Service Manual

ESX1

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3rd Edition
Issued date: July 15, 2004
Issued by: KORG INC.
05082006GA

A/D Buffer

CPU

JTAG H-UDI

Panel PCB

Smart Media Slot

NAND Flash

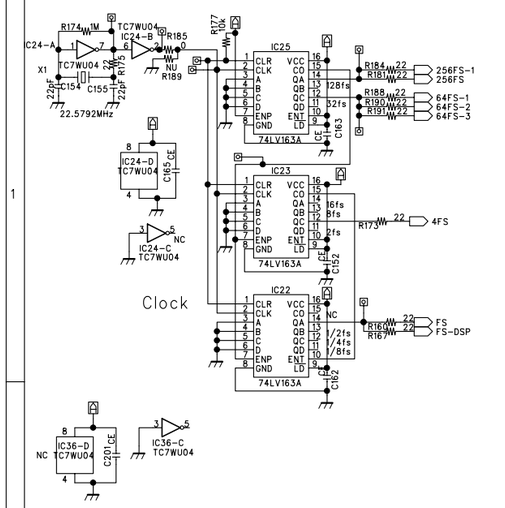
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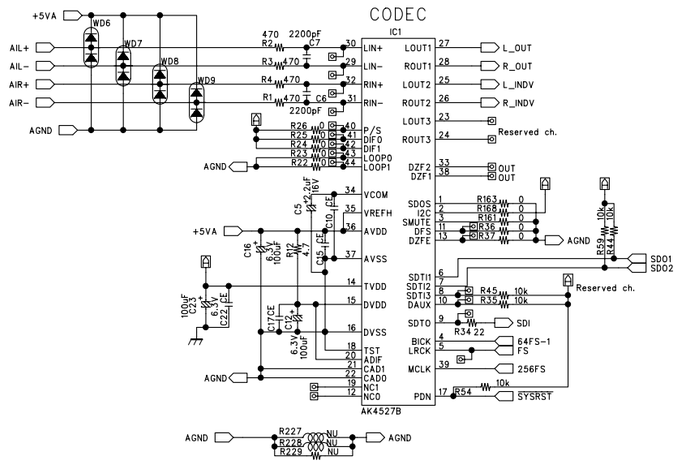
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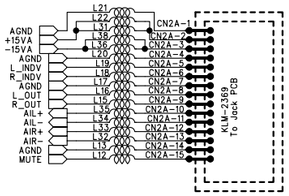
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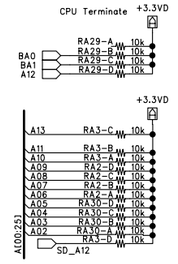
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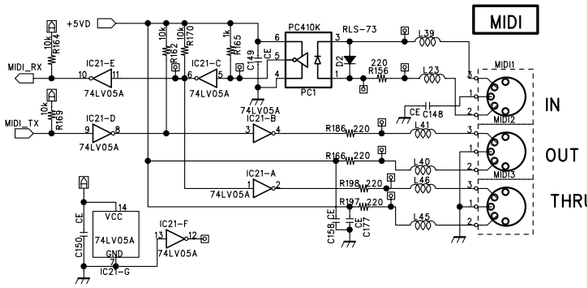
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M.Kuwabara	M.Kuwabara		TITLE	CPU & Peripherals	
KORG	DRAWING NO.	KOD-A30534	DATE	'03.06.20	

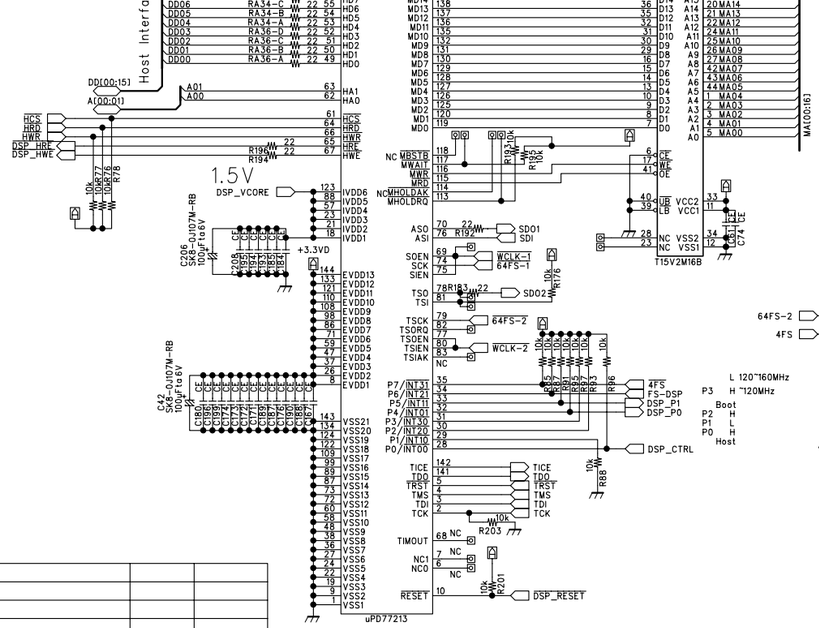


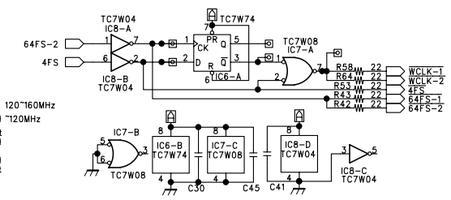


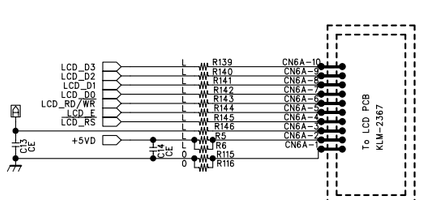


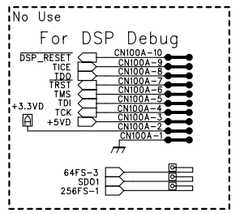








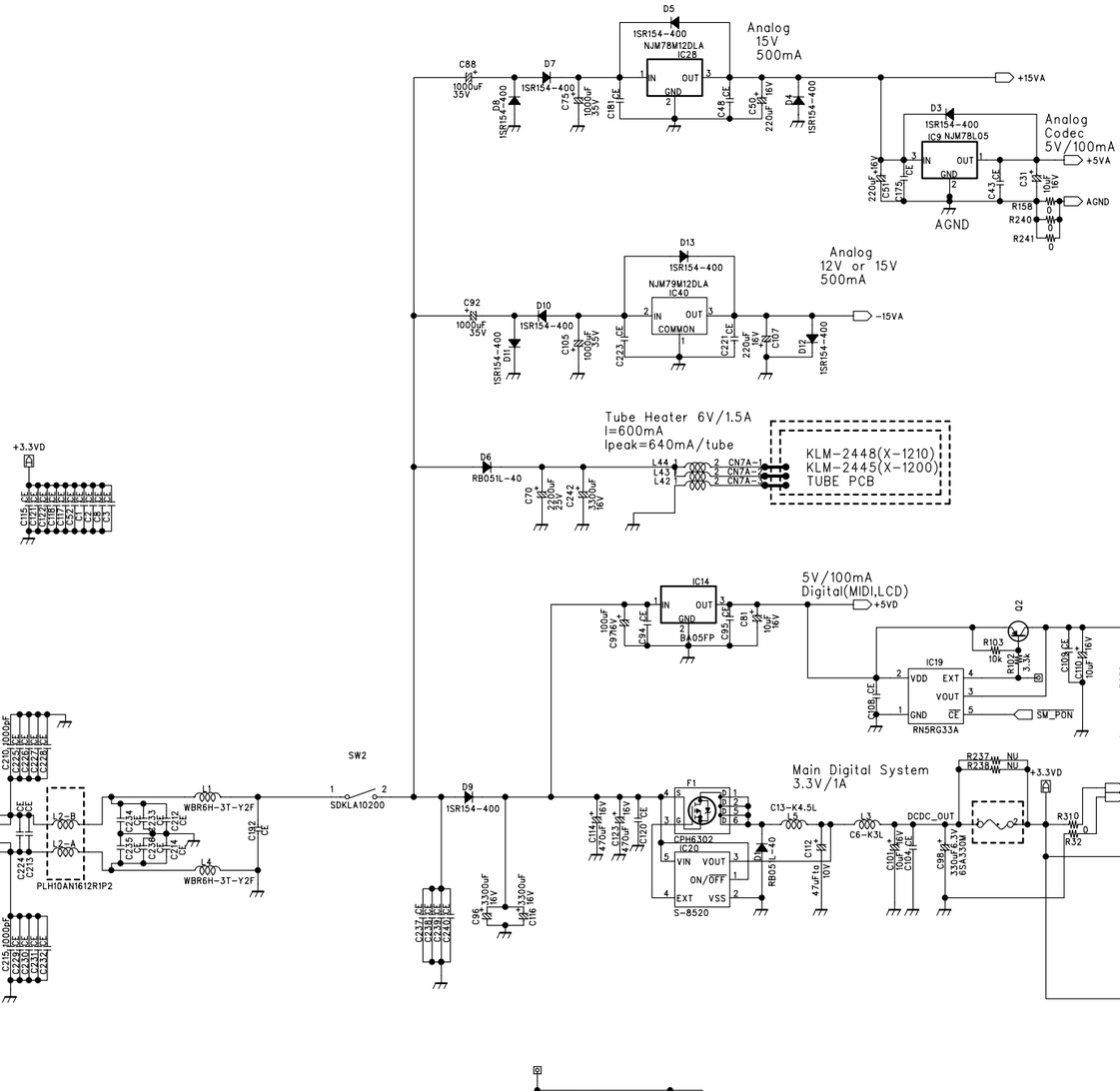




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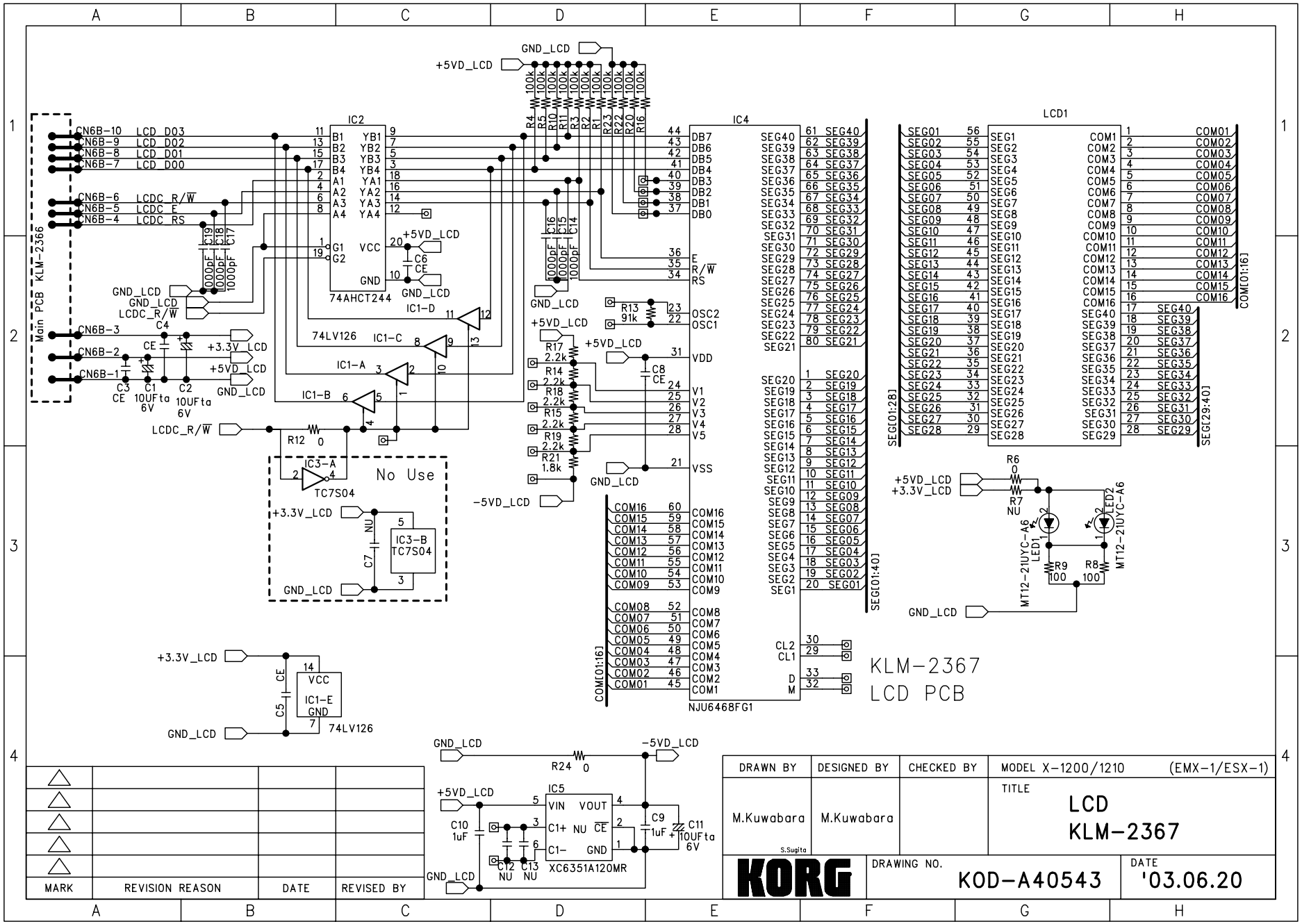
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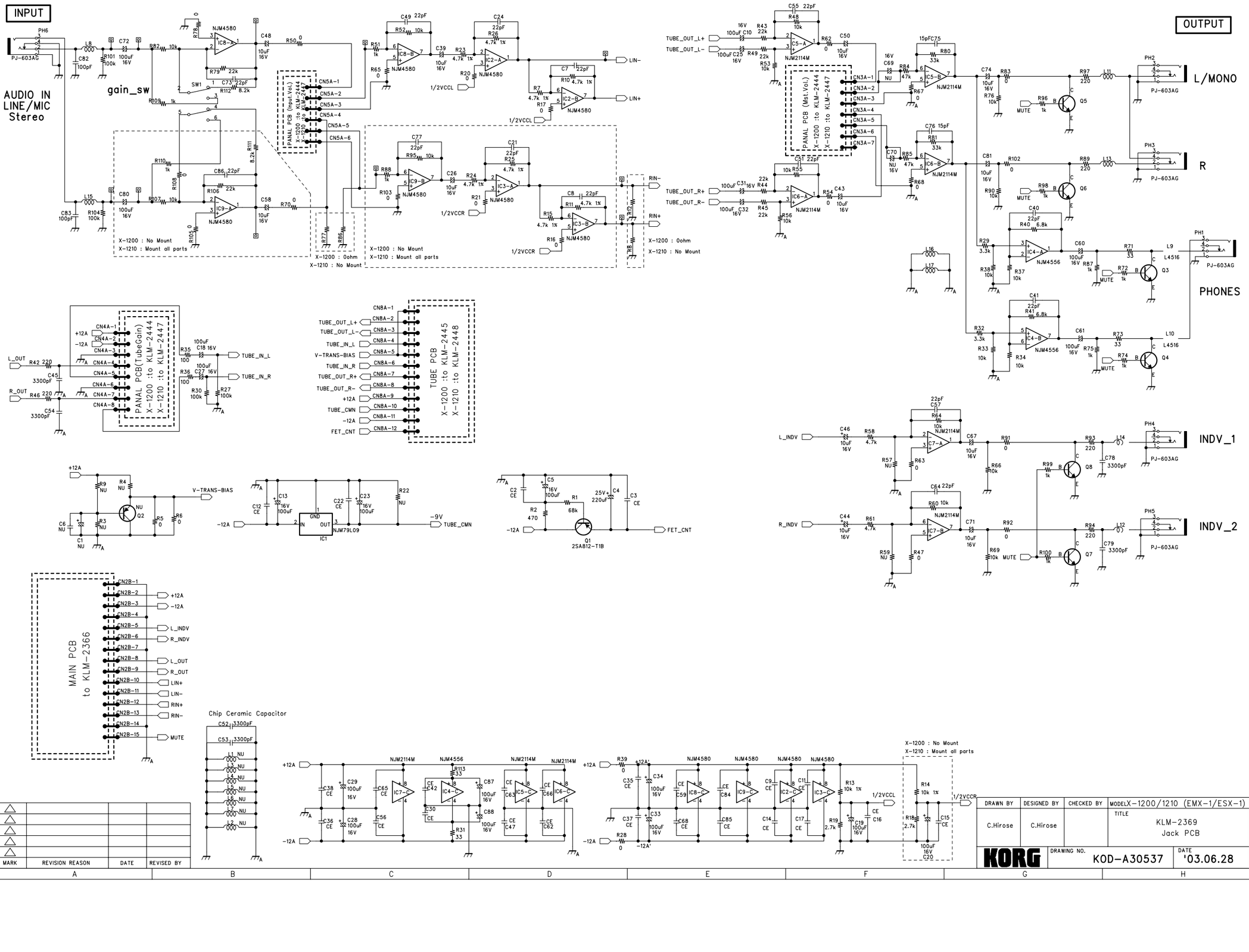


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M.Kuwabara	M.Kuwabara		TITLE: Power

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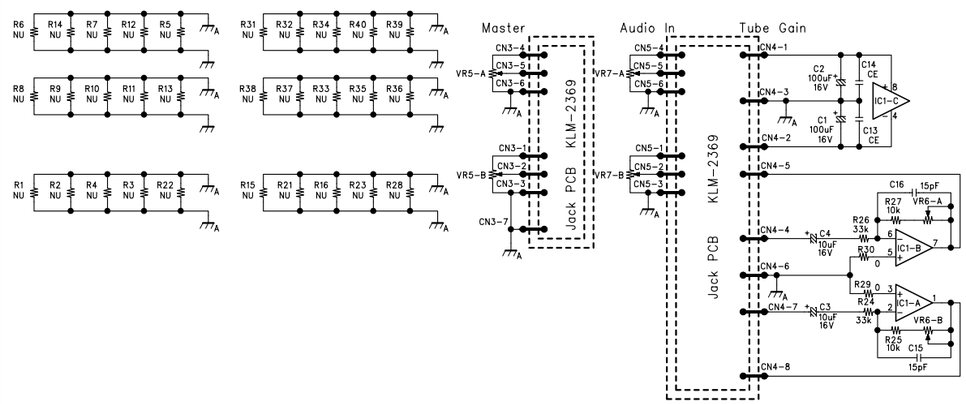

KLM-2367
LCD PCB
Main PCB KLM-2366
IC2
74AHCT244
IC4
NJU6468FG1
LCD1
IC1-A
IC1-B
IC1-C
IC1-D
74LV126
IC3-A
IC3-B
TC7S04
IC1-E
IC5
XC6351A120MR
No Use
CN6B-10 LCD_DO3
CN6B-9 LCD_DO2
CN6B-8 LCD_DO1
CN6B-7 LCD_DO0
CN6B-6 LCDC_R/W
CN6B-5 LCDC_E
CN6B-4 LCDC_RS
CN6B-3
CN6B-2
CN6B-1
GND_LCD
+5VD_LCD
+3.3V_LCD
-5VD_LCD
LCDC_R/W
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REVISION REASON
DATE
REVISED BY
DRAWN BY
M.Kuwabara
DESIGNED BY
M.Kuwabara
S.Sugita
CHECKED BY
MODEL X-1200/1210 (EMX-1/ESX-1)
TITLE
LCD
KLM-2367
KORG
DRAWING NO.
KOD-A40543
DATE
'03.06.20

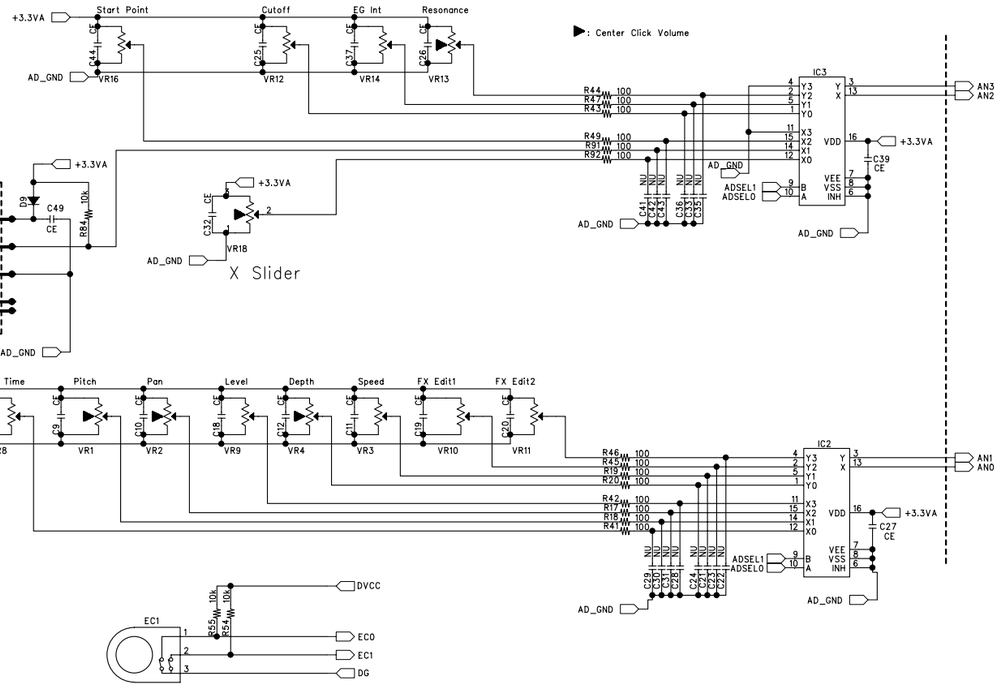


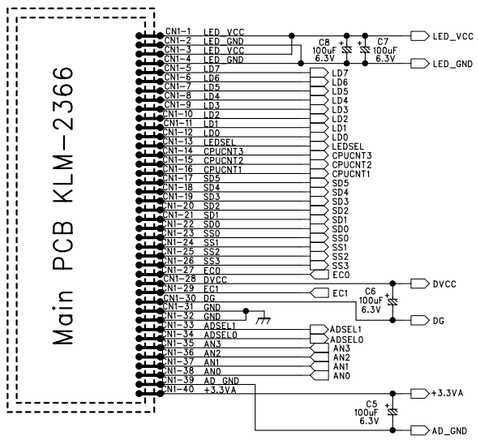
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C.Hirose	C.Hirose		TITLE: KLM-2369 Jack PCB

KORG | DRAWING NO. KOD-A30537 | DATE '03.06.28

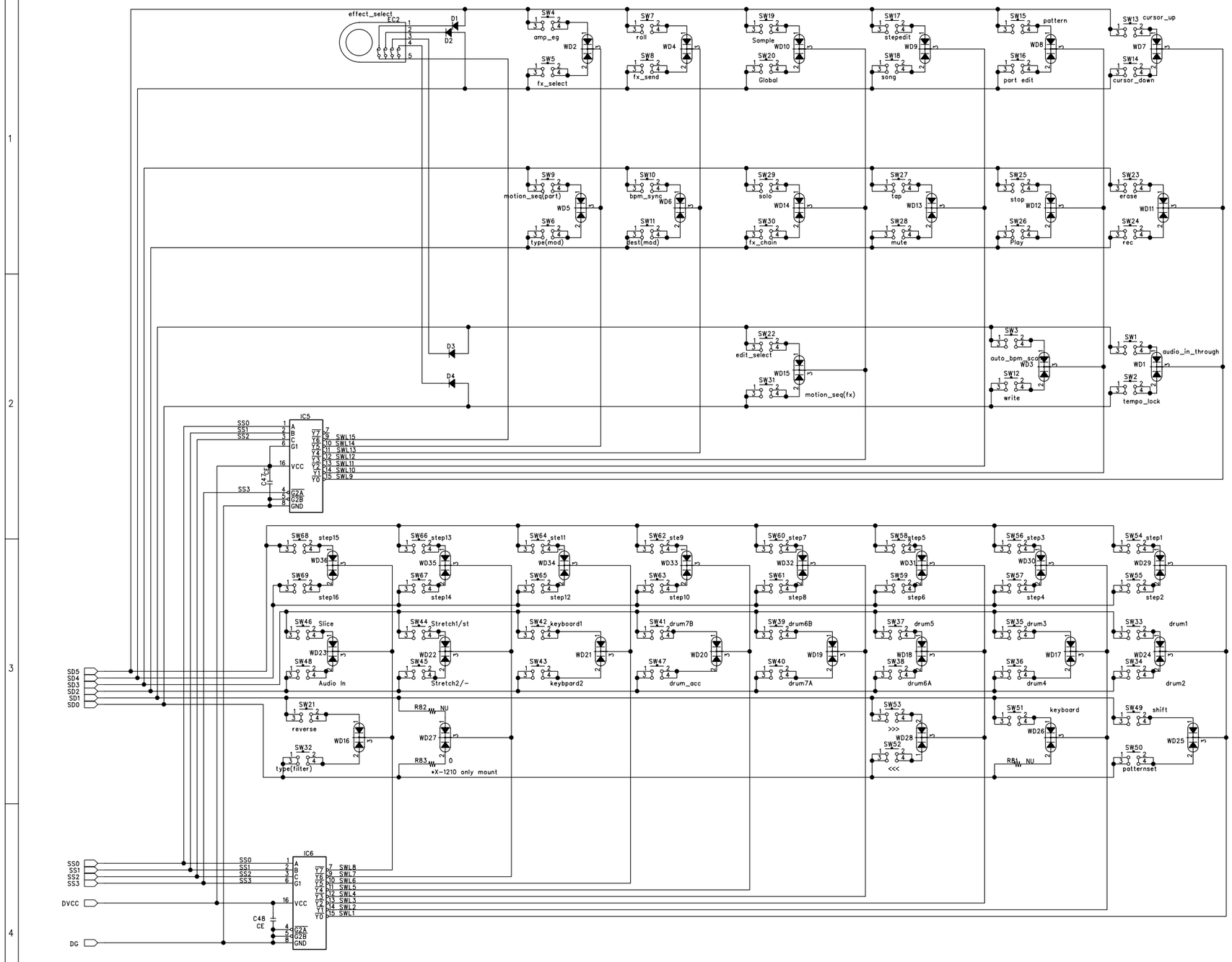






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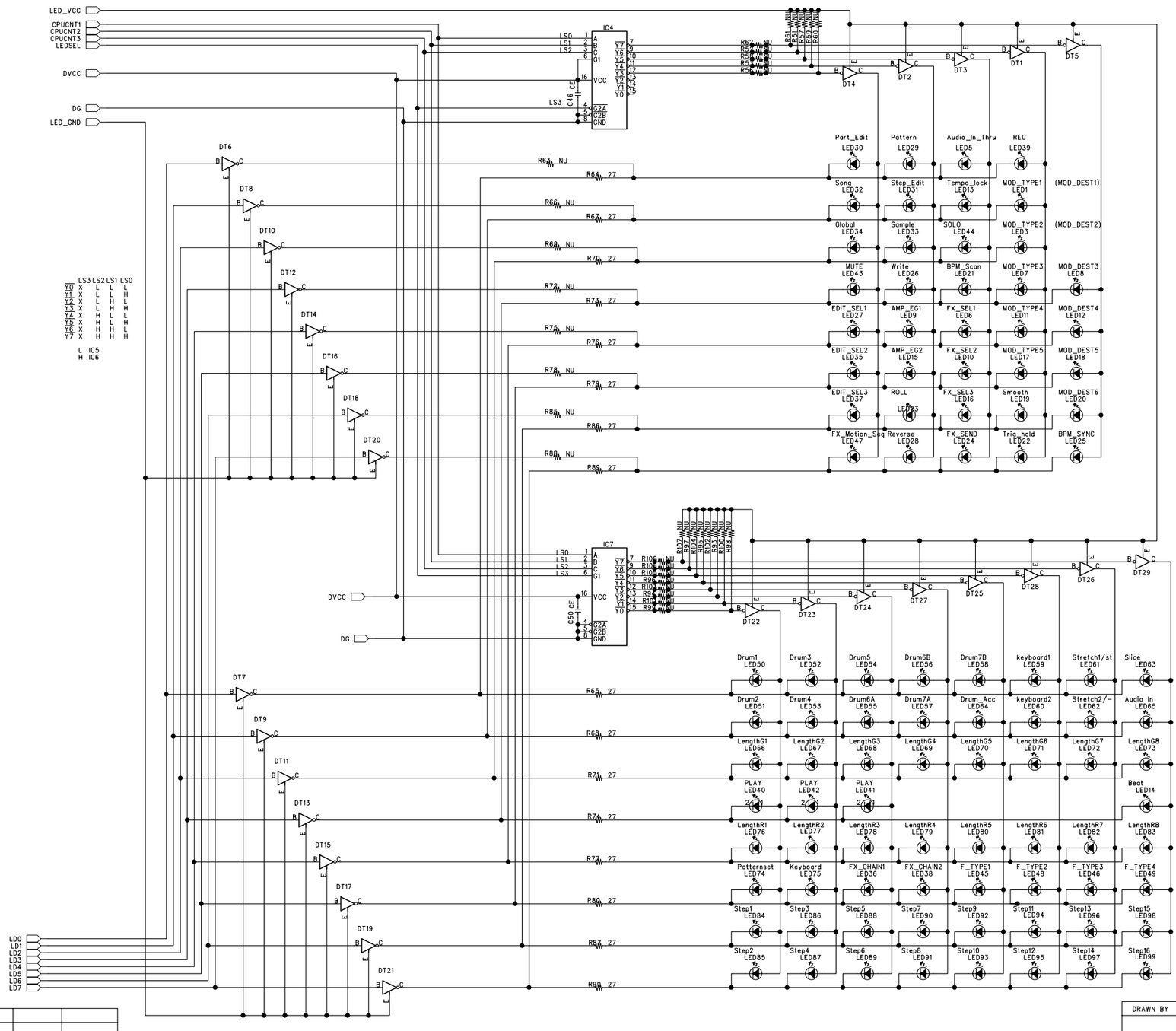
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M.Kuwabara	M.Kuwabara		TITLE Panel PCB KLM-2447 Encoder A/D
KORG	DRAWING NO. KOD-A30556		DATE '03.07.29



WD:MC2838-T12-1

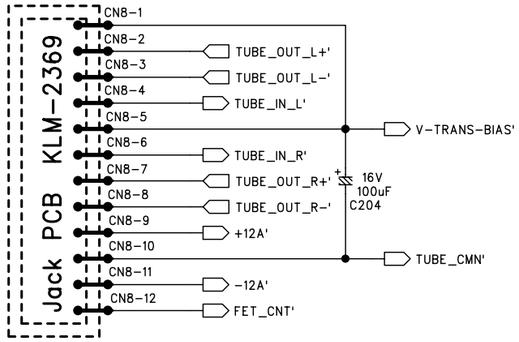
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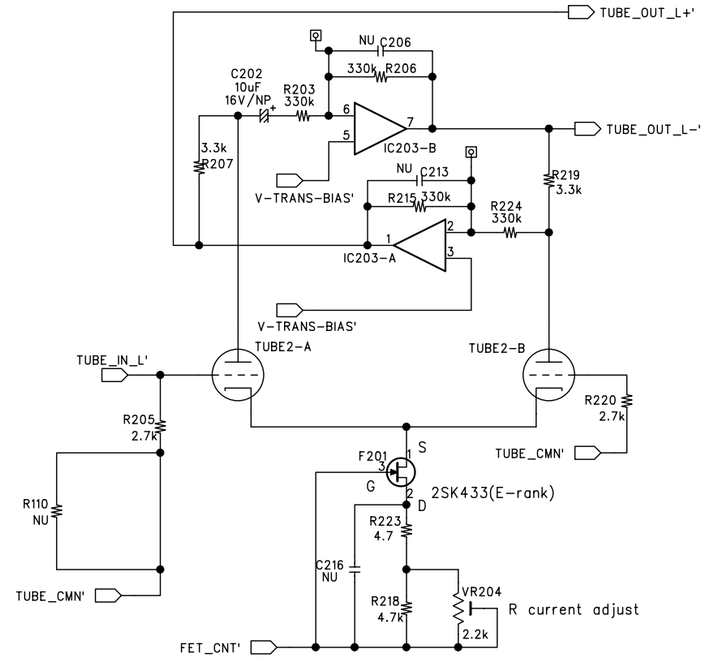
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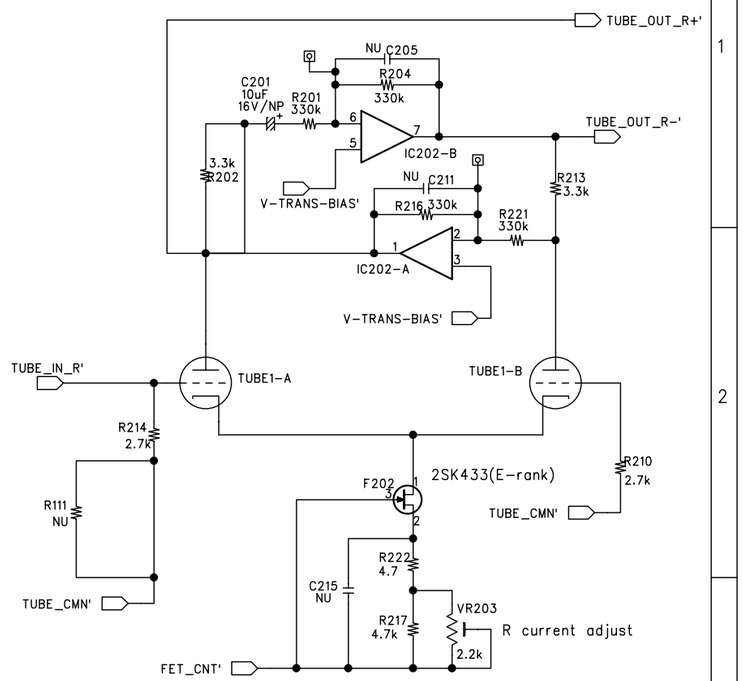


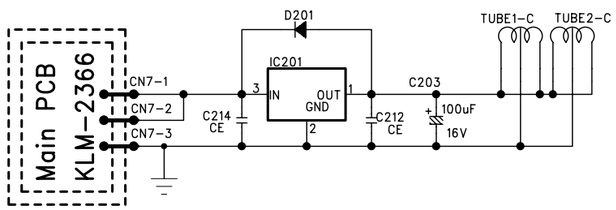
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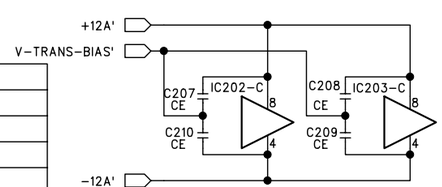
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			TITLE: PANEL PCB LED Matrix KLM-2447
KORG	DRAWING NO. KOD-A30558		DATE '03.07.29











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M.Kuwabara	C.Hirose		TITLE TUBE PCB KLM-2448
KORG	DRAWING NO. KOD-A30559		DATE '03.07.29

Jack PCB

INPUT

STEREO JACK
EMX-1 Mono
ESX-1 Stereo

L
St.

GAIN SW

INPUT VOL.

Heater
6.3V 300mA/Tube

ADC
CODEC
DAC
AK4527B 2in 6out

24bit
FS : 44.1kHz
Format : IIS
DR : 100dB
analog : 5V
digital : 3.3V

Dout
Din
Din

ANALOG +12V,-12V SUPPLY

Gain
TUBE

MASTER VOLUME

MUTE

1/4 PHONE UNBALANCE L/MONO
R

1/4 PHONE STEREO HEADPHONE

OUT 3
OUT 4

DIRECT

CLK
22.5792MHz

74LV163
x3

256FS 11.2896MHz
64FS 2.8224MHz
FS 44.1kHz

SIO

DSP
uPD77213

Din
Dout

SCK
SOEN,SIEN
Int
Int

120MHz
8.33nSec/1inst.
2700 steps
32kx16bitROM
18kx16bitRAM

Reset
Port
INT

DSP Reset

Boot Mode
P3
P2
P1
P0

3.3V/1.5V
CLK
144pin LQFP

120MHz 10MHz x12

Logic
64FS
WCLK
4FS
FS
4FS

Max 16Mbit(1M x16bit)
SRAM
2Mbit(256k x16bit)
55ns
MIO
16bit

HIO 16bit
WE,RE
CS,RD,WR
A0,A1
DREQ x2

50fs = 1.1ms
EMX-1 1400word
ESX-1 1450word

CPU
SH-3/7709S
SDRAM I/F
32k cache
100MHz/3.3V

CS/64MByte x6 area
SDRAM Area x2
Max 128MByte

Port
IRQ
PORT

Inside: 96MHz
Bus: 48MHz
Perpheral: 24MHz
I:B:P=8:4:2

CLK
12MHz
0x2
RESET

8bit
32bit
8bit

Flash
4Mbit

SDRAM pattern song GLOBAL WORK MIDI
64Mbit (4M x16)
EMX-1 64Mbit (4M x16) x2
ESX-1 128Mbit (8M x16) x2

Buffer
Power On

48pinTSSOP
Nand Flash
USER BACKUP
128Mbit
*ESX-1 256Mbit

CLE
ALE
RE
WE
R/B
CE
WPE
I/O1-8

7LINE
8LINES

Smart Media
USER BACKUP
4MB~128MB
WP
CD
Smart Media only

MIDI
IN
OUT
THRU
SCI

DISPLAY
LCDC NJU6468
LCD (Custum)
Ctrl
Data
Power
Back Light LED x2
LCD

digital 5V(LCD)
digital 3.3V

35
=14+13+8

RED LED
GREEN LED
CARBON SW
VR(CC)
VR

4bitEncoder 16 CLICKs
FX Type SEL
Oscillator Type SEL
Encoder
Slider Vr
Ribbon Controller

PANEL PCB

MAIN PCB

AC/AC9V
ADAPTOR
3000mA

POWER SUPPLY
+5V/0.1A(Analog CODEC)
+5V/0.1A(LCD,MIDI)
+3.3V/1A(Smart Media)
+3.3V/1A(Digital)
1.8V/500mA(For CPU Core)
1.5V/150mA(For DSP Core)
+12V/0.5A(Analog)
-12V/0.5A(Analog)
-9V/0.1A(tube)
+6V/1A(tube)

Reset IC
M51957B
To CODEC

NOTEs
BUS
SIGNAL LINE
SERIAL LINE
AUDIO LINE
CLOCK LINE

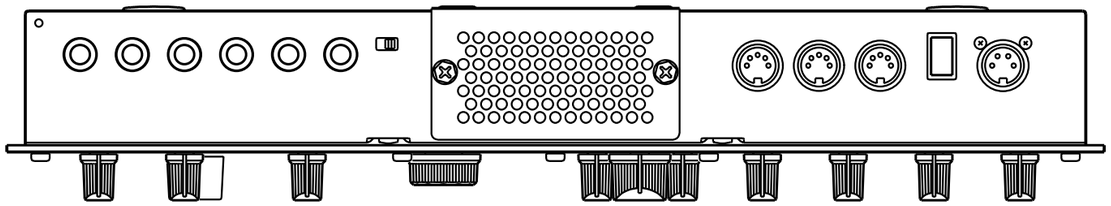
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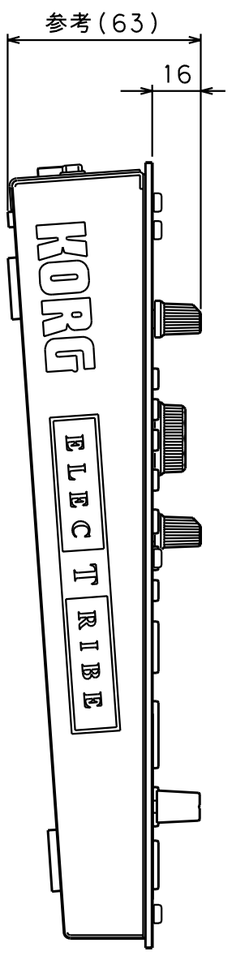
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M.Kuwabara	M.Kuwabara		TITLE: BLOCK DIAGRAM

KORG

DRAWING NO. KOD-B40252

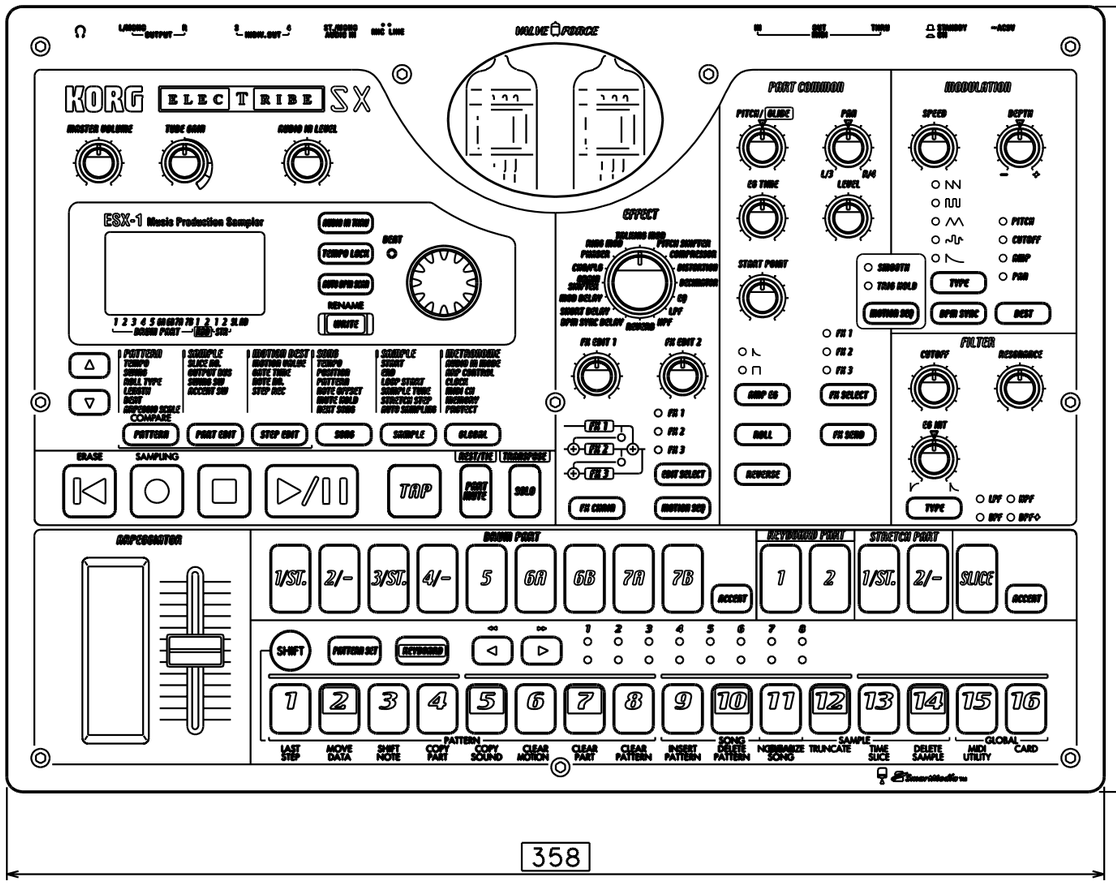
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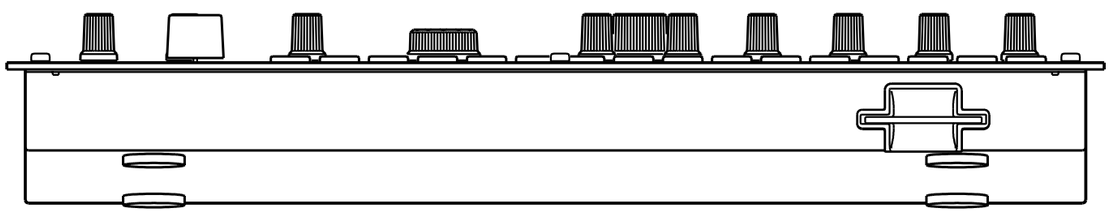
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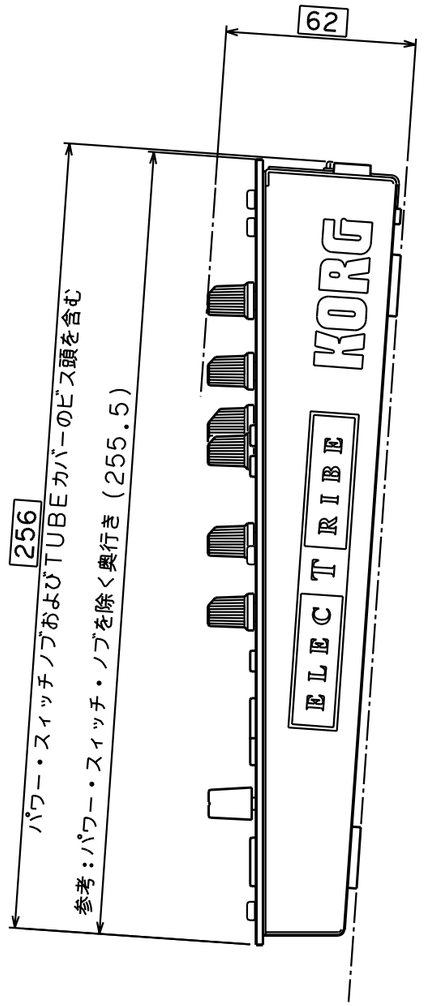
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参考(256)

358





公示寸法表

外形寸法	カタログ公表値	358(W)×256(D)×62(H)
	実測値	358(W)×256.4(D)×61.9(H)
製品重量	カタログ公表値	3.1kg
	実測値	3.05kg

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1	X-1210			ESX-1 外形図		
MODEL		SPECIFICATION		PARTS NAME		PARTS No.
WEIGHT: ××× (g)	DRAWN	CHECKED	APPROVED	TITLE		試作図
	中原 '03/07/31	服部 '03/07/31	安達 '03/07/31	外形図		見積図面
						金型発注図
KORG KORG INC.		SCALE 1/2		DRAWING No. KOC-A30164		量産図面
						総合製作書用図面 ○

A3

ESX-1 Test Mode

How to start and operate the test mode:

ERASE + PATTERN & POWER ON:	Internal test,
ERASE + STEP EDIT & POWER ON:	Adjustment of valve circuit, L/R balance calibration, Tube gain balance measurement
SHIFT + DRUM PART 1 & POWER ON:	Internal skip
SHIFT + DRUM PART 3 & POWER ON:	Audio test

16: Proceed the test

SHIFT + 15: Re-executing the test

▲ : ITEM UP

▼ : ITEM DOWN

▶▶ : STEP UP

◀◀ : STEP DOWN

Requirements:

You will need to make two custom cables and to prepare two SmartMedia cards as indicated below.

- A blank, write protected, SmartMedia card with a capacity of 16MB or greater.
- A 32 MB or larger SmartMedia card containing the factory preload data for the ESX1. The preload file can be downloaded from the Korg USA service web site.
- Custom Y-Cable - ¼" stereo to dual ¼" mono cable with a 2.2 MΩ resistors in series on each of the two signal lines. See image below.

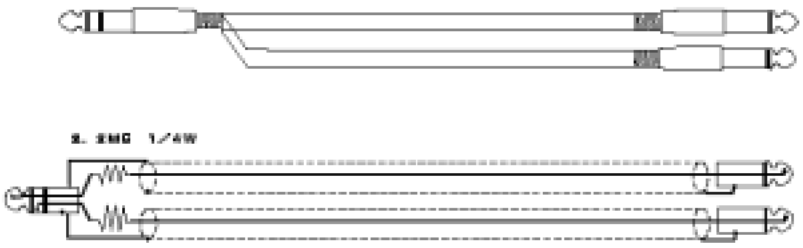


Fig. 1

- Custom Mix Cable - ¼" stereo to ¼" mono cable with the two signal lines mixed to mono via two 2.2 MΩ resistors. See image below.

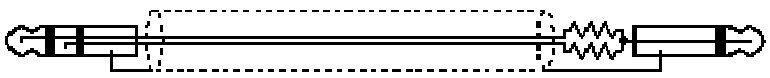


Fig. 2

Test Mode 1 (Internal test).

After replacing the main board, please run the following procedures first.

1. Connect the custom made Y-Cable as follows:

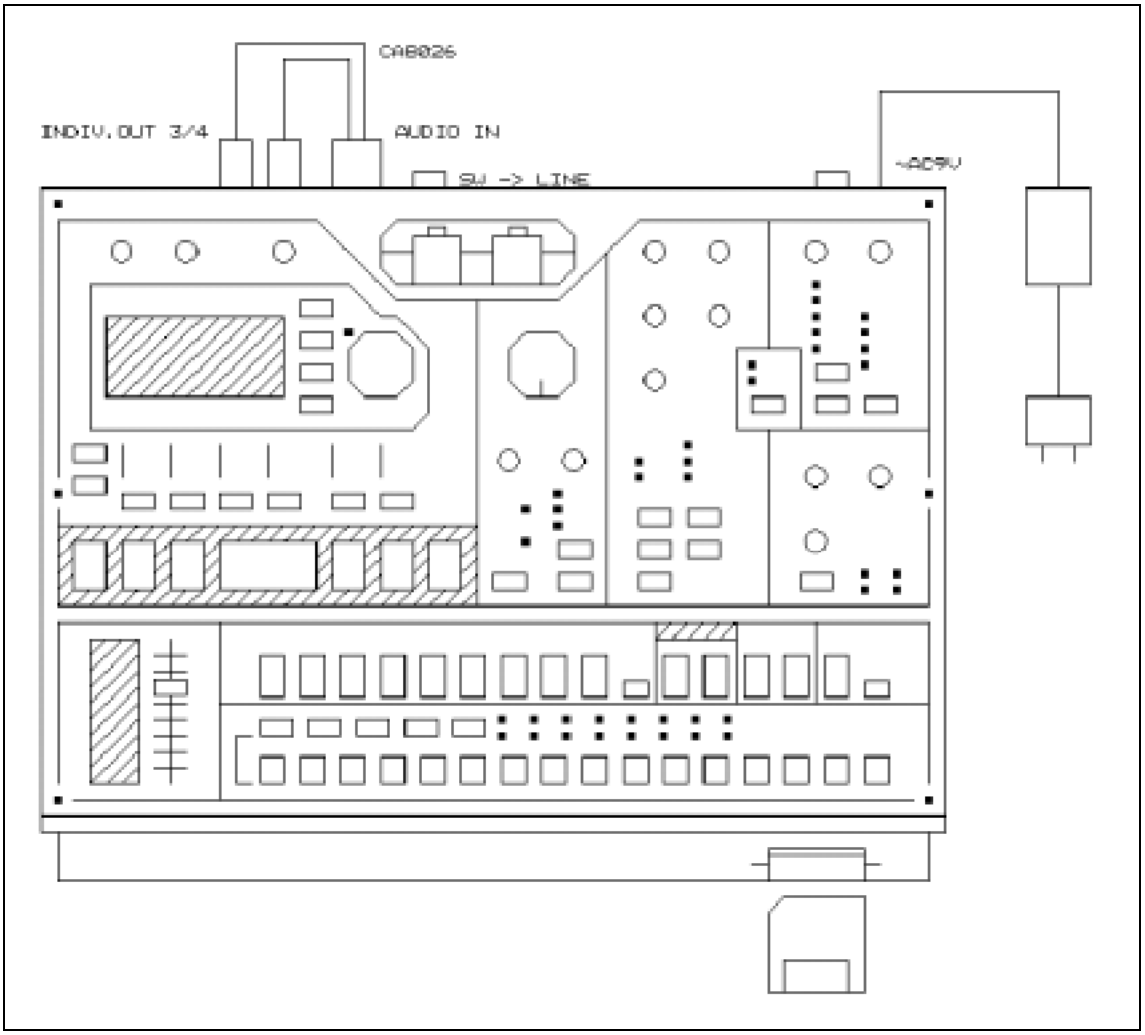


Fig. 3

2. Set up the volume knob and switches as follows.
   [MASTER VOLUME] : MAX
   [TUBE GAIN] : MIN
   [AUDIO IN LEVEL] : MAX
   [MIC/LINE] : LINE
   [EFFECT] : REVERB
3. Press [ERASE] + [PATTERN] + [STANDBY] (POWER ON)
4. When prompted, insert a write-protected 16MB (or larger) SmartMedia card.
5. Executing Internal Device check start....
   If the internal checks works correctly, the test proceeds to the next step automatically.
   If the test stops and "3>L MIC[16]" is displayed, please switch the MIC/LINE switch to “MIC”.
6. Switch and LED check
   "#PANEL" is displayed and all LEDs will be turned on. If all is OK, press [16].

You should now be in the switch test.
Press the switches indicated in the LED. (Start: [AUDIO IN] ..... End:[16])

7. Rotary encoder check <#R.Enc>
   When [RE ->>1>-> +000] is displayed, rotate the Dial knob 24 steps to the right.
   When [RE ->>1>-> +024] is displayed, press [16].
   When [RE <-<1<<- -000] is displayed, rotate Dial knob 24 steps to the right.
   When [RE <-<1<<- +024] is displayed, press [16].

8. Rotary select check <#R.Sel>
   When [BPM SYNC EFFECT] is displayed, rotate the EFFECT knob clockwise, stopping briefly at each position. (BPM SYNC --> SHORT DL --> ..... REVERB)

9. A/D check <#ADC>
   Rotate each knobs to "MIN --> MAX --> MIN".
   NOTE: The knobs labeled below with a (c) have a center detent. Rotate these knobs to the center position after you have tested it through it's range. "MIN --> MAX --> MIN --> CENTER".
   Then proceed to the next knob.

   [PITCH/GLIDE(c)] -> [PAN(c)] -> [SPEED] ->
   [DEPTH(c)] -> [EG TIME(c)] -> [LEVEL]->
   [START POINT] -> [FX EDIT 1] -> [FX EDIT 2] ->
   [CUTOFF] -> [RESONANCE] -> [EG INT(c)]

   The next step is the arpeggiator slider. Move this to "MIN --> MAX --> MIN" also

10. Ribbon check <#Ribbon>
    Touch the Ribbon controller. <Ribbon ***> is displayed.
    Drag upward on the Ribbon. If <Ribbon 127H> is displayed, OK.
    Drag downward on the Ribbon. If <Ribbon 001LH> is displayed, OK.
    Press [16].

11. LCD Dot check <#LCD>
    All the LCD dots light up. If no problem, press [16].
    All the LCD dots turn off. If no problem, press [16].
    Half the LCD dots light followed by the other half, alternatively.

This test is complete. Turn off the STANDBY (POWER) switch.

Test Mode 2 (System Data Loading).

Please run the following procedures after running Test Mode 1.

1. Connect the stereo plug of the custom mix cable to PHONES and the monaural plug to AUDIO IN.

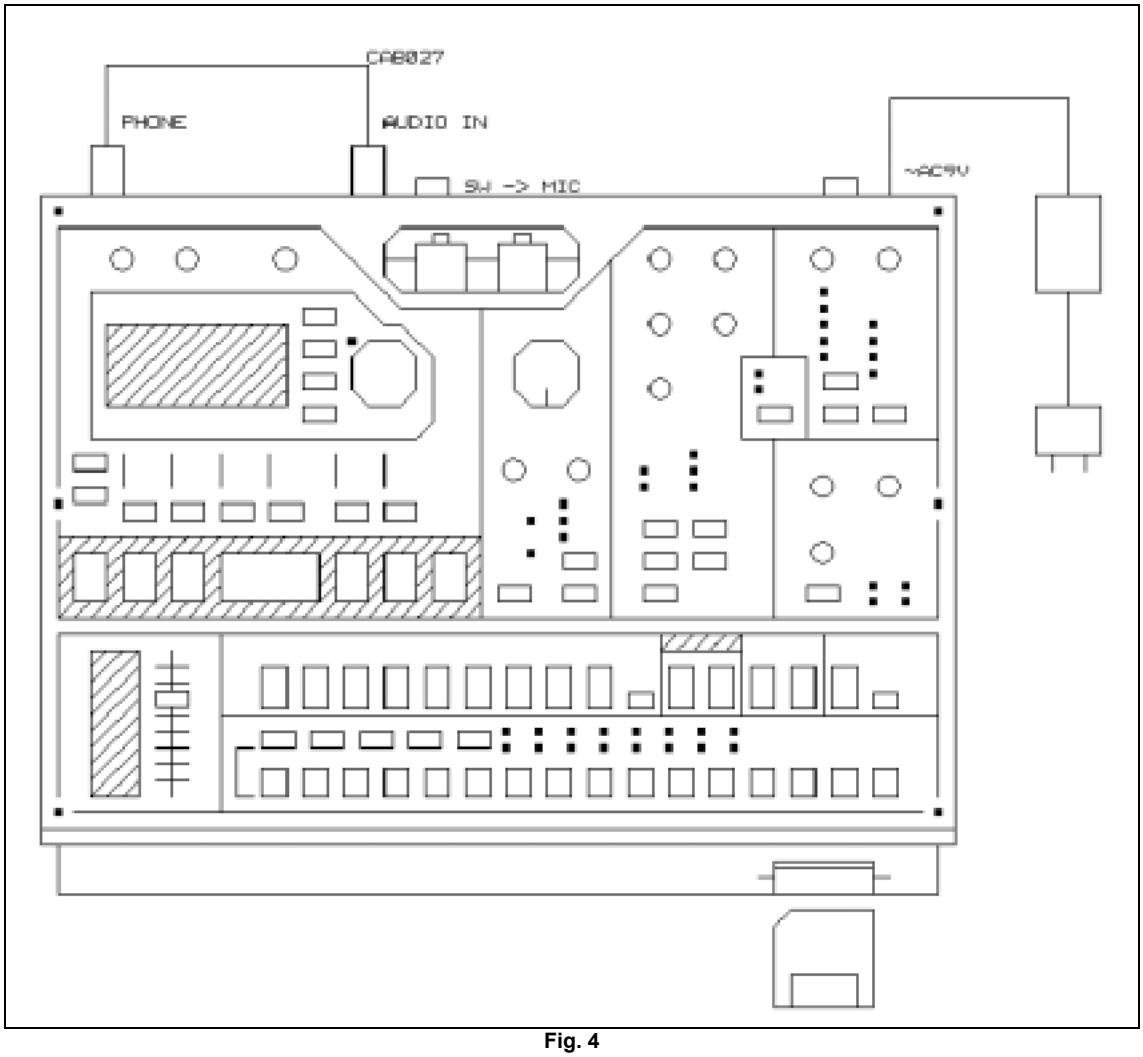


Fig. 4

2. Insert the SmartMedia card containing the factory preload data.
3. Turn the power on while pressing [ERASE] + [PART EDIT].
    1. "<NAND> Fmt OK"
    2. "<NAND> Init"
    3. "<NAND> Format"
    4. "<NAND> Sys Ld"
    5. "<NAND> DSP Ld"
    6. "<NAND> UserLd"
    7. "<NAND> Chking"

NOTE: If the test stops with any of the above indications in the display, press [SHIFT]+[15]. If the data loaded correctly, "Valv Wup ***sec"(000-160sec) will be indicated in the display. Continue on to the Tube Calibration instructions following this section. If any other message is displayed such as "@@@@@ x:$$$", there may have been an error loading the data.

EMX-1/ESX-1 Tube Calibration

1. Connect the stereo plug of the custom mix cable (see fig.) to PHONES and the monaural plug to INPUT.
2. Power on while pressing ERASE and STEP EDIT. “Valv Wup” will be displayed, along with a count-down timer indicating the wait time while the tubes warm up.
3. Set up the volume knob and switches as follows, and wait for the warm-up to complete.
   MASTER VOLUME : MAX
   TUBE GAIN : MIN
   AUDIO IN LEVEL : MAX
   MIC/LINE : MIC
4. When the warm-up is complete, “Ajst (L)” and a 4 digits figure are indicated in the LCD. If the value is less than 0010, the test is O.K.. If the value is over 0010, adjust the valve to obtain 0010 or lower. Adjust the variable resistors which correspond to the channels as shown in the photo below. When done, press button [16] at the bottom right of the panel.

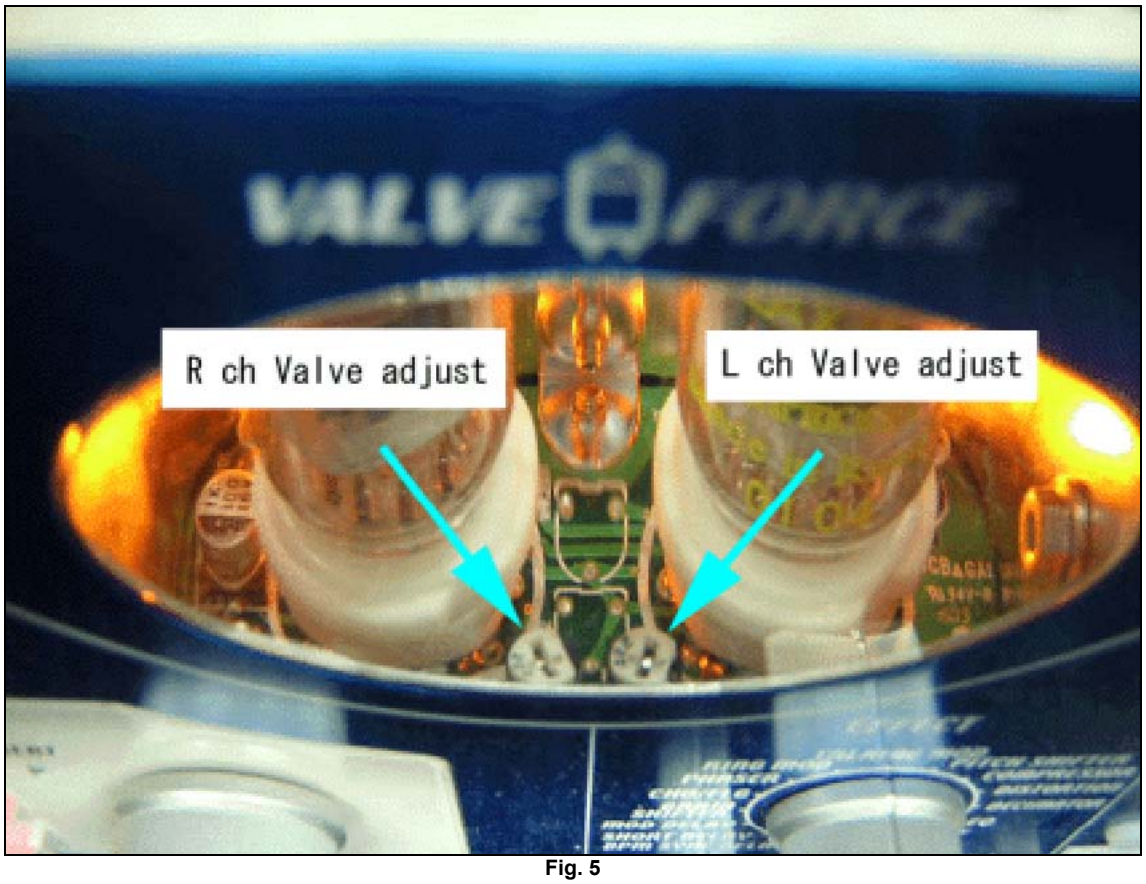


Fig. 5

5. “Ajst (R)” and a 4 digits figure will be indicated in the LCD. If the value is less than 0010, the test is O.K.. If the value is over 0010, adjust the valve to obtain 0010 or lower. Adjust the variable resistors which correspond to the channels as shown in the photo below. When done, press button [16] at the bottom right of the panel..
6. Once the balance of L/R is automatically adjusted, “ValvGMax GainMx” is indicated in the LCD. Turn the TUBE GAIN knob to MAX, and press [16].
7. The Electribe will self check the L/R balance and return to the normal mode.

PART CODE	PART NAME	NOTE	Q'TY
001236601	PCB ASSY KLM-2366 ESX-1	M.PART	1
001236700	PCB ASSY KLM-2367 EMX-1/ESX-1	M.PART	1
001236901	PCB ASSY KLM-2369 ESX-1	M.PART	1
001244700	PCB ASSY KLM-2447/48 ESX-1	M.PART	1
304000070	TR 2SA812-T1B (M5-7) (TS)	KLM-2369	1
304000070	TR 2SA812-T1B (M5-7) (TS)	KLM-2366	1
304010020	TR 2SB1120-F/G (TS)	KLM-2366	1
304020230	TR 2SC3661-TA/TB(3K) (TS)	KLM-2369	6
304020380	DIGITAL TR FP1L2Q-T1B (TS)	KLM-2447/48	13
304050140	DIGITAL TR DTC114EKA T146 (TS)	KLM-2447/48	8
304060070	FET 2SK433-T12-1C (TS)	KLM-2447/48	2
304060250	FET CPH6302-TL(TS)	KLM-2366	1
312051600	LED SLP-190B-51	KLM-2447/48	8
312052300	LED SLP-290B-51	KLM-2447/48	9
314001400	DIODE RLS-73 TE-11 (TS)	KLM-2447/48	9
314001400	DIODE RLS-73 TE-11 (TS)	KLM-2366	1
314030600	DIODE 1SR154-400TE25 (TS)	KLM-2366	10
314030700	DIODE RB051L-40TE25 (TS)	KLM-2447/48	1
314030700	DIODE RB051L-40TE25 (TS)	KLM-2366	2
315000500	DOUBLE DIODE MC-2840-T12-1(TS)	KLM-2366	10
315000600	DOUBLE DIODE MC2838-T12-1 (TS)	KLM-2447/48	36
320001610	IC UPD77213GJ-301-8EN	KLM-2366	1
320004688	IC HD6417709SF100B(S)	KLM-2366	1
320009103	IC NJU6468FG1-00	KLM-2367	1
320012318	IC MBM29LV004TC-90TN(X1210):S	KLM-2366	1
320018007	IC AK4527BVQ (S)	KLM-2366	1
324003025	IC TC7W04FU (TE12L)	KLM-2366	2
324003072	IC TC58256AFT(EL) (TS)	KLM-2366	1
324007002	IC BA10358F-T1(2K) (TS)	KLM-2366	2
324007005	IC BA05FP-E2 (TS)	KLM-2366	1
324009004	IC NJM78L05UA-TE2 (TS)	KLM-2366	1
324009036	IC NJM4556AM-T1	KLM-2369	1
324009039	IC NJM4580M-TE1 (TS)	KLM-2369	4
324009041	IC NJM79L09UA-TE1(TS)	KLM-2366	1
324009048	IC NJM2114M-TE2 (TS)	KLM-2369	3
324009048	IC NJM2114M-TE2 (TS)	KLM-2447/48	3
324009051	IC NJM78M12DLA-TE1(TS)	KLM-2366	1
324009052	IC NJM79M12DLA-TE1(TS)	KLM-2366	1
324011032	IC M51957AFP	KLM-2366	1
324017009	IC RN5RG33AA-TR (TS)	KLM-2366	1
324021014	IC SN74LV138ANS-EL (TS)	KLM-2447/48	4
324021103	IC SN74LV32APWR (TS)	KLM-2366	1
324021105	IC SN74LV245APWR (TS)	KLM-2366	1
324021109	IC SN74LV244APWR (TS)	KLM-2366	1
324021114	IC SN74LV05APWR (TS)	KLM-2366	1
324023008	IC S-8520F33MC-BNS-T2(TS)	KLM-2366	1
324026004	MT48LC8M16A2TG-75TR(TS)128M SD	KLM-2366	2
324046004	IC T15V2M16B-55S (44TSOP2)	KLM-2366	1
334000600	PHOTO COUPLER PC-410K (TS)	KLM-2366	1
335012200	CRYSTAL HC-49US 22.5792MHZ	KLM-2366	1
350002222	SEMI FIXED VR RH0615C J3 2.2K	KLM-2447/48	2
370004500	ROTARY ENCODER EC16B242041SA	KLM-2447/48	1
370005700	4BIT ENCODER REB161PVB20FHGRY1	KLM-2447/48	1

PART CODE	PART NAME	NOTE	Q'TY
375014800	PSW SDKLA10200	KLM-2366	1
405013500	AC ADAPTER KA-161E 100V	M.PART 100JP	1
405013600	AC ADAPTER KA-163E 120V	M.PART 117EX	1
405013600	AC ADAPTER KA-163E 120V	M.PART 117US	1
405013600	AC ADAPTER KA-163E 120V	M.PART 117CN	1
405013700	AC ADAPTER KA-165E 240V	M.PART 240AU	1
405013800	AC ADAPTER KA-169E 230V	M.PART 230UK	1
405013800	AC ADAPTER KA-169E 230V	M.PART 230WG	1
405013800	AC ADAPTER KA-169E 230V	M.PART 230FR	1
405013800	AC ADAPTER KA-169E 230V	M.PART 230GE	1
415004500	TOUCH SHEET FS-MR048-08 10KS	M.PART	1
454012707	DIN SOCKET DJ-004-C	KLM-2366	1
454012709	DIN SOCKET DS-05-02(W/OUT SW)	KLM-2366	3
474029500	S-M CONNECTOR CN015R-3013-0	KLM-2366	1
540023500	POWER PLUG ECP01 05A	M.PART 230UK	1
620018200	POWER SW KNOB KOC-E40224	M.PART	1
644003000	X-507 GND SPRING KOC-C46014	M.PART	1
646077600	X-0400 BL PLATE KOC-E40525	M.PART	1
*12AX7EH	TUBE 12AX7EH	M.PART	2
*312X120000	LED MT-12-21 UYC-A6 (YELLOW)	KLM-2367	2
*312X120001	CHIP LED SML-212VTT86 (RED)	KLM-2447/48	77
*312X120002	CHIP LED KM2520MGC03 (GREEN)	KLM-2447/48	3
*312X120003	CHIP LED SML-212YT (YELLOW)	KLM-2447/48	2
*313X120000	LCD DLC-90102G4GF	M.PART	1
*324X040005	IC TC7WHU04FK	KLM-2366	2
*324X040007	IC TC7WH74FK	KLM-2366	1
*324X040008	IC TC7WH08FK	KLM-2366	1
*324X120001	IC S-L2980A15PN-C6ATF	KLM-2366	1
*324X120002	IC NJU7223DL1-18	KLM-2366	1
*324X120003	IC HD74LV163A	KLM-2366	3
*324X120004	IC HD74LV14A	KLM-2366	1
*324X120005	IC SN74LV126APWR	KLM-2367	1
*324X120006	IC SN74AHCT244PWR	KLM-2367	1
*324X120007	IC SN74LV4052ANS (TS)	KLM-2447/48	2
*324X120008	IC NJM7806FA	KLM-2447/48	1
*335X120000	CRYSTAL OSC HC-49US 12.00MHZ	KLM-2366	1
*335X120001	CRYSTAL OSC HC-49US 10.00MHZ	KLM-2366	1
*362X120000	VR R1111NOA-V1B103FH00-00 10KB	KLM-2447/48	8
*362X120001	VR R1111NOA-V1B103FH01-00 10KB	KLM-2447/48	4
*362X120002	VR R1111RGOA-V1B103FH00 10KBX2	KLM-2447/48	2
*362X120003	VR R1111GOA-V1B503FH00 50KBX2	KLM-2447/48	1
*365X120000	SVR RS45111C6008 10KB	KLM-2447/48	1
*373X150000	SLIDE SW SK-22D06G8	KLM-2369	1
*404X040001	CHIP INDUCTOR C6-K3.0L 10UH	KLM-2366	1
*404X051000	CHIP INDUCTOR BLM21BD102SN1	KLM-2369	8
*404X120001	CHIP INDUCTOR BLM41PG102SN1D	KLM-2369	2
*404X120001	CHIP INDUCTOR BLM41PG102SN1D	KLM-2366	3
*404X120002	CHOKE COIL WBR6H-3T-Y2F	KLM-2366	2
*404X120003	CHOKE COIL PLH10AN1112R6P2B	KLM-2366	1
*404X120004	CHIP INDUCTOR C13-K4.5L 22UH	KLM-2366	1
*404X121000	CHIP INDUCTOR BLM18BD102SN1D	KLM-2366	48
*454X120000	PHONE JACK PJ-603AG	KLM-2369	6
*464X120000	CHIP FUSE 0433.750NR	KLM-2366	1

PART CODE	PART NAME	NOTE	Q'TY
*471X120000	PIN HEADER JS-1125-3	KLM-2366	1
*471X120001	PIN HEADER JS-1125-10	KLM-2366	1
*471X120002	PIN HEADER JS-1125-15	KLM-2366	1
*471X120003	FLAT CABLE CONNECTOR BA-40R	KLM-2366	1
*471X120004	PIN HEADER JS-1125-6	KLM-2369	1
*471X120005	PIN HEADER JS-1125-8	KLM-2369	1
*471X120006	PIN HEADER JS-1125-12	KLM-2369	1
*471X120007	PIN HEADER JS-1125-7	KLM-2369	1
*471X120008	FPC CONNECTOR 5597-05APB	KLM-2447/48	1
*475X120000	HARNESS HNS-3215 BOARD IN	KLM-2367	1
*475X120001	HARNESS HNS-3214 BOARD IN	KLM-2369	1
*475X120002	HARNESS HNS-3219 BOARD IN	KLM-2447/48	1
*475X120003	HARNESS HNS-3217 BOARD IN	KLM-2447/48	1
*475X120004	HARNESS HNS-3218 BOARD IN	KLM-2447/48	1
*475X120005	HARNESS HNS-3220 BOARD IN	KLM-2447/48	1
*475X120006	HARNESS HNS-3216 BOARD IN	KLM-2447/48	1
*475X120007	HARNESS HNS-3213 BOARD IN	KLM-2447/48	1
*480X120000	TUBE SOCKET 9PINPCG2C9-Y	KLM-2447/48	2
*500X040000	INTER CONNECTOR YP L58XH6.0XW2	M.PART	2
*500X851003	X-8510 RUBBER LEG KOC-F40709	M.PART	4
*575X120000	LED SPACER LEDH-6	KLM-2447/48	1
*575X120001	LED HOLDER KOC-E30318	KLM-2447/48	1
*580X120000	X-1200 LENS SHEET KOC-F41050	M.PART	2
*620X120000	X-1200 PATTERN KEY KOC-E30294	M.PART	1
*620X120004	X-1200 SLIDER KNOB KOC-E40557	M.PART	1
*620X120005	X-1200 VR KNOB-S KOC-E30312	M.PART	15
*620X120006	X-1200 VR KNOB-L KOC-E30313	M.PART	1
*620X120007	X-1200 ENCODER KNOB KOC-E30301	M.PART	1
*620X121000	X-1210 PART KEY KOC-E30295-2	M.PART	1
*620X121001	X-1210 EDIT KEY KOC-E30296-2	M.PART	1
*620X121002	X-1210 SELECT KEY-S E30298	M.PART	1
*630X040000	X-0400 REFLECTION SHEET F40971	M.PART	1
*630X040001	X-0400 SHEET KOC-F40972	M.PART	1
*630X120001	X-1200 TUBE LENS KOC-E30302	M.PART	1
*641X120001	X-1200 PANEL CHASSIS C20394	M.PART	1
*641X120002	X-1200 BOTTOM CASE KOC-C20395	M.PART	1
*641X120003	X-1200 TUBE BRACKET C30598	M.PART	1
*641X120004	X-1200 TUBE COVER KOC-C41286	M.PART	1
*641X120005	X-1200 TOUCH SHEET BRACKET	M.PART	1
*641X121000	X-1210 PANEL KOC-C20393	M.PART	1
*646X120000	X-1200 SW FRAME KOC-E10206	M.PART	1
*646X120001	X-1200 SM SLOT KOC-E20224	M.PART	1