iPod® INTERFACE

KCA-IP500

SERVICE MANUAL

KENWOOD

Kenwood Corporation

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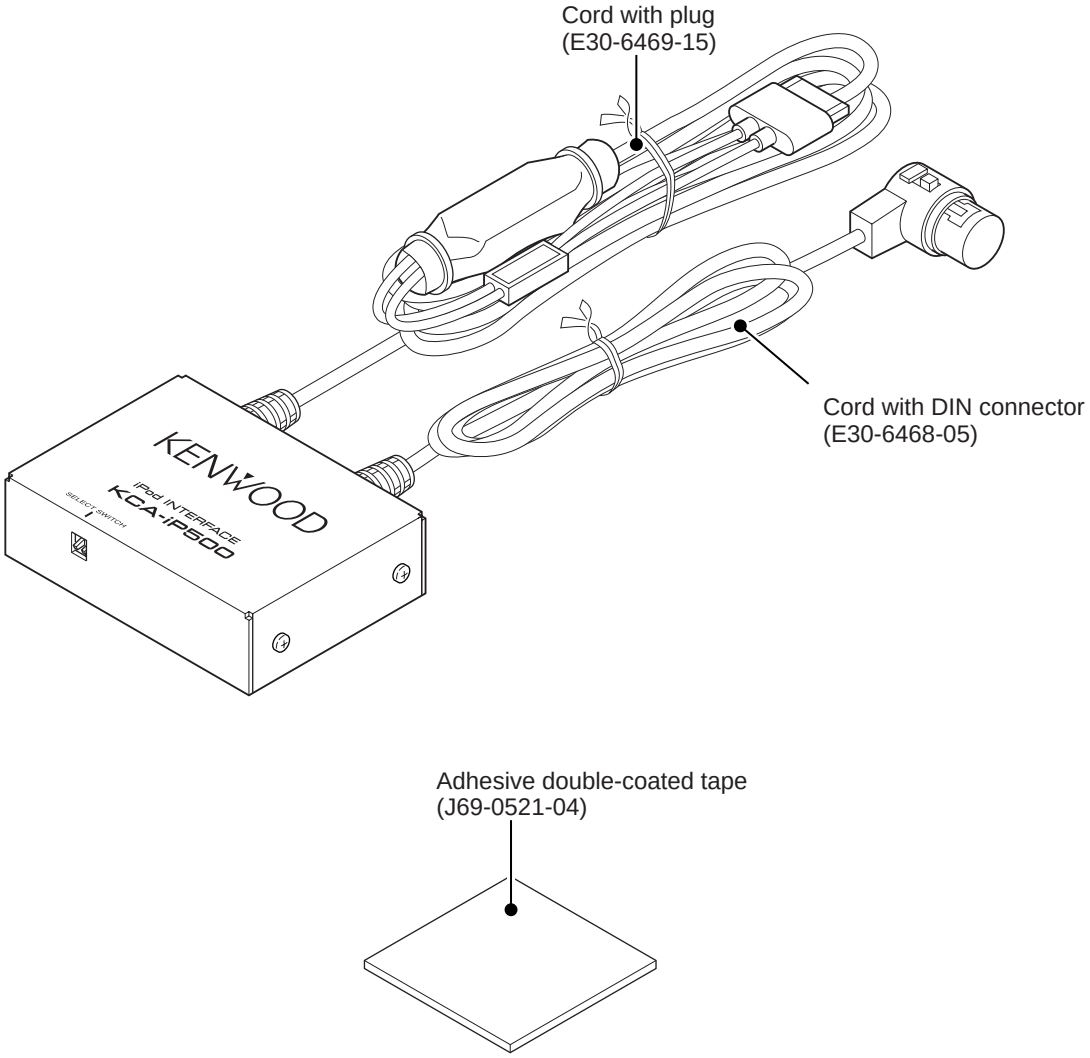
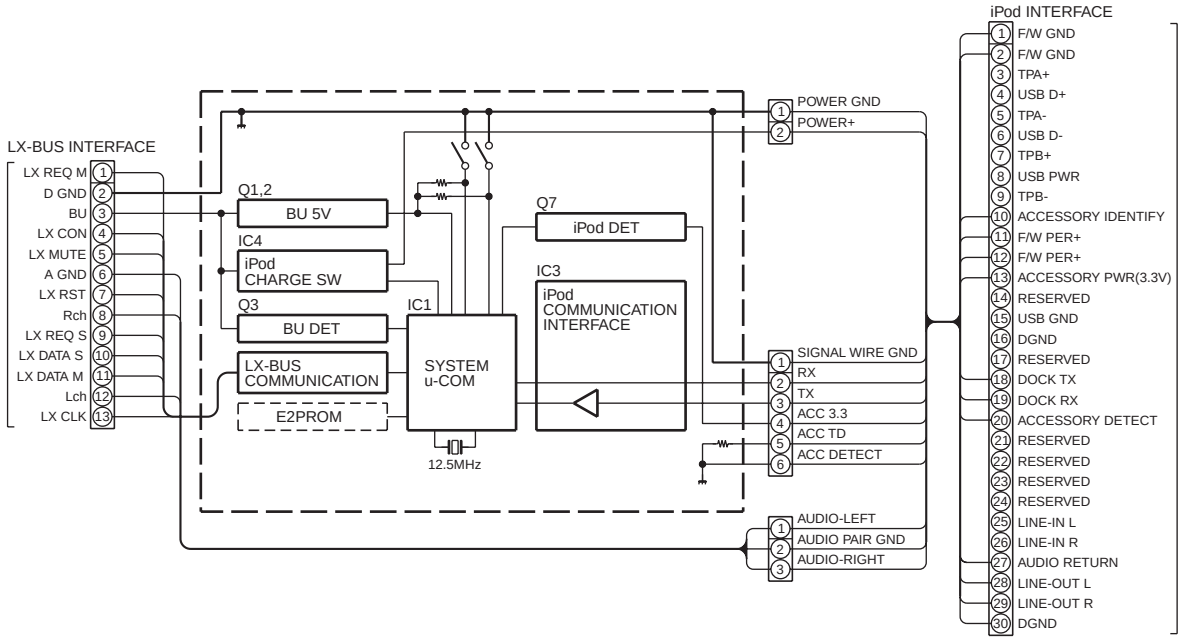


This product uses Lead Free solder.

BLOCK DIAGRAM



COMPONENTS DESCRIPTION

● CONTROL CIRCUIT UNIT (X29-4410-00)

Ref. No.	Application / Function	Operation / Condition / Compatibility
IC1	Communication control μ-com	iPod commands and LX-BUS commands are inter-converted.
IC2	Resetting IC	When voltage of BU 5V decreases to 3.6V or less, Lo is output.
IC3	Buffer	3.3V → 5V level shifter buffer
IC4	+8.5V AVR	iPod re-charging DC/DC converter power supply.
Q1,2	BU 5V AVR	When BU is impressed, 5V is output. Q1 and Q2 are inverted darlington connected.
Q3	BU detection SW	When momentary power down and BU are detected, base is turned to Lo and Q3 goes off.
Q4	Resetting SW	When system reset is turned on, base becomes Hi and Q4 is turned on.
Q5	Changer control SW	When in CH CON or CH CON2 modes, base is turned to Hi and Q5 is turned on.
Q6	Changer mute SW	When mute request is output to H/U, base is turned to Lo and Q6 is turned on.
Q7	iPod connection detection SW	When an iPod is connected, base is turned to Hi and Q7 is turned on.

MICROCOMPUTER'S TERMINAL DESCRIPTION

● MICROCOMPUTER 30302MCP070GP (IC1 : X29)

Pin No.	Active (H/L)	Pin Name	I/O	Application	Processing / Operation / Description
1~5		N.C	O	Not used.	
6		BYTE	I	External data bus switching input	Connected to GND.
7	H	CNVSS	I	CNVSS	Connected to GND via register.
8,9		N.C	O	Not used.	

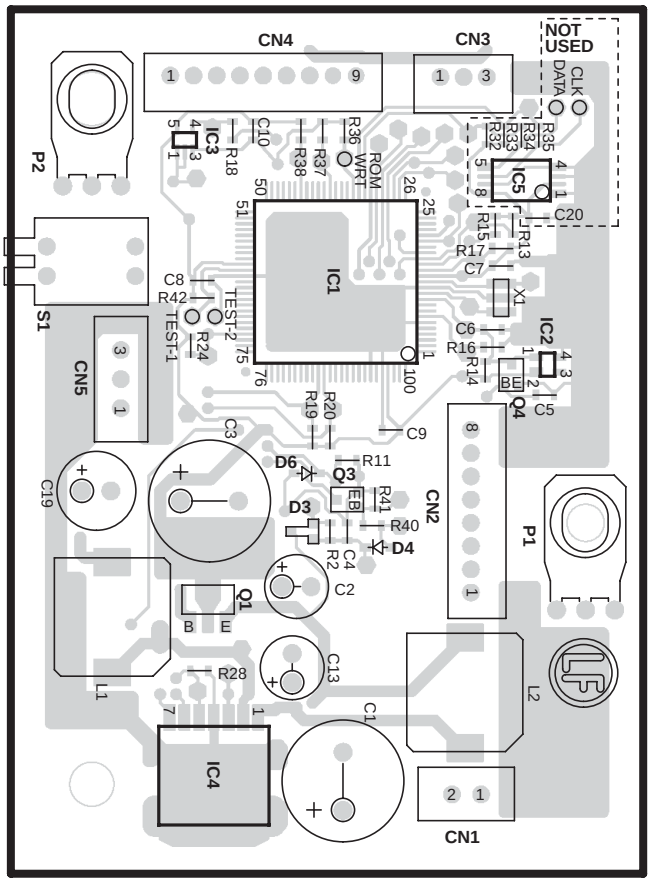
MICROCOMPUTER'S TERMINAL DESCRIPTION

Pin No.	Active (H/L)	Pin Name	I/O	Application	Processing / Operation / Description
10	H	LX_RST	I	Hard-resetting to the slave unit	H : Normal, L : Reset
10	L	RESET	I	Reset input	Reset IC or LX_RST input, H : Normal, L : Reset
11		XOUT	O	Main clock output	Connected to Ceralock resonator (12.5MHz)
12		VSS	I	Power supply input	Connected to GND
13		XIN	I	Main clock input	Connected to Ceralock resonator (12.5MHz)
14		VCC1	I	Power supply input	Connected to B.U 5V
15		NMI	I	NMI interruption input	Connected to B.U 5V via register.
16	L	BU_DET	I	Momentary power down detection	B.U voltage detection, H : When down, L : Normal
17	L	LX_CON	I	Startup request to the slave unit	H : Slave unit OFF, L : Slave unit ON
18		LX_REQ_M	I	Communication request to the slave unit	
19		N.C	O	Not used.	
20	H	LX_MUTE	O	Mute request from slave unit	L : Mute ON, H : Mute OFF
21	H	Charger Con	O	iPOD recharging control	iPod re-charging power supply circuit control H : iPod re-charging power supply circuit ON L : iPod re-charging power supply circuit OFF
22~26		N.C	O	Not used.	
27		DATAI	I	Data from iPOD	
28		DATAG	O	Data to iPOD	
29		LX_DATA_S	O	Data from slave unit	
30		LX_DATA_M	I	Data to slave unit	
31		LX_CLK	I	LX BUS clock	
32		LX_REQ_S	O	Communication request from slave unit	
33		ROM_SDA	I/O	ROM correction E2PROM data	
34		ROM_SCL	I/O	ROM correction E2PROM clock	
35	H	ROM_WR	I	ROM correction E2PROM write mode setting	EEPROM write recognition terminal H : EEPROM write, L : Normal
36~38		N.C	O	Not used.	
39	L	FLASH_EPM	I	μ-com flash EPM	Connected to GND via register.
40~43		N.C	O	Not used.	
44	H	FLASH_CE	I	μ-com flash CE	Connected to B.U 5V via register.
45~59		N.C	O	Not used.	
60		VCC2	I	Power supply input	Connected to B.U 5V.
61		TEST	I	Test mode setting	L : Test mode, H : Normal
62		VSS	I	Power supply input	Connected to GND.
63~71		N.C	O	Not used.	
72	L	iPOD_DET	I	iPOD connection detection	iPod connection detection H : iPod not connected, L : iPod connected
73~84		N.C	O	Not used.	
85,86	L	SW1, SW2	O	Switch for mode switching	Connection unit recognition SW
87~93		N.C	O	Not used.	
94		AVSS	I	Analog power supply input	Connected to GND.
95		N.C	O	Not used.	
96		VREF	I	Reference voltage input	Connected to GND.
97		AVCC	I	Analog power supply input	Connected to B.U 5V.
98~100		N.C	O	Not used.	

PC BOARD

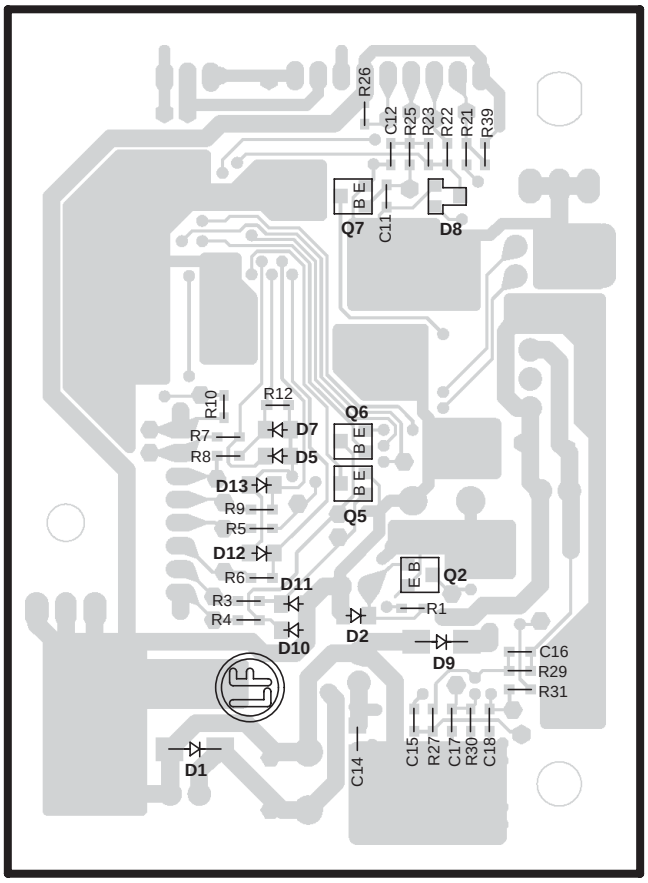
(COMPONENT SIDE VIEW)

CONTROL CIRCUIT UNIT X29-4410-00 (J76-0129-12)



(FOIL SIDE VIEW)

CONTROL CIRCUIT UNIT X29-4410-00 (J76-0129-12)



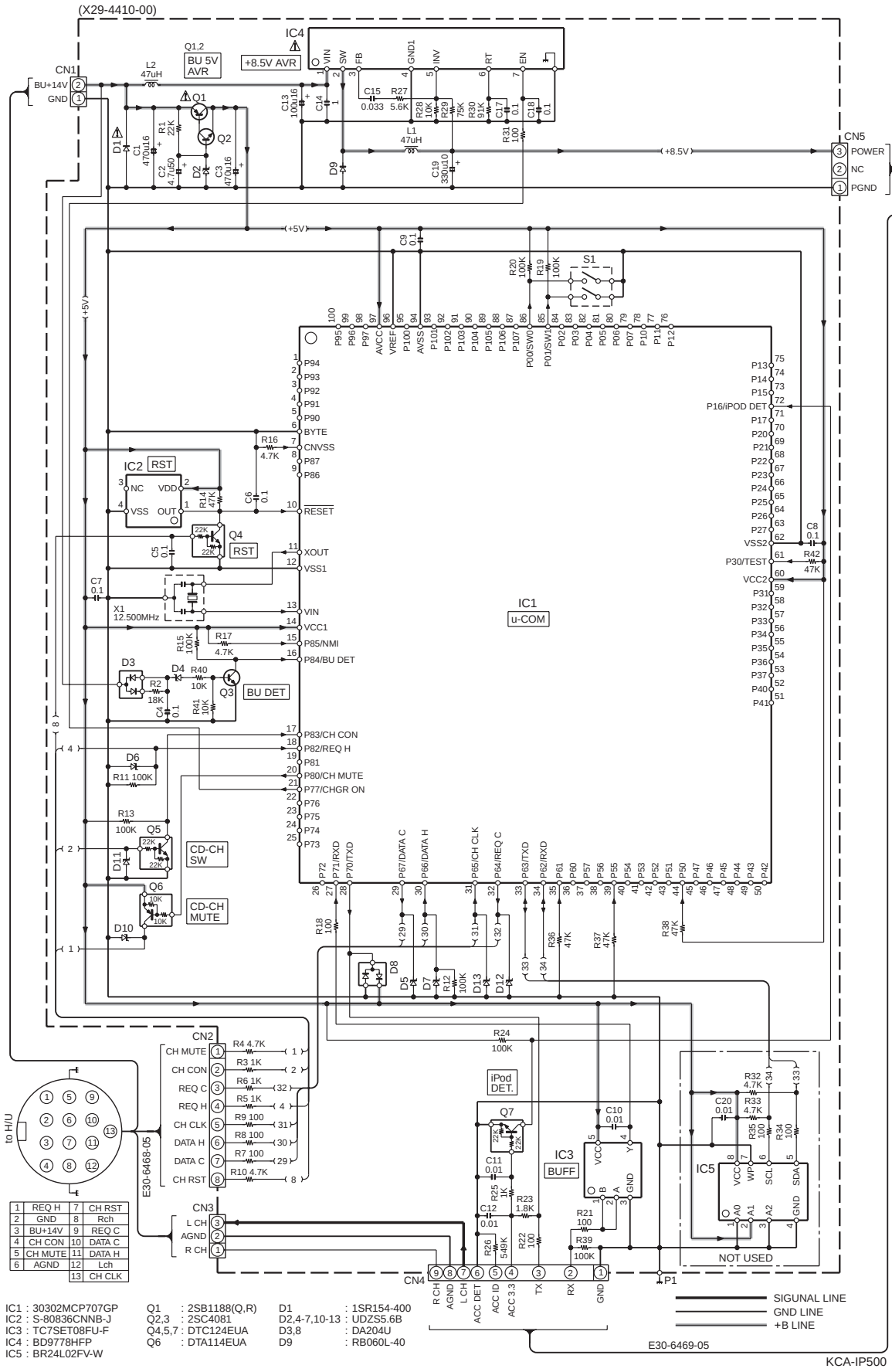
X29-4410-00

Ref. No.	Address
IC1	2B
IC2	3C
IC3	2B
IC4	4B
Q1	3B
Q3	3B
Q4	3C

X29-4410-00

Ref. No.	Address
Q2	3E
Q5	3E
Q6	3E
Q7	2E

Refer to the schematic diagram for the values of resistors and capacitors.



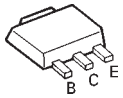
1	REQ H	7	CH RST
2	GND	8	Rch
3	BU+14V	9	REQ C
4	CH CON	10	DATA C
5	CH MUTE	11	DATA H
6	AGND	12	Lch
		13	CH CLK

IC1 : 30302MCP707GP
IC2 : S-80836CNNB-J
IC3 : TC7SET08FU-F
IC4 : BD9778HFP
IC5 : BR24L02FV-W

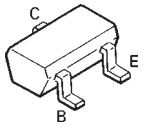
Q1 : 2SB1188(Q,R)
Q2,3 : 2SC4081
Q4,5,7 : DTC124EUA
Q6 : DTA114EUA

D1 : 1SR154-400
D2,4-7,10-13 : UDZS5.6B
D3,8 : DA204U
D9 : RB060L-40

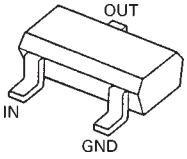
2SB1188



2SC4081

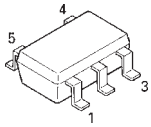


DTA114EUA
DTC124EUA



DA204U

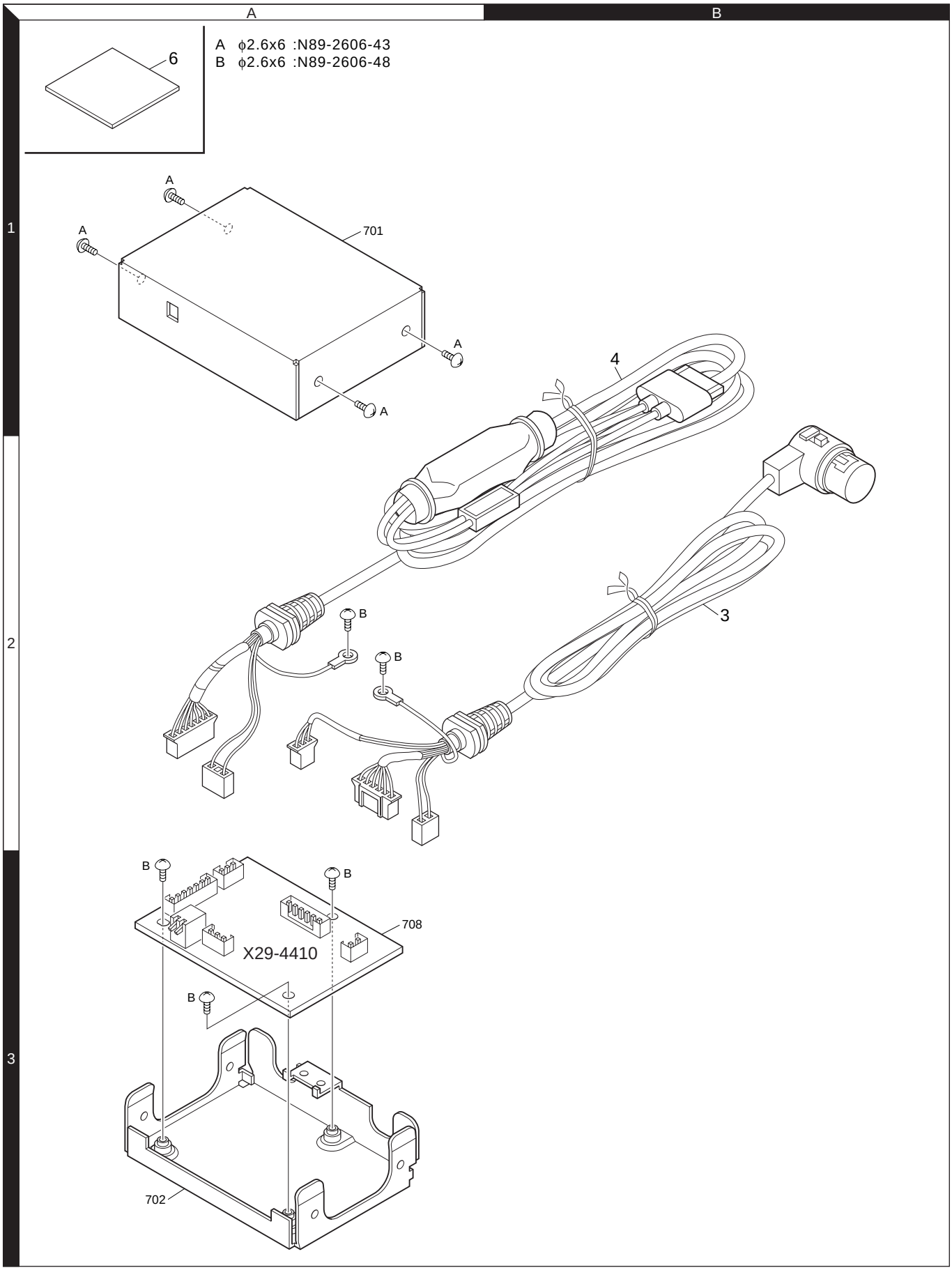
TC7SET08FU-F



CAUTION : For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list).
⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.

- DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

EXPLODED VIEW



Parts with the exploded numbers larger than 700 are not supplied.

PARTS LIST

✻ New parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

Ref. No.	Add	New	Parts No.	Description	Destination
KCA-IP500					
-			B46-0100-50	WARRANTY CARD	
-		✻	B58-1433-04	CAUTION CARD	
-		✻	B64-3055-00	INSTRUCTION MANUAL (ENG,FRE,GER,DUT,ITA,SPA,T-CHI)	
3	2B	✻	E30-6468-05	CORD WITH DIN CONNECTOR	
4	1B	✻	E30-6469-15	CORD WITH PLUG	
-			H25-0337-04	PROTECTION BAG (180X300X0.03)	
-			H25-1111-04	PROTECTION BAG (280X450X0.03)	
-		✻	H54-3479-03	ITEM CARTON CASE	
6	1A	✻	J69-0521-04	ADHESIVE DOUBLE-COATED TAPE	
A	1A	✻	N89-2606-43	BINDING HEAD TAPTITE SCREW	
B	2A		N89-2606-48	BINDING HEAD TAPTITE SCREW	
CONTROL CIRCUIT UNIT (X29-4410-00)					
C1			CD04BJ1C471M	ELECTRO 470UF 16WV	
C2			CD04BJ1H4R7M	ELECTRO 4.7UF 50WV	
C3			CD04BJ1C471M	ELECTRO 470UF 16WV	
C4-9			CK73GB1H104K	CHIP C 0.10UF K	
C10-12			CK73GB1H103K	CHIP C 0.010UF K	
C13		✻	CD04BD1C101M	ELECTRO 100UF 16WV	
C14			CK73FB1C105K	CHIP C 1.0UF K	
C15			CK73GB1H333K	CHIP C 0.033UF K	
C17,18			CK73GB1H104K	CHIP C 0.10UF K	
C19		✻	CD04BD1A331M	ELECTRO 330UF 10WV	
CN1		✻	E41-0955-05	PIN ASSY	
CN2		✻	E41-0933-05	PIN ASSY	
CN3			E41-0928-05	PIN ASSY	
CN4			E41-0934-05	PIN ASSY	
CN5			E41-0956-05	PIN ASSY	
L1,2		✻	L33-2268-05	CHOKE COIL	
X1			L78-0891-05	RESONATOR (12.5M)	
R1			RK73GB2A223J	CHIP R 22K J 1/10W	
R2			RK73GB2A183J	CHIP R 18K J 1/10W	
R3			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R4			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R5,6			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R7-9			RK73GB2A101J	CHIP R 100 J 1/10W	
R10			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R11-13			RK73GB2A104J	CHIP R 100K J 1/10W	
R14			RK73GB2A473J	CHIP R 47K J 1/10W	
R15			RK73GB2A104J	CHIP R 100K J 1/10W	
R16,17			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R18			RK73GB2A101J	CHIP R 100 J 1/10W	
R19,20			RK73GB2A104J	CHIP R 100K J 1/10W	
R21,22			RK73GB2A101J	CHIP R 100 J 1/10W	
R23			RK73GB2A182J	CHIP R 1.8K J 1/10W	
R24			RK73GB2A104J	CHIP R 100K J 1/10W	
R25			RK73GB2A102J	CHIP R 1.0K J 1/10W	
R26		✻	RK73GH2A5493D	CHIP R 549K D 1/10W	
R27			RK73GB2A562J	CHIP R 5.6K J 1/10W	
R28			RK73GB2A103J	CHIP R 10K J 1/10W	

Ref. No.	Add	New	Parts No.	Description	Destination
R29			RK73GB2A753J	CHIP R 75K J 1/10W	
R30			RK73GB2A913J	CHIP R 91K J 1/10W	
R31			RK73GB2A101J	CHIP R 100 J 1/10W	
R32,33			RK73GB2A472J	CHIP R 4.7K J 1/10W	
R36-38			RK73GB2A473J	CHIP R 47K J 1/10W	
R39			RK73GB2A104J	CHIP R 100K J 1/10W	
R40,41			RK73GB2A103J	CHIP R 10K J 1/10W	
R42			RK73GB2A473J	CHIP R 47K J 1/10W	
S1			S79-0804-05	DIP SWITCHES	
D1			1SR154-400	DIODE	
D2			UDZS5.6B	ZENER DIODE	
D3			DA204U	DIODE	
D4-7			UDZS5.6B	ZENER DIODE	
D8			DA204U	DIODE	
D9			RB060L-40	DIODE	
D10-13			UDZS5.6B	ZENER DIODE	
IC1		✻	30302MCP070GP	MICROCONTROLLER IC	
IC2			S-80836CNNB-J	MOS-IC	
IC3			TC7SET08FU-F	MOS-IC	
IC4			BD9778HFP	ANALOGUE IC	
Q1			2SB1188 (Q,R)	TRANSISTOR	
Q2,3			2SC4081	TRANSISTOR	
Q4,5			DTC124EUA	DIGITAL TRANSISTOR	
Q6			DTA114EUA	DIGITAL TRANSISTOR	
Q7			DTC124EUA	DIGITAL TRANSISTOR	

⚠ Indicates safety critical components.

KCA-IP500

SPECIFICATIONS

General

Cable Length

iPod I/F to Conversion box 2.5m

Conversion box to Control unit 1.0m

Operating voltage (11~16V allowable) 14.4V

Current consumption (When Recharging) 0.8A

Installation Size (W x H x D) ..... 80 x 58 x 23mm

..... 3-1/8 x 2-5/16 x 7/8inch

Weight 360g (0.8lbs)

KENWOOD follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

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