Service Manual
C7-C8 Chassis

CONTENTS **PAGE**

1. SAFETY INSTRUCTIONS

GENERAL GUIDELINES

1. It is advised to insert an isolation transformer in the AC supply before servicing a hot chassis.

2. Potentials as high as 33KV are present when this receiver is in operation. Operation of the receiver without the rear cover involves the danger of a shock hazard from the receiver power supply. Servicing should not be attempted by any one who is not competent with the precautions necessary when working on the high voltage equipment. Always discharge the anode of the tube.

3. When servicing observe the original lead dress in the high voltage circuits. If a short circuit is found, replace all the parts which have been overheated or damaged by the short circuit.

4. Always use the manufacturer's replacement safety components. The critical safety components marked with ⚠ on the schematics diagrams should not be replaced by other substitutes. Other substitute may create the electrical shock, fire or other hazards. Take attention to replace the spacers with the originals. Furthermore where a short circuit has occurred, replace those components that indicate evidence of overheating.

5. After servicing, see that all the protective devices such as insulation barriers, insulation papers, shields and isolation R-C combinations are correctly installed.

6. When the receiver is not being used for a long time of period of time, unplug the power cord from the AC outlet.

7. After servicing make the following leakage current checks to prevent the customer from being exposed to shock hazard.

LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs of the plug.

2. Turn the receiver's power switch on.

3. Measure the resistance value with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the receiver, such as screw heads, aerials, connectors, control shafts etc. When the exposed metallic part a return path to the chassis the reading should be between 4Mohm and the 20Mohm. When the exposed metal does not have a return path to the chassis, the reading must be infinite.

LEAKAGE CURRENT HOT CHECK

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

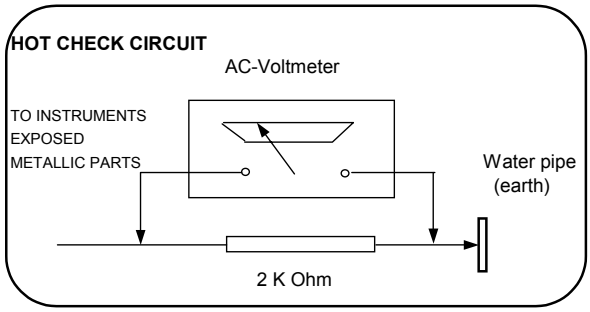


Figure 1

X-RAY RADIATION WARNING

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

CAUTION

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

Television

Thank you for buying this television which is designed to give you many years of satisfactory service.

You may already be familiar with using a television but do please take time to read these instructions. They are designed to familiarise you with the unit's many new features and to ensure you get the very best out of your purchase.

Special features

- Your TV can receive stereo channels directly (NICAM optional).
- Automatic tuning system with country selection.
- 100 Programme Memory
- Available for Cable Channels (A decoder maybe required)
- Manual Fine Tuning
- Child Lock
- Return to the last channel viewed (SWAP)
- Spatial Sound effect
- 16:9 picture format
- S-Video connection (optional)
- Audio/Video RCA sockets (optional).
- Back Audio Out (optional)
- Normalisation system to recall the setting in memory after the colour,contrast, brightness setting have been changed.
- Picture adjustment using one button (Smart control).
- Sound adjustment using one button (Smart control).
- Equalizer Sound Setup
- Automatic Volume Limiting
- Your TV set is equipped with an On-Screen Display system. This system enables the user to see the function on-screen and to control them efficiently.
- Infrared Remote Control
- Virtual Dolby Surround (optional)
- Multi language menu system
- On Timer
- Off Timer
- Stereo headphone socket (optional)
- 2 Scart Socket: Video cassette recorder, satellite receiver, video disc player,DVD, TV games or a home computer can be connected to this AV socket with an appropriate connecting cable.
- Third scart socket (optional).
- Subwoofer (optional)
- Zoom, Letterbox, Subtitle picture formats (for Widescreen TV sets)
- Naming the channels
- Teletext reception
- Auto recognition of the broadcasting format (4:3, 16-9 or Letterbox) via WSS feature.

Safety is Important

Your safety and the safety of others is important. Please, therefore, ensure you read the Safety instructions **before** you operate this television.

Safety instructions

Read all the safety instructions before first use of your TV.

• Position the television so that direct light does not fall on the screen. Excessive light will cause a washed out effect.

• Position the power supply lead and other leads so that they are not likely to be walked on or pinched by things placed on or against them.

• Do not use the appliance in humid or damp conditions. Do not allow the appliance to get wet, i.e. dripping or splashing, as this may be dangerous. Do not place water filled objects, such as vases and flower top on top of the appliance.

• Make sure that no naked flame sources, such as lighted candles, are placed on top of the appliance.
• Do not place the television near heat sources such as radiators, ovens, stoves, etc.

• Do not use the television near any apparatus that produces a magnetic field such as HI-FI speakers or electric motors otherwise colourpurity may be affected.

• The heat built up in the set escapes through ventilation holes, so do not cover the set by drapes, clothes etc. that may block air circulation. Do not place the television on carpet or soft furnishings.
• NEVER let children push anything into the holes or slots on the case.

• Clean the TV Screen using a slightly damp cloth or chamois leather. Never use abrasive cleaning agents like liquid or aerosol cleaners.
• Remove the mains plug from the socket outlet while cleaning.

• If you wish to place the television on a shelf or in a wall unit always ensure there is a minimum air gap of 8 cm around the top, sides and rear of the television, to assist ventilation.

• Your TV set is designed to operate with mains voltages 230V AC; 50Hz. Do not connect your TV set to power sources other than the mains supply.

Getting started

Remove your Television carefully from the box. You may wish to store the packaging for future use.

In the box

Inside your this package you should have:

- Television
- Remote control
- User guide
- AAA batteries x 2

Read these instructions before use.

Aerial connection

To connect an aerial, plug the aerial lead into the aerial socket on the rear of the TV.

You can use an outdoor or indoor aerial. However, if you use an indoor aerial the quality of the reception may be reduced and adjustment of the aerial may be required when changing programs.

Please note

If you live in a poor reception area or use an indoor aerial you may experience loss or corruption of teletext transmissions.

Switching on

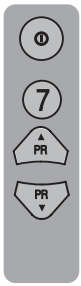
Mains power

Connect the mains plug into the mains socket and switch on.

Connect the TV mains plug into your domestic mains socket outlet (230 V 50 Hz AC).

Please Note

When not in use disconnect the plug from the mains power supply.



Press the **Power** button on the front of the TV. The standby indicator will illuminate.

Press a **Numeric** button or the **Program up** or **Program down** button on the remote handset or **Program up** or **Program down** button on the front panel to switch the TV on.

The standby indicator remains on. The picture will appear after a few seconds.

Press the **Standby** button to switch the TV to standby. The standby indicator will brighter.

Please Note

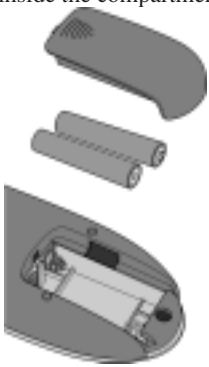
Do not leave the television on standby unattended or overnight.

Switching the TV on for the first time

To install your TV, please read the sections “TV controls” and “ Tuning the television”.

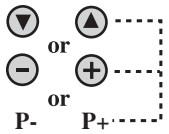
Battery fitting

Insert the 2 AAA Batteries supplied into the compartment on the rear of the remote control, ensure you follow the polarity diagram inside the compartment.

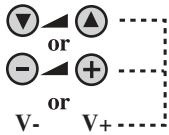


Control Unit

Front Panel



Program Down/Up button



Volume Down/Up button.

General

Program ON/OFF switch

Stand by (Depends on model)

Stand by indicator

External Connections: (Front or side)

Right audio RCA (Red)

Left audio RCA/Mono RCA (White)

Video RCA (Yellow)

S-Video connection

Headphone socket

(External connections: (Rear)

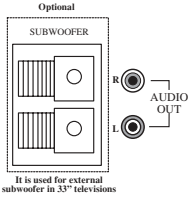
AV1 scart

AV2 scart

AV3 scart (optional)

Aerial socket

Power cable



You may wish to connect audio amplifier or any similar devices to audio out. The output is always the current channel you are watching.

Please note

• See the external connections table on next page for available connections depending the size and model of your TV set.

• Do not use Video RCA and S-Video connections at the same time, otherwise they will effect the picture each other.

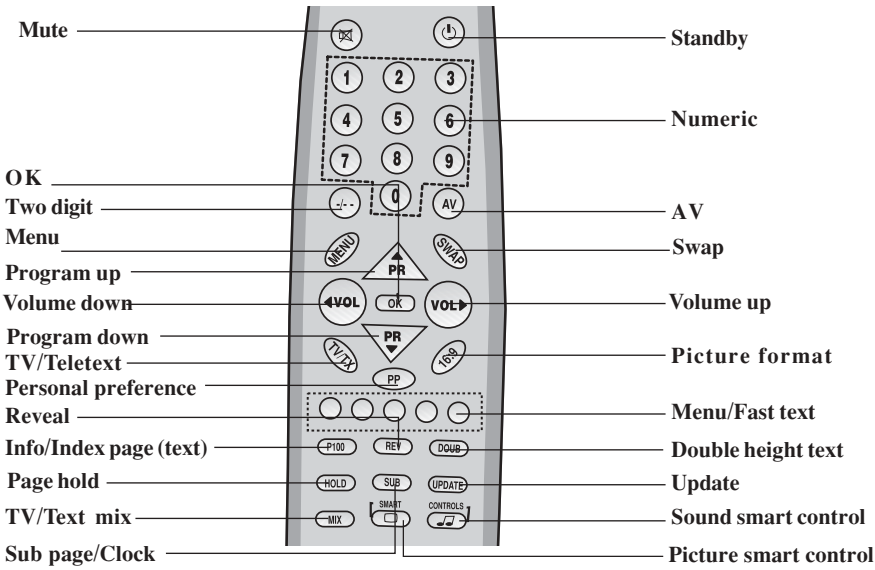
External connections table

Picture tube size/typee	25” 4:3	26” 16:9	28” 4:3	28” 16:9	29” 4:3	32” 16:9	33” 4:3
AV1 Scart	STD.	STD.	STD.	STD.	STD.	STD.	STD.
AV2 Scart	STD.	STD.	STD.	STD.	STD.	STD.	STD.
AV3 Scart	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.
Headphone socket	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.
Audio/Video RCA	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.
S-Video socket	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.
Back Audio Out	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.	OPT.

STD : Standart
OPT : Optional
N/A : Not available

Please note:
The Audio/Video RCA, S-Video and Headphone socket can be placed on the front panel or on the right-hand side of the cabinet depending to the model of your TV.

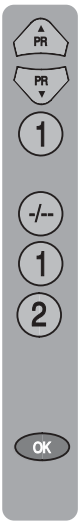
Remote control



Using the TV

TV controls

Programme selection

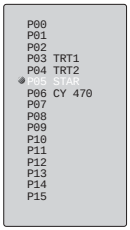


Press the **Program up** or **Program down** buttons on the TV or remote control or press a **Numeric** button to select a programme.

To select a programme whose number is greater than 9 using the numeric buttons, press the **-/--** button first and then press the two **Numeric** buttons. For example, to select programme 12, press the **-/--** button followed by **1** and then **2.**

You can also select a program by pressing in the OK button.

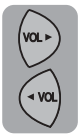
Press the **OK** button and a grey box will appear on the screen with programme numbers on it.



Use the **Program up** and **Program down** buttons to scroll through the programme numbers. When you find the program number you want press the **OK** button again.

Press the **TV/TX** button to close the grey box.

Volume



Press the **Volume +** or **Volume -** button on the TV or the **Vol◄** or **Vol►** button on the remote control. A sound level bar will appear on the screen.

Mute

To mute the sound press the **Mute** button on the remote control. A loudspeaker symbol will appear on the screen.

Press the **Mute** button again to restore the sound. The symbol will disappear.

Pressing **Volume up** buttons to decrease headphone volume. Pressing the **Volume down** button increase tne headphone volume.

PP

Personal preference. Press the **PP** button to revert to the default settings for the TV. (See TV setup).

Swap

Allows you to swap between the program you are watching and the last selected program. i.e. If you were watching Program 1 and change to Program 11, press the **Swap** button to go back to Program 1. Press it again to return to Program 11.

PR 01 ➡ SWAP ***PR 11*** ➡ SWAP ***PR 01***

AV

For use when you are connecting an external source to your TV (Video recorder, DVD player etc.) via the SCART sockets or RCA sockets.
See 'Connecting external equipment'.

Press the **AV** button to select your input as follows:

2 Scart models:

1 AV1 when using SCART socket 1.
2 AV2 when using SCART socket 2.
3 AV2S for S-Video equipment.
4 AV3 when using the RCA sockets of the TV. (Optional)
5 AV3S when using the S-video socket and RCA audio sockets of the TV. (Optional)

3 Scart models:

1 AV1 when using SCART socket 1.
2 AV2 when using SCART socket 2.
3 AV2S for S-Video equipment.
4 AV3 when using SCART socket 3.
5 AV4 when using the RCA sockets of the TV. (Optional)
6 AV4S when using the S-video socket and RCA audio sockets of the TV. (Optional)

Press the **AV** button again to return to TV.

Tuning the television

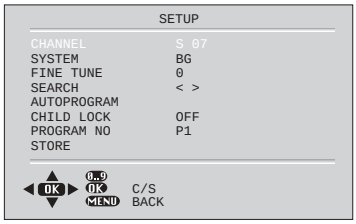
There are two ways of tuning your television: Manual, where you control the tuning process or
Autoprogram where the television does it all automatically.

Please Note
If the TV is set to a channel with no signal the TV will return to standby after 5 minutes. The time remaining is displayed on the screen last 60 second.

Manual tuning
Tuning the TV is accessed through the SETUP menu.

There are two ways to access the SETUP menu:

Press the blue **Setup** button.
or
Press the **Menu** button and use the **Program down** button to select SETUP. Press the **OK** button to enter the SETUP menu.



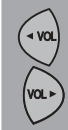
Please note
The system will displayed automatically on SYSTEM row i.e.BG, L, I, DK depending the receiving broadcasting system of the country. In some countries the broadcasting system can be both in BG/DK or BG/LL´. Only the TV sets produced with Pal Secam BG/DK or Pal Secam BG/LL´ systems can receive both BG/DK or BG/LL´ broadcasts. In this case the user can select the required SYSTEM using **Volume up/down** buttons.

Please note
If you do not press any buttons for 15 seconds the TV will exit the menu system.

In the Setup menu select PROG NO and change to P1 using the **Program down** button to select it and the **Volume up** button to change it.

Starting with Program 1, tune in the first channel as follows:

Use the **Program down** button to select SEARCH.



Press the **Volume up** or **Volume down** button to start the tuning search.

When the search finds a strong channel signal it will stop searching. The picture will appear.

Identify which channel you are watching (BBC 1, ITV 1 etc.) and decide which program number you want it to be.

Use the **Program down** button to select PROGRAM NO.

Use the **Volume up/down** buttons to select the program number.

Use the **Program down** button to select Store. Press the **OK** button and STORED will appear on the STORE line.

You have now stored the first channel.

Use the **Program up** button to select again SEARCH and continue the tuning procedure until you have tuned in all the programmes you want or the television can receive.

Tuning with channel numbers
Enter the SETUP menu by pressing the blue button.

Press the **OK** button to enter the CHANNEL row.

Use the **OK** button to select "S" for cable channels and "C" for terrestrial broadcast.

Use **Volume up** button to select the channel number buttons.

Enter the channel number using the Numeric buttons.

Press the **Program down/up** buttons to exit the channel row.

Use the **Program down** button to select PROGRAM NO.

Use the **Volume up/down** buttons to select the program number.

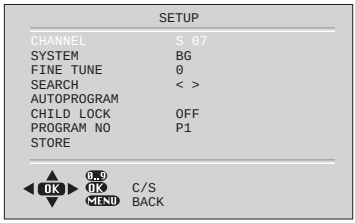
Use the **Program down** button to select STORE. Press the **OK** button and STORED will appear on the STORE line.

You have now stored the first channel.

Use the **Program up** button to select again SEARCH and continue the tuning procedure until you have tuned in all the programmes you want or the television can receive.

To exit the SETUP menu press the TV/TX button.

Automatic tuning (Autoprogram)
Enter the SETUP menu as before.



Use the Program down button to select AUTOPROGRAM and press the OK button. A list of countries will appear. Select the desired country using **Program** and **Volume** buttons.

When you are sure the aerial is connected properly press the **OK** button. Autoprogam will start.

To cancel Autoprogram whilst it is working press the **Menu** button.

Your TV is now tuned and ready to use.

Please note:

If auto sort fails to arrange the programmes in the required sequence please refer to programme table.

Fine tuning

Although the search and Autoprogram will automatically try and tune to the best reception, in areas of poor reception a bit of fine tuning may be required.

In the SETUP menu use the Program up/down buttons to select FINE TUNE. Use the Volume up and Volume down buttons to fine tune.

When you have finished use the **Program down** button to select STORE and press the **OK** button.

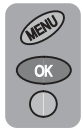
Child lock

Childlock switches off the programme you are watching when you select it. All other programmes are unaffected. If you go back to the programme with childlock on you will see a black screen with the OSD showing "🔑". You can lock as many programs as you want.

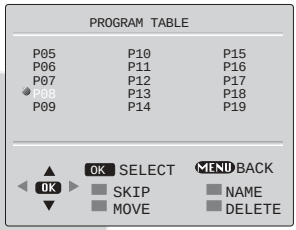
Press the **Volume up** button to switch the Child lock on or off.

Program Table

Once you have tuned in all the channels you want, you can change their programme number, if required, and name them.



To enter the PROGRAM TABLE menu press the **Menu** button and select PROGRAM TABLE and press the **OK** button or press directly the **Yellow** button.

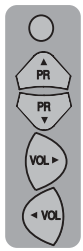


PROGRAM 01 will be selected and the channel stored under PROGRAM 01 will be showing on the screen.

The buttons used to edit the programs are shown at the bottom of the display:

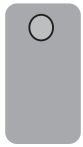
Blue button	-	Name
Green button	-	Move
Pink button	-	Delete
Red button	-	Skip

To name the programmes



Press the Blue button, the selected line will turn blue and the CH will turn white.

Use the **Program up** and **Program down** buttons to select the letters and numbers and the **Volume up** and **Volume down** buttons to move through the name.



Press the **Blue** button again to store the name.

Repeat this process to name all the programmes.

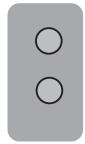
Please Note
Some TV channels may send their names with teletext transmission. In this case their names will be automatically shown on the name line.

To move the programmes
You can move the programmes around the programme list to the order you want

Select the programme you want to move and press the **Green** button. The programme will turn to green. Select the number you want to move the programme to and press the **Green** button again and the programme will be moved to that number.

All the following programmes are shifted down by one place.

To delete a programme



To delete a programme, select it and press the **Pink** button. The programme will turn pink and the programme will be deleted.

All the following programmes are shifted up by one position.

To skip programmes

Skipped programmes will not appear when you move through the program list using the **Program up**/ **Program down** buttons. They can still be selected using the numeric buttons or the OK button.

Select the programs you want to skip and press the **Red** button. The program will turn red. To unskip the program press the **Red** button again.

To exit the PROGRAM TABLE press the **TV/TX** button once, Yellow button or the **Menu** button twice.

When you select a programme, the information you entered in the PROGRAM TABLE menu will appear on the top of the screen i.e. P1 BBC1. This will disappear after about three seconds.

TV set up

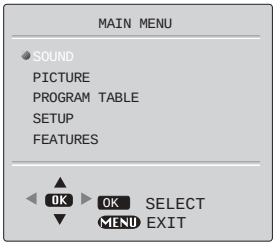
The TV set up is accessed through a menu system.

Once you have stored your set up, this is the set up the TV will default to when you switch it on.

To enter the MAIN menu press the **Menu** button.

Once in the MAIN menu use the **Program up** and **Program down** buttons to select items in the menu and the **OK** to access sub menus or use the coloured fastext buttons for quick access.

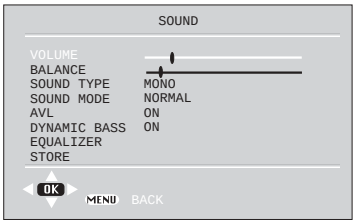
Red button - SOUND
Green button - PICTURE
Yellow button - PROGRAM TABLE
Blue button - SETUP
Pink button - FEATURES

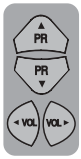


Please note

If you do not press any buttons for 15 seconds the TV will exit the menu system.

Sound menu (red button)

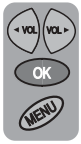




Select the required item in the menu using the **Program up/down** buttons and make the changes pressing **Volume up/down** buttons. Use the OK button to enter EQUALIZER sub menu.

Volume

Sets default volume using the **Volume up** and **down** buttons.



To save your settings, select STORE and press the **OK** button. STORED will be displayed. Press the **Menu** button to go back to the previous menu.

Balance

Sets the sound balance when the TV is in stereo mode using the **Volume up** and **down** buttons

To save your settings, select STORE and press the **OK** button. STORED will be displayed. Press the **Menu** button to go back to the previous menu.

Sound type

This item shows STEREO when receiving stereo transmission and MONO for mono transmissions.

The TV can be produced to receive the NICAM broadcasts as a optional feature.

If the channel you are watching is in Nicam stereo the On Screen Display will show NICAM STEREO for a while.

Please Note

If, while watching a nicam stereo channel, the signal strength drops and the system cannot receive nicam stereo the OSD will show MONO. If the signal strength increases again and nicam stereo can be received again, the OSD will show NICAM STEREO.

Sound mode
You can select NORMAL, SPATIAL or DOLBY VIRTUAL (optional)using the **Volume up/down** buttons or mix button.

SPATIAL sound is an 'expanded stereo'. It gives the impression that the two speakers in the TV are further apart than they really are.

DOLBY VIRTUAL is based on Dolby Pro Logic decoding for production of the Left, Right, Centre and Virtual Surround Sound channels using two loudspeaker.

Please Note
To get the surround effects in Virtual Dolby mode, you must apply a Dolby Pro Logic coded input to the TV.
You can't adjust the AVL and EQUALIZER in DOLBY VIRTUAL mode.

To save your settings, select STORE and press the **OK** button. STORED will be displayed. Press the **Menu** button to go back to the previous menu.

AVL
TV transmitters have different sound levels. AVL (automatic volume limiting) maintains the same sound level as you switch from program to program.
To supply this press **Volume up** or **down** button and select **ON** for AVL.

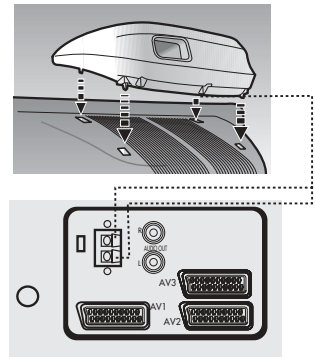
To save your settings, select STORE and press the **OK** button. STORED will be displayed. Press the **Menu** button to go back to the previous menu.

Dynamic Bass (optional)

Set DYNAMIC BASS to ON if you wish to deepen the bass sound specifically.

Subwoofer (optional)
A sub woofer speaker can be fitted within the TV case as an option depending to the model.

For 33"(84cm) TV sets there is an external subwoofer (optional) to be fixed as shown below.

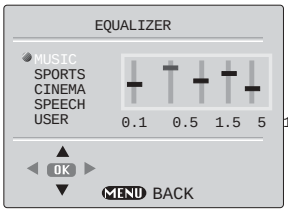


Select Sound menu and press **Program down** button to access subwoofer.

Press the **Volume up** button to switch the Subwoofer on or off.

Please Note
If you move the loudspeaker switch, on the rear of the TV, to the external position, the internal speakers in the TV will be switched off but the Subwoofer will remain on if switched on.

Equalizer



In this menu are a series of preset equalizer settings for different types of sound output. There are five music settings - MUSIC, SPORTS, CINEMA, SPEECH and USER mode.

USER allows you to set your own sound output as follows:

Plase the OK button to enter the use EQUALIZER menu.

Use the **Program down** button to select USER.

Press OK button to adjust the frequency band levels.

Use the **Volume up** button to select the KHz column you want to change.

Use the **Program up/down** buttons to make the changes.

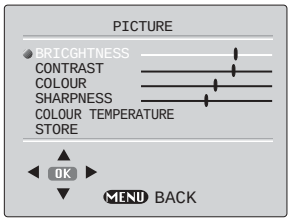
To save your settings, press the **OK** button. Press the **Menu** button to go back to the previous menu.

You can change the equalizer setting whilst watching the TV using the sound Smart control.

Press the sound **Smart control** to page through the different equalizer settings and select the one you want.

Once you have switched the TV off the equalizer setting will revert to the stored setting.

Picture menu (Green button)



The picture menu allows you to set up the following:
BRIGHTNESS
CONTRAST
COLOUR
SHARPNESS
COLOUR TEMPERATURE

To change, for example, the colour, select it using **Program** buttons.

Use the **Volume up** and **Volume down** buttons to change the setting.

To save your settings, select STORE and press the **OK** button. STORED will be displayed.

Smart cont.
This gives you a choice of picture type: SOFT, NATURAL, RICH or USER.
Use the button to change this type.

Select BRIGHTNESS, CONTRAST, COLOUR and SHARPNESS using the **Program up/down** buttons.

Change the settings with the **Volume up/down** buttons.

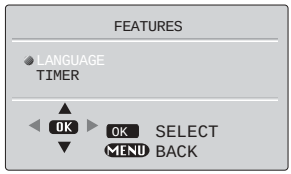
To save your settings, select STORE and press the **OK** button. STORED will be displayed. Press the **Menu** button to go back to the previous menu.

You can change the picture type whilst watching the TV using the picture Smart control.

Press the picture **Smart control** to page through the different picture types and select the one you want.

Once you have switched the TV off the picture type will revert to the stored setting.

Features Menu (Pink button)



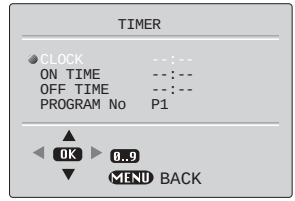
Language
There are many languages available for the On Screen Displays (OSD).

Press the **OK** button to select the language list.

Press the **Program down** button to page through all the languages and **OK** to select.

Timer: Use **Program up** and **down** buttons to select **Timer** in the features menu. Using the Timer fuction, you can switch to a specific programme at a pre-programmed time or you can turn your TV off at the time you want your TV to be turned off.

Press OK to access the **Timer** menu.



Clock: Use the numeric buttons to set the real time.

On Time: Use the numeric buttons to set the time that you want your TV to be turned on (TV should be on stand-by mode).

Off Time: Use the numeric buttons to set the time that you want your TV to be turned off (Stand-by mode).

Program No: Use the numeric buttons to set the programme number that will be shown when you set the **On Time**.

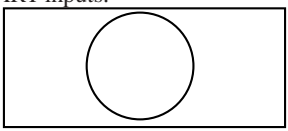
Picture format

This allows you to select the picture size on corresponding to the scren type widescreen of your TV:
Avaible formats for widesereen TV sets are 16:9, 4:3, zoom, Letterbox and Subtitle.
Avaible formats of 4:3 TV sets are 4:3 and 16:9.

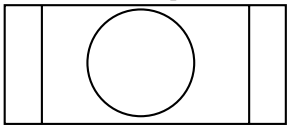
The formats of the broadcasts (4:3 or 16:9) you watch by means of aerial input are chosen automatically. (4:3, 16:9 and Letterbox for 16:9 TV) This feature is active if the channel you are watching sends WSS (Wide Screen Signalling) information.
Note: The feature mentioned above is relevant for TV sets having tele-text.

Widescreen TV sets:

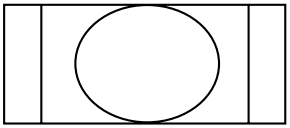
16:9, this is the screen format of widescreen TV sets (26" PF, 28" SF/PF, 32" SF/PF). The TV will automatically switch to this format if it detects 16:9 format from the SCART inputs.



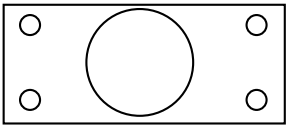
4:3, conventional TV picture format.



Zoom, an enlarged 4:3 format retaining the same aspect ratio.

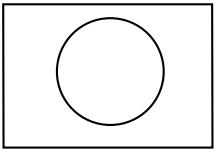


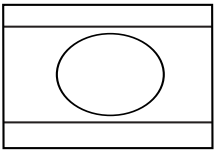
L Box (Letter box), Useful for watching video, some film formats and Pal-Plus format.



4:3 Sets:

4:3, is the screen format of 25", 28", 29" and 33" TV sets But you can change the picture format to 16:9 to able to watch the inputs in 16:9 format, i.e. some broadcasts and DVD's.





Press the **16:9** button to page through the different picture formats and select the one you want. The selected format will appear on the lower center of the screen for a short while.

Once you have switched the TV off the picture format will revert to the stored setting.

Using Teletext

Teletext is an information system that displays text on your TV screen. Using the teletext control buttons you can view pages of information that are listed in the teletext index.

Please Note
No on screen display is available in text mode. The contrast, brightness and colour cannot be changed but the volume control is still available.

To enter Text mode

Please Note
Make sure the TV channel you are watching transmits teletext.

Press the **TV/TX** button. The text page will appear, normally the index page.

To exit Text mode

Press the **TV/TX** button. The TV will return to the channel you were watching.

To select a page of text

Find the number of the page in the index and enter it using the **Numeric** buttons. The number of the page will appear in the top left hand corner of the screen.

The page counter will search for your page. When it finds it, the page will be displayed.

To move to the next page of text press the **Program up** button.

To move to the previous page press the **Program down** button.

To return to the index page press the **P100** button.

TV/text mix

To view a page of text whilst watching a TV programme press the **Mix** button. The text will be superimposed over the TV programme.

Press the **Mix** button again to return to the text page.

Page search whilst watching TV

In Text mode press the Update button. The TV will return to TV mode with the text page number in the top left hand corner of the screen.

Enter the page number you want using the **Numeric** buttons.

The top line of the text page will appear whilst the text searches for your page. When the page is found the number will remain in the top left hand corner of the screen.

Press the **Update** button to view your selected page of text.

Double height text

If you have difficulty reading the text on the TV you can double the height of the text.

Press the **Doub** button.
The top half of the page will be displayed in double height text.

Press the **Doub** button again.
The bottom half of the page will be displayed in double height text.

Press the **Doub** button again to return to the full page.

Page hold

If the page of text you have selected contains sub pages, these sub pages will automatically be displayed in order with a delay to allow you to read the page.

To stop the move to the next sub page press the **Hold** button. STOP will appear in the top left hand corner.

To continue moving through the sub pages press the **Hold** button again.

To select a sub page

If the page of text you are viewing contains sub pages, the number of the sub page you are on and the total number of sub pages is displayed on the right of the screen i.e. 1/7.

To select a sub page press the **Sub** button. The number in the top left hand corner will be replaced by S followed by 4 asterisks.

Enter the number of the sub page, using the **Numeric** buttons in the format S0001 for sub page 1.

The teletext will search for the sub page. This may take some time. To return to the TV whilst the teletext is searching press the **Update** button.

When the page number is found it will appear in the top left hand corner of the screen.

Press the **Update** button again to view the text page.

To reveal information

Press the **Rev** button to reveal concealed information (quiz answers etc.).

Press the **Rev** button again to conceal the information again.

Clock

Press the **Sub** button, whilst watching a TV program , to display the time.

Fastext

At the bottom of the teletext screen is a row of subject headings in red, green yellow and blue.

The remote control has a row of coloured buttons corresponding to the row of coloured subjects on the screen.

Pressing one of the coloured buttons will take you directly to the page corresponding to the subject heading.

Toptext (optional)

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

Note: Fastext and Toptext features are not available in every program.

Connecting external equipment

Headphones (optional)

The headphones must have an impedance of between 8 and 32 ohms and have a 3.5 mm stereo jack plug.

Plug the headphone jack into the headphone socket of the TV.

Connecting a video recorder

① Via SCART

Make sure the TV and video recorder are both switched off.

Plug one end of the SCART lead (not supplied) into the back of the video recorder and the other end into one of the SCART sockets on the back of the TV.

Switch on the video recorder and the TV.

Press the **AV** button on the remote control to select AV1, AV2 or AV3 (optional) to correspond with SCART socket you are using on the back of the TV.

Please note:
You can connect a RGB external equipment via Scart 1. It is necessary to you use full Scart cable for this purpose.

Select the video outputs of external device by using its menu to RGB if it's available.

② Via RCA lead (optional)

Make sure the TV and video recorder are both switched off.

Plug one end of the RCA lead into the video and audio out sockets on the back of the video recorder and plug the other end into the video and audio in sockets of the TV.

If the sound is in mono use the Audio Input L. In the SOUND menu select MONO.

Press the **AV** button repetitively and select the AV3 mode by two scart models or select AV4 mode by three scart models.

③ Via aerial socket

Make sure the TV and video recorder are both switched off.

Unplug the aerial lead from the TV and plug it into the aerial socket on the video recorder (if fitted).

Plug a coaxial plug into the RF out socket on the rear of the video recorder and plug the other end into the aerial socket of the TV.

Switch on the video recorder and the TV.

If your video recorder has a test signal, switch it on. (Refer to the video recorder user guide).

See 'Tuning the TV' and carry out the tuning procedure for the video recorder test signal. Select a programme number 0 or between 55 and 99.

④ S-Video Player

If you have an S-Video player you can connect it to SCART socket 2 via an adaptor from scart to S-Video/RCA audio (not supplied).

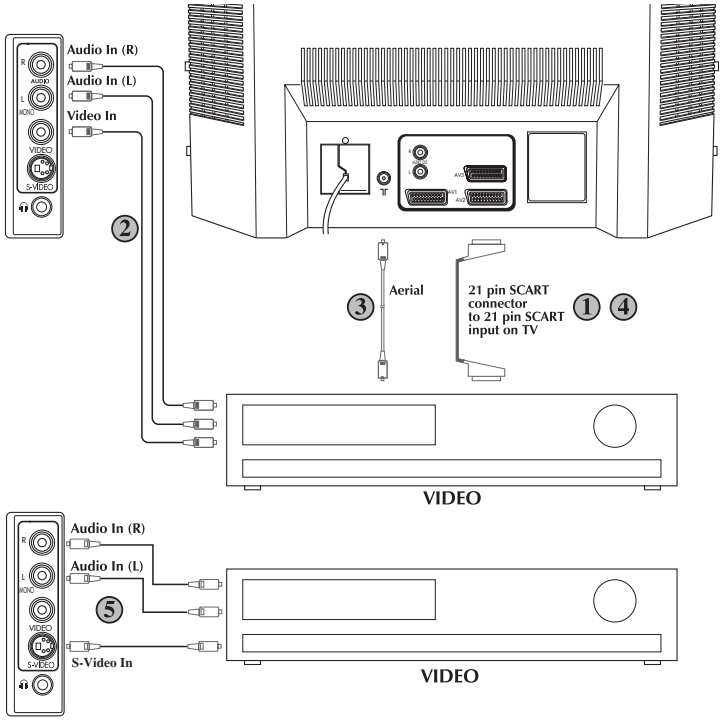
Press the **AV** button three times to select AV2S (available by two scart models).

⑤ Via RCA lead and S-Video socket

You can also connect it through the S-Video socket of the TV (optional).

Plug the S-Video plug into the S-Video socket and the audio leads into the audio sockets.

Press the **AV** button repetitively to select AV3S by two scart models or AV4S by three scart models.



Connecting a DVD player

① Via SCART

Make sure the TV and DVD player are both switched off.

Plug one end of the SCART lead (not supplied) into the back of the DVD player and the other end into one of the SCART sockets on the back of the TV.

Switch on the DVD and the TV.

Press the **AV** button on the remote control to select AV1, AV2 or AV3 (optional) to correspond with SCART socket you are using on the back of the TV.

② Via RCA lead (optional)

Make sure the TV and DVD player are both switched off.

Plug one end of the RCA lead into the video and audio out sockets on the back of the DVD player and plug the other end into the video and audio in sockets of the TV.

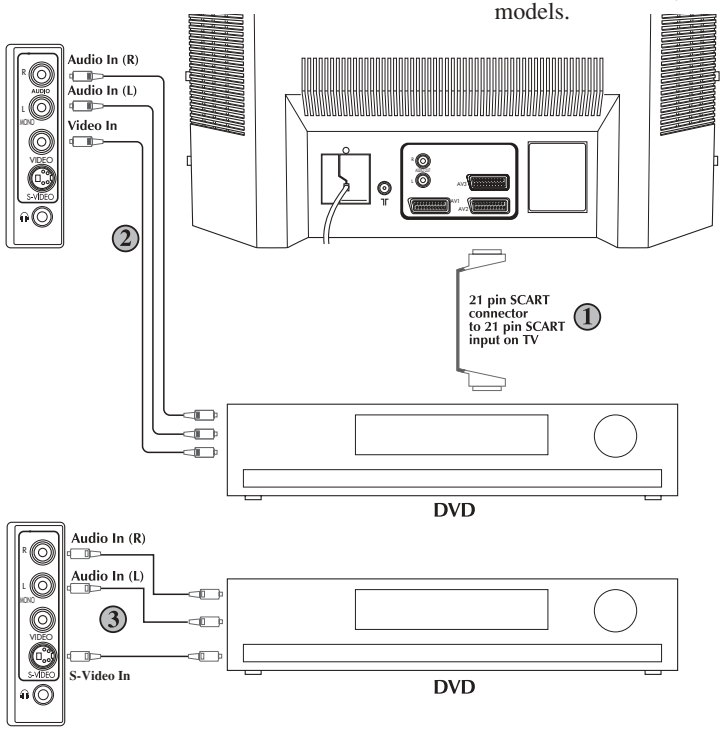
Press the **AV** button repetitively and select the AV3 mode by two scart models or select AV4 mode by three scart models.

③ Via RCA lead and S-Video socket

You can also connect it through the S-Video socket of the TV (optional).

Plug the S-Video plug into the S-Video socket and the audio leads into the audio sockets.

Press the **AV** button repetitively to select AV3S by two scart models or AV4S by three scart models.



Connecting a decoder

① Via SCART
Make sure the TV and decoder are both switched off.

Plug one end of the SCART lead (not supplied) into the back of the decoder and the other end into the SCART1 on the back of the TV.

Switch on the decoder and the TV.

Press the **AV**button on the remote control to select AV1.

② Via RCA lead (optional)
Make sure the TV and decoder are both switched off.

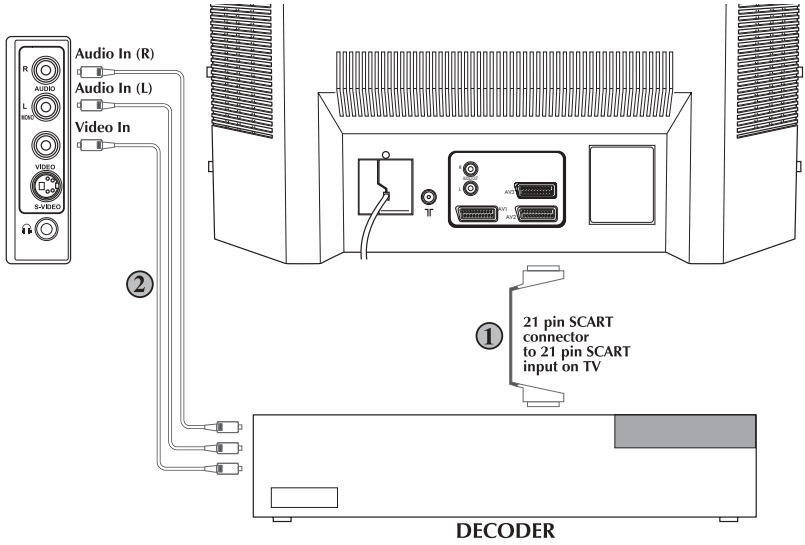
Plug one end of the RCA lead into the video and audio out sockets on the back of the decoder and plug the other end into the video and audio in sockets on the TV.

Press the **AV** button repetitively and select the AV3 mode by two scart models or select AV4 mode by three scart models.

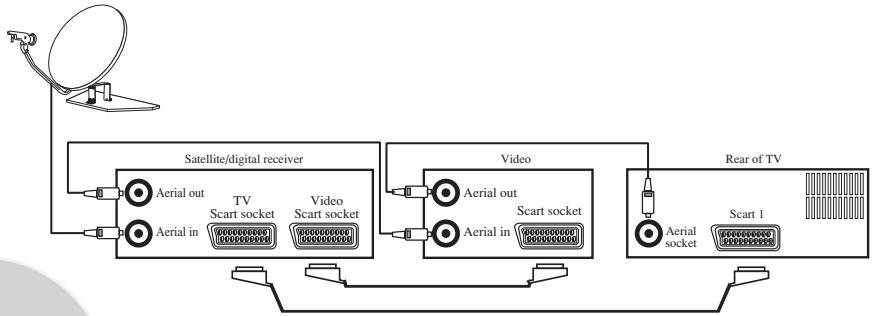
Please Note
You can record from one external piece of equipment to another via the TV by connecting the playback to SCART 1 and the recorder to SCART 2 or SCART 3 and selecting AV1. You cannot watch the TV.

You can connect NTSC supported equipment to the TV via the SCART sockets and adjusting the colour via the PICTURE menu.

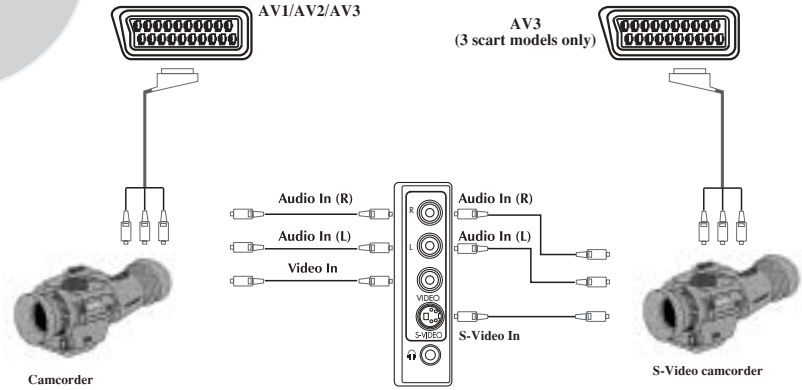
Select TINT by using **Program down** button and use the adjust the colour to **Volume up** and **down** buttons.



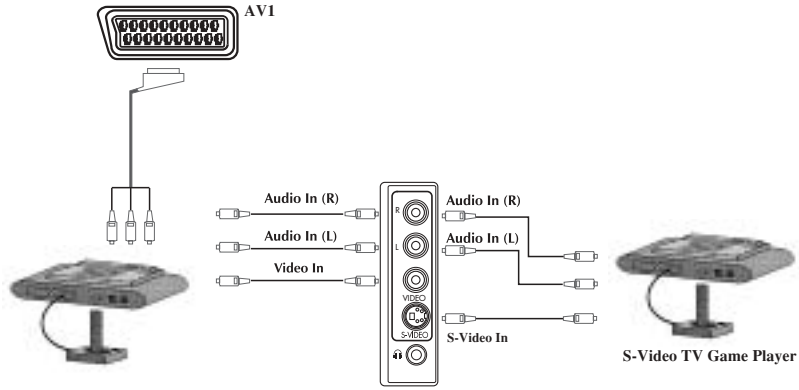
Connecting TV with video and satellite/digital receiver



Connecting TV with camcorder



Connecting TV games and computer



Help and service tips

The TV does not work

Make sure it is plugged into the mains supply and switched on.

Poor picture

- Is the aerial plugged in?
- If you are using a set top aerial is it properly aligned for the best signal.
- Make sure the aerial is not to close to neon lights, loudspeakers etc.
- Try changing the direction of the outdoor aerial. High buildings and mountains can cause ghost pictures or double images.
- The picture quality may be reduced by connecting two external sources at once. Disconnect one of the sources.
- Adjust the fine tuning.

No picture

- Is the aerial plugged in properly?
- Is the aerial lead damaged?
- Are all the plugs in the aerial lead fitted correctly?
- Have you pressed the correct buttons on the remote control?

No sound

- Is the sound muted? Press the Mute button.
- Is the volume turned down?
- Are there headphones connected?

Sound coming from only one speaker

- Is the balance set to one side? See the sound menu.
- If you have external speakers, has one of them become disconnected.

No response to the remote control

- Try changing the batteries.
- Is there an obstruction between the remote control and the sensor on the TV.

If nothing works

If you have tried the above solutions and none seem to work, try switching the unit off and on again.

If this does not work contact your supplier or TV repair technician. Never attempt to repair a defective TV yourself.

Symptoms / Solutions	Check if on/off switch is "on"	Try a different channel, if OK, probably station trouble	Check aerial connections on back of set	Check aerial broken wires	Re orientate aerial	Probably local interference, such as an appliance	Adjust fine tuning control	Adjust brightness control	Adjust contrast control	Check if station is broadcasting colour	Adjust colour control	Check batteries in the remote control handset.	Switch the TV set OFF and ON from mains	Move the loudspeakers away from the television	Switch off the television set at the mains and switch on again after 15 minutes
No picture, no sound	✓	✓	✓	✓			✓								
Poor sound, picture OK		✓			✓		✓								
Poor Picture, sound OK		✓	✓	✓	✓		✓	✓							
Weak picture		✓	✓	✓	✓		✓								
Blurred picture		✓		✓	✓		✓								
Double image		✓	✓	✓	✓		✓								
Lines in picture		✓		✓	✓	✓	✓								
Distorted picture		✓		✓	✓		✓								
Weak reception on some channels		✓	✓	✓	✓	✓	✓								
Horizontal bars				✓	✓	✓									
Picture rolls vertically		✓		✓	✓	✓									
Poor colour		✓	✓	✓	✓	✓	✓	✓	✓		✓				
No colour		✓	✓	✓	✓		✓			✓	✓				
Remote control not working												✓	✓		
TV does not accept any command													✓		
Teletext rolling up/down													✓		
Inappropriate colour, color spots														✓	✓

Technical specifications table

Picture tube size/type	25" 4:3	26" 16:9 PF	28" 4:3	28" 16:9 SF	28" 16:9 PF	29" 4:3 SF	29" 4:3 PF	32" 16:9 SF	32" 16:9 PF	33" 4:3
Screen size	63 cm	68 cm	70 cm	70 cm	70 cm	70 cm	72 cm	82 cm	82 cm	84 cm
Visible screen size	59 cm	65 cm	66 cm	66 cm	66 cm	68 cm	68 cm	77 cm	77 cm	80 cm
Sound Output (%10 THD)	2x10 W	2x10 W	2x10 W	2x10 W	2x10 W	2x10 W	2x10 W	2x10 W	2x10 W	2x10 W
Power consumption		90 W	90 W			95 W	95 W	95 W	95 W	
Stand by Power consumption	3 W	3 W	3 W	3 W	3 W	3 W	3 W	3 W	3 W	3 W
Subwoofer	—	optional	optional	optional	optional	optional	optional	optional	optional	optional
Dolby Virtual	optional	optional	optional	optional	optional	optional	optional	optional	optional	optional

SF : Superflat picture tube
PF : Pureflat picture tube
16:9: Widescreen TV
4:3 : Conventional TV

Please note:
Using a subwoofer causes 20 W extra power consumption and supplies maximum 20 W extra sound output.

General technical specifications

Power Supply
AC: 230-240V 50Hz
Number of preset programmes 100
RF Aerial input ..... 75 ohm (unbalanced)
Speaker empedance ..... 8 ohm
Audio output ..... Mono/Stereo/NICAM (optional)
Batteries ..... 2x AAA
Receiving channels ..... VHF (Band I Channels 2-4)
..... VHF (Band III Channels 5-12)
..... UHF (Channels 21-69)
..... Cable TV (S1-S20/S21-S41)
Receiving broadcast system..... PAL BG
PAL SECAM BG
PAL SECAM BG DK/DK´
PAL SECAM BG LL´
PAL I

Please note: Your TV set is produced to receive only "one " of this colour and sound system options which is based one your countries norms and can not be changed by user except BG/DK and BG/LL´ if both systems are avaible to receive (BG or DK and BG or LL´). Please refer to "Tuning the TV".

General Description

1. Introduction

The VCT 49xxI is an IC family of high-quality single-chip TV processors. Modular design and deep-submicron technology allow the economic integration of features in all classes of single-scan TV sets. The VCT 49xxI family is based on functional blocks contained and approved in existing products like DRX 396xA, MSP 34x5G, VSP 94x7B, DDP 3315C, and SDA 55xx.

Each member of the family contains the entire IF, audio, video, display, and deflection processing for 4:3 and 16:9 50/60-Hz mono and stereo TV sets. The integrated microcontroller is supported by a powerful OSD generator with integrated Teletext & CC acquisition including on-chip page memory.

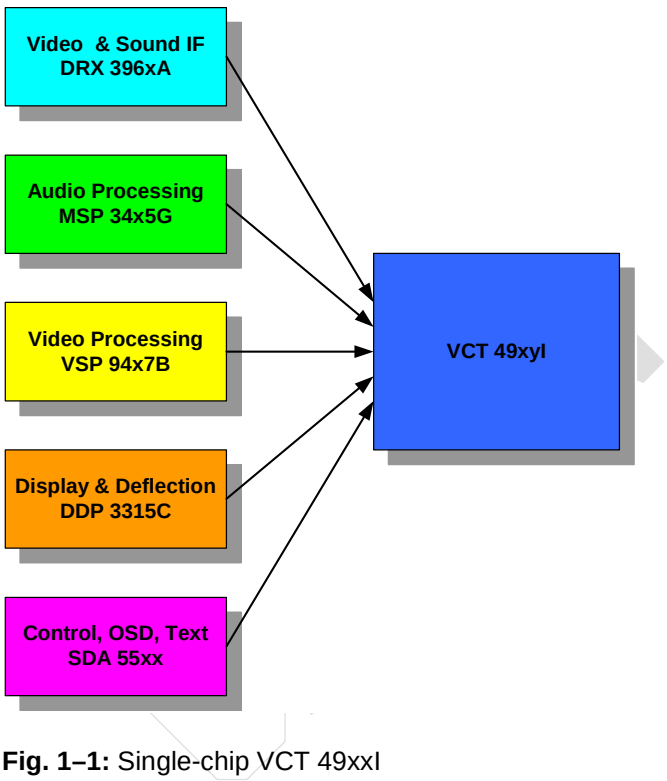


Fig. 1–1: Single-chip VCT 49xxI

1.1. Features

The VCT 49xxI family offers a rich feature set, covering the whole range of state-of-the-art 50/60-Hz TV applications.

- PSSDIP88-1/-2 package
- PMQFP144-2 package
- Submicron CMOS technology
- Low-power standby mode
- Single 20.25-MHz reference crystal
- 8-bit 8051 instruction set compatible CPU
- Up to 256 kB on-chip program ROM
- WST, PDC, VPS, and WSS acquisition
- Closed Caption and V-chip acquisition
- Up to 10 pages on-chip teletext memory
- Multi-standard QSS IF processing with single SAW
- FM Radio and RDS with standard TV tuner
- TV-sound demodulation:
  - all A2 standards
  - all NICAM standards
  - BTSC/SAP with MNR (DBX optional)
  - EIA-J
- Baseband sound processing for loudspeaker channel:
  - volume
  - bass and treble
  - loudness
  - balance
  - spatial effect (e.g. pseudo stereo)
  - Micronas AROUND (virtual Dolby optional)
  - Micronas BASS
- CVBS, S-VHS, YC_rC_b and RGB inputs
- 4H adaptive comb filter (PAL/NTSC)
- multi-standard color decoder (PAL/NTSC/SECAM)
- Nonlinear horizontal scaling “panorama vision”
- Luma and chroma transient improvement (LTI, CTI)
- Non-linear color space enhancement (NCE)
- Dynamic black level expander (BLE)
- Scan velocity modulation output
- Soft start/stop of H-drive
- Vertical angle and bow correction
- Average and peak beam current limiter
- Nonlinear and dynamic EHT compensation
- Black switch off procedure (BSO)

1.2. Chip Architecture

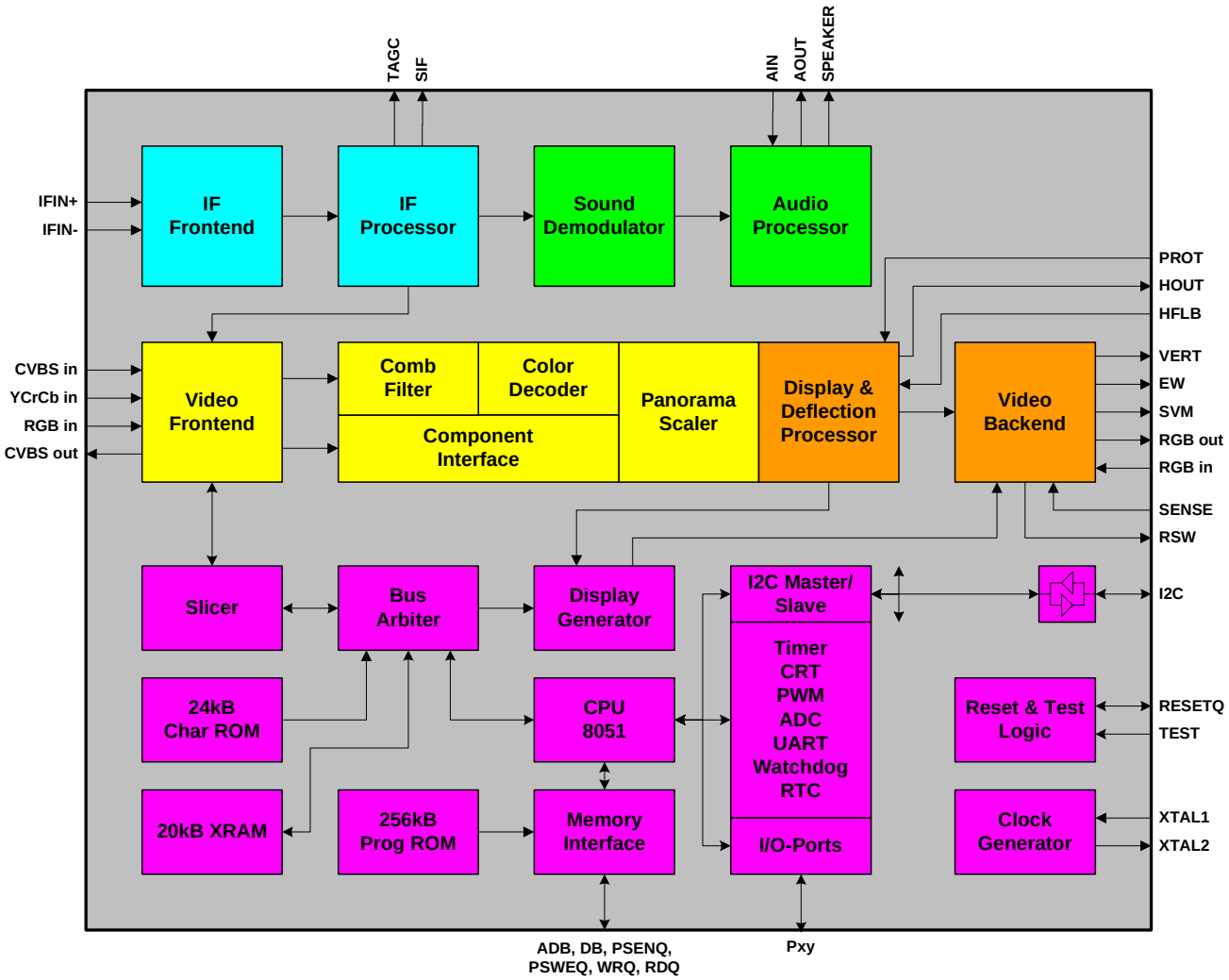


Fig. 1–2: Block diagram of the VCT 49xxI

1.3. System Application

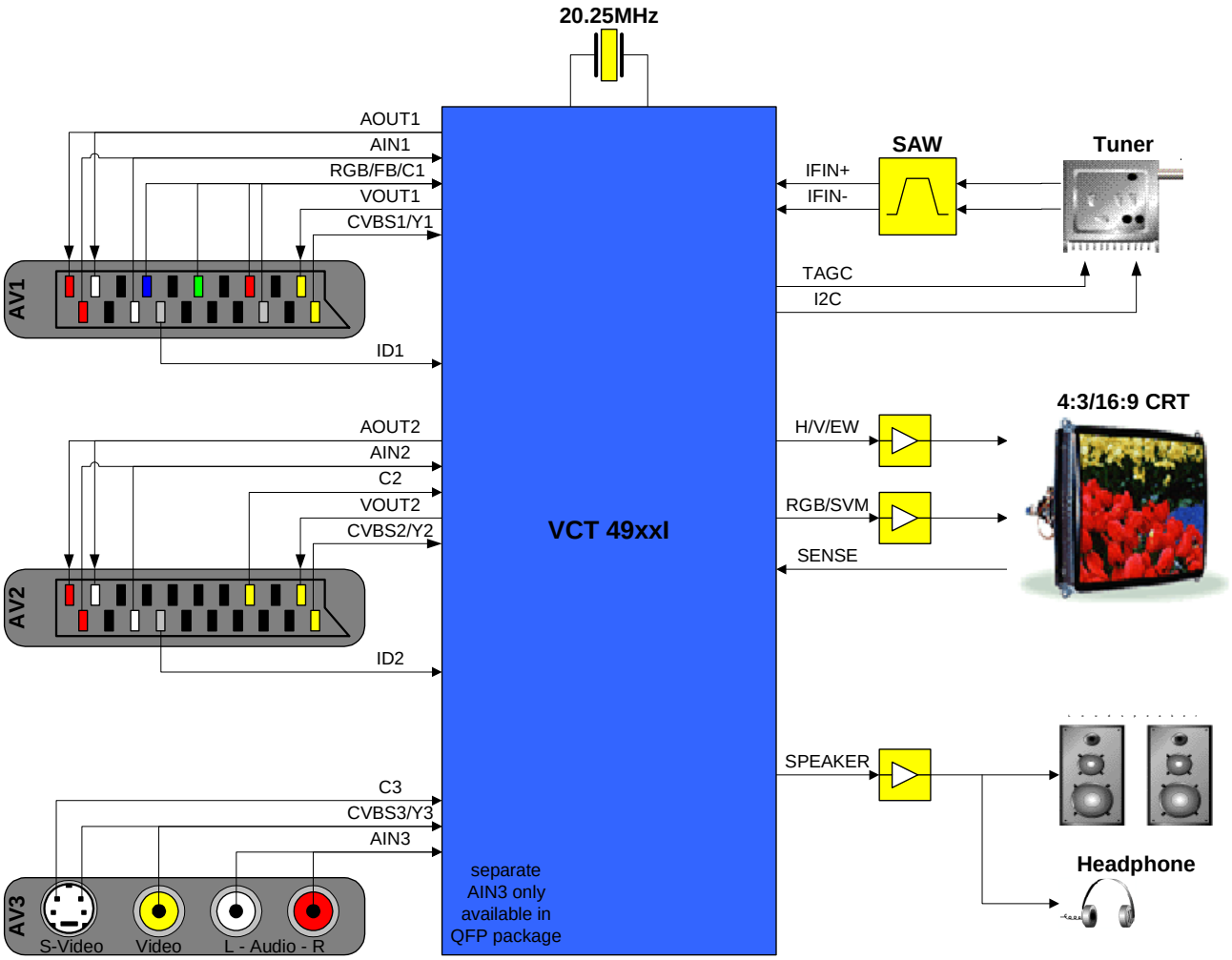


Fig. 1–3: Stereo TV set with VCT 49xxl

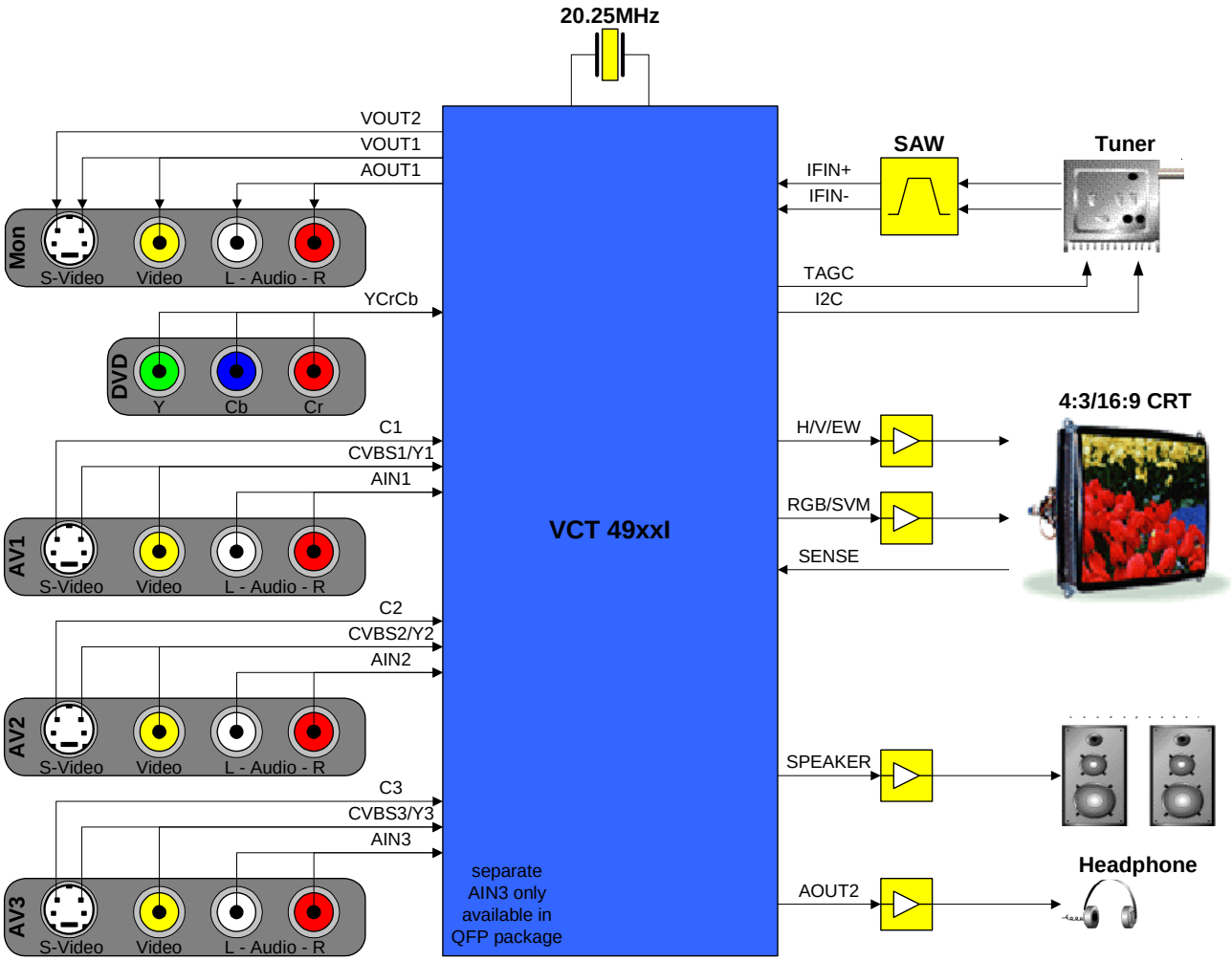


Fig. 1–4: Stereo TV set with VCT 49xxI

3. Control Interface

Table 3–1: I2C Slave Device Addresses

Block	Device Address	
	Write	**Read**
DRX	h'8E	h'8F
MSP	h'8C	h'8D
VSP	h'B0	h'B1
DDP	h'BC	h'BD
TVT	programmable	

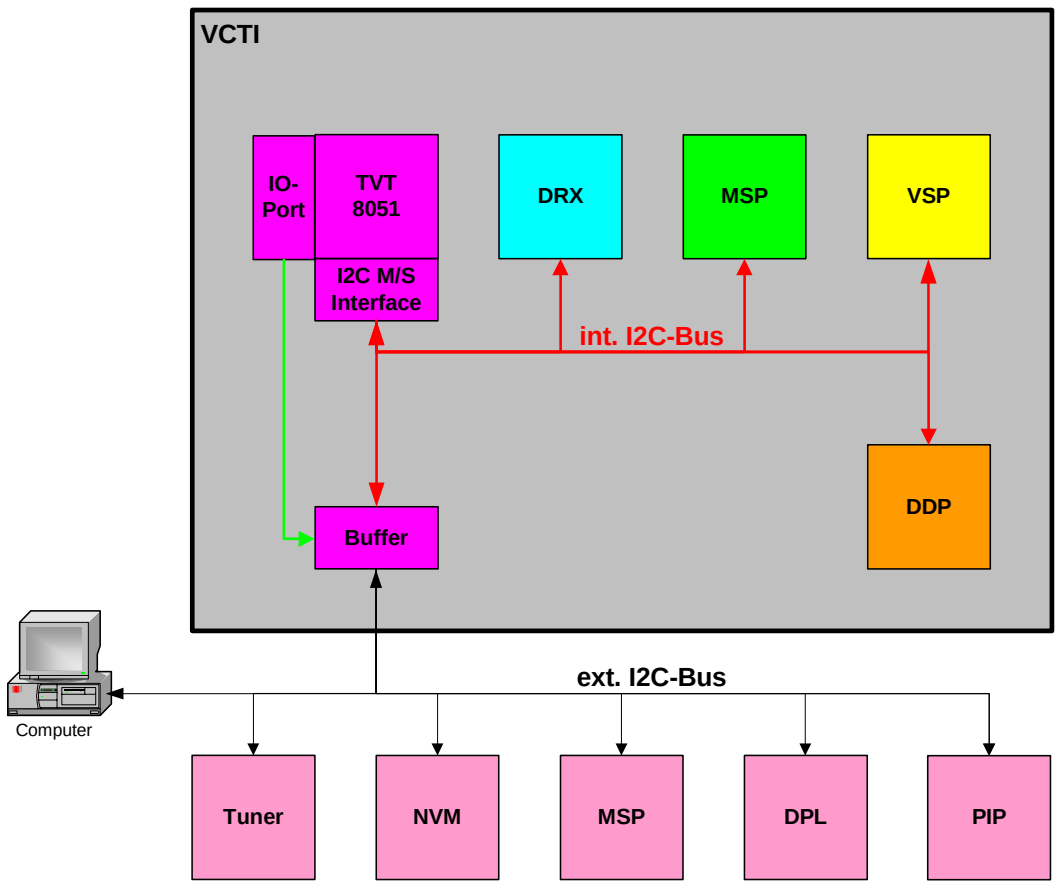


Fig. 3–1: I^2C Environment

4. Specifications

4.1. Outline Dimensions

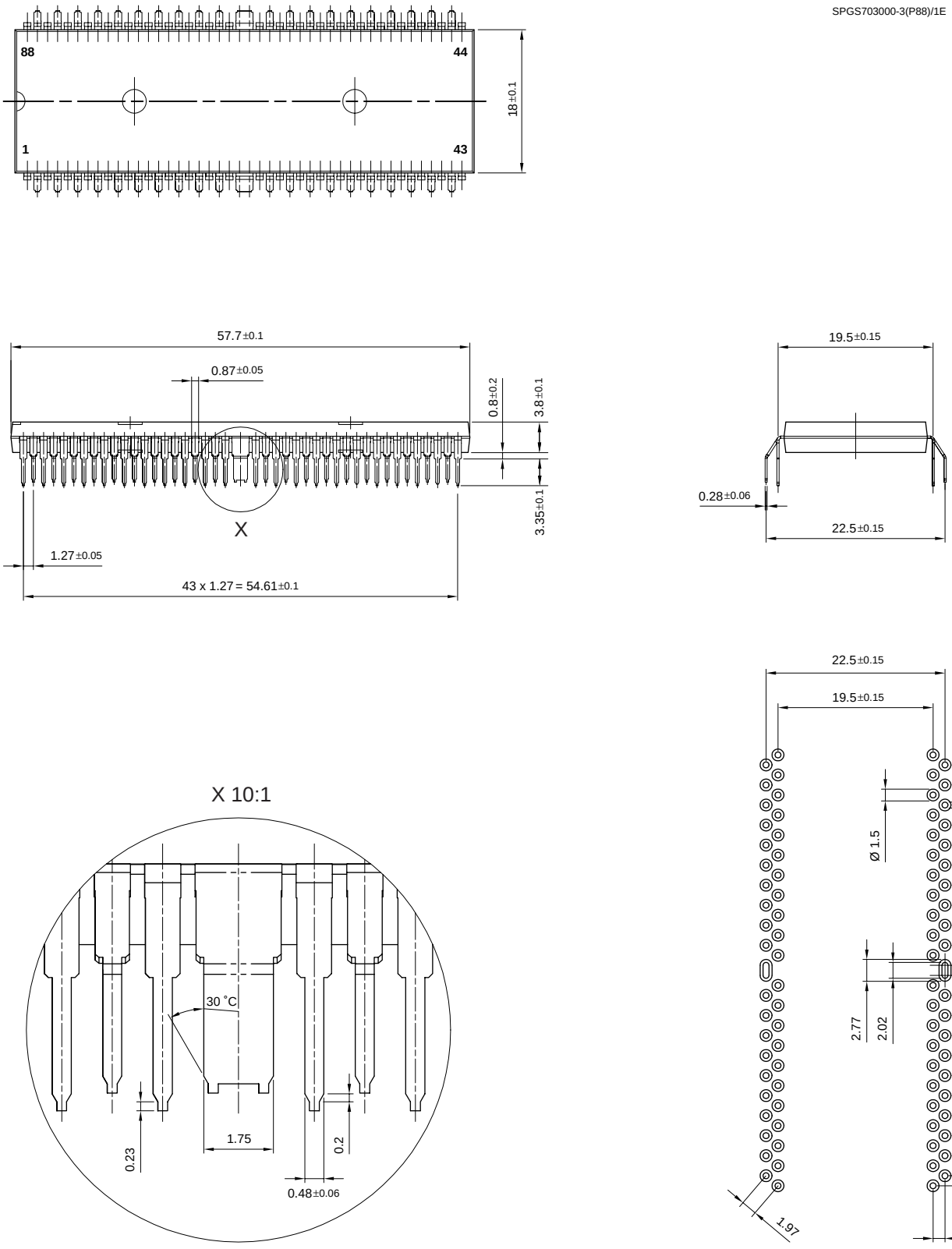


Fig. 4–1:
88-Pin Plastic Staggered Shrink Dual Inline Package
(PSSDIP88-1/-2)
Weight approximately 9.6 g
Dimensions in mm

Pin Connections and Short Descriptions

NC = not connected
LV = if not used, leave vacant
OBL = obligatory; connect as described in circuit diagram
IN = Input Pin
OUT = Output Pin
SUPPLY = Supply Pin

Pin No. PSSDIP 88-pin	Pin No. PMQFP-2 144-pin	Pin Name	Type	Connection (If not used)	Short Description
1	128	GND	SUPPLY	OBL	Ground Platform
2	129	VSUP5.0BE	SUPPLY	OBL	Supply Voltage Analog Video Back-end, 5.0 V
3	130	TEST	IN	GND	Test Input, reserved for Test
4	131	VERT+	OUT	LV	Differential Vertical Sawtooth Output
5	132	VERT-	OUT	LV	Differential Vertical Sawtooth Output
6	133	EW	OUT	LV	Vertical Parabola Output
7	134	RSW2	OUT	LV	Range Switch 2 Output
8	135	RSW1	OUT	LV	Range Switch 1 Output
9	136	SENSE	IN	GND	Sense ADC Input
10	137	GNDM	IN	GND	Reference Ground for Sense ADC
11	138	FBIN	IN	GND	Fast Blank Input, Back-end
12	139	RIN	IN	GND	Analog Red Input, Back-end
13	140	GIN	IN	GND	Analog Green Input, Back-end
14	141	BIN	IN	GND	Analog Blue Input, Back-end
15	142	SVMOUT	OUT	VSUP5.0BE	Scan Velocity Modulation Output
16	143	ROUT	OUT	VSUP5.0BE	Analog Red Output
17	144	GOUT	OUT	VSUP5.0BE	Analog Green Output
18	1	BOUT	OUT	VSUP5.0BE	Analog Blue Output
19	2	VRD		OBL	Reference Voltage for RGB DACs
20	3	XREF		OBL	Reference Current for RGB DACs
21	4	VSUP3.3BE	SUPPLY	OBL	Supply Voltage Analog Video Back-end, 3.3 V
22	5	GND	SUPPLY	OBL	Ground Platform
23	6	GND	SUPPLY	OBL	Ground Platform
24	7	VSUP3.3IO	SUPPLY	OBL	Supply Voltage I/O Ports, 3.3 V
25	8	VSUP3.3DAC	SUPPLY	OBL	Supply Voltage Video DACs, 3.3 V
26	9	GNDDAC	SUPPLY	OBL	Ground Video DACs
27	10	SAFETY	IN	GND	Safety Input

Pin No. PSSDIP 88-pin	Pin No. PMQFP-2 144-pin	Pin Name	Type	Connection (If not used)	Short Description
28	11	HFLB	IN	HOUT	Horizontal Flyback Input
29	12	HOUT	OUT	LV	Horizontal Drive Output
30	13	VPROT	IN	GND	Vertical Protection Input
	37	PWMV	OUT	LV	PWM Vertical Output
	38	DFVBL	OUT	LV	Dynamic Focus Vertical Blanking Output
31	39	SDA	IN/OUT	OBL	I^2C Bus Data Input/Output
32	40	SCL	IN/OUT	OBL	I^2C Bus Clock Input/Output
33	41	P21	IN/OUT	LV	Port 2, Bit 1 Input/Output
34	42	P20	IN/OUT	LV	Port 2, Bit 0 Input/Output
35	43	P17	IN/OUT	LV	Port 1, Bit 7 Input/Output
36	44	P16	IN/OUT	LV	Port 1, Bit 6 Input/Output
37	45	P15	IN/OUT	LV	Port 1, Bit 5 Input/Output
38	46	P14	IN/OUT	LV	Port 1, Bit 4 Input/Output
39	47	P13	IN/OUT	LV	Port 1, Bit 3 Input/Output
40	48	P12	IN/OUT	LV	Port 1, Bit 2 Input/Output
41	49	P11	IN/OUT	LV	Port 1, Bit 1 Input/Output
42	50	P10	IN/OUT	LV	Port 1, Bit 0 Input/Output
43	53	VSUP3.3FE	SUPPLY	OBL	Supply Voltage Analog Video Front-end, 3.3 V
44	54	GND	SUPPLY	OBL	Ground Platform
45	55	GND	SUPPLY	OBL	Ground Platform
46	56	VSUP1.8FE	SUPPLY	OBL	Supply Voltage Analog Video Front-end, 1.8 V
47	57	VOUT3	OUT	LV	Analog Video 3 Output
48	58	VOUT2	OUT	LV	Analog Video 2 Output
49	59	VOUT1	OUT	LV	Analog Video 1 Output
50	60	VIN1	IN	GND	Analog Video 1 Input
51	61	VIN2	IN	GND	Analog Video 2 Input
52	62	VIN3	IN	GND	Analog Video 3 Input
53	63	VIN4	IN	GND	Analog Video 4 Input
54	64	VIN5	IN	GND	Analog Video 5 Input
55	65	VIN6	IN	GND	Analog Video 6 Input
56	66	VIN7	IN	GND	Analog Video 7 Input
57	67	VIN8	IN	GND	Analog Video 8 Input
58	68	VIN9	IN	GND	Analog Video 9 Input

Pin No. PSSDIP 88-pin	Pin No. PMQFP-2 144-pin	Pin Name	Type	Connection (If not used)	Short Description
59	69	VIN10	IN	GND	Analog Video 10 Input
60	70	VIN11	IN	GND	Analog Video 11 Input
61	98	P23	IN/OUT	LV	Port 2, Bit 3 Input/Output
62	99	P22	IN/OUT	LV	Port 2, Bit 2 Input/Output
63	100	XTAL2	OUT	OBL	Analog Crystal Output
64	101	XTAL1	IN	OBL	Analog Crystal Input
65	102	VSUP1.8DIG	SUPPLY	OBL	Supply Voltage Digital Core, 1.8 V (main and standby supply)
66	103	GND	SUPPLY	OBL	Ground Platform
67	104	GND	SUPPLY	OBL	Ground Platform
68	105	VSUP3.3DIG	SUPPLY	OBL	Supply Voltage Digital Core, 3.3 V (main and standby supply)
69	106	VSUP5.0IF	SUPPLY	OBL	Supply Voltage Analog IF Front-end, 5.0 V
70	107	GNDIF	SUPPLY	OBL	Ground Analog IF Front-end
71	108	RESETQ	IN/OUT	OBL	$\overline{\text{Reset}}$ Input/Output
72	109	IFIN+	IN	$VREF_{IF}$	Differential IF Input
73	110	IFIN-	IN	$VREF_{IF}$	Differential IF Input
74	111	VREFIF		OBL	Reference Voltage, IF ADC
75	112	TAGC	OUT	LV	Tuner AGC Output
76	113	AIN1R / SIF	IN/OUT	GND	Analog Audio 1 Input, Right Analog 2nd Sound IF Output
77	114	AIN1L	IN	GND	Analog Audio 1 Input, Left
78	115	AIN2R	IN	GND	Analog Audio 2 Input, Right
79	116	AIN2L	IN	GND	Analog Audio 2 Input, Left
	117	AIN3R	IN	GND	Analog Audio 3 Input, Right
	118	AIN3L	IN	GND	Analog Audio 3 Input, Left
	119	AOUT2R	OUT	LV	Analog Audio 2 Output, Right
	120	AOUT2L	OUT	LV	Analog Audio 2 Output, Left
80		AIN3R / AOUT2R	IN / OUT	LV	Analog Audio 3 Input, Right Analog Audio 2 Output, Right
81		AIN3L / AOUT2L	IN / OUT	LV	Analog Audio 3 Input, Left Analog Audio 2 Output, Left
82	121	AOUT1R	OUT	LV	Analog Audio 1 Output, Right
83	122	AOUT1L	OUT	LV	Analog Audio 1 Output, Left
84	123	SPEAKERR	OUT	LV	Analog Loudspeaker Output, Right

Pin No. PSSDIP 88-pin	Pin No. PMQFP-2 144-pin	Pin Name	Type	Connection (If not used)	Short Description
85	124	SPEAKERL	OUT	LV	Analog Loudspeaker Output, Left
86	125	VREFAU		OBL	Reference Voltage, Audio
87	126	VSUP8.0AU	SUPPLY	OBL	Supply Voltage Analog Audio, 8.0 V
88	127	GND	SUPPLY	OBL	Ground Platform
	71	P37 / 656IO7	IN/OUT	LV	Port 3, Bit 7 Input/Output Digital 656 Bus 7 Input/Output
	72	P36 / 656IO6	IN/OUT	LV	Port 3, Bit 6 Input/Output Digital 656 Bus 6 Input/Output
	73	P35 / 656IO5	IN/OUT	LV	Port 3, Bit 5 Input/Output Digital 656 Bus 5 Input/Output
	74	P34 / 656IO4	IN/OUT	LV	Port 3, Bit 4 Input/Output Digital 656 Bus 4 Input/Output
	75	P33 / 656IO3	IN/OUT	LV	Port 3, Bit 3 Input/Output Digital 656 Bus 3 Input/Output
	76	GNDEIO	SUPPLY	OBL	Ground Extended I/O Ports
	77	VSUP3.3EIO	SUPPLY	OBL	Supply Voltage Extended I/O Ports, 3.3 V
	78	P32 / 656IO2	IN/OUT	LV	Port 3, Bit 2 Input/Output Digital 656 Bus 2 Input/Output
	79	P31 / 656IO1	IN/OUT	LV	Port 3, Bit 1 Input/Output Digital 656 Bus 1 Input/Output
	80	P30 / 656IO0	IN/OUT	LV	Port 3, Bit 0 Input/Output Digital 656 Bus 0 Input/Output
	81	P26 / 656VIO	IN/OUT	LV	Port 2, Bit 6 Input/Output Digital 656 Vsync Input/Output
	82	P25 / 656HIO	IN/OUT	LV	Port 2, Bit 5 Input/Output Digital 656 Hsync Input/Output
	83	P24 / 656CLKIO	IN/OUT	LV	Port 2, Bit 4 Input/Output Digital 656 Clock Input/Output
	31	ADB19	OUT	LV	Address Bus 19 Output
	21	ADB18	OUT	LV	Address Bus 18 Output
	19	ADB17	OUT	LV	Address Bus 17 Output
	22	ADB16	OUT	LV	Address Bus 16 Output
	23	ADB15	OUT	LV	Address Bus 15 Output
	18	ADB14	OUT	LV	Address Bus 14 Output
	17	ADB13	OUT	LV	Address Bus 13 Output
	26	ADB12	OUT	LV	Address Bus 12 Output
	14	ADB11	OUT	LV	Address Bus 11 Output

Pin No. PSSDIP 88-pin	Pin No. PMQFP-2 144-pin	Pin Name	Type	Connection (If not used)	Short Description
	96	ADB10	OUT	LV	Address Bus 10 Output
	15	ADB9	OUT	LV	Address Bus 9 Output
	16	ADB8	OUT	LV	Address Bus 8 Output
	27	ADB7	OUT	LV	Address Bus 7 Output
	28	ADB6	OUT	LV	Address Bus 6 Output
	29	ADB5	OUT	LV	Address Bus 5 Output
	30	ADB4	OUT	LV	Address Bus 4 Output
	84	ADB3	OUT	LV	Address Bus 3 Output
	85	ADB2	OUT	LV	Address Bus 2 Output
	86	ADB1	OUT	LV	Address Bus 1 Output
	87	ADB0	OUT	LV	Address Bus 0 Output
	88	DB0	IN/OUT	LV	Data Bus 0 Input/Output
	89	DB1	IN/OUT	LV	Data Bus 1 Input/Output
	90	DB2	IN/OUT	LV	Data Bus 2 Input/Output
	91	DB3	IN/OUT	LV	Data Bus 3 Input/Output
	92	DB4	IN/OUT	LV	Data Bus 4 Input/Output
	93	DB5	IN/OUT	LV	Data Bus 5 Input/Output
	94	DB6	IN/OUT	LV	Data Bus 6 Input/Output
	95	DB7	IN/OUT	LV	Data Bus 7 Input/Output
	32	RDQ	OUT	LV	$\overline{\text{Data Read Enable}}$ Output
	33	WRQ	OUT	LV	$\overline{\text{Data Write Enable}}$ Output
	34	OCF	OUT	LV	Opcode Fetch Output
	35	ALE	OUT	LV	Address Latch Enable Output
	36	RSTQ	OUT	LV	$\overline{\text{Internal CPU Reset}}$ Output
	97	PSENQ	OUT	LV	$\overline{\text{Program Store Enable}}$ Output
	20	PSWEQ	OUT	LV	$\overline{\text{Program Store Write Enable}}$ Output
	51	XROMQ	IN	OBL	$\overline{\text{External ROM Enable}}$ Input
	52	EXTIFQ	IN	LV	$\overline{\text{Enable External Interface}}$ Input
	24	STOPQ	IN	LV	$\overline{\text{Stop CPU}}$ Input
	25	ENEQ	IN	LV	$\overline{\text{Enable Emulation}}$ Input

Pin Descriptions

Supply Pins

VSUP1.8DIG – Supply Voltage 1.8 V
This pin is main and standby supply for the digital core logic of controller, video, display and deflection processing.

VSUP1.8FE – Supply Voltage 1.8 V
This pin is main supply for the analog video front-end.

VSUP3.3FE – Supply Voltage 3.3 V
This pin is main supply for the analog video front-end.

VSUP3.3IO – Supply Voltage 3.3 V
This pin is main and standby supply for the digital I/O-ports.

VSUP3.3DIG – Supply Voltage 3.3 V
This pin is main supply for the digital core logic of IF and audio processing and digital video back-end.

VSUP3.3BE – Supply Voltage 3.3 V
This pin is main supply for the analog video back-end.

VSUP5.0BE – Supply Voltage 5.0 V
This pin is main supply for the analog video back-end.

VSUP8.0AU – Supply Voltage 8.0 V
This pin is main supply for the analog audio processing.

GND – Ground Platform
This pin is main ground for all above supplies.

VSUP3.3DAC – Supply Voltage 3.3 V
This pin is main supply for the video DACs.

GNDDAC – Ground for 3.3 V Video DAC Supply

VSUP5.0IF – Supply Voltage 5.0 V
This pin is main supply for the analog IF front-end.

GNDIF – Ground for 5.0 V IF Supply

VSUP3.3EIO – Supply Voltage 3.3 V
This pin is main and standby supply for the extended digital I/O-ports available in QFP package only. It is internally connected to **VSUP3.3IO.**

GNDEIO – Ground for 3.3 V Extended I/O Supply
It is internally connected to GND.

Application Note:
All **GND** pins must be connected to a low-resistive ground plane underneath the IC. All supply pins must be connected separately with short and low-resistive lines to the power supply. Decoupling capacitors from **VSUPxx** to **GND** have to be placed as closely as possible to these pins. It is recommended to use more than one capacitor. By choosing different values, the frequency range of active decoupling can be extended.

IF Pins

VREFIF – Reference Voltage for Analog IF (Fig. 4–9)
This pin must be connected to **GNDIF** via a circuitry according to the application circuit. Low inductance caps are necessary.

IFIN+, IFIN- – Balanced IF Input (Fig. 4–6)
These pins must be connected to the SAW filter output. The SAW filter has to be placed as close as possible. The layout of the IF input should be symmetrical with respect to **GNDIF**.

SIF – 2nd Sound IF Output (Fig. 4–8)
Output level is set via I^2C-Bus. An appropriate sound processor (e.g. MSP) can be connected to this pin. This pin is also configurable as audio input (see Fig. 4–10).

TAGC – Tuner AGC Output (Fig. 4–7)
This pin controls the delayed tuner AGC. As it is a noise-shaped-I-DAC output, it has to be connected according to the application circuit.

Audio Pins

VREFAU – Reference Voltage for Analog Audio (Fig. 4–14)
This pin serves as the internal ground connection for the analog audio circuitry. It must be connected to the **GND** pin with a 3.3 µF and a 100 nF capacitor in parallel. This pins shows a DC level of typically 3.77 V.

AIN1 L – Audio 1 Inputs (Fig. 4–10)
The analog input signal for audio 1 is fed to this pin. Analog input connection must be AC coupled.

AIN1 R – Audio 1 Inputs (Fig. 4–10)
The analog input signal for audio 1 is fed to this pin. Analog input connection must be AC coupled. This pin is also configurable as sound IF output (see Fig. 4–8).

AIN2 R/L – Audio 2 Inputs (Fig. 4–10)
The analog input signal for audio 2 is fed to this pin. Analog input connection must be AC coupled.

AIN3 R/L – Audio 3 Inputs (Fig. 4–10)
The analog input signal for audio 3 is fed to this pin. Analog input connection must be AC coupled.

AOUT1 R/L – Audio 1 Outputs (Fig. 4–11)
Output of the analog audio 1 signal. Connections to these pins are intended to be AC coupled.

AOUT2 R/L – Audio 2 Outputs (Fig. 4–11)
Output of the analog audio 2 signal. Connections to these pins are intended to be AC coupled.

SPEAKER R/L – Loudspeaker Outputs (Fig. 4–13)
Output of the loudspeaker signal. A 1 nF capacitor to **GND** must be connected to these pins. Connections to these pins are intended to be AC-coupled.

Video Pins

VIN 1–11 – Analog Video Input (Fig. 4–15)
These are the analog video inputs. A CVBS, S-VHS, YCrCb or RGB/FB signal is converted using the luma, chroma and component AD converters. The input signals must be AC-coupled by 100nF. In case of an analog fast blank signal carrying alpha blending information the input signal must be DC-coupled.

VOUT 1-3 – Analog Video Output (Fig. 4–16)
The analog video inputs that are selected by the video source select matrix are output at these pins.

RIN, GIN, BIN – Analog RGB Input (Fig. 4–17)
These pins are used to insert an external analog RGB signal, e.g. from a SCART connector which can be switched to the analog RGB outputs with the fast blank signal. Separate brightness and contrast settings for the external analog signals are provided.

FBIN – Fast Blank Input (Fig. 4–18)
This pin is used to switch the RGB outputs to the external analog RGB inputs. The active level (low or high) can be selected by software.

ROUT, GOUT, BOUT – Analog RGB Output (Fig. 4–19)
These pins are the analog Red/Green/Blue outputs of the back-end. The outputs are current sinks.

SVMOUT – Scan Velocity Modulation Output (Fig. 4–19)
This output delivers the analog SVM signal. The D/A converter is a current sink like the RGB D/A converters. At zero signal the output current is 50% of the maximum output current.

VRD – DAC Reference Decoupling (Fig. 4–20)
Via this pin the RGB-DAC reference voltage is decoupled by an external capacitor. The DAC output currents depend on this voltage, therefore a pulldown transistor can be used to shut off all beam currents. A decoupling capacitor of 4.7 µF in parallel to 100 nF (low inductance) is required.

XREF – DAC Current Reference (Fig. 4–20)
External reference resistor for DAC output currents, typical 10 kΩ to adjust the output current of the D/A converters. (see recommended operating conditions). This resistor has to be connected to ground as closely as possible to the pin.

4.3.5. CRT Pins

VPROT – Vertical Protection Input (Fig. 4–22)
The vertical protection circuitry prevents the picture tube from burn-in in the event of a malfunction of the vertical deflection stage. If the peak-to-peak value of the sawtooth signal from the vertical deflection stage is too small, the RGB output signals are blanked.

SAFETY – Safety Input (Fig. 4–22)
This input has two thresholds. A signal between the lower and upper threshold means normal function. A signal below the lower threshold or above the upper threshold is detected as malfunction and the RGB signals will be blanked.

HOUT – Horizontal Drive Output (Fig. 4–21)
This open source output supplies the drive pulse for the horizontal output stage. An external pulldown resistor has to be used. The polarity and gating with the flyback pulse are selectable by software.

HFLB – Horizontal Flyback Input (Fig. 4–22)
Via this pin the horizontal flyback pulse is supplied to the VCT 49xxI.

VERT+, VERT– – Vertical Sawtooth Output (Fig. 4–23)
These pins supply the symmetrical drive signal for the vertical output stage. The drive signal is generated with 15-bit precision. The analog voltage is generated by a 4 bit current-DAC with an external resistor of 6.8 kΩ and uses digital noise shaping.

EW – East-West Parabola Output (Fig. 4–24)
This pin supplies the parabola signal for the East-West correction. The drive signal is generated with 15 bit precision. The analog voltage is generated by a 4 bit current-DAC with an external resistor of 6.8 kΩ and uses digital noise shaping.

PWMV – PWM Vertical Output (Fig. 4–35)
This pin provides an adjustable vertical parabola with 7 bit resolution and appr. 79.4 kHz PWM frequency.

DFVBL – Dynamic Focus Vertical Blanking (Fig. 4–35)
This pin supplies the blank pulse for dynamic focus during vertival blanking period or a free programmable horizontal pulse for horizontal dynamic focus generation.

SENSE – Measurement ADC Input (Fig. 4–27)
This is the input of the analog to digital converter for the picture and tube measurement. Three measurement ranges are selectable with RSW1 and RSW2.

GNDM – Measurement ADC Reference Input
This is the reference ground for the measurement A/D converter. Connect this pin to GND.

RSW1 – Range Switch1 for Measuring ADC (Fig. 4–25)
These pin is an open drain pulldown output. During cutoff and white drive measurement the switch is off. During the rest of time it is on. The RSW1 pin can be used as second measurement ADC input for picture beam current measurement.

RSW2 – Range Switch2 for Measuring ADC (Fig. 4–26)
These pin is an open drain pulldown output. During cutoff measurement the switch is off. During white drive measurement the switch is on. Also during the rest of time it is on. It is used to set the range for white drive current measurement.

4.3.6. Controller Pins

XTAL1 – Crystal Input and **XTAL2** Crystal Output (Fig. 4–28)
These pins connect a 20.25 MHz crystal to the internal oscillator. An external clock can be fed into XTAL1.

RESETQ – Reset Input/Output (Fig. 4–29)
A low level on this pin resets the VCT 49xxI. The internal CPU can pull down this pin to reset external devices connected to this pin.

TEST – Test Input (Fig. 4–30)
This pin enables factory test modes. For normal operation, it must be connected to ground.

SCL – I^2C Bus Clock (Fig. 4–31)
This pin delivers the I^2C bus clock line. The signal can be pulled down by external slave ICs to slow down data transfer.

SDA – I^2C Bus Data (Fig. 4–31)
This pin delivers the I^2C bus data line.

P10–**P13, P20**–**P23** – I/O Port (Fig. 4–32)
These pins provide CPU controlled I/O ports.

P14–**P17** – I/O Port (Fig. 4–33)
These pins provide CPU controlled I/O ports. Additionally they can be used as analog inputs for the controller ADC.

P24–**P26, P30**–**P37** – I/O Port (Fig. 4–34)
These pins provide CPU controlled I/O ports.

ADB0–**ADB19** – Address Bus Output (Fig. 4–35)
These 20 lines provide the CPU address bus output to access external memory.

DB0–**DB7** – Data Bus Input/Output (Fig. 4–36)
These 8 lines provide the bidirectional CPU data bus to access external memory.

WRQ – $\overline{\text{Data Write Enable}}$ Output (Fig. 4–35)
This pin controls the direction of data exchange between the CPU and the external data memory device (SRAM).

RDQ – $\overline{\text{Data Read Enable}}$ Output (Fig. 4–35)
This pin is used to enable the output driver of the external data memory device (SRAM) for read access.

PSENQ – $\overline{\text{Program Store Enable}}$ Output (Fig. 4–35)
This pin is used to enable the output driver of the external program memory device (ROM/FLASH) for read access.

PSWEQ – $\overline{\text{Program Store Write Enable}}$ Output (Fig. 4–35)
This pin is used to write into the external program flash memory device.

XROMQ – $\overline{\text{External ROM Enable}}$ Input (Fig. 4–37)
This pin must be pulled low to access the external program memory. **XROMQ** has an internal pull-up resistor.

EXTIFQ – $\overline{\text{Enable External Memory Interface}}$ Input (Fig. 4–37)
This pin must be pulled low to enable the external memory interface. **EXTIFQ** has an internal pull-up resistor.

STOPQ – $\overline{\text{Stop}}$ CPU Input (Fig. 4–37)
Applying a low level during the input phase freezes the realtime relevant internal peripherals such as timers and interrupt controller. **STOPQ** has an internal pull-up resistor.

ENEQ – $\overline{\text{Enable Emulation}}$ Input (Fig. 4–37)
Only if this pin is set to low level, STOPQ and OCF are operational. **ENEQ** has an internal pull-up resistor.

ALE – Address Latch Enable Output (Fig. 4–35)
This signal indicates changes on the address bus.

OCF – Opcode Fetch Output (Fig. 4–35)
A high level driven by the CPU during output phase indicates the beginning of a new instruction.

RSTQ – $\overline{\text{Internal CPU Reset}}$ Input/Output (Fig. 4–38)
This pin is used for emulation purpose only. A low level on this pin resets the CPU. It also indicates an internal reset of the CPU.

Pin Configuration

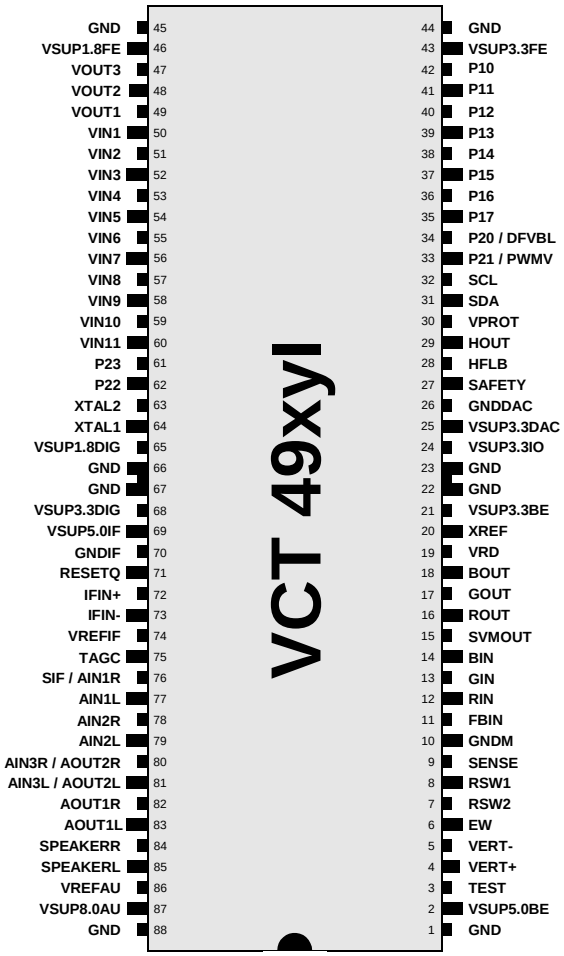


Fig. 4–3: PSSDIP88-1 package

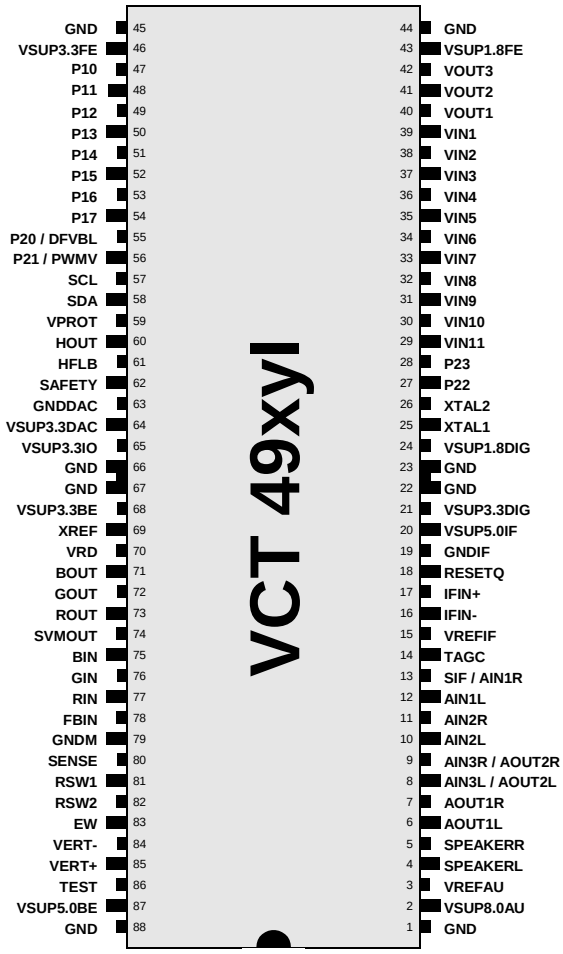


Fig. 4–4: PSSDIP88-2 package (pinning mirrored)

MC44608

Few External Components Reliable and Flexible SMPS Controller

The MC44608 is a high performance voltage mode controller designed for off−line converters. This high voltage circuit that integrates the start−up current source and the oscillator capacitor, requires few external components while offering a high flexibility and reliability.

The device also features a very high efficiency stand−by management consisting of an effective Pulsed Mode operation. This technique enables the reduction of the stand−by power consumption to approximately 1.0 W while delivering 300 mW in a 150 W SMPS.

- Integrated Start−Up Current Source
- Lossless Off−Line Start−Up
- Direct Off−Line Operation
- Fast Start−Up

General Features

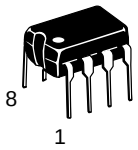
- Flexibility
- Duty Cycle Control
- Undervoltage Lockout with Hysteresis
- On Chip Oscillator Switching Frequency 40, 75, or 100 kHz
- Secondary Control with Few External Components

Protections

- Maximum Duty Cycle Limitation
- Cycle by Cycle Current Limitation
- Demagnetization (Zero Current Detection) Protection
- "Over V_{CC} Protection" Against Open Loop
- Programmable Low Inertia Over Voltage Protection Against Open Loop
- Internal Thermal Protection

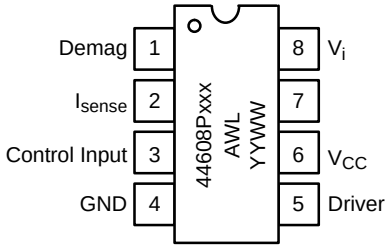
SMPS Controller

- Pulsed Mode Techniques for a Very High Efficiency Low Power Mode
- Lossless Startup
- Low dV/dT for Low EMI Radiations



PDIP−8
P SUFFIX
CASE 626

PIN CONNECTIONS AND MARKING DIAGRAM



(Top View)

AWL = Manufacturing Code
YYWW = Date Code

ORDERING INFORMATION

Device	Switching Frequency	Package	Shipping
MC44608P40	40 kHz	Plastic DIP−8	50/Rail
MC44608P75	75 kHz	Plastic DIP−8	50/Rail
MC44608P100	100 kHz	Plastic DIP−8	50/Rail

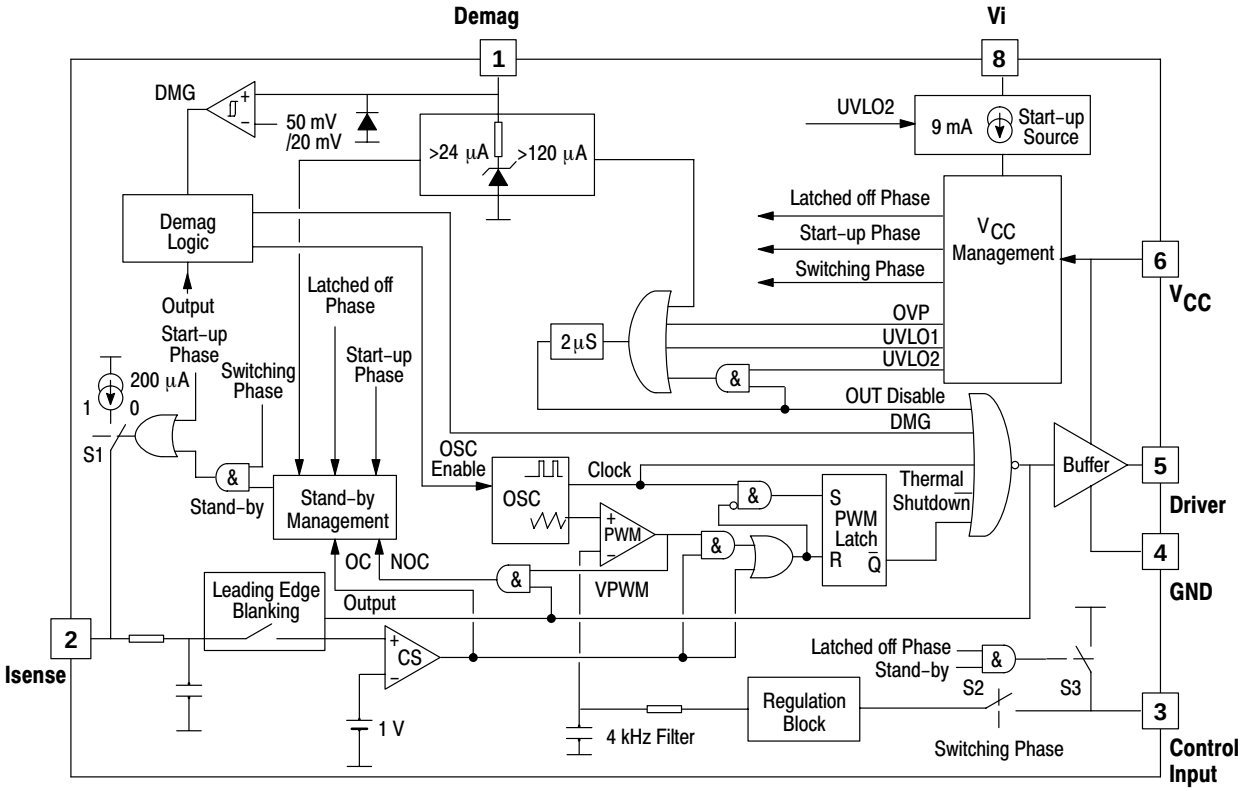
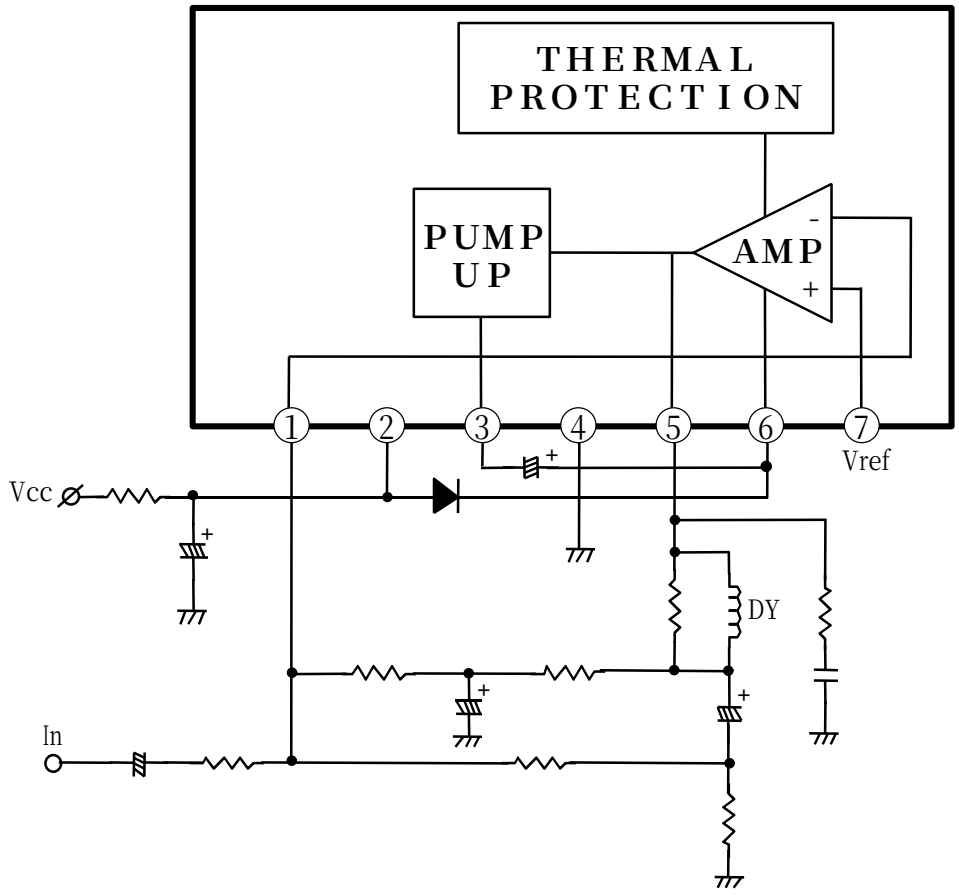


Figure 1. Representative Block Diagram

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Total Power Supply Current	I_{CC}	30	mA
Output Supply Voltage with Respect to Ground	V_{CC}	16	V
All Inputs except Vi	V_{inputs}	−1.0 to +16	V
Line Voltage Absolute Rating	V_i	500	V
Recommended Line Voltage Operating Condition	V_i	400	V
Power Dissipation and Thermal Characteristics Maximum Power Dissipation at T_A = 85°C Thermal Resistance, Junction−to−Air	 P_D $R_{\theta JA}$	 600 100	 mW °C/W
Operating Junction Temperature	T_J	150	°C
Operating Ambient Temperature	T_A	−25 to +85	°C

Circuit Function Block Diagram



Pin Descriptions

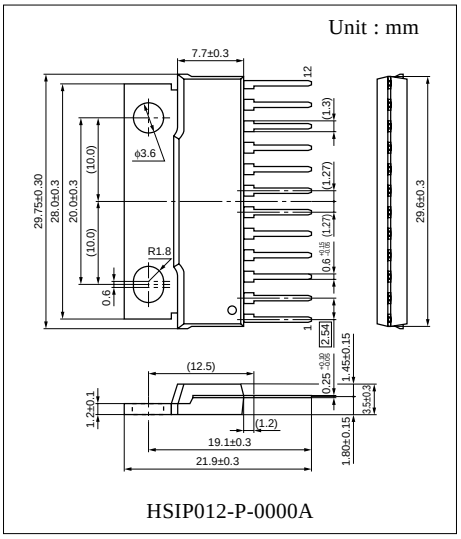
Pin No.	Pin Name
1	Inverting Input
2	Power Supply
3	Pump-up Output
4	GND GND
5	Vertical Output
6	Vertical Output Power Supply
7	Non-inverting Input

AN5277

Dual Channel SEPP Power Amplifier

■ Overview

The AN5277 is a monolithic integrated circuit designed for 10.0 W (26 V, 8 Ω)output audio power amplifier. It is a dual channel SEPP IC suitable for stereo operation in TV application.



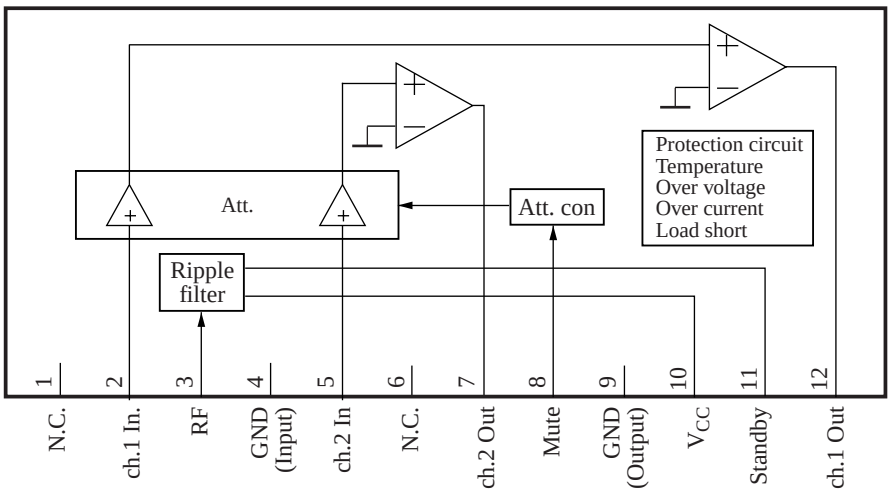
■ Features

- Few external components :
  - No Boucherot cells(output C, R)
  - No Bootstrap Capacitors
  - No Negative Feedback Capacitors
- Built-in muting circuit
- Built-in standby circuit
- Built-in various protection circuits (Load-short, thermal, over-voltage and current)
- High ripple rejection(55 dB)
- Compatible with AN5275, AN5276
- Operating voltage range 10 ~ 32 V(26 V typ.)

■ Applications

- TV

■ Block Diagram



1. ELECTRICAL ADJUSTMENTS

1.1. Supply Voltage Adjustment

Connect a digital voltmeter to the cathode of diode D611 at the AV1 mode of the TV and set the screen voltage to the minimum with the screen potentiometer. Adjust the main supply voltage (B+) with P601 potentiometer to the following value (after adjustment, readjust Screen voltage).

Size	CPT Beko Code	CPT Definition	Voltage
25"	056325-TE1	CPT TES A59EMZ43X07	147V
	056325-VC4	CPT VC A59EHJ13X38	146V
26"	056426-VC1	CPT VC W60ELC011X001 PF	117V
	056426-VC2	CPT VC W60ELC011X101 PF SVM	117V
28"	056328-PH10	CPT PH 28"4:3 A66EAK075X11/L (CEK)	147V
	056328-SB4	CPT SEB A66QEW13X10	147V
	056328-TE1	CPT TES A66EMZ43X07	147V
	056328-VC9	CPT VC A66EHJ13X62 (POLONYA)	145 V
	056329-SS2	CPT SS A68QCP993X011 PF DY SCD29333 MACR	128V
	056428-GS2	CPT GS W66QDS757X54 (G.Y.K)	127V
	056428-GS3	CPT GS TINT W66QDS770X59S (GYK) PF SVM	127V
	056428-PH13	CPT PH W66ERF022X013 PF WW (CEK)	142V
	056428-PH18	CPT PH W66ERF122X013 PF CEK(MCB DY+TINT)	142V
	056428-PH20	CPT PH W66ECK011X13/L SF MCB DY CEK	140V
	056428-PH3	CPT PH W66ECK011X13 (S.FLAT) FRANCE	140V
	056428-PH6	CPT PH W66ERF022X013 P.FLAT WW	142V
	056428-PH8	CPT PH W66ECK011X13(S.FLAT)HR-PO3 GUN	140V
	056428-SS2	CPT SS W66QDE993X041 PF (MACAR)	139V
	056428-VC1	CPT VC W66EJU023X015 (S.FLAT)	140V
	056428-VC6	CPT VC W66ELC011X001 (GEN2) P.FLAT	118V
	056428-VC8	CPT VC W66EJU023X215 28 16:9 SF SVM	135V
	056528-PH1	CPT PH 28"4:3 A66EAK075X11-50HZ(HRANICE)	147V
29"	056329-MT1	CPT MTH A68EPD10X20 PF D-COM SVM (ALM.)	131V
	056329-OR2	CPT OR A68QFD290X012 PF (KORE) SVM.LI	126V
	056329-OR5	CPT OR A68KTB359X048(P) 1.3R KORE S.TINT	142V
	056329-PH3	CPT PH A68QCU770X77N P.FLAT (MEXICO)	140V
	056329-PH6	CPT PH A68ERF112X013/M PF T.MIDY WW FRA	128V
	056329-SB5	CPT SEB A68QCP993X001 (GERMANY) PF	128V
	056329-SB8	CPT SEB A68QCP993X011 PF DY(SCD-29333)	134V
	056329-SS2	CPT SS A68QCP993X011 PF DY SCD29333 MACR	128V
	056329-TE1	CPT TES.A68EXZ196X107 P.FLAT SVM	139V
	056329-VC0	CPT VC A68AGA25X105 29" SF 1.3R (MEXICO)	142V
	056329-VC13	CPT VC A68ELA021X001 P.FLAT	133V
	056329-VC14	CPT VC A68AGA25X95 29" SF 1.3R WW (MEX.)	142V
	056329-VC15	CPT VC A68AGA20X105 29 SF 1.3R (CHINA)	142V
	056329-VC17	CPT VC A68ELM021X101 P.FLAT SVM ITALY	134V
	056329-VC18	CPT VC A68ELA021X101 P.FLAT SVM ITALYA	133V
	056329-VC19	CPT VC A68ELA011X101 P.FLAT SVM ITALYA	133V
	056329-VC20	CPT VC A68AGA20X105 29 SF 1.3R(DONGGUAN)	142V
	056329-VC9	CPT VC A68ELA011X001 P.FLAT	133V
	056333-HT1	CPT HT A80LZX70X46(C) SVM (CIN)	128V
32"	056432-GS2	CPT GS W76QDD259X11 (P.FLAT) G.Y.K	127V
	056432-PH8	CPT PH W76ESF011X14 CEK SF P03GUN SVM	140V
	056432-PS2	CPT PS W76EKW10X21 P.FLAT	140V
	056432-SS1	CPT SS W76QEN693X041 P.FLAT (HUNG)SNG.	140V
	056432-VC2	CPT VC W76EGV023X015 (S.FLAT)	133V
	056432-VC6	CPT VC W76ELC011X101 (GEN2) P.FLAT	135V
33"	056333-HT1	CPT HT A80LZX70X46(C) SVM (CIN)	128V
	056333-PH4	CPT PH A80QCF330X22N (KOREA) DY.SIZ	159V

2. SERVICE ADJUSTMENTS

To enter “SERVICE MENU” , edit “9301” by remote control while main menu on the secreen.To exit from service menu ,press TV/TXT button.

2.1. AGC Adjustment

- Enter service menu
- Enter “OPTION” sub menu and set “AGC METHOD” item as a “SYNC+PEAK WHITE”
- Exit from “OPTION”
- Enter “IF ADJ.” and set “AGC” as “2” and “AGC FOR VHF I” as “2”
  Not: For Panasonic DB2G3 (PS4) tuner , set “AGC” as “4” and “AGC FOR VHF I” as “4”
- Set "PIP AGC" as "15" and "PIP AGC FOR VHF I" as "20"
- Exit from the service menu

2.2. Screen Adjustment

- Enter the Service Menu and select “VIDEO ADJ. I” and find “SCREEN ADJ.”
- Enter the value from the table of preset values
- Press “ok” button on RC
- Adjust the screen potentiometer to the level where the screen is just black.
- By pressing “ok” please see the picture on TV
- Exit from the Service menu.

2.3. Geometry Adjustments

- In C7 and C8 chassis ,There is different geometric adjustment memory for PAL/SECAM and NTSC. For PAL/SECAM “50Hz GEOM.” , "50Hz GEOM. HOR.I" ve "50Hz GEOM. EHT", For NTSC "60Hz GEOM.", "60Hz GEOM. HOR.I" ve "60Hz GEOM. EHT" menus are used.For all version both of them have to be adjust.
- Apply a Cross Hatch Test pattern.
- Enter Service Menu
- If the product has “TILT “ propertis, Please select TILT as available under the “SOUND OPTION” and set “TILT 0” as “32”
- Set the value of this item as given in the preset table EHT TRESHOLD" , "EHT TIME CONSTANT" , "VERTICAL EHT 1" , "VERTICAL EHT 2", "HORIZONTAL EHT 1", "HORIZONTAL EHT 2", "EHT DTC", "EHT P1", "EHT P2", "EHT A1", "EHT A2", "START LINE MEASUR.", "VER. BLANKING STOP", "VER. BLANKING START", "HOR. BLANKING STOP" ve "HOR. BLANKING START"
- Adjust item "HORIZONTAL WIDTH, "VERTICAL AMPLITUDE" , "VERTICAL SHIFT" to vertical shift , "LINEARITY", "S-CORRECTION", "VERTICAL ANGLE", "VERTICAL BOW", "HORIZONTAL SHIFT" , "TRAPEZE CORR. I" "CUSHION CORR I.", "UPPER CORNER 1 I" and "UPPER CORNER 2 I" "LOWER CORNER 1 I" and "LOWER CORNER 2 I" , "HORIZONTAL OSD POSITION" "VERTICAL OSD POSITION"
- Adjust 16:9 TV's 4:3 picture format or 4:3 TV's 16:9 picture format by entering "50HZ GEOM. HOR.I" sub menu.Adjust the items "TRAPEZE CORR.II", "CUSHION CORR.II" , "UPPER CORNER 1 II" "UPPER CORNER 2 II", "LOWER CORNER 1 II" ve "LOWER CORNER 2 II"
- For NTSC geometry, connect NTSC signal to Scart 1(AV1). Enter "60Hz GEOM. VER.", "60Hz GEOM. HOR.I" and "60Hz GEOM. EHT" and adjust geometry like PAL/SECAM

2.4. White Balance Adjustment

- Enter the Service Menu, select "VIDEO ADJ. I" menu
- Set "G. CUTOFF" as "156" , "G. DRIVE" as "356". Change "R. DRIVE" high red light, "B. DRIVE" high blue ligt , "R. CUTOFF" red low light and "B. CUTOFF" blue low ligt .If white color can not be setted , change the value of "G. CUTOFF" and "G. DRIVE" (The values in the preset table are aproximate and these values have to be setted for each tv sets)
- Exit from the Service menu.

2.5. Feature Options

FEATURE OPTIONS AND SERVICE MENU

***AV1 YUV**	AVAILABLE : Scart1 component input available , N/A : Scart1 component input not available
AV2&AV3	AV2&AV3 N/A : Scart2 and AV3 not available AV2 AVAIL.-AV3 N/A : Scart2 yes, AV3 no AV2&AV3 AVAILABLE : Scart2 and AV3 yes
AV4	NONE : Front AV no CVBS + SVHS : Front AV + S-VHS available CVBS ONLY :Only Front AV available. (S-VHS not) SVHS ONLY : Only S-VHS available. (Front AV not)
TELETEXT	DEFAULT : Teletext ; FASTEXT : Fastext ; TOPTEXT : Toptext FASTEXT + TOPTEXT : Fastext + Toptext
LANGUAGE	It is used to select menu language A : English-German-French-Italian-Spanish-Portuguese-Greek-Turkish-Dutch-Swedish-Danish-Norwegian-Finnish-Slovenian-Polish-Hungarian-Russian-Hebrew-Romanian Croatian-Czech-Slovak-Albanian-Bulgarian- Macedonian-Serbian B : English-German-French-Italian-Spanish-Portuguese-Greek-Turkish-Dutch-Swedish Danish-Norwegian-Finnish-Slovenian-Polish-Hungarian-Russian-Romanian-Croatian Czech-Slovak-Albanian-Bulgarian- Macedonian-Arabic-Persian
TXT TABLE	AUTO : Automatic selection of TXT table with Menu Language. WEST : English,French,German,Turkish,Spanish,Italian,Finnish,Swedish,Norwegian,Dannish EAST : Polish,French,Hungarian,Czech,German,Slovak,Italian,Romanian GREEC :English,French,Turkish,German,Finnish,Norwegian,Swedish,Danish,Spanish, Italian,Greek CYRILLIC :English,Russian,German,Czech,Estonian,Ukrainian,Letvian, ARABIC :English,French,German,Turkish,Spanish,Italian,Finnish,Swedish,Norwegian, Dannish,Arabic FARSI : English,French,German,Turkish,Spanish,Italian,Finnish,Swedish,Norwegian, Dannish,Persian HEBREW : English,French,German,Turkish,Italian,Finnish,Swedish,Norwegian,Dannish,
MAIN TUNER	To select used main tuner Philips; Panasonic DB2G3; Temic; Panasonic D44G3; Sharp or Alps
***PIP TUNER**	To select PIP tuner Philips; Panasonic DB2G3; Temic; Panasonic D44G3; Sharp or Alps
***PIP**	AVAILABLE : PIP available ; N/A : PIP not available.
BG	EUROPE : BG Europe ; NEW ZELLAND : BG New Zelland. AUSTRALIA : BG Australia ; N/A : BG Not available.
DK	AVAILABLE : DK available ; N/A : DK not available
I	AVAILABLE :" I" available ; N/A :" I " not available.
L/L'	AVAILABLE : LL' available ; N/A : LL' not available.
***NICAM**	AVAILABLE : Nicam available ; N/A : Nicam not available.
***DOLBY VIRTUAL**	AVAILABLE : Virtual Dolby available ; N/A : Virtual Dolby not available.
HEADPHONE	AVAILABLE : Headphone available ; N/A : Headphone not available.
***BASS OPTION**	DYNAMIC BASS : Dinamik Bass open ; SUBWOOFER : Subwoofer open. NONE : Bass option not available.
CARRIER MUTE	VIA MSP : For all market except Turkey; VIA MICRO : For Turkey market.
***FM RADIO**	NONE: Radio and EPG closed. FM RADIO: Only radio open.
/ TV GUIDE	TV GUIDE : Only EPG open.
***LTI & COMB**	ON: LTI ve Comb. Filter opened ; OFF: LTI ve Comb. Filter closed
NOT:	LTI&COMB selected for C7 chassis it is OFF, for C8 chassis it is ON
***CTI**	ON : Color Transient Improvement properties opened OFF :Color Transient Improvement properties closed. MENU :Color Transient Improvement properties can be selected on user menu.

	CTI normaly selected for chassis C7 as OFF and for chasis C8 as MENU
NOT:	
***PAT**	AVAILABLE : Picture and Text available N/A : Picture and Text not available
SIMPLE HOTEL	AVAILABLE : Hotel TV , N/A : Normal TV
HOTEL MAX VOL	Hotel TV maximum volume level can be selected
CRT	4:3 : 4:3 TV's ; 16:9 : 16:9 TV's.
***SVM&DCI**	ON : Scan Velocity Modulation available ; OFF : Scan Velocity Modulation not available. MENU : SVM option can be selected via user menu
BLUEBACK	ON : Blueback opened ; OFF : Blueback closed
NOT:	Normaly BLUEBACK is selected for C7 as OFF and for C8 as ON
***CALCULATOR**	AVAILABLE : Caculater opened ; N/A : closed
***GAME**	AVAILABLE : Game opened ; N/A : closed.
***ALARM TIMER**	AVAILABLE : Alarm opened ; N/A : Alarm closed
PROTECTION	N/A : Protection circuitry not available ; BCL ONLY : Only Beam Current Limitation protection available. VERTICAL ONLY : Only vertical protection available. BCL & VERTICAL : Both of them available.
NOT:	All C7-C8 protection default value is N/A . If the related circuitry does not exist ,DO NOT SELECT AVAILABLE
***PANORAMA**	AVAILABLE : Panorama mode opened ; N/A : Panorama mode closed. **NOT1:** This item not functioanal for 4:3 TV's
***DYNAMIC FOCUS**	ON : Dynamic Focus available ; OFF : Dynamic Focus not available.
KEYBOARD	P- P+ V- V+ ; Selects this button configuration on TV. MENU P/V - + ; Selects this button configuration on TV
NOT:	KEYBOARD items have to be selected with product properties
DEMO	0 : Automatic tuning at first opening is closed 1 :Automatic tuning at first opening is opened.
***TILT**	N / A : Tilt adjutment not available ; Available :Available
AGC METHOD	Microcontroller AGC adjustment method. Sync peak white ; Fixed.
CRT4:3,MODE16:9	VIA FLYBL : Cutoff lines make not visable by moving top. DISABLE CUTOFF : Cutoff lines directly disabled
NOT:	Default vaule is VIA FLYBL
NOT:	* items not availabe in C7 Mono S/W.

2.6. Factory Settings for Service Mode (Preset Table)

1. Values given in Preset Table are typical values and can vary according to the CRT type.
2. Also in the list some changing value are givens acording to CPT type.CPT called in the list as last digits after "-" of CPT Beko codes.CPT Beko codes are given in Voltage adjustment section.
3. PF means Pure Flat and SF means Super Flat.
4. The items marked with " * " in Preset Table can be changed for each tv set.

	25" MASTER CPT	25" -TE1 CPT DIFF.	26" 16:9 MASTER CPT	28" 4:3 SF MASTER CPT	28" 4:3 SF "PH1" CPT DIFF.	28" 4:3 SF "SB4"CPT DIFF.	28" 4:3 SF "TE1"CPT DIFF.	28 16:9 SF	28" 16:9 SF "VC1" CPT DIFF.	28" 16:9 PF	28" 16:9 PF "SS2" CPT DIFF .	28" 16:9 PF "VC6" CPT DIFF.	29" 4:3 PF	29" 4:3 PF "PH3" CPT DIFF.	29" 4:3 PF "SS2"and "SB5" CPT DIFF.	29" 4:3 PF "SB8" CPT DIFF.	29" 1,3R SF and "VC14";"VC20"	29" 1,3R SF "OR5" DIFF.	32 16:9 SF	32 16:9 SF "PH8" CPT DIFF.	32" 16:9 PF	32" 16:9 PF "SS1" CPT DIFF.	33" 4:3 SF
VIDEO ADJ. I																							
*R. DRIVE	: 356		: 356	: 356				: 356		: 356			: 356				: 356		: 356		: 356		: 356
G. DRIVE	: 356		: 356	: 356				: 356		: 356			: 356				: 356		: 356		: 356		: 356
*B. DRIVE	: 356		: 356	: 356				: 356		: 356			: 356				: 356		: 356		: 356		: 356
*R. CUTOFF	: 156		: 156	: 156				: 156		: 156			: 156				: 156		: 156		: 156		: 156
G. CUTOFF	: 156		: 156	: 156				: 156		: 156			: 156				: 156		: 156		: 156		: 156
*B .CUTOFF	: 156		: 156	: 156				: 156		: 156			: 156				: 156		: 156		: 156		: 156
IBRM	: 320	:330	: 330	: 330		:260	:270	: 320	:240	: 340	:300	:290	: 310	:290	:330	:300	: 320	:300	: 340	: 330	: 310	: 300	: 330
WDRM	: 300	:248	: 320	: 290		:265	:300	: 310	:280	: 310	:270	:280	: 290	:260	:310 (SS2)	:300	: 350	:270	: 290	: 280	: 300	: 260	: 280
SCREEN ADJ.	: 170	:200	: 95	: 176		:165	:170	: 100	:150	: 80	:175	:175	: 90		:176	:174	: 215	:147	: 90	: 176	: 170	: 135	: 180
VIDEO ADJ. III																							
DPWL GAIN	:-300		: 0	:-250				:-350		:-300	:-250		:-300		:-250	:-360	: 0		:-350		:-300		:-300
DPWL START P.	: 520		: 0	: 550				: 600		: 650	:550		: 520		:550	:460	: 0		: 520		: 520	:450	: 600
PWL TIME CONSTANT	: 1		: 1	: 1				: 1		: 1			: 1		:1		: 1		: 1		: 1		: 1
PWL	: 100		: 60	: 80				: 70		: 250	:90		: 250		:250		: 150		: 150		: 150	:130	: 150
SVM GAIN	: 0		: 0	: 0				: 0		: 20			: 30				: 0		: 20		: 20		: 0
SVM CORING	: 0		: 0	: 0				: 0		: 7			: 7				: 0		: 7		: 7		: 0
SVM LIMITTER	: 0		: 0	: 0				: 0		: 63			: 63				: 0		: 63		: 63		: 0
SVM DELAY	: 0		: 0	: 0				: 0		: 3			: 3				: 0		: 3		: 3		: 0
SVM DIFF.WINDOW	: 0		: 0	: 0				: 0		: 4			: 4				: 0		: 4		: 4		: 0
5OHZ GEOM. EHT																							
EHT TRESHOLD	: 60	:50	: 40	: 63	:63			: 50	:40	: 40	:86	:55	: 100	: 55	:70	:75	: 40	:63	: 60		: 60	: 53	: 40
EHT TIME CONSTANT	: 40		: 40	: 40				: 40		: 30	:40	:40	: 40				: 40		: 40		: 40		: 40
VERTICAL EHT 1	:-35	:-100	:-225	:-100	:+100	:-60	:-60	: -60	:-120	:-185	:-130	:-270	:-30	:-170	:-90	:-160	:-184	:-140	:-185	:-100	:-140	:-110	:-185
VERTICAL EHT 2	:-10	:+15	:+35	:+34	:+34	:-10	:-5	:-10	:-25	:-25	:+30	:+44	:-90	:+45	:-30	:+90	: 14	:+10	:-20	:+20	:-30	:-10	: 0
HORIZONTAL EHT 1	:-185	:-270	:-350	:-237	:-237	:-160	:-155	:-160	:-180	:-390	:-70	:-170	:-140	:-150	:-115	:-200	:-340	:-300	:-225	:-180	:-20	:-90	:-470
HORIZONTAL EHT 2	:-80	:-50	:-45	:-46	:-36	:-90	:-90	:-110	:-60	:-60	:-50	:-30	:-65	:-50	:-70	:0	:-66	:-50	:-100	:-90	:-150	:-60	:-90
EHT DTC	:-50		:-30	:-50				:-50		:-20		:-50	:-10				:-75		:-25		:-50		:-50
EHT P1	:-60	:-40	:-50	:-49		:-40		:-30	:-40	:-30	:-35	:-40	:-40	:-50		:-30	:-42	:-20	:-40		:-50	:-50	:-60
EHT P2	:-45	:-40	:-40	:-40				:-30	:-40	:-40	:-17	:-30	:-15	:-30		:-40	:-36	:-30	:-25	:-25	:-50	:-40	:-25
VIDEO ADJ. II																							
BCL GAIN	: 280		: 250	: 280				: 260		: 250	:200		: 250		:200		: 250		: 250		: 280		: 250
BCL TRESHOLD	:+180		:+240	:+265				:+260		:+230	:329		:+240				:+230		:+260		:+240	:265	:+250
BCL TRESHOLD II	:+140		:+100	:+235				:+150		:+130	:330		:+220				:+160		:+180		:+130	:180	:+220
BCL TIME CONSTANT 1	: 511		: 511	: 511				: 511		: 511			: 511				: 511		: 511		: 511		: 511
BCL TIME CONSTANT 2	: 0		: 0	: 0				: 0		: 0			: 0				: 0		: 0		: 0		: 0
OSD BRIGHTNESS	: 120		: 110	: 110				: 100		: 120	:110		: 100				: 110		: 120		: 130		: 120
OSD CONTRAST	: 200		: 150	: 170				: 170		: 200			: 200				: 200		: 230		: 200		: 200
TXT BRIGHTNESS	: 100		: 110	: 110				: 100		: 100	:140		: 120				: 140		: 120		: 120		: 110
TXT CONTRAST	: 130		: 130	: 120				: 120		: 140	:130		: 170				: 150		: 140		: 160		: 170
YC DELAY FOR PAL	: 9		: 9	: 9				: 9		: 9			: 9				: 9		: 9		: 9		: 9
YC DELAY FOR SECAM	: 2		: 2	: 2				: 2		: 2			: 2				: 2		: 2		: 2		: 2
YC DELAY FOR NTSC	: 10		: 10	: 10				: 10		: 10			: 10				: 10		: 10		: 10		: 10
SUBCARRIER ADJ.	: 18		: 18	: 18				: 18		: 18			: 18				: 18		: 18		: 18		: 18
SOUND OPTIONS																							
BCL DELTA	: 50		: 50	: 50				: 50		: 50			: 50				: 50		: 50		: 50		: 50
TILT 0	: 0		: 0	: 32				: 0		: 32			: 32				: 32		: 0		: 32		: 0
PIP POSITION																							
*HORIZONTAL	: 59		: 54	: 54				: 56		: 52			: 58				: 58		: 54		: 55		: 52
*VERTICAL	: 14		: 14	: 14				: 16		: 14			: 15				: 16		: 17		: 15		: 14
6OHZ GEOM. EHT																							
EHT TRESHOLD	: 50		: 30	: 50		:63		: 90	:40	: 50	:80		: 120	:100	:70	:40	: 60	:+50	: 60		: 60	:40	: 60
EHT TIME CONSTANT	: 40		: 40	: 40				: 40		: 40			: 40				: 40		: 40		: 40		: 40

	25" MASTER CPT	25" -TE1 CPT DIFF.	26" 16:9 MASTER CPT	28" 4:3 SF MASTER CPT	28" 4:3 SF "PH1" CPT DIFF.	28" 4:3 SF "SB4"CPT DIFF.	28" 4:3 SF "TE1"CPT DIFF.	28 16:9 SF	28" 16:9 SF "VC1" CPT DIFF.	28" 16:9 PF	28" 16:9 PF "SS2" CPT DIFF .	28" 16:9 PF "VC6" CPT DIFF.	29" 4:3 PF	29" 4:3 PF "PH3" CPT DIFF.	29" 4:3 PF "SS2"and "SB5" CPT DIFF.	29" 4:3 PF "SB8" CPT DIFF.	29" 1,3R SF and "VC14";"VC20"	29" 1,3R SF "OR5" DIFF.	32 16:9 SF	32 16:9 SF "PH8" CPT DIFF.	32" 16:9 PF	32" 16:9 PF "SS1" CPT DIFF.	33" 4:3 SF
VERTICAL EHT 1	:-43	:-80	:-350	:-133		:-60	:-60	:-50	:-120	:-80	:-20	:-180	:-30	:-150	:-90	:-140	:-143	:-155	:-140	:-100	:-60	:-120	:-180
VERTICAL EHT 2	: 0	:-20	:-15	:-13		:-20	:-30	: 0	:-45	:-10	:-80	:-40	:-10	:+35	:-60	:-25	: 2	:-15	:10	:+20	:-25	:-25	:-30
HORIZONTAL EHT 1	:-230	:-270	:-390	:-270		:-160	:-200	:-120	:-190	:-410	:-70	:-220	:-150	:-200	:-165	:-200	:-250	:-310	:-225	:-180	:-170	:-190	:-430
HORIZONTAL EHT 2	:-90	:-100	:-45	:-97		:-90		:-115	:-75	:-60	:-160	:-50	:-35	:-175	:-70	:-50	:-65	:-80	:-80	:-90	:-100	:-70	:-60
EHT DTC	:-50		:-30	:-50				:-50		:-50			:-50				:-50		:-50		:-50		:-40
EHT P1	:-50	:-40	:-40	:-39				:-20	:-40	:-40		:-60	:-40				:-32	:-49	:-30	:-40	:-30	:-40	: 0
EHT P2	:-55	:-40	:-35	:-34		:-40		:-15	:-20	:-40	:-60	:-34	:-45	:-40		:-34	:-25	:-40	:-20	:-40	:-20	:-35	:-45
50HZ GEOM.																							
*VERTICAL AMPLITUDE	:+104	:+40	:+240	:-144	:+297	:+24	:+85	:-17	:0	:-65	:-270	:+80	:-144		:+44	:+79	:-144	:-5	:-2	:-260	:-56	:-40	:+16
*VERTICAL SHIFT	:-3	:+3	:+1	:-2	:-3			:-5	:0	:-2		:-5	:-2	:-105		:-6	:-2	:-5	: 0	:-6	:-5		: 0
*LINEARITY	:+5	:0	: 0	:-40	:0	:0	:-20	: 0		:-40	:-2	:-23	:-40		:0	:-20	:-40	:0	:-18	:0	:+13	:-10	:+7
*S-CORRECTION	:-7	:+100	: 0	:+30	:+140	:+140	:+130	: 0	:+60	:+30	:0	:+80	:+30	:0	:+140	:+135	:+30	:+85	:+100	:+40	:+36	:+80	:+80
*VERTICAL ANGLE	:+1	:-2	: 0	: 0	:-4			: 0	:+2	: 0			: 0	:+100			: 0		: 0	:-1	:-1	:+3	: 0
*VERTICAL BOW	:-5	:+7	: 0	: 0				: 0		: 0			: 0				: 0		:-10	:0	:+3		: 0
START LINE MEASUR.	: 12	:13	: 11	: 11				: 12		: 12	:11	:11	: 10				: 12		: 12	:11	: 12		: 12
VER. BLANKING STOP	: 19		: 20	: 20				: 19		: 23	:20	:20	: 20		:24(SB5)		: 20		: 23	:20	: 23		: 23
VER. BLANKING START	: 311		: 333	: 310				: 320		: 333	:320	:310	: 333				: 310		: 333	:310	: 333		: 333
*HORIZONTAL WIDTH	:+104		:+97	:+101	:+65	:+65	:+66	:+133	:+23	:+105	:20	:+20	:+101		:+44	:+62	:+101	:+55	:+40	:45	:+70	:+95	:+118
*HORIZONTAL SHIFT	:-42		:-28	:-35	:+48	:-45	:-45	:-34	:-34	:-45	:-38	:-34	:-35	:-5	:-39	:-40	:-35		:-35	:-39	:-34	:-41	:-37
*TRAPEZE CORR. I	:-7	:-30	:-16	:-26	:-56	:-46		:-36	:-20	:-39		:-13	:-26			:-26	:-26	:-15	:-17	:0	:-30	:-14	:-79
*CUSHION CORR. I	:-155	:-110	:-61	:-187	:-291	:-246	:-141	:-151	:-145	:-154		:-55	:-187	:0		:-240	:-187	:-200	:-170	:-141	:-124	:-168	:-289
*UPPER CORNER 1 I	:-10	:0	:-18	:-44		:-14	:-18	:-18	:-10	:-20		:-11	:-44	:-165		:0	:-44	:+30	: 0	:-18	: 0	:-14	:+47
*LOWER CORNER 1 I	:-10	:+20	:-3	:-9		:+31		:-3	:+10	:+16		:0	:-9			:+10	:-9	:+30	:+10	:-23	: 0	:-12	:+90
*UPPER CORNER 2 I	:-30	:-10	:-1	:+59			:-1	:-1		:-3		:0	:+59			:+15	:+59	:0	:+20	:-1	: 0	:+27	: 0
*LOWER CORNER 2 I	:-30	:0	:-2	:-12		:+18	:-2	:-2	:-10	:-1		:-8	:-12			:+34	:-12	:+10	: 0	:-2	:+16	:+20	:+3
HOR. BLANKING STOP	: 215		: 190	: 225				: 210		: 230	:225	:225	: 200				: 200		: 215	:225	: 225		: 230
HOR. BLANKING START	: 1235		: 1275	: 1245				: 1260		: 1220	:1245	:1245	: 1220				: 1240		: 1240	:1245	: 1220		: 1220
*HOR. OSD POSITION	: 32		: 31	: 31				: 27	:34	: 32			: 31				: 29		: 32		: 32		: 32
*VER. OSD POSITION	: 19		: 18	: 18				: 18		: 19			: 19				: 20		: 18		: 19		: 19
50HZ GEOM. HOR.II																							
HOR. WIDTH II	: No Value		: 0	: No Value				: 0		: 0			: No Value				: No Value		: 0		: 0		: 0
VER. ZOOM II	: 60		: 90	: 60	:+89			: 90		: 90	:3	:90	: 60		:63(SB5)		: 60		: 90	:30	: 85		: 60
FLYBL	: 14	:16	: No Value	: 13	:14	:14	:14	: No Value		: No Value			: 14	: 15	:13(SB5)		: 15		: No Value		: No Value		: 16
*TRAPEZE CORR. II	:-46	:-40	:-16	:-26	:-42	:-50	:-36	:-36	:-20	:-45		:-13	:-26	:-30			:-26	:-46	:+5	:-36	:-19		:-90
*CUSHION CORR. II	:-161	:-100	:-61	:-151	:-291	:-190	:-130	:-151	:-145	:-170		:-70	:-151	:-160		:-200	:-151		:-170	:-162	:-128	:-180	:-229
*UPPER CORNER 1 II	:-18	:0	:-18	:-18		:+10		:-18		:-20		:+10	:-18			:0	:-18	:0	:+10	:-18	: 0	:+20	: 0
*LOWER CORNER 1 II	:-3	:+50	:-3	:-63		:0	:-3	:-3		:+15		:0	:-63				:-63		: 0	:-3	: 0	:+10	: 0
*UPPER CORNER 2 II	:-1		:-1	:-11		:0	:+16	:-1		:+2		:0	:-11			:+30	:-11	:+5	:+10	:-1	: 0		: 0
*LOWER CORNER 2 II	:-2		:-2	:+28		:0	:-2	:-2		:-1		:-5	:+28				:+28	:0	:+13	:-2	:+20		: 0
60HZ GEOM.																							
*VERTICAL AMPLITUDE	:+69	:+30	:-192	:-147		:+7	:+80	:+10	:-30	:-145	:-276	:+50	:-147	:-30		:+40	:-147	:-40	:-70	:-312	:-110	:-40	:-40
*VERTICAL SHIFT	:+6	:+10	:+2	:+4				:+6		:+7	:0	:+5	:+4				:+4	:0	:+6	:+1	:+4		: 0
*LINEARITY	: 0	:-10	: 0	:-30				: 0		:-30	:0	:0	:-30	:0		:-20	:-30	:15	: 0		:-20	: 0	:-30
*S-CORRECTION	: 0	:+70	: 0	: 0		:+140	:+90	: 0	:+90	:+30	:0	:+80	: 0	:+20		:+110	: 0	:+110	:+80	:+40	:+50	: 0	:+30
*VERTICAL ANGLE	:-3		: 0	:+3		:-1	:-3	: 0	:+2	: 0		:-4	:+3			:0	:+3	:0	: 0		: 0	:+3	: 0
*VERTICAL BOW	: 0		: 0	: 0				: 0		: 0			: 0				: 0		: 0		: 0		: 0
START LINE MEASUR.	: 12	:13	: 9	:12		:10		: 10		: 10		:11	: 10			:+11	: 13		: 10	: 11	: 8		: 9
VER. BLANKING STOP	: 18	:19	: 16	: 18		:16		: 19	:18	: 19	:16	:18	: 19			:17	: 19		: 19	: 16	: 16	: 310	: 15
VER. BLANKING START	: 261		: 333	: 250				: 323		: 333	:303	:250	: 333				: 323		: 333	: 255	: 256		: 333
*HORIZONTAL WIDTH	:+121		:+105	:+101		:+70	:+75	:+130	:+31	:+108	:22	:+34	:+101	:+10		:+75	:+101	:+50	:+51	:+43	:+80	:+105	:+108
*HORIZONTAL SHIFT	:-62		:-46	:-53		:-64	:-66	:-51		:-64	:-40	:-55	:-53	:-60		:-60	:-53		:-48	:-63	:-53	:-60	:-64
*TRAPEZE CORR. I	:-26		:-16	:-26		:-70		:-36	:-36	:-39		:-19	:-26	:-40			:-26	:-15	:-17	:-47	:-30	:-14	:-79
*CUSHION CORR. I	:-171	:-110	:-61	:-187		:-270	:-141	:-151	:-145	:-134		:-57	:-187	:-195		:-220	:-187	:+200	:-170	:-141	:-124	:-168	:-289

	25" MASTER CPT	25" -TE1 CPT DIFF.	26" 16:9 MASTER CPT	28" 4:3 SF MASTER CPT	28" 4:3 SF "PH1" CPT DIFF.	28" 4:3 SF "SB4"CPT DIFF.	28" 4:3 SF "TE1"CPT DIFF.	28 16:9 SF	28" 16:9 SF "VC1" CPT DIFF.	28" 16:9 PF	28" 16:9 PF "SS2" CPT DIFF .	28" 16:9 PF "VC6" CPT DIFF.	29" 4:3 PF	29" 4:3 PF "PH3" CPT DIFF.	29" 4:3 PF "SS2"and "SB5" CPT DIFF.	29" 4:3 PF "SB8" CPT DIFF.	29" 1,3R SF and "VC14","VC20"	29" 1,3R SF "OR5" DIFF.	32 16:9 SF	32 16:9 SF "PH8" CPT DIFF.	32" 16:9 PF	32" 16:9 PF "SS1" CPT DIFF.	33" 4:3 SF
*UPPER CORNER 1 I	:-18	:-20	:-18	:-44		:+40	:-18	:-18	:-10	:-20		:-1	:-44				:-44	:+30	: 0	:-18	: 0	:-14	:+47
*LOWER CORNER 1 I	:-3		:-3	:-9		:+71		:-3	:+10	:+16		:-6	:-9				:-9	:0	:+10	:-3	: 0	:-12	:+90
*UPPER CORNER 2 I	:-1	:-10	:-1	:+59		:+16		:-1	:-10	:-3		:-11	:+59			:+42	:+59	:+59	:+20	:-1	: 0	:+27	: 0
*LOWER CORNER 2 I	:-2	:+10	:-2	:-12		:+20	:-2	:-2		:-1		:-2	:-12			:+10	:-12	:-12	: 0	:-2	:+16	:+20	:+3
HOR. BLANKING STOP	: 175		: 195	: 175				: 185	:135	: 175			: 200				: 165		: 175		: 190		: 190
HOR. BLANKING START	: 1220		: 1240	: 1220				: 1210		: 1220		:1225	: 1220				: 1230		: 1220		: 1230		: 1220
*HOR. OSD POSITION	: 18		: 13	: 18				: 11	:17	: 17			: 16				: 13		: 17		: 15	: 18	: 17
*VER. OSD POSITION	: 9		: 11	: 6				: 11		: 11		:9	: 9				: 11		: 11	: 8	: 14	: 9	: 11
60HZ GEOM. HOR.II																							
HOR. WIDTH II	: No Value		: 0	: No Value				: 0		: 0			: No Value				: No Value		: 0		: 0		: 0
VER. ZOOM II	: 53		: 90	: 60				: 90		: 90		:100	: 60				: 60		: 90	:30	: 85	:90	: 60
FLYBL	: 10		: No Value	: 10				: No Value		: No Value			: 10				: 10		: No Value		: No Value		: 10
*TRAPEZE CORR. II	:-47	:-30	:-16	:-46		:-66		:-36	:-40	:-39		:-19	:-46	:-36		:-25	:-46	:-16	:-29	:-36	:-36		:-104
*CUSHION CORR. II	:-161	:-110	:-81	:-161		:-280	:-121	:-151		:-154		:-57	:-161	:-170		:-210	:-161	:-180	:-161		:-131	:-160	:-241
*UPPER CORNER 1 II	:-18	:-25	:+2	:-18		:+90	:-30	:-18	:-10	:-20		:-10	:-18				:-18	:+32	:-20	:-18	:+18	:0	: 0
*LOWER CORNER 1 II	:-3		:-3	:-3		:+130	:-25	:-3	:+7	:+16		:+10	:-3			:+7	:-3	:+17	:-20	:-3	:-13	:0	:+50
*UPPER CORNER 2 II	:-1	:-60	:-1	: 0		:-40		:-1	:+10	:-3		:-1	: 0				: 0	:-20	:+40	:-1	:-11	:+4	:+7
*LOWER CORNER 2 II	:-2		:-2	: 0		:+30		:-2	:+3	:-1		:-2	: 0				: 0	:+8	:+50	:-2	:+28	:0	:-23

Part Code	Part Definition	Notes		Position
010712-03	POWER SWITCH S40 4/100A-250V S.BRAC.GDE		29"	
010844	TACT SWITCH 2 LEG (MTSB)		28"	P(-)
			28"	P(+)
			28"	V(-)
			28"	V(+)
010845	TACT SW WITH GREEN LED		29"	
010971	MAIN SWITCH GDE S40 4/100A-250V		28"	
030409	HEATSINK KLIPS BIG V2			T504
031021	PIN HEADETR 2.54MM 3.PC.MOLEX 14.1			X783
				X784
031163	KONN. CINCH ..... WHITE HOR.14.1			X923
031164	KONN. CINCH ..... RED HOR.14.1			X922
031165	KONN. CINCH ..... YELLOW HOR.14.1			X921
031197	SCART SOKET HR-DM2441S-O			SK202
031251	SCART SOCKET 14.1			SK201
031280	CINCH AUDIO 2P			X785
031423	HEADPHONE JACK YKB21-5103			X941
031530-02	INCHANG/CRT SOCKET ISHM23S-W			X703
031672	CON.HOUSING 2P MALE RED			X602
031675	CON.HOUSING 2P MALE			X601
031794	CONN.MALE HOR. 4.PIN PLUG			X502
031795	KONN.S-VHS			X925
031821	CON.HOUSING X2.5TMK 2204 GRAY			X503
031850	CONN.HOUSING 2'LI GREY		29"	X303
				X501
031854	CONN.HOUSING X2003 GREY			X302
			29"	X405
031856	CONN.HOUSING X2003 BLACK		29"	X404
031858	CONN.HOUSING X2004 GREY			X301
			29"	X402
				X406
031866	CONN.HOUSING X2006 GREY			X206
031872	CONN.HOUSING X2007 BLACK		28"	X403
040014-EL1	FBT 28 4:3/U TYPE SL EL/1352.5081A C8		28"	
040014-TR1	FBT 110/U TYPE SLOT TR/... C8		28"	
040017-EL3	FBT 29" U TIP EL/1372.0126 32KV C8		29"	
040017-TR3	FBT 29" TR/... 32KV C8		29"	
044116-02	PE BAG 320*195*.06 B.LI HOLE			
044413	PE BAG		28"	
044743	PE BAG TV 33" 1450*1300*1		29"	
044763	PE PAG 1050*1200*.05 DELIKLI		29"	
			28"	PLS
050024-EL1	SMPS EL/..... 29PF C8		29"	TR601
050024-TR1	SMPS TR/..... 29PF C8		29"	
050029-EL1	SMPS 2528 EL/..... C8		28"	
050029-TR1	SMPS 2528 TR/..... C8		28"	
051315	DRIVER TRANSFORMER C8 E TYPE 1.9 MH			TR501
051707-10	COIL 6MH E/W			L501
051729-10	BRIDGE COIL 1.5MH		28"	L503
051737-10	LINE FILTRE 2*18MH E-TYPE			L601
051771	DRIVER TRANSFORMER TR/2416 005 08 0111		29"	TR503
051798-10	BRIDGE COIL 1.8MH		29"	L503
051805	COIL PFC 56MH DTH30563H ELIM TECH			TR602
052693	COIL LINEARITY 25UH (TERMAL)		29"	L502
053331	COIL 10UH LAL02			L109
				L110
				L111
				L112
				L114
				L115
				L209
053352	COIL- CHOKE 10UH R0814 14.1			L701
053370	COIL H.LINEARITE 35UH		28"	L502
053500	COIL 10UH K AXIAL LAL04			L105
053711	COIL 10UH K (TAIYO) LAL03			L101
				L104
				L107
				L108
				L301
				L801

Part Code	Part Definition	Notes		Position
				L804
053732	COIL 4.7UH LAL04 52MM			L103 L106
053734	COIL 4.7UH LAL03			L405 L603 L803 L805
053739-10	COIL CHOKE 50UH			L604
053804	COIL-CHIP 10UH K 0805			L203 L204 L205 L206 L207 L208
053806	COIL-CHIP 8.2UH K /0805			L113
053823	COIL CHOKE 10UH LAN02 280MA/1R			L401 L402 L403 L404 L406
054280	FUSE 3.15AT (215)			FS601
055127	CORE FERRIT			MOD-AV-SASI
055531	FERRIT-CHIP 600R/100MHZ 200MA/0805			FB102 FB103
056013	CRYSTAL 4 MHZ HC49-U			Q801
056038	CRYSTAL 20.25MHZ 20PPM (106478)			Q101 Q802
056210	CER.RESONATOR GSB455E			Q01
056298	SAW FILTER X6966M			F101
056328-VC9	CPT VC A66EHJ13X62		28"	
056329-PH6	CPT PH A68ERF112X013/M CO7T.MIDY WW FRA		29"	
056709	SAW FILTER OFW K3953M			F801
064159	PERTINAX FR2V0			
090116-01	SOLDER BAR 60/40 1MM 3% FSW26			
090117	SOLDER BAR			
090118-01	SOLDER BAR (L-SN 60PB)1.2MM			
100220	CFR 22R J 1/2W 52MM			R639
100473	CFR 47R J 1/4W /6 52MM			R617
100751	CFR 75R J 1/4W /6 26MM			R842 R920 R921
100752	CFR 75R J 1/4W /6 52MM			R837 R838 R839
101106	CFR 100R J 1/4W 52MM			R126
101117	CFR 100R J 1/4W 26MM			R105 R106 R107 R123 R124 R402 R404 R405 R406 R407 R408 R409 R783 R784
101121	CFR 120R J 1/2W (A) 52MM			R515
101154	CFR 150R J 1/4W 52MM			R422 R423
101163	CFR 150R J 1/4W 26MM			R812 R901 R902
101184	CFR 180R J 1/2W (A) 52MM			R940 R941
101223	CFR 220R J 1/4W 52MM			R903
101236	CFR 220R J 1/4W 26MM			R456
101282	CFR 270R J 1/4W /6 26MM			R718

Part Code	Part Definition	Notes		Position
101343	CFR 330R J 1/4W /6 26MM			R781 R782
101396	CFR 390R J 1/4W /6 26MM			R942 R943
101473	CFR 470R K 1/2W /9 52MM			R532
101494	CFR 470R J 1/4W /6 26MM			R922 R923
102101	CFR 1K J 1/4W /6 52MM			R111 R502 R611 R803
102141	CFR 1K J 1/4W /6 26MM			R314 R316 R446 R630
102159	CFR 1.5K J 1/2W /9 52MM			R711 R713 R715 R716
102185	CFR 1.8K J 1/4W /6 26MM		29"	R340
102227	CFR 2.2K J 1/4W /6 52MM			R312 R328
102228	CFR 2.2K J 1/4W /6 26MM		29"	R342 R458
102487	CFR 4.7K J 1/4W /6 26MM			R443
102685	CFR 6.8K J 1/4W /6 52MM			R521
103116	CFR 10K J 1/4W /6 52MM			R204 R482
103136	CFR 10K J 1/4W /6 26MM			R311
103155	CFR 15K J 1/4W 52MM		29"	R645
103234	CFR 22K J 1/4W 26MM		29"	R334
103484	CFR 47K J 1/4W /6 26MM			R705
104133	CFR 130K J 1/4W 26MM			R604
104338	CFR 330K J 1/4W /6 26MM			R722
105221	CFR 2.2M J 1/4W /6 52MM			R708
109151	CFR 1.5R K 1/2W /9 52MM			R539
109472	CFR 0.47R J 1/2W /9 52MM			R513
109473	CFR 4.7R J 1/4W /6 26MM		29"	R317
109474	CFR 4.7R J 1/2W /9 52MM			R318 R319
110476	RMO 47R J 3W			R615
112113	RMO 1K J 2W			R608
112433	RM 4.3K %1 1/4W 52MM			R605
113113	RMF 10K J 1/2W			R524
113275	RMO 27K J 2W			R629
113335	RMO 33K J 1W			R531
113681	RMO 68K J 2W			R609
114110	RM 100K %1 1/4W 26MM			R508
114115	RM 115K %1 1/4W		29"	R625
114151	RM 150K J 1/2W ' SAFETY'			R514 R517
114152	RM 150K F 1/4W 52MM		28"	R625
115110	RM 1M J .5W 52MM SAFETY			R669
115470	RM 4.7M J 1/2W 52MM 'SAFETY '			R610
119110	RMF 1R J 1W		28"	R529
119113	RMF 0.1R J 1/4W (FM 1/4)			R526 R527 R612
119159	RMO 1.5R J 3W		28"	R525A
119220	RM 2.2R J 1/2W			R518
119224	RMF 0.22R J 1W		29"	R529
119336	RM 0.33R %1 1W			R606
119342	RM 3.3R J 1/2W /9 52MM			R519
119476	RMF 4.7R J 1W			R516
119480	RM 0.47R J 1/2W			R607
120234	RMF 22R J 1/2W			R503
121182	RW 180R J 2W 73MM			R510
122114	RWF 1K J 1.5W 73MM			R523
129487	RW 4.7R J 7W R:5		29"	R525
133118	R-VAR 10K V(2.5MM) 5*3			P601

Part Code	Part Definition	Notes		Position
141103	CFR 100R J 1/4W /3.2 26MM			R710
				R712
				R714
141182	CFR 180R J 1/4W /3.2 26MM		29"	R905
			29"	R906
			29"	R907
141222	CFR 220R J 1/4W /3.2 26MM			R709
154216	NTC 5.1R M (S234R)			R601
154225	PTC 18R/3 PIN BOX TYPE		29"	R602
154234	PTC 9R/2 PIN - 3 CYCLE BOX TYPE		28"	R602
160110	CAP VARISTOR 5006V00001A			R668
170106	RC-CHIP 10R J 1/16W /0603			R481
170225	RC-CHIP 22R J 1/10W /0603			R420
170333	RC-CHIP 33R J 1/16W /0603 TAPE			R424
				R425
				R426
170754	RC-CHIP 75R J 1/16W /0603			R112
				R113
				R114
				R115
				R116
				R208
				R209
				R210
				R211
				R212
				R213
				R214
				R247
				R249
				R250
				R251
171107	RC-CHIP 100R J 1/16W /0603			R101
				R102
				R103
				R104
				R117
				R125
				R127
				R215
				R216
				R217
				R218
				R221
				R222
				R233
				R401
				R403
				R410
				R411
				R412
				R413
				R414
				R415
				R462
				R463
				R468
			29"	R477
				R537
				R801
				R802
				R808
				R809
				R820
				R821
				R822
				R823
171124	RC-CHIP 120R %1 1/16W /0603 TAPE			R659
				R667
171154	RC-CHIP 150R J 1/16W /0603			R421

Part Code	Part Definition	Notes		Position
				R824
171184	RC-CHIP 180R J 1/16W /0603			R430
171224	RC-CHIP 220R J 1/16W/0603 TAPE			R120 R121 R832 R840
171227	RC-CHIP 270R J 1/16W/0603 TAPE			R225 R226 R229 R230 R231 R232 R427 R428 R429 R476 R702 R703 R704
171241	RC-CHIP 240R %1 1/16W /0603 TAPE			R649 R650 R651
171336	RC-CHIP 330R J 1/16W /0603 TAPE			R219 R223 R324 R325 R811 R852
171363	RC-CHIP 365R %1 1/16W /0603 TAPE			R656
171392	RC-CHIP 390R %1 1/16W/0603 TAPE			R648 R657
171472	RC-CHIP 470R J 1/16W /0603 TAPE			R220 R224 R248 R451 R813 R834 R836
171479	RC-CHIP 470R %1 1/16W /0603 TAPE			R658
171562	RC-CHIP 560R J 1/16W/0603 TAPE			R201 R202
171683	RC-CHIP 680R J 1/16W /0603		29"	R338 R807
171825	RC-CHIP 820R %1 1/16W /0603 TAPE			R660
172104	RC-CHIP 1K J 1/16W /0603			R234 R235 R236 R237 R238 R239 R240 R241 R313 R315 R416 R479 R505 R652 R830 R841 R851
172113	RC-CHIP 1.05K %1 1/16W /0603 TAPE			R666
172125	RC-CHIP 1.2K J 1/16W/0603 TAPE			R449
172131	RC-CHIP 1.3K %1 1/16W/0603 TAPE			R647
172154	RC-CHIP 1.5K J 1/16W /0603 TAPE			R460 R461 R520 R542 R719
172182	RC-CHIP 1.8K J 1/16W /0603			R309

Part Code	Part Definition	Notes		Position
				R310
172224	RC-CHIP 2.2K J 1/16W/0603 TAPE			R130
				R131
				R252
				R253
172276	RC-CHIP 2.7K J 1/16W /0603			R418
				R444
				R626
				R633
172278	RC-CHIP 2.7K %1 1/16W /0603			R623
172336	RC-CHIP 3.3K J 1/16W /0603			R322
				R323
				R432
				R433
				R434
				R435
				R447
				R450
				R631
				R653
				R670
				R671
172393	RC-CHIP 3.9K J 1/16W/0603 TAPE			R132
				R133
172479	RC-CHIP 4.7K J 1/16W /0603 TAPE			R320
				R339
				R436
				R437
				R438
				R439
				R440
				R441
				R442
172567	RC-CHIP 5.6K J 1/16W /0603 TAPE			R445
				R810
172686	RC-CHIP 6.8K J 1/16W /0603			R110
				R474
				R701
172751	RC-CHIP 7.5K J 1/16W /0603			R472
				R473
173108	RC-CHIP 10K J 1/16W /0603			R128
				R129
				R203
				R206
				R304
				R306
				R307
				R308
			29"	R333
			29"	R341
				R419
				R471
				R522
				R622
				R627
				R628
				R634
				R636
				R681
				R827
				R828
				R829
				R831
				R833
				R835
173114	RC-CHIP 100K J 1/16W /0603			R805
173124	RC-CHIP 12K J 1/16W /0603 TAPE			R804
				R806
173153	RC-CHIP 15K J 1/16W /0603 TAPE			R544
173183	RC-CHIP 18K J 1/16W /0603 TAPE			R227

Part Code	Part Definition	Notes		Position
				R264
				R506
173229	RC-CHIP 22K J 1/16W /0603			R321
			29"	R335
			29"	R336
			29"	R337
				R452
				R478
				R530
173332	RC-CHIP 33K J 1/16W /0603 TAPE			R109
				R254
				R255
				R256
				R263
173396	RC-CHIP 39K %1 1/16W /0603 TAPE			R533
				R538
173478	RC-CHIP 47K J 1/16W /0603 TAPE			R134
			29"	R326
173563	RC-CHIP 56K J 1/16W /0603			R303
				R305
173681	RC-CHIP 68K %1 1/10W /0805			R534
				R535
179001	RC-CHIP 0R /0805 2*1.25			L201
				L202
179002	RC-CHIP 0R /1206			R01
179005	RC-CHIP 0R /0603 1.6*0.8 TAPE			R108
				R257
			29"	R327
				R417
				R466
				R483
				R484
				R685
				R707
				R723
				R814
				R843
179475	RC-CHIP 4.7R J 1/16W/0603			R246
				R480
200680	CC 68PF J 500V NPO R:5			C506
201103	CC 100PF 100V R:5			C532
201108	CC 100PF 500V NPO R:5			C631
201227	CC 220PF M 250VAC R:10 Y5U AH/NSA			C650
				C651
201481	CC 470PF K 2KV +15%, -30% 105C R:5			C614
				C619
202105	CC 1NF K 1KV Y5P R:5			C604
				C605
				C607
				C608
202106	CC 1NF K 50V Y5P R:5			C920
				C921
				C922
				C923
202220	CC 2.2NF M 250VAC Y5U R:10 AH/NSA			C616
203330	C-PPM 33NF J 630V R:15			C615
222477	CC 4.7NF K 1KV Z4V R:7.5			C705
250100	EC 1UF 160V 11*6.3 R:5			C522
250111	EC 1UF 16V 11*5 R:5			C831
				C834
				C839
250113	C-ELA 1UF 25V 11*5 R:5			C301
				C302
250151	EC 15UF 25V 11*5 R:5			C610
250227	EC 2.2UF 16V 11*5 R:5		29"	C353
250333	EC 3.3UF 16V 11*5 R:5			C124
250470	EC 4.7UF 16V 11*5 R:5			C233
				C234
				C235
				C236

Part Code	Part Definition	Notes		Position
				C237
				C238
				C247
				C248
				C253
				C254
				C430
250475	EC 4.7UF 63V 11*5 R:5			C142
				C707
				C803
250479	EC 4.7UF 50V 11*5 R:5			C502
251105	EC 10UF 16V 5*3.5 R:5			C901
251107	EC 10UF M 16V 11*5 R:5			C239
				C321
				C407
				C408
				C420
				C517
				C662
				C817
				C824
251109	EC 10UF 250V 16*10 R:5			C702
				C703
251116	EC 10UF 63V 11*5 R:5			C244
				C245
				C648
251219	EC 22UF 25V 105 DEG 11*5 R:5			C645
251225	EC 22UF 16V 11*5 R:5			C642
				C643
				C646
				C647
				C655
251226	EC 22UF 25V 11*5 R:5		29"	C330
				C644
251230	EC 22UF 250V 20*13 R:5			C525
251469	EC 47UF 35V 105 DEG 11*6.3 R:5			C639
251478	EC 47UF 16V 11*5 R:5			C227
				C228
				C229
				C230
				C231
				C232
				C249
				C250
				C444
				C649
				C808
				C841
251479	EC 47UF 25V 11*5 R:5			C504
				C629
251484	EC 47UF 35V 11*6.3 R:5			C153
251487	C-ELA 47UF M 6.3V 11*5 R:5			C01
252104	EC 100UF 200V 25*16 R:7.5			C627
				C628
252106	EC 100UF 63V 11*5.8 R:5			C511
252112	EC 100UF 16V 11*6 R:5			C125
				C126
				C127
				C128
				C129
				C131
				C324
				C325
				C338
				C413
				C414
				C415
				C805
252113	EC 100UF 25V 11*6 R:5		29"	C306
252124	C-ELA 100UF 35V 11*6.3 R:5			C313

Part Code	Part Definition	Notes		Position
252150	EC 150UF 400V 40*22 R:10		28"	C613
252222	EC 220UF M 400V 40*25 R:10		29"	C613
252240	EC 2.2UF 25V 11*5 R:5		29"	C304
252476	EC 470UF 25V 11*10 R:5			C508 C509 C526 C527
253101	EC 1000UF 35V 25*13 R:5			C315 C316 C317
			29"	C335 C621
253118	EC 1000UF 25V 105 20*13 R:5			C620
253129	EC 1000UF 16V 105DEG 13*10 WL RC1.1			C623
253155	EC 1500UF 35V 20*13 R:5		29"	C334
253334	EC 3300UF 25V 105DEG 31.5*16 R:7.5			C658
259223	EC 2.2UF 63V 11*5 R:5			C507
271390	C-PPM 390NF J 250V R:15 CLASS-B		29"	C521
272101	C-PEM 1NF K 50V R:5			C503 C781 C782 C784 C785
272154	C-PPM 1.5NF J 1600V R:15		28"	C513
			28"	D508
272220	C-PPM 2.2NF J 1.6KV R:15		29"	C513
273105	C-PEM 10NF K 100V R:5			C536
273114	C-PPM 10NF J 1.5/1.6KV R:15 CLASS-B		28"	C518
273132	C-PPM 13NF J 1.5/1.6KV R:15 CLASS-B		29"	C518
273151	C-PPM 15NF J 1KV R:15		29"	C519
273225	C-PEM 22NF J 63V R:5			C704
273226	C-PEM 22NF J 100V R:5			C534
273228	C-PPM 22NF J 1KV R:15		28"	C519
273471	C-PEM 47NF K 63V R:5			C529 C940 C941
274104	C-PEM 100NF K 63V R:5			C318 C320
			29"	C332
			29"	C333 C512 C632
274105	C-PEM 100NF J 250V R:10			C603 C701
274230	C-PEM 220NF J 100V R:5			C505 C524
274238	C-PEM 220NF K 275V-AC R:15 CLASS-B			C601 C602 C630 C667
274240	C-PPM 240NF J 250V R:15 CLASS-B		29"	C521A
274274	C-PPM 270NF J 250V R:15		28"	C520 C520A
			28"	C521
			28"	C521A
274330	C-PEM 330NF J 250V R:15			C523
274363	C-PPM 360NF J 250V R:15 CLASS B		29"	C515
274483	C-PEM 470NF J 100V R:5			C531
274563	C-PPM 560NF J 250V R:15 CLAAS-B		29"	C520
290107	CC-CHIP 10PF J 50V /0603 NPO TAPE			C424 C425 C426 C427
290159	CC-CHIP 15PF J 50V /0603 NPO			C828 C829
290223	CC-CHIP 22PF J 50V /0603 NPO TAPE			C133 C134 C144 C145 C423

Part Code	Part Definition	Notes		Position
				C438 C533 C801 C802 C819 C838 C846 C847 C848 C849 C850
290335	CC-CHIP 33PF J 50V /0603 NPO TAPE			C409
290475	CC-CHIP 47PF J 50V /0603 NPO TAPE			C132 C135 C136 C137 C138 C148 C149 C150 C151 C152 C155 C157 C158 C159 C160 C161 C837
291101	CC-CHIP 100PF J 50V /1206 NPO			C02 C03
291104	CC-CHIP 100PF J 50V /0603 NPO			C139 C140 C255 C256 C421 C804 C807 C826 C827
291226	CC-CHIP 220PF J 50V /0603 NPO TAPE			C201 C202 C203 C204 C205 C206 C207 C208 C209
291337	CC-CHIP 330PF J 50V /0603 NPO			C401 C402 C403
291393	CC-CHIP 390PF J 50V /0603 NPO TAPE			C812
292114	CC-CHIP 1NF K 50V /0603 X7R			C102 C103 C104 C105 C106 C107 C143 C242 C251 C252 C303 C305 C307 C308 C309 C310 C311

Part Code	Part Definition	Notes		Position
				C312
				C314
				C337
				C439
				C440
				C441
				C446
				C447
				C448
				C449
				C450
				C455
				C456
				C809
292153	CC-CHIP 1.5NF K 50V /0603 X7R TAPE			C326
				C327
				C816
292475	CC-CHIP 4.7NF K 50V /0603 X7R			C221
				C222
				C223
				C224
				C225
				C226
293113	CC-CHIP 10NF K 50V /0603 X7R			C130
				C212
				C213
				C216
				C219
				C220
				C241
				C322
			29"	C336
			29"	C341
				C416
				C417
				C418
				C419
				C436
				C437
				C443
				C501
				C609
				C611
				C612
				C654
				C664
				C806
				C810
				C811
				C813
				C814
				C825
				C832
				C835
				C840
				C842
293155	CC-CHIP 15NF K 50V /0603 X7R			C851
				C852
				C853
293234	CC-CHIP 22NF K 50V/0603 X7R TAPE			C210
				C211
				C214
				C215
				C217
				C218
				C246
			29"	C331
				C422
				C820
293271	CC-CHIP 27PF J 25V /0603			C101

Part Code	Part Definition	Notes		Position
293334	CC-CHIP 33NF K 50V /0603 X7R			C429 C640 C657
293478	CC-CHIP 47NF K 25V /0603 X7R TAPE			C243 C300 C323 C435 C606 C622 C625 C626 C633 C634 C635 C636 C637 C638 C653
293685	CC-CHIP 68NF K 50V /0603 X7R			C319 C428 C843 C844 C845
294118	CC-CHIP 100NF K 16V /0603 X7R			C111 C339
294122	CC-CHIP 100NF K 50V /0603 X7R			C108 C109 C110 C112 C113 C114 C115 C116 C117 C118 C119 C120 C121 C122 C123 C154 C156 C340 C410 C411 C412 C442 C445 C514
294233	CC-CHIP 220NF K 50V /0805 X7R			C240 C815 C830 C836
294480	CC-CHIP 470NF K 10V /0603 X5R			C818
295110	CC-CHIP 1UF K 16V /0805 X7R			C146
299682	CC-CHIP 6.8PF D (+-0.5) 0603 NPO 50V			C706 C709 C710
300305	DIODE BA157			D510 D511
302289	DIODE 1N4148 52MM			D201 D232 D401 D402 D405 D503 D504 D505 D607 D616

Part Code	Part Definition	Notes		Position
				D631
				D801
302299	DIODE 1N4001		29"	D301
			29"	D302
				D626
				D627
302318	DIODE Z. BZX55C33 52MM			ZD502
302786	DIODE Z. MTZJ6.2B 52MM			ZD650
302948	DIODE 1N4007			D701
303103	DIODE BY228			D507
303195	DIODE 4148 MELF SOD-80C			D202
				D403
				D404
				D506
303206	DIODE RGP30MS			D611
303209	DIODE BAV21			D702
				D703
				D704
303214	DIODE UF4006			D608
				D609
303217	DIODE RGP10J			D601
				D615
				D628
				D630
303227	DIODE RGP15J			D512
				D513
303228	DIODE RGP30D			D612
				D614
303244	DIODE RGP30K		28"	
			29"	D508
303246	DIODE 1N5819 SCHOTTKY			D101
303308	DIODE RF2007			D501
				D602
				D603
				D604
				D605
303441	DIODE-CHIP Z. BZT55C12 0.5W SOD80-QMELF		29"	ZD404
			29"	ZD405
303813	DIODE RGP15D			D613
303900	LED ROT			D901
303991	LED IR SIR563SB3F 23/940			D01
303993	LED LTL4221N D:3 R/D RED			D02
401047	TRN BC337-25			T01
401141	TRN-CHIP BC848B SOT23			T101
				T102
				T203
				T204
				T205
				T206
				T207
				T307
			29"	T310
			29"	T311
			29"	T353
				T404
				T406
				T407
				T410
				T411
				T412
				T604
				T605
				T609
				T610
				T650
				T801
				T805
				T808
401142	TRN-CHIP BC858B SOT23			T201
				T202

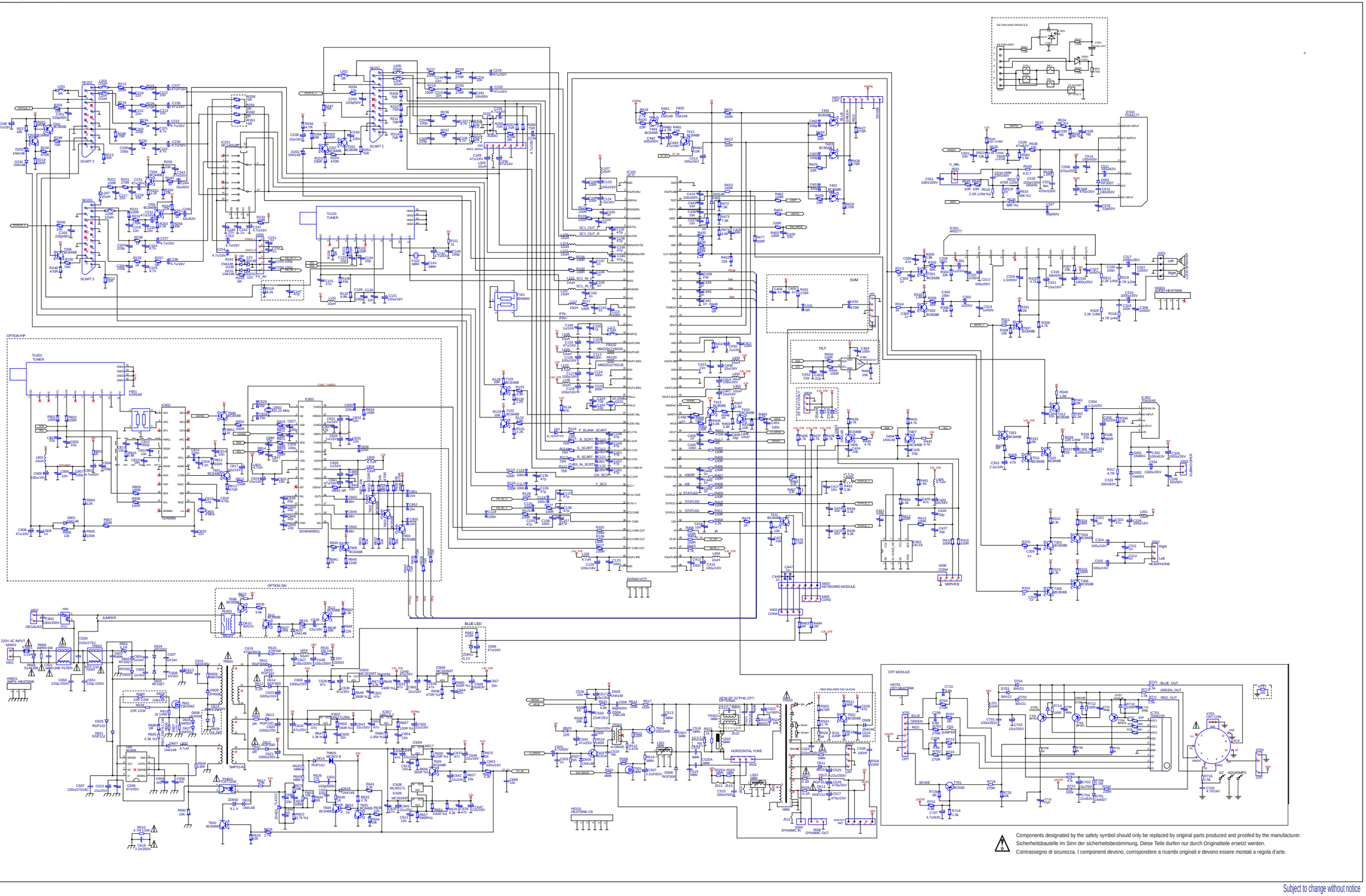
Part Code	Part Definition	Notes		Position
				T301
				T302
				T303
				T304
				T305
				T306
			29"	T312
				T401
				T402
				T403
				T413
				T701
				T802
				T803
				T804
401218	TRN BC618			T503
401279	TRN 2SK2381			T501
401455	TRN 2SK3562 TO220FP (2-10R1B)			T601
401492	TRN 2SD2499 1500V/6A			T504
410026	THRYSTOR MCR22-8			TH601
451518	IC KA317TU T0220CASE			IC604
451569-01	IC-CHIP TDA9886T/V4 118(SO24) T&R			IC801
451570-01	IC-CHIP SDA9489B31 SOP28 T&R			IC802
451885-01	IC TL431CLP (ON SEMICONDUCTOR)			ZD602
452297-02	IC OPTOCOUPLER TCET1100/V310U27 VISHAY			PH601
452382	IC-CHIP S3C1840DA9/SMB1 T&R			IC01
452487-01	IC MC44608P40			IC601
452521-01	IR RECEIVER TSOP34838 SS1A			IC901
452662-02	IC-CHIP AT24C16AN 10SI2.7 TAPE&REEL			IC401
453170	IC AN5277			IC301
453172	IC TDA8177			IC501
453173	IC TDA6109J			IC701
453174	IC-CHIP MC14052BD T&R			IC201
453176	IC LM317LZRA 0.1A TO92			IC602
				IC607
453177	IC MC33269T 0.8A LD TO220			IC603
				IC605
				IC606
453185	IC TDA2040		29"	IC302
453584	IC VCT4977F D5 VDOL/NC-A2ST PSSDIP88-2			IC101
500235	RONDEL PLST 6*3*2.5			IC501
				IC603
				IC604
				IC605
500275	HOLDER DEGAUSSING COIL D=35		29"	
500276	HOLDER MAIN POWER (FASON)			
500296	CABLE HOLDER 3P			
500297	CABLE HOLDER 5P			
500298	CABLE HOLDER 9P		28"	
500307	SPRING CRT EARTH LEAD			
500545-AS	CABLE BROWN L=500			AQUA
500597-AS	CABLE PVC DIZA.34*0.15 GREEN L=45MM			MET-SC2/3
502507-AS	CABLE AWG24 TER L=160MM BLUE		29"	CAB2
502511-AS	CABLE AWG24 TER L=100MM BLUE			CAB1
502516-AS	KAB.AWG24 TER.LI L=120MM YELLOW			CAB4
502520-AS	CABLE AWG24 TER L=100MM WHITE		29"	CAB3
50G278	COVER SWITCH (FASON)			
50S291	BRACKET LED		28"	
50S312	INSULATER SILICON 19.5*12*.25			IC501
				IC603
				IC604
				IC605
51A301	SPRING POWER KNOB		28"	
54C500-01	CORD POWER			
58A280	HOLDER MAIN CABLE (FASON)		28"	
5AT100-AS	MAIN SW ASSY 14MN1 FILTER W/COVER		28"	
5LZ539-AS	CABLE LONG DB.ISO. BROWN		28"	CRT-SMPS
5S4516-AS	CABLE HARNESS 4+2' LI SAPT L=240+370MM		28"	SAPKAB
5ZJ320-01	NAME PLATE BEKO 33P1TL6 D.C. 13*60		28"	
5ZZ541-AS	CABLE BROWN CRT-CPT GREEN L=500MM		29"	CRT-SMPS

Part Code	Part Definition	Notes		Position
600186-AS	SHIELD WIRE L=1230 28"		28"	
600189-AS	SHIELD WIRE L=1310 29"		29"	
600301	TERMINAL BATT.BOX(+) R/C		29"	
600302	TERMINAL BATT.BOX(-) R/C		29"	
600303	TERMINAL BATT.BOX(+-) R/C			
628169-AS	DEGAUSSING COIL ASSY 28" BAND		28"	
629169-AS	DEGAUSSING COIL ASSY 29" BAND		29"	
6PA107-AS	SPE.8R 10W(N)/15W(M) 126X57		28"	
6X1320-01	NAME PLT SILVER BEKO D.C.60*13*.5		29"	
6YS222-10	PLATE FUNCTION GREY HP/AV /SVHS		28"	
7KA227-AS	SPE.FUN+SUBW. 29T12		29"	
7KA283	COVER FUNNEL TOP FU.MAS.21AV1 T04(S.CONT		29"	
7KA285	WOOFER ADOPTER FUME MAS.21AV1 T04 (S.CON		29"	
7KA297	FUNNEL FRONT FUME MAS.21AV1 T04 MIT.(S.C		29"	
7NA292	COVER SIDE SIL.COM.KL+AV(3)+SVHS T44/T57		28"	
7PA282	KNOB PROGRAM CONT.PANEL 29T17		29"	
7PB278	KNOB POWER SILVER 29T25(FASON)		29"	
7PB279	PANEL 29T25(FASON)		29"	
7PZ159	IR/LED AUTO INSER 29"T12 14.1		29"	
7PZ172	CU ASSY 29"T12 14.1		29"	
7PZ173	CU AUTO INSER 29T12 /T33/T23/T25		29"	
7PZ223-10	PLATE FUNCTION LG GREY KLK+AV+SV T27/		29"	
7PZ231	SPEAK.COVER PVC LG GRI 29T12 14.1		29"	
7PZ277	HOLDER MAIN CABLE 29T12(FASON)		29"	
7PZ282	COVER SIDE LG-GREY PAINTED KLK+AV(3)+SV.		29"	
7PZ287	HOLDER CU 29T12		29"	
7PZ292	COVER SIDE K.GRI HP+AV3+SV T12		29"	
7PZ505-AS	CABLE HARNESS 4+2B. L=400 HOR.14.1		29"	SAPKAB
7PZ506-AS	CABLE HARNESS 6P L=1200 14.1		29"	
7PZ508-AS	CABLE HARNESS 6B. L=500 S-VHS MOD.		29"	X920
7PZ509-AS	CABLE HARNESS 3B.GREEN L=500		29"	X940
7PZ510-AS	CABLE PVC 7*.2 RED L=200MM		29"	
7PZ511-AS	CABLE PVC 7*.2 WHITE L=200MM		29"	
7PZ524-AS	CABLE HARNESS DBIS 4P L=1250 2*7*.2		29"	
7PZ525-AS	CABLE HARNESS DBIS 2P L=550 SP.2*7*.2		29"	
7PZ805	STROPOR TOP 29B4T12 FLAT		29"	
7PZ806	STROPOR BOTTOM 29B4T12 FLAT		29"	
7RZ286-20	CHASSIS BRACKET 14.1 II.KALIP (S.CONT.)			
7RZ290	HOLDERIR IR RECEIVER TSOP 1838 14.1		28"	
7RZ305	MEAT SINK CRT 14.1			HS701
7SZ129	S-VHS AUTO INSER 29" 14.1			
7SZ130	S-VHS/KLK MODULE ASSY 29" 14.1		29"	
7SZ186	CHIP INSERT R/C 14.1		29"	
7SZ506-AS	CABLE HARNESS 7P L=500 14.1		28"	X901
7TT100-AS	MAIN SW ASSY 28TL2/TL3 FILT./COVER 14.1		29"	
7UA117	SPK.CABLE ASSY 28B4T07 8R/15W(MAX) 14.1		28"	
7UA517-AS	CABLE HARNESS 3P L=470HP-ST.MOD.28T07		28"	X940
7UA525-AS	CABLE HARNESS DBIS 4P L=1100 2*7*.2		28"	
7UB107-AS	SPEAKER 8R 10W/15W(M) 102X102		29"	
7UB108-AS	TWEETER SPEAKER 10R 5W(N)/10W(M) 53X28		29"	
7UB109-AS	SUBWOOFER SPEAKER 4R 20W(N)/...		29"	
7X1901	RUBBER CONTACT BEKO TYPE 22.1		29"	
7XB186	CHIP INSERT R/C 14.1		28"	
7XB301	TERMINAL BATT.BOX(+) R/C FLAT		28"	
7XB302	TERMINAL BATT.BOX(-) R/C FLAT		28"	
7XB901	RUBBER CONTACT PURE FLAT COMMON 14.1		28"	
871273	DEGAUSSING COIL HOLDER FASON			
885906	BATTERY AAA 1.5V			
DST10018	FBT-DUMMY C8 110/50HZ 28 4:3		28"	TR502
DST10020	FBT-DUMMY C8 110/50HZ 29PF		29"	TR502
G99136-PH3	TUNER PH ASM.PLL UV1316/AIG-4 (SHORT			TU202
IG9187F	RC BEKO TYPE SILV/LG GREY.22.1		29"	
S01172	CU ASSY 28"T39 14.2		28"	
S01173	CU AUTO INSER 28"T39 14.2		28"	
S01258	POWER KNOB SILVER PAINTED 28T39		28"	
S01262	KNOB VOL.SILVER 28T39		28"	
S01263	KNOB PRG.SILVER 28T39		28"	
S01278	KNOB POWER SWITCH SILVER MAS.28T39		28"	
S01279	PANEL 28B8T39		28"	
S01282	KNOB VOLUME SILVER 28T39		28"	

Part Code	Part Definition	Notes		Position
S01283	KNOB PROGRAM SILVER MAS.28T39		28"	
S01805	STROPOR TOP 28B8T39		28"	
S01806	STROPOR BOTTOM 28B8T39		28"	
S01903	CUSHION 28T39/T40/T47		28"	
S03130	S-VHS/KLK MODULE ASSY 28" T47 14.2		28"	
S99136-PH1	TUNER PH SPL ASIMETRIK UV1316 T / ALG-3			TU101
SMT10013	SMT-SANAL C8 110/50HZ 28"		28"	TR601
SMT10015	SMT-SANAL C8 110/50HZ 29PF		29"	TR601
U47222	PLATE FUNCTION 29T25/T33 SILV.PROG./SES		29"	
U47258	KNOB MAIN SW.SILV.PAINTED 29T25/29T33		29"	
U98160	IR/LED ASSY 29"T12 14.2		29"	
V80508-AS	CABLE HARNESS 6B. L=450 S-VHS MOD.		28"	X920
V99507-AS	CABLE HARNESS 4P L=450MM		29"	
Y01554-AS	CONN.CABLE WITH HOLDER 3+1P L=425 CRT/CH			X702
ZA1141	BZ PN-AUDIO-BACK MODULE			
ZA1143	BZ AUDIO-BACK MODULE			
ZX8110	C8 CHASIS-SD SD 28" P/VDNX/3S/KLK/SVH/AU		28"	
ZX8111	C8 CHASIS-PN 28" P/SX/3S/KLK/SVH/AUB 28"		28"	
ZX8112	C8 CHASSIS-CH 28" P/SX/3S/KLK/SVH/AUB		28"	
ZX8187F	RC FLAT A-TIP SILVER C7/C8		28"	
ZX8301	HEAT SINK C8			HS101
ZX8304	HEAT SINK AUDIO C8			HS301
ZX8307	HEAT SINK C8			HS601
ZX8325	METAL BOX			
ZX8553-AS	CABLE WITH HOLDER 5P L=425 CRT/CHAS		29"	X701
ZX8558-AS	CABLE WITH HOLDER 5P L=375 CRT/CHAS		28"	X701
ZX8800-00A	GIFT BOX BEKO/PIL.28C8T39 P/VDNX/2S/SVKL		28"	
ZX8801	INS.MAN.NO BRAND ENGLISH C8			
ZX8820	CIRCUIT DIAGRAM C8			
ZX9110	C8 CHASIS-SD SD 29PF P/VDNX/3S/KLK/SVH/A		29"	
ZX9111	C8 CHASIS-PN 29PF P/VDNX/3/KSV/AU/PIP/SW		29"	
ZX9112	C8 CHASSIS-CH 29PF P/VDNX/3/KSV/AU/PIP/S		29"	
ZX9800-00A	GIFT BOX BEKO/PIL.29C8T33 P/VDNX/3S/SVKL		29"	

Please note that Product part list files should be invastigated for the mechanical parts like cabinet, etc.

C7,C8 CTV CHASSIS



Components designated by the safety symbol should only be replaced by original parts produced and proofed by the manufacturer.
Sicherheitsbauteile im Sinn der sicherheitsbestimmung. Diese Teile durfen nur durch Originalteile ersetzt werden.
Contrassegno di sicurezza. I componenti devono, corrispondere a ricambi originali e devono essere montati a regola d'arte.

Subject to change without notice