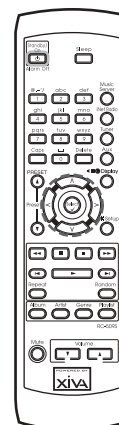
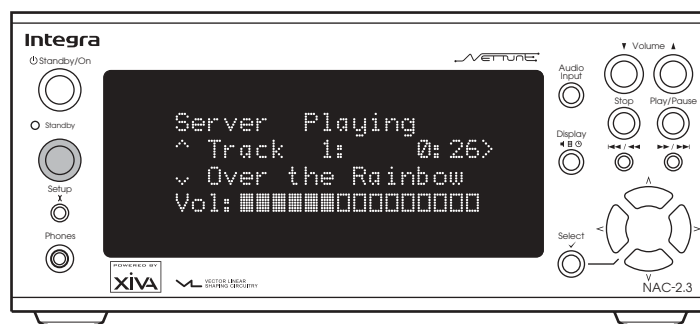


# Audio Network Receiver

## MODEL NAC-2.3



### Silver model

|      |               |
|------|---------------|
| BMDD | 120V AC, 60Hz |
|------|---------------|

## SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

# Specifications

## Amplifier Section

**Power output**  
FTC 15 watts per channel, min RMS, at 8 ohms, both channels driven 1 kHz, with no more than 0.1 %

DIN 2 × 17 watts at 6 Ω, 1 kHz  
2 × 15 watts at 8 Ω, 1 kHz

**Dynamic power output**  
2 × 27 watts at 6 Ω  
2 × 24 watts at 8 Ω

**Total harmonic distortion**  
0.1 % at rated power

**IM distortion**  
0.6 % at rated power

**Damping factor**  
30 at 8 Ω

**Input Sensitivity and Impedance**  
AUX: 150 mV, 50 kΩ

**Output Level and Impedance**  
FIXED: 150 mV, 2.2 kΩ  
VARIABLE: 2 V, 470 Ω

**Frequency and response**  
10 to 50,000 Hz +0 /-3 dB

**Signal to noise ratio**  
100 dB (IHF-A)

**Muting**  
-40 dB

**AC Inlet**  
IEC type × 1

## Tuner Section

**Tuning range**  
FM: 87.5–108.00 MHz (100 kHz steps)  
(U.S. & Canadian models)

87.5–108.00 MHz (50 kHz steps)  
(Other area models)  
AM: 530–1710 kHz (10 kHz steps)  
(U.S. & Canadian models)  
522–1611 kHz (9 kHz steps)  
(Other area models)

**Usable sensitivity**  
FM: Mono 11.2 dBf,  
1.0 μV (75 Ω IHF)  
0.9 μV (75 Ω DIN)  
Stereo 17.2 dBf,  
2.0 μV (75 Ω IHF)  
23.0 μV (75 Ω DIN)  
AM: 30 μV

**50 dB Quieting sensitivity**  
FM: Mono 17.2 dBf, 2.0 μV (75 Ω)  
Stereo 37.2 dBf, 20.0 μV (75 Ω)

**Capture ratio**  
FM: 2.0 dB

**Image rejection ratio**  
FM: 40 dB (U.S. & Canadian models)  
85 dB (Other area models)  
AM: 40 dB

**IF rejection ratio**  
FM: 90 dB  
AM: 40 dB

**Signal to noise ratio**  
FM: Mono 73 dB, IHF  
Stereo 67 dB, IHF  
AM: 40 dB

**Selectivity**  
FM: 50 dB DIN  
(±300 kHz at 40 kHz Devi.)

**AM Suppression Ratio**  
50 dB

**Harmonic distortion**  
FM: Mono 0.2 %  
Stereo 0.3 %  
AM: 0.7 %

**Frequency response**  
FM: 30–15,000 Hz (±1.5 dB)

**Stereo separation**  
FM: 45 dB at 1,000 Hz  
30 dB at 100 to 10,000 Hz

**Stereo threshold**  
FM: 17.2 dBf, 2.0 μV (75 Ω)

# Specifications

## General

**Sound format supported by the Net-Tune**  
WAVE (PCM), MP3, WMA

**Clock precision**  
monthly error: ±30 seconds  
(at 25 °C (77 °F) )

**Power supply**  
AC 120 V, 60 Hz

**Power consumption**  
58 W (120 V, 60 Hz)

**Standby power**  
8 W

**Dimensions (W × H × D)**  
205 × 91 × 279 mm  
8-1/16" × 3-9/16" × 11"

**Weight**  
3.9 kg, 8.6 lbs

Specifications and external appearance are subject to change without notice as a result of product improvement.

# OPERATING INSTRUCTIONS

## SAFETY PRECAUTIONS



**WARNING**  
RISK OF ELECTRIC SHOCK  
DO NOT OPEN



**AVIS**
RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR

WARNING : TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER(OR BACK). NO USER-SERVICEABLE PART INSIDE, REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**WARNING :** TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. DANGEROUS HIGH VOLTAGES ARE PRESENT INSIDE THE ENCLOSURE. DO NOT OPEN THE CABINET. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

**CAUTION :** TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

**ATTENTION :** POUR EVITER LES CHOCES ELECTRIQUE, INTRODUIRE LA LAME LA PLUS LARGE DA LA FICHE DANS LA BORNE CORRESPONDANTE DA LA PRISE ET POUSSER JUSQU' AU FOND.

## PRECAUTIONS

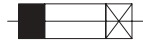
### 1. Replacing the fuses

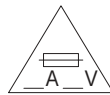
For continued protection against risk fire, replace only with same type and same rating fuse.

| CIRCUIT No. | PART No. | DESCRIPTION          |
|-------------|----------|----------------------|
| F901        | 252157   | 1.25A-UL/T-237, FUSE |

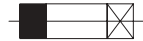
**CAUTION**


FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH FUSE OF SAME TYPE AND RATING INDICATED.


 THIS SYMBOL LOCATED NEAR THE FUSE INDICATES THAT THE FUSE USED IS SLOW OPERATING TYPE FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE WITH SAME TYPE FUSE. FOR FUSE RATING REFER TO THE MARKING ADJACENT TO THE SYMBOL

**ATTENTION**


AFIN D'ASSURER UNE PROTECTION PERMANENTE CONTRE LES RISQUES D'INCENDIE, REMPLACER UNIQUEMENT PAR UN FUSIBLE DE MEME TYPE ET CALIBRATION COMME INDIQUE.


 CE SYMBOLE INDIQUE QUE LE FUSIBLE UTILISE EST E LENT. POUR UNE PROTECTION PERMANENTE, N'UTILISER QUE DES FUSIBLES DE MEME TYPE. CE DARNIER EST INDIQUE LA QU LE PRESENT SYMBOLE EST APPOSE.

### 2. Safety-check out (Only U.S.A. model)

After correcting the original service problem, perform the following safety check before releasing the set to the customer. Connect the insulating-resistance tester between the plug of power supply cord and screw on the back panel.

Specifications: 3.3Mohm+/-10% at 500V.

## Troubleshooting

| Error messages |                                                                                                                                        |                                                                                                                                                                                                                                                                |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input source   | Client FL display message                                                                                                              | Meaning                                                                                                                                                                                                                                                        |
| Server         | <b>No Albums</b>                                                                                                                       | Unable to find the album information during searching the music library.                                                                                                                                                                                       |
| Server         | <b>No Artists</b>                                                                                                                      | Unable to find the artist information during searching the music library.                                                                                                                                                                                      |
| Server         | <b>No Genres</b>                                                                                                                       | Unable to find the genre information during searching the music library.                                                                                                                                                                                       |
| Server         | <b>No Playlists</b>                                                                                                                    | Unable to find the playlist during searching the music library.                                                                                                                                                                                                |
| Server         | <b>No Tracks</b>                                                                                                                       | Unable to find the track during searching the music library.                                                                                                                                                                                                   |
| Server         | <b>Unsupported Format</b>                                                                                                              | The track using unsupported format was selected during searching the music library.                                                                                                                                                                            |
| Server         | <b>List Changed</b>                                                                                                                    | The music library on the Net-Tune server is updated. The selected list is discarded and the selecting operation is reset. Select tracks for new playlist again.                                                                                                |
| Server         | <b>Server Timeout</b>                                                                                                                  | The Net-Tune server does not respond. Check the operation status for the Net-Tune server.                                                                                                                                                                      |
| Server         | <b>Server not available</b>                                                                                                            | The Net-Tune server function is not available. A global IP address may be set for the IP address setting.                                                                                                                                                      |
| Server         | <b>Stream Error</b>                                                                                                                    | There is an error for playing the audio stream. The server load may be increased, which may result from too many client connections, too much PCM stream distribution, any other applications on the Net-Tune server, and so on. Take the appropriate measures |
| Server         | <b>TrackList Over → [1 of 999]<br/>AlbumList Over → [1 of 999]<br/>ArtistList Over → [1 of 999]<br/>PlaylistList Over → [1 of 999]</b> | The list you selected contains 1,000 or more tracks. You can add up to 999 tracks per list. Divide the list into several lists so that each list contains 999 or fewer tracks, which enables you to play all tracks in a list (see the Net-Tune Central Help). |
| Internet Radio | <b>No Genres</b>                                                                                                                       | Unable to retrieve the genre information during searching the Internet radio stations.                                                                                                                                                                         |
| Internet Radio | <b>No Languages</b>                                                                                                                    | Unable to retrieve the language information during searching the Internet radio stations.                                                                                                                                                                      |
| Internet Radio | <b>No Countries</b>                                                                                                                    | Unable to retrieve the country information during searching the Internet radio stations.                                                                                                                                                                       |
| Internet Radio | <b>No Sub Genres</b>                                                                                                                   | Unable to retrieve the sub-genre information during searching the Internet radio stations.                                                                                                                                                                     |

## Troubleshooting

| Input source          | Client FL display message | Meaning                                                                                      |
|-----------------------|---------------------------|----------------------------------------------------------------------------------------------|
| Internet Radio        | <b>No Stations</b>        | Unable to connect the station during searching the Internet radio stations.                  |
| Internet Radio        | <b>Stream Access Err</b>  | Unable to receive the streaming data from the selected Internet radio station.               |
| Internet Radio        | <b>No Stream</b>          | Unable to play the selected Internet radio station. Select other Internet radio stations.    |
| Internet Radio        | <b>iNet Radio Timeout</b> | Receiving the streaming data from the Internet radio station is timed out.                   |
| FM/AM/Internet Radio  | <b>No Presets</b>         | There are no preset radio stations for FM, AM and Internet radio.                            |
| Server/Internet Radio | <b>Playback Denied</b>    | Tried to play the content with protection. Cancel the protection before ripping the content. |

This product used a microcomputer to perform various advanced functions. However, noise, radio interference, or static electricity could occasionally cause the unit to malfunction. In this case, unplug the power cable from the AC outlet, then plug it in again in five seconds.

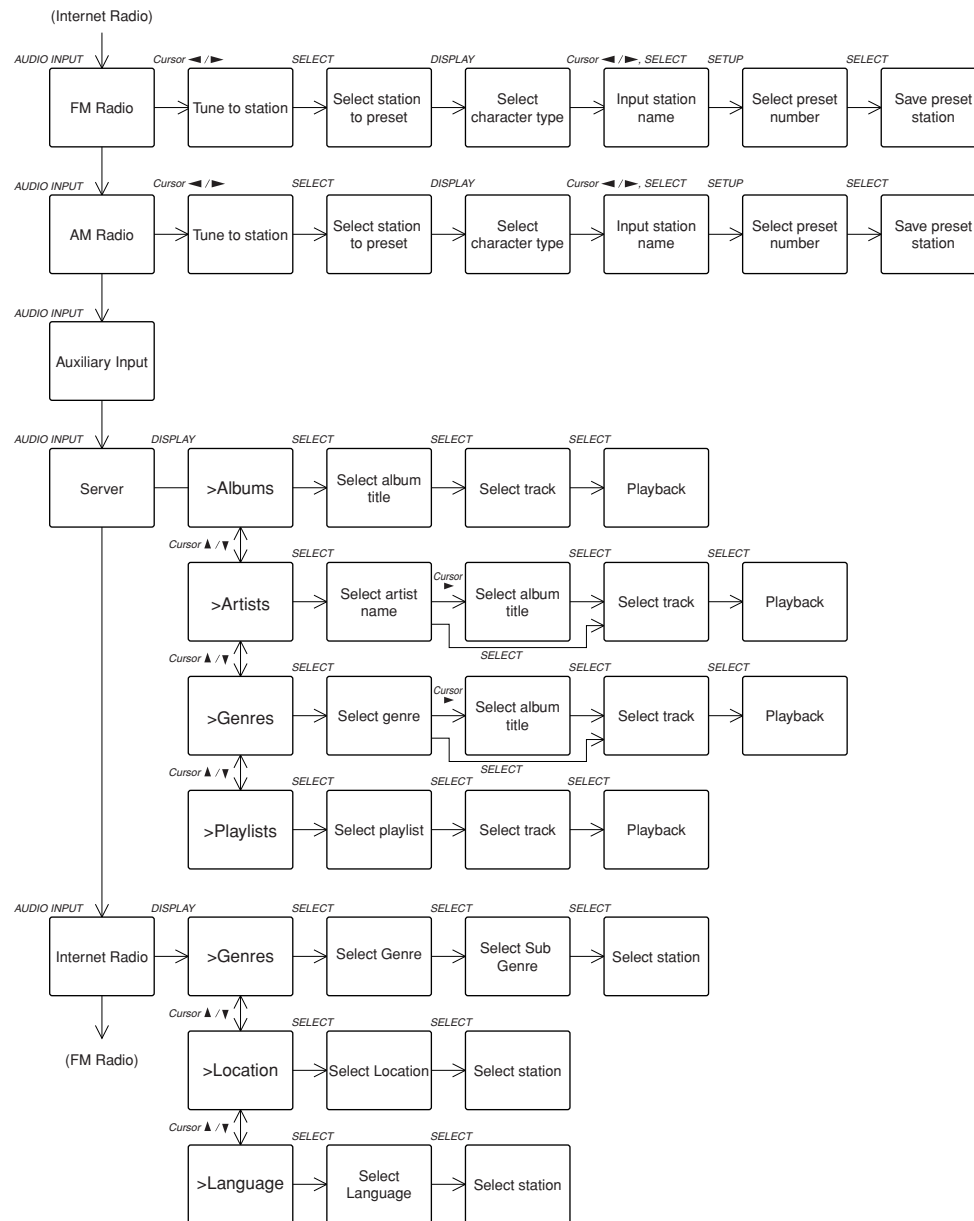
Integra/Onkyo is not responsible for damages (such as CD rental fees) due to unsuccessful recordings caused by the unit's malfunction. Before you record important data, make sure that the material will be recorded correctly.

### Restoring the factory default settings:

To reset all the stored settings to the factory default conditions, while the power to the NAC-2.3 is on, press and hold down the STOP button on the unit, and press Standby/On button.

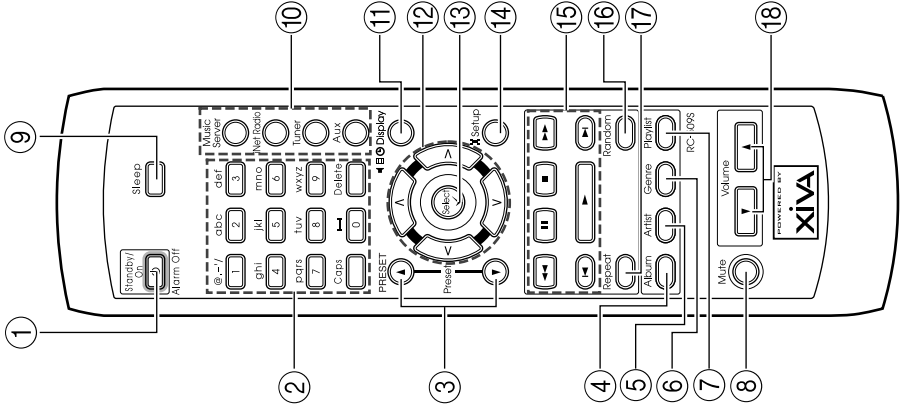
# On Screen Display (OSD)

## OSD menu flowchart



Index parts and facilities

Remote Controller



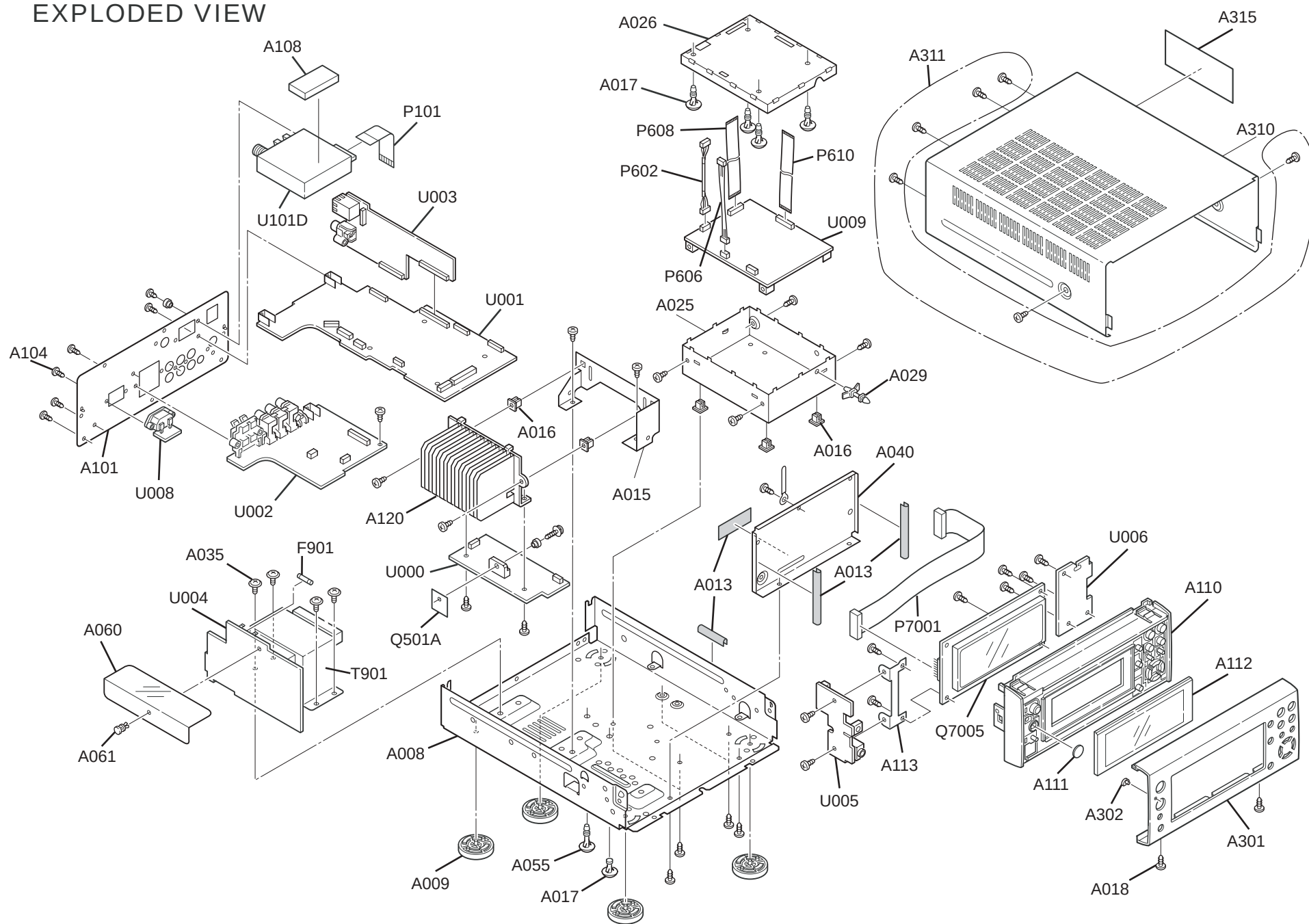
- ① **Standby/On button**  
Turns on the NAC-2.3 or place it in standby mode.
- ② **Numeric keys**  
Press to select one of the preset stations or the track you want to play. When entering text, you use these buttons to type in letters and special characters.
- ③ **Preset Up/Down buttons**  
Press to navigate through preset stations for Internet radio or FM/AM radio.
- ④ **Album button**  
Press to invoke the Album selection menu when working with the NAS-2.3.
- ⑤ **Artist button**  
Press to invoke the Artist selection menu when working with the NAS-2.3.
- ⑥ **Genre button**  
Press to invoke the Genre selection menu when working with the NAS-2.3.
- ⑦ **Playlist button**  
Press to invoke the Playlist selection menu when working with the NAS-2.3.
- ⑧ **Mute button**  
Press to activate the mute function. Press the button again to disable the mute function.
- ⑨ **Sleep button**  
Press to set the sleep function.
- ⑩ **Music Server/iNet Radio/Tuner/Aux buttons**  
Press to select an input source. The Tuner button toggles between FM and AM.

Index parts and facilities

Changing the remote controller mode

- ⑪ **Display button**  
Press to change the display mode.
  - ⑫ **Cursor ▲/▼/◀/▶ buttons**  
Press to locate your selection.
  - ⑬ **Select button**  
Determines your selection or saves a new setting.
  - ⑭ **Setup button**  
Press to set up the NAC-2.3.
  - ⑮ **Operation buttons**  
**◀◀, ▶▶ (FR/FF) buttons**  
Press to fast-rewind or fast-forward the current track.  
**⏏ (Pause) button**  
Press to pause the playback.  
**▶ (Play) button**  
Press to start playback.  
**■ (Stop) button**  
Press to stop the playback.  
**◀, ▶ B/F-Skip buttons**  
Press to move to the previous or next track.
  - ⑯ **Random button**  
Press to play the selected track list at random.
  - ⑰ **Repeat button**  
Press to repeat the selected single track or track list.
  - ⑱ **Volume ▲/▼ buttons**  
Press to adjust the volume.
- When you use any Integra/Onkyo products other than the NAC-2.3 in the same room, the operations made with the NAC-2.3's remote controller may also cause the other Integra/Onkyo products to operate. To avoid this, you can change the remote controller mode both for the NAC-2.3 and its remote controller choosing from three modes (1, 2 or 3).
- To change the remote controller mode for the remote controller, hold the Standby button on the remote controller and press the Select button, then release these buttons simultaneously. Within 5 seconds after releasing the buttons, enter the appropriate mode (1, 2 or 3) using the numeric keys. The default mode is 1 for both the remote controller and NAC-2.3.
- After changing the remote controller mode, make sure that the remote control "Remote ID code" on the NAC-2.3 is set to the same mode as the remote controller. (see Page 57)

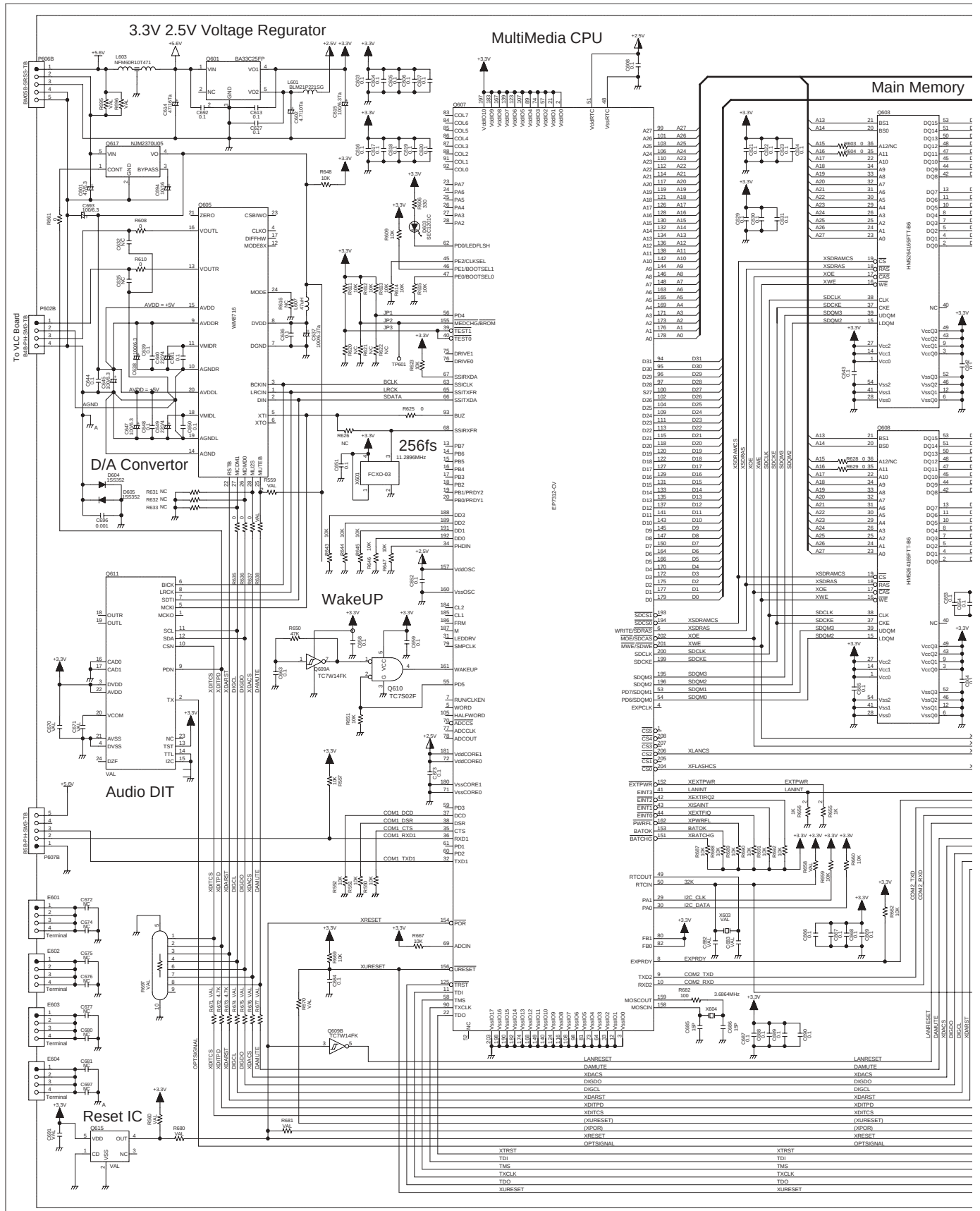
EXPLODED VIEW





# SCHEMATIC DIAGRAMS

## Network Circuit Section - 1/2



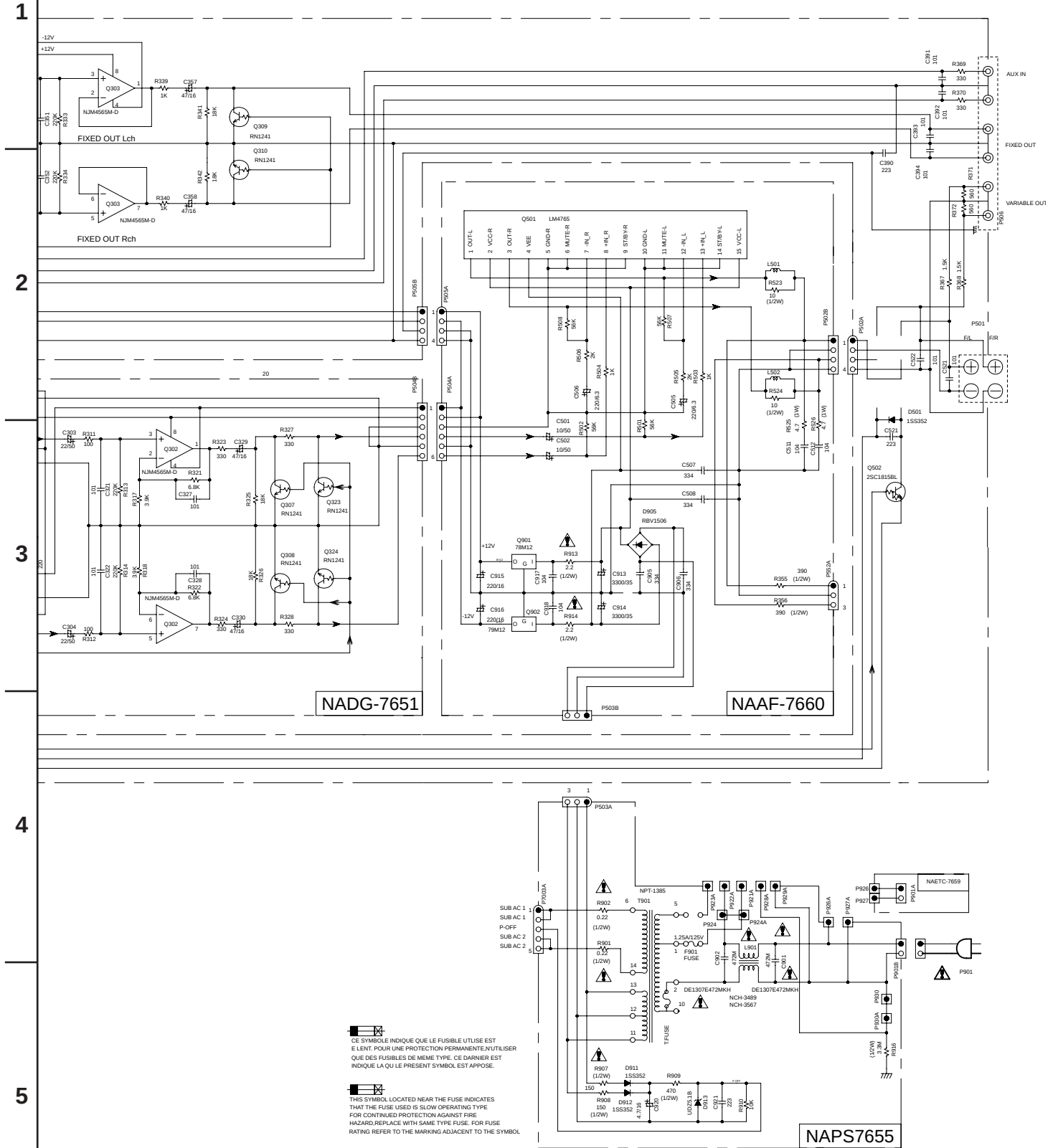




1



# SCHEMATIC DIAGRAM - 2

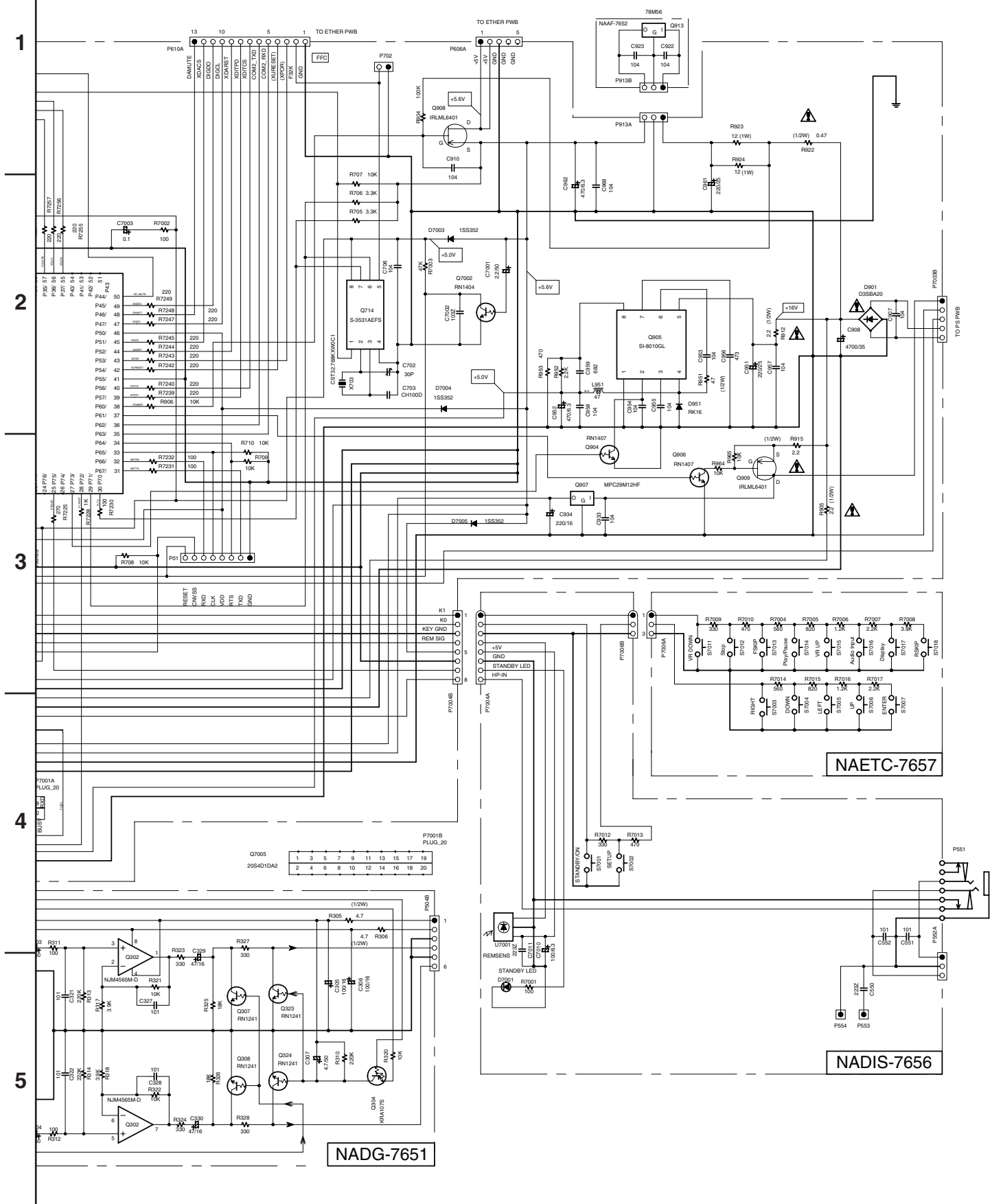




A

---

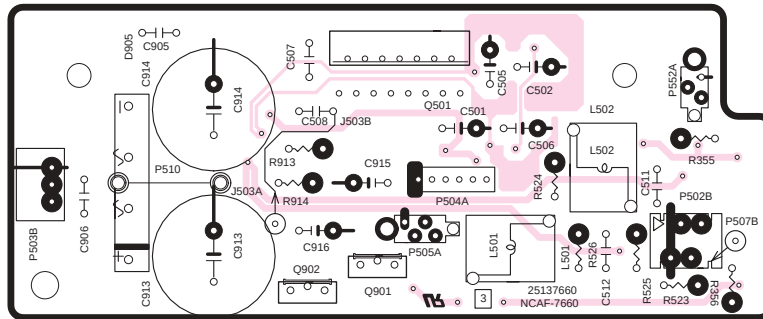
**SCHEMATIC DIAGRAM - 4**



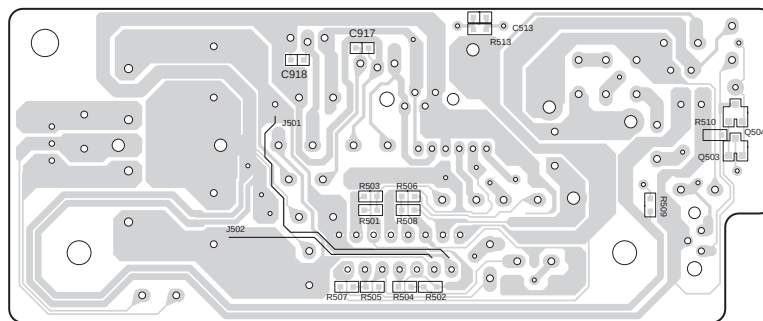
PRINTED CIRCUIT BOARD VIEW - 1

U000:AF-7660

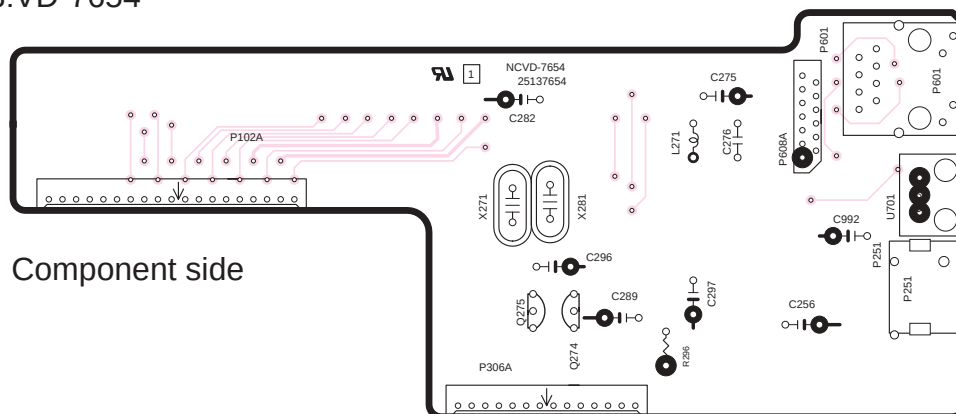
## Component side



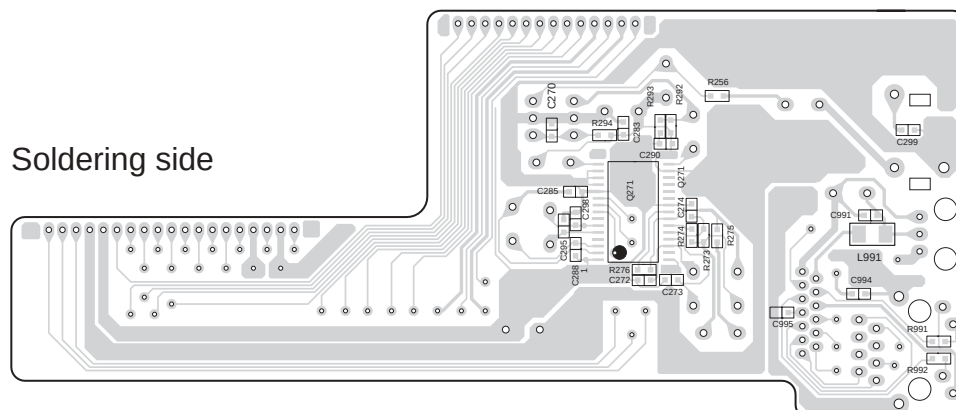
Soldering side



U003:VD-7654



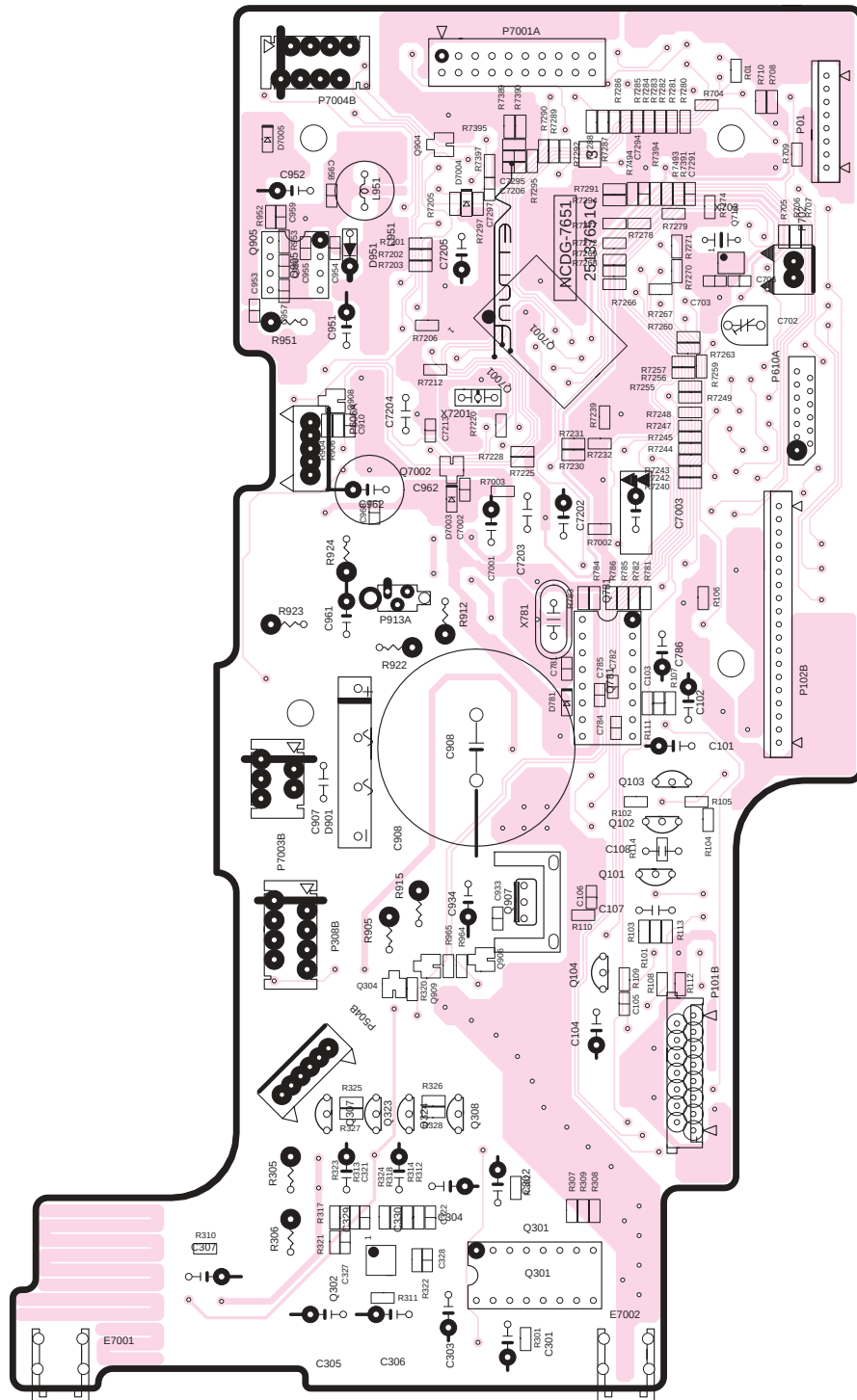
## Component side



Soldering side

**PRINTED CIRCUIT BOARD VIEW - 2-1**

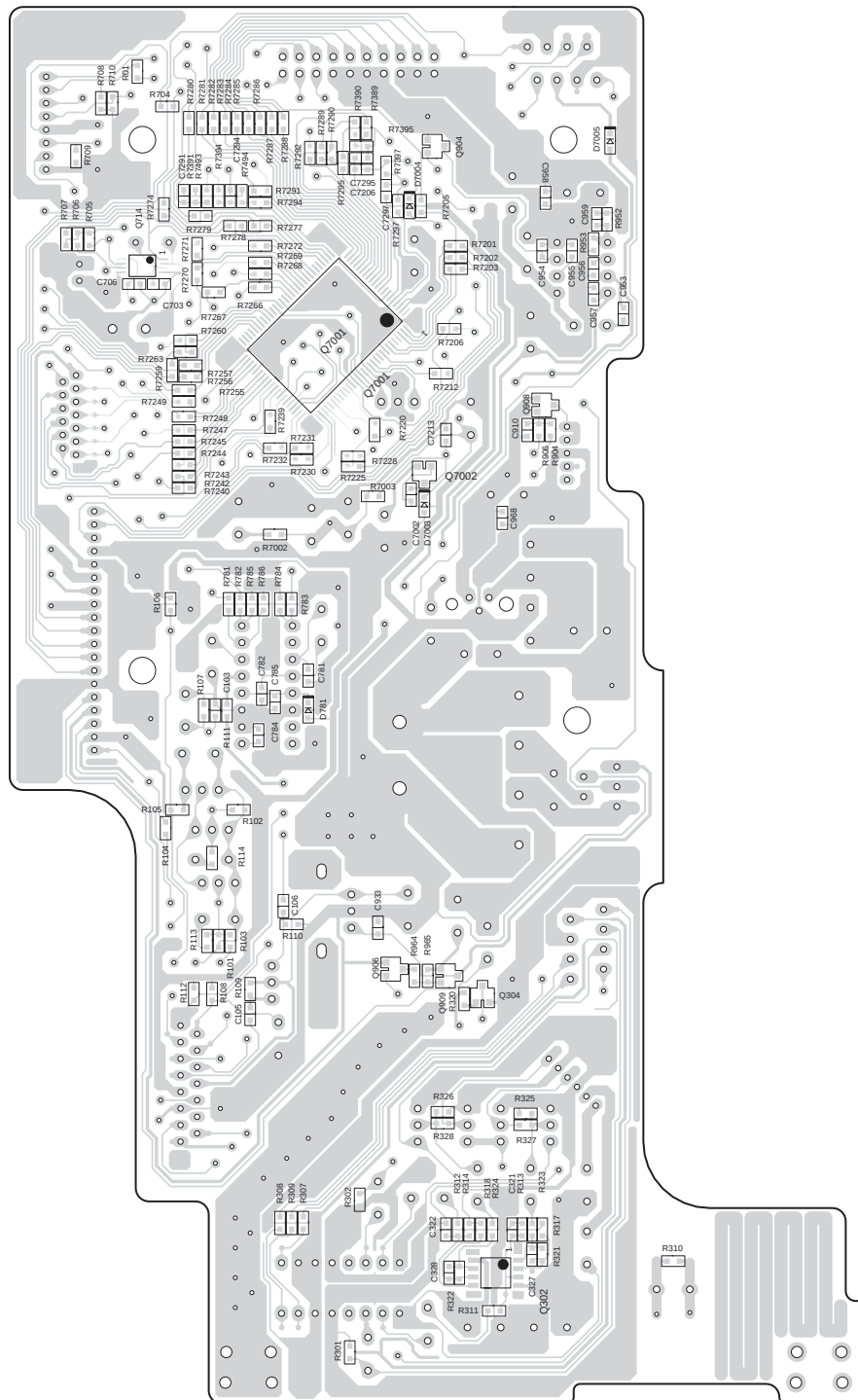
U001:DG7651  
Component side





**PRINTED CIRCUIT BOARD VIEW 2 - 2**

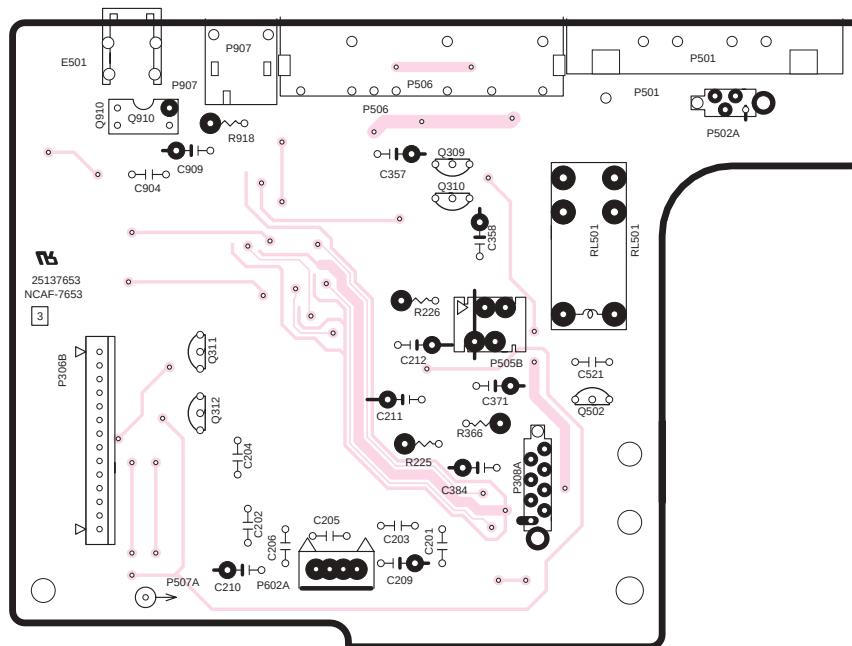
U001:DG-7651  
Soldering side



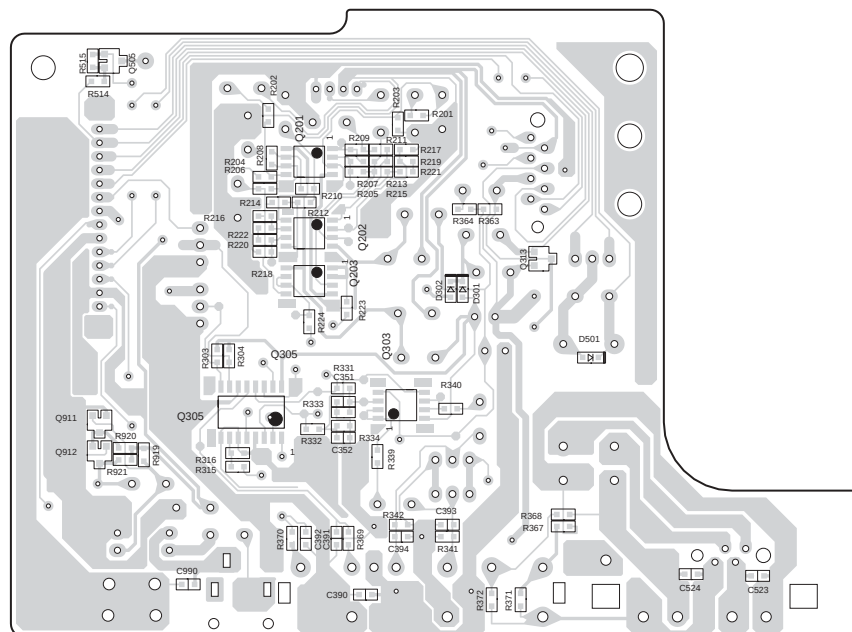
### PRINTED CIRCUIT BOARD VIEW - 3

U002:AF-7653

## Component side

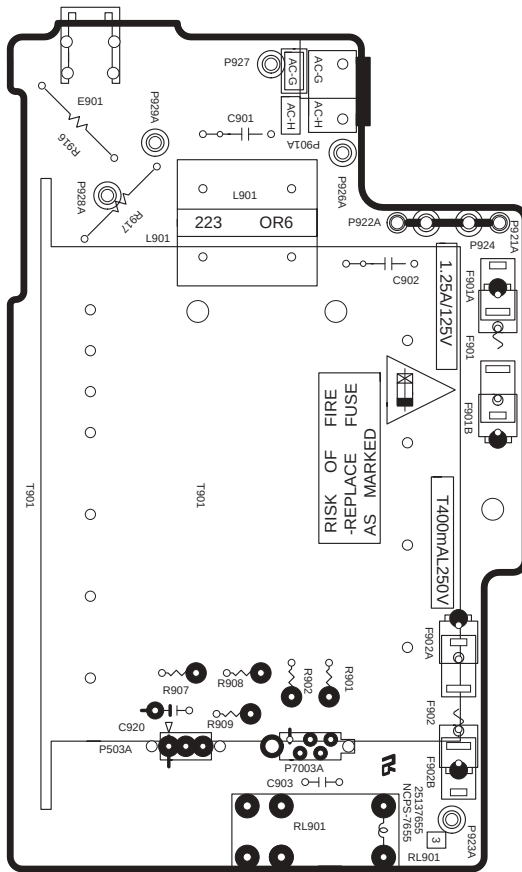


Soldering side

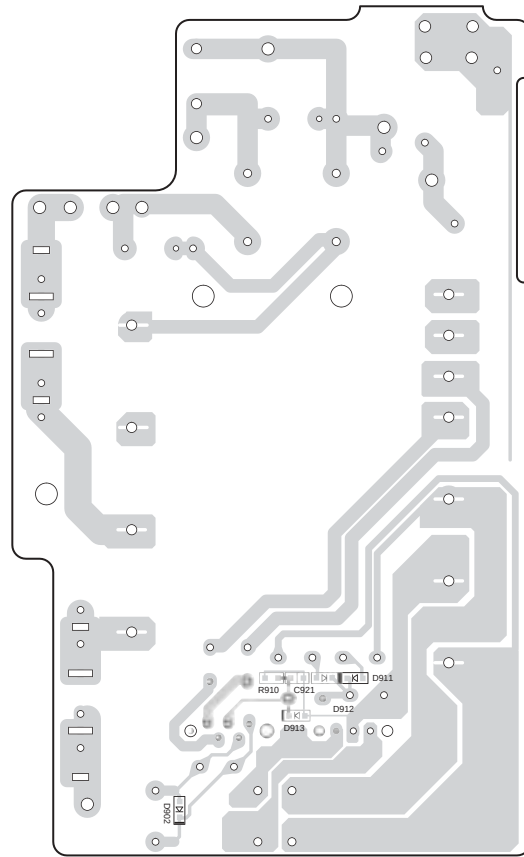


# PRINTED CIRCUIT BOARD VIEW - 4

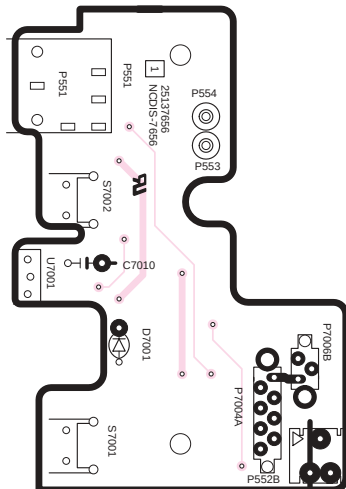
U004:PS-7655  
Component side



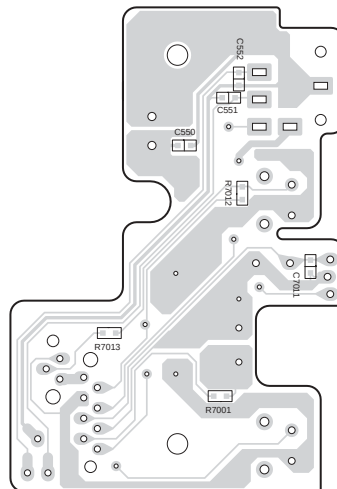
Soldering side



U005:DIS-7656  
Component side

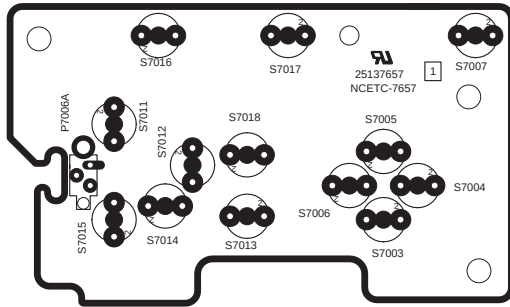


Soldering side

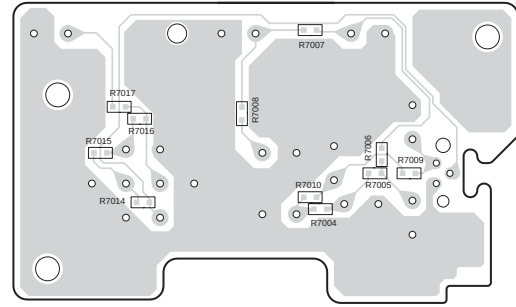


## PRINTED CIRCUIT BOARD VIEW - 5

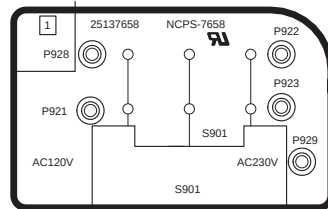
U006:ETC-7657  
Component side



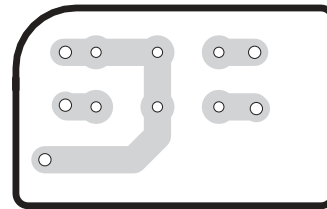
Soldering side



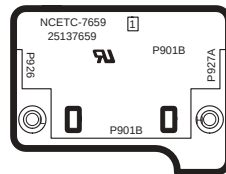
U007:PS-7658  
Component side



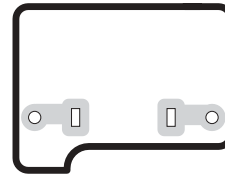
Soldering side



U008:ETC-7659  
Component side

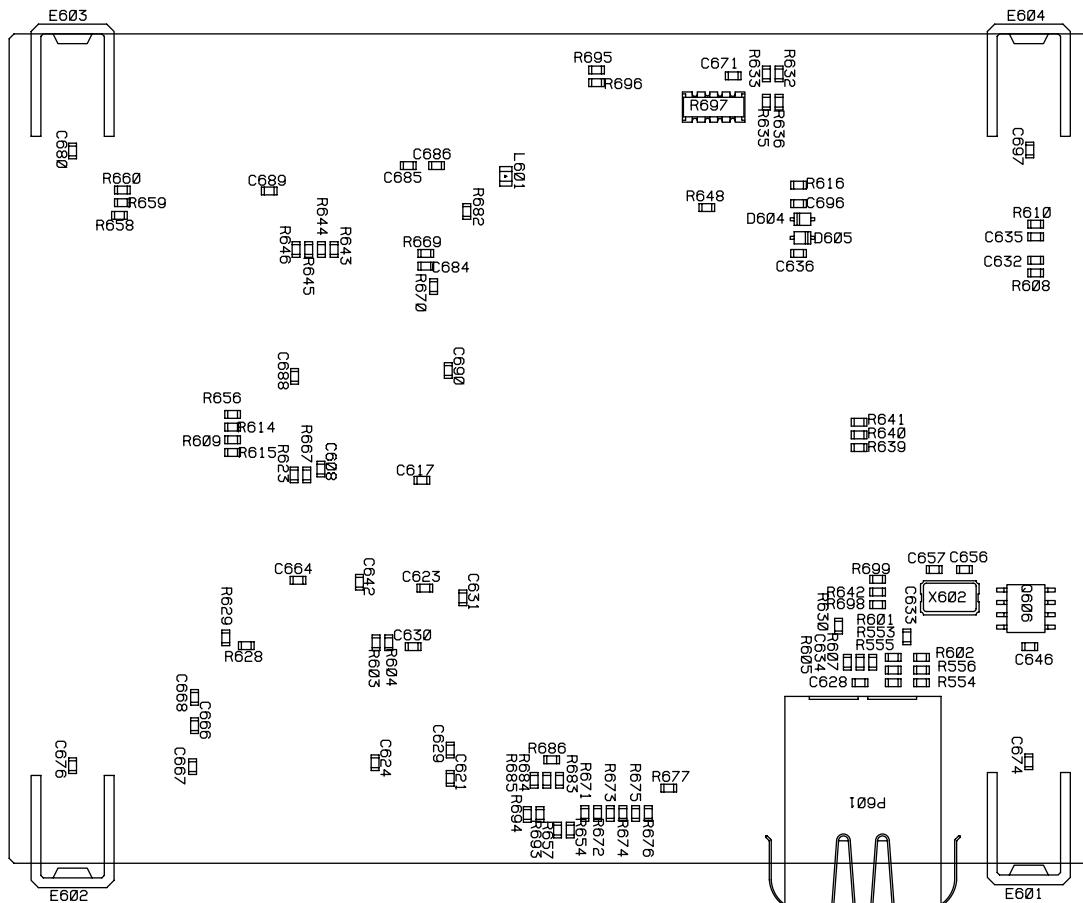
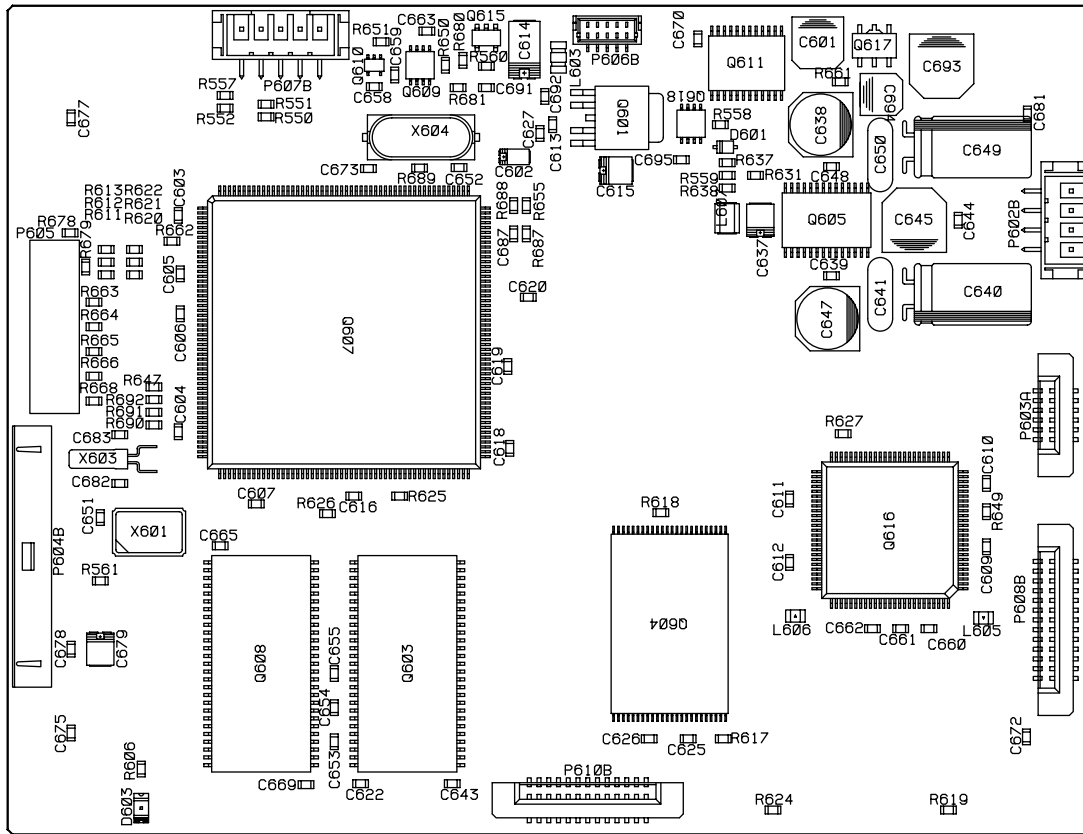


Soldering side



# PRINTED CIRCUIT BOARD VIEW - 6

U009:DG-7662, Network Circuit



# BLOCK DIAGRAM AND DESCRIPTION OF IC - 1

Q305:TC4052B  
ANALOG SWITCH

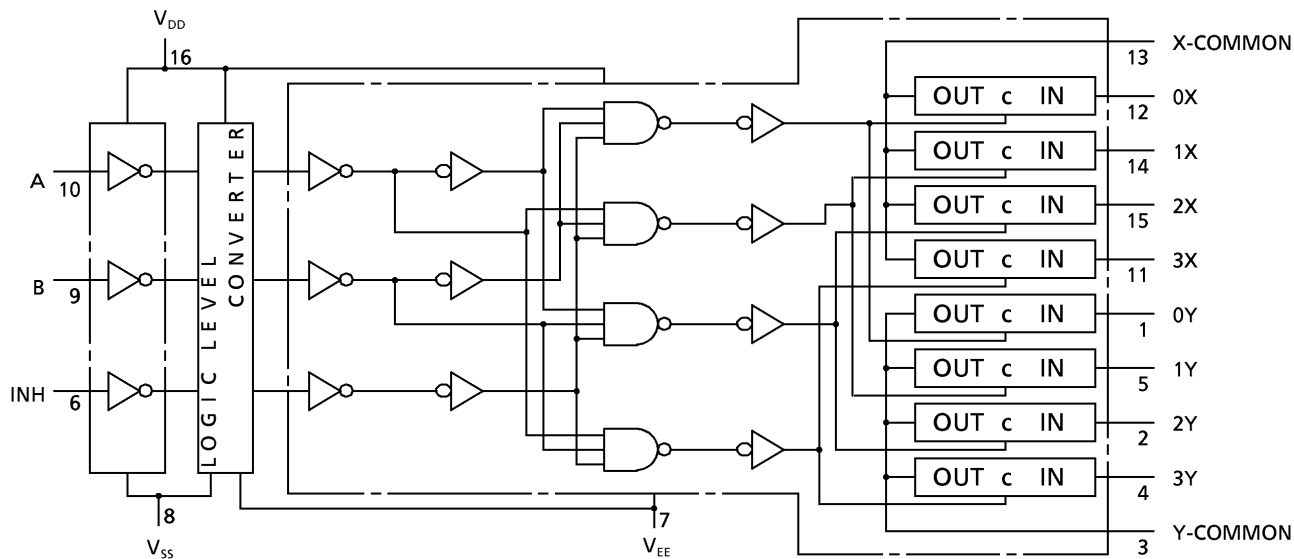


TRUTH TABLE

| CONTROL INPUTS |    |   |   | "ON" CHANNEL |         |            |
|----------------|----|---|---|--------------|---------|------------|
| INHIBIT        | C△ | B | A | TC4051B      | TC4052B | TC4053B    |
| L              | L  | L | L | 0            | 0X, 0Y  | 0X, 0Y, 0Z |
| L              | L  | L | H | 1            | 1X, 1Y  | 1X, 0Y, 0Z |
| L              | L  | H | L | 2            | 2X, 2Y  | 0X, 1Y, 0Z |
| L              | L  | H | H | 3            | 3X, 3Y  | 1X, 1Y, 0Z |
| L              | H  | L | L | 4            | —       | 0X, 0Y, 1Z |
| L              | H  | L | H | 5            | —       | 1X, 0Y, 1Z |
| L              | H  | H | L | 6            | —       | 0X, 1Y, 1Z |
| L              | H  | H | H | 7            | —       | 1X, 1Y, 1Z |
| H              | *  | * | * | NONE         | NONE    | NONE       |

\* : Don't Care    △ Except TC4052B

TC4052B



## BLOCK DIAGRAM AND DESCRIPTION OF IC - 4

Q605:WM8716

DAC

### PIN DESCRIPTION

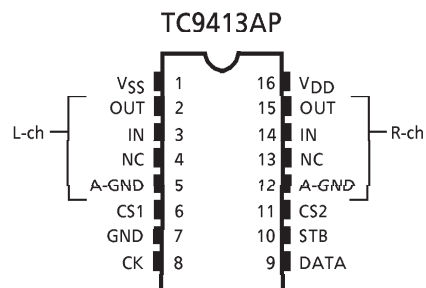
| PIN | NAME   | TYPE                                | DESCRIPTION                                                                                      |                                                                                                  |                                                                        | Software Mode                                                      |
|-----|--------|-------------------------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|--------------------------------------------------------------------|
|     |        |                                     | Hardware Mode                                                                                    |                                                                                                  |                                                                        |                                                                    |
|     |        |                                     | Normal Mode                                                                                      | Differential Mode                                                                                | 8X Mode                                                                |                                                                    |
| 1   | LRCIN  | Digital input                       | Sample rate clock input.                                                                         |                                                                                                  |                                                                        |                                                                    |
| 2   | DIN    | Digital input                       | Audio data serial input                                                                          |                                                                                                  |                                                                        | DINL                                                               |
|     |        |                                     |                                                                                                  |                                                                                                  |                                                                        | Audio data serial input                                            |
| 3   | BCKIN  | Digital input                       | Audio data bit clock input.                                                                      |                                                                                                  |                                                                        |                                                                    |
| 4   | CLKO   | Digital output                      | Oscillator buffered output (system clock).                                                       |                                                                                                  |                                                                        |                                                                    |
| 5   | XTI    | Analogue input                      | Oscillator input.                                                                                |                                                                                                  |                                                                        |                                                                    |
| 6   | XTO    | Analogue output                     | Oscillator output.                                                                               |                                                                                                  |                                                                        |                                                                    |
| 7   | DGND   | Supply                              | Digital ground supply.                                                                           |                                                                                                  |                                                                        |                                                                    |
| 8   | DVDD   | Supply                              | Digital positive supply.                                                                         |                                                                                                  |                                                                        |                                                                    |
| 9   | AVDDR  | Supply                              | Analogue positive supply.                                                                        |                                                                                                  |                                                                        |                                                                    |
| 10  | AGNDR  | Supply                              | Analogue ground supply.                                                                          |                                                                                                  |                                                                        |                                                                    |
| 11  | VMIDR  | Analogue output                     | Mid rail right channel.                                                                          |                                                                                                  |                                                                        |                                                                    |
| 12  | MODE8X | Digital input                       | Internal pull-down, active high, 8 x fs mode.                                                    |                                                                                                  |                                                                        |                                                                    |
| 13  | VOUTr  | Analogue output                     | Right channel DAC output.                                                                        |                                                                                                  |                                                                        |                                                                    |
| 14  | AGND   | Supply                              | Analogue ground supply.                                                                          |                                                                                                  |                                                                        |                                                                    |
| 15  | AVDD   | Supply                              | Analogue positive supply.                                                                        |                                                                                                  |                                                                        |                                                                    |
| 16  | VOUtl  | Analogue output                     | Left channel DAC output.                                                                         |                                                                                                  |                                                                        |                                                                    |
| 17  | DIFFHW | Digital input                       | Internal pull-down, active high, differential mono mode                                          |                                                                                                  |                                                                        |                                                                    |
| 18  | VMIDL  | Analogue output                     | Mid rail left channel.                                                                           |                                                                                                  |                                                                        |                                                                    |
| 19  | AGNDL  | Supply                              | Analogue ground supply.                                                                          |                                                                                                  |                                                                        |                                                                    |
| 20  | AVDDL  | Supply                              | Analogue positive supply.                                                                        |                                                                                                  |                                                                        |                                                                    |
| 21  | ZERO   | Digital output                      | Infinite zero detect – active low. Open drain type output with active pull-down.                 |                                                                                                  |                                                                        |                                                                    |
| 22  | RSTB   | Digital input                       | Reset input – active low. Internal pull-up.                                                      |                                                                                                  |                                                                        |                                                                    |
| 23  | CSBIWO | Digital input<br>Internal pull-down | Wordlength:<br>Low for 16-bit data.<br>High for 20-bit (normal) or 24-bit I <sup>2</sup> S data. | Wordlength:<br>Low for 16-bit data.<br>High for 20-bit (normal) or 24-bit I <sup>2</sup> S data. | Wordlength:<br>Low for 20-bit data.<br>High for 24-bit data.           | Low for serial interface operation.                                |
| 24  | MODE   | Digital input<br>Internal pull-up   | Low for hardware mode.                                                                           | Low for left mono mode.<br>High for right mono mode                                              | DINR                                                                   | High for software mode.                                            |
| 25  | MUTEb  | Digital input<br>Internal pull-up   | Low to soft mute.<br>High for normal operation.<br>Z for automute.                               | Low to soft mute.<br>High for normal operation.<br>Z for automute.                               | Low to soft mute.<br>High for normal operation.<br>Z for automute.     | Low to soft mute.<br>High for normal operation.<br>Z for automute. |
| 26  | MD/DM0 | Digital input<br>Internal pull-up   | De-emphasis mode select bit 0.                                                                   | Low for no de-emphasis.<br>High for 44.1kHz de-emphasis.                                         | LRP – LRCLK polarity select.                                           | Control serial interface data signal.                              |
| 27  | MC/DM1 | Digital input<br>Internal pull-up   | De-emphasis mode select bit 1.                                                                   | Low for normal filter operation.<br>High for filter slow roll-off.                               | Unused.<br>Leave unconnected.                                          | Control serial interface clock signal.                             |
| 28  | ML/I2S | Digital input<br>Internal pull-up   | Audio serial format:<br>Low – right justified.<br>High – I <sup>2</sup> S.                       | Audio serial format:<br>Low – right justified.<br>High – I <sup>2</sup> S.                       | Input data format:<br>Low – right justified.<br>High – left justified. | Control serial interface load signal.                              |

**Note:** Digital input pins have Schmitt trigger input buffers except Pin 12 and Pin 17.

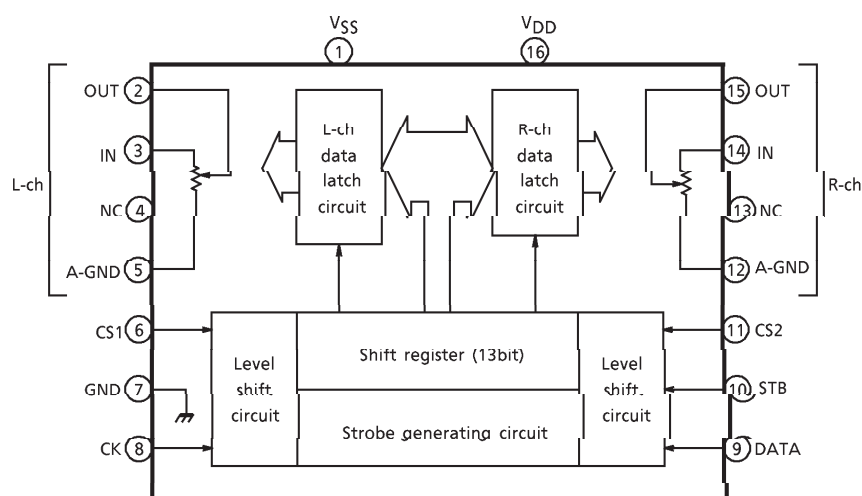
## BLOCK DIAGRAM AND DESCRIPTION OF IC - 2

Q301:TC9413AP  
ELECTRONIC VOLUME CONTROL

## PIN CONNECTIONS



### BLOCK DIAGRAM (TC9413AP)



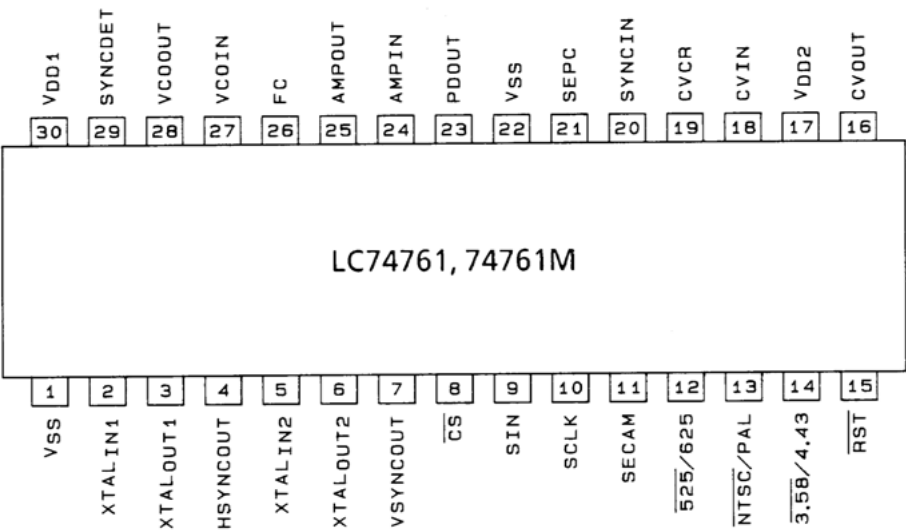


# BLOCK DIAGRAM AND DESCRIPTION - 3

Q271:LC74761M-9845  
ON-SCREEN DISPLAY LSI



## Pin Assignment



## BLOCK DIAGRAM AND DESCRIPTION OF IC - 3

Q271:LC74761M-9845  
ON-SCREEN DISPLAY LSI

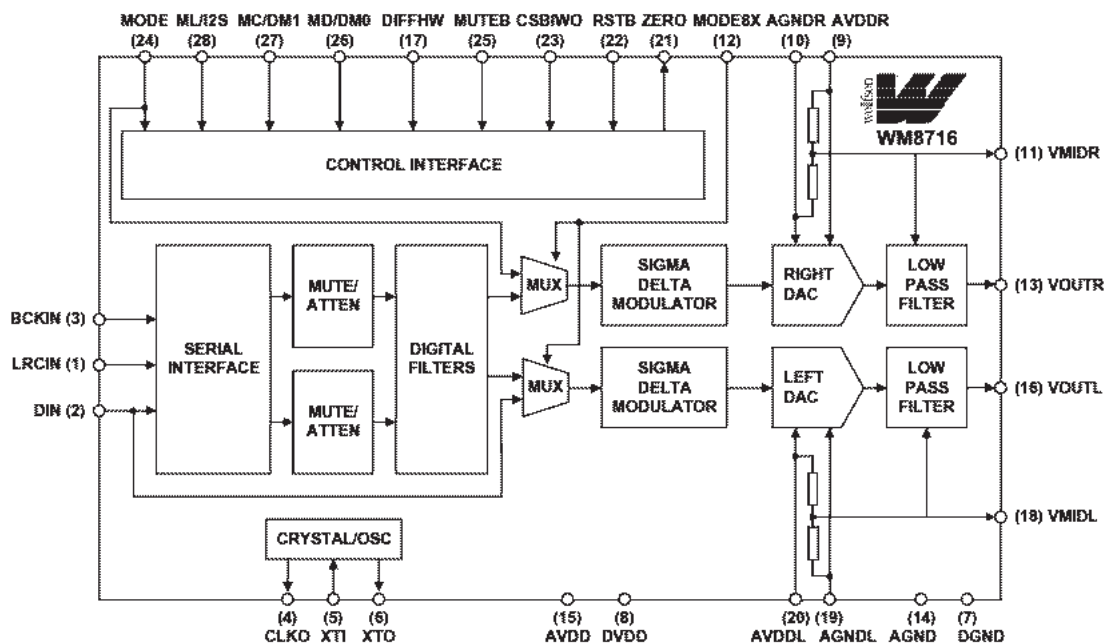
### Pin Functions

| Pin No. | Symbol                       | Function                                         | Description                                                                                                                                                                                                      |
|---------|------------------------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | V <sub>SS</sub>              | Ground                                           | Ground connection                                                                                                                                                                                                |
| 2       | Xtal <sub>IN1</sub>          | Crystal oscillator connection                    | Connection for the crystal and capacitor used to form the crystal oscillator that generates the internal synchronization signal. The oscillator can be selected with a command switch.                           |
| 3       | Xtal <sub>OUT1</sub>         |                                                  |                                                                                                                                                                                                                  |
| 4       | HSYNC <sub>OUT</sub>         | Horizontal synchronization output                | Outputs the horizontal synchronization signal (AFC). The output polarity can be selected (metal option). Also functions as general output port (command switch).                                                 |
| 5       | Xtal <sub>IN2</sub>          | Crystal oscillator connection                    | Connection for the crystal and capacitor used to form the crystal oscillator that generates the internal synchronization signal.                                                                                 |
| 6       | Xtal <sub>OUT2</sub>         |                                                  |                                                                                                                                                                                                                  |
| 7       | VSYNC <sub>OUT</sub>         | Vertical synchronization output                  | Outputs the vertical synchronization signal. The output polarity can be selected (metal option). Also functions as general output port (command switch).                                                         |
| 8       | $\overline{\text{CS}}$       | Enable input                                     | Enables/disables serial data input. Serial data is enabled when this pin is low (hysteresis input). Pull-up resistor built in (metal option).                                                                    |
| 9       | SIN                          | Data input                                       | Serial data input (hysteresis input). Pull-up resistor built in (metal option).                                                                                                                                  |
| 10      | SCLK                         | Clock input                                      | Clock input for serial data input (hysteresis input). Pull-up resistor built in (metal option).                                                                                                                  |
| 11      | SECAM                        | SECAM mode switch input/output (command switch)  | During input, switches between SECAM and other modes.<br>During output, functions as general output port or internal V output (command switch).<br>Low = other modes, high = SECAM mode                          |
| 12      | $\overline{525/625}$         | 525/625 switch input/output (command switch)     | During input, switches between 525 scan lines and 625 scan lines.<br>During output, functions as general output port or character data output (command switch).<br>Low = 525 lines, high = 625 lines             |
| 13      | $\overline{\text{NTSC/PAL}}$ | NTSC/PAL switch input/output (command switch)    | Switches the color mode between NTSC and PAL.<br>During output, functions as general output port or frame data output (command switch).<br>Low = NTSC, high = PAL                                                |
| 14      | $\overline{3.58/4.43}$       | 3.58/4.43 switch input/output (command switch)   | Switch FSC between 3.58 MHz and 4.43 MHz.<br>During output, functions as general output port or half-tone output (command switch).<br>Low = 3.58, high = 4.43                                                    |
| 15      | $\overline{\text{RST}}$      | Reset input                                      | System reset input pin, low is active (hysteresis input). Pull-up resistor built in (metal option).                                                                                                              |
| 16      | CV <sub>OUT</sub>            | Video signal output                              | Composite video output                                                                                                                                                                                           |
| 17      | V <sub>DD2</sub>             | Power supply connection                          | Power supply connection for composite video signal level generation                                                                                                                                              |
| 18      | CV <sub>IN</sub>             | Video signal input                               | Composite video input                                                                                                                                                                                            |
| 19      | CV <sub>CR</sub>             | Video signal input                               | SECAM chroma signal input                                                                                                                                                                                        |
| 20      | SYNC <sub>IN</sub>           | Sync separator circuit input                     | Built-in sync separator circuit video signal input                                                                                                                                                               |
| 21      | SEP <sub>C</sub>             | Sync separator circuit                           | Built-in sync separator circuit                                                                                                                                                                                  |
| 22      | V <sub>SS</sub>              | Ground                                           | Ground connection                                                                                                                                                                                                |
| 23      | PD <sub>OUT</sub>            | Control voltage output                           | AFC control voltage output                                                                                                                                                                                       |
| 24      | AMP <sub>IN</sub>            | AFC filter connection                            | Filter connection                                                                                                                                                                                                |
| 25      | AMP <sub>OUT</sub>           |                                                  |                                                                                                                                                                                                                  |
| 26      | FC                           | Control voltage input                            | AFC control voltage input                                                                                                                                                                                        |
| 27      | VCO <sub>IN</sub>            | LC oscillator connection                         | VCO LC oscillator circuit coil and capacitor connection                                                                                                                                                          |
| 28      | VCO <sub>OUT</sub>           |                                                  |                                                                                                                                                                                                                  |
| 29      | SYNC <sub>DET</sub>          | External synchronization signal detection output | Outputs the exclusive NOR of the horizontal synchronization signal (AFC) and CSYNC (sync separator). The output polarity can be selected (metal option). Also functions as general output port (command switch). |
| 30      | V <sub>DD1</sub>             | Power supply connection                          | Power supply connection (+5 V: digital system power supply)                                                                                                                                                      |

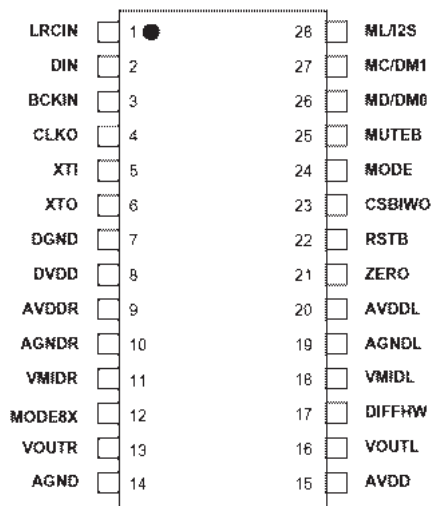
## BLOCK DIAGRAM AND DESCRIPTION OF IC - 4

Q605:WM8716  
DAC

### BLOCK DIAGRAM



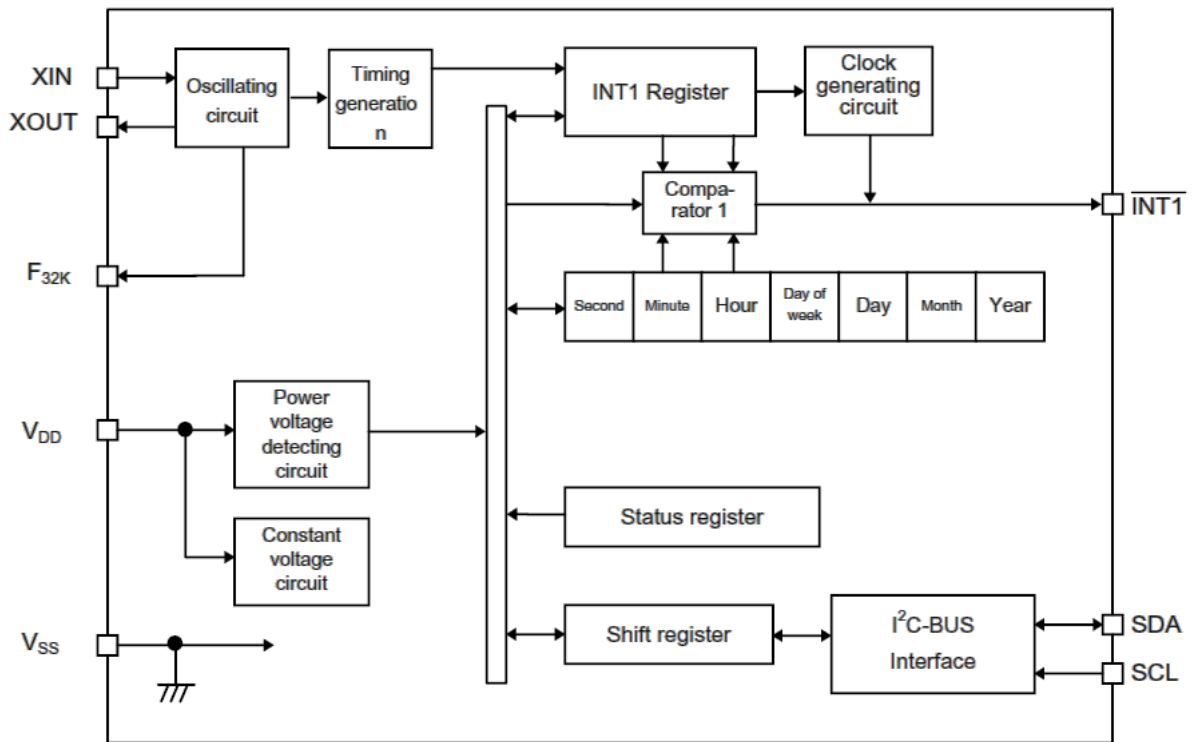
### PIN CONFIGURATION



## BLOCK DIAGRAM AND DESCRIPTION OF IC - 5

Q714:S-3531A  
REAL-TIME CLOCK

### ■ Block Diagram



### ■ Pin Assignment

(1) Package : S-3531AEFS

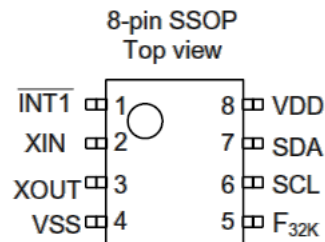
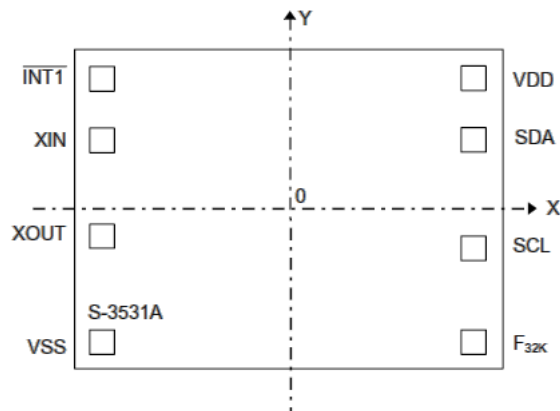


Figure 2 Pin assignment

(2) Die : S-3531AECA



## BLOCK DIAGRAM AND DESCRIPTION OF IC - 5

Q714:S-3531A  
REAL-TIME CLOCK

### ■ Description of Pins

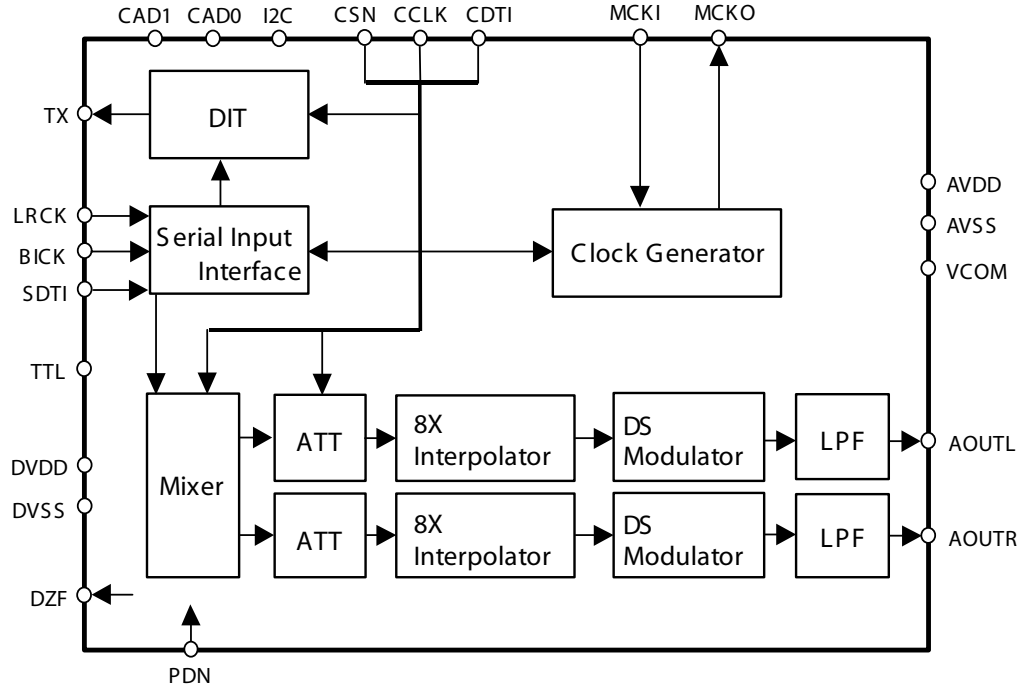
**Table 1 Description of pins**

| Pin No. | Symbol                   | Description                                                                                                                                                                                                             | Configuration                                                                      |
|---------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| 1       | $\overline{\text{INT1}}$ | Alarm interrupt 1 output pin.<br>Depending on the mode set by the $\overline{\text{INT1}}$ register and status register, it outputs low or Clock when time is reached. It is disabled by rewriting the status register. | N-channel open drain output (No protective diode on the side of VDD)               |
| 2       | XIN                      | Crystal oscillator connect pin (32,768 Hz)<br>(Internal Cd, External Cg)                                                                                                                                                | —                                                                                  |
| 3       | XOUT                     |                                                                                                                                                                                                                         |                                                                                    |
| 4       | VSS                      | Negative power supply pin (GND)                                                                                                                                                                                         | —                                                                                  |
| 5       | F <sub>32K</sub>         | 32,768 Hz clock output pin.<br>This clock is always being output and cannot be controlled by command.                                                                                                                   | N-channel open drain output (No protective diode on the side of VDD)               |
| 6       | SCL                      | Serial clock input pin.<br>Follow the specification with great care to the rising/falling time of the SCL signal because the signal is treated at its rising/falling edge.                                              | CMOS input (No protective diode on the side of VDD)                                |
| 7       | SDA                      | Serial data input/output pin.<br>This pin is usually pulled up to VDD via a resistor, and connected to other open-drain or open-collector output devices in wired OR configuration.                                     | N-channel open drain output (No protective diode on the side of VDD)<br>CMOS input |
| 8       | VDD                      | Positive power supply pin.                                                                                                                                                                                              | —                                                                                  |

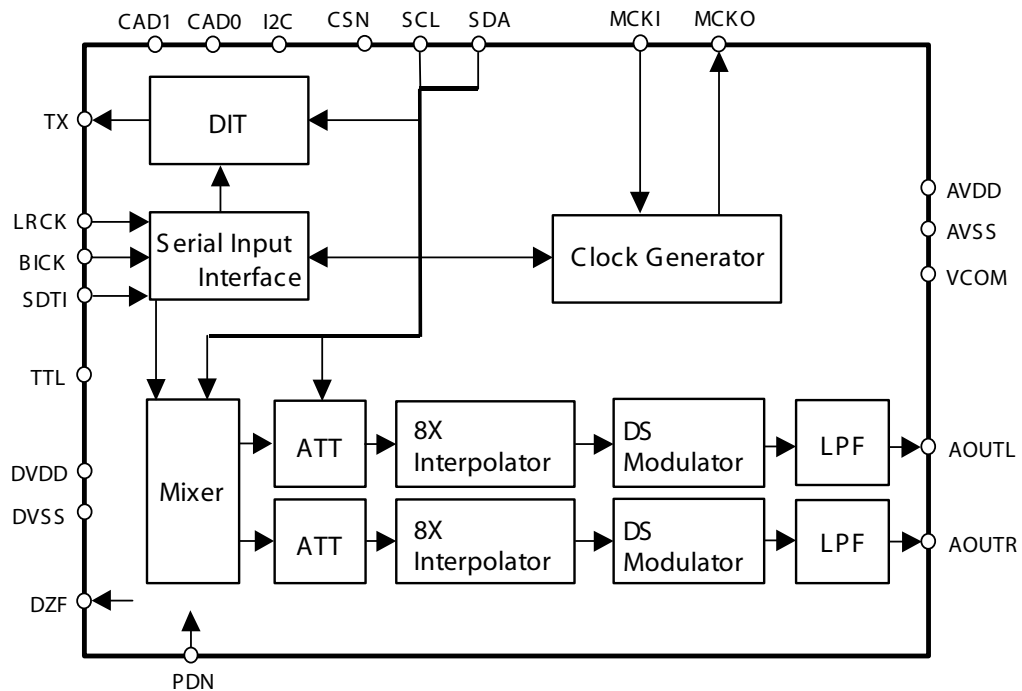
# BLOCK DIAGRAM AND PIN DESCRIPTION OF IC - 6

Q611:AK4353  
DAC WITH DIT

Block Diagram



3-wire Serial Control Mode ( $I^2C = "L"$ )

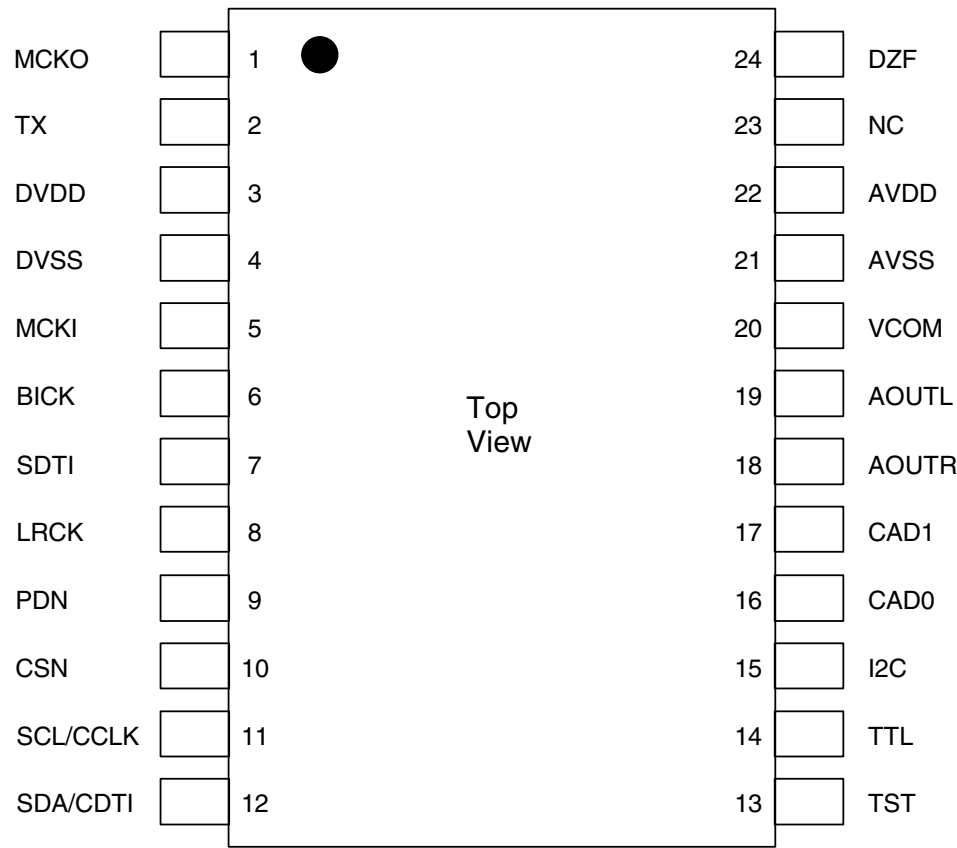


$I^2C$  Bus Control Mode ( $I^2C = "H"$ )

BLOCK DIAGRAM AND PIN DESCRIPTION OF IC - 6

Q611:AK4353  
DAC WITH DIT

Pin Layout



## BLOCK DIAGRAM AND PIN DESCRIPTION OF IC - 6

Q611:AK4353  
DAC WITH DIT

| PIN/FUNCTION |          |     |                                                                                                                                        |
|--------------|----------|-----|----------------------------------------------------------------------------------------------------------------------------------------|
| No.          | Pin Name | I/O | Description                                                                                                                            |
| 1            | MCKO     | O   | Master Clock Output Pin<br>Same frequency as MCKI is output                                                                            |
| 2            | TX       | O   | Transmit Channel Output Pin                                                                                                            |
| 3            | DVDD     | -   | Digital Power Supply Pin, +2.7~+5.5V                                                                                                   |
| 4            | DVSS     | -   | Digital Ground Pin, 0V                                                                                                                 |
| 5            | MCKI     | I   | Master Clock Input Pin                                                                                                                 |
| 6            | BICK     | I   | Serial Data Clock Pin                                                                                                                  |
| 7            | SDTI     | I   | Serial Data Input Pin                                                                                                                  |
| 8            | LRCK     | I   | Serial Input Channel Clock Pin                                                                                                         |
| 9            | PDN      | I   | Power-Down Pin<br>When “L”, the circuit is in power-down mode.<br>The AK4353 should always be reset upon power-up.                     |
| 10           | CSN      | I   | Chip Select Pin at 3-wire Serial control mode<br>This pin should be connected to DVDD at I <sup>2</sup> C Bus control mode.            |
| 11           | SCL      | I   | Control Clock Pin at I <sup>2</sup> C bus control mode                                                                                 |
|              | CCLK     | I   | Control Clock Pin at 3-wire serial control mode                                                                                        |
| 12           | SDA      | I/O | Control Data Input/Output Pin at I <sup>2</sup> C Bus control mode                                                                     |
|              | CDTI     | I   | Control Data Input Pin at 3-wire serial control mode                                                                                   |
| 13           | TST      | I   | Test pin<br>This pin should be connected to DVDD.                                                                                      |
| 14           | TTL      | I   | Digital Input Level Select Pin<br>“L”: CMOS, “H”: TTL                                                                                  |
| 15           | I2C      | I   | Control Mode Select Pin<br>“L”: 3-wire Serial, “H”: I <sup>2</sup> C Bus                                                               |
| 16           | CAD0     | I   | Chip Address Select 0 Pin                                                                                                              |
| 17           | CAD1     | I   | Chip Address Select 1 Pin                                                                                                              |
| 18           | AOUTR    | O   | Rch Analog Output Pin                                                                                                                  |
| 19           | AOUTL    | O   | Lch Analog Output Pin                                                                                                                  |
| 20           | VCOM     | O   | Common Voltage Output Pin, AVDD/2<br>Used for analog common voltage.<br>Large external capacitor is used to reduce power supply noise. |
| 21           | AVSS     | -   | Analog Ground Pin                                                                                                                      |
| 22           | AVDD     | -   | Analog Power Supply Pin                                                                                                                |
| 23           | NC       | -   | No Connect<br>Nothing should be connected externally to this pin.                                                                      |
| 24           | DZF      | O   | Zero Input Detect Pin<br>When SDTI follows a total 8192 LRCK cycles with “0” input data<br>or RSTN = “0”, this pin goes to “H”.        |



## DESCRIPTION OF MAIN MICROPROCESSOR - 1

## Q7001, M30624FGAFP

| No.   | Symbol   | I/O | Act. | Description (Function)                          |
|-------|----------|-----|------|-------------------------------------------------|
| 1     | OSDDA    | O   | H    | Data of OSD communication                       |
| 2     | OSDCL    | O   | CLK  | Clock of OSD communication                      |
| 3     | ~OSDCS   | O   | L    | To select OSD communication                     |
| 4,5   | -        | O   |      | -                                               |
| 6     | ~IRIN    | I   | L    | Infrared signal from rear panel (IR IN)         |
| 7     | ~IRMAIN  | I   | L    | Infrared signal from front panel                |
| 8     | BYTE     | I   | H    | VSS                                             |
| 9     | CNVSS    | I   | H    | Change of processor mode                        |
| 10,11 | -        | O   |      | -                                               |
| 12    | ~RESET   | I   | L    | Reset                                           |
| 13    | XOUT     | O   |      | Crystal oscillator, connect to 16MHz oscillator |
| 14    | VSS      |     |      | GND                                             |
| 15    | XIN      | I   |      | Crystal oscillator, connect to 16MHz oscillator |
| 16    | VCC      |     |      | Power supply, 5V                                |
| 17    | ~NMI     | I   | L    | -                                               |
| 18    | -        | O   |      | -                                               |
| 19    | RDSCLK   | I   | CLK  | RDS clock                                       |
| 20    | ~POFF    | I   | L    | Detect power failure                            |
| 21~24 | -        | O   |      | -                                               |
| 25    | STBLED   | O   | H    | STANDBY LED                                     |
| 26    | -        | O   |      | -                                               |
| 27    | ~FLPOWER | O   | L    | Control of FL power supply                      |
| 28    | ~FLTEST  | O   | L    | FL tube test                                    |
| 29    | RTCSCL   | O   | CLK  | Clock of RTC IC                                 |
| 30    | RTCSDA   | I/O | H    | Data of RTC IC                                  |
| 31~34 | -        | O   |      | -                                               |
| 35    | NETTX    | O   | L    | Communication of network microprocessor         |
| 36    | NETRX    | I   | L    | Communication of network microprocessor         |
| 37    | -        | O   |      | -                                               |
| 38    | ~ETPOWER | O   | L    | Control of power supply for ETHER IC            |
| 39    | ~DITPD   | O   | L    | DIT power down                                  |
| 40    | ~DITCS   | O   | L    | To select DIT                                   |
| 41    | (~EPM)   | I   | L    | Connect to VSS                                  |
| 42    | -        | O   |      | -                                               |
| 43    | XPOR     | O   | L    | EP7312 reset                                    |
| 44    | ~DARST   | O   | L    | DAC reset                                       |
| 45    | DACS     | O   | L    | To select DAC                                   |
| 46    | (~CE)    | I   | L    | Connect to Vcc                                  |
| 47    | DIGCL    | O   | CLK  | Common clock of DIT/DAC                         |
| 48    | DAMUT    | O   | L    | Muting of DAC                                   |
| 49    | DIGDO    | O   | H    | Common data of DIT/DAC                          |
| 50~54 | -        | O   |      | -                                               |
| 55    | VOLDA    | O   | H    | Serial data of TC9412 volume IC                 |
| 56    | VOLCL    | O   | CLK  | Serial clock of TC9412 volume IC                |

## DESCRIPTION OF MAIN MICROPROCESSOR - 2

## Q7001, M30624FGAFP

| No.   | Symbol  | I/O | Act.  | Description (Function)                                    |
|-------|---------|-----|-------|-----------------------------------------------------------|
| 57    | VOLSTB  | O   | H     | Strobe of TC9412 volume IC                                |
| 58    | -       | O   |       | -                                                         |
| 59    | AMUT    | O   | H     | Analog muting                                             |
| 60    | TUMUT   | O   | H     | Tuner muting                                              |
| 61    | -       | O   |       | -                                                         |
| 62    | VCC     |     |       | Power supply, 5V                                          |
| 63    | SPRLY   | O   | H     | Speaker relay                                             |
| 64    | VSS     |     |       | GND                                                       |
| 65    | -       | O   |       | -                                                         |
| 66    | ~STEREO | I   | L     | Detect STEREO of tuner                                    |
| 67    | ~SD     | I   | L     | Detect SD of tuner                                        |
| 68    | PLLCL   | O   | CLK   | PLL clock of tuner                                        |
| 69    | PLLCS   | O   | H     | To select of PLL of tuner                                 |
| 70    | PLLDA   | O   | H     | PLL data of tuner                                         |
| 71    | RDSSIG  | I   | H     | RDS signal                                                |
| 72    | RDSDA   | I   | H     | RDS data                                                  |
| 73    | ~RTCINT | I   | L     | Interruption signal (1Hz) from RTC IC                     |
| 74    | FLBUSY  | I   | L     | FL tube busy                                              |
| 75,76 | -       | O   |       | -                                                         |
| 77    | ~SELA   | O   | L     | TC4052 function change, the reversal output terminal of A |
| 78    | ~SELB   | O   | L     | TC4052 function change, the reversal output terminal of B |
| 79    | FLWR    | O   | H     | FL tube WR                                                |
| 80    | ~FLSEL  | O   | L     | FL tube ~SEL                                              |
| 81    | FLDA7   | O   | H     | FL tube data 7                                            |
| 82    | FLDA6   | O   | H     | FL tube data 6                                            |
| 83    | FLDA5   | O   | H     | FL tube data 5                                            |
| 84    | FLDA4   | O   | H     | FL tube data 4                                            |
| 85    | FLDA3   | O   | H     | FL tube data 3                                            |
| 86    | FLDA2   | O   | H     | FL tube data 2                                            |
| 87    | FLDA1   | O   | H     | FL tube data 1                                            |
| 88    | FLDA0   | O   | H     | FL tube data 0                                            |
| 89    | RDSEN   | I   | H     | To select of RDS function                                 |
| 90    | AREA2   | I   | H     | Local setting 2                                           |
| 91    | AREA1   | I   | H     | Local setting 1                                           |
| 92    | HPDET   | I   | H     | Detect headphone (Insert : "H")                           |
| 93    | -       | O   |       | -                                                         |
| 94    | MODEL   | I   | H(AD) | Model setting                                             |
| 95    | KEY1    | I   | AD    | Key 1                                                     |
| 96    | AVSS    |     |       | A/D convertor power supply, connect to VSS                |
| 97    | KEY0    | I   | AD    | Key 0                                                     |
| 98    | VREF    | I   |       | Reference voltage of A/D convertor                        |
| 99    | AVCC    |     |       | A/D convertor power supply, connect to Vcc                |
| 100   | -       | O   |       | -                                                         |

## **ADJUSTMENT & CONFIRMATIONS OF OPERATIONS**

### **ADJUSTMENT OF FREQUENCY**

- a) Turn C702 CCW to set minimum position before POWER ON.
- b) Set the frequency at P702 to 32768Hz by adjusting C702 under the condition of no input and no load, immediately after POWER ON.
- c) After 4 ~ 6 minutes of heat running, re-adjust by following b.

### **OPERATIONS OF SPEAKER RELAYS**

The relay shall be ON about 5 seconds after POWER is ON and shall be OFF immediately after POWER is OFF.

### **INITIAL SETTING FOR SHIPPING**

#### **1. Initialization of memories**

Press STANDBY/ON button while pressing down INPUT button when the unit is POWER ON, then the FLT displays "CLEAR", and turn to STAND-BY. Remove power cord from power line.

#### **2. Other settings**

Pull out the AC cord at the standby mode.

## FIRMWARE UPDATE - 1

### Arrangements for PC

- 1 Make the firmware folder under the Net-Tune Central folder.
- 2 Make the folder of a suitable name (ex.:FW\_NAC23) in that.
- 3 Putting the following 4 files in that.  
 Fdist.fdf - File Distribution File  
 FW\_0\_1\_0.dcf - Device Construcion File  
 LanY08na.mot - The program of Network microprocessor (The file name changes by the version).  
 LanY08rb(L).mot - The program of System microprocessor (The file name changes by the version)
- 4 Start Net-Tune Central.



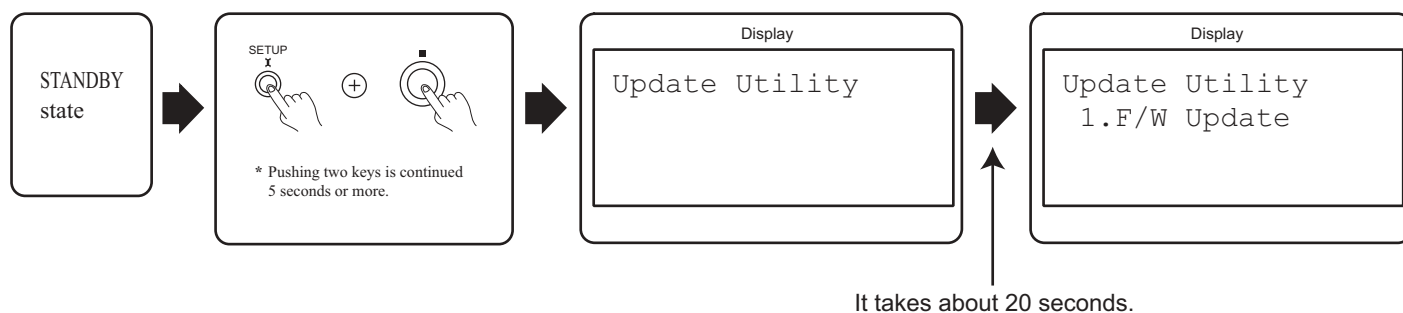
### Note!

**Update initializes each setting data.**

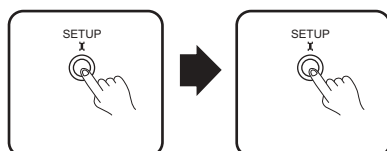
Put only the folder which puts firmware in the firmware folder. And, do not make the folder of the subordinate position from it.

When you replaces or edits the above file, you should end Net-Tune Central once, and restart. Otherwise, the change is not reflected.

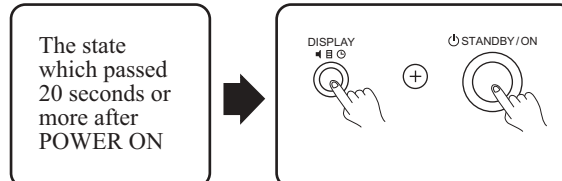
### Update Utility : ON



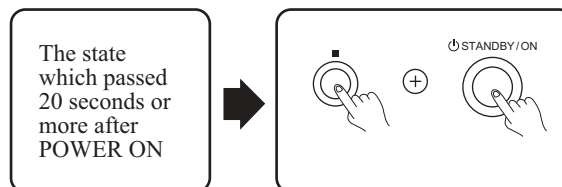
### Update Utility : STOP → CANCEL



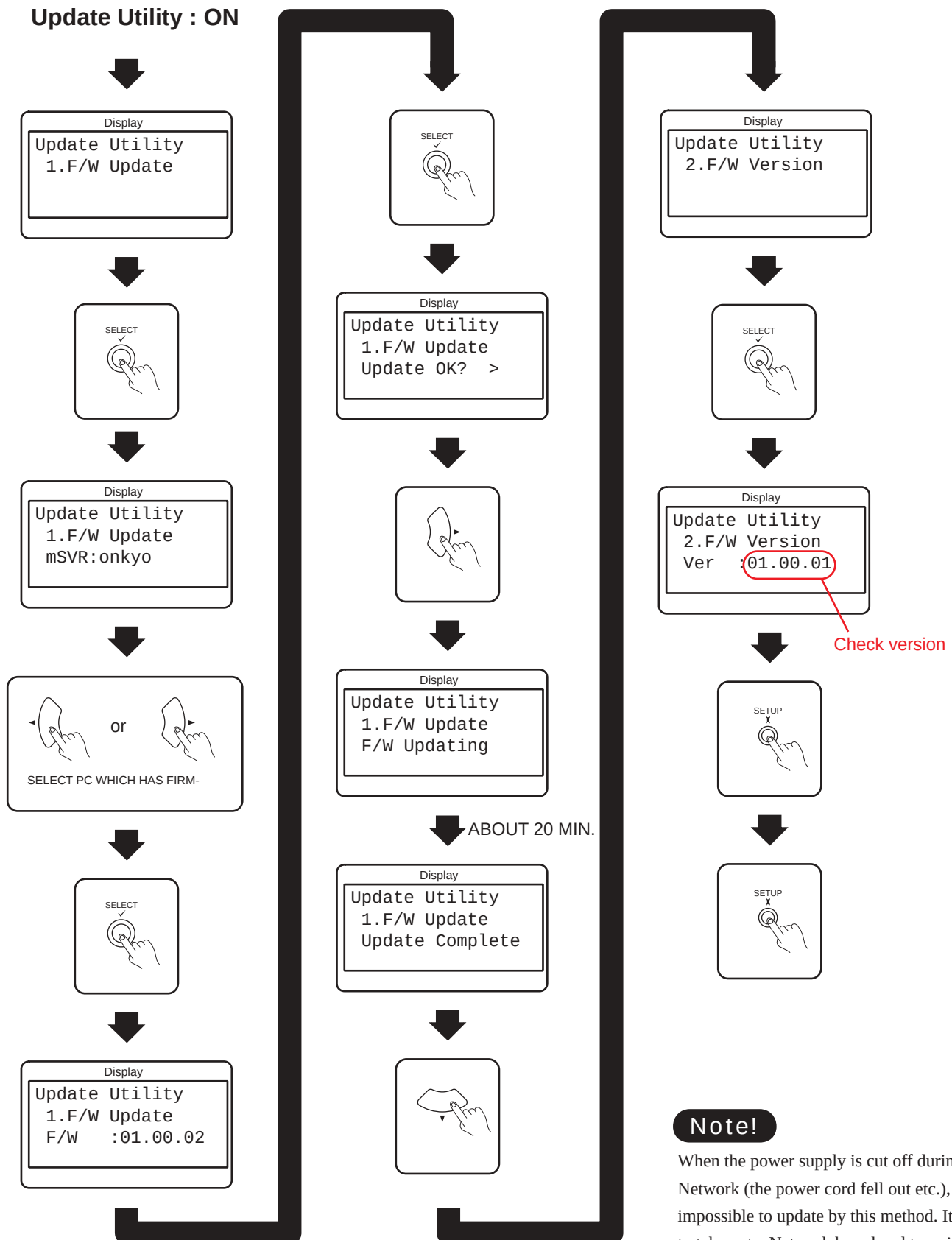
### Version Check



### Memory Clear



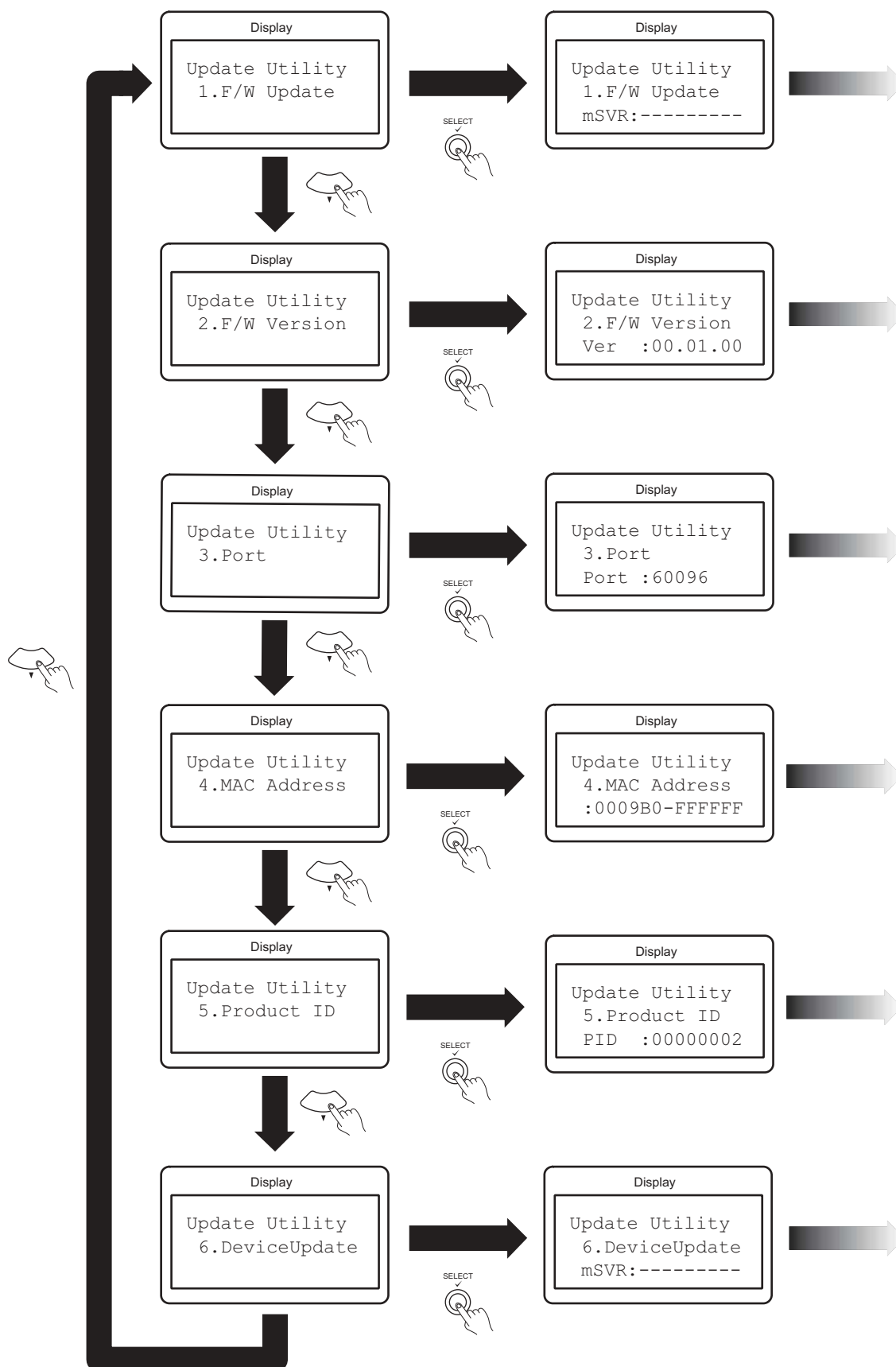
## FIRMWARE UPDATE - 2

**Note!**

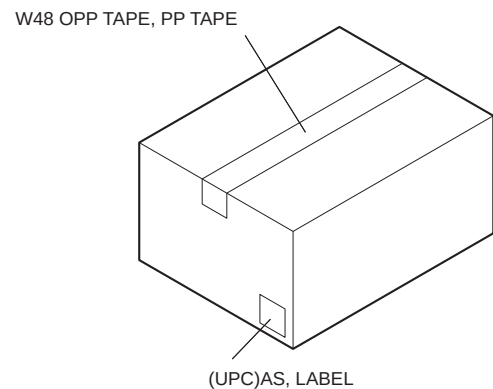
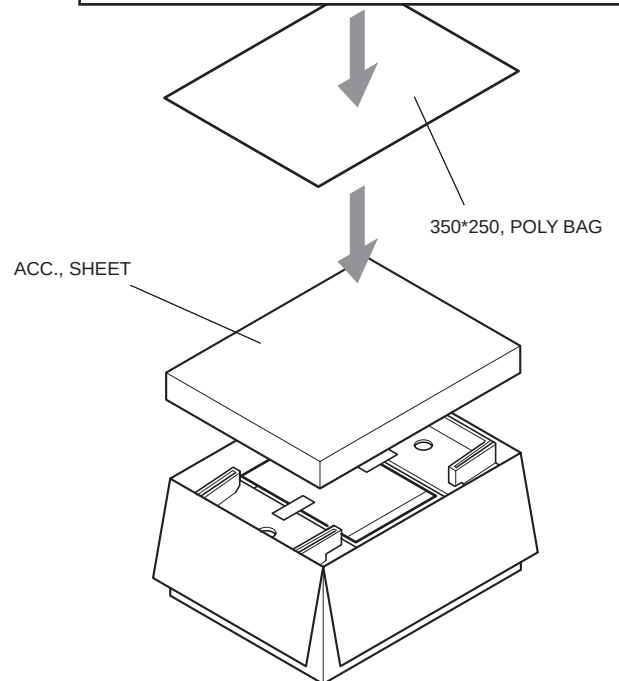
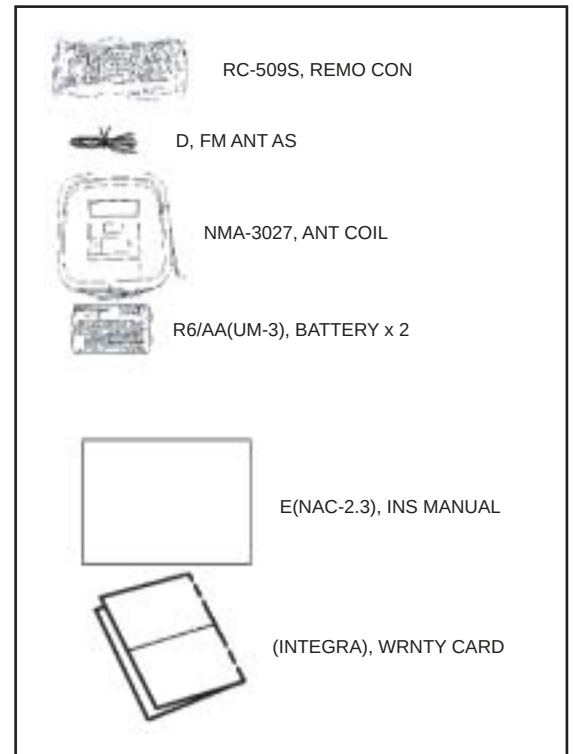
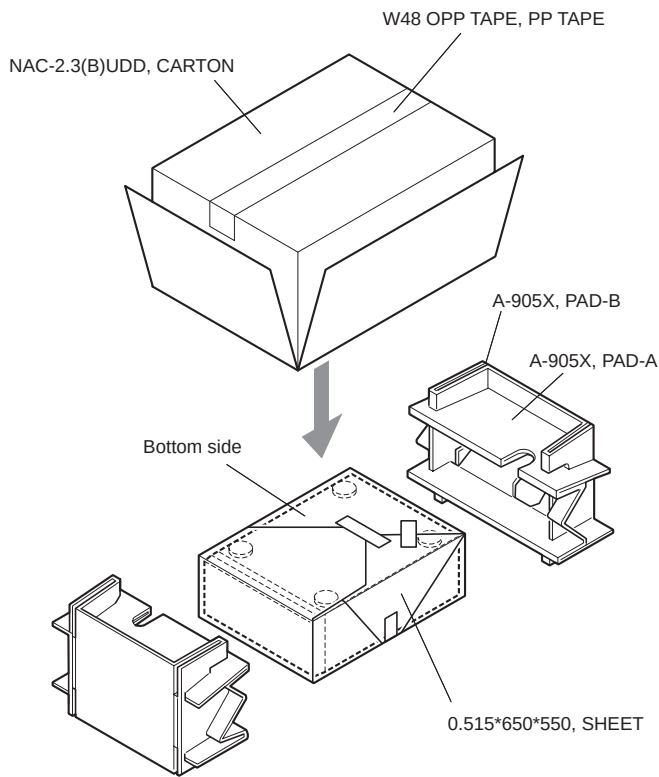
When the power supply is cut off during update of Network (the power cord fell out etc.), it becomes impossible to update by this method. It is necessary to take out a Network board and to write in firm-ware using a special pc board with a Linux PC.

## FIRMWARE UPDATE - 3

### Menu of Update Utility



# PACKING VIEW



| Part Number    | Description                |
|----------------|----------------------------|
| [11:Packing ]  |                            |
| 29053970       | NAC-2.3(B)UDD, CARTON      |
| 29363242       | (UPC)AS, LABEL             |
| 29091886       | A-905X, PAD-A              |
| 29095835       | 0.515*650*550, SHEET       |
| 29110149       | (SEROHAN)NITTO NO.29, TAPE |
| 29110148       | W48 OPP TAPE, PP TAPE      |
| 29091887       | A-905X, PAD-B              |
| 29095932       | ACC., SHEET                |
| [12:Accessory] |                            |
| 29343425       | E(NAC-2.3), INS MANUAL     |
| 29365089       | (INTEGRA), WRNTY CARD      |
| 292142         | D, FM ANT AS               |
| 29100097-1A    | 350*250, POLY BAG          |
| 3010054        | R6/AA(UM-3), BATTERY       |
| 232198         | NMA-3027, ANT COIL         |
| 24140509       | RC-509S, REMO CON          |

| REF.NO.<br>CIRCUIT NO. | PARTS NUMBER            | DESCRIPTION                                         |
|------------------------|-------------------------|-----------------------------------------------------|
|                        | [NAC-2.3(B)UDD,ADAPTER] |                                                     |
| U000                   | 1W240560-1A             | NAAF-7660-1A, PCB AS                                |
| U001                   | 1W240551-1A             | NADG-7651-1A, PCB AS                                |
| U002                   | 1W240552-1A             | NAAF-7652-1A, PCB AS                                |
| U003                   | 1W240553-1A             | NAAF-7653-1A, PCB AS                                |
| U004                   | 1W240554-1A             | NAVD-7654-1A, PCB AS                                |
| U005                   | 1W240555-1A             | NAPS-7655-1A, PCB AS                                |
| U006                   | 1W240556-1A             | NADIS-7656-1A, PCB AS                               |
| U007                   | -                       | -                                                   |
| U008                   | 1W240559-1A             | NAETC-7659-1A, PCB AS                               |
| U009                   | 1W240562-1A             | NADG-7662-1A, PCB AS                                |
|                        | [01:Tuner Unit]         |                                                     |
| U101D                  | 240138A or<br>240134A   | ENG06501QR, TUNER UNIT or<br>TFCE1U114B, TUNER UNIT |
|                        | [02:Semi Conductor]     |                                                     |
| Q501                   | 22241729                | LM4765, IC                                          |
| Q7005                  | 212235A                 | 20S401DA2A, FL TUBE                                 |
|                        | [03:Trans Coil]         |                                                     |
| T901                   | 2301664                 | NPT-1457D, P TRANS                                  |
|                        | [07:SW TRM]             |                                                     |
| Q501A                  | 223025                  | AG262, ISO SHEET                                    |
| Q501B                  | 223034                  | MT-25, TR ACCY                                      |
|                        | [09:Chassis Screw]      |                                                     |
| A008                   | 27100375E               | A-905X, CHASSIS                                     |
| A009                   | 27175323                | (AS), LEG                                           |
| A013                   | 29110083                | TAPE(CROSS-16U), TAPE                               |
| A015                   | 27141829                | RETAINER(AMP)                                       |
| A016                   | 27191016                | NIFCO#2315, HOLDER                                  |
| A017                   | 27190503A               | KGLS-8RT, HOLDER                                    |
| A018                   | 838130088               | 3TTB+8B, SCREW                                      |
| A019                   | 801433                  | 3SMS8W.SW+14B(BC), SCREW                            |
| A020                   | 838430068               | 3TTB+6B(BC), SCREW                                  |
| A025                   | 27225148                | SHLD CASE                                           |
| A026                   | 27150482                | SHLD PLT(PWB)                                       |
| A029                   | 27190480                | HOLDER KGLS-8S, HOLDER                              |
| A035                   | 830440089               | 4TTC+8C(BC), SCREW                                  |
| A040                   | 27150483                | SHLD PLT(FRONT)                                     |
| A042                   | 27255004                | CS-1U, CLIP                                         |
| A050                   | 27190608-1              | (CRAMP) UA-0 V0, HOLDER                             |
| A055                   | 27190266                | KGLS-12RT, HOLDER                                   |
| A060                   | 27150448A               | (PT), SHLD PLT                                      |
| A061                   | 880009                  | P-RIVET NRP-345, RIVET                              |
| A101                   | 27123045A               | LAN-200(B)UDD, REAR PANEL                           |
| A102                   | 838430088               | 3TTB+8B(BC), SCREW                                  |
| A103                   | 838430068               | 3TTB+6B(BC), SCREW                                  |
| A104                   | 838440089               | 4TTB+8C(BC), SCREW                                  |
| A110                   | 27111300                | (B), F BRACKET                                      |
| A111                   | 28191895                | (RE), CLEAR PLT                                     |
| A112                   | 28191979                | FL(WHITE), CLEAR PLT                                |
| A113                   | 27141830                | RETAINER(JACK)                                      |
| A114                   | 838130088               | 3TTB+8B, SCREW                                      |
| A120                   | 27160525                | RAD-182, HEAT SINK                                  |
|                        | [10:Cabinet]            |                                                     |
| A301                   | 27212453                | (B)UDD, F PANEL                                     |
| A302                   | 28191920                | FACET(S)                                            |
| A303                   | 29110029                | W3, DF TAPE                                         |
| A304                   | 838430088               | 3TTB+8B(BC), SCREW                                  |
| A310                   | 28184784                | COVER                                               |
| A315                   | 29362572A               | (UD), LABEL                                         |



|                      |               |                             |
|----------------------|---------------|-----------------------------|
| [11:Packing]         |               |                             |
| A501                 | 29053970      | NAC-2.3(B)UDD, CARTON       |
| A504                 | 29363242      | (UPC)AS, LABEL              |
| A601                 | 29091886      | A-905X, PAD-A               |
| A604                 | 29095835      | 0.515*650*550, SHEET        |
| A607                 | 29110149      | (SEROHAN)NITTO NO.29, TAPE  |
| A610                 | 29110148      | W48 OPP TAPE, PP TAPE       |
| A622                 | 29091887      | A-905X, PAD-B               |
| A623                 | 29095932      | ACC., SHEET                 |
| [12:Accessory]       |               |                             |
| A801                 | 29343425      | E(NAC-2.3), INS MANUAL      |
| A805                 | 29365089      | (INTEGRA), WRNTY CARD       |
| A806                 | 292142        | D, FM ANT AS                |
| A807                 | 29362900      | (RISK), LABEL               |
| A851                 | 29100097-1A   | 350*250, POLY BAG           |
| A852                 | 29110149      | (SEROHAN)NITTO NO.29, TAPE  |
| A853                 | 3010054       | R6/AA(UM-3), BATTERY        |
| A854                 | 232198        | NMA-3027, ANT COIL          |
| U003                 | 24140509      | RC-509S, REMO CON           |
| [99:Other]           |               |                             |
| F901                 | 252157        | 1.25A-UL/T-237, FUSE        |
| P101                 | 2047150512    | NCFC7-150512, FFC           |
| P602                 | 2009990754UL  | NSAS-8P1060, SOCKET AS      |
| P606                 | 2009990752    | NSAS-5P1055, SOCKET AS      |
| P608                 | 2044131512    | NCFC4-131512, FFC           |
| P610                 | 2045131012    | NCFC5-131012, FFC           |
| P7001                | 2009990751    | NSAS-40P1054, SOCKET AS     |
| P901                 | 253297KAW     | AS-UC-2, AC CORD            |
| [DG-AS,NADG-7662-1A] |               |                             |
| [02:Semi Conductor]  |               |                             |
| D601,D604,D605       | 223234R2      | 1SS352, C-DIODE             |
| D603                 | 225385R2      | SEC1201C, LED               |
| Q601                 | 22241778R2    | BA33C25FP, IC               |
| Q603,Q608            | 22241861R3    | HM5264165FTT-B6, IC         |
| Q604                 | 22241862R3    | MX29LV320BTC-90, IC         |
| Q605                 | 22241821R2    | WM8716EDS, IC               |
| Q606                 | 22241872R2    | 93LC46BT/SN, IC             |
| Q607                 | 22241863R3    | EP7312-CV, IC               |
| Q609,Q618            | 22241161R2    | TC7W14FU, IC                |
| Q610                 | 22241159R2    | TC7S02FU, IC                |
| Q615                 | 22241642R2    | S-80127CNMC-JKM-T2, IC      |
| Q616                 | 22241867R3    | CS8900A-CQ3, IC             |
| Q617                 | 22241289R2    | NJM2370U05, IC              |
| [03:Trans Coil]      |               |                             |
| L601,L605,L606       | 230949R2      | BLM21P221SG, CHOKE COIL     |
| L603                 | 3030048R2     | NFE31PT471F1E9, EMI FIL     |
| L607                 | 231237K470R2  | NCH-1479, CHOKE COIL        |
| X601                 | 3010374R2     | DSO-751SV, CRYSTAL          |
| X602                 | 3010371R2     | DSX630G, CRYSTAL            |
| X604                 | 3010373R2     | SMD-49, CRYSTAL             |
| [04:Capacitor]       |               |                             |
| C601                 | 356724709R2   | CEWX6.3V-47M, CHIP ELECT C  |
| C602                 | 395530477R2   | F93-10V-4.7M, CHIP TANTAL   |
| C614                 | 395544707R2   | F93-16V-47M, CHIP TANTAL    |
| C615,C637,C679       | 395521017R2   | F93-6.3V-100M, CHIP TANTAL  |
| C638,C645,C647,C693  | 356721019R2   | CEWX6.3V-100M, CHIP ELECT C |
| C640,C649            | 393322217     | CE04W6.3V-220M(VX), VX C    |
| C641,C650            | 374721044     | ECQ-V50V-104J, TF C         |
| C694                 | 356741009R2   | CEWX16V-10M, CHIP ELECT C   |
| [05:Resistor]        |               |                             |
| R697                 | 43474510308R2 | RM1/16JB10KX08, C-R NET     |
| [07:SW TRM]          |               |                             |

|                                                 |                      |                                    |
|-------------------------------------------------|----------------------|------------------------------------|
| E601,E602,E603,E604                             | 25065425             | NEGITANSI M3, TRM(SCREW)           |
| P602B                                           | 25056180R2 or        | NPLG-4P1119, PLUG or               |
|                                                 | 25055964R2           | NPLG-4P917, PLUG                   |
| P606B                                           | 25056163R2 or        | NPLG-5P1102, PLUG or               |
|                                                 | 25056182R2           | NPLG-5P1121, PLUG                  |
| P607B                                           | 25056181R2 or        | NPLG-5P1120, PLUG or               |
|                                                 | 25055965R2           | NPLG-5P918, PLUG                   |
| P608B,P610B                                     | 25052711R2           | NSCT-13P2607, FFC SOCKET           |
|                                                 | [11:Packing ]        |                                    |
| A701                                            | 29363264             | (MAC), LABEL                       |
|                                                 | [DG-AS,NADG-7651-1A] |                                    |
|                                                 | [02:Semi Conductor]  |                                    |
| D301,D302,D501,D902,D911,D912,D7003,D7004,D7005 | 223234R2             | 1SS352, C-DIODE                    |
| D7001                                           | 225290               | SEL4110R, LED                      |
| D901,D905                                       | 22380285F or         | RS403M, DIODE or                   |
|                                                 | 22380271F            | D3SBA20, DIODE                     |
| D913                                            | 224490510R2 or       | UDZ5.1B, ZENER D or                |
|                                                 | 224550510R2          | UDZS5.1B, ZENER D                  |
| D951                                            | 22380320             | RK16, DIODE                        |
| Q101,Q102,Q307,Q308,Q309,Q310,Q323,Q324         | 2213631              | RN1241-A, TR                       |
| Q103                                            | 2213510              | DTA114ES, TR                       |
| Q201,Q202,Q203,Q302,Q307                        | 22241383R2           | NJM4565M-D, IC                     |
| Q271                                            | 22241884R2           | LC74761M-9848, IC                  |
| Q274,Q275                                       | 2212125              | 2SA1048-GR, TR                     |
| Q301                                            | 22241854             | TC9413AP, IC                       |
| Q304,Q313,Q505                                  | 2216350R2            | KRA107S, TR                        |
| Q305                                            | 222840521R2TO or     | 4052BF(TC4052BF), IC or            |
|                                                 | 222840521R1TO or     | 4052BF(TC4052BF), IC or            |
|                                                 | 222840521R9TO        | 4052BF(TC4052BF), IC               |
| Q311,Q312                                       | 2213640              | DTC123JS, TR                       |
| Q502                                            | 2211256              | 2SC1815-BL, TR                     |
| Q503,Q504,Q908,Q909                             | 2216761R2            | IRLML6401, TR                      |
| Q7001                                           | 22241857             | M30624FGAFP(NAC-2.3), IC           |
| Q7002                                           | 2214490R2            | RN1404, TR                         |
| Q714                                            | 22241856R2           | S-3531AEFS, IC                     |
| Q901                                            | 222780125JRC         | 78M12HF(NJM78M12FA), IC(REGULATOR) |
| Q902                                            | 222790125JRC         | 79M12HF(NJM79M12FA), IC(REGULATOR) |
| Q904                                            | 2216260R2 or         | RN1407, TR or                      |
|                                                 | 2216340R2            | KRC107S, TR                        |
| Q906                                            | 2216260R2            | RN1407, TR                         |
| Q905                                            | 22241853             | SI-8010GL, IC                      |
| Q907                                            | 22278012ENE          | MPC29M12HF, IC(REGULATOR)          |
| Q910                                            | 24120080             | PC817X, PHT CP                     |
| Q911,Q912                                       | 2214470R2            | RN1402, TR                         |
| Q913                                            | 222780565JRC         | 78M56(NJM78M56FA), IC(REGULATOR)   |
|                                                 | [03:Trans Coil]      |                                    |
| L501,L502                                       | 231176S              | S-1.3C, S COIL                     |
| L271                                            | 231086               | NCH-2134, CHOKE COIL               |
| L901                                            | 231252 or            | NCH-3489, CHOKE COIL or            |
|                                                 | 231287 or            | NCH-3567, CHOKE COIL or            |
|                                                 | 231301 or            | NCH-3581, CHOKE COIL or            |
|                                                 | 231305               | NCH-3584, CHOKE COIL               |
| L951                                            | 231328K470           | NCH-3603K470, CHOKE COIL           |

|                          |                         |                                                         |
|--------------------------|-------------------------|---------------------------------------------------------|
| [04:Capacitor]           |                         |                                                         |
| C101,C920                | 354784799               | CE04W50V-0.47M, ELECT C                                 |
| C102                     | 354780339               | CE04W50V-3.3M, ELECT C                                  |
| C104                     | 353780109               | CE04W50V-1M(S), ELECT C                                 |
| C201,C202                | 374721024               | ECQ-B50V-102J, TF C                                     |
| C203,C204                | 374722724               | ECQ-B50V-272J, TF C                                     |
| C205,C206                | 374721824               | ECQ-B50V-182J, TF C                                     |
| C209,C210,C357,C358      | 354744709               | CE04W16V-47M, ELECT C                                   |
| C211,C212,C934           | 354742219               | CE04W16V-220M, ELECT C                                  |
| C256                     | 354724719               | CE04W6.3V-470M, ELECT C                                 |
| C275,C296                | 354780109               | CE04W50V-1M, ELECT C                                    |
| C276                     | 374726824               | ECQ-B50V-682J, TF C                                     |
| C282,C289                | 354721019               | CE04W6.3V-100M, ELECT C                                 |
| C297                     | 354744709               | CE04W16V-47M, ELECT C                                   |
| C301,C302                | 353781009               | CE04W50V-10M(S), ELECT C                                |
| C303,C304                | 353742209               | CE04W16V-22M(S), ELECT C                                |
| C305,C306,C371           | 355741019               | CE04W16V-100M, ELECT C                                  |
| C307,C384                | 354780479               | CE04W50V-4.7M, ELECT C                                  |
| C321,C322,C351,C352,C39  | 373022214R2             | ECHU50V-221J, C-FILM C                                  |
| 1,C392,C393,C394         |                         |                                                         |
| C329,C330                | 353744709               | CE04W16V-47M(S), ELECT C                                |
| C501,C502                | 354781009               | CE04W50V-10M, ELECT C                                   |
| C505,C506                | 354722219               | CE04W6.3V-220M, ELECT C                                 |
| C511,C512,C907           | 374721044               | ECQ-V50V-104J, TF C                                     |
| C521,C903,C904           | 374722234               | ECQ-B50V-223J, TF C                                     |
| C523,C524                | 374721024S              | ECQ-B50V-102J, TF C                                     |
| C7001                    | 354780229               | CE04W50V-2.2M, ELECT C                                  |
| C7003                    | 3000116 or<br>3000089   | EECS5R5V105, CONDENSER or<br>DX-5R5V105, EDL C          |
| C7010                    | 353721019               | CE04W6.3V-100M(S), ELECT C                              |
| C702                     | 3060016                 | NTC-30P14, TRIMMER                                      |
| C7203,C7204              | 374724744               | ECQ-V50V-474J, TF C                                     |
| C901,C902                | 3300030                 | DE1307E472M-KH, IS C                                    |
| C905,C906                | 374723344               | ECQ-V50V-334J, TF C                                     |
| C908                     | 3500183                 | CE04W35V-4700MLQ3V, ELECT C                             |
| C909,C7205               | 354721019               | CE04W6.3V-100M, ELECT C                                 |
| C913,C914                | 393364727S              | CE04W35V4700M, SPC C                                    |
| C915,C916                | 354762219               | CE04W35V-220M, ELECT C                                  |
| C951,C961                | 393752217               | CE04W25V-220M(PW), PW C                                 |
| C952,C962                | 393724717               | CE04W6.3V-470M(PW), PW C                                |
| X271                     | 3010363                 | HC-49/U0314.318M, CRYSTAL                               |
| [05:Resistor]            |                         |                                                         |
| R225,R226,R305,R306,R525 | 453530474               | RNU1/2WCJ-4.7, METAL R                                  |
| ,R526                    |                         |                                                         |
| R296                     | 443521014               | RS1/2WBJ-100, METAL O R                                 |
| R355,R356                | 443523914               | RS1/2WBJ-390, METAL O R                                 |
| R366                     | 443521034               | RS1/2WBJ-10K, METAL O R                                 |
| R523,R524                | 443521004               | RS1/2WBJ-10, METAL O R                                  |
| R901,R902                | 453532294               | RNU1/2WCJ-0.22, METAL R                                 |
| R905,R912,R913,R914,R915 | 453530224               | RNU1/2WCJ-2.2, METAL R                                  |
| R907,R908                | 443521514               | RS1/2WBJ-150, METAL O R                                 |
| R909                     | 443524714               | RS1/2WBJ-470, METAL O R                                 |
| R916,R917                | 4000206S                | RD1/2SPH-3.3M, RESISTOR                                 |
| R918                     | 443521014               | RS1/2WBJ-100, METAL O R                                 |
| R922                     | 453534794               | RNU1/2WCJ-0.47, METAL R                                 |
| R923,R924                | 443621204               | RS1WBJ-12, METAL O R                                    |
| R951                     | 443524704               | RS1/2WBJ-47, METAL O R                                  |
| [07:SW TRM]              |                         |                                                         |
| E901                     | 25065425                | NEGITANSI M3, TRM(SCREW)                                |
| P501                     | 25060306                | NTM-4PDML237, TRM                                       |
| RL501                    | 25065582 or<br>25065605 | NRL-2P5A-DC18-138, RELAY or<br>NRL-2P5A-DC18-154, RELAY |
| RL901                    | 25065643 or<br>25065642 | NRL-2P5A-DC18-168, RELAY or<br>NRL-2P5A-DC18-167, RELAY |
| S7001,S7002              | 25035715                | NPS-111-S678, PUSH SW                                   |

S7003,S7004,S7005,S7006, 25035699  
 S7007,S7011,S7012,S7013,  
 S7014,S7015,S7016,S7017,

NPS-111-S662, PUSH SW

|                                  |                  |                                |
|----------------------------------|------------------|--------------------------------|
|                                  | [08:Mecha Parts] |                                |
| E501,E7001,E7002                 | 25065425         | NEGITANSI M3, TRM(SCREW)       |
| Q907A                            | 27160220         | HEAT-SINK(RAD-51(B)), RADIATOR |
| Q907B                            | 82143010         | 3P+10FN(BC), SCREW             |
|                                  | [99:Other]       |                                |
| F901A,F901B                      | 25052133         | NSCT-1P2031, FUSE HOL          |
| P01                              | 25055704         | NPLG-8P660, PLUG               |
| P101B                            | 25051822         | NSCT-15P1609, SOCKET           |
| P102A                            | 25051530         | NSCT-19P1317, SOCKET           |
| P102B                            | 25055808         | NPLG-19P764, PLUG              |
| P251                             | 25045591         | NPJ-1PDYE402, PIN JACK         |
| P306A                            | 25051239         | NSCT-14P1029, SOCKET           |
| P306B                            | 25055710         | NPLG-14P666, PLUG              |
| P308A,P7004A                     | 25051092         | NSCT-8P879, WIRE HOL           |
| P308B,P7004B                     | 25055629         | NPLG-8P591, WIRE TRAP          |
| P502A,P505A                      | 25051088         | NSCT-4P875, WIRE HOL           |
| P502B,P505B                      | 25055625         | NPLG-4P587, WIRE TRAP          |
| P503A                            | 25051107         | NSCT-3P894, WIRE HOL           |
| P503B                            | 25050267         | NSCT-3P95, SOCKET              |
| P504A                            | 2009990685UL     | NSAS-12P0952, SOCKET AS        |
| P504B                            | 25055444         | NPLG-6P426, PLUG               |
| P506                             | 25045583         | NPJ-6PDRW394, PIN JACK         |
| P507                             | 72120250505      | 1007#24 .2/7HAND B, PVC        |
| P510                             | 27141772         | BBL15, BUS BAR                 |
| P551                             | 25045712         | YKB21-5151, ST JACK            |
| P552A,P913B,P913A,P7006 B,P7006A | 25051087         | NSCT-3P874, WIRE HOL           |
| P552B                            | 25055624         | NPLG-3P586, WIRE TRAP          |
| P553                             | 2067A12100       | CRIMP AS, CRIMP AS             |
| P601                             | 25052724         | NSCT-8P2620, SOCKET            |
| P602A                            | 25055148         | NPLG-4P132, PLUG               |
| P606A                            | 25055149         | NPLG-5P133, PLUG               |
| P608A,P610A                      | 25052507         | NSCT-13P2404, SOCKET           |
| P7001A                           | 25056173         | NPLG-20P1112, PLUG             |
| P7003A                           | 25051089         | NSCT-5P876, WIRE HOL           |
| P7003B                           | 25055626         | NPLG-5P588, WIRE TRAP          |
| P702                             | 25055038         | NPLG-2P29, PLUG                |
| P901B                            | 25055960         | NPLG-2P913, AC INLET           |
| P907                             | 25045387         | YKB21-5130, JACK               |
| P924                             | 27141772         | BBL15, BUS BAR                 |
| P926                             | 2069943101UL     | CRIMP-AS, CRIMP AS             |
| P927                             | 2069943106UL     | CRIMP AS, CRIMP AS             |
| U7001                            | 241345           | PIC-37043SMI, REMO SENS        |
| X703                             | 3010282          | DT-38, CRYSTAL                 |
| X7201                            | 3010322          | CST16.00MXW0C1, CERA LOCK      |

---

Integra Division of  
ONKYO CORPORATION  
Sales & Product Planning Div. : 2-1, Nisshin-cho, Neyagawa-shi, OSAKA 572-8540, JAPAN  
Tel: 072-831-8111 Fax: 072-833-5222 <http://www.onkyo.co.jp/>

Integra Division of  
ONKYO U.S.A. CORPORATION  
18 Park Way, Upper Saddle River, N.J. 07458, U.S.A.  
Tel: 201-785-2600 Fax: 201-785-2650 E-mail: [integra@onkyousa.com](mailto:integra@onkyousa.com) <http://www.integrahometheater.com>