

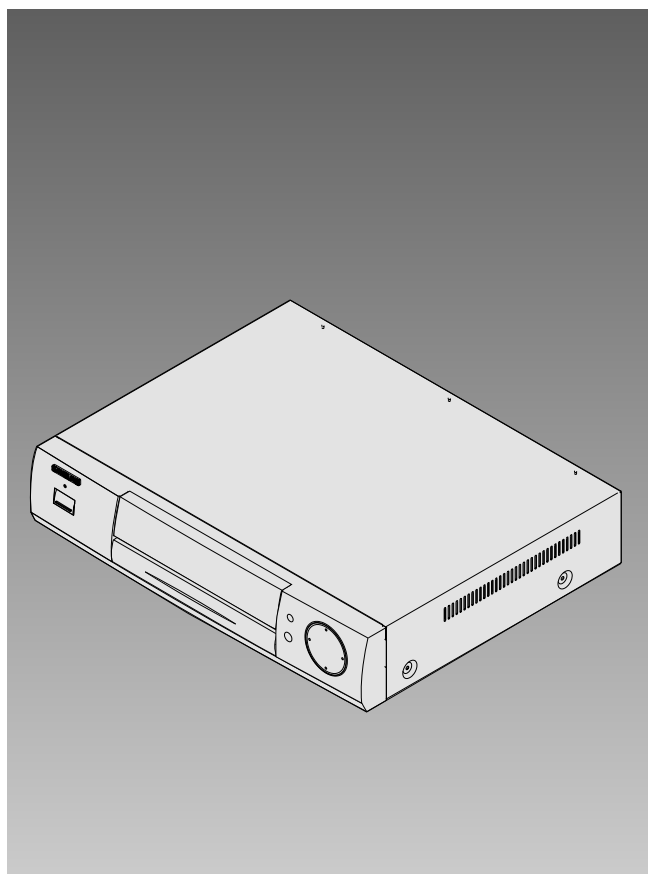


DIGITAL SET TOP BOX

Chassis : T12A
Model: SIRT100X/XAA

SERVICE *Manual*

DIGITAL SET TOP BOX



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ELECTRONICS

1. Precautions

Follow these safety, servicing and ESD precautions to prevent damage and protect against potential hazards such as electrical shock and X-rays.

1-1 Safety Precautions

1. Be sure that all of the built-in protective devices are replaced. Restore any missing protective shields.
2. When reinstalling the chassis and its assemblies, be sure to restore all protective devices, including: nonmetallic control knobs and compartment covers.
3. Make sure that there are no cabinet openings through which people—particularly children—might insert fingers and contact dangerous voltages. Such openings include the spacing between the picture tube and the cabinet mask, excessively wide cabinet ventilation slots, and improperly fitted back covers.

If the measured resistance is less than 1.0 megohm or greater than 5.2 megohms, an abnormality exists that must be corrected before the unit is returned to the customer.

4. Leakage Current Hot Check (Figure 1-1):
Warning: Do not use an isolation transformer during this test. Use a leakage-current tester or a metering system that complies with American National Standards Institute (ANIS C101.1, Leakage Current for Appliances), and Underwriters Laboratories (UL Publication UL1410, 59.7).
5. With the unit completely reassembled, plug the AC line cord directly into the power outlet. With the unit's AC switch first in the ON position and then OFF, measure the current between a known earth ground (metal water pipe, conduit, etc.) and all exposed metal parts, including: antennas, handle brackets, metal cabinets, screwheads and control shafts. The current measured should not exceed 0.5 milliamp. Reverse the power-plug prongs in the AC outlet and repeat the test.

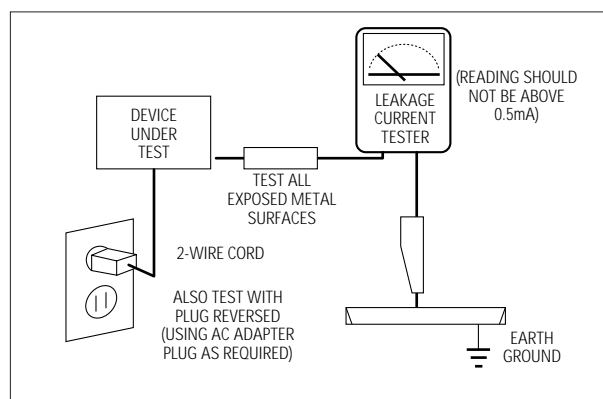




Fig. 1-1 AC Leakage Test

6. Antenna Cold Check:
With the unit's AC plug disconnected from the AC source, connect an electrical jumper across the two AC prongs. Connect one lead of the ohmmeter to an AC prong. Connect the other lead to the coaxial connector.
7. High voltage is maintained within specified limits by close-tolerance, safety-related components and adjustments. If the high voltage exceeds the specified limits, check each of the special components.
8. Design Alteration Warning:
Never alter or add to the mechanical or electrical design of this unit. Example: Do not add auxiliary audio or video connectors. Such alterations might create a safety hazard. Also, any design changes or additions will void the manufacturer's warranty.
9. Some TV chassis have a secondary ground system in addition to the main chassis ground. This secondary ground system is not isolated from the AC power line. The two ground systems are electrically separated by insulating material that must not be defeated or altered.

1-1 Safety Precautions (Continued)

10. Components, parts and wiring that appear to have overheated or that are otherwise damaged should be replaced with parts that meet the original specifications. Always determine the cause of damage or overheating, and correct any potential hazards.
11. Observe the original lead dress, especially near the following areas: Antenna wiring, sharp edges, and especially the AC and high voltage power supplies. Always inspect for pinched, out-of-place, or frayed wiring. Do not change the spacing between components and the printed circuit board. Check the AC power cord for damage. Make sure that leads and components do not touch thermally hot parts.

12. **Product Safety Notice:**
Some electrical and mechanical parts have special safety-related characteristics which might not be obvious from visual inspection. These safety features and the protection they give might be lost if the replacement component differs from the original—even if the replacement is rated for higher voltage, wattage, etc.

Components that are critical for safety are indicated in the circuit diagram by shading, () or ().

Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications.

A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

1-2 Servicing Precautions

Warning 1 : First read the "Safety Precautions" section of this manual. If some unforeseen circumstance creates a conflict between the servicing and safety precautions, always follow the safety precautions.

Warning 2 : An electrolytic capacitor installed with the wrong polarity might explode.

1. Servicing precautions are printed on the cabinet. Follow them.
2. Always unplug the unit's AC power cord from the AC power source before attempting to: (a) Remove or reinstall any component or assembly, (b) Disconnect an electrical plug or connector, (c) Connect a test component in parallel with an electrolytic capacitor.
3. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
4. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the portion around the serviced part has not been damaged.
5. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels, input terminals and earphone jacks).
6. **Insulation Checking Procedure:** Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500V) to the blades of the AC plug.

The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 megohm.
7. Never defeat any of the B+ voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.
8. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.

1-3 Precautions for Electrostatically Sensitive Devices (ESDs)

1. Some semiconductor (“solid state”) devices are easily damaged by static electricity. Such components are called Electrostatically Sensitive Devices (ESDs); examples include integrated circuits and some field-effect transistors. The following techniques will reduce the occurrence of component damage caused by static electricity.
2. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. (Be sure to remove it prior to applying power—this is an electric shock precaution.)
3. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of electrostatic charge.
4. Do not use freon-propelled chemicals. These can generate electrical charges that damage ESDs.
5. Use only a grounded-tip soldering iron when soldering or unsoldering ESDs.
6. Use only an anti-static solder removal device. Many solder removal devices are not rated as “anti-static”; these can accumulate sufficient electrical charge to damage ESDs.
7. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
8. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.
9. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting a foot from a carpeted floor can generate enough static electricity to damage an ESD.

2. Specifications

System	Broadcasting	ATSC DTV (USA)
	Tuning	Frequency Synthesizer
	Sound	DTV
	Programme Channel	VHF : CH2 ~ CH13
UHF : CH14 ~ CH69		
Antenna Impedance		VHF/UHF Tuner : 75Ω Unbalanced Coaxial
AGC		Reverse AGC
Power	Consumption	30W ± 10%
	Requirement	120V/60Hz
Sound Output		SPDIF (OPTICAL), DOWN MIXED R/L, OUTPUT
Dimensions (W x D x H)		420 x 320 x 100
Weight		7.2kg

MEMO

3. Servicing Information

3-1 Board Test

3-1-1 General Testing Procedures

1. The following signals should be checked :

A[25..0], D[31..0], GP[27..0], NCS[3..0], NRAS [3..0], NCAS [3..0], NPWE, NPOE, ROMSEL, NRESET, NPCE1, NPCE2, NPWAIT, NOE, NOW, PSKTSEL, NPIOR, NPIOW.

2. Enter the program-test mode for servicing.

- Connect a PC to the digital board using a serial cable.
- Set up a hyper terminal.

- 1) When setting up a hyper terminal, set it in sub-program.
- 2) Enter a new name.
- 3) Select modem (com 1 and direct connection).
- 4) Set the bit/second to 115200.
- 5) Set the data bit to 8.
- 6) No parity bit.
- 7) Set the stop bit to 1.
- 8) No flow control.
- 9) Store in memory.
- 10) At this point, the new hyper terminal is ready.

- Open the hyper terminal in the PC.
- Turn on the TV press "t" repeatedly for next procedure (while simultaneously pressing the Ctrl key).
- Test is automatically performed.
- The program stops operating at the trouble points, which are displayed.
- If there is no malfunction, the test list is displayed and "OK" is displayed for each item.

3. Troubleshooting is a 4-step process:

(1) Find the exact location of error, (2) Display the rough location of error, (3) Stop while the program is executing, and (4) Perform a sense test.

- 1) If any key is pressed after the exact location of error is displayed, the program continues.
- 2) If any key is pressed after the rough location of error is displayed, the program continues.
- 3) When an error is found, the program stops.
- 4) If an error shows on the TV screen
(but no problem happens during the test) a sense test must be performed.

4. Check the location of error.

5. Display each test item and see if it functions normally.

3-1-2 Testing Procedures

1. Hyper Terminal Operation Check

After the winding check is completed, access each register and check.

2. DRAM (CPU) Operation Check (U904, U905)

Check the address (A[12..10]) and data line (D[31..0]) between CPU and DRAM, and then identify abnormal parts.

The lower 16-Bit data have been checked (Flash Memory Check), problems might happen between the upper 16-Bit data (D[31..16]) and address. The problems can be rightly indicated.

3. Format Converter, Channel Dec, EQ Operation Check

Check the register via the serial bus (I2C Bus) operation. And then check for access to IC. Check the H/W connection and operation.

4. Lower 8-Bit I/O Operation Check

Check the I/O [15..8] related to TS. 8-Bit (added to the previous tested lower 8-bit) is tested.

This 8-Bit I/O ([15..8]) is used only between TS and OSGM. If access to TS is successful, then the I/O line is okay. Errors can be rightly indicated.

5. T/S RAM Operation Check

When accessing the T/S Memory, check the data line and then address line.

6. Video Host I/F Check

Access the Video Decrement Register. If accessed, the connection between the video and TS is okay.

7. Lower 32-Bit I/O Operation Check

Check the I/O [31..16] related to OSGM. If an access to OSGM is successful then the I/O line is okay. Errors can be rightly indicated.

8. OSGM SDRAM Operation Check

To access to OSGM Memory, check the data line and then address line.

9. CH Operation Check

The CH Operation Check should be performed after the actual signal is input.

Check the FPLL_Lock and Error Flag (CH register), and the signal (input to the CH) operation, and the connection between two CH ICs.

10. T/S Operation Check

Check that the available data are provided to T/S.

By reading PAT or PMT, determine that the channel data (input to TS) is available.

If any error shows (even though no problem happens during the channel test) there might be a problem between the channel output and the T/S inputs.

11. Video Decrement Operation Check

Check the register to see if the normal data are provided to the Video DEC.

In the event that any Video DEC internal error or pin short occurs, the Video DEC might have problems.

12. Audio Operation Check

Check that the TS datas are successfully provided to Audio (4600).

13. F/C Operation Check

Check that the normal signals are input to F/C.

14. Sense Test

(1) After the NTSC a digital-color- bar signals (input to channels) are output, check the connection between Video DEC. and Format Convertor;Format Convertor and OSGM;NTSC A/D and Format Convertor.

(2) Adjust F/C, so that the 16:9, HALF, 4:3 screens are output.

15. Final Test Item Display

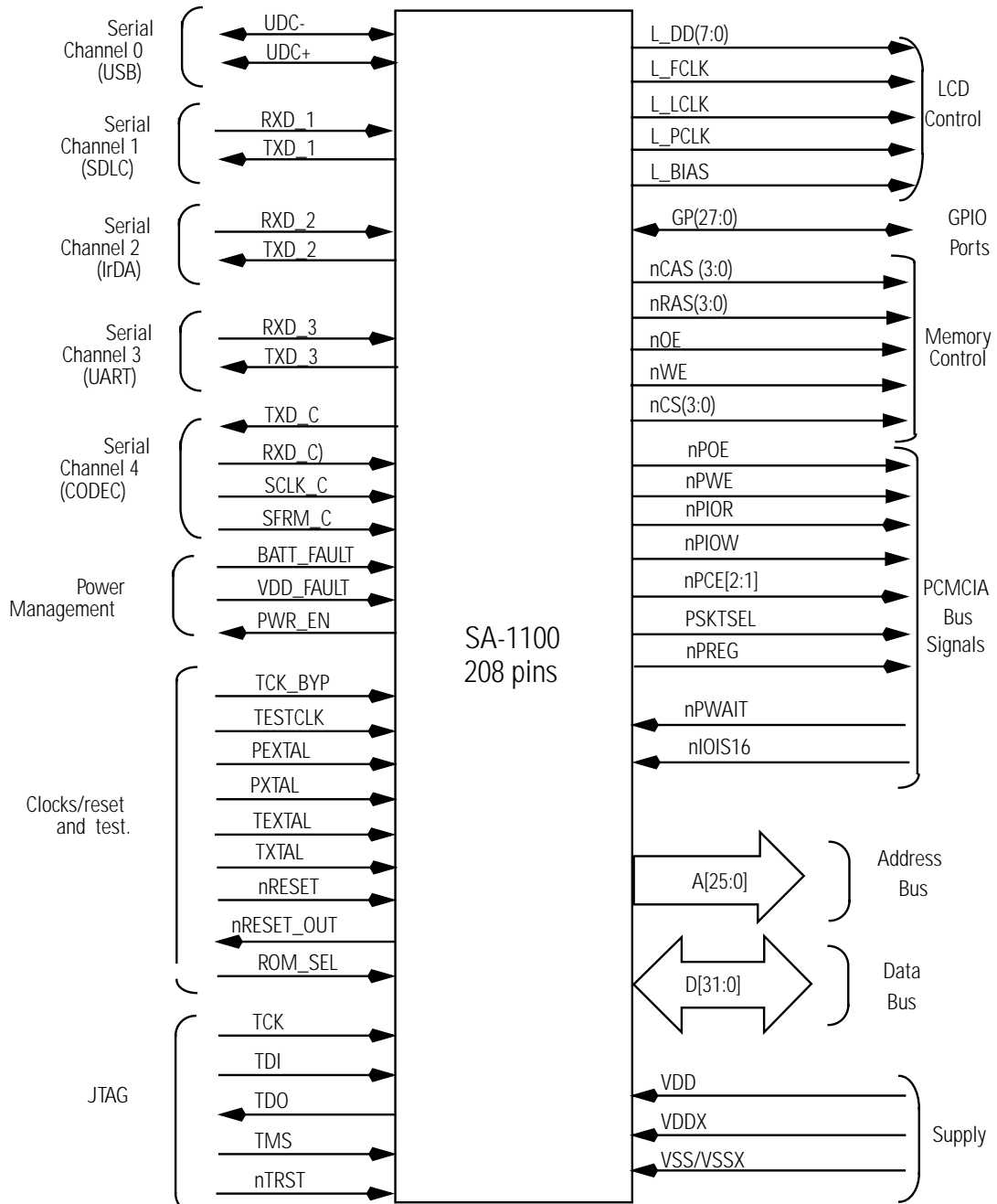
After all tests are completed, display the checked items.

If no error shows on the screen during the sense test, then exit.

3-2 Main IC Pin Description

Note : For ASIC chip description refer to Digital TV training Manual.

3-2-1 Pin Configuration of SA1100



Functional Diagram

3-2-1(A) Signal Description of SA1100

Key to Signal Types:

IC - Input, CMOS threshold

ICOCZ - Input, CMOS threshold, output CMOS levels, tri-stateable

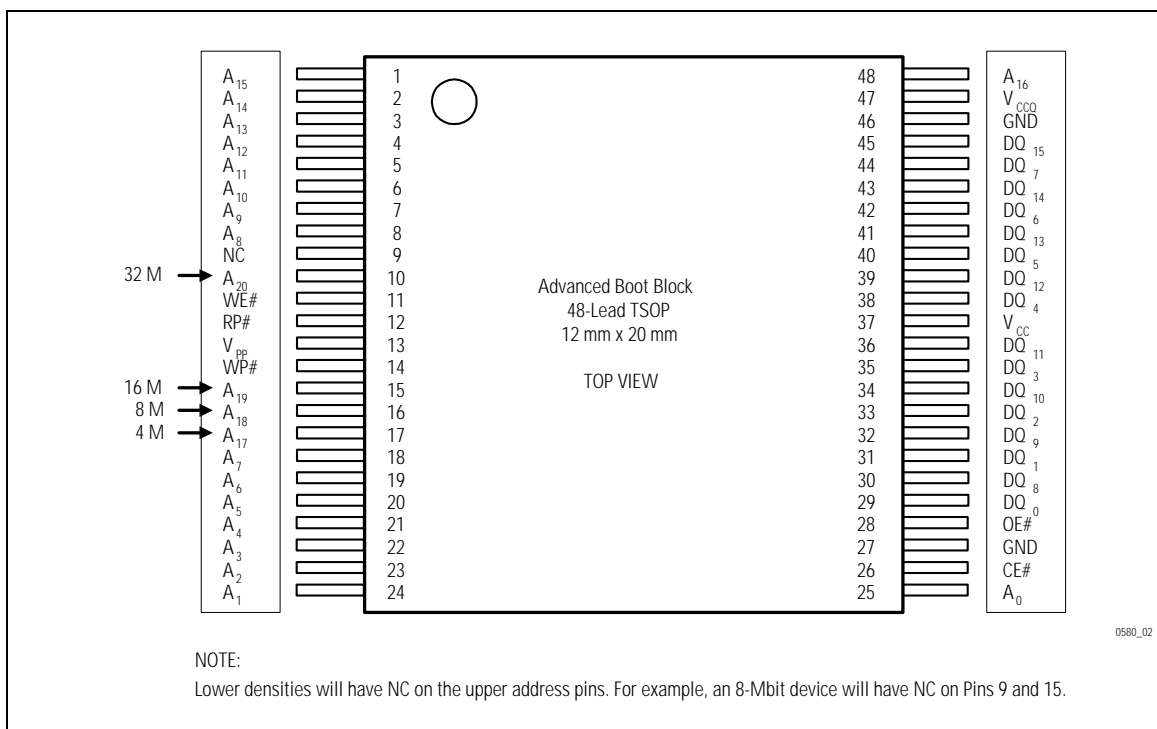
OCZ - Output, CMOS levels, tri-stateable

Name	Type	Description
A[25:0]	OCZ	Memory Address Bus. This bus signals the address requested for memory accesses. Bits 21-10 carry the 12 bit DRAM address and the static memory devices and the expansion bus receive address bits 25-0.
D[31:0]	ICOCZ	Memory Data bus.
nCS[3:0]	OCZ	Static chip selects. These signals are chip selects to static memory devices such as ROM and Flash. They are individually programmable in the memory configuration registers.
nOE	OCZ	Memory output enable. This signal should be connected to the output enable (to begin driving data onto the data bus).
nWE	OCZ	DRAM write enable. This signal should be connected to the DRAM write enables to perform write. This signal is used in conjunction with CAS[3:0] to perform byte writes.
nRAS[3:0]	OCZ	DRAM RAS. These signals should be connected to the DRAM row address strobe (RAS) pin.
nCAS[3:0]	OCZ	DRAM CAS. These signals should be connected to the DRAM column address strobe (CAS) pins. .
nPOE	OCZ	PCMCIA output enable. ThisPCMCIA signal is an output and is used to perform reads from memory and attribute space.
nPWWE	OCZ	PCMCIA write enable. This signal is an output and is used to perform writes to memory and attribute space.
nPIOW	OCZ	PCMCIA I/O write. This signal is an output and is used to perform write transactions to the PCMCIA I/O space.
nPIOR	OCZ	PCMCIA I/O read. This signal is an output and is used to perform read transactions from the PCMCIA I/O space.
nPCE[2:1]	OCZ	PCMCIA Card enable. These signals are output and are used to select a PCMCIA card. (Bit one enables the high byte lane, and Bit zero enables the low byte lane.
nIOIS16	IC	I/O Select 16. This signal is an input and is an acknowledge from the PCMCIA card that the current address is a valid 16 bit wide I/O address.
nPWAIT	IC	PCMCIA Wait. This signal is an input and is driven low by the PCMCIA card to lengthen the transfers from the SA-1100.
PSKTSEL	OCZ	PCMCIA Socket select. This signal is an output and is used by external steering logic to route control, address and data signals to one of the PCMCIA sockets. When PSKTSEL is low, Socket zero is selected. When PSKTSEL is high, Socket one is selected. This signal has the same timing as address.

Name	Type	Description
nPREG	OCZ	PCMCIA Register select. This signal is an output and indicates that, on a memory transaction, the target address is attribute space. This signal has the same timing as address.
L_DD[7:0]	OCZ	LCD controller display data
L_FCLK	OCZ	LCD Frame clock
L_LCLK	OCZ	LCD line clock
L_PCLK	OCZ	LCD pixel clock
L_BIAS	OCZ	LCD AC bias drive
TXD_C	OCZ	CODEC Transmit
RXD_C	IC	CODEC Receive
SCLK_C	OCZ	CODEC Clock
SFRM_C	OCZ	CODEC Frame signal
UDC+	OCZ	Serial Port Zero Transmit Pin (USB)
UDC-	IC	Serial Port Zero Receive Pin (USB)
TXD_1	OCZ	Serial Port One Transmit Pin (SDLC)
RXD_1	IC	Serial Port One Receive Pin (SDLC)
TXD_2	OCZ	Serial Port Two Transmit Pin (IrDA)
RXD_2	IC	Serial Port Two Receive Pin (IrDA)
TXD_3	OCZ	Serial Port Three Transmit Pin (UART)
RXD_3	IC	Serial Port Three Receive Pin (ART)
GP[27:0]	ICOCZ	General purpose Input Output.
ROM_SEL	IC	This pin is used to configure the ROM_width. It is either grounded or pulled high. If ROM_SEL is grounded, the ROM width is 16 bits. If ROM_SEL is pulled up, the ROM width is 32 bits.
PXTAL	IC	Input connection for 3.6864 Mhz crystal
PEXTAL	OCZ	Output connection for 3.684 6Mhz crystal
XTAL	IC	Input connection for 32.768 Khz crystal
TEXTAL	OCZ	Output connection for 32.768 Khz crystal
PWR_EN	OCZ	Active high. PWR_EN Enables the external power supply. Negating it signals the power supply that the system is going into sleep mode and that the VDD power supply should be removed.
BATT_FAULT	IC	Signals the SA-1100 that the main power source is going away (battery has been removed from the system.) BATT_FAULT will cause the SA1100 to enter Sleep Mode.

Name	Type	Description
VDD_FAULT	IC	Signals the SA-1100 that the main power supply is going out of regulation. VDD_FAULT will cause the SA-1100 to enter Sleep Mode.
nRESET	IC	Hard reset. This active low signal is a level sensitive input which is used to start the processor from a known address. A LOW level will cause the current instruction to terminate abnormally, and the on-chip caches, MMU, and write buffer to be disabled. When nRESET is driven HIGH, the processor will re-start from address 0. nRESET must remain LOW until the power supply is stable and the internal 3.6864 MHz oscillator has come up to speed. While nRESET is LOW the processor will perform idle cycles.
nRESET_OUT	OCZ	Not reset out. This signal is asserted when nRESET is asserted and deasserts when the processor has completed resetting.
nTRST	IC	Test interface reset. Note this pin has an internal pulldown resistor and must be driven high to enable the JTAG circuitry. If left unconnected, this pin is pulled low and disables JTAG operation.
TDI	IC	Test interface data input. Note this pin has an internal pullup resistor.
TDO	OCZ	Test interface data output. Note this pin does NOT have an internal pullup resistor.
TMS	IC	Test interface mode select. Note this pin has an internal pullup resistor.
TCK	IC	Test interface reference Clock. This times all the transfers on the JTAG test interface. Note this pin has an internal pulldown resistor.
TCK_BYP	IC	Test clock PLL bypass. When TCK_BYP is HIGH, the TESTCLK is used as the core clock in place of the PLL clock, when LOW the internal PLL output is used. This signal has no relation to the JTAG TCK pin.
TESTCLK	IC	Test Clock. TESTCLK is used to provide the core clock when TCK_BYP is HIGH. It should be tied LOW if TCK_BYP is LOW. This pin should be used for test purposes only. An end user should ground this pin.
VDD		Positive supply for the core. Nine pins are allocated to this supply; eight are labelled VDD. The ninth pin, labelled VDDP is dedicated to the PLL supply and should be tied directly to the VDD power plane with the other eight VDD pins.
VDDX		Positive supply for the pins. 20 VDDX pins, labelled VDDX1, VDDX2 and VDDX3. All of these pins should be tied directly to the VDDX power plane.
VSS		Ground supply. Nine pins are allocated to VSS including one for the PLL
VSSX		Ground supply for the I/O pins. 18 pins are allocated to VSSX

3-2-2 28F016 Pin Configuration



48-Lead TSOP Package for x16 Configurations

3-2-2(A) Pin Descriptions of 28F016

The pin descriptions table details the usage of each device pin.

Symbol	Type	Name and Function
A ₀ –A ₂₁	INPUT	ADDRESS INPUTS for memory addresses. Addresses are internally latched during a program or erase cycle. 28F008B3: A[0-19], 28F016B3: A[0-20], 28F800B3: A[0-17], 28F800B3: A[0-18], 28F160B3: A[0-19], 28F320B3: A[0-20]
DQ ₀ –DQ ₇	INPUT/OUTPUT	DATA INPUTS/OUTPUTS: Inputs array data on the second CE# and WE# cycle during a Program command. Inputs commands to the Command User Interface when CE# and WE# are active. Data is internally latched. Outputs array, identifier and status register data. The data pins float to tri-state when the chip is de-selected or the outputs are disabled.
DQ ₈ –DQ ₁₅	INPUT/OUTPUT	DATA INPUTS/OUTPUTS: Inputs array data on the second CE# and WE# cycle during a Program command. Data is internally latched. Outputs array and identifier data. The data pins float to tri-state when the chip is de-selected. Not included on x8 products.
CE#	INPUT	CHIP ENABLE: Activates the internal control logic, input buffers, decoders and sense amplifiers. CE# is active low. CE# high de-selects the memory device and reduces power consumption to standby levels.
OE#	INPUT	OUTPUT ENABLE: Enables the device's outputs through the data buffers during a read operation. OE# is active low.
WE#	INPUT	WRITE ENABLE: Controls writes to the Command Register and memory array. WE# is active low. Addresses and data are latched on the rising edge of the second WE# pulse.
RP#	INPUT	RESET/DEEP POWER-DOWN: Uses two voltage levels (V _{IL} , V _{IH}) to control reset/deep power-down mode. When RP# is at logic low, the device is in reset/deep power-down mode , which drives the outputs to High-Z, resets the Write State Machine, and minimizes current levels (I _{CCD}). When RP# is at logic high, the device is in standard operation. When RP# transitions from logic-low to logic-high, the device resets all blocks to locked and defaults to the read array mode.
WP#	INPUT	WRITE PROTECT: Provides a method for locking and unlocking the two lockable parameter blocks. When WP# is at logic low, the lockable blocks are locked , preventing program and erase operations to those blocks. If a program or erase operation is attempted on a locked block, SR.1 and either SR.4 [program] or SR.5 [erase] will be set to indicate the operation failed. When WP# is at logic high, the lockable blocks are unlocked and can be programmed or erased. See Section 3.3 for details on write protection.

Symbol	Type	Name and Function
V _{CCQ}	INPUT	<p>OUTPUT V_{CC}: Enables all outputs to be driven to 1.8 V – 2.5 V while the V_{CC} is at 2.7 V–3.3 V. If the V_{CC} is regulated to 2.7 V–2.85 V, V_{CCQ} can be driven at 1.65 V–2.5 V to achieve lowest power operation (see Section 4.4, <i>DC Characteristics</i>).</p> <p>This input may be tied directly to V_{CC} (2.7 V–3.6 V).</p>
V _{CC}		DEVICE POWER SUPPLY: 2.7 V–3.6 V
V _{PP}		<p>PROGRAM/ERASE POWER SUPPLY: Supplies power for program and erase operations. V_{PP} may be the same as V_{CC} (2.7 V–3.6 V) for single supply voltage operation. For fast programming at manufacturing, 11.4 V–12.6 V may be supplied to V_{PP}. This pin cannot be left floating. Applying 11.4 V–12.6 V to V_{PP} can only be done for a maximum of 1000 cycles on the main blocks and 2500 cycles on the parameter blocks. V_{PP} may be connected to 12 V for a total of 80 hours maximum (see Section 3.4 for details).</p> <p>V_{PP} < V_{PLK} protects memory contents against inadvertent or unintended program and erase commands.</p>
GND		GROUND: For all internal circuitry. All ground inputs must be connected.
NC		NO CONNECT: Pin may be driven or left floating.

3-3 Remocon Specification

1 POWER

Press to turn the power on or off.

2 DISPLAY

Press to display information about the current box settings and program: Time, channel ID, P.Locks, MTS language, program title, program duration, and the sound mode.

3 MTS (Multitrack Sound)

Press to select among the available "multitracks" (for example, depending on the particular broadcast, one or more foreign-language translations might be available).

4 FAV-CH (Favorite Channel) #1

Press to switch among your favorite channels.

5 +100 #2

Press to select cable-TV channels over 100.

6 Channel-Number Buttons #1, #2, #3, #4

Press to tune to directly tune to a particular channel.

7 VOLUME UP/DOWN #2

Press to increase or decrease the volume.

8 REW (Rewind) #3, #5

Press to rewind a videocassette or reverse search a DVD.

9 PAUSE #3, #5

Press to temporarily stop a videocassette or DVD. (A freeze-frame is displayed.)

10 STOP #3, #5

Press to stop the videocassette or DVD.

11 SELECT

Press to choose a particular component to be controlled by the remote. When you press SELECT, a green light will blink under the component that is being controlled (DTV, TV, VCR, CATV, or DVD). See "Programming the Remote Control," below.

12 TV/VIDEO #2

Press to view the signal sources that are available for display by the TV.

13 PRE-CH (Previous Channel) #1

Press to alternate between the current channel and the last channel that was displayed.

Special Notes:

#1 The Channel buttons
(CH ▼▲, FAV-CH):

To use these buttons, the available channels must first be memorized. (See page 3.1)

#2 The "TV" buttons
(VOL +-, Mute, TV/Video and +100):

To use these buttons, you must first switch the remote control to "TV" mode. (Use the SELECT button on the remote control to select "TV.")

#3 The "VCR" buttons
(FF, REW, PLAY, STOP, PAUSE):

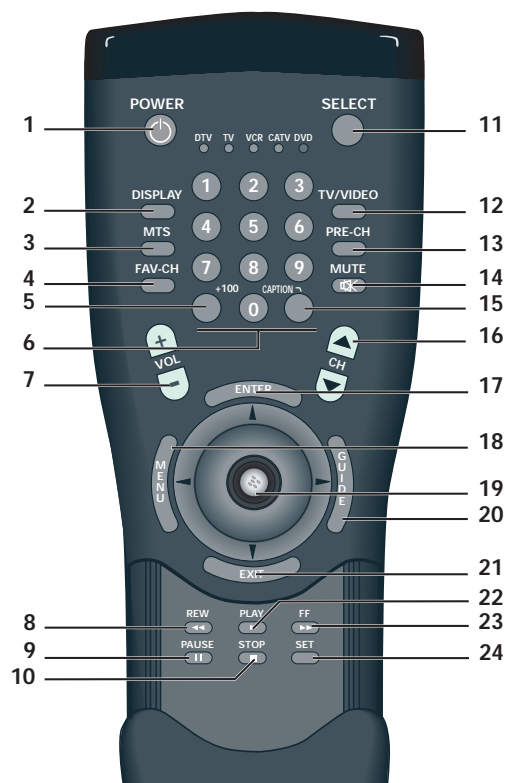
To use these buttons, you must first switch the remote control to "VCR" mode. (Use the SELECT button on the remote control to select "VCR.")

#4 The "CATV" buttons

To use the CABLE Set Top Box, you must first switch the remote control to "CATV" mode. (Use the SELECT button on the remote control to select "CATV.")

#5 The "DVD" buttons
(FF, REW, PLAY, STOP, PAUSE):

To use these buttons, you must first switch the remote control to "DVD" mode. (Use the SELECT button on the remote control to select "DVD.")



14 MUTE #2

Press to temporarily cut off the sound.

15 CAPTION

Press to switch on or switch off “captions” (on-screen text messages).

16 CH ▲▼ (Channel Up and Down) #1, #2, #3, #4

Press to change channels.

17 ENTER

While using the on-screen menus, press ENTER to activate (or change) a particular item.

18 MENU

Press to display the on-screen menu, or to switch back to the previous menu-screen that was displayed.

19 I-Point control

Use to move the on-screen pointer left, right, up or down.

20 GUIDE

Press to display the on-screen, Electronic Program Guide (EPG).

21 EXIT

Press to completely exit all the on-screen menus.

22 PLAY #3, #5

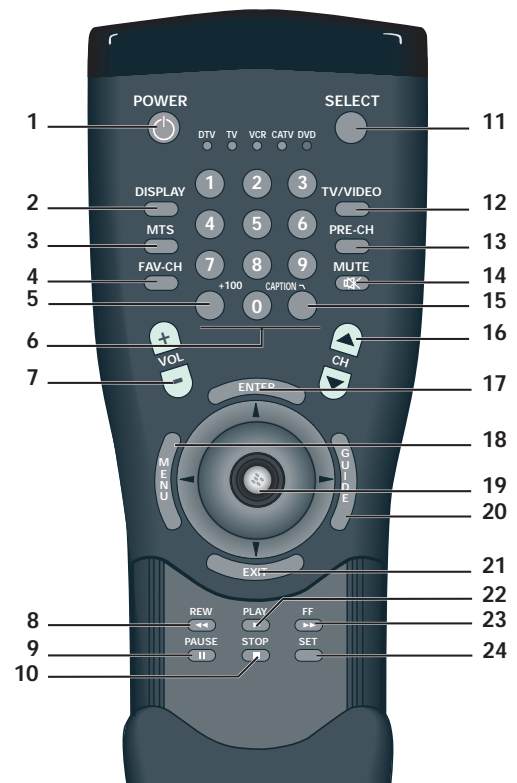
Press to play a videocassette or DVD.

23 FF (Fast Forward) #3, #5

Press to fast forward a videocassette or forward search a DVD.

24 SET

Used to program the remote control for other components. (See “Programming the Remote Control,” below.)

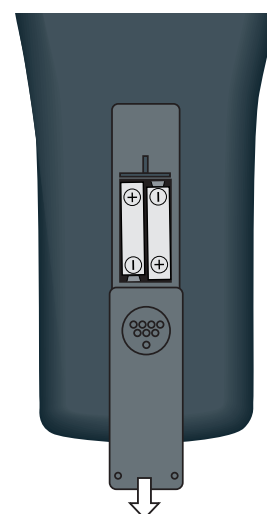


Installing the Batteries

Press and remove the battery cover on the back of the remote control. Put two AAA batteries into the compartment and replace the battery cover.

Programming the Remote Control

To program the remote control to operate a VCR, Cable Box, TV or DVD player, see “Programming the Remote Control to Operate Other Components” (See page A.1).



3-4 Connector Specification

CN801

Pin NO	NAME
1	D5V(DIGIATL)
2	ST5V(STANBY)
3	S0
4	S1
5	S2
6	S3
7	IR INPUT
8	SEG LOCK
9	/EPG_LED
10	DGND
11	DGND

CN802

Pin NO	NAME
1	D5V / 330mA
2	DGND
3	D5V / 270mA
4	DGND
5	D5V / 260mA
6	DGND
7	D3.3V / 916mA
8	DGND
9	D3.3V / 916mA
10	DGND
11	D3.3V / 916mA
12	DGND

CN803

Pin NO	NAME
1	ST5V / 16mA
2	DGND
3	POWER_ON
4	NC
5	NC
6	DGND

CN804

Pin NO	NAME
1	A12V / 40mA
2	AGND
3	A9V / 540mA
4	AGND
5	A5V / 224mA
6	AGND
7	A30V / 10mA
8	AGND
9	LNB
10	AGND

CN805

Pin NO	NAME
1	-A5V/ 250mA
2	AGND
3	A12V / 25mA
4	AGND
5	A5V / 57mA
6	AGND
7	A3.3V / 64mA
8	AGND

3-5 Power Operating Description

3-5-1 General Description

LKM-621 consists of the Forward Converter (about 60KHz) and the Flyback Converter (about 100KHz). It turns ON/OFF the output using the Power ON port signal after applying power supply.

3-5-2 Line Filter & AC/DC Rectifier Circuit

The Line Filter controls the occurrence of both Common Mode Noise and Normal Mode Noise, by blocking the noise coming into the AC line and the power noise. A control circuit is contained, which protects the product when the inrush current and surge voltage are synchronized. The AC/DC Rectifier Circuit converts AC (which is connected to the smoothing capacitor through the bridge diode) to DC.

3-5-3 Stand-By Power Supply and Power ON Circuit

When the rectified DC voltage is applied to the +B line, the PWM-IC (TOP209P) operates and an 100KHz switching power is input to the secondary (and then is rectified by D20 and C55). At this time, the rectified but irregular voltage is output through A11 (LM78L05), C56, and C57. When the Stand-By power supply is output and the Power ON Signal is converted from "L" to "H", the level of the PWM IC (KA7577) On/Off pin becomes low and simultaneously a pulse is output from the PWM IC.

3-5-4 Converter and PWM (Pulse Width Modulation) Circuit

After a pulse is output from the PWM IC, Q1 (IRF830) and T1 (X-FMR) are switched and send power to the secondary.

The non-sinusoidal power supply (sent to the secondary) is rectified (like on the systematic diagram) by each diode and multi-choke and capacitor. The rectified but unstable power supply is stabilized and output through each regulator IC. At this time, the state of D+5.0V output is fed back through the OPTO (TLP521) and delivered to the PWM IC. Therefore, the width of pulse of PWM IC is controlled and the output voltage becomes regular.

3-5-5 DC to DC Converter (D+3.3V) Circuit

The non-sinusoidal wave of point F is changed to the triangle wave by R41, R42, C47, D15, D16, D17. The associated circuitry of A9B (LM393A) feeds back the output of D+3.3V and pass through A9A (LM393A).

A9A compares the two signals and generates a pulse and then operates Q3, Q4, Q5. Depending on the output of D+3.3V, the width of pulse is controlled in order to keep the output voltage regular.

3-5-6 Overcurrent Protection Circuit

When the overload happens at the secondary, the primary switching current (passing through T1 and Q1) increases, and it is converted to the voltage source through R13 and then the PWM IC detects the voltage source to restrict the overload.

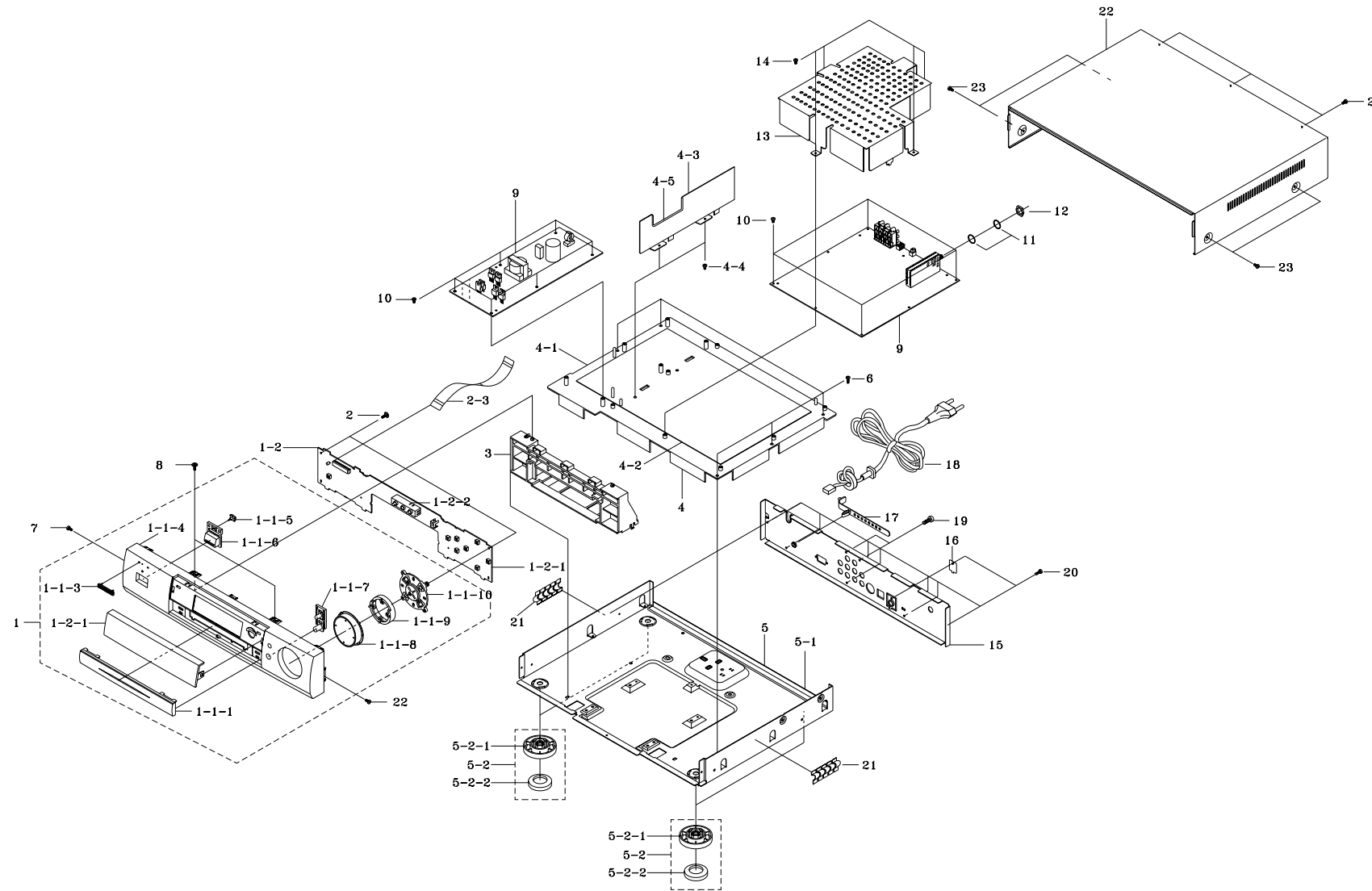
3-6 Video Signal Output Specification

100% white signal reference		
NAME	SIGNAL	SPEC
MONITOR OUTPUT	R	0.7Vpp
	G	0.7Vpp
	B	0.7Vpp
	H	TTL
	V	TTL
RGB OUTPUT	R	0.7Vpp
	G	0.7Vpp
	B	0.7Vpp
	H	TTL
	V	TTL
COMPONENT VIDEO OUTPUT	Y	1Vpp video : 0.7Vpp, sync : 0.3Vpp
	Pb	0.7Vpp
	Pr	0.7Vpp

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4. Exploded View & Parts List

4-1 SIRT100X/XAA

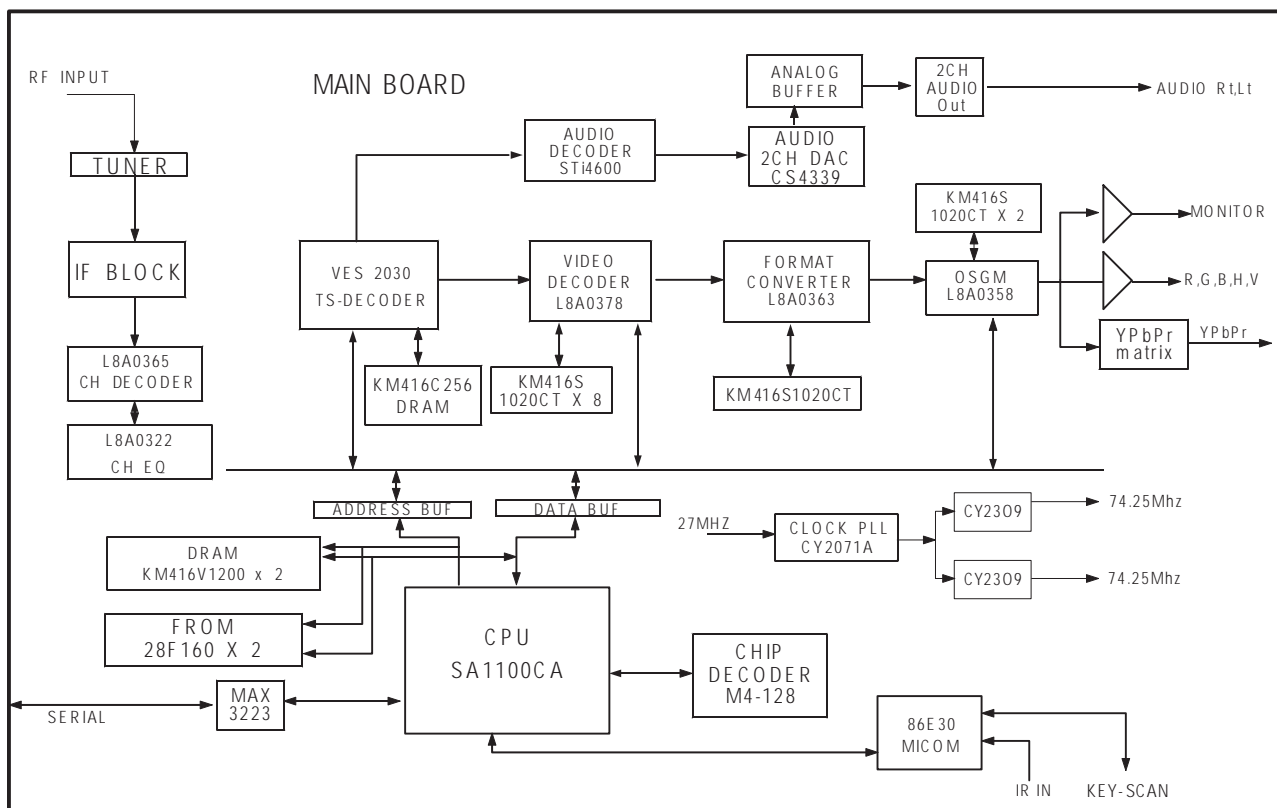


NO	CODE-NO	DESCRIPTION	SPECIFICATION	Q'TY	REMARK
1	AA91-00131A	ASSY-CABINET,FRONT	-,SIR-T100,SIR-T100,A	1	
1-1-1	AA63-00085B	COVER-CENTER	ABS BLACK	1	
1-1-2	AA64-00305A	WINDOW-FLT	ACRYL VIOLET	1	
1-1-3	AA64-00311A	BAGGE-BRAND	AL SILVER 28mm	1	
1-1-4	AA64-00304A	PANEL-FRONT	ABS BLACK	1	
1-1-5	AA64-00310A	INDICATOR-POWER	ACRYL MILKY	1	
1-1-6	AA64-00306A	KNOB-POWER	ABS BLACK	1	
1-1-7	AA64-00308A	KNOB-OPEN(MENU)	ABS BLACK	1	
1-1-8	AA64-00307A	KNOB-PLAY(CONTROL)	ABS BLACK	1	
1-1-9	AA64-00309A	INDICATOR-PLAY(CONTROL)	ABS SILVER 4.0	1	
1-1-10	AA64-00088A	HOLDER-PLAY(CONTROL)	ABS BLACK	1	
1-2	AA95-00194A	ASSY-PCB,FRONT	-,SIR-T100,T12A,-,-,USA	1	
1-2-1	AA41-00113A	FRONT-PCB	SIR-T100	1	
1-2-2	AA61-00084A	HOLDER-LED	ABS BLACK	1	
1-2-3	AA39-20160F	WIRE	CONNECTOR	1	
2	6003-001023	SCREW	RWH 3*10 YEL	2	C/F+F/PCB
3	AA61-00083A	FRAME-CHASSIS	ABS BLACK	1	
4	AA91-00133A	ASSY-FRAME,PCB	-,AL T=2.0 + PC T=0.5,S	1	
4-1	AA61-00095A	FRAME-PCB	AL T=2.0	1	
4-2	AA63-00086A	SHIELD-SHEET,PCB	PC + DOUBLE TAPE	1	
4-3	AA63-00094A	SHIELD-GUIDE	SECC T=0.8	1	
4-4	AA60-00014A	SCREW	BH M3*6 SILVER	2	
4-5	AA63-00124A	COVER-BUSHING	NYLON 66 NATURAL	1	
4-6	AA61-20069A	HOLDER-WIRE	NYLON 66 NATURAL	2	
4-7	AA65-30015A	HOLDER-WIRE	NYLON 66 NATURAL	2	
5	AA91-10132A	ASSY-CABINET,BOTTOM	SIR-T100,-,SECC T0.75 +		
5-1	AA61-00089A	CHASSIS-BOTTOM	SECC T=1.0	1	
5-2	AA64-00312A	FOOT-ASSY	ABS + RUBBER	4	
5-2-1	AA64-00313A	FOOT-BOTTOM	ABS BLACK	4	
5-2-2	AA63-00126A	SPACE-FOOT	RUBBER	4	
6	6003-000334	SCREW	RH 3*6 YEL	5	F/PCB+BOTTOM
7	6003-000334	SCREW	RH 3*6 YEL	2	FRONT+BOTTOM
8	6003-001023	SCREW	RWH 3*10 YEL	2	FRONT+CHASSIS
9	AA41-00074A	ASSY-MAIN,PCB	SIR-T100	1	
10	AA60-00014A	SCREW	RH M3*6 SILVER	10	PCB+FRAME
11	AA61-00117A	BRACKET-WASHER	SHRW SIL T=0.2	2	
12	AA61-00116A	BRACKET-NUT	SHRW SIL T=3.0	1	
13	AA63-00083A	SHIELD-CASE,MAIN	SPTPE T=0.6	1	
14	AA60-00014A	SCREW	RH M3*6 SILVER	4	S/CASE+PCB
15	AA64-00282B	CABINET-REAR	SECC T=1.0	1	
16	AA63-00093A	COVER-E/JACK	SECC T=1.0	1	
17	AA65-00003A	CABLE-CLAMP	PE BLACK	1	
18	AA96-00156A	ASSY-POWER,CODE	-,EP2/YES(US),H/C100MM,K	1	
19	6003-001026	SCREW	RH 4*15 BLACK	2	RCA JACK+REAR
20	6003-000275	SCREW	BH 3*10	5	
21	AA61-00114A	BRACKET-GROUND	SPTPE T=0.2	2	
22	AA64-00281A	CABINET-TOP	SECC T=0.7 VC	1	
23	AA61-00115A	BRACKET-SCREW	RH 3*6 SILVER	7	

*** PACKING**

1	AA69-00111B	PACKING-CASE	SW-3	1	
2	AA69-00112B	CUSHION-SET	EPS 0.02	1	
3	AA69-30032M	SHEET-BAG	HDPE T=0.3	1	

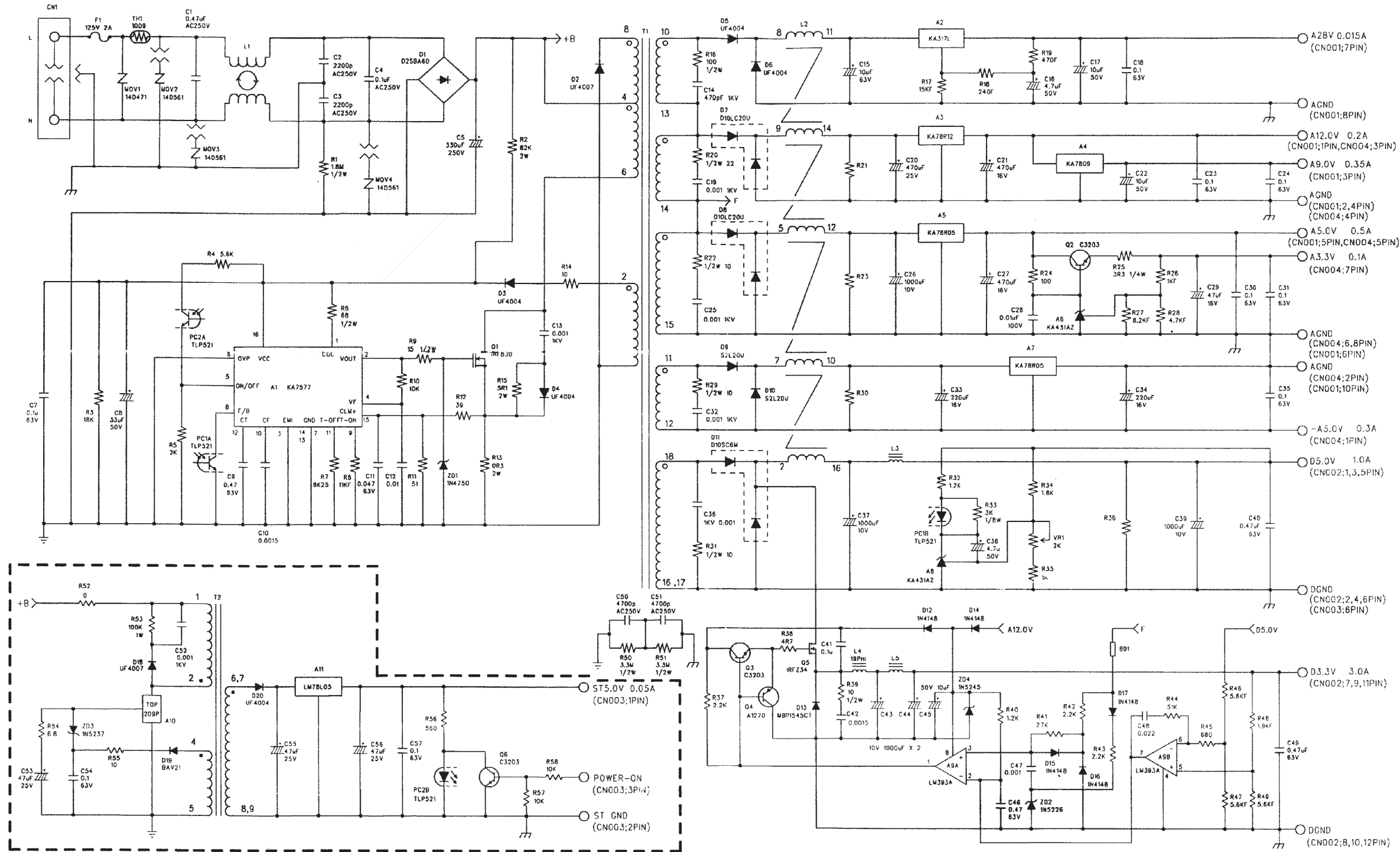
6. Block Diagram



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7. Schematic Diagram

7-1 POWER



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NOTE : VALUE FOR ALL CAPACITOR ARE IN uF, ELSE SPECIFY.
 RATED WATTAGE FOR ALL RESISTOR ARE 1/8W, ELSE SPECIFY.
 LAST NO :
 NOT ASSIGNED :R21,R23,R30,R36