circumstances be liable for loss and/or damage to the product caused by:

- fire;
- earthquake;
- accidental damage;
- intentional misuse of the product;
- use of the product in improper conditions;
- loss and/or damage caused to the product whilst in the possession of a third party;
- any damage or loss caused as a result of the owner's failure and/or neglect to follow the instructions set out in the owner's manual;
- any loss or damage caused directly as a result of misuse or malfunction of the product when used simultaneously with associated equipment;

Furthermore, under no circumstances shall JVC be liable for any consequential loss and/or damage including but not limited to the following, loss of profit, interruption of business, the loss of recorded data whether caused during normal operation or misuse of the product.

WARNING! NEVER LEAVE A STATIONARY IMAGE ON THE SCREEN

If stationary images generated by TELETEXT, CHANNEL IDENTIFICATION LOGOS, COMPUTER DISPLAYS, VIDEO GAMES, ON SCREEN MENUS, etc. are left on the TV screen for any length of time, they could become permanently ingrained.

If you use your television to display completely still images, or moving pictures which have a permanent still image superimposed e.g. broadcast network logos, it is always advisable to reduce BOTH the brightness and contrast settings.

Care and disposal

Cleaning the screen and cabinet...

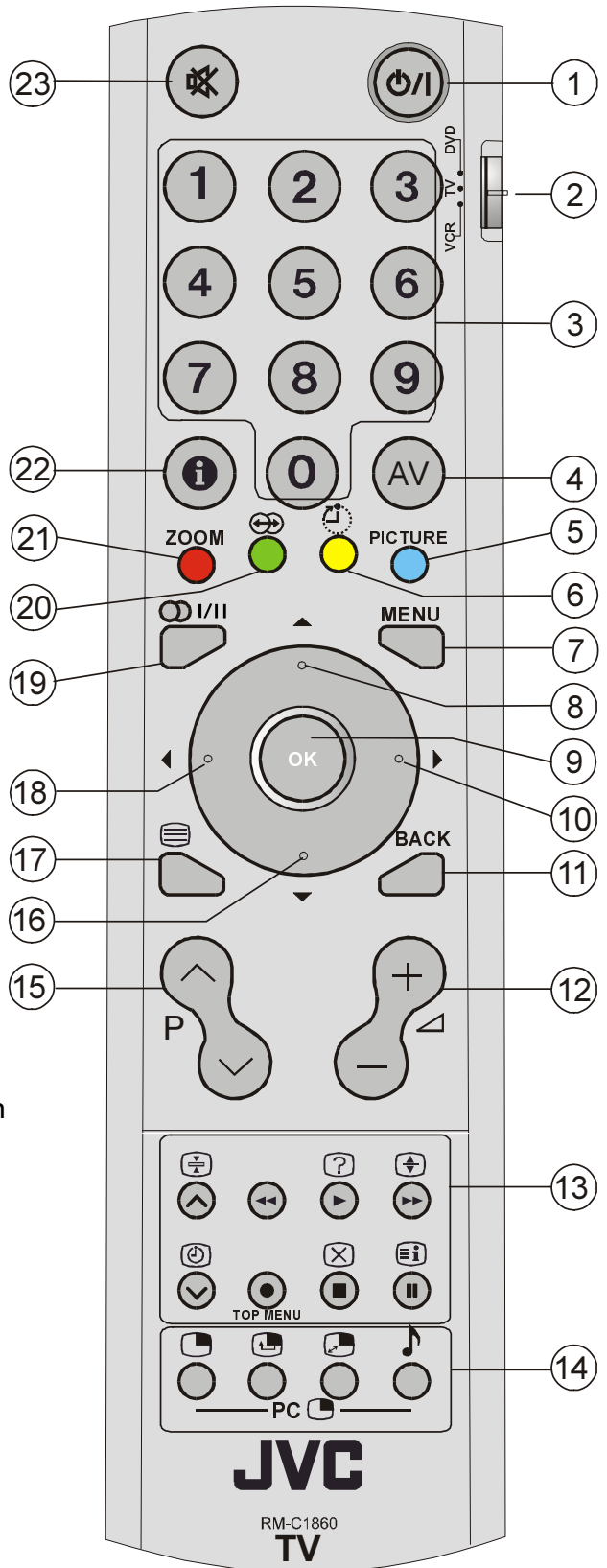
Turn off the power, clean the screen and cabinet with a soft, dry cloth. We recommend that you do not use any proprietary polishes or solvents on the screen or cabinet as this may cause damage.

Disposal...

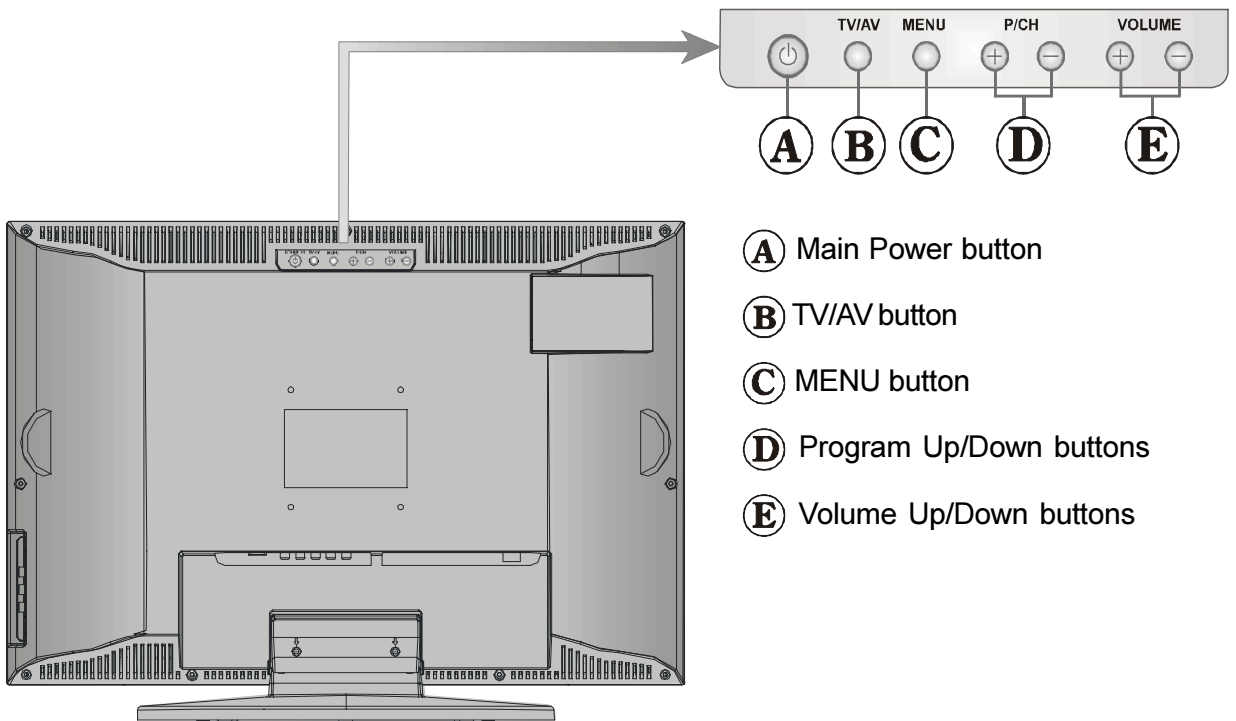
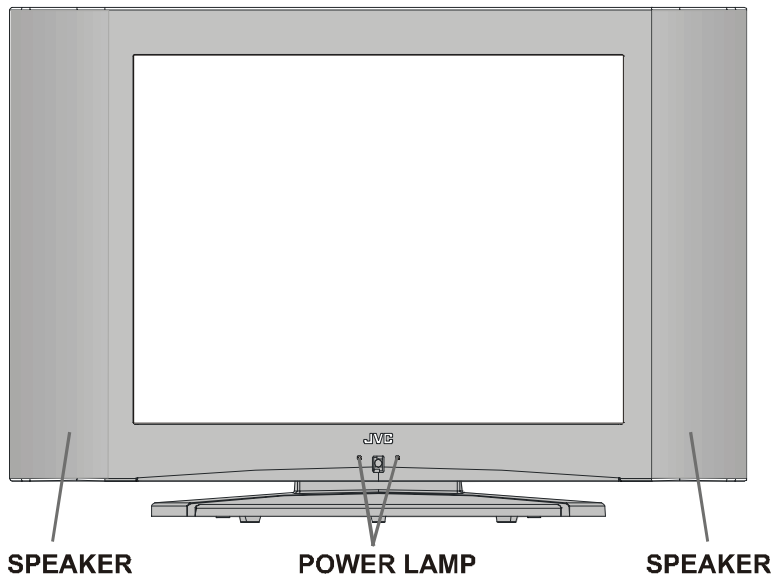
When the set reaches the end of its useful life please dispose of it in accordance with Local Government Regulations or at a recycling centre.

Remote Control Buttons

- ① = (Stand By) button
- ② TV / VCR / DVD Switch
- ③ Number buttons
- ④ **AV** button (TV, EXT-1, EXT-2, EXT-2 S, EXT-3, EXT-4, EXT-4 S or PC)
- ⑤ **BLUE / PICTURE** Mode button
- ⑥ **YELLOW** / Sleep Timer button
- ⑦ **MENU** button
- ⑧ = Cursor Up button
- ⑨ **OK** button
- ⑩ = Cursor Right button
- ⑪ **BACK** button
- ⑫ = Volume + / - buttons
- ⑬ Teletext / VCR / DVD Control buttons
- ⑭ PC Control Buttons
- ⑮ = P / V buttons
- ⑯ = Cursor Down button
- ⑰ = Teletext Button
- ⑱ I/II = Stereo / Bilingual button
- ⑲ **GREEN** / Hyper Sound On/Off button
- ⑲ **RED / ZOOM** Mode button
- ⑲ = Information Button / T-V Link in Program Menu
- ⑲ = Mute button



Control Panel Buttons



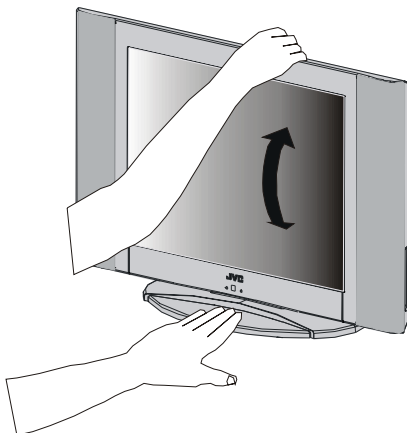
Using the stand

This TV comes with a Table Top Stand already attached.

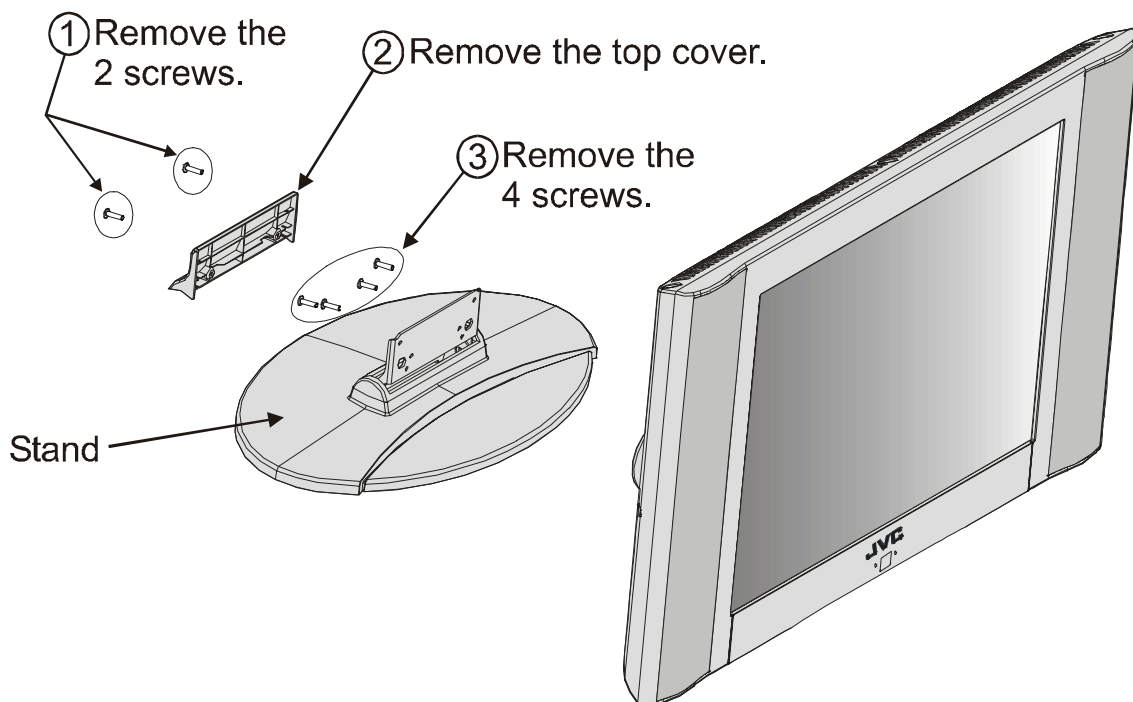
This stand can be used to adjust the direction of the TV screen.

Tilt the TV up and down:

While holding the stand with one hand which should be on lower level of the stand for avoiding trapping, use your other hand to hold the middle of the top of the TV and slowly tilt the TV up and down.



How to remove the stand



Installing TV on the wall

WARNING

- When you install the TV on the wall, only use a JVC wall mounting unit (optional) which is designed for this TV.
- Make sure that the TV is installed on the wall by a skilled installer.

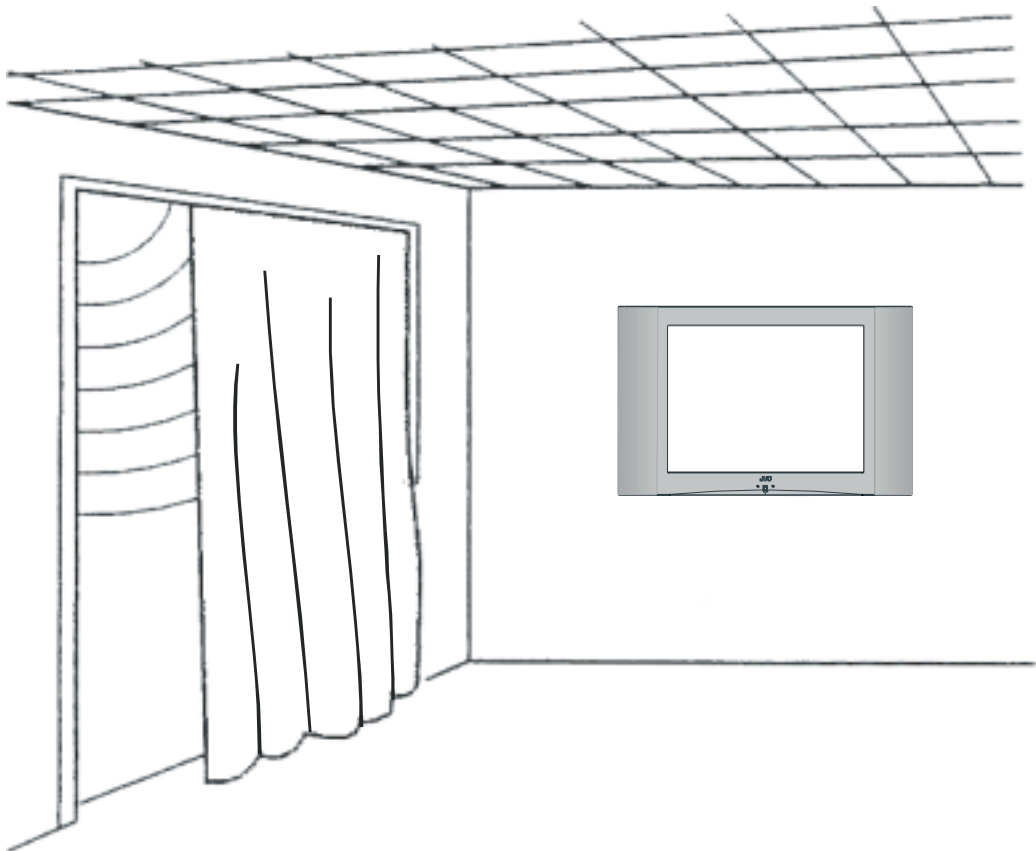
Locate the TV away from direct sunlight and strong lights, soft, indirect lighting is recommended for comfortable viewing. Place on a sturdy platform, the mounting surface should be flat and steady, it should then be secured to the wall with a sturdy tie using the hook on the back of the TV, this will prevent it from falling over. Use curtains or blinds to prevent direct sunlight falling on the screen.

A floor and table top stand are available for this television, or an angled bracket which enables the TV to be wall-mounted.

The LCD display panels are manufactured using an extremely high level of precision technology, however sometimes some parts of the screen may be missing picture elements or have luminous spots. This is not a sign of a malfunction.

Make sure the TV is located in a position where it cannot be pushed or hit by objects, as pressure will break or damage the screen.

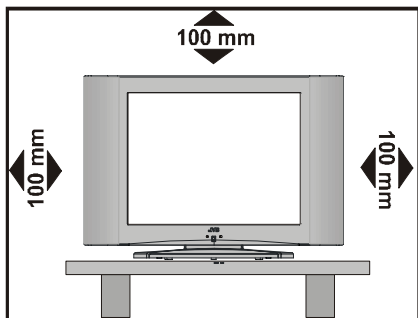
- 100 mm mount based on VESA regulation is equipped.



Preparation

Install Display on solid horizontal surface such as a table or desk.

For ventilation, leave a space of at least 10 cm free all around the set. To prevent any fault and unsafe situations, please do not place any objects on top of the set.



Features

- It is a remote controlled colour television and PC monitor.
- 100 programmes from VHF, UHF bands or cable channels can be preset.
- It can tune cable channels.
- Controlling the TV is very easy by its menu driven system.
- It has 2 pieces of Euroconnector socket for external devices (such as video, video games, audio set, etc.)
- To use as a PC monitor, 15 Pin Mini D-Sub connector for computer.
- Optional stereo sound systems (German or German+Nicam) are available.
- Multilanguage OSD.
- Teletext (Fastext, 7 pages).
- It is possible to connect headphone.
- A.P.S. (Automatic programming system)
- All programmes can be named.
- Forward or backward automatic tuning.
- Sleep timer.
- Child lock
- Auto, 4:3, 16:9
- Automatic sound mute when no transmission.
- When no valid signal is detected, after 5 min-

utes the TV switches itself automatically to stand-by mode.

- NTSC Playback.
- Universal power supply range is a standard feature on this model.
- TV Picture in PC (if PC input available).
- PLL (Channel Search)
- PC input (Support Up to 1024 x 768)

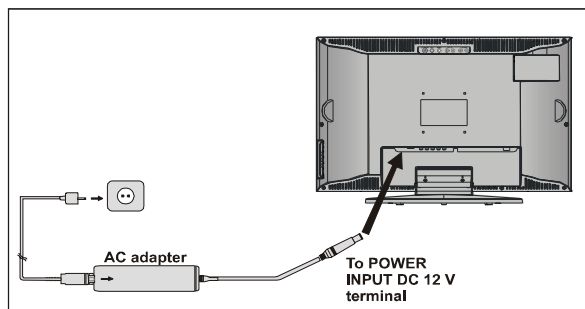
Panel Features

- High resolution (800 x 600), 20" TFT LCD display.
- High contrast ratio (500:1 Typical)
- Brightness: 500 cd/m²
- High-speed response time < 16 msec.
- Wide viewing angle (typical) 160° (horizontal) and 120° (vertical).
- 8-bit colour depth, display 16.7 M colours.

Before Switching on your TV

Power connection

Only use the adaptor supplied with this product.



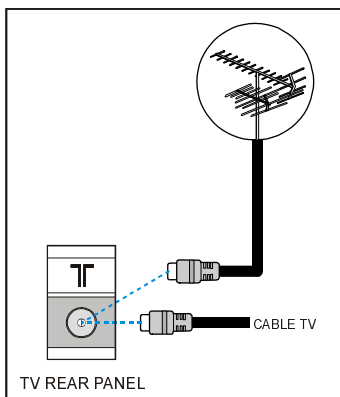
IMPORTANT: The TV set is designed to operate on 12 V DC. For this, an adaptor is used which gives 12V DC voltage. Connect this adaptor to a system that supplies 100 -240V AC, 50/60 Hz.

- After unpacking, allow the TV set to reach the ambient room temperature before you connect the set to the mains.

Connections to the RF input socket

- Connect the aerial or cable TV plug to the RF input socket located at the back of the TV and connect the cable plug coming out from

the TV out socket located at the devices (VCR, DVB etc.) to this socket as well.



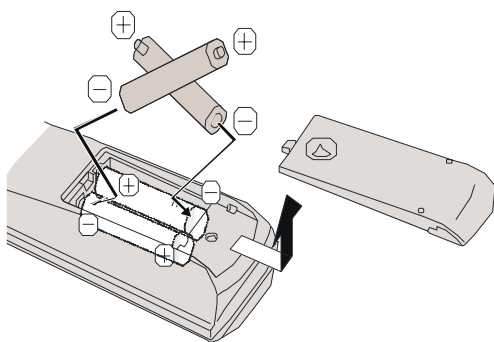
How to connect other devices

IMPORTANT: Switch off the TV before connecting any external device.

Sockets for external connections are at the back of the TV. For connection of other devices via Euroconnector refer to the manuals of the related devices.

Inserting batteries in the remote control handset

- Remove the battery cover located on the back of the handset by gently pulling upwards from the indicated part.
- Insert two AA/R6 dry cell or equivalent type of batteries inside.
- Replace the battery cover.



NOTE: Remove the batteries from remote control handset when it is not to be used for a long period. Otherwise it can be damaged due to any leakage of battery.

Old batteries must be disposed in a designated area. If performance of the remote con-

trol reduces, replace the batteries with the correct type. Do not combine a used, old battery or a new one or mixed battery types. Remove dead batteries immediately to prevent acid from leaking into the battery compartment.

Switching the TV ON/OFF

To switch the TV on

Your TV will switch on in two steps:

- 1- Connect the mains plug to the system. Press the main power button on the top of the TV, then the TV will switch to the last programme (or EXT mode) that it was switched off and the power lamp becomes green.
- 2- To switch on the TV from stand-by mode either:

Press the “ / I” button on the remote control or.

Press a digit button on the remote control so that a programme number is selected, or,

Press “**P**  ” or “**P**  ” buttons on the remote control, so that last switched off programme is selected.

Either way the TV will switch on and the power lamp will become green.

To switch the TV off

- Press the “ / I” button on the remote control, so the TV will switch to stand-by mode and the power lamp will become red.

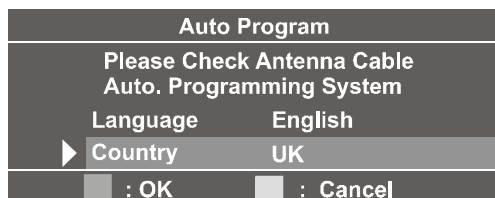
NOTE: When you turn on the TV for the first time, pressing the main power button turns the TV on and the first APS menu appears. See [page 11](#) for the **Initial Settings**. To switch the TV off completely, press the main power button and withdraw the mains plug.

Initial Settings

You can operate your TV both using the remote control handset and onset buttons.

First A.P.S. (Automatic Programming System)

APS, searches and sorts all channels and stores them automatically on your TV, according to the transmission of programme systems in your area.



To cancel APS before starting, press BLUE button.

First of all choose the “**Language**” which the menus of the TV will appear. As soon as you change the language, the menu items will be displayed in the selected language. . By pressing the “▲” or “▼” button, come to the “**Country**” item and select the country. This will effect the sort process in APS . Press red button to start A.P.S.

After APS is finalized, a programme list will appear on the screen. In the programme list you will see the programme numbers and names assigned to the programmes.

If you press the BLUE button at any time while the A.P.S. is running, the A.P.S. will be ended.

If you do not accept the locations and / or the programme names of programmes, you can change them in Program menu. For details see **Program** menu on [page 17](#).

If you do not have a T-V Link compatible VCR, press BLUE button to exit the menu.

If you have a T-V Link compatible VCR connected to the EXT-2 terminal, press “**i**” button to display T-V Link menu. Then follow the operating procedure “**Downloading data to VCR**” in the following T-V Link section.

T-V Link

When a T-V Link compatible VCR connected to the EXT-2 terminal on the TV, it is easier to set up the VCR and to view videos. T-V Link uses the following features:

To use T-V Link functions

A “**T-V Link compatible VCR**” means a JVC video cassette recorder with the T-V Link logo, or with one of the following logos. For details see your VCR instruction manual.

“**Q-LINK**” (A trademark of Panasonic Corporation)

“**Data Logic**” (A trademark of Metz Corporation)

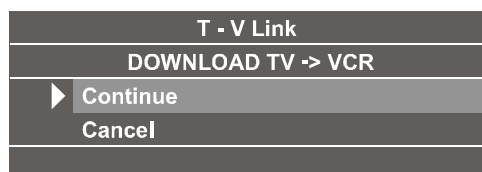
“**Easy Link**” (A trademark of Phillips Corporation)

“**Megalologic**” (A trademark of Grundig Corporation)

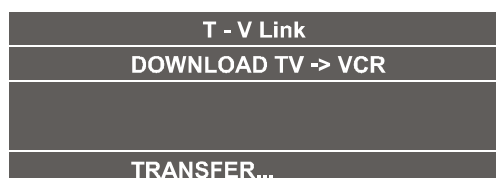
“**SMARTLINK**” (A trademark of Sony Corporation)

Downloading data to VCR:

The VCR will automatically download the registered data on the TV channels from the TV. This means you do not need to set up the programme channels on your VCR manually. The “**T-V Link**” menu will be displayed when you press the “**i**” button while **Program** menu is displayed.



Press “▶” or “OK” button to start downloading data to VCR. “**TRANSFER**” is displayed in the menu



If you do not want to continue press the BLUE button to exit the menu.

If “**FEATURE NOT AVAILABLE**” is displayed,

download was not performed correctly. Before trying to download again, check that:

- The VCR power is turned on.
- The VCR is T-V Link compatible.
- The VCR is connected to the EXT-2.
- The scart cable is fully wired.

Direct REC:

You can easily record to VCR the images that you are watching on the TV. For details, read the manual for your VCR. Use your VCR controls you can not carry out Direct REC using your TV control.

When the VCR is not ready (For example when there is no tape inserted), **"NO RECORDING"** is displayed. In the following situations, the VCR will stop recording if the Tv is turned off, if the TV channel or input is changed, or if the menu is displayed on the TV:

- When recording images from an external device connected to TV (For example camcorder).
- When recording a TV channel after it has been unscrambled on a decoder.
- When recording a TV channel by using the TV's output because the VCR's own tuner can not properly receive that channel.

TV autopower on/VCR image view:

When the VCR starts playing, the TV automatically turns on and images from EXT-2 appear on the screen.

This function does not happen if your TV's main power is turned off. Set your TV's main power to on (StandBy Mode).

Operating the TV

You can operate your TV both using the remote control handset and onset buttons.

Volume setting and programme selection can be made by using the buttons on the top of the TV.

Volume Setting

- Press **"VOLUME -"** button to decrease volume or **" +VOLUME"** button to increase volume, so a volume level scale (slider) will be displayed at the middle of the bottom on the screen.

Programme Selection

- Press **" + P/CH"** button to select the next programme or **"P/CH -"** button to select the previous programme.

Entering Main Menu

- Press **"MENU"** button to enter Main menu. In the Main menu select submenu using **"P/CH -"** or **" + P/CH"** button and enter the submenu using **"VOLUME -"** or **" + VOLUME"** button. To learn the usage of the menus, refer to the Menu System sections.

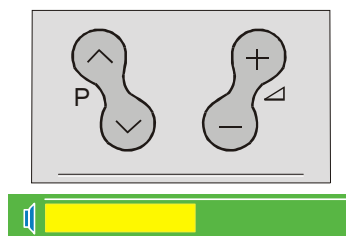
Operating with Remote Control

The remote control handset of your TV is designed to control all the functions of the model you selected. The functions will be described in accordance with the menu system of your TV.

Functions of the menu system are described in following sections.

Volume Setting

Press **"▲ +"** button to increase volume. Press **"▲ -"** button to decrease volume. A volume level scale (slider) will be displayed in the middle at the bottom of the screen.



Programme Selection (Previous or next programme)

- Press “**P**↘” button to select the previous programme.
- Press “**P**↗” button to select the next programme.

Programme Selection (direct access)

Press digit buttons on the remote control handset to select programmes between 0 and 9. TV will switch to the selected programme. To select programmes between 10 - 99, press the digit buttons consecutively which programme you want to select (eg. for programme 27, first press 2 and then 7). When it is late to press second digit button only the first digit programme will be displayed. The limit of the delay time is 3 seconds

.Example: PR6 → press 6, PR12 → press 1 and 2 , PR123 →press 1,2 and 3.

Press directly the programme number to reselect single digit programmes.

Hint: The channel list numbers are assigned by the broadcasters. Because not all channels are broadcast free-to-air and stored by the receiver, the channel list numbers do not run continuously. The fifteenth channel in the list, for example, may not be channel number 15 but channel number 17.

Menu System

Your TV has been designed with a menu system to provide an easy manipulation of a multi-function system. The TV is controlled by choosing the commands, which are displayed on the screen.

MAIN MENU

Press the “**MENU**” button. The main menu will be displayed in the middle of the screen.



To select a sub-menu use “▲” or “▼” button, and press “◀” or “▶” button or directly press “**OK**” button.

In EXT-1, EXT-2 and EXT-4 modes, main menu appears the same as in TV mode but without Program sub-menu.

In EXT-3 mode, Main Menu appears as follows:



Menu does not disappear automatically if it is left on the screen.

Press “**MENU**” button again to remove menu.

Picture Menu

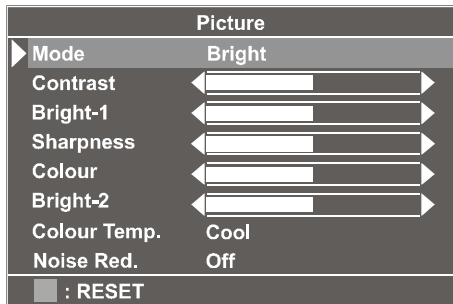
Press “**MENU**” button, now you are in main menu. In the Main menu, select “**Picture**” using “▲” or “▼” button, then enter the Picture menu pressing “◀ / ▶” or “**OK**” button.

Setting Mode

- As you enter the picture menu, Mode will be the first item.

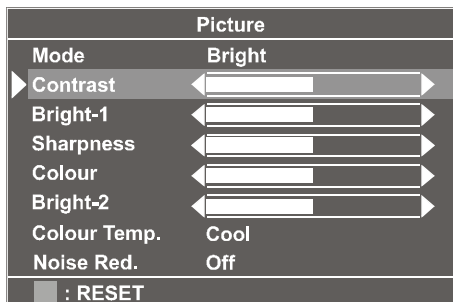
- By pressing “◀” or “▶” button you may choose one of these options:

Soft, Standard and Bright.



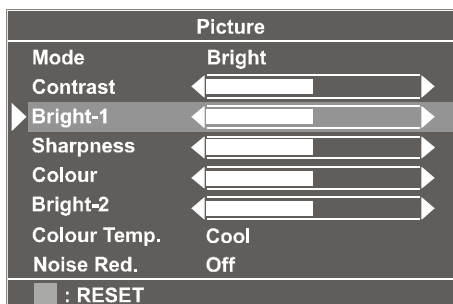
Setting Contrast

- Using “▲” or “▼” button select **Contrast**.
- Press “▶” button to increase contrast level.
- Press “◀” button to decrease contrast level.



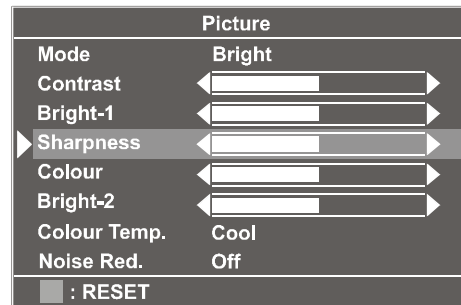
Setting Bright-1

- Using “▲” or “▼” button select **Bright-1**.
- Press “▶” button to increase brightness.
- Press “◀” button to decrease brightness.



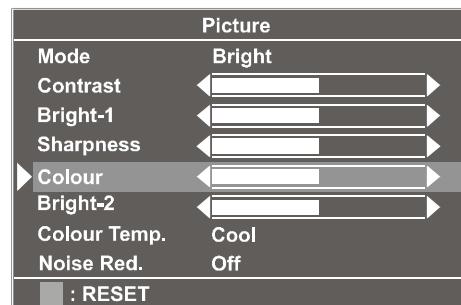
Setting Sharpness

- Using “▲” or “▼” button select **Sharpness**.
- Press “▶” button to increase sharpness level.
- Press “◀” button to decrease sharpness level.



Setting Colour

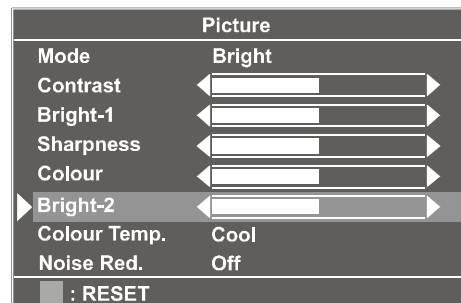
- Using “▲” or “▼” button select **Colour**.
- Press “▶” button to increase colour level.
- Press “◀” button to decrease colour level.



Setting Bright-2

Using “▲” or “▼” button select **Bright-2**.

- Press “▶” button to increase the back light.
- Press “◀” button to decrease the back light.



Setting Colour Temp.

- Using “▲” or “▼” button select **Colour Temp.**
- Press “◀” or “▶” button to select “Warm”, “Cool” or “Normal”.

Setting Noise Reduction

- Using “▲” or “▼” button select **Noise Red.**
- Press “◀” or “▶” button to select Noise Reduction level “Off” or “Minimum” or “Medium” or “Maximum”.

Note 1:

At low signal level, the changings on the Noise Reduction function are not effective when there is menu on the screen. If the menu is removed, the effect of this function is seen. At normal broadcasting, Noise Reduction changings are effective at once.

Note 2:

At moving pictures, while Noise Reduction is at maximum level, some picture distortions may occur. If Noise Reduction is set to medium or minimum, the picture will improve.

Setting Hue

During Playback NTSC system, this will appear in AV mode only when NTSC video source is applied. Otherwise, Hue option is invisible in Picture menu in TV mode :

- Using “▲” or “▼” button select **Hue**.
- Press “▶” button to increase hue level.
- Press “◀” button to decrease hue level.

Center value is indicated with one arrow.

Reset

Press BLUE button to reset the picture modes to factory default settings.

To Store the Settings

In the Picture Menu, all settings are stored automatically.

Sound Menu

To change sound settings

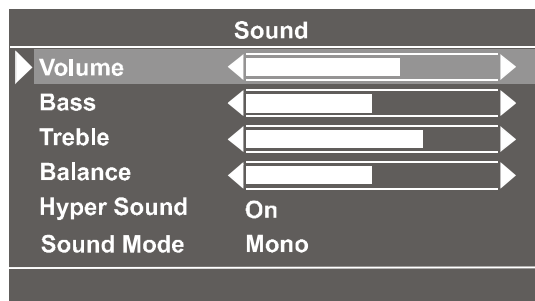
As you enter the main menu, sound will be the second item. In the main menu, select **Sound** using “▲” or “▼” button, then enter the sound menu pressing “◀” / “▶” or “OK” button.

Setting Volume

As you enter the sound menu, **Volume** will be the first selected option.

- Press “▶” button to increase volume.
- Press “◀” button to decrease volume.

Or you can directly change the volume settings using “▲ +” (to increase) or “- ▲” (to decrease) button.



Setting Bass Level

- Using “▲” or “▼” button select **Bass** Level.
- Press “▶” button to increase bass level.
- Press “◀” button to decrease bass level.

Setting Treble Level

- Using “▲” or “▼” button select **Treble**.
- Press “▶” button to increase treble level.
- Press “◀” button to decrease treble level

Setting Balance

It allows adjusting the distribution between the left and right speakers.

- Using “▲” or “▼” button select **Balance**.
- Press “▶” button to change balance rightward.
- Press “◀” button to change balance leftward.

Hyper Sound

- Using “▲” or “▼” button select **Hyper Sound**
- Pressing “◀” or “▶” button will turn on or off this feature.

Pseudo/spatial effect can be turned on or off via the Hyper Sound item in the Sound menu or by remote control. In Mono transmission the left and right channels will be added at left channel and dummy stereo effect will introduced to end-user.

In stereo transmission it yields a phase difference between left and right channels. Hyper Sound selection will be displayed on the screen when the TV Status button is pressed or programme is changed.

Selecting Sound Mode

- Using “▲” or “▼” button select **Sound Mode**.

- Press “◀” or “▶” button to change Sound Mode.

You can choose **Mono**, **Stereo** or **Dual (I-II)** mode, only if the selected channel supports that Sound Mode.

You can also change sound mode directly pressing “I-II” button on your remote control.

In case of bilingual broadcast (Dual Sound), you can select original or dubbed language using mode option. So when somebody listens to the original language from the loudspeakers, somebody else can listen to the dubbed language from headphone.

To Store The Settings

In the Sound Menu, all settings are stored automatically.

Feature Menu

Press “**MENU**” button, now you are in mainmenu. In the main menu, select **Feature** using “▲” or “▼” button. Then enter the Feature menu pressing “◀” / “▶” or “**OK**” button.

Feature	
▶ Sleep Timer	Off
Child Lock	Off
Language	English
EXT-2 Output	TV
Blue Back	Off

Sleep Timer

The **Sleep Timer** is used to turn the TV off after a defined period of time after selecting this item. The timer can be programmed between Off and 120 minutes in steps of 10 minutes. (Off, 010, 020, 030, 040, ... , 120)

If sleep timer is activated, at the end of the selected the time, the TV goes automatically to stand-by mode.

Child Lock

You can use this feature to prevent children turning on/off TV or changing programmes or adjustments etc. without remote control.

- Using “▲” or “▼” button select **Child Lock**.
- Press “◀” / “▶” button to select Child Lock On or Off.

The **Child Lock** feature can be set **On** or **Off** by “◀” / “▶” button. When **Off** is selected, there will be no difference in the operation of your TV. When **On** is selected, the TV can only be controlled by the remote control handset. In this case the control panel buttons except “⏻ / I” button on the right side of the TV will not work.

Selecting Menu Language

- Using “▲” or “▼” button select **Language**.
- Press “◀” or “▶” button to select menu language.

EXT-2 Output

From EXT-2 Output; TV, EXT-1 or EXT-4 can be given. These modes can be chosen by pressing “◀” or “▶” button on “**EXT-2 Output**”.

Feature	
Sleep Timer	Off
Child Lock	Off
Language	English
▶ EXT-2 Output	TV
Blue Back	Off

Blue Back (During No Signal)

The **Blue Back** Feature can be set by “▲” or “▼” button to either **On** or **Off**.

To Store Settings

In Feature menu all settings are stored automatically.

Install Menu

Press “**MENU**” button, now you are in main menu. In the main menu, select “**Install**” using ▲” or “▼” button. Then enter the Install menu pressing “◀” / “▶” or “**OK**” button.

Install	
▶ Programme	P 02
Band	C
Channel	02
Colour System	Auto
Sound System	BG
Fine Tuning	◀-----+-----▶
Search	048.25
Decoder(EXT-2)	Off
VCR	Off
Store	

In EXT mode, Install menu appears like this:

Install	
► Colour System	Auto
VCR	Off

You can change only Colour system and VCR.

Selecting Programme

- Using “▲” or “▼” button select Programme.
- To select programme number, you can use “◀” / “▶” button or Digit Buttons

Selecting Band

Band, can be chosen either,

- “C” or “S” by “◀” or “▶” button.

Selecting Channel

Channel can be changed by “◀” or “▶” button or by Digit Buttons.

Selecting Colour System

Using “◀” or “▶” button on **Colour System**, you can change the colour system to **PAL**, **SECAM** or **Auto**.

Note: In EXT mode, you can choose NTSC 3.58 and NTSC 4.43 as well)

Selecting Sound System

Using “◀” or “▶” button on **Sound System**, you can change the standard to **BG**, **DK**, **I**, **L**, **Lp**.

Selecting Fine Tuning

You can use the Fine Tuning process for fine adjustment (after coarse adjustment), if you are not happy about the image on the screen.

Use “◀” or “▶” button on **Fine Tuning** item, until getting the best image on the screen.

Selecting Search

To start the search process, press “▶” button for forward search or “◀” button for backward search. If a signal is found or reaches to end of the band after searching, press “◀” or “▶” buttons to continue search process. To stop the search process when you want, press “◀” or “▶” buttons at any time.

Decoder(EXT-2)

You can use this mode to connect any decoder to your TV.

- Press the “◀” or “▶” buttons to set it “On” or “Off”.

When you select Decoder(EXT-2) “On”, EXT-2 output will be chosen as TV mode only and any scrambled channels will be unscrambled through decoder connected your TV via EXT-2 output.

Setting VCR (Video Cassette Recorder) Mode

- This item can be seen in **TV**, **EXT-1**, **EXT-2**, **EXT-3** and **EXT-4** modes.
- If you want to watch a **VCR** source from one of these modes, then it will be better to set **VCR** mode “on”. For this, while the cursor is on this item press the “◀” or “▶” buttons to set it “On”.
- If you want to watch a **DVD**, then you must set this item “off”; because **DVD** is not a source like a **VCR** and to see the picture better, you must set the **VCR** mode “Off”.

To Store Settings

- Press “◀” / “▶” or “OK” button on **Store** option to store Install menu settings.
- After stored, T-V Link menu will appear. If you do not need to do T-V Link, press **BLUE** button to exit the menu.

Program Menu

Press “**MENU**” button, now you are in main menu. In the main menu, select “**Program**” using “▲” or “▼” button. Then enter the Programme menu, press “◀” / “▶” or “OK” button.

Note: There is no Program menu in any EXT modes.

Program		P01
▶ 01	BBC	11
02	RTL	12
03	XXXXX	13
04	-----	14
05	-----	15
06	-----	16
07	-----	17
08	-----	18
09	-----	19
10	-----	20
Name		Insert
Delete		Autostore
i : T-V Link		

Program Menu is used to delete a channel, to change the programme number of a channel, to give a channel name to a channel, and to start the A.P.S (Autostore) function.

To choose a channel in the PROGRAM menu

Press “▲” / “▼” / “◀” / “▶” button. The programme number that you choose is highlighted in the Program.

Caution:

Using “Delete” or “Insert” function rewrite the current channel list in the Program menu. Therefore, the programme numbers of some of channels will change.

When you complete the settings of Program menu:

If you have a T-V LINK compatible VCR, press “i” button to display the T-V LINK menu. then follow the operating procedure “**Downloading the data to VCR**”

T - V Link	
DOWNLOAD TV -> VCR	
▶ Continue	
Cancel	

If you do not have a T-V LINK compatible VCR, press BLUE button to exit the menu.

To give a channel name (Name):

1. Choose the channel you want to give a channel name.
2. Press the RED button to enter the Name mode.
3. Press “◀” or “▶” button to choose the

position, and press “▲” or “▼” button to choose each character of channel name.

4. Press the RED button to store the channel name.

- To cancel the NAME mode, press the BLUE button.

To delete a channel (Delete):

1. Choose the channel you want to delete.
 2. Press the YELLOW button to enter the Delete mode.
 3. Press the YELLOW button to delete it.
- To cancel the Delete mode, press the BLUE button.

To change the programme number of a channel (Insert)

1. Choose the channel you want to change the programme number.
2. Press the GREEN button to enter the Insert mode.
3. Press “▲” / “▼” / “◀” / “▶” button to choose new programme number.
4. Press the GREEN button to insert the channel to the chosen programme number.

Autostore:

To enter Autostore menu, press the BLUE button. To learn the features of this function see “Autostore” below.

Autostore, searches and stores all channels automatically on your TV, according to the transmission of programme systems in your area.

Warning	
All Prestored Programmes Will Be Deleted	
▶ Country	UK
OK	Cancel

First of all choose the “Country” by using “◀” or “▶” button.

After Autostore is finalized, a programme list will appear on the screen. In the program list you will see the programme numbers and names assigned to the programmes.

If you do not accept the locations and/or the

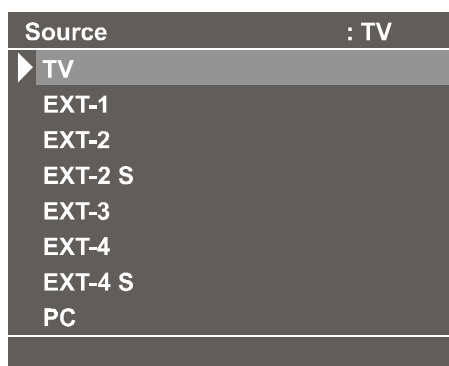
programme names of programmes, you can change them in Programme menu.

Source Menu

You can switch your TV to EXT modes by pressing directly to “**AV**” button or by selecting in source menu from the main menu.

While in EXT mode, you can also switch your TV to TV or other EXT modes by selecting in source menu from the main menu.

In main menu, firstly use “▲” or “▼” button then use “◀” / “▶” or “OK” button to enter Source menu. In source menu, move the cursor by “▲” or “▼” button and then press “OK” button or “◀” / “▶” buttons when the cursor is on the required item. The selected mode comes automatically on the screen.



Other Features

TV Status

Programme Number, Programme Name (or EXT), (they are displayed on the upper left of the screen). The **sound indicator** is displayed with them too. They are displayed after programme change during 3 seconds.

Sound Indicator

The alternatives of the indicator are Mono, Stereo, Dual I and Dual II. This indicator is displayed under the programme number indicator on the screen. “**I-II**” button is used to select Mono or Stereo, or Dual I or Dual II.

Mono

In Mono broadcast or in forced-mono (for stereo broadcast).

Stereo

In Stereo broadcast.

Dual I

If dual broadcast detected. Dual I is selected in default and also can be selected after Dual II by Remote Control.

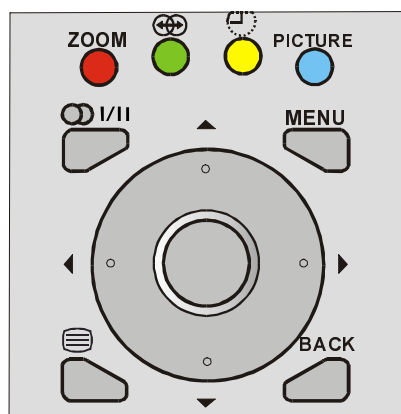
Dual II

If Dual II selected by Remote Control.

Hyper Sound

By selecting Hyper Sound in sound menu or by pressing the “⊕⊖” button on your remote control, Pseudo/Spatial effect can be turned on or off. In Mono transmission the left and right channels will be added at left channel and dummy stereo effect will introduced to end-user.

In stereo transmission it yields a phase difference between left and right channels. Hyper Sound selection will be displayed on the screen when the TV Status button is pressed or programme is changed.



Picture Mode

Picture mode OSD is displayed when BLUE button is pressed. Picture mode can be changed to standard, soft, and bright.

Sleep Timer

Sleep Timer mode OSD is displayed when YELLOW button is pressed.

The Sleep Timer is used to turn the TV off after a defined period of time after selecting this item. The timer can be programmed between Off and 120 minutes in steps of 10 minutes. (Off, 010, 020, 030, 040, ... , 120)

If sleep timer is activated, at the end of the

selected the time, the TV goes automatically to stand-by mode.

Mute Indicator

It is placed in the upper middle of the screen when enabled, and it stays there until it is disabled.



To cancel mute, there are two alternatives; the first one is by pressing the "X" button, this volume is set to the preceding value, and the second one is increasing the volume level. By decreasing the volume level in mute state, mute will not be ignored, only the volume level will decrease.

No-Signal Detection (TV mode)

If no valid signal detected, it takes 5 minutes to switch to the Stand-By mode unless any signal detected or any Remote Control command is accessed.

After a Remote Control command (if No-Signal Timer is active) the timer stops and if no signal detected again the timer is initialized to 5 minutes and starts 3 seconds later again to count down.

It is not valid in EXT modes.

No-Signal and Out Of Range Detection (PC mode)

In PC Mode, as no menu is displayed, in case that there is no PC input to the TV, it is displayed an OSD message:

No input signal detected

then the power lamp turns to amber and PC will be in PC standby mode. Press "AV" button, digit buttons or "P V" / "P ^" buttons to exit standby mode.

In PC Mode, as no menu is displayed, in case that there is no PC input to the TV, but the resolution and the vertical frequency is not supported by the concept, it is displayed an OSD message:

Signal out of range

Volume Bar

It is displayed in the lower middle of the screen. When a volume command is received (pressing "▲ +" or "▲ -" by Remote Control or Control panel at the top of the TV) and no menu is active, it stays on the screen for 3 seconds, after the last volume command or until another command is received in between.



EXT Modes

By pressing the "AV" button you can switch your TV to EXT modes (except being in Teletext). Pressing this button consecutively will switch the TV in one of the optional EXT modes: **EXT-1**, **EXT-2**, **EXT-2 S**, **EXT-3**, **EXT-4**, **EXT-4 S** and **PC**.

In order to quit the EXT mode press any digit buttons or "P V" or "P ^"

Zoom Modes

Zoom mode can be changed by pressing Red button. You can change the screen size according to the picture aspect ratio. Select the optimum one from the following **ZOOM** modes: **Auto**, **4:3** and **16:9**.

AUTO

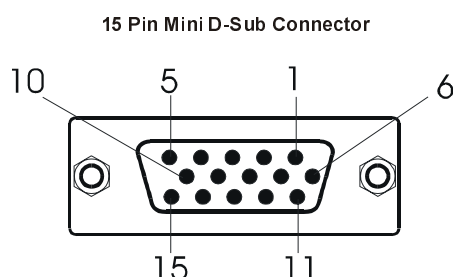
When a **WSS (Wide Screen Signalling)** signal, which shows the aspect ratio of the picture, is included in the broadcast signal or the signal from an external device, the TV automatically changes the **ZOOM** mode to **4:3** or **16:9** according to the **WSS** signal.

- When the **AUTO** mode does not function correctly due to poor **WSS** signal quality or when you want to change the **ZOOM** mode, change to another **ZOOM** mode manually.

PC Mode

Installation

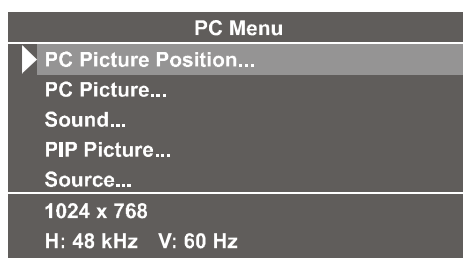
- Power off both Computer and Display before making any connections.
- Set your PC's resolution correctly before connecting to the TV. See the table in [page 28](#) for supported modes.
- Use a D-SUB cable to connect the TV's PC input to the computer's RGB output terminal. If you want to listen to the sound from the computer, use an audio cable to connect the PC AUDIO IN to the computer's sound output terminal.



- Tighten the screws of the Display cable until the connectors are fastened securely (finger-tighten only).

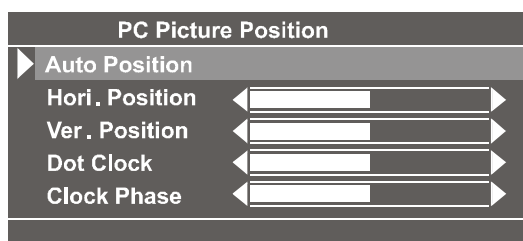
Main Menu in PC mode

Enter the main menu by pressing the “**MENU**” button on the remote control.



PC Picture Position Menu

In the Main menu, select “**PC Picture Position**” using “**▲**” or “**▼**” button, then enter the menu pressing “**◀**” / “**▶**” or “**OK**” buttons..



Auto Position

If you shift the picture horizontally or vertically to an unwanted position, use this item to put the picture into correct place automatically.

- Select **Auto position** item by using “**▲**” or “**▼**” buttons.
- Press “**OK**” button.
- Press “**MENU**” button or “**BACK**” button to store the value.

Warning: Auto position adjustment recommended to be done with the full screen image for the proper adjustment.

Horizontal Position

This item shifts the image horizontally to right hand side or left hand side of the screen.

- Select **Hori. Position** item by using “**▲**” or “**▼**” button.
- Use “**◀**” or “**▶**” button to adjust the value.
- Press “**MENU**” button or “**BACK**” button to store the value.

Vertical Position

This item shifts the image vertically towards the top or bottom of the screen.

- Select **Ver. Position** item by using “**▲**” or “**▼**” button.
- Use “**◀**” or “**▶**” button to adjust the value.
- Press “**MENU**” button or “**BACK**” button to store the value.

Dot Clock

Dot Clock adjustments correct interference that appear as vertical banding in dot intensive presentations like spreadsheets or paragraphs or text in smaller fonts.

- Use “**◀**” or “**▶**” button to adjust the value.

Clock Phase

Depending on the resolution and scan frequency that you input to the TV Set, you may see a muddy or noisy picture on the screen. In such a case you can use this item to get a clear picture by trial and error method.

- Use “**◀**” or “**▶**” button to adjust the value.

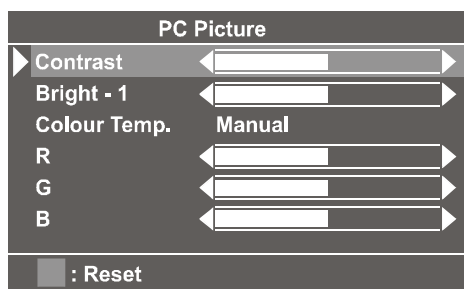
PC Picture Menu

In the Main menu, select “**PC Picture**” using “▲” or “▼” button, then enter the PC Picture menu pressing “◀” / “▶” or “OK” buttons.

Contrast, Bright-1 and Colour Temp. adjustments in this menu are identical to adjustments defined in TV picture menu.

R, G, and B adjust the TV image colour in PC mode. You can change the TV colour to your desired colour: R (Red), G (Green), B (Blue)

Press the BLUE button to reset the PC picture settings to default factory settings.



Sound Menu

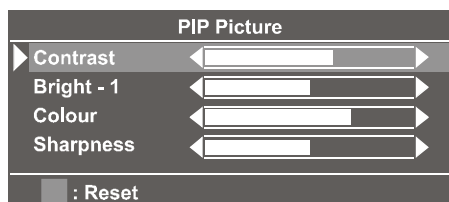
In the main menu select “**Sound**” using “▲” or “▼” button then enter the Sound menu pressing “◀” / “▶” or “OK” buttons.

The items in this menu are described at **Sound menu** starting [page 15](#).

PIP Picture

In the Main menu, select “**PIP Picture**” using “▲” or “▼” button, then enter the PIP Picture menu pressing “◀” / “▶” or “OK” buttons.

This menu is displayed when PIP is displayed on the screen and otherwise “**PIP No Signal**” message will be displayed at the bottom of menu.



PIP picture is displayed on the screen with “” button. By pressing “OK” button, PIP window is selected. PIP position is changed

by “” button. There are four different PIP positions. PIP size is changed by “” button. Two different PIP size are available.

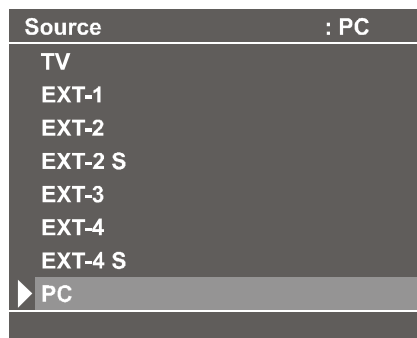
Programme in the PIP window is increased / decreased by “P▼ / P▲”, digit buttons or AV button. All EXT modes (Except EXT-3) are also available in PIP window. PIP window is removed from the screen by “” button.

Press the BLUE button to reset the PIP picture settings to default factory settings.

The items in this menu are described at **Picture menu** starting [page 13](#).

Source Menu

In the Main menu, select “**Source**” using “▲” or “▼” button, then enter the Source menu pressing “◀” / “▶” or “OK” buttons.



Select the available sources of TV, EXT-1, EXT-2, EXT-2 S, EXT-3, EXT-4, EXT-4 S or PC using “▲” or “▼” button and by pressing “◀” / “▶” or “OK” buttons.

Sound in PC mode

- Connect the PC's Audio output to the TV's **PC Audio In** socket with an audio cable.
- On your remote control, using “” button to select sound source from TV, EXT-1, EXT-2, EXT-3, EXT-4 and PC options.
- When PIP is displayed on the screen, “” allows you to switch sound between PC and selected PIP source.

Teletext

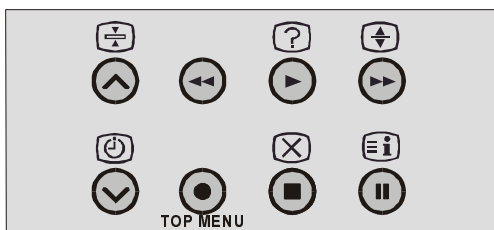
Teletext is an information system that displays text on your TV screen. Using the Teletext information system you can view a page of information on a subject that is available in the list of contents (index).

On screen display is not available in text mode.

Contrast, brightness or colour control is not available, but volume control is available in text mode.

To operate Teletext

- Select a TV station on which Teletext is being transmitted.
- Press (TELETEXT) “” button. Usually the list of contents (index) is displayed on the screen.



To select a page of Teletext

- Press the appropriate digit buttons for the required Teletext page number.

The selected page number is displayed at the top left corner of the screen. The Teletext page counter searches until the selected page number is located, so that the desired page is displayed on the screen.

- Press “**P** ” button to move the Teletext screen forward one page at a time.
- Press “**P** ” button to move the Teletext screen backward one page at a time.

To Select Index Page

- To select the page number of the index (generally page 100), press “” button.

Searching for a teletext page while watching TV

- In the Teletext mode pressing “” button will switch the screen to the TV mode. In the TV mode enter a page number using digit

buttons. As you enter last digit of page number, “” sign will replace the page number and flash until the entered page number is found. Then the page number will replace “” sign again. Now you can display this teletext page pressing “” button.

To Select Double Height Text

- Press “” button for the top half of the information page to be displayed in double height text.
- Press “” button again for the bottom half of the information page to be displayed in double height text.
- Press “” button once more for the full page of normal height text.

To Reveal “concealed” Information

- Pressing “” button once will reveal answers on a quiz or games page.
- Pressing “” button again will conceal the revealed answers.

To Stop Automatic Page Change

The teletext page you have selected may contain more information than what is on the screen; the rest of the information will be displayed after a period of time.

- Press “” button to stop the automatic page change.
- Press “” button again to allow the next page to be displayed.

To Select a Subcode Page

Subcode pages are subsections of long Teletext pages that can only be displayed on the screen one section at a time.

- Select the required Teletext page.
- Press “” button.
- Select the required subcode page number by pressing four digit buttons (e.g. 0001).
- If the selected subcode page is not displayed in a short time, press “” button. TV programme will be displayed on the screen.

- Teletext page number will be displayed on the upper left corner of the screen when the selected page is found.
- Press “

To exit Teletext

- Press “

Fasttext and Toptext

Your TV supports the 7 page Teletext system. When the page number of any of the 7 pages in memory is entered, the system will not search for the requested page; instead it will display the page automatically.

- Press “**P**

For Fasttext and Toptext

The subject-heading for the information may have a particular colour.

- Press an appropriate **RED, GREEN, YELLOW** or **BLUE** button in order to reach the relevant page quickly.

For TOPTXT

If Toptext transmission is present, colour coded buttons will appear in status row.

If Toptext transmission is not present, status row will not appear.

In Toptext mode the “**P**

Peripheral Equipment Connections

There is a wide range of audio and video equipment that can be connected to your TV.

Connection diagrams at the end of this section show you where the different equipment should be connected at the back side of the TV.

Via the Euroconnector

Your TV set has 2 Euroconnector sockets. If you want to connect peripherals (e.g. video, decoder, etc.) which have Euroconnectors, to your TV, use **SCART** input.

If an external device is connected via Euroconnector sockets TV is switched to AV mode automatically. In this case if both sockets are connected **SCART** has the precedence.

T-V Link compatible VCR

Be sure to connect the T-V Link compatible VCR to the **EXT.2** terminal. If not, the T-V Link function will not work properly.

- When connecting a T-V Link compatible VCR to the EXT.2 terminal, be sure to connect the decoder to the VCR. If not, the **T-V Link** function may not work properly. And then set the **Decoder(EXT-2)** function for the channel to On to unscramble a scrambled channel.

RGB mode

If an equipment can output the **RGB** signals, connect it to the **EXT-1** or **EXT-2** terminal.

EXT-2 S Mode

If the equipment connected to your TV set supports S-Video (Y/C) output from Euroconnector, you can have a better picture quality by selecting **EXT-2 S** mode and connecting your equipment to the **EXT.2 (EXT-2 S)** terminal of TV. See your equipment's booklet to check if your equipment has such feature.

Via the RCA jacks

If you have an equipment (such as a Camcorder) which has the RCA jacks, connect it to the **EXT-4** terminal with the video and audio cables.

If you have a device which outputs component signal, connect it to the EXT-3 terminal with a component video cable.

Via the ANT (aerial) socket

If your equipment does not have an Euroconnector or RCA jacks, connect it to the TV with an aerial cable. For details, see the manual provided with the equipment.

- To store the test signal that comes from the equipment, see “Install Menu” on [page 16](#) and store it to the program number 0. You can watch images from that equipment to select the program number which you stored the test signal.

Decoder

Cable TV offers you a wide choice of programmes. Most of them are free, others are to be paid for by the viewer. This means that you will need to subscribe to the broadcasting organisation whose programmes you wish to receive. This organisation will supply you a corresponding decoder unit to allow the programmes to be unscrambled.

For further information ask your dealer. See also the booklet supplied with your decoder.

Connect a decoder with an aerial socket to the TV

- Connect the aerial cable.

Connect a decoder without an aerial socket to the TV

- Connect the decoder to your TV with a eurocable (RCA Jack Cable) to **EXTERNAL** (RCA Jack). When your decoder has a Euroconnector / RCA Jack you can obtain better picture quality if you connect a eurocable (RCA Jack Cable) to **EXTERNAL** (RCA Jack).

TV and Video Recoder (VCR)

- Connect the Video Recorder to the ANT (antenna input) socket of the TV with the aerial cable.
- Connect the Video Recorder to the **EXT-1** or **EXT-2** terminal with the SCART cable, or connect it to the **EXT-4** terminal with the audio and video cables.

NTSC Playback

Connect a NTSC video recorder to a terminal. Then press “AV” button to select the corresponding AV mode.

INTSC 3.58/4.43 system is detected automatically in AV mode.

Camera and Camcorder

To connect to the EXT-4 terminal

Connect your camera or camcorder at the back side of your TV.

- Connect your equipment to the TV via **VIDEO** (yellow), **AUDIO R** (red) and **AUDIO L** (white) inputs. You should connect the jacks to the input in the same colour.

Connect the decoder to the video recorder

Some video recorders have a special euroconnector for decoder.

- Connect a eurocable to the euroconnector of your decoder and to the special euroconnector of your video recorder. See also the handbook of your video recorder.
- To connect your video recorder to the TV, see TV and Video Recorder section.

If you want to connect more equipment to your TV, consult your dealer.

Connecting Headphones

Use the stereo headphone socket on the right side of your TV, to connect headphones.

Connecting the PC

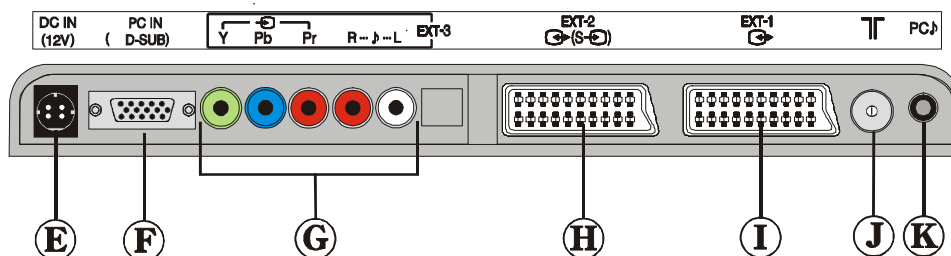
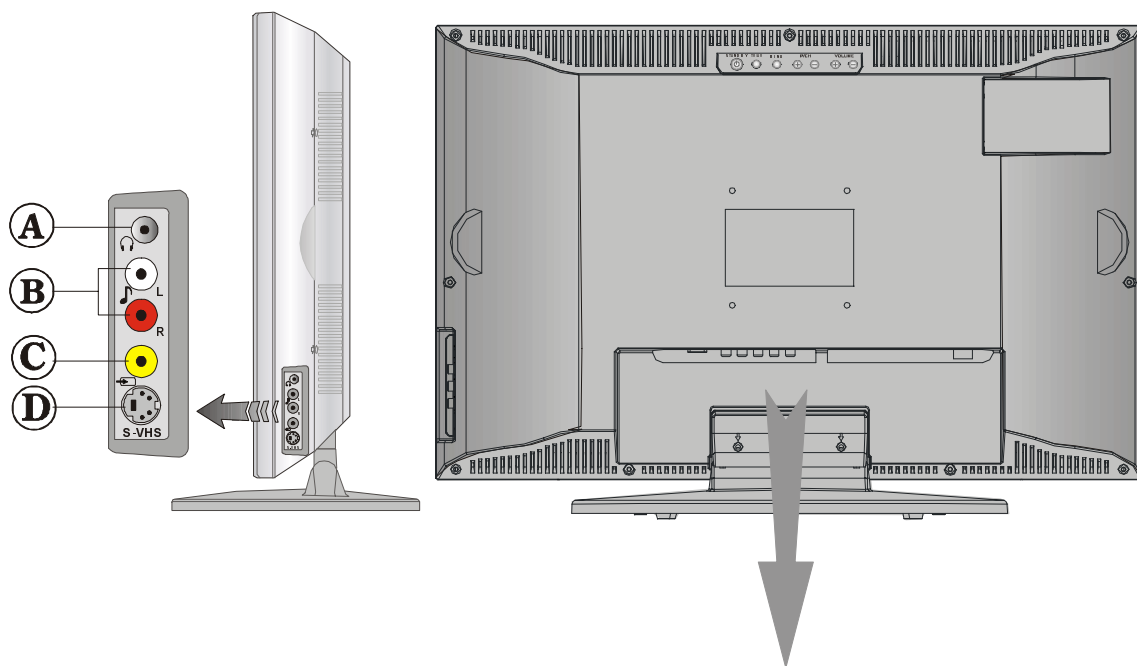
Connect PC monitor with 15-pin PC cable to the 15-pin connector on the rear of the computer. For detail installation procedure see **Installation** in PC mode.

To connect to S-Video input

Connect your camera or camcorder at the back side of your TV.

- Connect your equipment to the TV via S-Video input at the back side by using S-Video cables.

Peripheral Equipment Connections

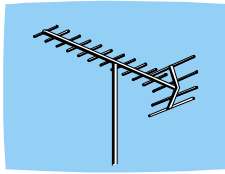


- Ⓐ HEADPHONE
 - Ⓑ AUDIO L/R
 - Ⓒ VIDEO IN
 - Ⓓ S-VIDEO IN
 - Ⓔ DC 12 V
 - Ⓕ PC INPUT
 - Ⓖ EXT-3
 - Ⓗ EXT-2
 - Ⓘ EXT-1
 - Ⓙ ANTENNA
 - Ⓚ PC AUDIO IN
- EXT-4
- Y
Pb
Pr
Component Audio In R
Component Audio In L

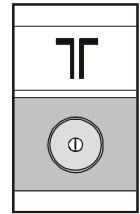
Antenna Connections

Outdoor Antenna Connections

VHF antenna

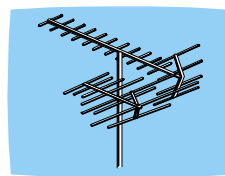


Round 75 ohm coaxial cable

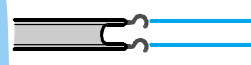


Rear of TV

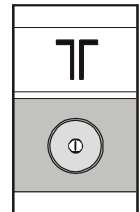
VHF/UHF antenna



Flat 300-ohm twin lead cable



Round 75-ohm coaxial cable



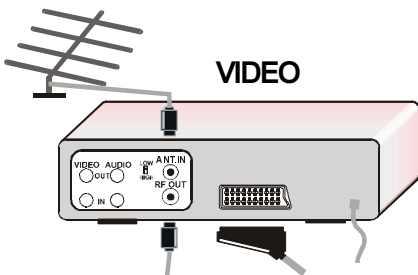
Rear of TV

Peripheral Equipment Connections

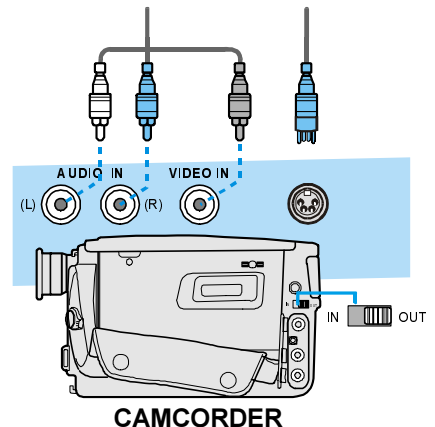
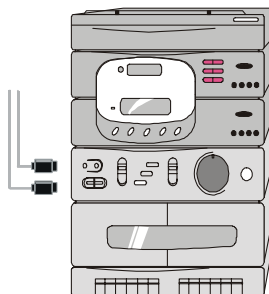
HEADPHONE



VIDEO

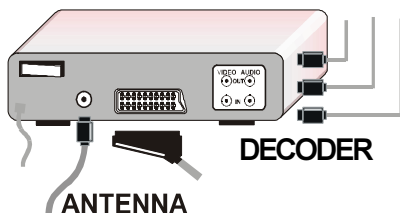


AUDIO



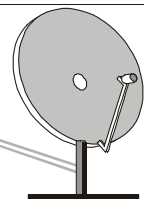
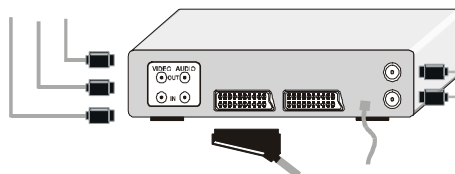
CAMCORDER

DECODER



ANTENNA

FOR SATELLITE RECEIVER



PC Input Typical Display Modes

The display has a maximum resolution of 1024 x 768, vertical sync. frequency range of 50-75 Hz and a horizontal sync. frequency range of 30-69 KHz.

The following table is an illustration of some of the typical video display modes.

<i>Mode</i>	<i>Resolution</i>		<i>Frequency</i>	
	<i>Horizontal</i>	<i>Vertical</i>	<i>Hor. (kHz)</i>	<i>Ver. (Hz)</i>
1	640	400	31.5	70
2	640	480	31.5	60
3	640	480	37.9	72
4	640	480	37.5	75
5	720	400	31.5	70
6	800	600	35.2	56
7	800	600	37.9	60
8	800	600	48.1	72
9	800	600	46.9	75
10	1024	768	48.4	60
11	1024	768	56.5	70
12	1024	768	60.0	75

When Mode 10 to Mode 12 signals are input, thin lines may become obscure for their signal frequencies are higher than the display resolution.

Tips

Care of the Screen

Clean the screen with a slightly damp, soft cloth. Do not use abrasive solvents as they may damage the TV screen coating layer

Colors of image on screen are abnormal

Have you selected the correct TV system? Is your TV set or house aerial located too close to the loudspeakers, non-earthed audio equipment or neon lights, etc. ?

Mountains or high buildings can cause double pictures or ghost images. Sometimes you can improve the picture quality by changing the direction of the aerial.

Is the picture or Teletext unrecognisable? Check if you have entered the correct frequency.

The picture quality may degrade when two peripherals are connected to the TV at the same time. In such a case, disconnect one of the peripherals.

No Image on Display Screen

Is the aerial connected properly? Are the plugs connected tightly to the aerial socket? Is the aerial cable damaged? Are suitable plugs used to connect the aerial? If you are in doubt, consult your dealer.

No Image means that your TV is not receiving any transmission. Have you pressed the correct buttons on the remote control? Try once more.

PC Picture

If no PC picture appears, check that the D-SUB cable is connected properly. Check that your PC's resolution set correctly. See [page 28](#) for supported modes.

Sound

You can not hear any sound. Did you perhaps interrupt the sound, pressing "X" button? Are external speakers connected to the TV?

Sound is coming from only one of the speakers. Is the balance set to one direction extreme? See **Sound** menu.

Remote Control

If your TV no longer responds to the remote control, perhaps the batteries are exhausted. Replace the batteries.

Have you selected the wrong menu? Press **MENU** button to return to normal screen or press **BACK** button to return to the previous menu.

No solution

Switch your TV set off and on. If this does not work, switch off, remove the mains plug and call the service personnel; never attempt to repair it yourself.

Specifications

Item	Model	LT-20E50SU
Broadcasting Systems		PAL SECAM BG, DK, I, L, Lp
Channels and Frequencies		VHF (VL) : 46,25 MHz - 168,25 MHz VHF (VH) : 175,25 MHz - 463,25 MHz UHF : 471,25 MHz - 863,25 MHz Cable TV : (S1-S20/ S21-S41)
Input Signal		Video: Analog 0,7 Vp-p 75 ohm positive Sync: TTL Level positive or negative, Seperate sync.
Horizontal Timing		30 - 69 KHz
Vertical Timing		50 - 75 Khz
Dot Rate		78,75 MHz max.
Panel Size		20,1" (511 mm) (measured diagonally)
Visible Picture Size		411 mm horizontal x 309.5 mm vertical
Display Resolution		800 x 600 max. (SVGA)
Number of Preset Channels		100
Channel Indicator		On Screen Display (OSD)
RF Aerial Output		75 Ohm (unbalanced)
Power Requirements		Adaptor: 100-240 V AC, 50/60 Hz / TV: 12 V DC
Power Consumption (W)		54 W (max) / STAND-BY <3W
Sound Systems		German , Nicam Stereo
Audio Output		2 x 5 W _{RMS} (%10 THD)
EXT-1 Terminal		Euroconnector (21-pin, SCART 1) (bottom of the cabinet) • Video Input, Audio L/R Inputs and RGB inputs are available. • TV broadcast outputs (Video and Audio L/R) are available.
EXT-2 Terminal		Euroconnector (21-pin, SCART 2) (bottom of the cabinet) • Video Input, S-VIDEO (Y/C) input, Audio L/R and RGB inputs are available. • Video and Audio L/R outputs are available. • T-V Link functions are available.
EXT-3 Terminal		RCA connectors x 5 (bottom of the cabinet) • Component video (Pr, Pb, Y) inputs and Audio L-R inputs are available
EXT-4 Terminal		RCA connectors x 3 (side of the cabinet) S-VIDEO connector x 1 (side of the cabinet) • Video input, S-VIDEO (Y/C) input and Audio L/R inputs are available.
PC IN terminal		Analog RGB D-SUB 15 x 1 • PC signal is available (refer to page 28 for details of the signals which can be input)
PC AUDIO IN terminal		Stereo mini-jack (3.5 mm diameter)
Dimensions (W x H x D)		617 mm x 430 mm x 235 mm 617 mm x 396 mm x 73 mm (TV only)
Weight		8,6 kg (with stand) / 7,0 kg (TV only)
Accessories		Remote control unit x 1 (RM-C1860) / AA/R6 dry cell battery x 2 AC adapter x 1 Power cord x 1
Headphone jack		Stereo mini-jack (3.5 mm diameter)