# DENON

Hi-Fi Digital Audio Preamplifier

# SERVICE MANUAL

# MODEL DAP-5500

## DIGITAL AUDIO PREAMPLIFIER

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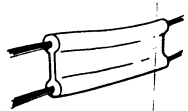
NIPPON COLUMBIA CO., LTD.

## Installation Precautions

This device (digital audio device) uses a microcomputer for control of the internal electronic circuits. In the event that this device is used at the same time as a tuner or television, interference could occur either in the sound from the tuner or the picture on the television.

Please take the following precautions to avoid such occurrences.

- Keep this device as far away from the tuner or television as possible.
- Keep the power cable and other cables connected to this device separated from the antenna wires of the tuner or television.
- Interference is particularly likely to occur when an indoor antenna or a 300 ohm feeder line is used, so instead use an outdoor antenna and a 75 ohm coaxial cable for the antenna.



300 ohm feeder line

75 ohm coaxial cable

**For U.S.A. and Canada models.**

**CAUTION**

TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

**For United Kingdom model only.**

**WARNING:**

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

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

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

**IMPORTANT**

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

Blue: Neutral
Brown: Live





## SPECIFICATIONS

### ANALOG SECTION

**Input terminals**

**Input sensitivity/Input impedance:**
LINE-1·2, TAPE-1·2: 1 V/10 kohm — SOURCE DIRECT-ON
150 mV/10 kohm — SOURCE DIRECT-OFF
LINE-3: 1V/10 kohm (Balanced input) — SOURCE DIRECT-ON
150 mV/10 kohm (Balanced input) — SOURCE DIRECT-OFF
Suitable input terminals ..... XL type CANNON plugs

**Output terminals**

**Rated output/Impedance:** PRE-OUT-1 : 1 V/10 ohm
PRE-OUT-2 (Balanced output) : 2 V/600 ohm

**Maximum output:** PRE-OUT-1 15 Vrms (Unbalanced-type) 30Vrms (Balanced-type)

**Frequency response:** 1 Hz ~ 300 kHz $^{+0}_{-3}$ dB

**Harmonic distortion:** 0.002% 20 Hz ~ 20 kHz 5 V OUT

**S/N ratio:** 116 dB

**DAC OUT terminals:** Analog output terminals following the D/A converter

**Output impedance:** 470 ohm

**Output voltage:** 2 V (at 10 kohm load, CD max recording level)

**NOTE:** Specifications are from the regular RCA type unbalanced input/output terminals without specifying "Balanced input/output".

### DIGITAL SECTION

**Digital input/output system:** Digital audio interface format

**Input terminals**

**Optical input terminal:** DIGITAL-1 (1 system)

**COAXIAL input:** DIGITAL-2 and -3 (2 systems) 0.5 Vp-p–75 ohm

**DIGITAL TAPE terminals:** DIGITAL TAPE ..... MONITOR 0.5 Vp-p–75 ohm
DIGITAL TAPE ..... REC 0.5 Vp-p–75 ohm

**D-A conversion method:** 4DA push pull· super linear converter

**Filters:** 4-times oversampling digital filter, C.A.L.P, 7-pole analog filter

**Frequency response:** 2 Hz ~ 20 kHz ±0.2 dB

**S/N ratio:** 110 dB

**Dynamic range:** More than 97 dB

**Total harmonic distortion:** Less than 0.002% (1 kHz)

**Channel separation:** More than 100 dB (1 kHz)

### OTHER FUNCTIONS

**Automatic switching of sampling frequency:** 32 kHz, 44.1 kHz, 48 kHz

**PRE OUT switch:** ON, OFF

### GENERAL

**Power supply/Power consumption:** 120 VAC 60 Hz/25 W (for USA, Canada)
220 VAC 50 Hz/25 W (for Europe)
240 VAC 50 Hz/25 W (for UK and Australia)
110/120/220/240 VAC 50/60 Hz/20 W (for Asia ..... multiple)

**DC Output:** DC 12 V 1 mA

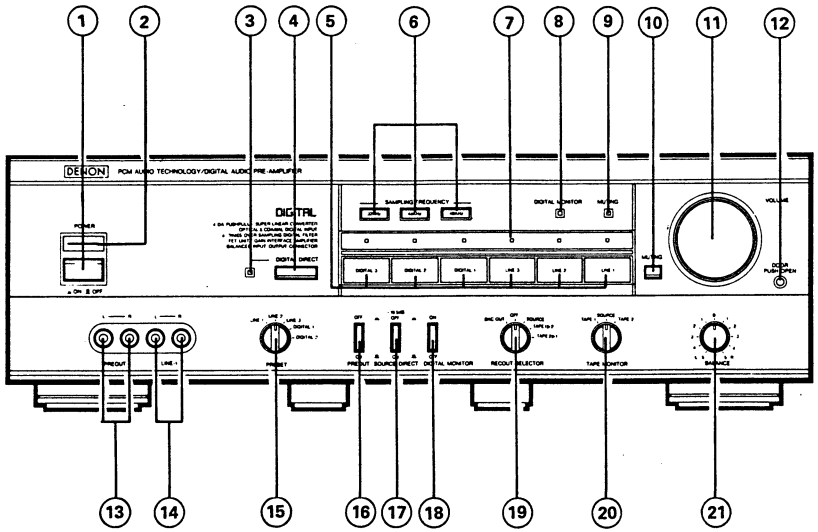
**Dimensions:** 434 mm (17-3/32") W x 133 mm (5-15/64") H x 380 mm (14-61/64") D

**Weight:** 13.7 kg (30 lbs 3 oz)

Specifications and contents are subject to change without notice for purposes of improvement.

NOTE: The following codes correspond to the appropriate models.
E2 for Europe, EU for U.S.A., EA for Australia, EK for U.K.
E1 for Asia and EC for Canada.
This Service Manual is prepared based on EU Black Version.

## NAME OF EACH PART




① POWER (Power switch)
② POWER (Power "ON" indication)
③ DIGITAL DIRECT (Digital direct indication)
④ DIGITAL DIRECT (Digital direct switch)
⑤ INPUT SELECTOR (Input selector switch)
⑥ SAMPLING FREQUENCY (Sampling frequency indication)
⑦ INPUT SELECTOR (Input selector indication)
⑧ DIGITAL MONITOR (Digital monitor indication)
⑨ MUTING (Muting indication)
⑩ MUTING (Muting switch)
⑪ VOLUME (Volume control)
⑫ DOOR (Door-open button)
⑬ PRE OUT (PRE OUT output side terminals)
⑭ LINE-1 (LINE-1 input side terminals)
⑮ PRESET (Preset switch)
⑯ PRE OUT (PRE OUT off switch)
⑰ SOURCE DIRECT (Source direct switch)
⑱ DIGITAL MONITOR (Digital monitor switch)
⑲ REC OUT SELECTOR (REC OUT selection switch)
⑳ TAPE MONITOR (Tape monitor switch)
㉑ BALANCE (Balance control)

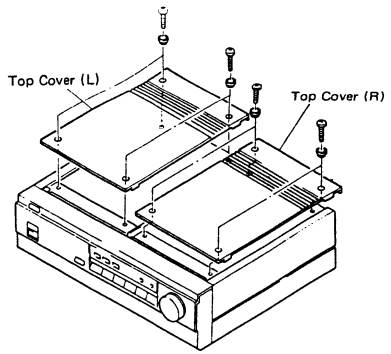




## REMOVAL OF EACH SECTION

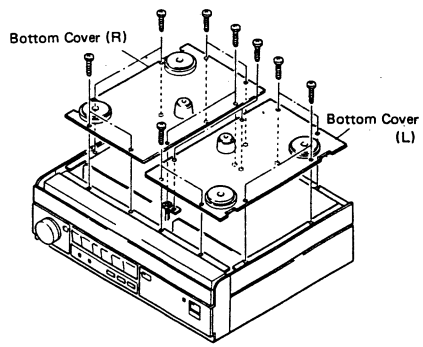
**1. Top Covers (L), (R)**

Remove the 4 screws each from the top covers, and lift the covers to remove.



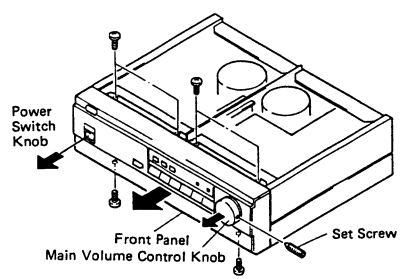

**2. Bottom Covers (L), (R)**

Unfasten the 8 screws each from the bottom covers, and lift the covers to remove.



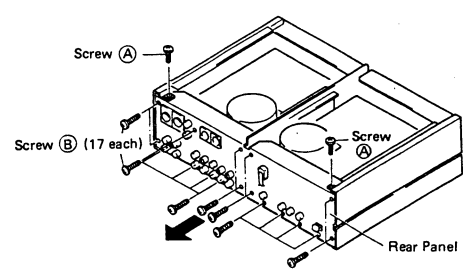

**3. Front Panel**

1) Remove the set screw tightening the main volume control knob, and detach the knob.
2) Pull out the power switch knob.
3) Unfasten the 4 screws from the top side and the 2 screws from the bottom side.
4) Draw the front panel toward you to remove.

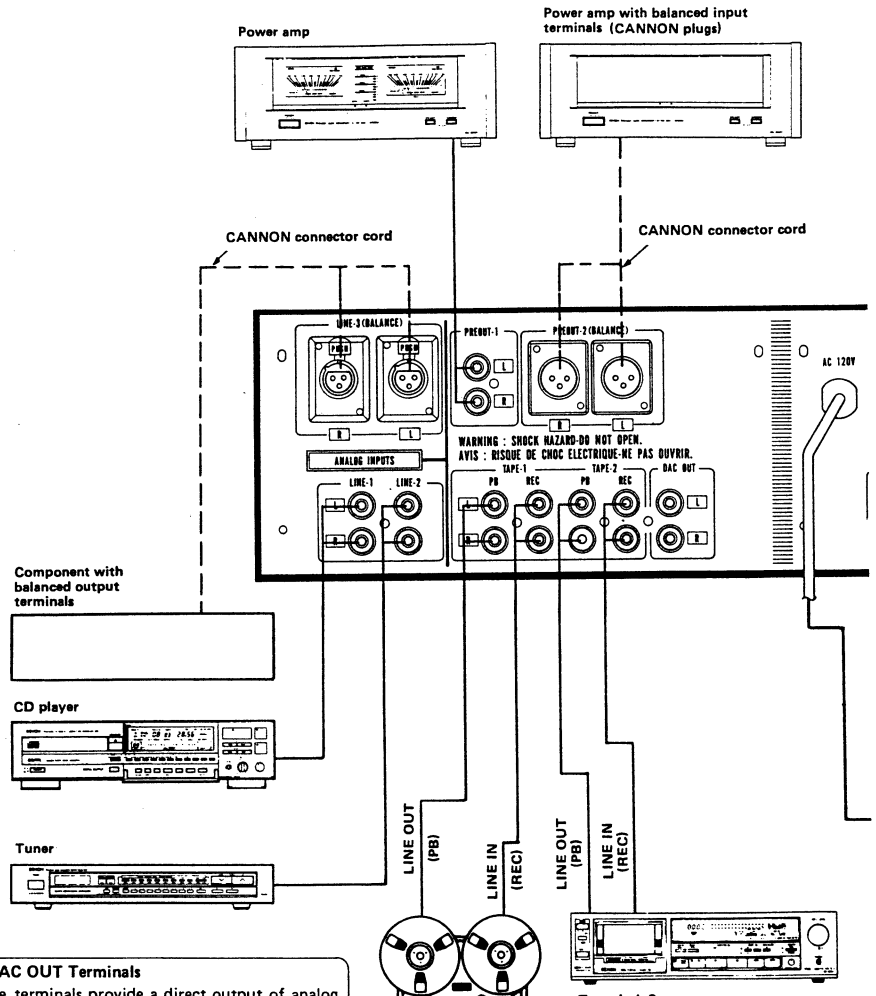



**4. Rear Panel**

1) Remove 2 screws Ⓐ.
2) Unfasten 17 screws Ⓑ on the rear panel.
3) Draw the rear panel toward you to remove.



## CONNECTIONS

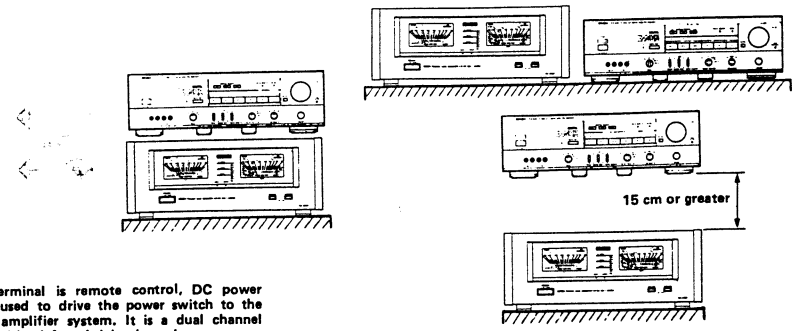



**DAC OUT Terminals**
These terminals provide a direct output of analog signals from the D/A converter section when a digital input is played back. (The output level is fixed.) When used as a D/A converter, this unit should be connected to another amplifier (or some other audio component).

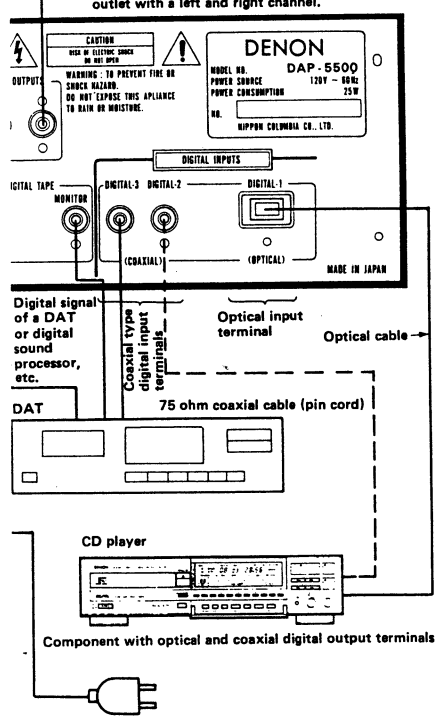




- **Precautions for Preamp Installation**
  Taking into consideration the heat given off by a power amp, install this unit according to the guidelines shown in the diagram.




**This terminal is remote control, DC power outlet used to drive the power switch to the power amplifier system. It is a dual channel outlet with a left and right channel.**

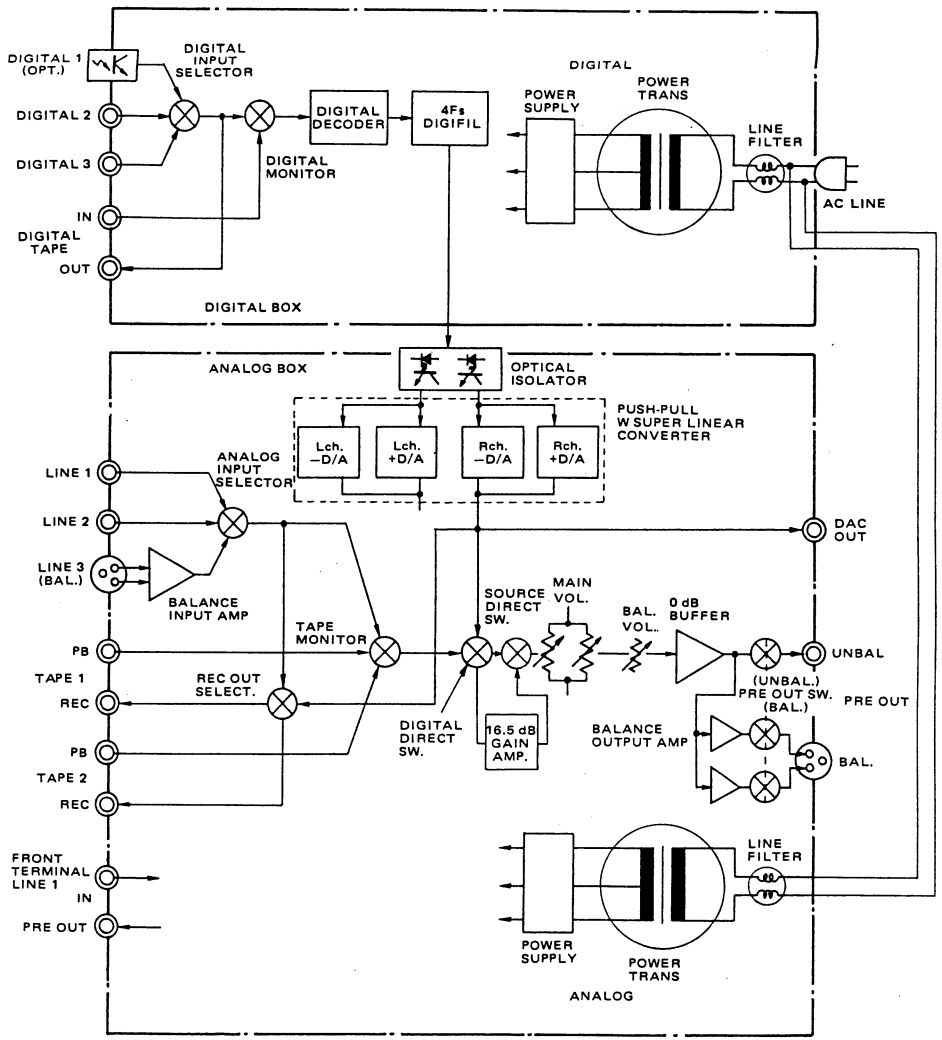



This figure shows the back panel for models with U.S. and Canada specifications.
Labels on the panel differ slightly depending on the destination country.

- **LINE VOLTAGE (Voltage select switch) . . .**
  **For Multiple voltage model only.**
  * The desired voltage may be set with the VOLTAGE SELECTOR KNOB on the back panel using a screw driver.
  * Do not twist the VOLTAGE SELECTOR KNOB with excessive force. It may be damaged.
  * If the voltage select switch does not turn smoothly, see a qualified serviceman.


**Precautions for Connections**
- Do not plug in the power cord until all connections have been completed.
- Connect L to L and R to R after checking the left and right channels.
- Insert the power plug firmly. An incomplete connection will lead to the generation of noise.
- Do not bind the pin plug cord and the power cord together or set the pin plug cords near a power transformer since this arrangement will cause hum or noise.
- Be sure to insert the optical connector protection caps when not using optical cable.
- LINE-1 input terminals are provided on the front and back panels. Connect only one of these sets of terminals – either the back or the front.

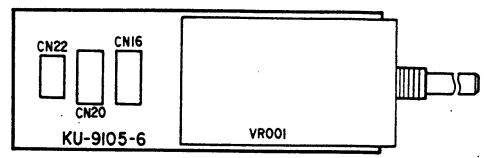
## BLOCK DIAGRAM

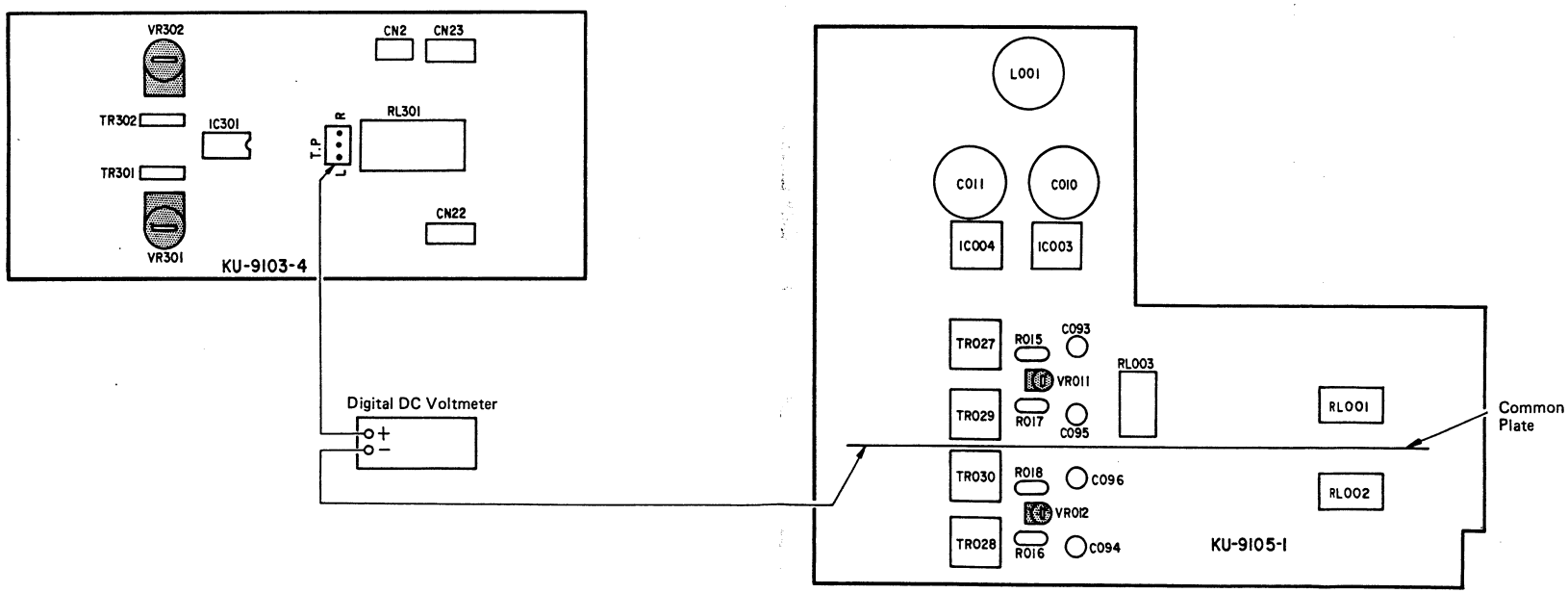


## ADJUSTMENT

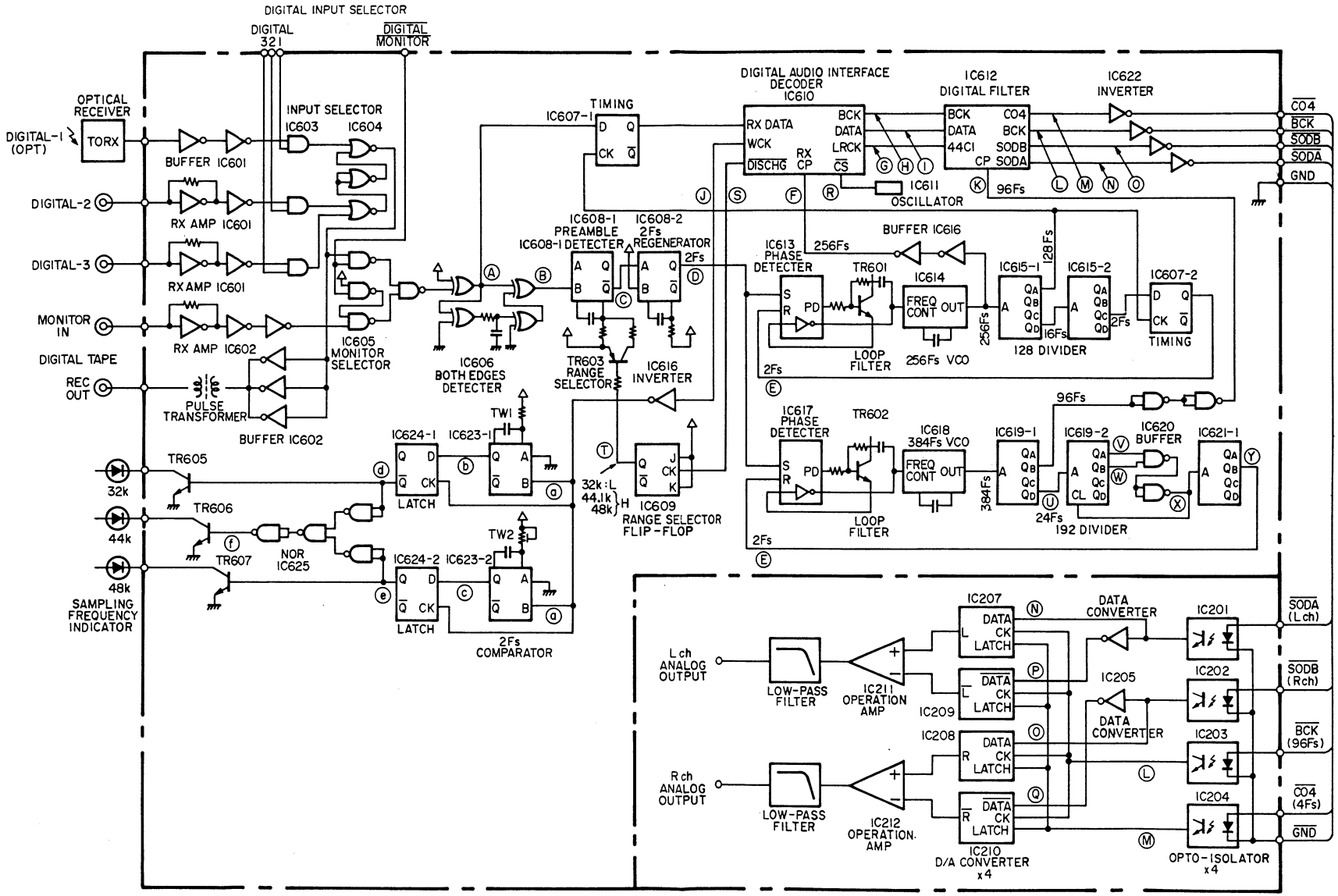
- **BOOST AMP Neutral Point Adjustment**
  1) Turn the power switch ON.
  2) Set the INPUT SELECTOR to LINE-2.
  3) Turn the DIGITAL DIRECT switch OFF.
  4) Insert the short-pin to both L and R of LINE-2.
  5) Connect a digital DC voltmeter across the KU-9103-4 TP terminal L and KU-9105-1 common plate, and adjust VR301 to obtain 0 ± 0.1 mV indication on the meter.
  6) Connect a digital DC voltmeter across the KU-9103-4 TP terminal R and KU-9105-1 common plate, and adjust VR302 to obtain 0 ± 0.1 mV indication on the meter.

- **UGI AMP Neutral Point Adjustment**
  1) Turn the power switch ON.
  2) Set the VR001 (volume control) to MIN position.
  3) Wait 3 minutes or more to warm-up, adjust VR011 and VR012 to obtain 0 ± 0.1 mV DC voltage at PRE OUT-1 on the digital DC voltmeter.

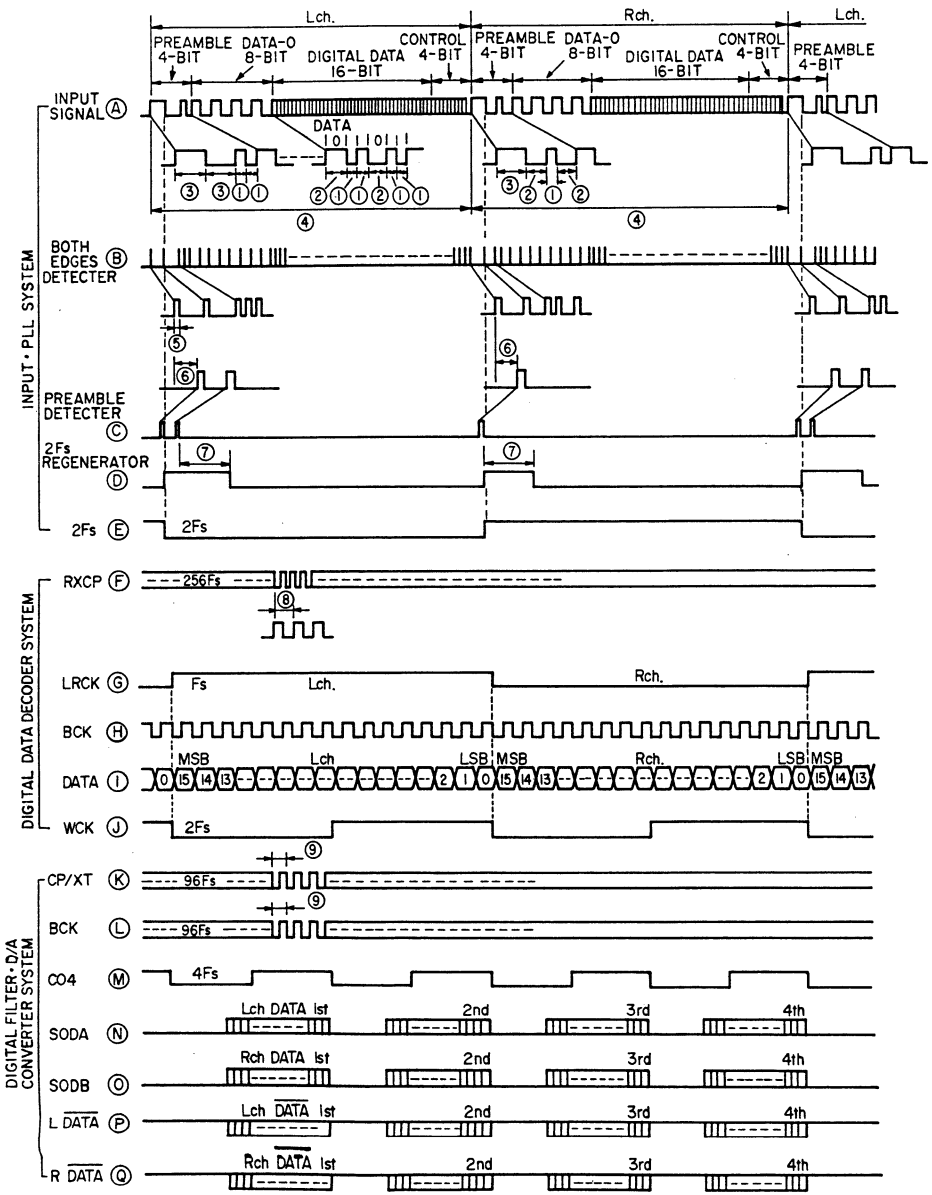


## BLOCK DIAGRAM OF DIGITAL UNIT

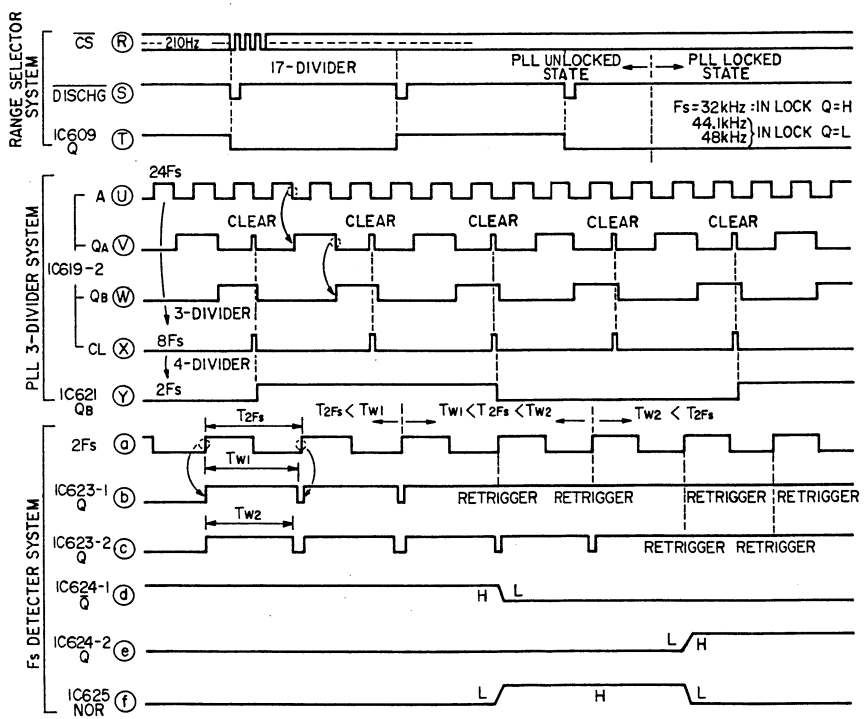


## TIMING CHART




| NO. \ FS | Pulse Width of Each Waveform 32k | 44.1k | 48k | Unit Hz |
|---|---|---|---|---|
| ① | 244n | 177n | 163n | |
| ② | 488n | 354n | 326n | |
| ③ | 732n | 531n | 488n | |
| ④ | 15.6μ | 11.3μ | 10.4μ | |
| ⑤ | 60~70n | | | sec. |
| ⑥ | 650n | 410n | | |
| ⑦ | 3.0μ | | | |
| ⑧ | 122n | 89n | 81n | |
| ⑨ | 326n | 236n | 217n | |

FS:Sampling Frequency



## SAMPLING FREQUENCY INDICATION ADJUSTMENT

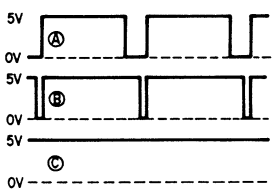
This unit automatically discriminates the sampling frequency in the input digital signal.
*The input sampling frequency to the indication relates roughly as follows:*

| Fsin Input Sampling Frequency | Sampling Frequency Indication |
|---|---|
| Fsin < 38 kHz | 32 kHz |
| 38 kHz < Fsin < 46 kHz | 44 kHz |
| 46 kHz < Fsin | 48 kHz |

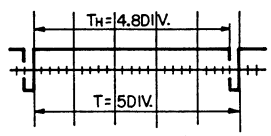
Switching of 32 kHz and 44 kHz indication is performed by the fixed constant (R641 and C661). However, for 44 kHz and 48 kHz is performed by VR601 adjustment.

**1. Adjustment Procedure for Connecting a CD Player Equipped with the Digital Output**

1) Connect a digital output from the CD player to the digital input of this unit (CD player digital output: ON, CD saft not required) and set the unit in operation mode.
2) Connect an oscilloscope across TP. 1 and TP. 2 on the digital signal P.W. Board KU-9102 and observe 5V logic waveform.
3) As rotating VR601 on the KU-9102 shifts the waveforms A → B → C , make the adjustment so that the duty ratio for 1 cycle becomes 96% (refer to the Figure below).




* Duty ratio = $\frac{TH}{T}$ x 100(%)




Oscilloscope Waveform

T : Adjust time axis of the scope for 5DIV.
TH: Adjust VR601 for 4.8DIV.

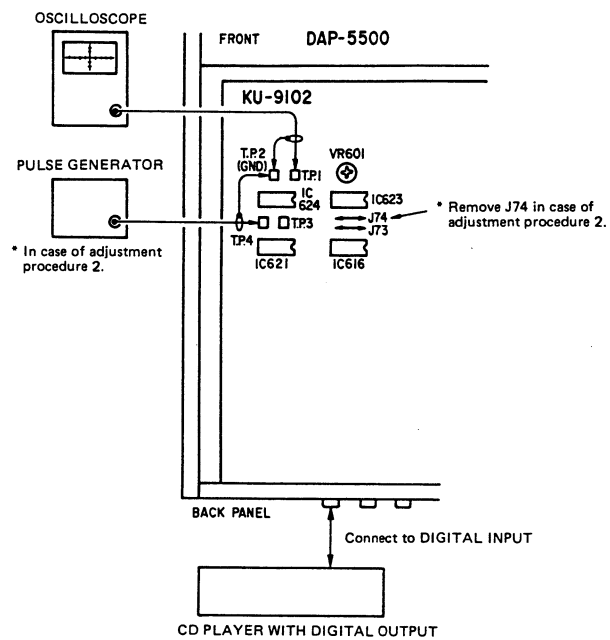
4) Upon completion of adjustment, verify that 44 kHz indication is properly lit.

**2. Adjustment Procedure for Using a Pulse Generator**

In case of a CD player equipped with the digital output is not available, use a pulse generator for adjustment.

1) Remove either one of the sides of J74 on the KU-9102. (Be sure that the removed part does not touch any other portion.)
2) Apply a 5Vp-p, 88.2 kHz square wave output from the pulse generator to TP. 4 and TP. 2 (GND).
3) In the same manner as to "1. Adjustment Procedure", follow the step from 2) to adjust the frequency of the pulse generator so that the indication shifts from 44 kHz to 48 kHz at 92.1 ± 1 kHz.
4) Disconnect the measuring equipment and re-solder J74 as it was before.

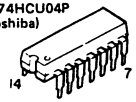
## CONNECTION OF MEASURING EQUIPMENT



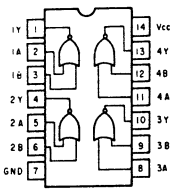
## SEMICONDUCTORS

### • IC

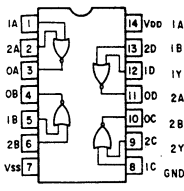
HD14001BP
HD74HC00P
HD74HC02P
HD74HC08P
HD74HC74P
HD74HC86P
HD74LS393P
(Hitachi)
TC74HCU04P
(Toshiba)



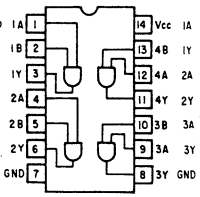
HD74HC02P



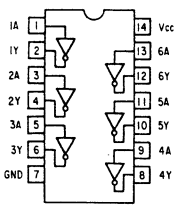
HD14001BP



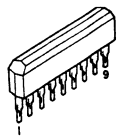
HD74HC08P

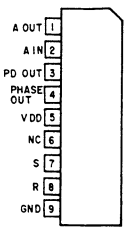


TC74HCU04P

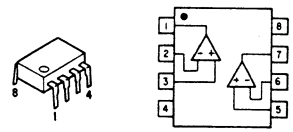


TC5081AP
(Toshiba)

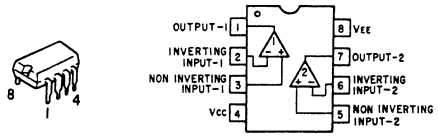




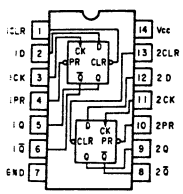
M5238P (Mitsubishi)
LA6458DF (Sanyo)



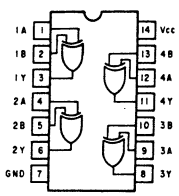
M5219P
(Mitsubishi)



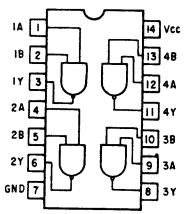
HD74HC74P



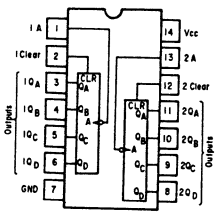
HD74HC86P



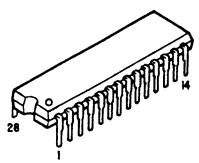
HD74HC00P

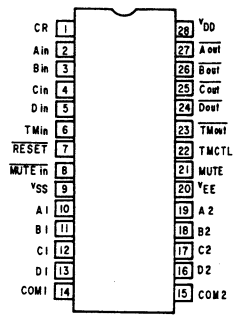


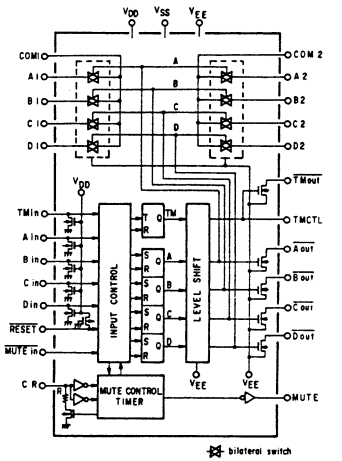
HD74LS393P



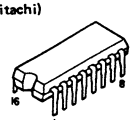
LC7816 (Sanyo)



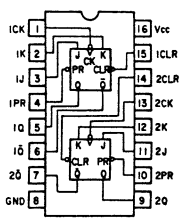




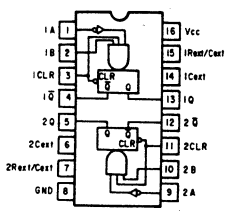
HD74LS112P
HD74LS123P
(Hitachi)



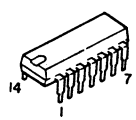
HD74LS112P

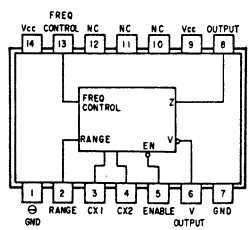


HD74LS123P

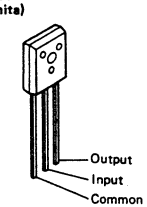


SN74LS624N
(Texas Instruments)

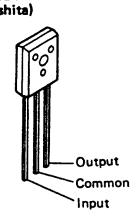




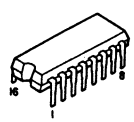
AN79N05
AN79N24
(Matsushita)

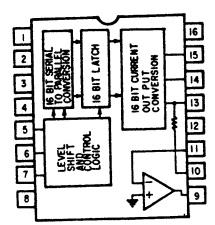


AN78N05
AN78N24
(Matsushita)

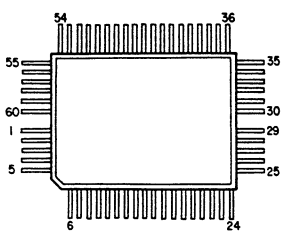


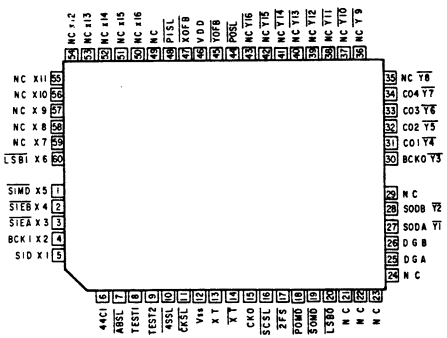
PCM56KP
(Bar Brown)



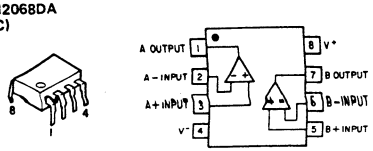


SM5804D
(NPC)

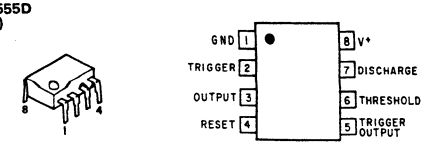




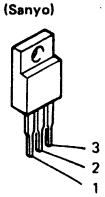
NJM2068DA
(JRC)



NJM555D
(JRC)

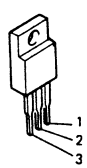


L78M15ML
L78M05ML
(Sanyo)



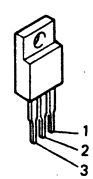
1 (Input)
2 (Common)
3 (Output)

NJM78M05A
NJM78M12A
(JRC)



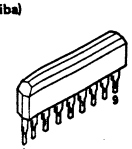
1 (Output)
2 (Gnd)
3 (Input)

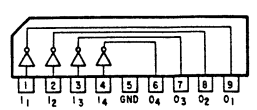
NJM79M05A
NJM79M12A
NJM79M15A
(JRC)



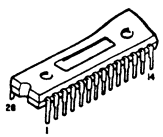
1 (Output)
2 (Input)
3 (Common)

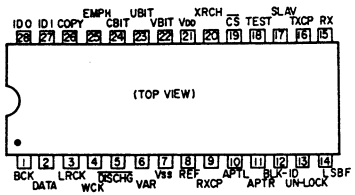
TD62553S
(Toshiba)

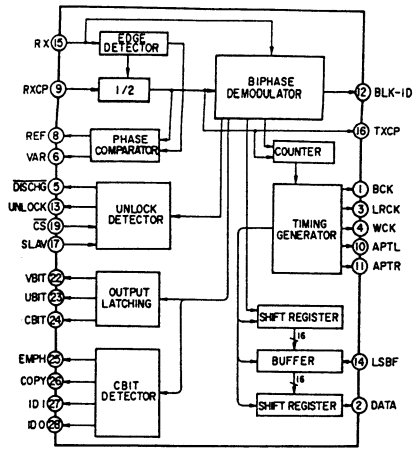




CXD1076P
(SONY)





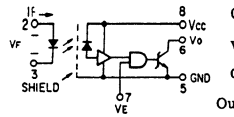




## TERMINAL DESCRIPTION

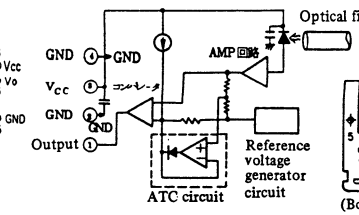
| Terminal No. | I/O | Terminal Symbol | Terminal Description |
|---|---|---|---|
| 1 | O | BCK | Shift clock output of digital audio data. |
| 2 | O | DATA | Serial output of decoded audio data. |
| 3 | O | LRCK | Discriminating pulse for L/R channel in audio data. Polarity is switchable with XRCH terminal. XRCH in "L" for Rch in High. |
| 4 | O | WCK | Pulse which has a frequency twice higher as LRCK. Output signifies 1 word punctuation. Up to all-down of the pulse composing 1 word. |
| 5 | O | $\overline{\text{DISCHG}}$ | Low-active pulse output to perform as a locking trigger at the time clock pick-up external PLL becomes unlock condition. |
| 6 | O | VAR | Low-active pulse output to make decision of sink current for external PLL. |
| 7 | – | VSS | GND terminal. |
| 8 | O | REF | High-active pulse output to make decision of source current for external PLL. |
| 9 | I | RXCP | Clock input which has a 256 times greater than the fs as picked up by external PLL. |
| 10 | O | APTL | Pulse output for operature compensation. |
| 11 | O | APTR | Pulse output for operature compensation. |
| 12 | O | BLK-ID | BLOCK detection panel output for synchronizing the head of C-bit BLOCK. |
| 13 | O | UNLOCK | Detection output of designating PLL in LOCK condition. In "L" is locked. |
| 14 | I | LSBF | Input for switching higher or lower in the head of audio data serial output. "H": LSB first, "L": MSB first. |
| 15 | I | RX | Input for digital I/O data which is decoded by digital audio interface format. |
| 16 | O | TXCP | Clock output of 128fs to be used as a master clock for auxiliary equipment. |
| 17 | I | SLAV | Terminal to shift output terminals of data TXCP, WCK, LRCK, BCK for Hi-z. "L": Normal state, "H": Hi-z state. |
| 18 | I | TEST | Input for switching TEST mode and Normal mode. "H": TEST mode, "L": Normal mode. |
| 19 | I | $\overline{\text{CS}}$ | Clock input to produce $\overline{\text{DISCHG}}$ needed for external PLL. |
| 20 | I | XRCH | Input for making the decision of LR clock polarity. "H": Lch High, Rch Low. "L" : Lch Low, Rch High. |
| 21 | – | $V_{DD}$ | Power supply terminal. |
| 22 | O | VBIT | Validity Flag (V-bit) output. |
| 23 | O | UBIT | User Definable Data (U-bit) output. |
| 24 | O | CBIT | Channel Status Data (C-bit) output. |
| 25 | O | EMPH | Output of Emphasis data. "H" to ON. |
| 26 | O | COPY | Output of COPY Inhibit data. "L" to Inhibit. |
| 27 | O | ID1 | ID1 output. |
| 28 | O | IDO | IDO output. |

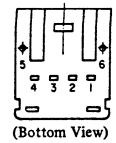


HCPL-2601




TORX172

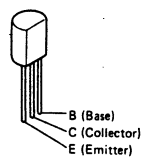


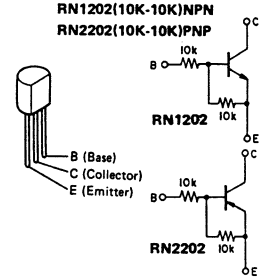

| Pin No. | Connection |
|---|---|
| 1 | output |
| 2 | GND |
| 3 | Vcc |
| 4 | GND |
| 5 | Case(1) |
| 6 | Case(1) |

## • TRANSISTORS

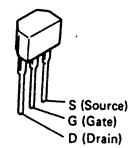
**2SC1815(BL)**
**2SC2878(A/B)**
**2SA1015(GR)**



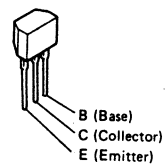

**RN1202(10K-10K)NPN**
**RN2202(10K-10K)PNP**



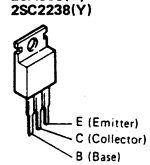

**2SK184(Y)**



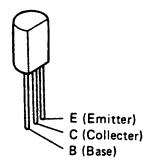

**2SC2458(BL)**
**2SA1048(GR)**



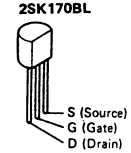

**2SA968(Y)**
**2SC2238(Y)**



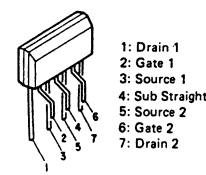

**2SB647A**




**2SJ74BL**
**2SK170BL**

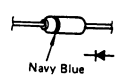



**2SK389(GR)/(BL)/(V)**

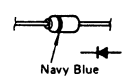



## • DIODES

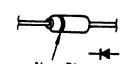
**IS2076A**



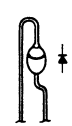

**ISS270A**



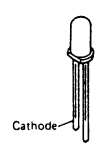

**HZ5C-1**
**HZ6C-3**
**HZ7B-3**
**HZ15-2**



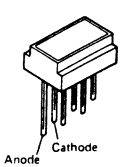

**DSA1A2-Type-3**



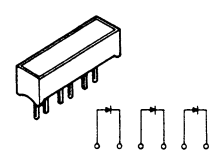
**SEL-1210S**
**SEL-1410E**
**SEL-1810A**




**SLF-206B**




**LD-701DU**



# PRINTED WIRING BOARD PATTERNS AND PARTS LIST

## KU-9102E DIGITAL SIG UNIT

| Ref. No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| **SEMICONDUCTORS GROUP** | | | |
| IC601,602 | 2620739005 | TC74HCU04P | |
| IC603 | 2620729002 | HD74HC08P | |
| IC604 | 2620655008 | HD74HC02P | |
| IC605 | 2620591007 | HD74HC00P | |
| IC606 | 2620724007 | HD74HC86P | |
| IC607 | 2620594004 | HD74HC74P | |
| IC608 | 2620537003 | HD74LS123P | |
| IC609 | 2620834007 | HD74LS112P | |
| IC610 | 2620833008 | CXD1076P | |
| IC611 | 2630458004 | NJM555D | |
| IC612 | 2620734000 | SM5804D | |
| IC613 | 2620738006 | TC5081AP | |
| IC614 | 2620824004 | SN74LS624N | |
| IC615 | 2620544009 | HD74LS393P | |
| IC616 | 2620739005 | TC74HCU04P | |
| IC617 | 2620738006 | TC5081AP | |
| IC618 | 2620824004 | SN74LS624N | |
| IC619 | 2620544009 | HD74LS393P | |
| IC620 | 2620591007 | HD74HC00P | |
| IC621 | 2620544009 | HD74LS393P | |
| IC622 | 2620739005 | TC74HCU04P | |
| IC623 | 2620537003 | HD74LS123P | |
| IC624 | 2620594004 | HD74HC74P | |
| IC625 | 2620591007 | HD74HC00P | |
| TR601,602 | 2730198015 | 2SC1815 (BL) | |
| TR603 | 2710102021 | 2SA1015 (GR) | |
| TR604~607 | 2730198015 | 2SC1815 (BL) | |
| TR608 | 2710102021 | 2SA1015 (GR) | |
| D601,602 | 2760432000 | 1SS270A | |
| **RESISTOR GROUP** (not included Carbon Film ±5%,¼W type) | | | |
| R616 | 2452369960 | RN14K2E153F | 15kΩ, ¼W (±1%) |
| R617 | 2452370933 | RN14K2E303F | 30kΩ,¼W (±1%) |
| R620 | 2452320006 | RN14K2E103F | 10kΩ, ¼W (±1%) |
| R641 | 2452370933 | RN14K2E303F | 30kΩ, ¼W (±1%) |
| R642 | 2452369960 | RN14K2E153F | 15kΩ, ¼W (±1%) |
| VR601 | EP-5462H15 | SOLID VR | 22kΩ, FS |
| **CAPACITORS** | | | |
| C601~604 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C605 | 2544254006 | CE04W1C100M | 10μF/16V |
| C606 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C607 | 2544256020 | CE04W1E330M | 33μF/25V |
| C608 | 2531024003 | CK45F1H103Z | 0.01μF/50V |

| Ref. No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| C609 | 2544256020 | CE04W1E330M | 33μF/25V |
| C610 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C611 | 2544256020 | CE04W1E330M | 33μF/25V |
| C612 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C613 | 2544256020 | CE04W1E330M | 33μF/25V |
| C614~617 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C618 | 2533617007 | CC45SL1H390J | 39pF/50V |
| C619 | 2556171025 | CQ09S1H680G | 68pF/50V |
| C620 | 2556171009 | CQ09S1H681G | 680pF/50V |
| C621 622 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C623 | 2544254006 | CE04W1C100M | 10μF/16V |
| C625 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C626 | 2561035017 | CF93A1H224J | 0.22μF/50V |
| C627~629 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C630 | 2544254006 | CE04W1C100M | 10μF/16V |
| C631~633 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C634 | 2544252066 | CE04W1A471M | 470μF/10V |
| C635 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C636 | 2544254006 | CE04W1C100M | 10μF/16V |
| C637 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C638 | 2531001000 | CK45B1H331K | 330pF/50V |
| C639 | 2561034047 | CF93A1H563J | 0.056μF/50V |
| C640 | 2551120084 | CQ93M1H472J | 4700pF/50V |
| C641 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C642 | 2521026008 | CM92C1H470J | 47pF/50V |
| C643 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C644 | 2544254006 | CE04W1C100M | 10μF/16V |
| C645~648 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C649 | 2544254006 | CE04W1C100M | 10μF/16V |
| C650 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C651 | 2531055056 | CK45B1H221K | 220pF/50V |
| C652 | 2561034047 | CF93A1H563J | 0.056μF/50V |
| C653 | 253643000 | CC45SL1H471J | 470pF/50V |
| C654 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C655,656 | 2544162017 | CE04W1A331M | 330μF/10V |
| C657 | 2521020004 | CM92C1H270J | 27pF/50V |
| C658~660 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C661 | 2556171012 | CQ09S1H102G | 1000pF/50V |
| C662 | 2551120000 | CQ93M1H102J | 1000pF/50V |
| C663 | 2544254006 | CE04W1C100M | 10μF/16V |
| C664~666 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C667 | 2544254006 | CE04W1C100M | 10μF/16V |
| C668,669 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C670 | 2544254006 | CE04W1C100M | 10μF/16V |
| C672 | 2531002009 | CK45B1H471K | 470pF/50V |
| C673 | 2531002009 | CK45B1H471K | 470pF/50V |
| C674 | 2533619005 | CC45SL1H470J | 47pF/50V |
| C675 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C676 | 2531004007 | CK45B1H102K | 1000pF/50V |
| C677 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C678 | 2531004007 | CK45B1H102K | 1000pF/50V |
| **TRANS, COIL** | | | |
| T601 | 2318058001 | PULSE TRANS | |

## KU-9103E DIGITAL P.S. UNIT

| Ref. No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| L601 | 2350016920 | INDUCTOR | 47μH ±10% |
| L603,604 | 2350015989 | INDUCTOR | 4.7μH ±10% |
| L606~617 | 2350015989 | INDUCTOR | 4.7μH ±10% |
| L619~627 | 2350015989 | INDUCTOR | 4.7μH ±10% |
| **OTHER PARTS GROUP** | | | |
| | 2048234001 | 1P CONNECTOR BASE | |
| | 2048235000 | 3P CONNECTOR BASE | |
| | 2050141027 | COMMON PLATE | |
| | 2050185041 | 4P WIRE HOLDER | |
| | 2050185054 | 5P WIRE HOLDER | |
| | 2050190052 | 5P NH CONNECTOR BASE | |
| | 2030241028 | 1P CONTACT ASS'Y | |
| | 2038188002 | 5P CONNECTOR CORD | |
| | 2042211004 | 8P CONNECTOR CORD | |
| | 2690044005 | TORX-172 | |

| Ref. No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| **SEMICONDUCTOR GROUP** | | | |
| IC301 | 2630284003 | M5219P | |
| IC501 | 2630459003 | L78M05ML | |
| IC502 | 2630373008 | NJM78M12A | |
| IC503 | 2630190003 | NJM79M12A | |
| IC504 | 2620298009 | HD14001BP | |
| IC506 | 2620841003 | TD-62553S | |
| IC507,508 | 2620731003 | LC7816 | |
| TR301,302 | 2750045012 | 2SK389 (GR)/(BL)/(V) | |
| TR501 | 2720053005 | 2SB647A (C) | |
| TR503 | 2690025008 | RN1202 (10K-10K) | |
| TR504 | 2730253015 | 2SC2878 (A/B) | |
| TR505 | 2690025008 | RN1202 (10K-10K) | |
| TR506 | 2730317003 | 2SC2458 (BL) | |
| TR507 | 2710191003 | 2SA1048 (GR) | |
| TR508,509 | 2730317003 | 2SC2458 (BL) | |
| TR510 | 2710191003 | 2SA1048 (GR) | |
| TR511 | 2730317003 | 2SC2458 (BL) | |
| TR512,513 | 2710191003 | 2SA1048 (GR) | |
| TR514 | 2690025008 | RN1202 (10K-10K) | |
| TR515 | 2690026007 | RN2202 (10K-10K) | |
| LE501~503 | 3939362007 | SEL-1810A (OR) | |
| LE504~506 | 3939362010 | SEL-1410E (GR) | |
| LE507 | 3939362007 | SEL-1810A (OR) | |
| LE508 | 3939362023 | SEL-1210S (RD) | |
| LE509 | 3939362007 | SEL-1810A (OR) | |
| LE510~512 | 3939364005 | SLF-206B (GR) 7 x 19FS | |
| D301 | 2760049011 | 1S2076A | |
| D501~509 | 2750427015 | DSA1A2 (TYPE-3) | |
| D511,512 | 2760049011 | 1S2076A | |
| D513 | 2760173071 | HZ6C-3 Zener | |
| D514 | 2760254000 | HZ7B-3 Zener | |
| D515 | 2760049011 | 1S2076A | |
| D516 | 2760254000 | HZ7B-3 Zener | |
| D517~523 | 2760049011 | 1S2076A | |
| D525~534 | 2760049011 | 1S2076A | |
| D540 | 2760049011 | 1S2076A | |
| **RESISTOR GROUP** (not included Carbon Film ±5%, ¼W type) | | | |
| VR301,302 | 2116025016 | V08PB101 Semi Fixed Resistor | 100Ω |
| **CAPACITOR GROUP** | | | |
| C303,304 | 2554216018 | CQ09P1H472J | 4700pF/50V |
| C305,306 | 2543056014 | CE04D1H010MBP | 1μF/50V |
| C309,310 | 2544258918 | CE04W1V100M | 10μF/35V |





| Ref. No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| C501,502 | 2538014003 | CK45F2GAC103M AC | 0.01μF/400V |
| C504 | 2551134025 | CQ92M1H103J | 0.01μF/50V |
| C505 | 2531052004 | CK45E2H472P | 4700pF/500V |
| C506 | 2544256091 | CE04W1E222M | 2200μF/25V |
| C507 | 2544254019 | CE04W1C220M | 22μF/16V |
| C508,509 | 2544231003 | CE04W1C101M | 100μF/16V |
| C510,511 | 2544256091 | CE04W1E222M | 2200μF/25V |
| C512 | 2544254048 | CE04W1C101M | 100μF/16V |
| C513,514 | 2544258057 | CE04W1V101M | 100μF/35V |
| C515 | 2544254048 | CE04W1C101M | 100μF/16V |
| C516 | 2544260045 | CE04W1H010M | 1μF/50V |
| C517 | 2531006005 | CK45B1H222K | 2200pF/50V |
| C518,519 | 2531004007 | CK45B1H102K | 1000pF/50V |
| C520 | 2531006005 | CK45B1H222K | 2200pF/50V |
| C521 | 2544260045 | CE04W1H010M | 1μF/50V |
| C522,523 | 2544254006 | CE04W1C100M | 10μF/16V |
| C524 | 2544254022 | CE04W1C330M | 33μF/16V |
| C525 | 2544260032 | CE04W1HR47M | 0.47μF/50V |
| C526 | 2544252037 | CE04W1A101M | 100μF/10V |
| C527 | 2561034076 | CF93A1H104J | 0.1μF/50V |
| C528~531 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C532 | 2544254006 | CE04W1C100M | 10μF/16V |
| C533 | 2544258057 | CE04W1V101M | 100μF/35V |
| C534,535 | 2544254048 | CE04W1C101M | 100μF/16V |
| C550 | 2544254006 | CE04W1C100M | 10μF/16V |
| C551 | 2531024003 | CK45F1H103Z | 0.01μF/50V |
| C552 | 2531025002 | CK45F1H223Z | 0.022μF/50V |
| **RELAY, SWITCH, COIL GROUP** | | | |
| L501 | 2398019002 | LINE FILTER COIL AC LINE | |
| RL301,302 | 2149005100 | RELAY (BSR-H-12S) | |
| SW501~508 | 2124407008 | TACT SWITCH | |
| SW509 | 2129547002 | 3P PUSH SWITCH | |
| SW512 | 2123627009 | ROTARY SWITCH | |
| **OTHER PARTS GROUP** | | | |
| | 4439023007 | LED HOLDER | |
| | 4170253000 | RADIATOR | |
| | 4700012022 | CROSS PAN SCREW WITH SW. WASHER 3 x 12 | |
| | 2020022008 | FUSE HOLDER | |
| F501~504 | 2061039047 | FUSE 1.25A (T) | |
| | 2050141001 | COMMON PLATE (EARTH) | |
| | 2050190052 | 5P NH CONNECTOR BASE | |
| | 2050190081 | 8P NH CONNECTOR BASE | |

| Ref. No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| | 2050190094 | 9P NH CONNECTOR BASE | |
| | 2050190036 | 3P NH CONNECTOR BASE | |
| | 2050233032 | 3P EH CONNECTOR BASE | |
| | 2050233032 | 3P EH CONNECTOR BASE | |
| | 2050275016 | 11P EH CONNECTOR BASE | |
| | 2050275029 | 12P EH CONNECTOR BASE | |
| | 2050275032 | 13P EH CONNECTOR BASE | |
| | 2050243022 | 2P WIRE HOLDER | |
| | 2050185038 | 3P WIRE HOLDER | |
| | 2050185041 | 4P WIRE HOLDER | |
| | 2050185054 | 5P WIRE HOLDER | |
| | 2050185067 | 6P WIRE HOLDER | |
| | 2034203004 | 3P CONNECTOR CORD | |
| | 2034382006 | 3P CONNECTOR CORD | |
| | 2034427000 | 3P CONNECTOR CORD | |
| | 2034185067 | 3P CONNECTOR CORD | |
| | 2046139014 | 11P CONNECTOR CORD | |
| | 2046140003 | 12P CONNECTOR CORD | |
| | 2046141002 | 13P CONNECTOR CORD | |
| | 2034415009 | 3P CONNECTOR CORD | |

## KU-9104E D.A & INPUT UNIT

| Ref. No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| **SEMICONDUCTOR GROUP** | | | |
| IC201~204 | 2620737007 | HCPL2601 | |
| IC205 | 2620739005 | TC74HCU04P | |
| IC206 | 2630466009 | NJM-2068DA | |
| IC207~210 | 2620735009 | PCM56KP | |
| IC211,212 | 2620679000 | M-5238P | |
| IC213,214 | 2630466009 | NJM-2068DA | |
| IC215 | 2630468007 | L78M15ML | |
| IC216 | 2630259009 | NJM-79M15A | |
| IC217 | 2630471007 | AN79N05 | |
| IC218 | 2630469006 | AN78N05 | |
| D201,202 | 2760432000 | 1SS270A | |
| D205~208 | 2760432000 | 1SS270A | |
| **RESISTOR GROUP** (not included Carbon Film ±5%, ¼W type) | | | |
| VR201~204 | EP-5462H19 | SOLID VR (104) | 100kΩ |
| **CAPACITOR GROUP** | | | |
| C201~204 | 2551134025 | CQ92M1H103J | 0.01μF 50V |
| C209,210 | 2544252930 | CE04W1A101M | 100μF 10V |
| C211 | 2544260087 | CE04W1H100M | 10μF 50V |
| C212 | 2531024003 | CK45F1H103Z | 0.01μF 50V |
| C213~220 | 2551134025 | CQ92M1H103J | 0.01μF 50V |
| C221~224 | 2551134038 | CQ92M1H223J | 0.022μF 50V |
| C225,226 | 2554214049 | CQ09P1H821J | 820pF 50V |
| C227 228 | 2554214052 | CQ09P1H221J | 220pF 50V |
| C229,230 | 2554214052 | CQ09P1H221J | 220pF 50V |
| C231,232 | 2554214049 | CQ09P1H821J | 820pF 50V |
| C233,234 | 2554214052 | CQ09P1H221J | 220pF 50V |
| C235,236 | 2554214049 | CQ09P1H821J | 820pF 50V |
| C237,238 | 2554216021 | CQ09P1H682J | 0.0068μF 50V |
| C243,244 | 2544260045 | CE04W1H010M | 1μF 50V |
| C245~248 | 2544260087 | CE04W1H100M | 10μF 50V |
| C249~252 | 2544260045 | CE04W1H010M | 1μF 50V |
| C253,254 | 2554121006 | CQ93P1H101J | 100μF 50V |
| C261,262 | 2561033019 | CF93B2A105K | 1μF/100V |
| C263,264 | 2544260087 | CE04W1H100M | 10μF 50V |
| C291,292 | 2544260087 | CE04W1H100M | 10μF 50V |
| C295,296 | 2561033035 | CF93B2A474K | 0.47μF 100V |
| **OTHER PARTS GROUP** | | | |
| L201,202 | 2350030100 | L.P.F COIL | |
| L203 | 2350016917 | INDUCTOR (108K) | |
| RL201 | 2149005100 | RELAY | |
| RL202 | 2140036000 | REED RELAY | |
| RL203~206 | 2149005100 | RELAY | |

| Ref. No. | Part No. | Part Name | Remarks |
|---|---|---|---|
| SW003 | 2124187001 | SLIDE SW | |
| SW004 | 2123626000 | SLIDE SW REMOTE | |
| | 2048236009 | 4P CONNECTOR BASE | |
| | 2048237008 | 6P CONNECTOR BASE | |
| CN14,15,19 | 2050233032 | 3P EH CONNECTOR BASE | |
| CN11 | 2050190052 | 5P NH CONNECTOR BASE | |
| C17~21 | 2050185038 | 3P WIRE HOLDER | |
| CN7~19 | 2050185041 | 4P WIRE HOLDER | |
| CN7 | 2050185054 | 5P WIRE HOLDER | |
| CN4 | 2050185067 | 6P WIRE HOLDER | |
| | 2050243022 | 2P WIRE HOLDER | |
| CN4 | 2040094016 | 6P CONNECTOR CORD | |
| CN17 | 2034388000 | 3P CONNECTOR CORD | |
| | 2042213002 | 9P CONNECTOR CORD | |
| | 2030225073 | 1P CONTACT ASS'Y | |
| | 2090208001 | TWIN SHIELD WIRE | |
| | 2034383018 | 3P CONNECTOR CORD | |
| | 2034383021 | 3P CONNECTOR CORD | |
| | 2034426001 | 3P CONNECTOR CORD | |
| | 2050414000 | 1P CONNECTOR BASE | |
| | 2050414013 | 1P CONNECTOR BASE | |
| | 2050414026 | 1P CONNECTOR BASE | |





## KU-9105E ANALOG P.S. UNIT

| Ref. No. | Part No. | Part Name | Remarsk |
|---|---|---|---|
| **SEMICONDUCTOR GROUP** | | | |
| IC1 | 2630254004 | NJM78M05A | |
| IC2 | 2630272002 | NJM79M05A | |
| IC3 | 2630470008 | AN78N24 | |
| IC4 | 2630472006 | AN79N24 | |
| IC7,8 | 2630284003 | M5219P | |
| TR11~18 | 2750060000 | 2SK-170BL | |
| TR19~26 | 2750059008 | 2SJ-74BL | |
| TR27,28 | 2730199001 | 2SC2238 (Y) | |
| TR29,30 | 2710104003 | 2SA968 (Y) | |
| TR31~34 | 2750055028 | 2SK184 (Y) | |
| LE1 | 3939319018 | LD-701DU | |
| D1~8 | 2760247910 | DSA1A2 (TYPE-3) | |
| D11~14 | 2760236031 | HZ5C-1 | |
| D15~17 | 2760049011 | 1S2076A | |
| **REGISTOR GROUP** | | | |
| R15~18,23,24 | 2440017020 | RS14B3A100JNBF | |
| VR1 | 2119047101 | V2540V30SA503– | 50kΩA |
| VR2 | 2119048003 | V16V20FB503T | 50kΩB |
| VR11,12 | 2116025016 | V08PB101 | 100ΩB |
| **CAPACITOR GROUP** | | | |
| C1~3 | 2538014003 | CK45F2GAC103M | 0.01μF 400VAC |
| C4 | 2551134025 | CQ92M1H103J | 0.01μF 50V |
| C5 | 2538014003 | CK45F2GAC103M | 0.01μF 400VAC |
| C6~7 | 2544254080 | CE04W1C102M | 1000μF 16V |
| C8~9 | 2544260087 | CE04W1H100M | 10μF 50V |
| C10~11 | 2544277009 | CE04W1H222 | 2200μF 50V |
| C14,15 | 2561033019 | CF93B2A105K | 1μF 100V |
| C51~52 | 2554214078 | CQ09P1H101J | 100pF 50V |
| C53~56 | 2544260087 | CE04W1H100M | 10μF 50V |
| C57 | 2561033019 | CF93B2A105K | 1μF/100V |
| C58,59 | 2544260087 | CE04W1H100M | 10μF 50V |
| C60 | 2561033019 | CF93B2A105K | 1μF 100V |
| C61~64 | 2521008000 | CM92C1H080D | 8pF 50V |
| C65~68 | 2543054948 | CE04D1E101MBP | 100μF 25V |
| C403~406 | 2544195929 | CE04W1V100M | 10μF 35V |
| **OTHER PARTS GROUP** | | | |
| ⚠L1 | 2398019002 | LINE FILTER COIL | |
| L11,12 | 2350016917 | INDUCTOR (180K) | |
| RL1~3 | 2419005100 | RELAY | |
| ⚠SW1 | 2129525008 | POWER SW | |
| ⚠F1 | 2061039047 | FUSE 1.25A | |
| ⚠F2,3 | 2061039034 | FUSE 1A | |
| ⚠F4,5 | 2061039050 | FUSE 1.6A (T) | |

| Ref. No. | Part No. | Part Name | Remarsk |
|---|---|---|---|
| ⚠F1~5 | 2020022008 | FUSE HOLDER | |
| TR27~30 | 4170253000 | RADIATOR | |
| IC3 | 4170253026 | RADIATOR | |
| | 2048225007 | 2P CONNECTOR BASE | |
| | 2048238007 | 4P CONNECTOR BASE | |
| CN1 | 2050243022 | 2P WIRE HOLDER | |
| CN16,18,19,20 | 2050185038 | 3P WIRE HOLDER | |
| CN13,14 | 2050243035 | 3P WIRE HOLDER | |
| CN12-15-18 | 2050185041 | 4P WIRE HOLDER | |
| CN2-17-18 | 2050190036 | 3P NH CONNECTOR BASE | |
| CN18 | 2034389009 | 3P CONNECTOR CORD | |
| CN18 | 2034389012 | 3P CONNECTOR CORD | |
| CN19 | 2034380011 | 3P CONNECTOR CORD | |
| CN3-12-13 | 2050190036 | 3P NH CONNECTOR BASE | |
| CN4 | 2050190065 | 6P NH CONNECTOR BASE | |
| CN1 | 2050233032 | 3PEH CONNECTOR BASE | |
| CN18 | 2050154030 | 3P NH CONNECTOR BASE | |
| CN19 | 2050234031 | 3PEH SID CON. BASE | |
| | 2050141001 | COMMON PLATE | |
| CN18 | 2030275081 | 1P CONTACT ASS'Y | |
| | 2050414013 | 1P CONNECTOR BASE | |
| CN12 | 2034383005 | 3P CONNECTOR CORD | |
| CN13 | 2034384004 | 3P CONNECTOR CORD | |
| CN16 | 2034387001 | 3P CONNECTOR CORD | |
| CN19 | 2034386002 | 3P CONNECTOR CORD | |
| CN1 | 2034382006 | 3P CONNECTOR CORD | |
| CN20 | 2090208014 | TWIN SHIELD WIRE | |
| CN12-15 | 2090207057 | VINYL WIRE | |

## KU-9116E SERVO UNIT

| Ref. No. | Part No. | Part Name | Remarsk |
|---|---|---|---|
| IC901 | 2630229013 | LA-6458DF | |
| **RESISTOR GROUP** | | | |
| R901~906 | 2412116001 | RD14B2E103J | 10kΩ (±5%) ¼W |
| **CAPACITOR GROUP** | | | |
| C901,902 | 2561033019 | CF93B2A105K | 1μF 100V |
| C903~906 | 2544261015 | CE04W1H470M | 47μF 50V |
| C909,910 | 2544260045 | CE04W1H010M | 1μF 50V |
| **OTHER PARTS GROUP** | | | |
| | 2050190036 | 3P NH CONNECTOR BASE | |
| | 2050233032 | 3P EH CONNECTOR BASE | |
| | 2050142039 | 2P CONNECTOR BASE PIN | |

## KU-9105D for E1

[Same as KU-9105E (for EU) except the followings]

| Ref. No. | Part No. | Part Name | Remarsk |
|---|---|---|---|
| **CAPACITOR GROUP** | | | |
| C002,003 | 2538014003 | CK45F2GAC103M (2) DELETE | |
| **COIL GROUP** | | | |
| L001 | 2398019002 | LINE FILTER COIL DELETE | |
| **OTHER PARTS GROUP** | | | |
| ⚠ F001 | 2061039047 | FUSE 1.25A DELETE | |
| ⚠ F002,003 | 2061053007 | FUSE 1.0A (2) CHANGE | |
| ⚠ F004,005 | 2061035054 | FUSE 1.6A(T) (2) | |
| | 2020022008 | FUSE HOLDER (2) DELETE | |
| | 2090207057 | VINYL WIRE CHANGE | |

## KU-9105B for E2

[Same as KU-9105E (for EU) except the followings]

| Ref. No. | Part No. | Part Name | Remarsk |
|---|---|---|---|
| **OTHER PARTS GROUP** | | | |
| ⚠ F001 | 2061015016 | FUSE (1.25A) (1) CHANGE | |
| ⚠ F002,003 | 2061036008 | FUSE ST630MA (2) CHANGE | |
| ⚠ F004,005 | 2061015058 | FUSE 1.6A (2) CHANGE | |
| | 4150298001 | CONDENCER COVER (1) ADD (For C001) | |

## KU-9103B for E2
[Same as KU-9103E (for EU) except the followings]

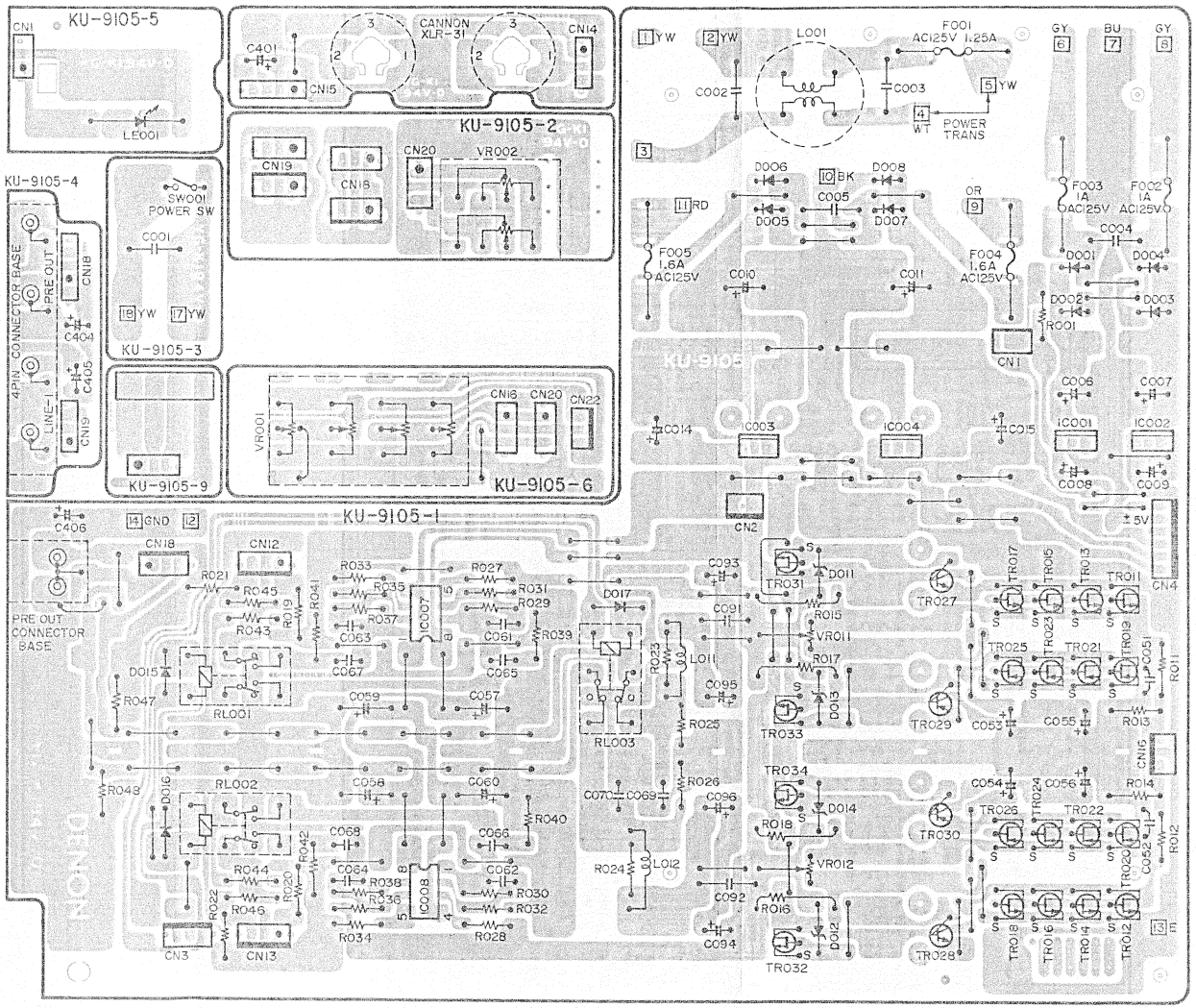
| Ref. No. | Part No. | Part Name | Remarsk |
|---|---|---|---|
| OTHER PARTS GROUP | | | |
| F501~504 | 2061015016 | FUSE (1.25A) (4)<br>CHANGE | |

## KU-9103D for E1
[Same as KU-9103E (for EU) except the followings]

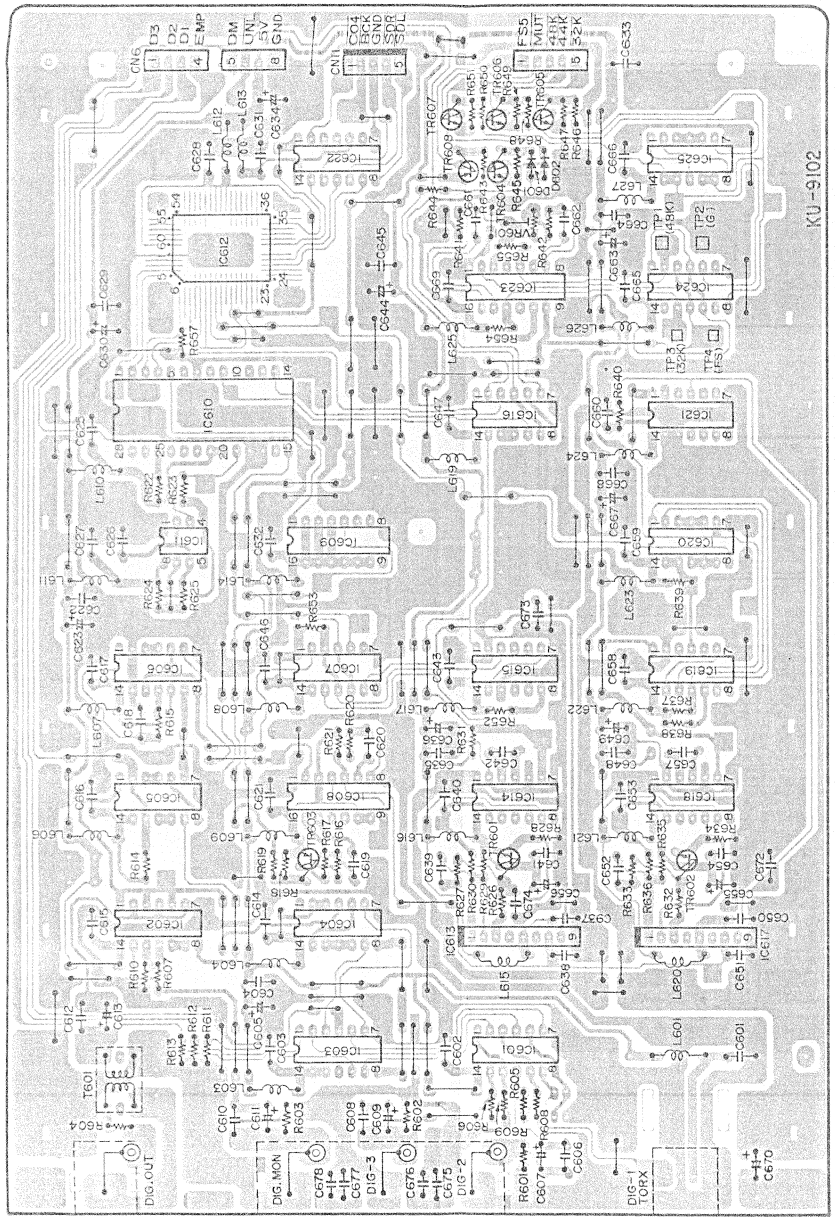
| Ref. No. | Part No. | Part Name | Remarsk |
|---|---|---|---|
| OTHER PARTS GROUP | | | |
| *F501~504 | 2061035025 | FUSE 1.25A (T) (4)<br>CHANGE | |
| | 2020022008 | FUSE HOLDER (6)<br>CHANGE | |

## PRINTED WIRING BOARD

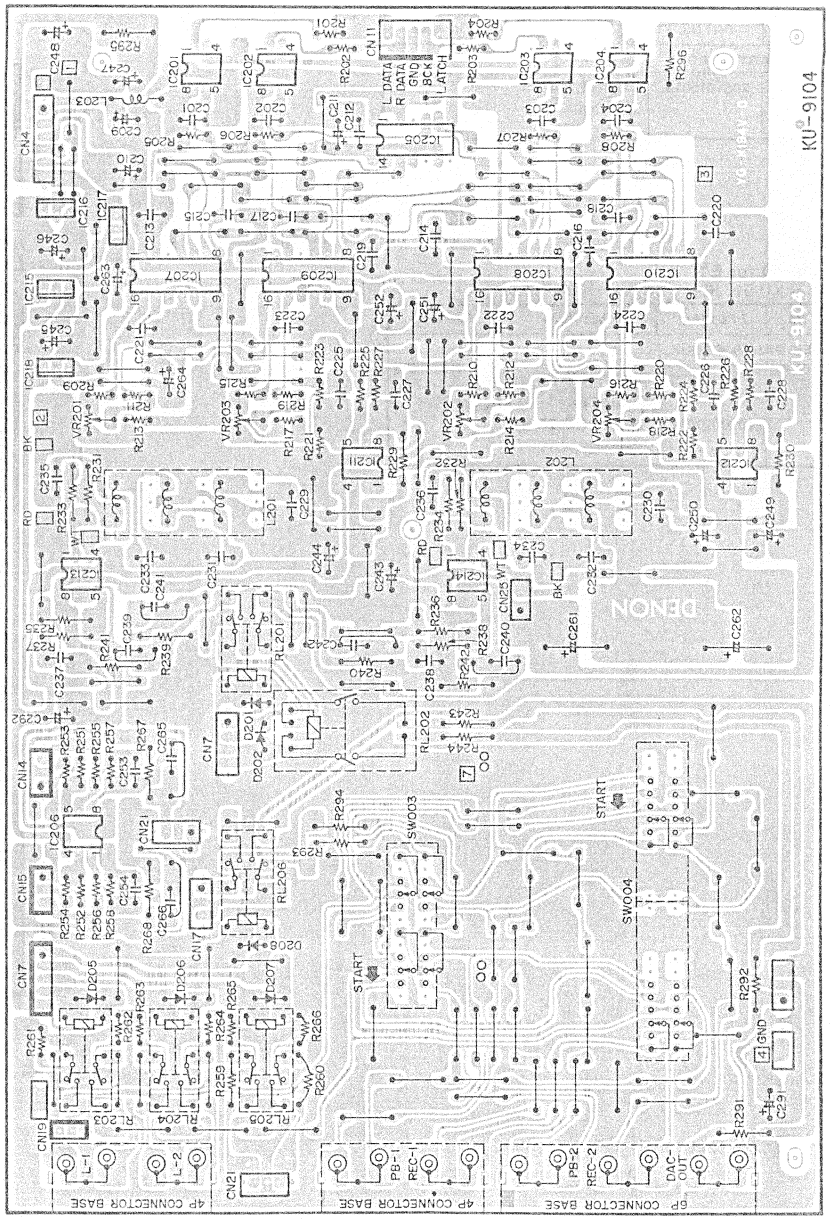
### KU-9105 ANALOG P.S. UNIT



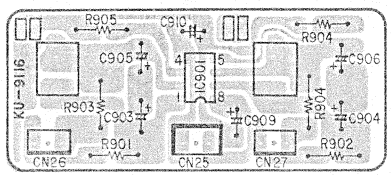
KU-9102 DIGITAL SIG UNIT



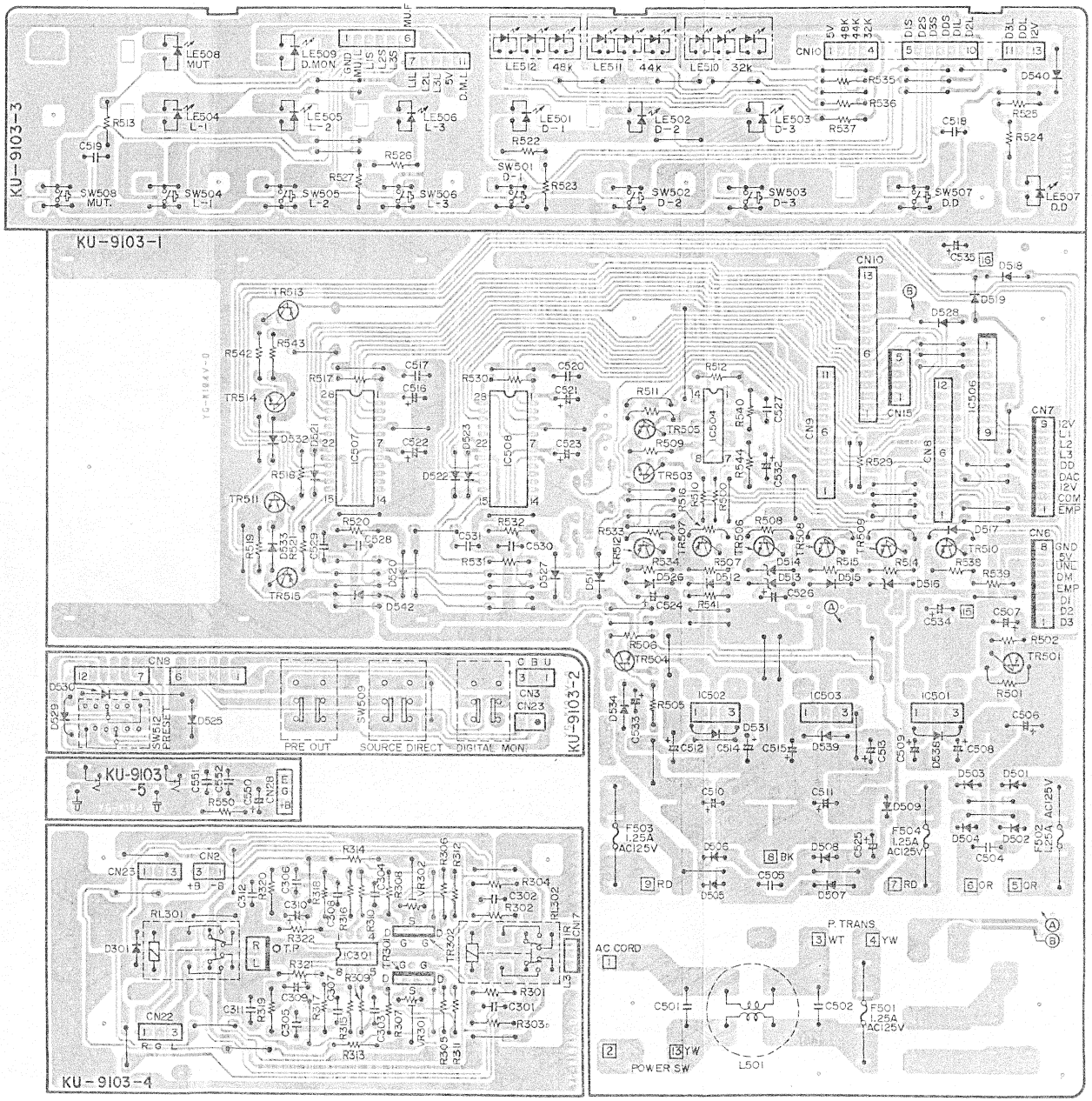

KU-9104 D.A. & INPUT UNIT



KU-9116 SERVO UNIT

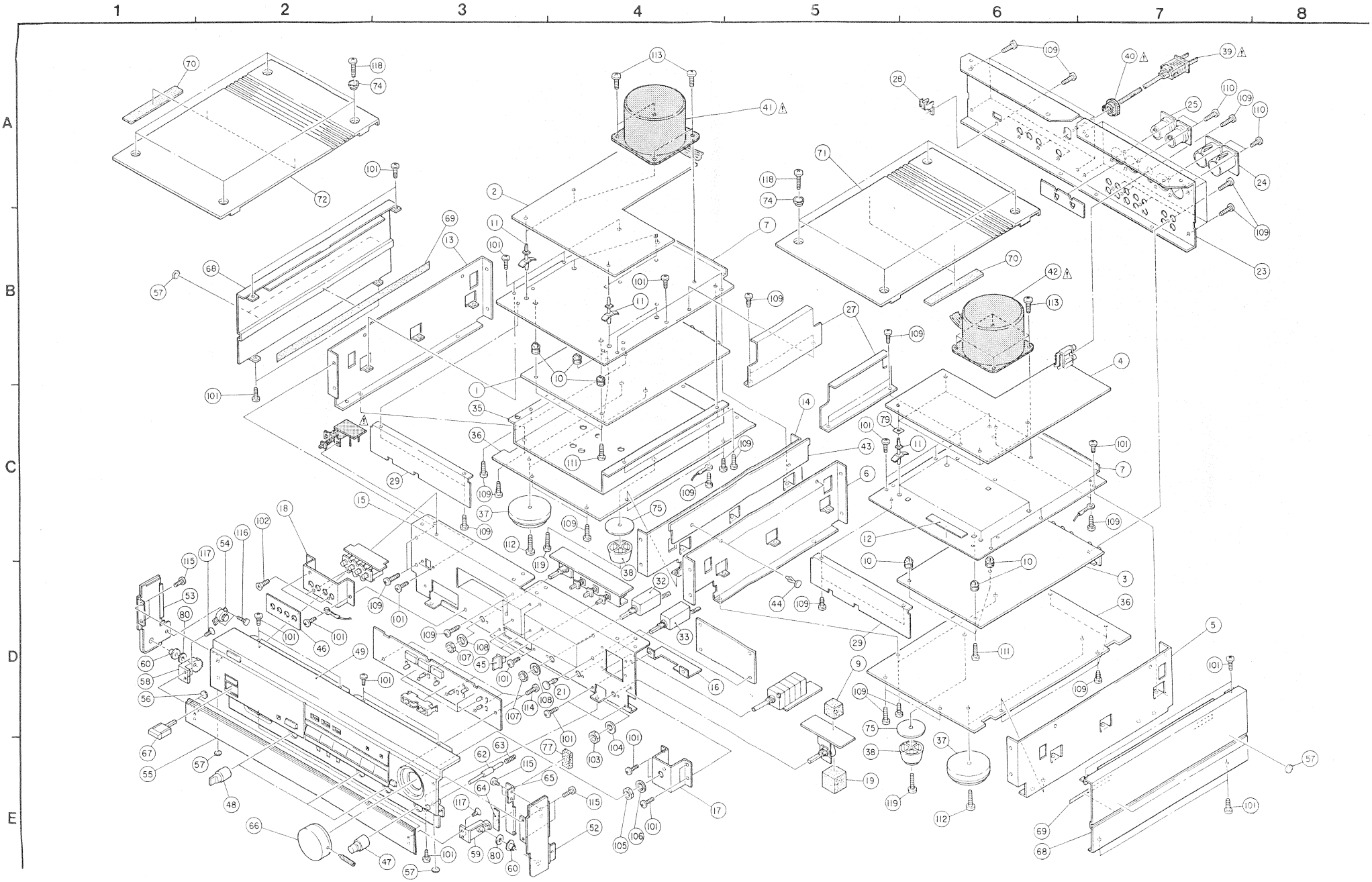



KU-9103 DIGITAL P.S. UNIT



EXPLODED VIEW OF CHASSIS AND CABINET & PARTS LIST

• EXPLODED VIEW OF CHASSIS AND CABINET



## •PARTS LIST OF EXPLODED VIEW

| Ref. No. | Part No. | Part Name | Remarsk |
|---|---|---|---|
| •1 | KU-9102E | DIGITAL SIG UNIT | 1 |
| •2 | KU-9103E | DIGITAL P.S UNIT | 1 |
| •3 | KU-9104E | D.A & INPUT UNIT | 1 |
| •4 | KU-9105E | ANALOG P.S UNIT | 1 |
| 5 | 4119045305 | SIDE CHASSIS (R) | 1 |
| 6 | 4117048001 | CENTER CHASSIS (R) | 1 |
| 7 | 4149038104 | SHIELD PLATE (A) | 2 |
| 9 | 4610114007 | CUSHION | 1 |
| 10 | 4439015002 | P.W. SPACER | 6 |
| 11 | 4159016006 | P.C.B HOLDER | 9 |
| 12 | 4149017031 | SAFETY PLATE | 1 |
| 13 | 4119046003 | SIDE CHASSIS (L) | 1 |
| 14 | 4119047002 | CENTER CHASSIS (L) | 1 |
| 15 | 4119044209 | FRONT CHASSIS | 1 |
| 16 | 4129106001 | BRACKET (B) | 1 |
| 17 | 4129100104 | VR BRACKET | 1 |
| 18 | 4129101103 | 4 P.T BRACKET | 1 |
| 19 | 4619001098 | RUBBER SHEET | 1 |
| 21 | 4121979003 | P.C.B HOLDER | 4 |
| •23 | 1059091108 | BACK PANEL | 1 |
| 24 | 2050416008 | 3P CANNON CONNECTOR | 2 |
| 25 | 2050388000 | 3P CANNON CONNECTOR | 2 |
| 27 | 4129103004 | TOP SUPPORT | 2 |
| 28 | 4129102102 | TORX SUPPORT | 1 |
| 29 | 4159027008 | SHIELD BRACKET | 2 |
| 30 | 4450048016 | CORD HOLDER (L50) | 3 |
| 31 | 2038185005 | 5P CONNECTOR CORD | 1 |
| 32 | 2123625027 | ROTARY REMOTE | 1 |
| 33 | 2123625014 | ROTARY REMOTE | 1 |
| 34 | 4450033005 | WIRE CLAMP BAND | 18 |
| 35 | 4149039200 | SHIELD COVER | 1 |
| 36 | 1059086100 | BOTTOM COVER | 2 |
| 37 | 1049010005 | FOOT ASS'Y | 4 |
| ⚠•39 | 2062039004 | AC CORD (POLARIZED) | 1 |
| ⚠•40 | 4450020005 | CORD BUSH (4K-4) | 1 |
| ⚠•41 | 2339568004 | POWER TRANS (DIGITAL) | 1 |
| ⚠•42 | 2339569003 | POWER TRANS (ANALOG) | 1 |
| 43 | 1469093204 | ESC BAR (C) | 1 |
| 44 | 4770284000 | PLASTIC RIVET | 2 |
| 45 | 1139071006 | PUSH KNOB (T) | 3 |
| 46 | 1469091002 | BLIND SHEET (4P) | 1 |
| 47 | 1129037005 | KNOB ASS'Y | 1 |
| 48 | 1129038004 | KNOB ASS'Y | 3 |
| 49 | AF70A81 | FRONT PANEL SUB ASS'Y | 1 |
| 52 | AS71B02 | S•ESC SUB ASS'Y (R) | 1 |
| 53 | AS71B04 | S•ESC SUB ASS'Y (L) | 1 |
| 54 | 4210261004 | MINI DAMPER | 1 |
| 55 | 1449055107 | DOOR | 1 |
| 56 | 1220039038 | SPACER | 2 |
| •57 | 1040034006 | STOPPER | 6 |
| 58 | 4010140215 | HINGE (L) | 1 |
| 59 | 4010139116 | HINGE (R) | 1 |
| 60 | 4250140114 | BEARING | 2 |
| 62 | 1139117106 | DOOR KNOB | 1 |
| 63 | 4630162080 | SPRING | 1 |
| 64 | 1229013039 | SPACER | 1 |

| Ref. No. | Part No. | Part Name | Remarsk |
|---|---|---|---|
| 65 | 4639045005 | SPRING PLATE | 1 |
| 66 | 1129036103 | MAIN VR KNOB ASS'Y | 1 |
| 67 | 1139114002 | PUSH KNOB (P) ASS'Y | 1 |
| •68 | 1029020015 | SIDE COVER | 2 |
| 69 | 1229006017 | SPACER | 2 |
| 70 | 1229013026 | SPACER | 4 |
| 71 | 1029019000 | TOP COVER (R) | 1 |
| 72 | 1029019013 | TOP COVER (L) | 1 |
| 74 | 1469086004 | SCREW CUP | 8 |
| 75 | 1229007045 | BLIND RING | 2 |
| 77 | 4619009032 | DAMP SHEET (C) | 1 |
| 78 | 2048101008 | 2P POWER JACK | 2 |
| •79 | 4159018004 | INSULATING SHEET | 1 |
| 80 | 4770195005 | WASHER | 2 |
| 81 | | | |
| 82 | | | |
| 83 | | | |
| **SCREWS & NUTS** | | | |
| •101 | 4737002034 | TAPPING SCREW (S) 3x6 (BLACK) | 40 |
| 102 | 4737512003 | TAPPING SCREW (P) 3x8 (BLACK) | 2 |
| 103 | | NUT M7 | 1 |
| 104 | 4753009008 | TOOTHED WASHER φ7 | 1 |
| 105 | | NUT M8 | 1 |
| 106 | 4753005002 | TOOTHED WASHER φ8 | 1 |
| 107 | | NUT M9 | 3 |
| 108 | | WASHER φ9 | 3 |
| 109 | 4770064107 | FIXING SCREW | 58 |
| 110 | 4737515000 | TAPPING SCREW (P) 2.6 x 8 | 8 |
| 111 | 4737501014 | TAPPING SCREW (P) 3 x 14 | 6 |
| 112 | 4737007026 | TAPPING SCREW (S) 4 x 16 (BLACK) | 4 |
| 113 | 4737004016 | TAPPING SCREW (S) 4 x 6 | 8 |
| 114 | 4737500044 | TAPPING SCREW (P) 3 x 8 (BLACK) | 9 |
| 115 | 4711301010 | CROSS PAN SCREW 3 x 4 | 6 |
| 116 | 4737000052 | TAPPING SCREW (S) 2 x 4 | 2 |
| 117 | 4712801030 | CROSS SCREW 3 x 5 | 4 |
| 118 | 4737007013 | TAPPING SCREW (S) 4 x 10 | 8 |
| 119 | 4737007039 | TAPPING SCREW (S) 4 x 20 (BLACK) | 2 |
| 120 | 4770276005 | EARTH SCREW | 1 |

## PARTS LIST OF PACKING & ACCESSORIES

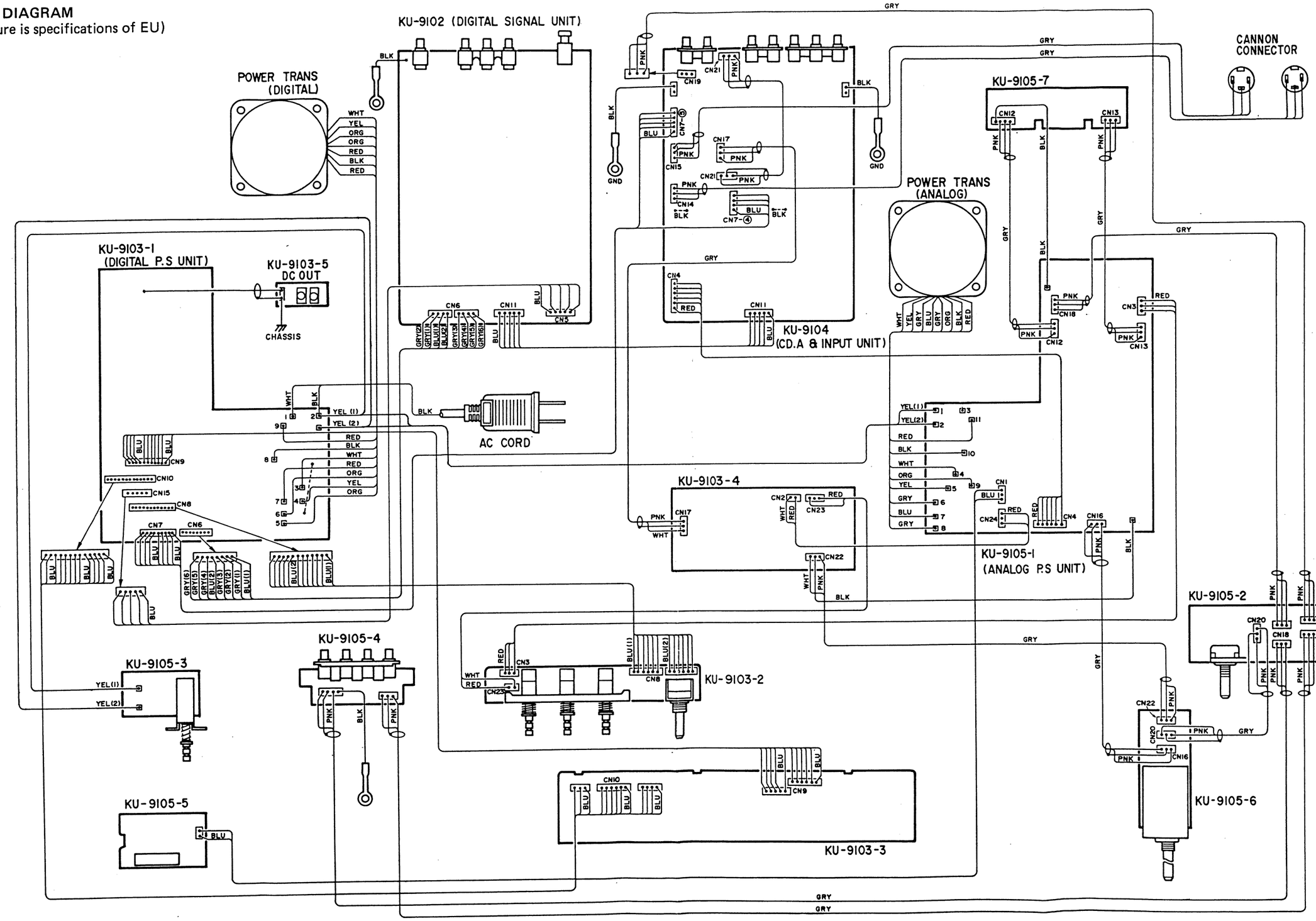
| Ref. No. | Part No. | Part Name | Remarsk |
|---|---|---|---|
| 201 | – | – | – |
| 202 | 5040063060 | STYLEN PAPER | 1 |
| 203 | 5049102003 | STYLEN PAPER | 1 |
| 204 | 5059102006 | POLY COVER | 1 |
| 205 | 5039142002 | CUSHION ASS'Y | 1 |
| 206 | 5019128059 | CARTON CASE | 1 |
| 207 | 5058006019 | ENVELOPE | 1 |
| 208 | 5119213107 | INST MANUAL | 1 |
| 209 | 2048121004 | 2P PIN CORD | 1 |
| •210 | 5150418000 | DAI WARRANTY HOME | 1 |
| 211 | | | |
| 212 | | | |

## ADDENDUM LIST

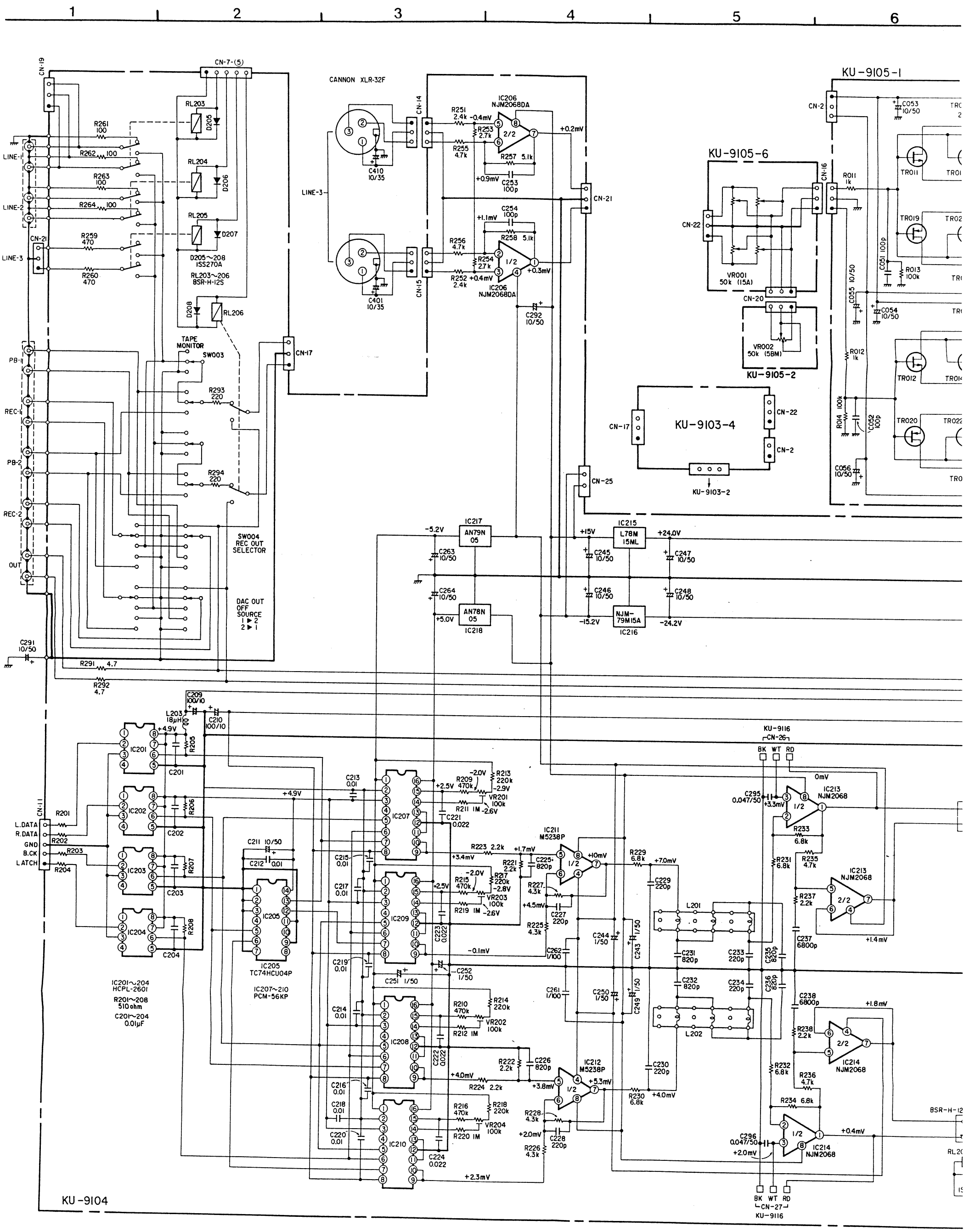
| Ref. No. | Part Name & Descriptions | Part No. | | | |
|---|---|---|---|---|---|
| | | E1 | E2 | | |
| 1 | DIGITAL SIG UNIT | KU-9102D | KU-9102B | | |
| 2 | DIGITAL P.S UNIT | KU-9103D | KU-9103B | | |
| 3 | D.A & INPUT UNIT | KU-9104D | KU-9104B | | |
| 4 | ANALOG P.S UNIT | KU-9105D | KU-9105B | | |
| 23 | BACK PANEL | 1059095007 | 1059091111 | | |
| ⚠ 39 | AC CORD | 2006031026 | 2062002031 | | |
| ⚠ 40 | CORD BUSH (4K-4) | 4450028007 | 4450020005 | | |
| ⚠ 41 | POWER TRANS (DIGITAL) | 2339573002 | 2339570005 | | |
| ⚠ 42 | POWER TRANS (ANALOG) | 2339574001 | 2339571004 | | |
| 57 | STOPPER | 1040034006(2) | 1040034006(2) | | |
| 68 | SIDE COVER | 1029020002(2) | 1029020002(2) | | |
| 79 | INSULATING SHEET | – | – | | |
| 80 | FUSE (1.25A) F901 | 2061035025 | – | | |
| 81 | VOLTAGE SEL SWITCH | 2129555007 | – | | |
| 82 | FUSE BRACKET | 4129139007 | – | | |
| 83 | FUSE HOLDER | 2020013101 | – | | |
| 101 | TAPPING SCREW(S) 3x6 (BLACK) | 4737002034(45) | 4737002034(40) | | |
| 210 | DAI WARRANTY HOME | – | – | | |

Note 1. See addendum list above for the parts with asterisk (•) on the Ref. No. and the other parts not included in the list.
2. ★ marked not included EXPLODED VIEW OF CHASSIS AND CABINET.
3. This list is prepared based on EU BLACK VERSION.

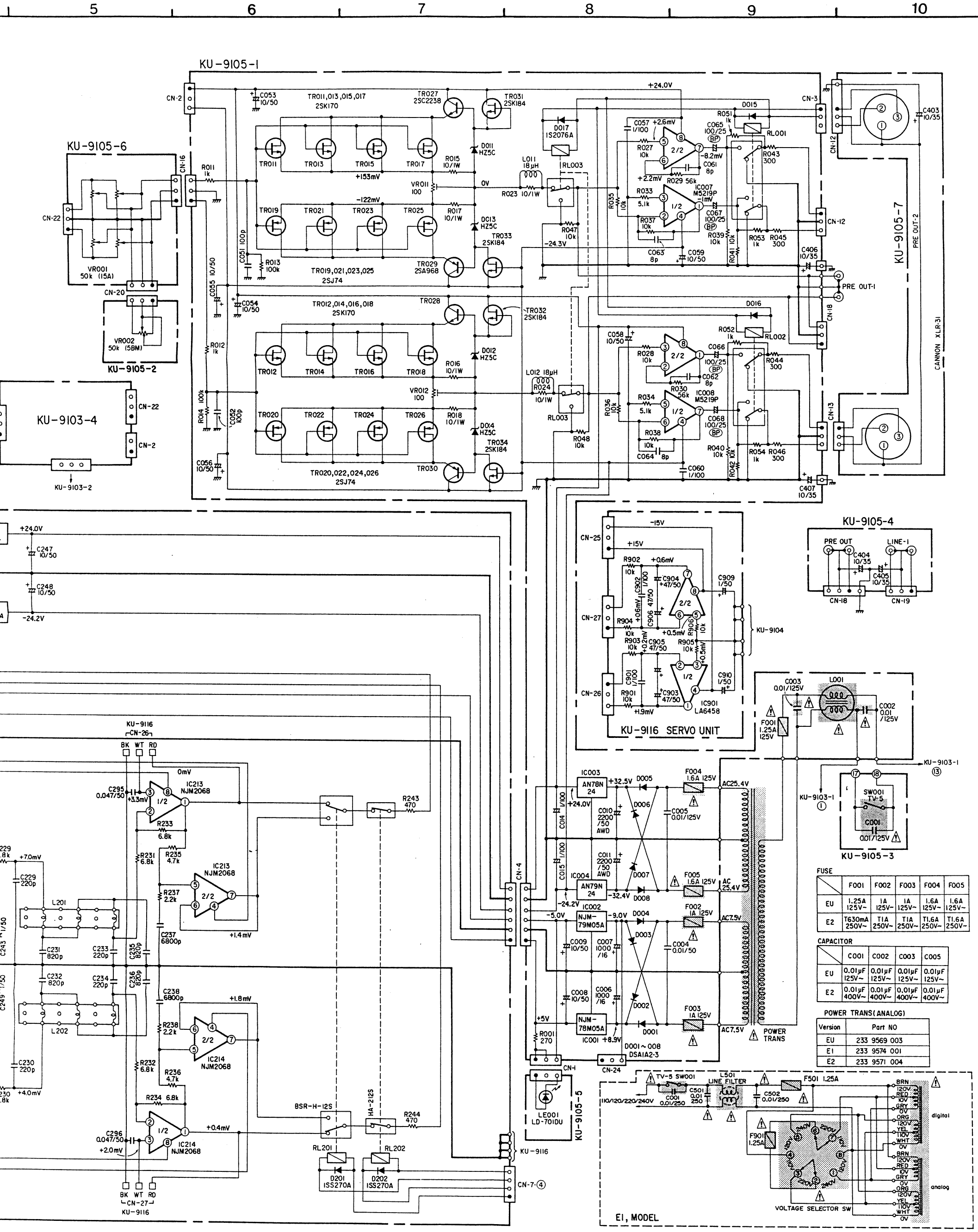
## WIRING DIAGRAM
(This figure is specifications of EU)



## SCHEMATIC DIAGRAM (ANALOG UNIT)



⚠ Means important safety item, which must be replaced, when necessary, by a part specified or meeting the specification by the manufacturer.




FUSE

| | F001 | F002 | F003 | F004 | F005 |
|---|---|---|---|---|---|
| EU | 1.25A 125V~ | 1A 125V~ | 1A 125V~ | 1.6A 125V~ | 1.6A 125V~ |
| E2 | T630mA 250V~ | T1A 250V~ | T1A 250V~ | T1.6A 250V~ | T1.6A 250V~ |

CAPACITOR

| | C001 | C002 | C003 | C005 |
|---|---|---|---|---|
| EU | 0.01μF 125V~ | 0.01μF 125V~ | 0.01μF 125V~ | 0.01μF 125V~ |
| E2 | 0.01μF 400V~ | 0.01μF 400V~ | 0.01μF 400V~ | 0.01μF 400V~ |

POWER TRANS(ANALOG)

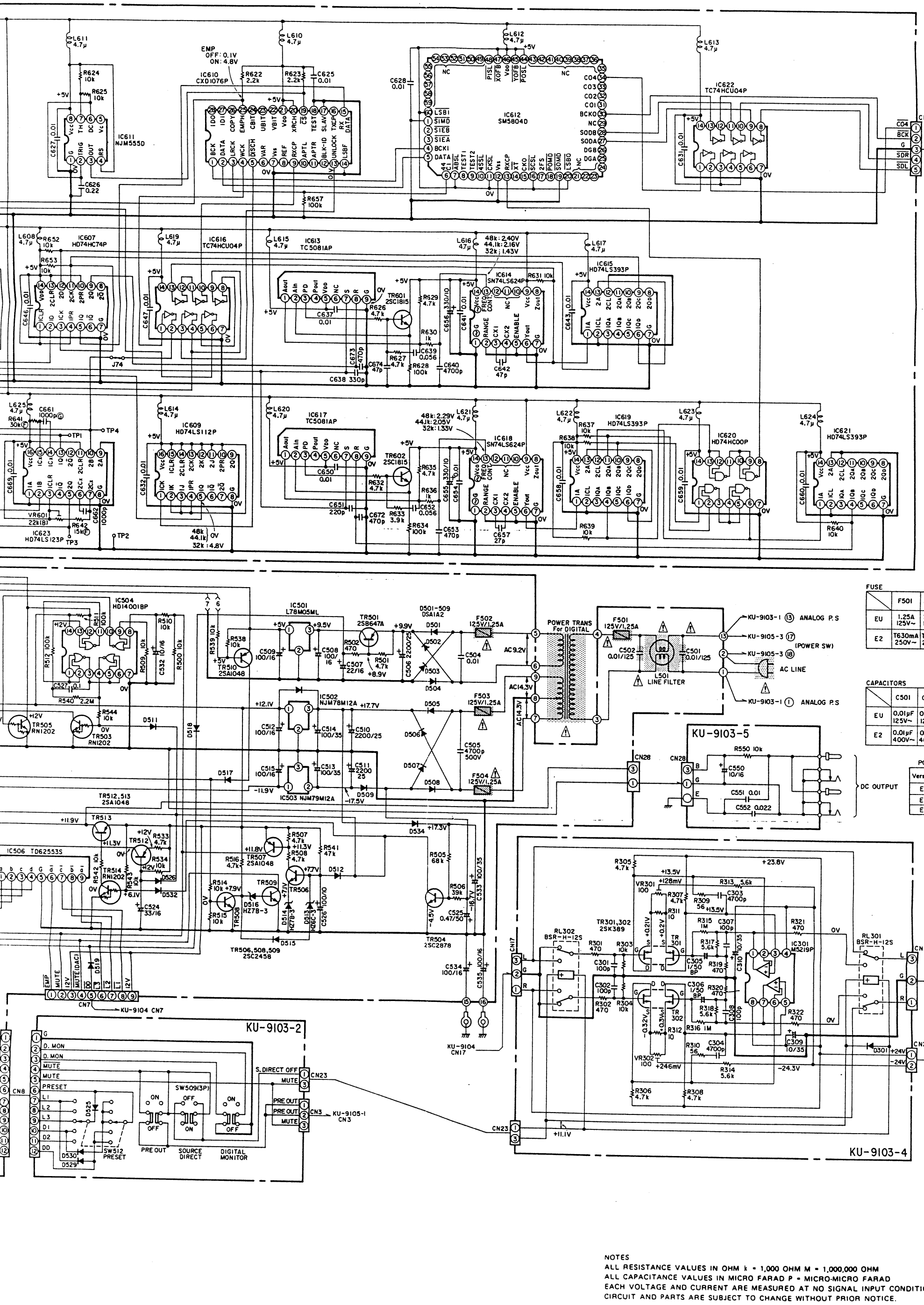
| Version | Part NO |
|---|---|
| EU | 233 9569 003 |
| E1 | 233 9574 001 |
| E2 | 233 9571 004 |

NOTES
ALL RESISTANCE VALUES IN OHM k = 1,000 OHM M = 1,000,000 OHM
ALL CAPACITANCE VALUES IN MICRO FARAD P = MICRO-MICRO FARAD
EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

## SCHEMAIC DIAGRAM (DIGITAL UNIT)

⚠ ▨ Means important safety item, which must be replaced, when necessary, by a part specified or meeting the specification by the manufacturer.

5 6 7 8 9 10




FUSE

| | F501 | F502 | F503 | F504 |
|---|---|---|---|---|
| EU | 1.25A 125V~ | 1.25A 125V~ | 1.25A 125V~ | 1.25A 125V~ |
| E2 | T630mA 250V~ | T1.25A 250V~ | T1.25A 250V~ | T1.25A 250V~ |

CAPACITORS

| | C501 | C502 |
|---|---|---|
| EU | 0.01μF 125V~ | 0.01μF 125V~ |
| E2 | 0.01μF 400V~ | 0.01μF 400V~ |

POWER TRANS (DIGITAL)

| Version | Part NO |
|---|---|
| EU | 233 9568 004 |
| E1 | |
| E2 | |

NOTES
ALL RESISTANCE VALUES IN OHM k = 1,000 OHM M = 1,000,000 OHM
ALL CAPACITANCE VALUES IN MICRO FARAD P = MICRO-MICRO FARAD
EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

**WARNING:**

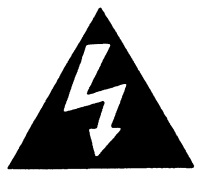
**1. Component parts**

Parts marked with ⚠ and/or shading in this service manual have special characteristics important to safety. Be sure to use the specified parts for replacement.

**2. Leakage current**

Before returning the appliance to customer, test the leakage current when the power plug is connected. Use a calibrated (with an error of not more than 5%) leakage current tester and measure the leakage current from any exposed metal to the earth ground. Reverse the power plug polarity and test the above again.

Any current measured MUST NOT EXCEED 0.5 miliamps. Corrective measure must be taken if it exceeds the limit.



**CAUTION**

RISK OF ELECTRIC SHOCK

DO NOT OPEN

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

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user of 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 of the presence of important operating and maintenance (servicing) instruction in the literature accompanying the appliance.

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