

KENWOOD

SERVICE MANUAL

CONTROL HEAD INTERFACE KIT, CONTROL HEAD REMOTE KIT

KRK-14H, KRK-15B

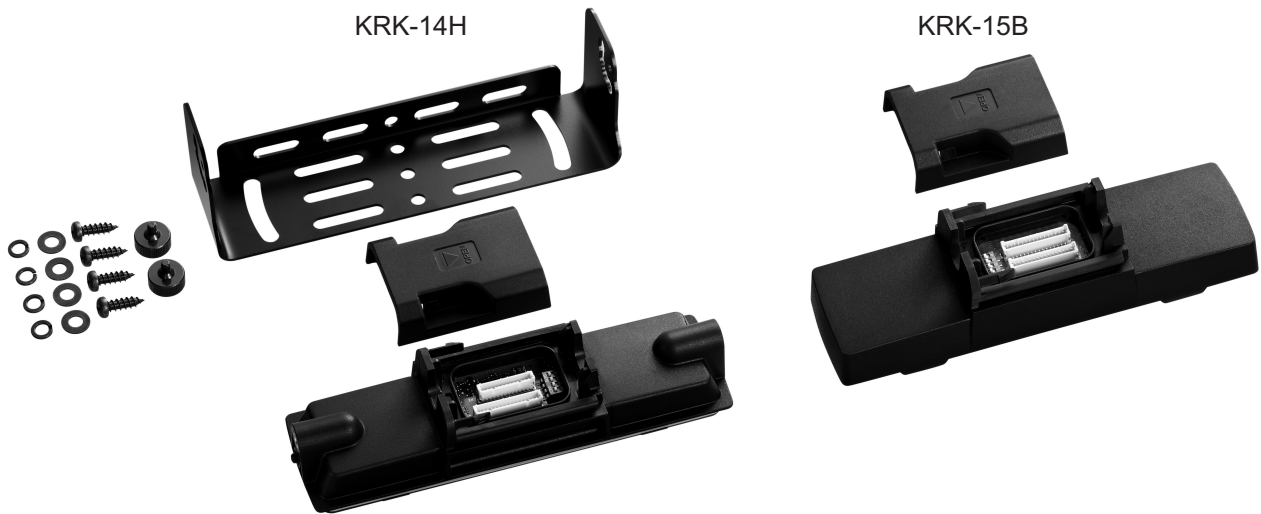


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REVISED

This service manual has been revised due to the addition of the Multi RF Deck and Multi Control Head installation information.

This product complies with the RoHS directive for the European market.



This product uses Lead Free solder.

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Service Manual List

Manual number	Model name	Type	Interface unit number		Remarks
			KRK-14H	KRK-15B	
No.RA021<Rev.001>	KRK-14H, KRK-15B	M	XC3-0080-20 (J7C-0039-00)	XC3-0090-20 (J7C-0040-00)	First edition
No.RA021<Rev.002>	KRK-14H, KRK-15B	M	XC3-0080-20 (J7C-0039-10)	XC3-0090-20 (J7C-0040-00)	Revised This service manual

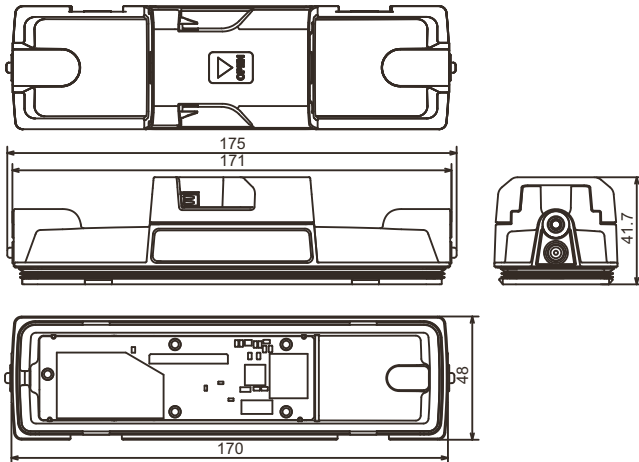
SECTION 1 PRECAUTION

This service manual does not describe PRECAUTION.

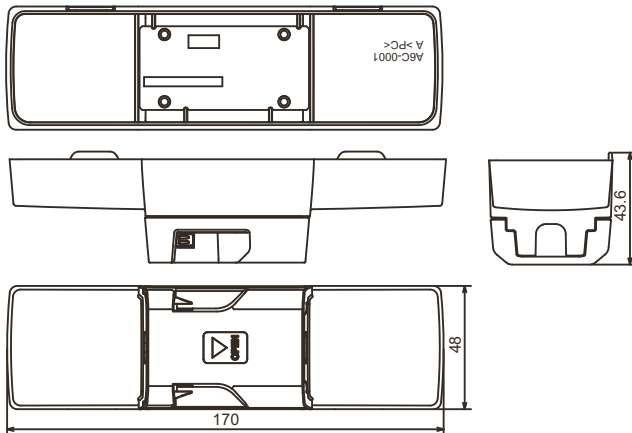
SECTION 2 SPECIFIC SERVICE INSTRUCTIONS

2.1 INSTALLATION

KRK-14H External View



KRK-15B External View



2.1.1 Installing the Remote Kit (KRK-14H, KRK-15B)

The KRK-14H and KRK-15B remote kit is used to remotely operate the NX-5700/5800/5900 series transceiver.

The KRK-14H is connected to the NX-5700/5800/5900 or KCH-19 operation panel with the KCT-71 remote control cable.

The KRK-15B is connected to the NX-5700/5800/5900 RF Deck with the KCT-71.

Note:

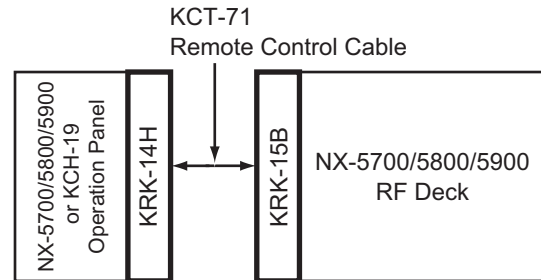
The KRK-14H has the common firmware of the NX-5700/5800/5900.

When turning the transceiver power ON in the state from which the firmware version of the NX-5700/5800/5900 RF Deck and KRK-14H is different, the firmware programming mode will start up automatically, and "FIRMWARE PROG" is displayed on the LCD.

In this case, rewrite the newer version firmware.

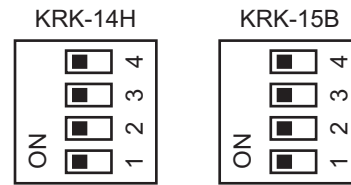
The firmware is written into the NX-5700/5800/5900 RF Deck and KRK-14H at the same time.

2.1.2 Connection image



2.1.3 DIP Switch setting

All DIP switches for single remote (KRK-14H and KRK-15B) must be set as "ON".



2.1.4 Remove the Operation panel from the transceiver (NX-5700, NX-5800, NX-5900 only)

- (1) Lift the two tabs of the panel on the bottom of the transceiver with a flat-head screwdriver and remove the panel from the chassis. (Fig. 1)



Fig.1

- (2) Remove the flat cable from the display unit connector (CN6) of the panel.
- (3) Remove the cable from the display unit connector (CN2) of the panel.

2.1.5 Install the KRK-15B onto the NX-5700, NX-5800, NX-5900 RF Deck

- (1) Insert the cable into the interface unit (XC3-0090-20) connector (CN2) of the KRK-15B.
- (2) Insert the flat cable into the interface unit connector (CN1) of the KRK-15B. (Fig. 2)

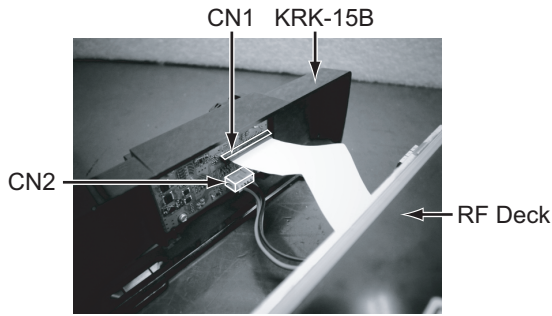


Fig.2

Note:

The blue line of the flat cable and the flap of connector are as same side.
After inserting, the flat cable should be locked with the connector (flap) surely.

- (3) Fit the KRK-15B with four tabs onto the front of the chassis. (Fig. 3)

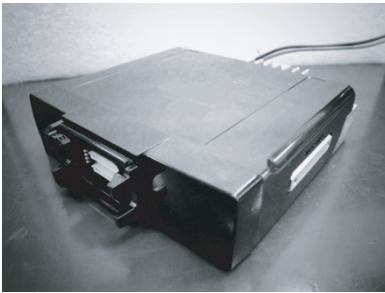


Fig.3

Note:

When installing the KRK-15B onto the front of the chassis, hold down the flat cable with your fingers to prevent it from being caught.

2.1.6 Install the KRK-14H onto the NX-5700, NX-5800, NX-5900 or KCH-19 operation panel

- (1) Insert the cable attached to the interface unit (XC3-0080-20) of the KRK-14H into the display unit connector (CN2) of the panel.
- (2) Insert the flat cable attached to the interface unit of the KRK-14H into the display unit connector (CN6) of the panel. (Fig. 4)
(The two cables have been pre-inserted in the connector (CN35, CN37) of the KRK-14H.)

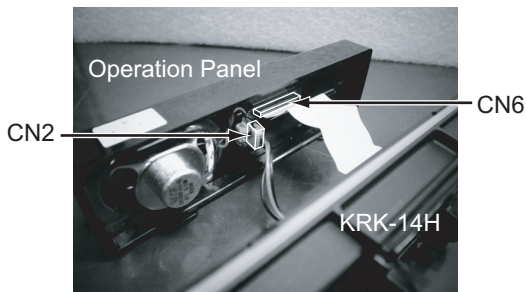


Fig.4

Note:

The blue line of the flat cable and the flap of connector are as same side.
After inserting, the flat cable should be locked with the connector (flap) surely.

- (3) Fit the four tabs of the KRK-14H into the operation panel.

Note:

Fit so that the flat cable towards the way of the arrow using a finger. (Fig. 5)

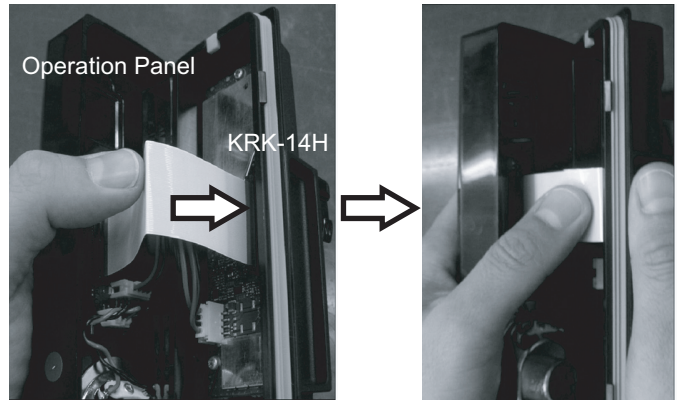


Fig.5

2.1.7 Connect the KRK-15B and KRK-14H with the KCT-71

- (1) Insert one lead wire with connector of the KCT-71 into the connector (CN3) of the KRK-15B. (Fig. 6)

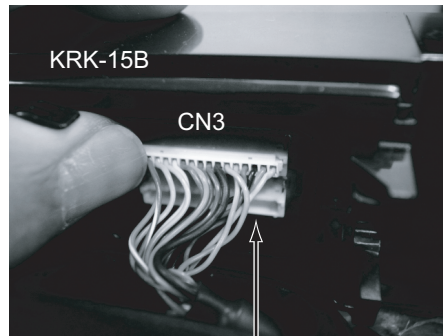


Fig.6

- (2) Secure the cable bush as shown in the figure 7 and attach the waterproof packing.

Note:

There is a direction to the installing of the cable bush.



Fig.7

(3) Slide the molding cover so as not to float the waterproof packing and attach so that it is locked. (Fig. 8)

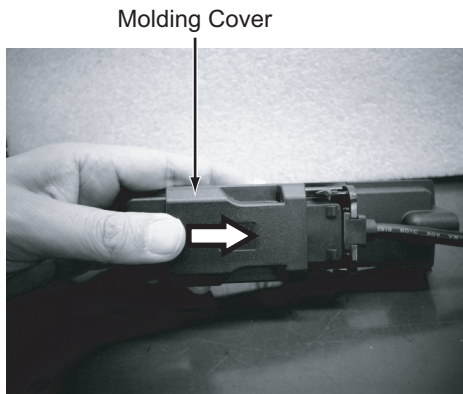


Fig.8

(4) Insert the other lead wire with connector of the KCT-71 into the connector (CN1) of the KRK-14H.

(5) Attach the waterproof packing and molding cover in the same way of step 2 and 3.

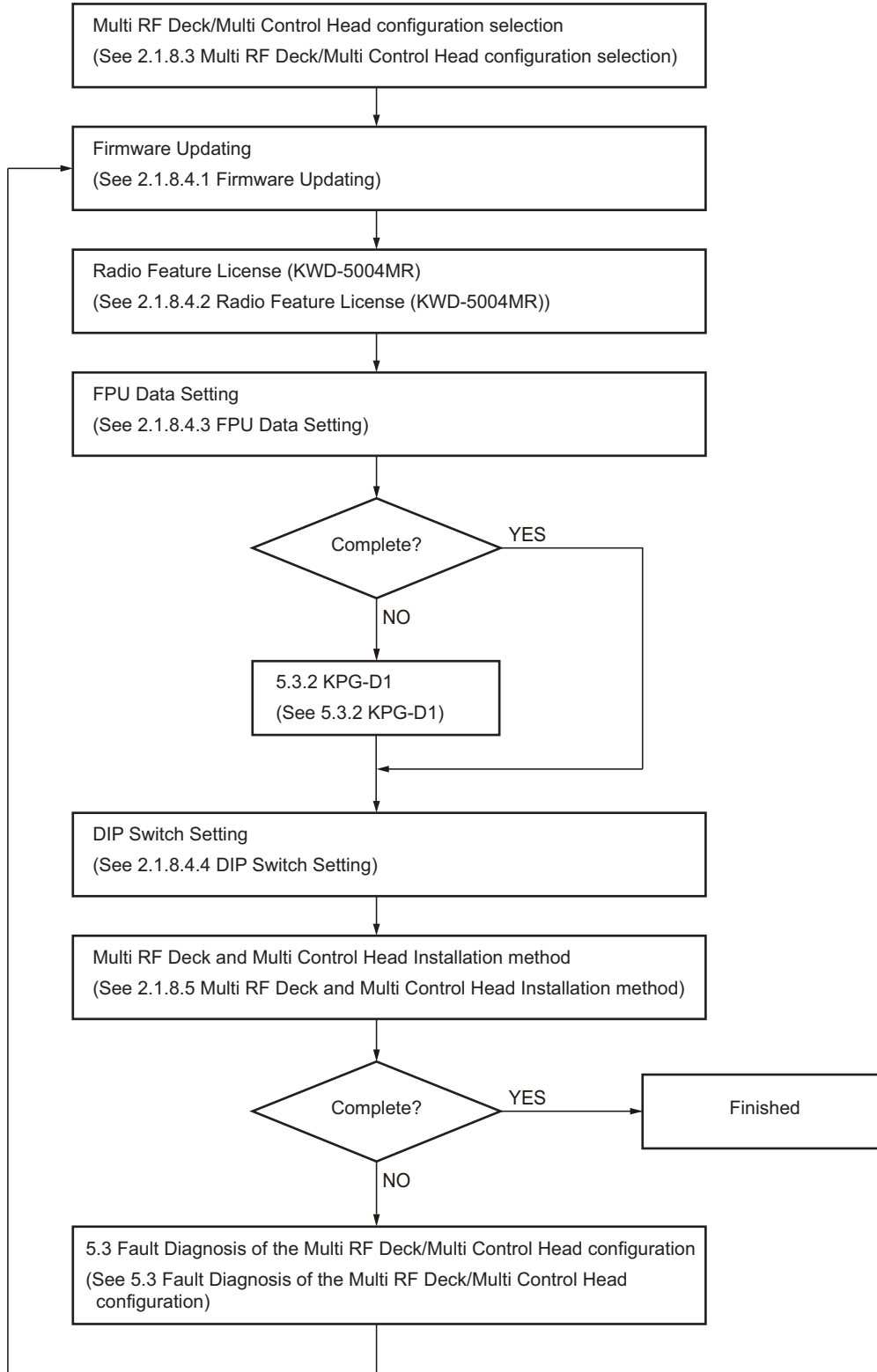
2.1.8 Multi RF Deck/Multi Control Head installation and configuration method

2.1.8.1 Outline

The Multi RF Deck/Multi Control Head configuration enables the creation of a single system from multiple subscriber units connected to one or two panels.

“RF Deck” refers to the NX-5700/5800/5900. “Control Head” refers to either the Basic Panel (KCH-19) or the Featured Panel (KCH-20R).

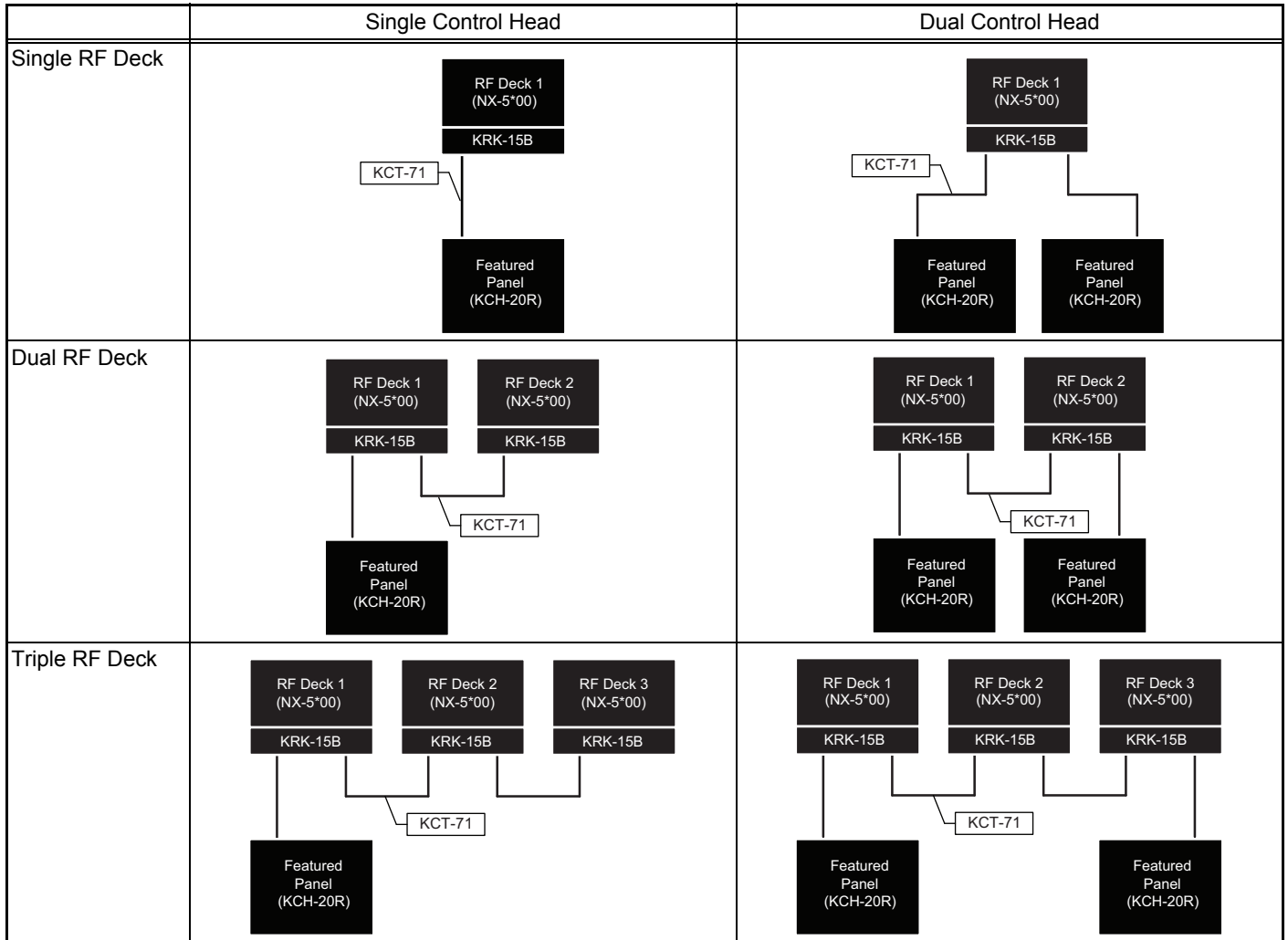
2.1.8.2 Multi RF Deck/Multi Control Head installation and configuration procedure flow chart



2.1.8.3 Multi RF Deck/Multi Control Head configuration selection

The following 6 Multi RF Deck/Multi Control Head configurations are presented here for consideration (featuring, in this case, the KCH-20R Control Head):

Select the configuration you'd like to use from 6 Multi RF Deck/Multi Control Head configurations.



2.1.8.4 Initial Setting

This section describes the initial setup for a Multi RF Deck/Multi Control Head configuration, involving the following procedures:

- (1) Firmware Updating
- (2) Radio Feature License (KWD-5004MR)
- (3) FPU Data Setting
- (4) DIP Switch Setting

2.1.8.4.1 Firmware Updating

To operate a Multi RF Deck/Multi Control Head system, the firmware must be updated to version 1.6 or later. All RF Decks and Control Heads must have the same firmware version.

For initial setup, update the firmware on each RF Deck individually. Because microcomputer (OMAP) is mounted on the KRK-14H and KCH-20R, it needs to write the firmware to them. The firmware is updated when the RF Deck and Control Head are connected together. Therefore, firmware for the RF Deck and for the Control Head can be updated simultaneously.

In addition, when writing, check the DIP switch*1 settings (DIP switches are mounted on the KRK-14H, KRK-15B, and KCH-20R). All switches (1-4) must be set to ON when updating the firmware.

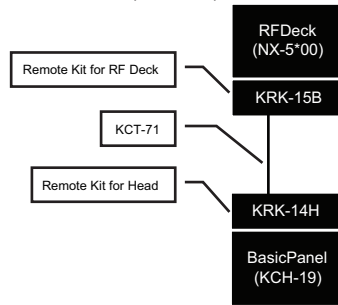
*1: Refer to section **2.1.8.4.4 DIP switch settings** for details.

The following procedure is how to update firmware when Triple RF Deck / Dual Control Head system is configured.

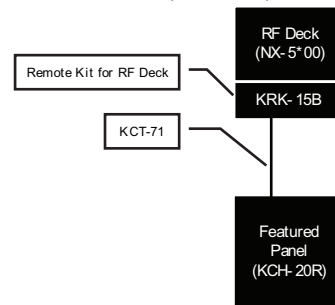
Step1

Configure the subscriber unit for a Single RF Deck/Single Control Head system. The combination of Remote Kit (KRK-15B, KRK-14H) depends on the type of Control Head.

Basic Panel (KCH-19)



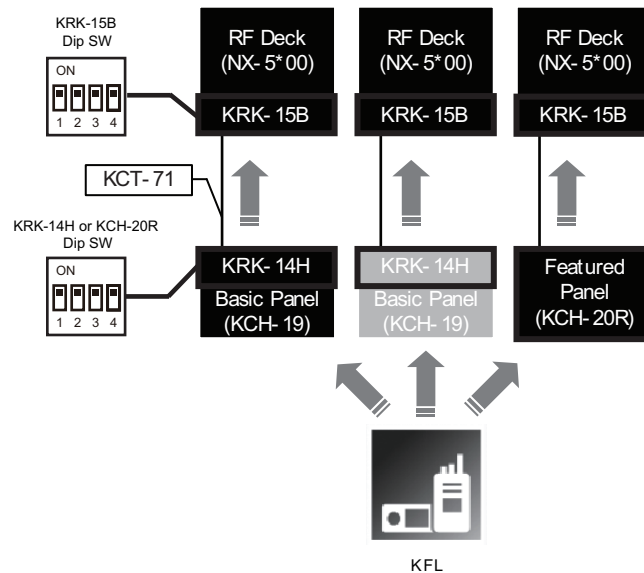
Featured Panel (KCH-20R)



Step2

Install firmware ver. 1.6 or later on all subscriber units.

Check that the Control Head and RF Deck are connected and perform the installation since the firmware has to be installed on both units.



Note

- KRK-14H and KCH-20R is written factory in Firmware. If Firmware of Control Head and RF Deck is mismatch, LCD is displayed the "FIRM MISMATCH". The display condition of "FIRM MISMATCH" is that firmware of RF Deck is version 1.6 or more. On the other hand, LCD is displayed the "FIRMWARE PROG". The display condition of "FIRMWARE PROG" is that firmware of RF Deck is version 1.5 or less.
- If Dual Control Head is configured, please update the Firmware to be used for both Control Head because it is necessary to write Firmware to each Panel.
- Once initial setup is complete, it is possible to update the firmware for multiple RF Decks in a Multi RF Deck/Multi Control Head system at the same time.
- Firmware writing is recommended via Control Head because baud rate via Control Head is higher. Via D-sub is also available. However, baud rate via D-sub is lower than via Control Head.
- The KCT-71 cable comes in 3 lengths:
KCT-71M2: 17ft (5.2m)
KCT-71M3: 25ft (7.6m)
KCT-71M4: 1.6ft (0.5m)

2.1.8.4.2 Radio Feature License (KWD-5004MR)

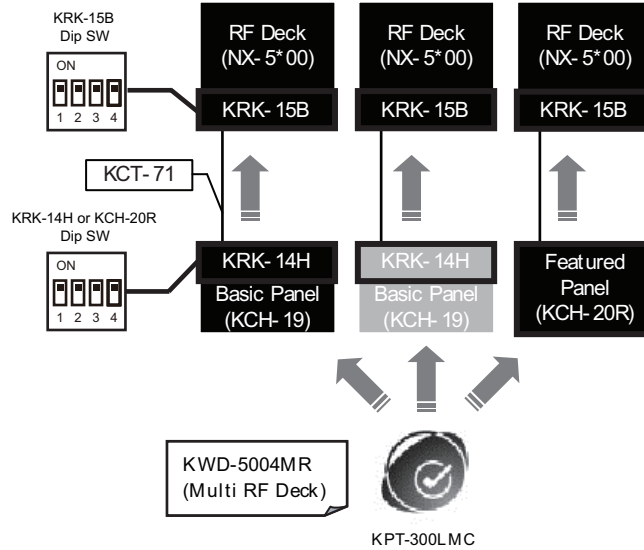
For Multi RF Deck/Multi Control Head functionality, this option has to be activated for each subscriber unit using the KPT-300LMC. The target of activation is RF Deck the Firmware Version 1.5 or less has been written. Activation is performed the same way as firmware updates. The following procedure is used to activate the Software Option for a Triple RF Deck system.

Step1

Configure the subscriber unit for a Single RF Deck/Single Control Head system.

Step2

Activate the Radio Feature License (KWD-5004MR) for each subscriber unit. Ensure that the Control Head and RF Deck are connected for activation.



Note

- KWD-5004MR (Multi RF Deck) is activated in factory. The target of activation is RF Deck the Firmware Version 1.6 or more has been written.
- The charge by activation is not required.

2.1.8.4.3 FPU Data Setting

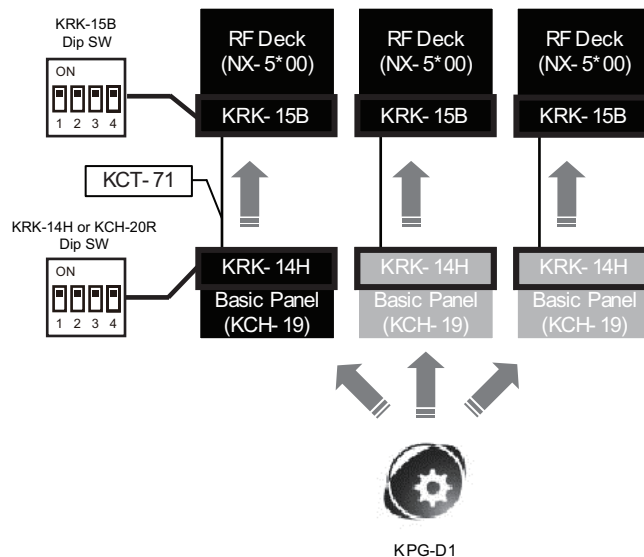
Version 1.6 of the KPG-D1 must be used to compile FPU Data compatible with Multi RF Deck/Multi Control Head systems. The activation (2.1.8.4.2 Radio Feature License) is required for the “Multi RF Deck (KWD-5004MR)” option. Unless Multi RF Deck activated, Programming Data compatible with Multi RF Deck/Multi Control Head cannot be written to SU.

For illustration, FPU Data for a Triple RF Deck system can be configured using the KPG-D1, thus.

In this configuration, RF Deck 1 is for VHF, RF Deck 2 is for UHF, and RF Deck 3 will operate on 700 / 800 MHz.

Step1

Writing of FPU Data writes for each RF Deck. Therefore, SU leave to the structure of the Single RF Deck / Single Control Head.



Note

- Write the FPU data to RF Deck 1, RF Deck 2 and RF Deck 3 using Control Head set as "Control Head 1" in "Control Head Configuration" of STEP2 "Product Information".
- If "FPU MISMATCH" is displayed on the LCD, refer to "5.3 Fault Diagnosis of the multi RF Deck/Multi Control Head configuration".

Step2

As an example, Programming Data of VHF is created. Please put a check in the Multi RF Deck on Product Information. Since this time is Dual Control Head configuration, it must be selected Control Head to be used. Control Head 1, it will show the Control Head which is connected to the RF Deck 1. Control Head 2, it will show the Control Head which is connected to the RF Deck 3.

(KPG-D1 > Model > Product Information)

Product Information

Model Name NX-5700 [Mobile]: K/F

Frequency 136-174 MHz

Zone-channel Format Channel Table

Feature Selection

4000 Channel/Talkgroup ID (KWD-5000CH)

microSD (KWD-5002SD)

Secure Cryptographic Module (KWD-5005AE)

Multi RF Deck (KWD-5004MR)

Front Panel Programming (KWD-5001FP)

Bluetooth Serial Port Profile (KWD-5003BT)

DES 4 Keys (KWD-5006DE)

P25

P25 Conventional (KWD-5100CV)

P25 Phase 2 Trunking (KWD-5102TR)

P25 OTAR (KWD-5103RK)

P25 OTAP (KWD-5104AP)

P25 Phase 1 Trunking (KWD-5101TR)

P25 Packet Data (KWD-5106DT)

P25 Voting Scan (KWD-5105VT)

NXDN

NXDN Conventional (KWD-5200CV)

NXDN OTAP (KWD-5204AP)

NXDN Type-C Trunking (KWD-5201TR)

Control Head Configuration

Control Head 1 KCH-19 (Basic Panel)

Control Head 2 KCH-20R (Featured Panel)

Read Configuration OK Cancel Help

Step3

Create a programming data for VHF.

Step4

Save a programming data for VHF once.

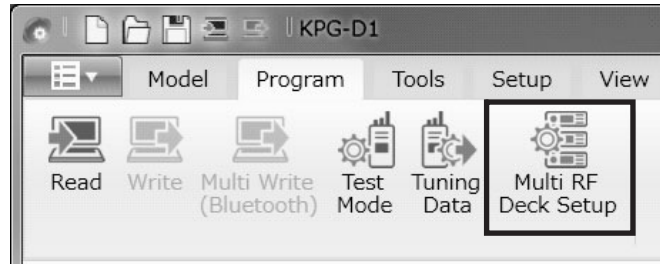
Step5

By the same procedure as Step2-4, create programming data for UHF and 700 / 800, and save each programming data.

Step6

Write the programming data to RF Deck of VHF.

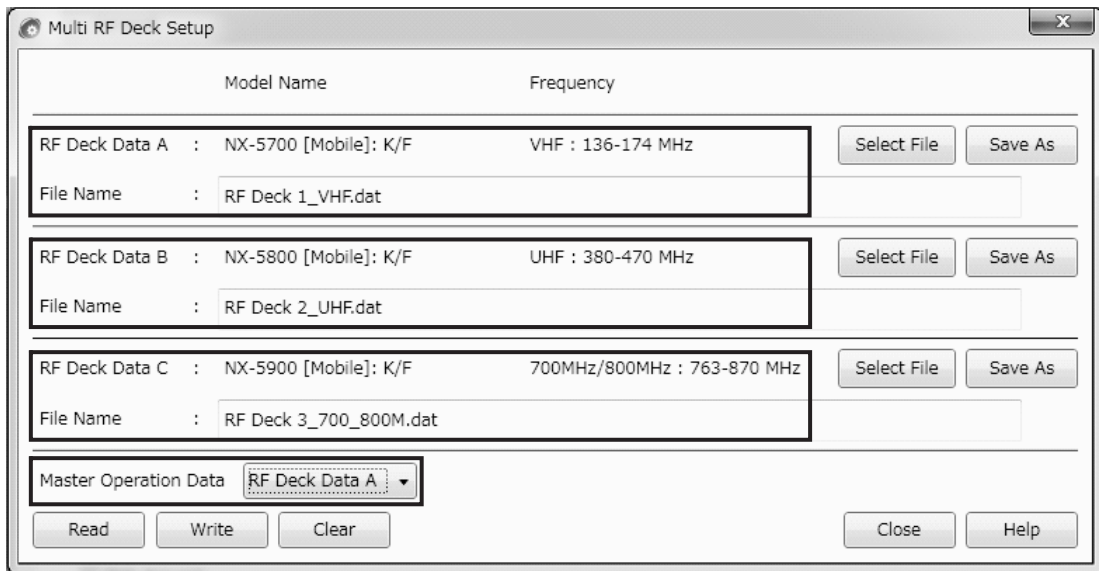
(KPG-D1 > Program > Multi RF Deck Setup)



Step7

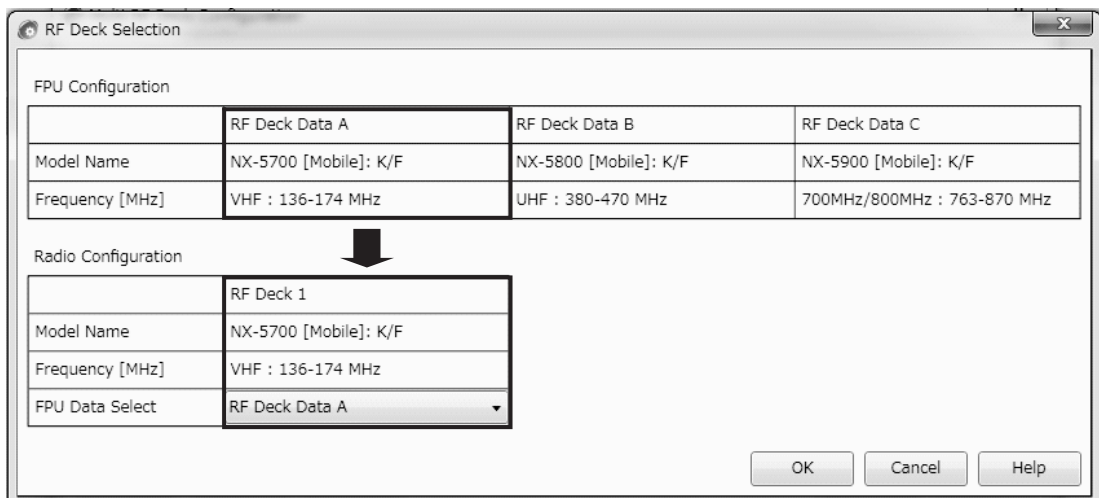
In Multi RF Deck Setup, the FPU Data for all RF Deck created are selected in advance. Programming Data for RF Deck is selected by Select File button. The boxes of RF Deck Data A, RF Deck Data B and RF Deck Data C are available. It does not specify the box to select the FPU Data of RF Deck. In the case of Multi RF Deck, common features are included in the Programming Data used between all of the RF Deck. Master Operation Data can set the RF Deck to be the deployment source of common features. As shown in the figure below, when the Master Operation Data is RF Deck Data A, the common features of RF Deck Data A are deployed to RF Deck B and RF Deck C. It can be checked setting items corresponding to the Master Operation Data using Help of KPG-D1.

It is used RF Deck A as Mater Operation Data.



Step8

When the selection of the FPU Data of Select File and Mater Operation Data is finished, Write button becomes Active. *1 When Write Button is pressed, following screen is displayed. RF Deck Data A is selected to RF Deck 1.



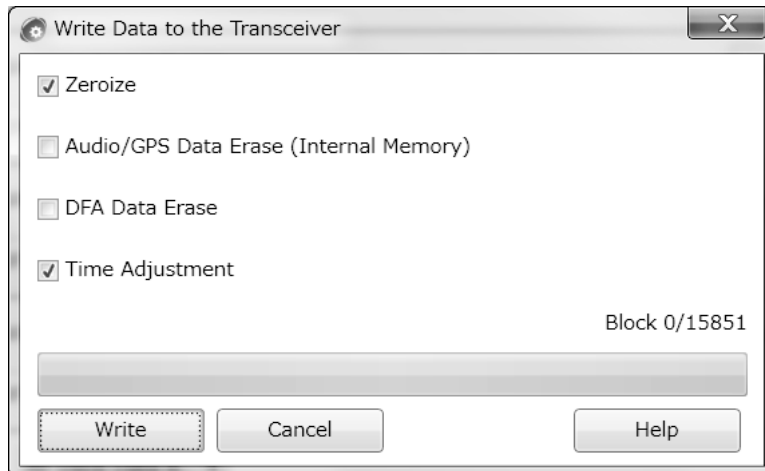
*1

When Write Botton is pushed, if FPU Data is not correct, this window is shown.
Because there is not Emergency Zone-Channel in Master Operation Data.
Please set a exsiting Zone-Channel as Emergency Zone-Channel in it.



Step9

When OK is pressed in the RF Deck Selection screen, the following screen is displayed.
Please press Write button to write a programming data.



Step10

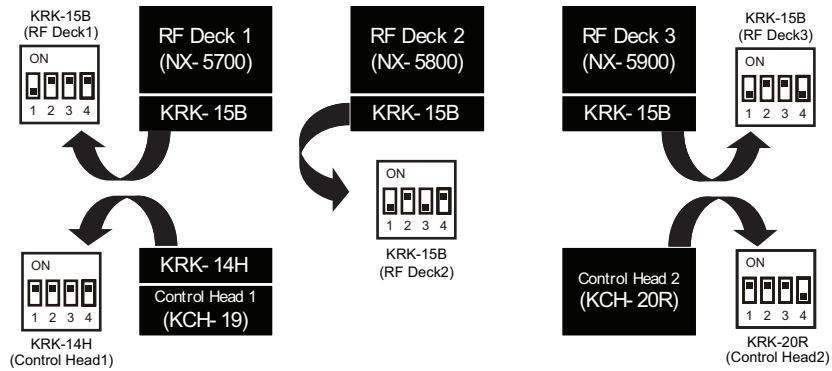
By the same procedure as **Step8-9**, it is written the programming Data for UHF and 700 / 800M.

Note

- If programming data is changed on the way, FPU MISMATCH error occurs.
In that case, it must be created the programming data along the procedure of Step8-9 again.

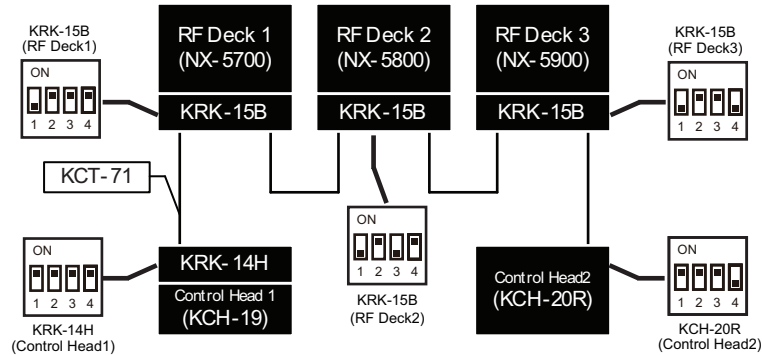
Step11

Even if the writing of the FPU Data is completed in each RF Deck, Triple RF Deck / Dual Control Head of the system will not operate. It must be correlated string all RF Deck and all Control Head to operate the system. To correlate the string, you need to write Triple RF Deck / Dual Control Head of the FPU Data of each RF Deck at the same time in connection state. Dip Switch is configured to connect Triple RF Deck / Dual Control Head.



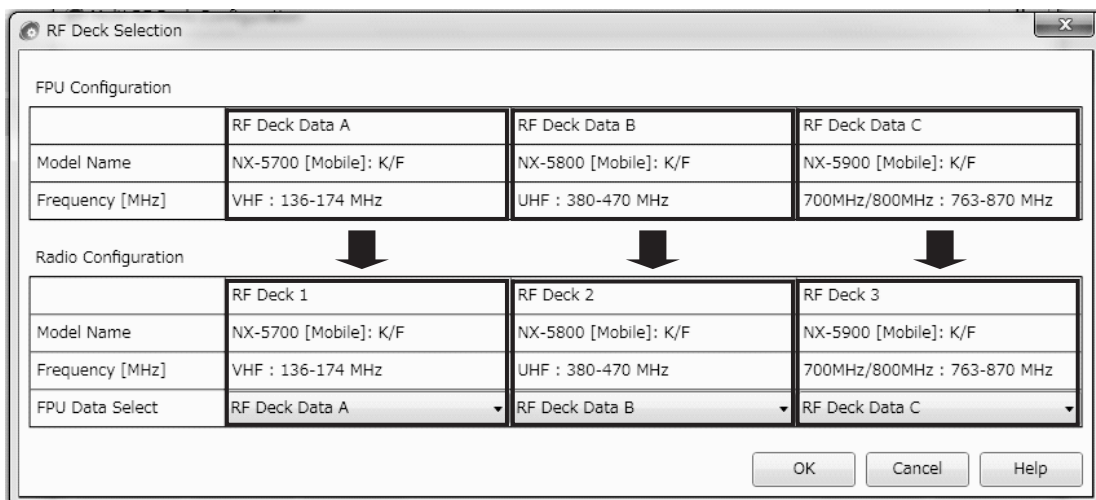
Step12

All RF Deck and all Control Head are connected using KCT-71. Control Head to be connected to RF Deck 1 is Control Head 1. Control Head to be connected to RF Deck 3 is Control Head 2. Control Head is not connected to the RF Deck 2.




When the procedure is finished, Multi RF Deck/Multi Control Head is able to operate normally. Once initial setting is finished, if Multi RF Deck / Multi Control Head system is configured, it's possible to write the programming data to all RF Deck simultaneously. The following is writing example.

By the same procedure as **Step6-7**, it is written the programming Data for VHF, UHF and 700 / 800M. RF Deck Data A is selected to RF Deck 1 for VHF. RF Deck Data B is selected to RF Deck 2 for UHF. RF Deck Data C is selected to RF Deck 3 for 700 / 800 MHz. The programming data can be written all at once after the selection.



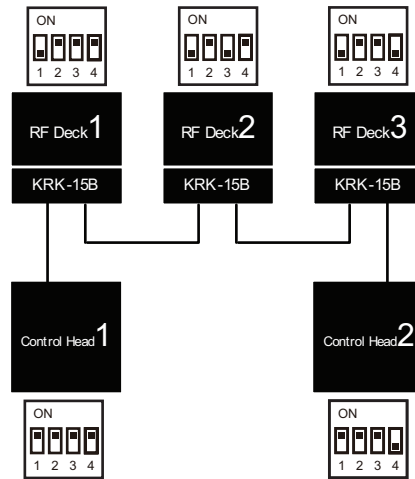
2.1.8.4.4 DIP Switch Settings

DIP switch settings are very important for the proper operation of a Multi RF Deck/Multi Control Head system. DIP switches are mounted on the KRK-14H (Remote Kit for Head), KRK-15B (Remote Kit for RF Deck) and KCH-20R. The DIP switches are used for number management of the RF Decks and Control Heads in the system; they also determine termination for CAN (Controller Area Network) communications. Numbering of the RF Decks and Control Heads is essential to configure a Multi RF Deck/Multi Control Head system. Be aware that without proper numbering, the subscriber units may not function properly. The four switches (SW1-4) are assigned as follows:

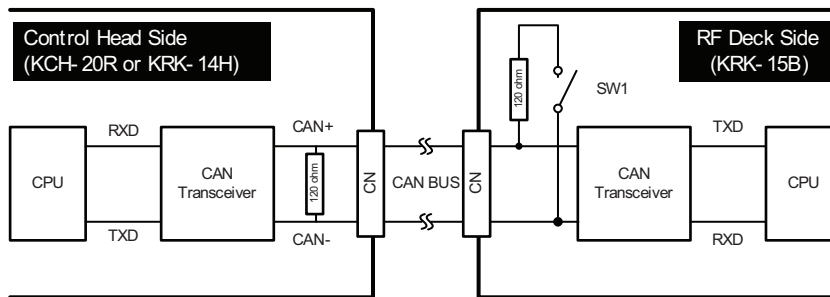
		KCH-20R/KRK-14H (Control Head side)	KRK-15B (RF Deck side)
	SW1	(Unused)	CAN termination
	SW2	(Unused)	(Unused)
	SW3	(Unused)	RF Deck Numbering
	SW4	Control Head Numbering	

It performs numbering based on the following conditions, please set up the correct Dip Switch.

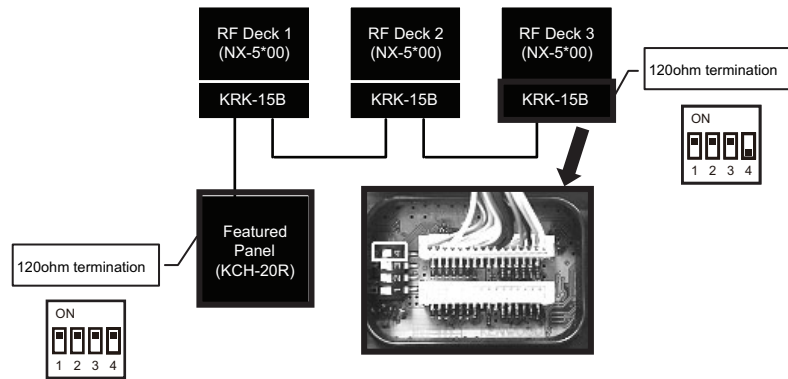
- Control Head 1 is shown the Control Head which is connected to RF Deck 1.
- Control Head 2 is shown the Control Head which is connected to RF Deck 3.
- Control Head which is connected to RF Deck 1 is Control Head 1.
- Control Head which is connected to RF Deck 3 is Control Head 2.
- Control Head is not connected to the RF Deck 2.



Data communications between the Control Head and RF Deck are handled by CAN. A 120-ohm termination is stipulated for high-speed CAN. Below is a block diagram illustrating CAN communications between Control Head and RF Deck.



In a Dual Control Head system, since the Control Head must be the termination point no special consideration is required. If an RF Deck is to be the termination point, SW1 on the deck is set to ON. When deciding if an RF Deck should be the termination point, consider this: if only one of the connectors on the KCT-71 mounted on the KRK-15B is being used, then the RF Deck connected to this KRK-15B will be the termination point. In the case of a Dual RF Deck/Single Control Head system, the KRK-15B connected to RF Deck 2 will be the termination point. And in the case of a Triple RF Deck/Single Control Head system, the KRK-15B connected to RF Deck 3 will be the termination point.

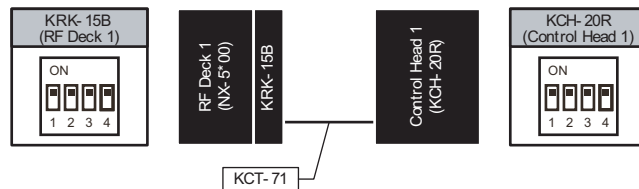


Note

- If Single Control Head is configured, DIP Switch of Control Head must be the setting of the Control Head 1. If DIP Switch setting is for Control Head 2, the system may not operate properly. In the case of Single Control Head configuration, the numbering of Control Head is only Control Head1.
- If Multi RF Deck is configured, dip switch setting for RF Deck 1 is absolutely imperative in the system.
- If CAN has not been terminated, the data waveform through the CAN bus line is broken. As a result, LCD is not displayed and key operation is not available. In order to operate CAN communication normally, a resistance of 120 ohm must be terminated.

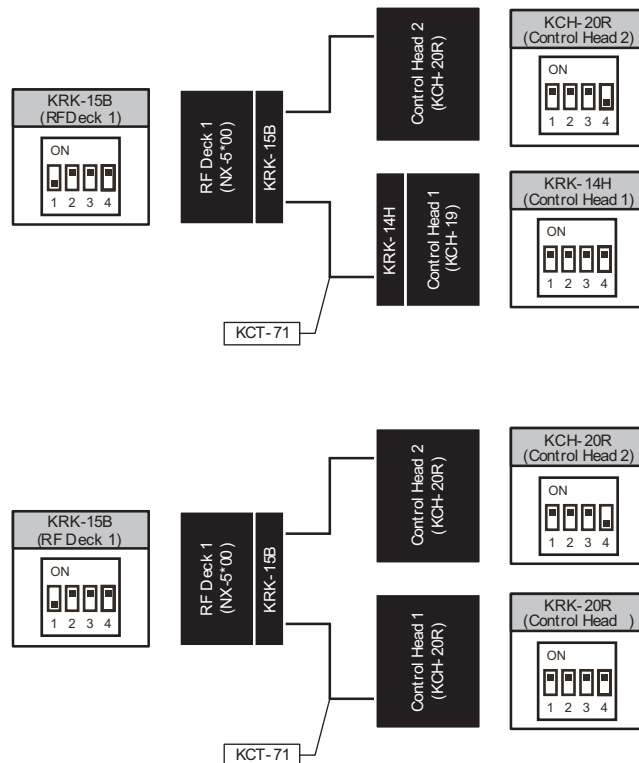
The state of the switch which is set by each hardware configuration it is shown below.

Case1 : Single RF Deck/Single Control Head

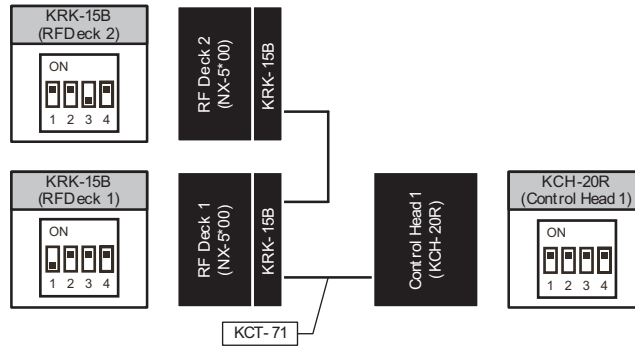


When Control Head 1 is KCH-19 with KRK-14H, the dip switch setting of KRK-14H is same to KCH-20R.

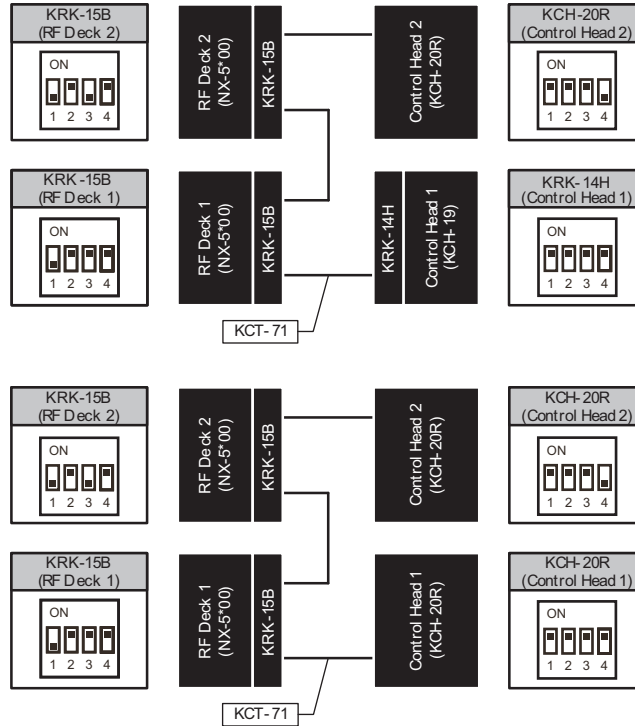
Case2 : Single RF Deck/Dual Control Head



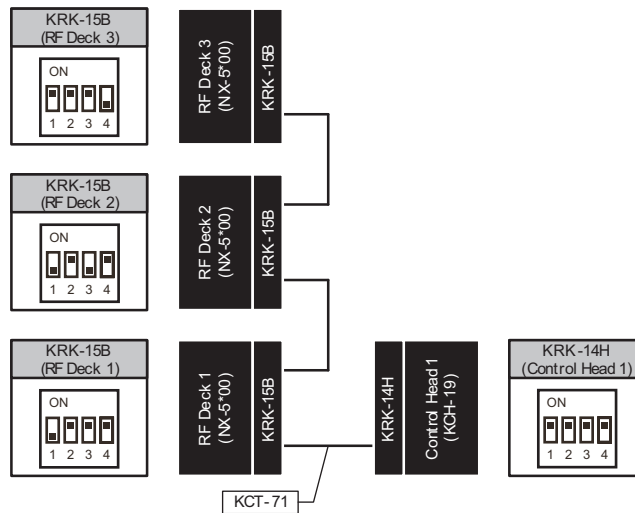
Case3 : Dual RF Deck/Single Control Head

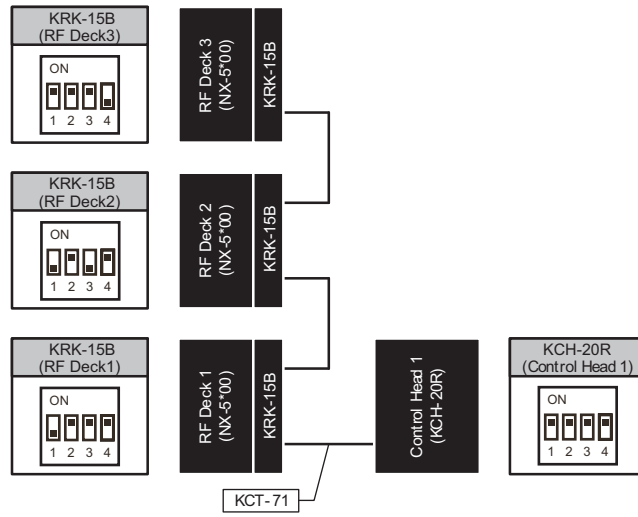


Case4 : Dual RF Deck/Dual Control Head

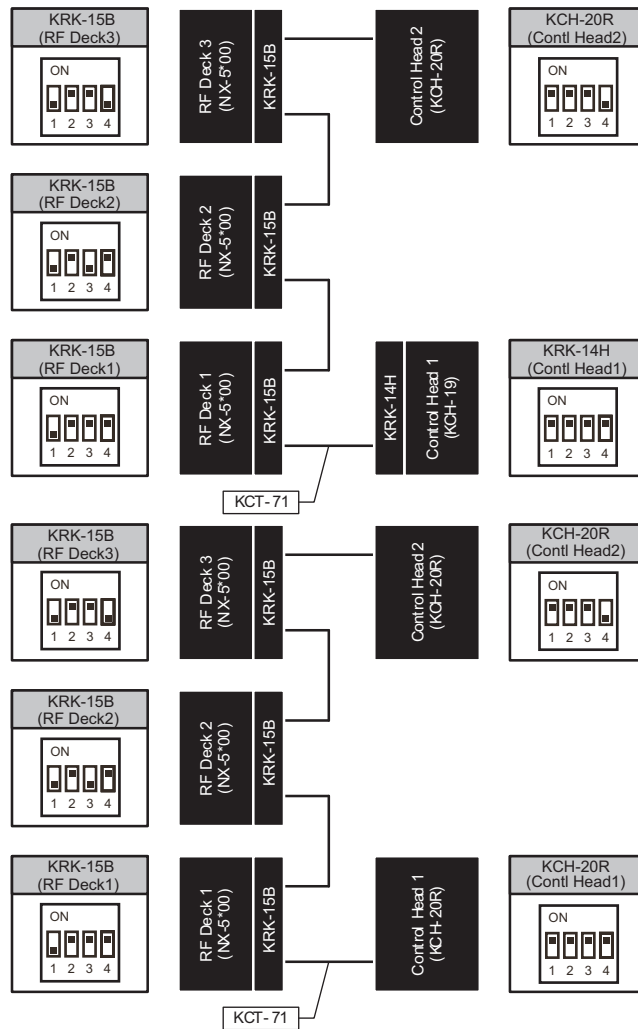


Case5 : Triple RF Deck/Single Control Head





Case6 : Triple RF Deck/Dual Control Head



2.1.8.5 Multi RF Deck and Multi Control Head Installation method

2.1.8.5.1 Installing the Dual RF Deck and Single Control Head

Fig. 1 shows an example of the connection with the basic panel as a control head. Installation work even if the control head is replaced in featured panel KCH-20R is the same.

(If installing KCT-72 only, please work from “2.1.8.5.2 Installing the KCT-72 to the Control Head”.)

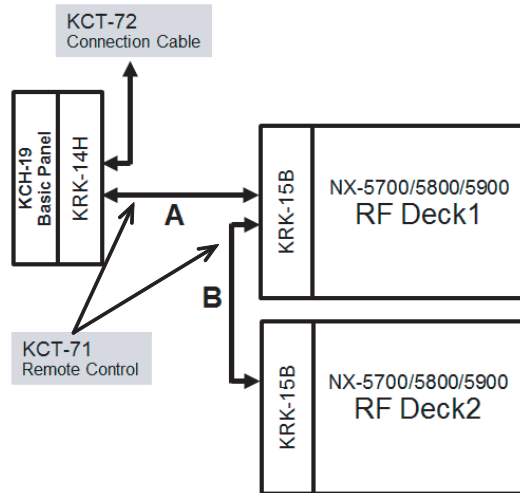


Fig.1

Step 1: Make KCT-71-A by modifying the KCT-71 shown in Fig. 1.

Cut a part of the waterproof packing of KCT-71 along the dotted line with a cutting tool so as to make the hole for the passage of another connector wire. (Fig. 2)

(Cut the waterproof packing of KRK-14H side in the same way, if you want to connect the KCT-72.)

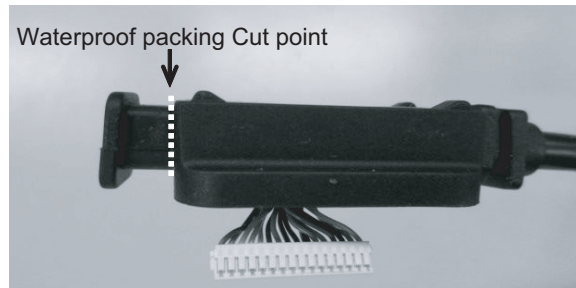


Fig.2

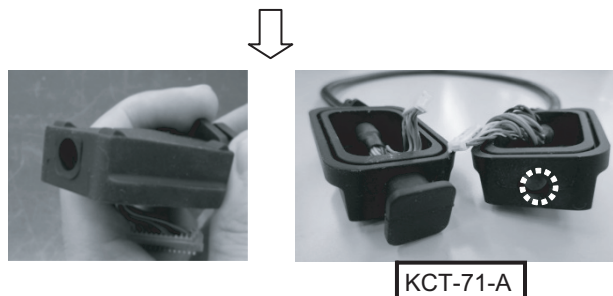


Fig.3

Step 2: Make KCT-71-B by modifying another KCT-71 shown in Fig. 1.

Push out the connector from the hole of the waterproof packing (RF Deck1 side) as the below Fig. 4.

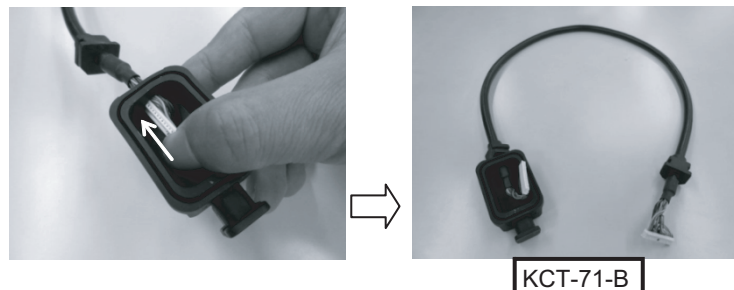


Fig.4

Step 3: Combine the KCT-71-A and KCT-71-B.

Plug the connector of the KCT-71-B into the hole of the waterproof packing of KCT-71-A as the below Fig. 5.

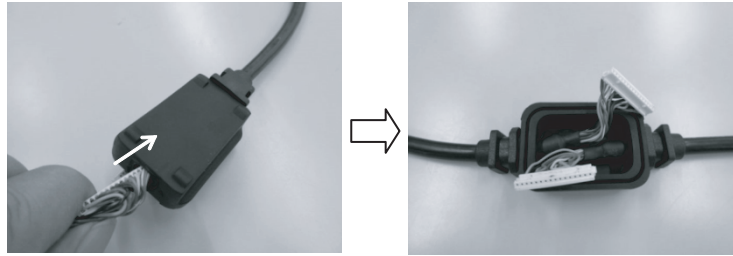


Fig.5

Step 4: Insert each of the connector combined in Step 3 to KRK-15B (RF Deck1 side).

(There are no rules to the insertion position of these two 16pin connectors.)

Fit waterproof packing to the main panel surely, then slide the molding cover and lock it. (Fig. 6) (Fig. 7)

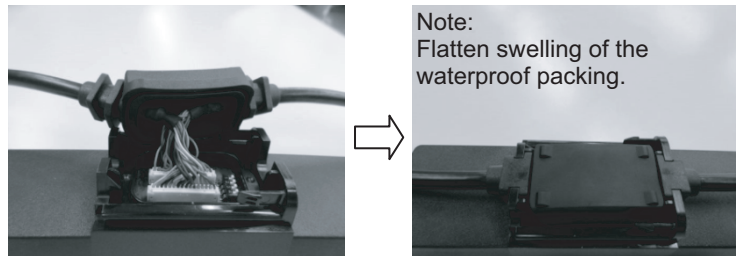


Fig.6

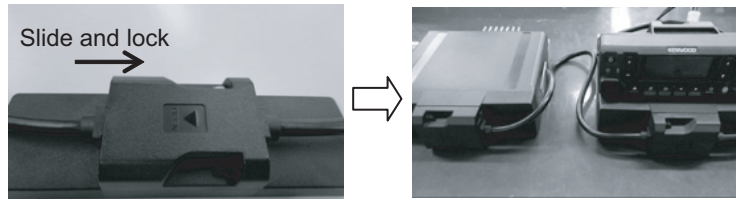


Fig.7

2.1.8.5.2 Installing the KCT-72 to the Control Head

Step 1: Cut a part of the waterproof packing of KCT-71(KRK-14H side) with a cutting tool so as to make the hole for the passage of another connector wire. (Refer to "2.1.8.5.1 Installing the Dual RF Deck and Single Control Head" Step1 Fig. 2.)

Step 2: Combine the modified KCT-71 and KCT-72.

Plug the connector of the KCT-72 into the hole of the waterproof packing of KCT-71 as the below Fig. 8.

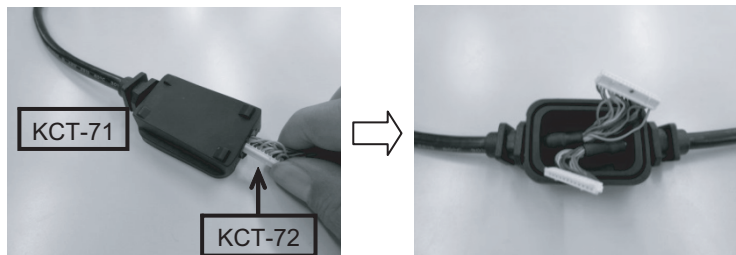
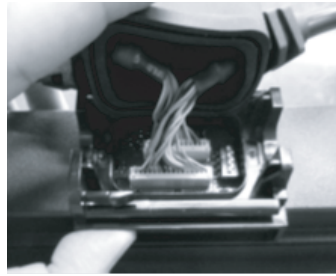


Fig.8

Step 3: Insert each of the connector combined in Step 2 to KRK-14H. (The same applies if the control head is KCH-20R.) Match the direction of KCT-72 and KRK-14H before inserting the connector. (Installation of the waterproof packing can be available for any direction.)

Insert the connector of the KCT-71 to 16pin. Insert the connector of the KCT-72 to 13pin.

Fit waterproof packing to the main panel surely, then slide the molding cover and lock it. (Fig. 9) (Fig. 10)



Note: Flatten swelling of the waterproof packing.

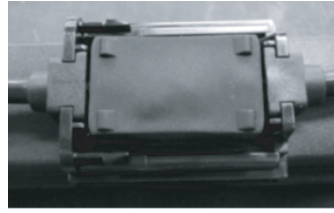
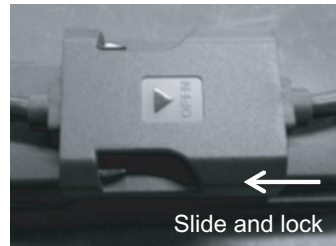


Fig.9

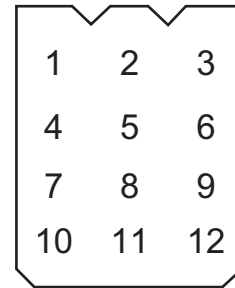


Slide and lock

Fig.10

KCT-72 PIN ASSIGNMENT

HOUSING PIN No.(JST)	COLOR	HOUSING PIN No.(MOLEX)	FUNCTION
13	---	---	---
12	RED	1	IGN
11	BLACK	2	SB
10	LIGHT GREEN	3	GND
9	LIGHT BLUE	4	MIC
8	YELLOW	5	ME
7	GRAY	6	AI1
6	BLUE	7	AI2
5	PURPLE	8	AO1
4	PINK	9	AO2
3	ORANGE	10	RS1
2	BROWN	11	RS2
1	DARK GREEN	12	NC



MOLEX HOUSING

Fig.11

KCT-72 12P Accessory Interface

Pin Num	Pin Name	I/O	Signal Type	Description /port Type	Spec and Condition	Min	Typ	Max	Unit
1	IGN	I	Digital	Ignition Signal Input					
					VIH	9	-	16	V
					VIL	0	-	2	V
2	SB	O	Analog	Switched B Output					
					Output Voltage	Depend on DC Supply Voltage			V
					Current @ 20°C			200	mA
					Current @ 60°C			130	mA
3	GND	-	GND	Ground					
					Allowable Current			200	mA
4	AUX MIC	I	Analog	AUX MIC Input					
					Input Amplitude (1kHz 60% Deviation)	-	5	-	mVrms
					Coupling Capacitor	-	10	-	uF
					Input Impedance	-	680	-	Ω
					Allowable Frequency	300	-	3000	Hz
5	AUX ME	I	Analog	Ground for AUX MIC					
6	AI1	I	Digital	AI1 Input Diode Level Shifter					
					VIH @ 25°C	1.5		5.0	V
					VIL @ 25°C	0		0.45	V
7	AI2	I	Digital	AI2 Input Diode Level Shifter					
					VIH @ 25°C	1.5		5.0	V
					VIL @ 25°C	0		0.45	V
8	AO1	O	Digital	AO1 Output Open Drain					
					VOL @ 25°C			0.4	V
					IOL @ 25°C			-200	mA
9	AO2	O	Digital	AO2 Output Open Drain					
					VOL @ 25°C			0.4	V
					IOL @ 25°C			-200	mA
10	RS1 (KCH-20R)	O	Analog	SP+ Output(BTL)					
					Audio Power	-	-	3.0	W
					Load Impedance	4.0	-	-	Ω
					Frquency Range	300	-	3000	Hz
	NC (KRK-14H)	NC	-	NC					
11	RS2 (KCH-20R)	O	Analog	SP- Output(BTL)					
					NC (KRK-14H)	NC	-	NC	
12	GND	-	GND	Ground					
					Alloable Current			200	mA

Current Drain

■KRK-14H

600mA (MAX)

(KRK-14H and KRK-15B with KCH-19)

■KCH-20R

700mA (MAX)

■Triple RF Deck/Dual Control Head

- Two KCH-20R + Three NX-5700/5800/5900

1.4A(Two KCH-20R)+ 13A(One transmission)+ 1A(Two standby) = 15.4A

- Two KRK-14H + Three NX-5700/5800/5900

1.2A(Two KRK-14H)+ 13A(One transmission)+ 1A(Two standby) = 13.4A

2.1.8.5.3 Installing the Triple RF Deck and Dual Control Head

RF Deck, Control Head and KCT-72 can be connectable by using modified KCT-71 as the below Fig. 12. (Fig. 12 is a connection example of maximum system.)

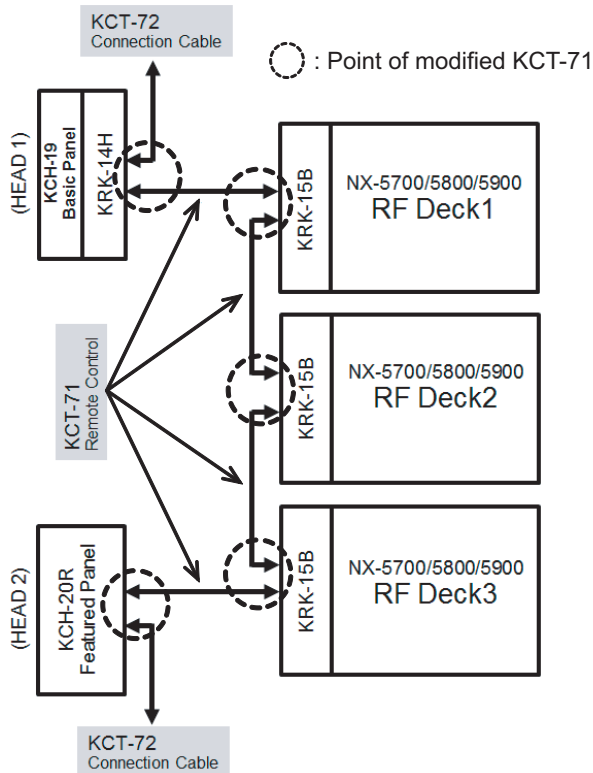


Fig.12

○ mark shown in Fig. 12 means the additional connection of the connector and the point of using modified KCT-71.

Because the modifying and installation method is a repetition of the same work, please refer to the item "2.1.8.5.1 Installing the Dual RF Deck and Single Control Head" and "2.1.8.5.2 Installing the KCT-72 to the Control Head".

2.2 CIRCUIT DESCRIPTION

2.2.1 KRK-14H

2.2.1.1 Overview

KRK-14H is an optional unit designed to separate the Mobile transceiver and Basic type panel (KCH-19) by remote control cable (KCT-71). KRK-14H communicates with Mobile transceiver in a serial bus and controls Basic type panel. This unit consists of a power supply circuit, audio circuit, and control circuit.

2.2.1.2 Power supply circuit

SB (Switched +B Power) is supplied from Mobile transceiver via CN1. IC1, IC2, A1, and IC4 are step down switching regulator. IC1 regulates 5.3V (53DC) from SB. 53DC is the power source of D-class audio amplifier, CAN transceiver, and regulator (IC6). IC6 regulates 5.0V (50D). 50D is supplied to level shift circuits and a part of audio circuits. IC2 regulates 3.9V (39DC) from SB. 39DC is the power source of regulators (A1, IC3, IC4, and IC5). A1 regulates 1.2V (12D), IC4 regulates 1.8V (18D), IC3 regulates 3.3V (33A), and IC5 regulates 3.3V (33D).

12D is supplied to MPU core. 18D is supplied to MPU, Mobile DDR, Codec DSP core, In MPU memory interface work with 1.8V power supply (18D). The I/O section of the NOR flash memory works with a 1.8V power supply. It must be supplied after 33D is powered up. Therefore, the 1.8V power supply of flash memory is supplied through switch IC (IC7) which is controlled by 33D. 33A is the power source of audio circuits. Those are operational amplifiers and the analogue section in Codec IC. 33D is the power source of I/O section of MPU, Codec, and CAN transceiver. The power source of flash memory is 33D, too. During the SB supplies, all regulators work.

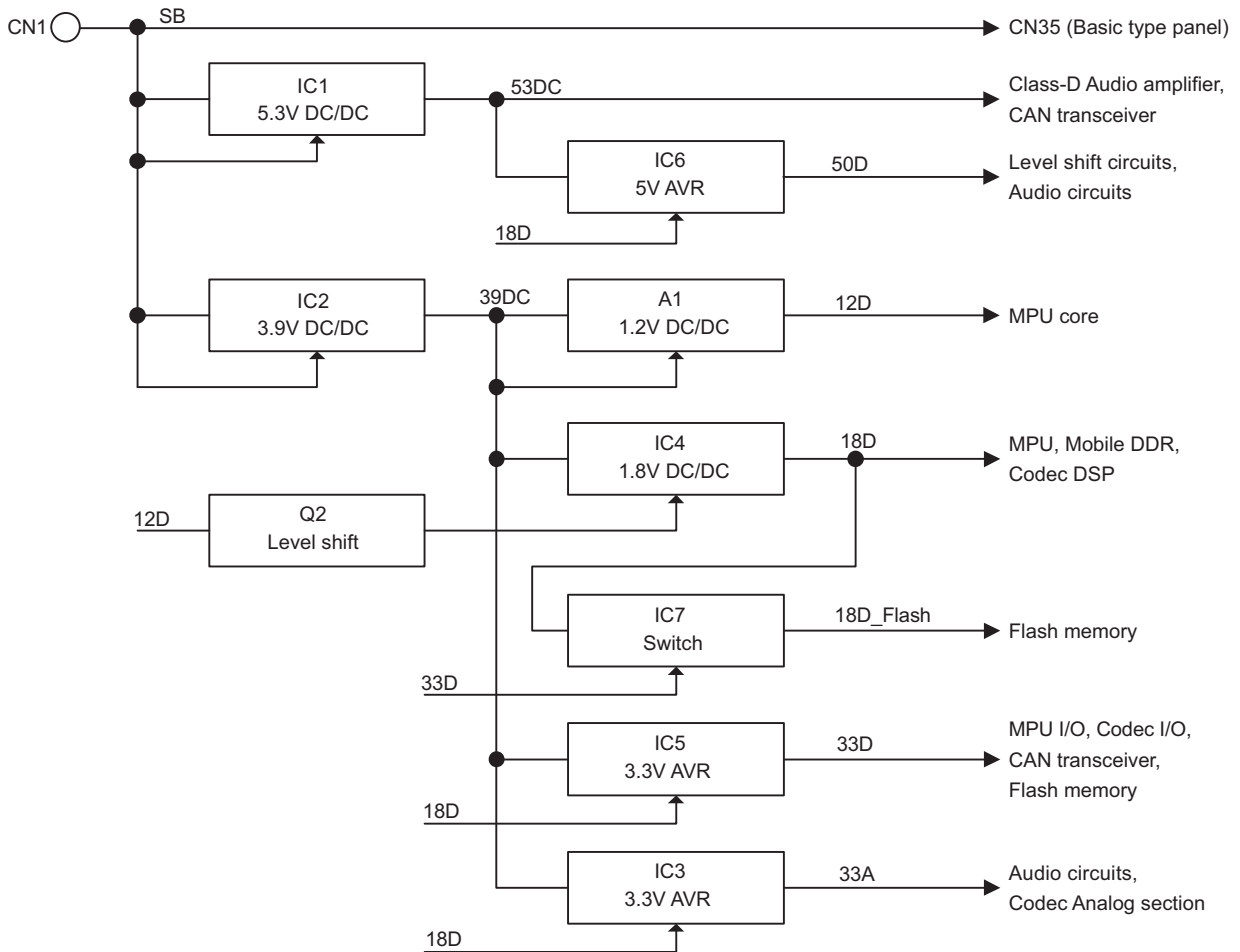


Fig.1 Power supply circuit

2.2.1.3 Audio circuit

2.2.1.3.1 RX Audio

KRK-14H has two RX Audio input channels, AFIA+/- and AFIB+/- . And the MPU selects the one of the two channels, and input it to codec IC (IC17). (The channel to use is notified by serial communication from RF Deck.)

The codec IC adjusts RX Audio signal amplitude equal to the value of selected volume step, and output it. That output signal is converted to balanced signal by operational amplifier (IC19). And converted signal goes to Class-D audio amplifier (IC25). The audio amplifier is controlled to shutdown or power-up, by MPU.

2.2.1.3.2 TX Audio

KRK-14H has two microphone input channels. One is connected to Basic type panel (KCH-19), other is connected to external interface connector (CN2). Two microphone signals are selected by analog multiplexer IC (IC20), and inputted to microphone amplifier. The microphone amplifier consists of operational amplifier and AGC. And its output is connected to Codec IC. The total gain of amplifiers in Codec IC is set to 0dB. The output signal of codec IC is converted to balanced signal by operational amplifier (IC13). The converted signals are switched by analog switch IC (IC11, IC12), and output to either MICA+/- or MICB+/- . The output channel is notified from RF Deck by serial communication.

2.2.1.4 Control circuit

The control circuit consists of MPU (IC16) and its peripheral circuits. IC16 mainly performs the followings;

- (1) Serial communication between RF deck and KRK-14H
- (2) Controlling the audio circuits including codec IC
- (3) Controlling the display

2.2.1.4.1 MPU

The MPU is 32bit RISC processor, equipped with peripheral functions. The maximum operating clock of MPU is 288MHz, and power source are 3.3V/ 1.8V/ 1.2V DC. The MPU controls the flash memory, Mobile DDR, the audio circuits, the Key detection IC which is on Basic type panel, external I/O circuit, and the display (LCD).

2.2.1.4.2 Memory Circuit

Memory circuit consists of the MPU and the Mobile DDR (IC23), the flash memory (IC29). The flash memory has capacity of 256Mbit that contains the program for the MPU and stores the data. That program can be easily updated from external devices. The Mobile DDR has capacity of 512Mbit. The MPU copies the program from the flash memory to the Mobile DDR. The MPU uses the Mobile DDR as a work area.

2.2.1.4.3 LCD control interface

The MPU controls LCD which is in Basic type panel (KCH-19) through the panel interface connector (CN37). LCD is controlled by parallel bus with 16bit data width.

2.2.1.4.4 Key detection

The MPU can detect the keys of Basic type panel (KCH-19). In the Basic type panel, the keys are connected to I/O expander IC which has key matrix function. When the key was pushed, I/O expander IC scans which key is pushed. Then an interrupt occurs for a MPU from an I/O expander IC. The MPU reads the registers of I/O expander IC after an interrupt occurs, and checks which key is pushed.

2.2.1.4.5 External I/O

KRK-14H has external interface connector (CN2). That interface has two output and two input terminals. The output terminal is open collector type. The input terminal has level shift circuit, it permits input the 5V signal.

2.2.2 KRK-15B

2.2.2.1 Overview

KRK-15B is an optional unit designed to separate the Mobile transceiver and Basic type panel (KCH-19) by remote control cable (KCT-71). KRK-15B communicates with Mobile transceiver in a serial bus and controls Basic type panel. This unit consists of a power supply circuit, audio circuit, and control circuit.

2.2.2.2 Power supply circuit

54M (5.4V DC Power) is supplied from Mobile transceiver via CN1. 54M is power source of IC2 (CAN Transceiver) and IC3 (33D, 3.3V regulator). 33A (3.3V DC Power) is power source of Audio circuits.

33M (3.3V DC Power) is supplied from Mobile transceiver via CN1. 33M is power source of IC7 (I/O Expander).

SB (Switched +B Power) is supplied from Mobile transceiver via CN2. SB is power source of Control head interface kit (KRK-14H).

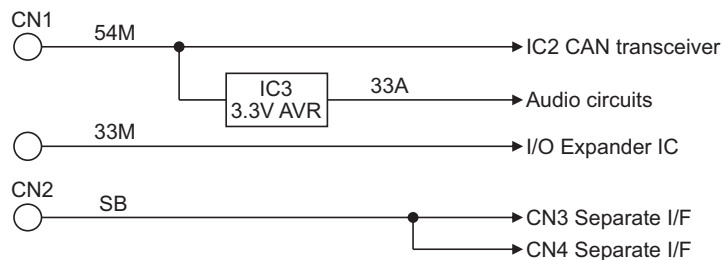


Fig.1 power supply circuit

2.2.2.3 Audio circuit

2.2.2.3.1 Audio circuit overview

KRK-15B has one RX Audio input channel (AFI+/-), two RX Audio output channels (AFOA+/- and AFOB+/-), one TX Audio output channel (MIC/ ME), and two TX input channels (MICA+/- and MICB+/-). Selection of Audio input / output channels (AFOA/ AFOB/ MICA/ MICB) and other audio path are controlled by Mobile transceiver's MPU through I/O expander IC (IC7).

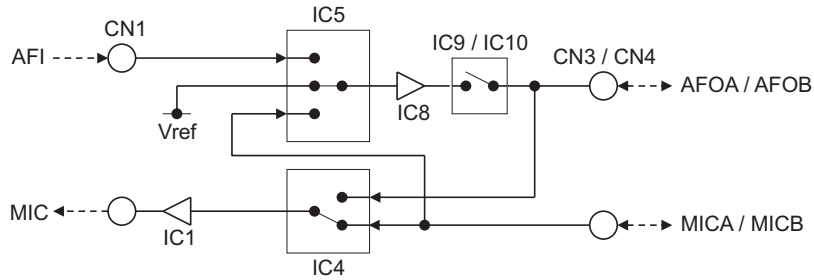


Fig.2 Simplified audio circuit

2.2.2.3.2 RX Audio path

Speaker voice sounds of KCH-19 which received by Mobile transceiver are passed through KRK-15B and KRK-14H.

Receive audio for KRK-14H given from AFI+/- has outputted to AFOA+/- or AFOB+/- terminal through IC5, IC8, IC9 and IC10 as follows.

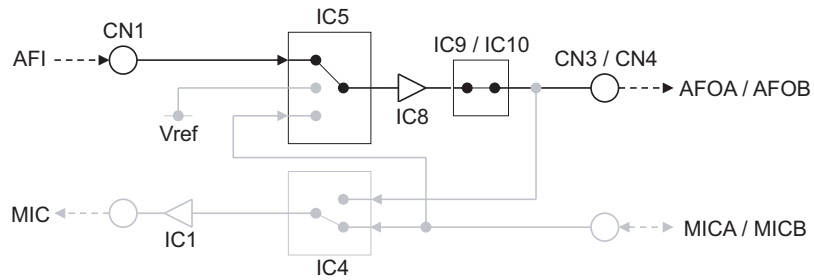


Fig.3 RX audio path

2.2.2.3.3 TX Audio path

Microphone signals Mobile transceiver which given by KCH-19 are passed through KRK-14H and KRK-15B.

Transmit audio given from MICA+/- or MICB+/- have outputted to MIC / ME terminal through IC4 and IC1 as follows.

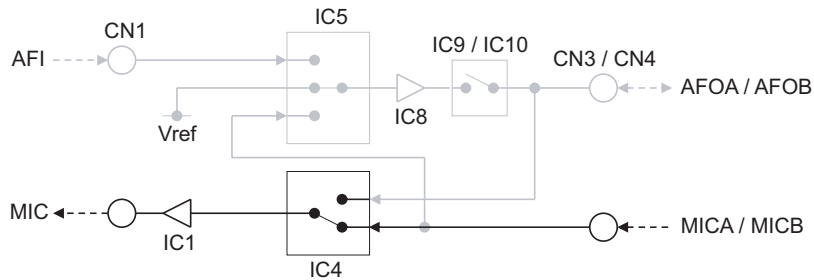


Fig.4 TX audio path

2.2.2.4 Control circuit

The control circuit consists of followings;

- (1) Convert serial communication signal (IC2)
- (2) Convert audio path control signal from Mobile transceiver (IC7).

2.3 COMPONENTS DESCRIPTION

2.3.1 Interface unit (XC3-0080-20) (KRK-14H)

Ref.No	Part Name	Description
IC1	IC	DC/DC converter (53DC)
IC2	IC	DC/DC converter (39DC)
IC3	IC	Voltage regulator (33A)
IC4	IC	DC/DC converter (18D)
IC5	IC	Voltage regulator (33D)
IC6	IC	Voltage regulator (50D)
IC7	IC	DC SW (18D)
IC8	IC	CAN transceiver IC
IC9~12	IC	Analog SW (AF)
IC13	IC	AF AMP
IC14	IC	AF/DC AMP (AF/25ref)
IC15	IC	AF AMP (RX AF)
IC16	IC	MPU
IC17	IC	Codec IC
IC18	IC	DC/AF AMP (Vref/AF)
IC19	IC	AF AMP
IC20	IC	Analog SW (AF)
IC21, 22	IC	Logic control
IC23	IC	SDRAM
IC25	IC	Audio power AMP (class D)
IC29	IC	Flash memory
Q1	FET	DC SW (Open drain)
Q2	FET	DC SW
Q3	FET	DC SW (Open drain)
Q4, 5	Transistor	DC SW
Q6	Transistor	MIC AGC
Q7~10	FET	DC SW
D1	Varistor	Over current prevention
D2, 3	Varistor	ESD protection
D4, 5	Diode	Reverse current prevention
D6	Diode	DC/DC converter (53DC)
D7	Diode	DC/DC converter (39DC)
D8, 9	Zener diode	Over voltage protection
D10	Diode	Reverse current prevention
D11, 12	Diode	MIC AGC detection
D13	Diode	Reverse current prevention
D15	Diode	Reverse current prevention

2.3.2 Interface unit (XC3-0090-20) (KRK-15B)

Ref.No	Part Name	Description
IC1	IC	AF AMP
IC2	IC	CAN transceiver IC
IC3	IC	Voltage regulator (33A)
IC4, 5	IC	Analog SW (AF)
IC6	IC	DC AMP (Vref)
IC7	IC	I/O expander
IC8	IC	AF AMP
IC9, 10	IC	Analog SW (AF)

2.4 TERMINAL FUNCTION

2.4.1 Interface unit (XC3-0080-20) (KRK-14H)

Pin No.	Name	I/O	Function
CN1			
1	/PRST	I	Reset signal
2	/PSW	O	Detection signal output of power switch
3	MICA+	O	MIC signal output plus_A
4	MICA-	O	MIC signal output minus_A
5	MICB+	O	MIC signal output plus_B
6	MICB-	O	MIC signal output minus_B
7	GND	-	Ground
8	NC	-	No connection
9	SB	I	Switched power supply
10	NC(IGN)	-	No connection (Ignition sense output)
11	AFiA+	I	AF signal input plus_A
12	AFiA-	I	AF signal input minus_A
13	AFiB+	I	AF signal input plus_B
14	AFiB-	I	AF signal input minus_B
15	CAN+	I/O	CAN data plus
16	CAN-	I/O	CAN data minus
CN2			
1	GND	-	Ground
2	NC	-	No connection
3	NC	-	No connection
4	Ao2	O	AUX output 2
5	Ao1	O	AUX output 1
6	Ai2	I	AUX input 2
7	Ai1	I	AUX input 1
8	AUX_ME	-	AUX MIC ground
9	AUX_MIC	I	AUX MIC signal input
10	GND	-	Ground
11	SB	O	Switched power supply
12	IGN	I	Ignition sense input
13	GND	-	Ground

Pin No.	Name	I/O	Function
CN35			
1	SP+	O	Speaker output plus
2	SP-	O	Speaker output minus
3	GND	-	Ground
4	SB	O	Switched power supply
CN37			
1	NC (IGN)	-	No connection (Ignition sense input)
2	NC	-	No connection
3	GND	-	Ground
4	54M	O	5.4V output
5	GND	-	Ground
6	GND	-	Ground
7	18M	O	1.8V output
8	D[15]	I/O	LCD driver data output
9	D[14]	I/O	LCD driver data output
10	D[13]	I/O	LCD driver data output
11	D[12]	I/O	LCD driver data output
12	D[11]	I/O	LCD driver data output
13	D[10]	I/O	LCD driver data output
14	D[9]	I/O	LCD driver data output
15	D[8]	I/O	LCD driver data output
16	D[7]	I/O	LCD driver data output
17	D[6]	I/O	LCD driver data output
18	D[5]	I/O	LCD driver data output
19	D[4]	I/O	LCD driver data output
20	D[3]	I/O	LCD driver data output
21	D[2]	I/O	LCD driver data output
22	D[1]	I/O	LCD driver data output
23	D[0]	I/O	LCD driver data output
24	/CS_LCD	O	LCD driver chip-select signal
25	A[23]	O	LCD driver data/command switch signal
26	/WR_LCD	O	LCD driver WR signal
27	/RD_LCD	O	LCD driver RD signal
28	PRST	O	LCD driver reset signal
29	/KEYINT	I	Key state change signal
30	I2CCK	O	I2C serial clock
31	I2CDT	I/O	I2C serial data
32	GND	-	Ground
33	USB_D-	I/O	USB0 PHY data minus
34	USB_D+	I/O	USB0 PHY data plus
35	GND	-	Ground
36	33M	O	3.3V output
37	DM/KVL	I/O	MIC data detection
38	GND	-	Ground
39	RXD	I	Serial data input

Pin No.	Name	I/O	Function
40	TXD	O	Serial data output
41	/PTT	I	PTT input
42	/PSW	I	Detection signal input of power switch
43	AFO+	O	AF signal output plus
44	AFO-	O	AF signal output minus
45	MIC	I	MIC signal input
46	ME	-	MIC ground
47	NC	-	No connection
48	NC	-	No connection
49	NC	-	No connection
50	GND	-	Ground

2.4.2 Interface unit (XC3-0090-20) (KRK-15B)

Pin No.	Name	I/O	Function
CN1			
1	GND	-	Ground
2	R_SET0	O	Radio setting signal 0
3	R_SET1	O	Radio setting signal 1
4	R_SET2	O	Radio setting signal 2
5	ME	-	MIC ground
6	MIC	O	MIC signal output
7	AFi-	I	AF signal input minus
8	AFi+	I	AF signal input plus
9	/PSW	O	Detection signal output of power switch
10	NC	-	No connection
11	TXD	I	Serial data input
12	RXD	O	Serial data output
13	GND	-	Ground
14	NC	-	No connection
15	33M	I	3.3V input
16	GND	-	Ground
17	NC	-	No connection
18	NC	-	No connection
19	GND	-	Ground
20	I2CDT	I/O	I2C serial data
21	I2CCK	O	I2C serial clock
22	/KEYINT	O	Key state change signal
23	/PRST	I	Reset signal
24	NC	-	No connection
25	NC	-	No connection
26	NC	-	No connection
27	NC	-	No connection
28	NC	-	No connection

Pin No.	Name	I/O	Function
29	NC	-	No connection
30	NC	-	No connection
31	NC	-	No connection
32	NC	-	No connection
33	NC	-	No connection
34	NC	-	No connection
35	NC	-	No connection
36	NC	-	No connection
37	NC	-	No connection
38	NC	-	No connection
39	NC	-	No connection
40	NC	-	No connection
41	NC	-	No connection
42	NC	-	No connection
43	NC	-	No connection
44	NC	-	No connection
45	GND	-	Ground
46	GND	-	Ground
47	54M	I	5.4V input
48	GND	-	Ground
49	NC	-	No connection
50	NC(IGN)	-	No connection (Ignition sense output)
CN2			
1	NC	-	No connection
2	NC	-	No connection
3	GND	-	Ground
4	SB	I	Switched power supply
CN3			
1	/PRST	O	Reset signal
2	/PSW	I	Detection signal input of power switch
3	MICA+	I	MIC signal input plus_A
4	MICA-	I	MIC signal input minus_A
5	MICB+	I	MIC signal input plus_B
6	MICB-	I	MIC signal input minus_B
7	GND	-	Ground
8	SB	O	Switched power supply
9	NC	-	No connection
10	NC(IGN)	-	No connection (Ignition sense input)
11	AFoA+	O	AF signal output plus_A
12	AFoA-	O	AF signal output minus_A
13	AFoB+	O	AF signal output plus_B
14	AFoB-	O	AF signal output minus_B
15	CAN+	I/O	CAN data plus
16	CAN-	I/O	CAN data minus

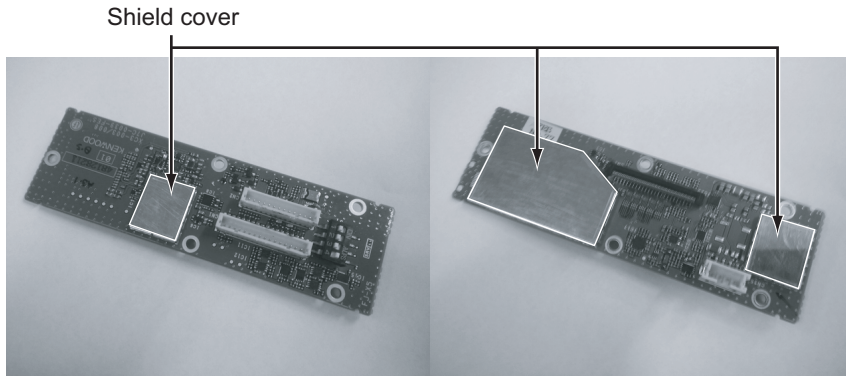
Pin No.	Name	I/O	Function
CN4			
1	/PRST	O	Reset signal
2	/PSW	I	Detection signal input of power switch
3	MICA+	I	MIC signal input plus_A
4	MICA-	I	MIC signal input minus_A
5	MICB+	I	MIC signal input plus_B
6	MICB-	I	MIC signal input minus_B
7	GND	-	Ground
8	SB	O	Switched power supply
9	NC	-	No connection
10	NC(IGN)	-	No connection (Ignition sense input)
11	AFoA+	O	AF signal output plus_A
12	AFoA-	O	AF signal output minus_A
13	AFoB+	O	AF signal output plus_B
14	AFoB-	O	AF signal output minus_B
15	CAN+	I/O	CAN data plus
16	CAN-	I/O	CAN data minus

SECTION 3 DISASSEMBLY

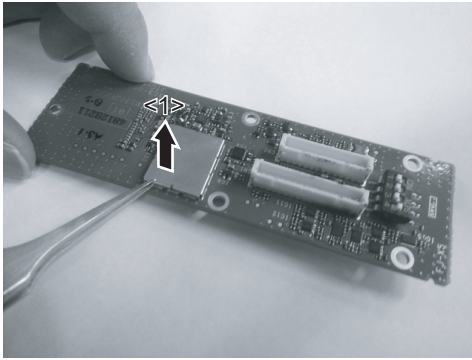
3.1 Precautions for Disassembly

3.1.1 Remove the top cover from the shield cover (KRK-14H only)

(1) There are three shield covers on the interface unit, the top covers can be removed.

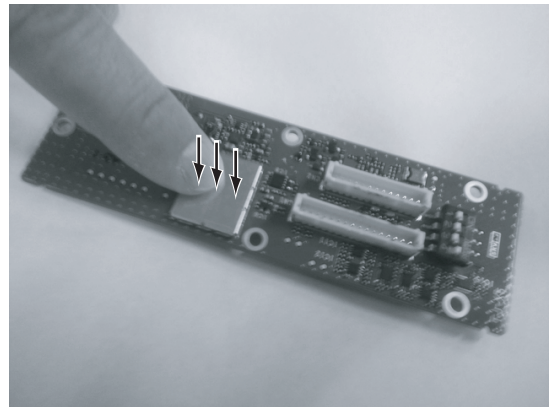


(2) Use tweezers to slightly lift the edge of the top cover. <1>



Note:

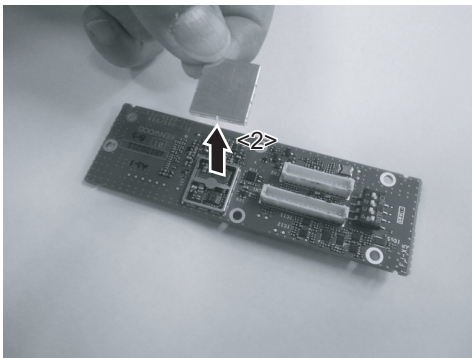
Push evenly on the top cover and be careful that you do not bend it as you install it on the shield cover.



(3) As you do step 2 above, vary the position you hold the top cover as you lift it, and remove the top cover <2>.

Note:

Once the top cover is removed, it cannot be used again.



SECTION 4 ADJUSTMENT

This service manual does not describe ADJUSTMENT.

(There is no adjustment item on KRK-14H and KRK-15B.)

SECTION 5 TROUBLESHOOTING

5.1 KRK-14H Fault Diagnosis of the BGA (Ball Grid Array) IC

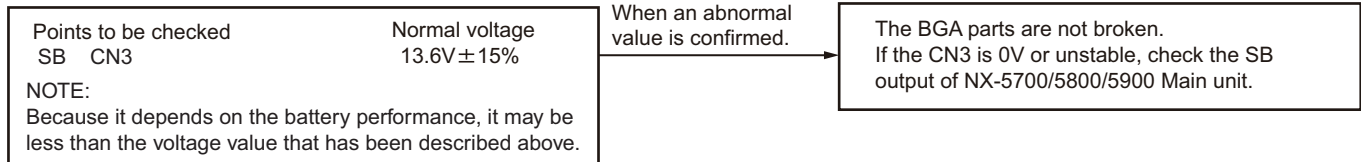
■ Overview

A flowchart for determining whether or not the transceiver can be powered on (the LCD does not function even if the power switch is turned on) due to broken BGA parts. As necessary, connect the NX-5700/5800/5900 and KCH-19 directly. Confirm whether there is a defect in the KRK-14H and KRK-15B.

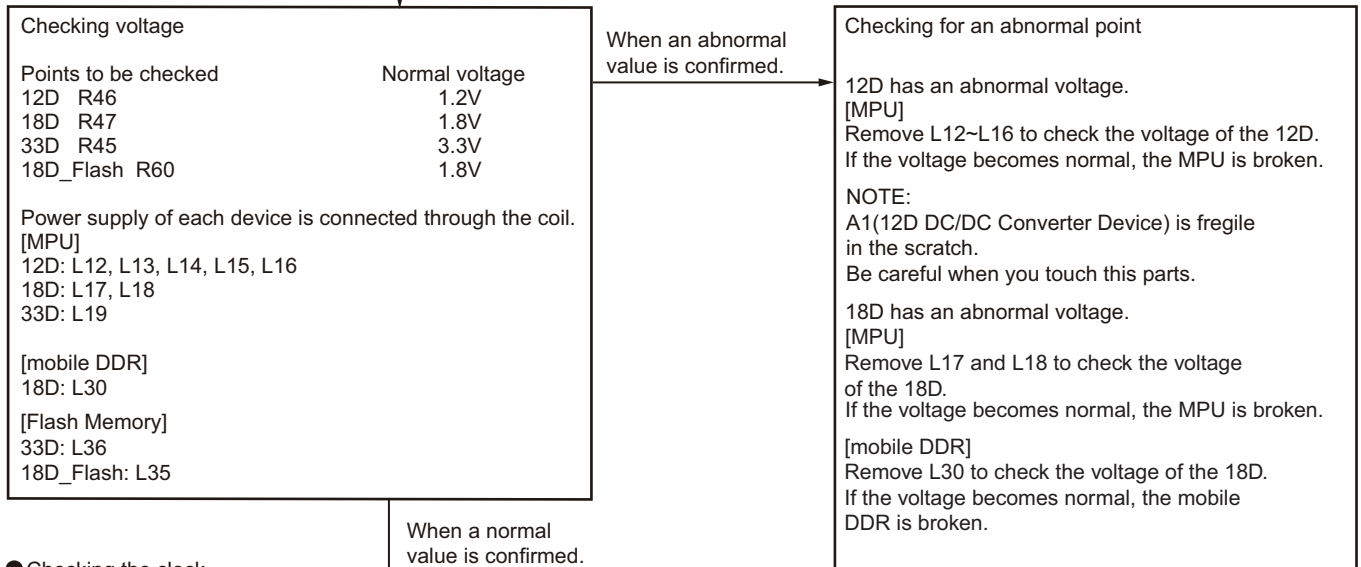
■ BGA parts

MPU (IC16), mobile DDR (IC23), Flash memory (IC29)

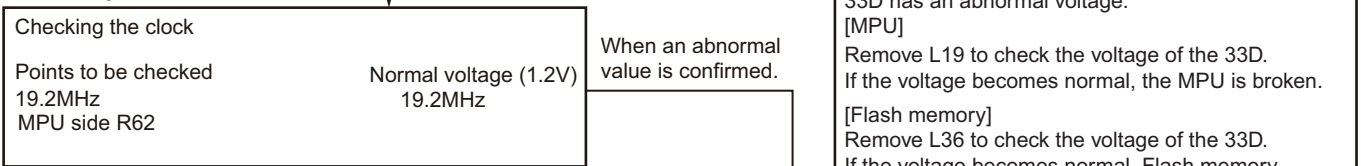
● Checking SB (Battery) voltage



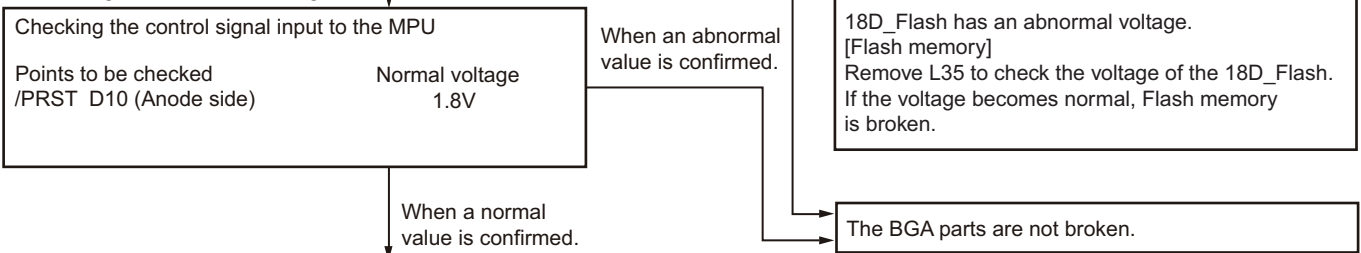
● Checking power supply voltage

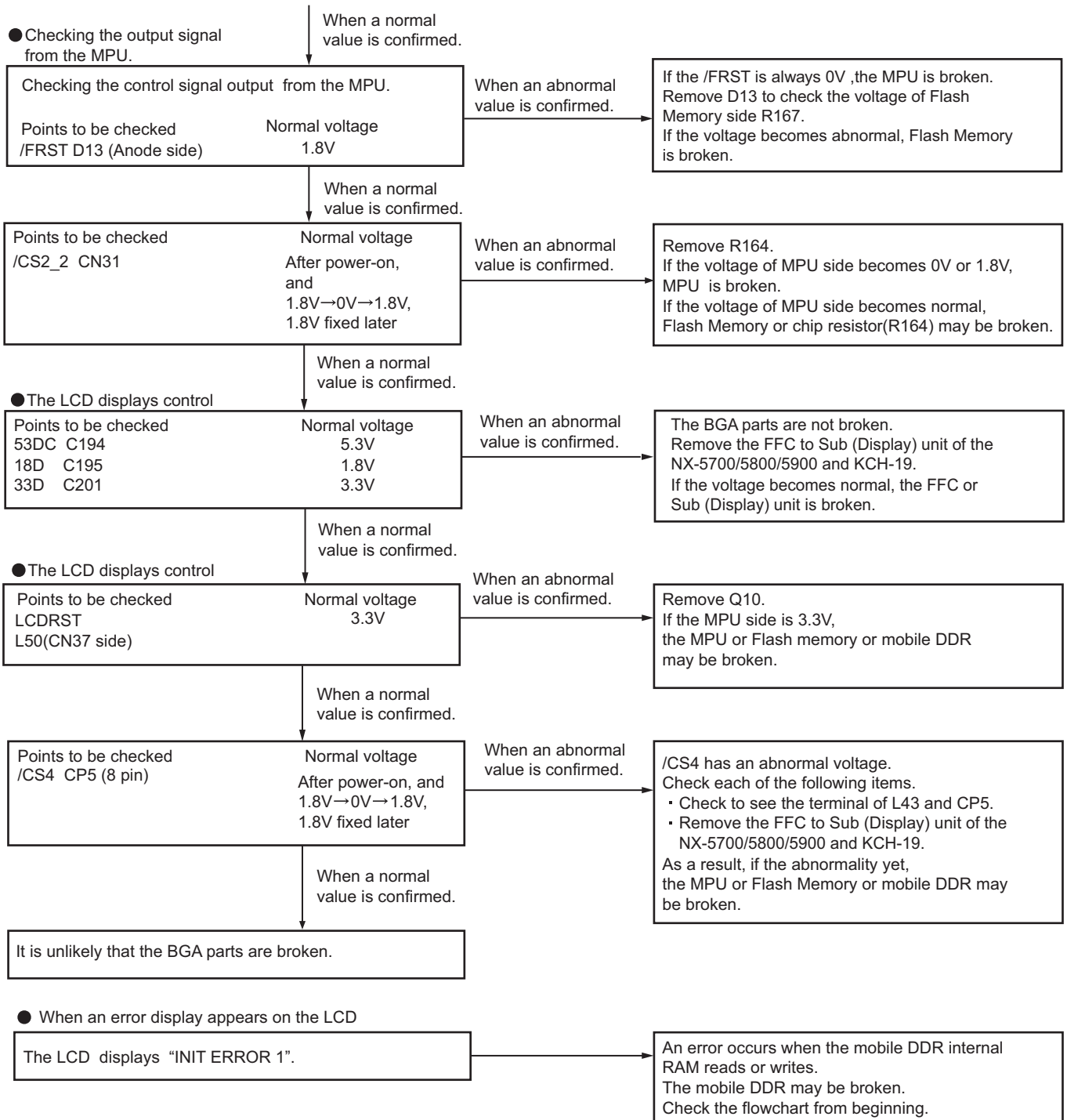


● Checking the clock



● Checking the Reset/Control signal





■ Descriptions of signal names

1) /PRST	:MPU reset signal	LOW → Reset
2) /FRST	:Flash Memory reset signal	LOW → Reset
3) /CS2_2	:Flash Memory chip select signal	LOW → Active
4) LCDRST	:LCD reset signal	LOW → (L50 CN37 side) → Reset
5) /CS_4	:LCD controller chip select signal	LOW → Active

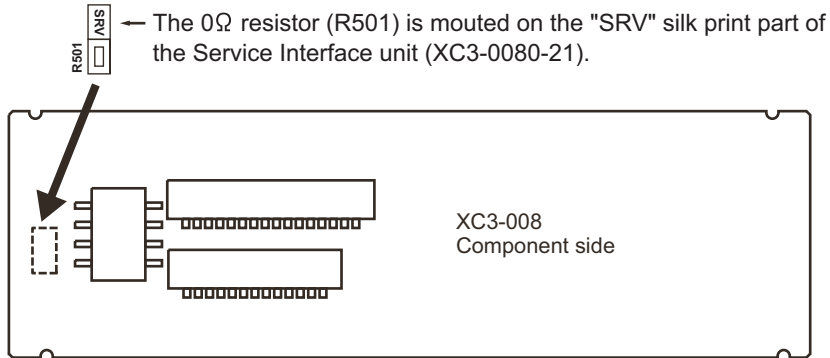
5.2 Replacing Interface Unit

■Interface Unit Information

Model Name	Orginal Interface Unit Number	For Service Interface Unit Number
KRK-14H	XC3-0080-20	XC3-0080-21

* The KRK-15B doesn't have a service interface unit. Please order normal interface unit (XC3-0090-20) listed in parts list.

■Method of confirming "Original Interface Unit" and "Service Interface Unit"



■Supplied Accessories of "Service Interface Unit"

Item (Including Parts Number)	Quantity
Interface Unit (XC3-008)	1

■"Service Interface Unit" Data

The following data is written on the service unit.

Data Type	Desctiption
Firmware	NX-5700/5800/5900 Firmware

■After Changing the PCB

After changing the printed circuit board, update Firmware following the instructions.

(1) Connection procedure

Connect the transceiver to the personal computer using the interface cable (KPG-46A/46U/46X).

Note:

You can only program firmware from the 8-pin microphone connector on the NX-5700/5800/5900 or KCH-19 front panel. Using the 25-pin logic interface (D-SUB 25-pin) on the NX-5700/5800/5900 rear panel will not work.

(2) Programming

- Start up the KENWOOD Firmware loader (KFL).
- Set the firmware to the KENWOOD Firmware loader (KFL).
- Turn the transceiver power ON.
- Check the connection between the transceiver and the personal computer.
- Press write button in the window.
 - When the transceiver starts to receive data, the [LOADING] display on the LCD.
 - The Firmware is written to DECK (NX-5700/5800/5900) and KRK-14H at the same time.
- If writing ends successfully, the checksum is calculated and a result is displayed.

5.3 Fault Diagnosis of the Multi RF Deck/Multi Control Head configuration

This chapter describes a troubleshooting in each failure mode.

Note 1:

Multi Deck operation is not possible if the firmware version of both Control Head and RF Deck is not R1.6 or later.

Error message mentioned below will not displayed if configuring a Multi RF Deck with a firmware version R1.5 or below.

In that case, please confirm below.

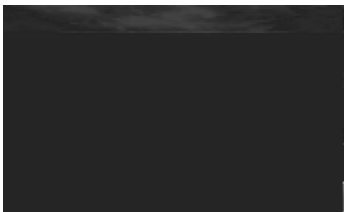
Confirm whether the firmware version of RF Deck 1 in Multi RF Deck configuration is R1.6 by using Transceiver Information of programming software. If it was not R1.6, please perform steps mentioned in [FIRM MISMATCH] Error Display in the below table.

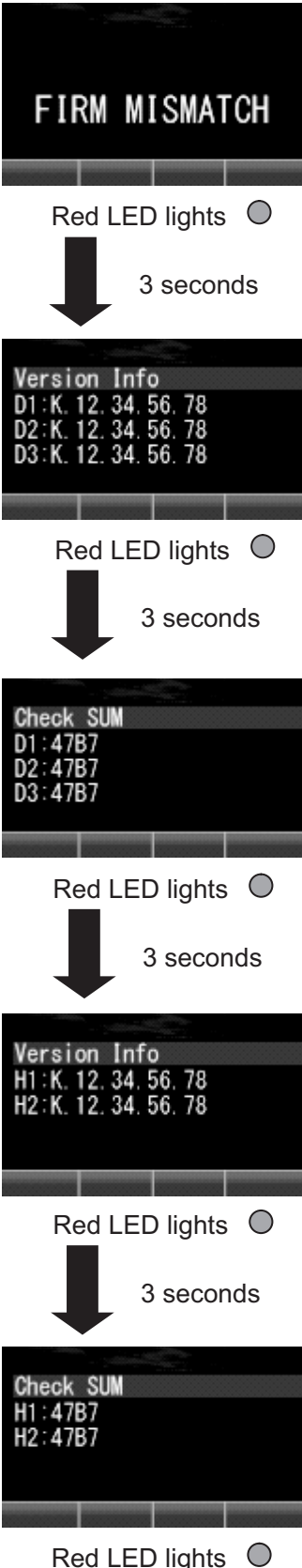
Note 2:

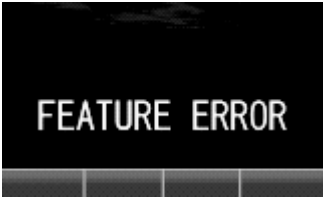


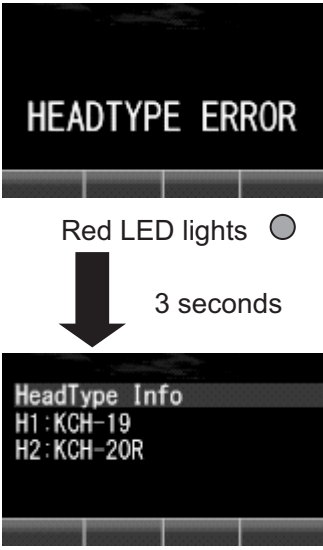
If the power does not turn off, please use the Force Power OFF (5 seconds long press).


5.3.1 Subscriber Unit

Content of display is common in KCH-20R and KCH-19. Pictures in the below explanation are a sample of KCH-20R. Multi Deck operation is not possible if the firmware version of both Control Head and RF Deck is not R1.6 or later. Error message mentioned below will not displayed if configuring a Multi RF Deck with a firmware version R1.5 or below. In that case, please confirm below.

Error Display	Note
	<p>If any of the RF Deck is damaged, Subscriber Unit does not start up.</p> <p>Troubleshooting</p> <ol style="list-style-type: none">(1) Confirm whether the configuration of Dip Switch of RF Deck and Control Head is correct in the Multi Head Configuration.(2) If the symptom is not improved, confirm whether the KRK-14H and KRK-15B is connected in the Multi Head configuration.(3) If the symptom is not improved, confirm whether the power is supplied to all RF Deck in the Multi Head configuration.(4) If the symptom is not improved, return the condition of subscriber unit to Single RF Deck/Single Control Head configuration.(5) Re-write a firmware (R1.6 or above) and programming data of Multi RF Deck to all RF Deck and Control Head, with Single RF Deck/Single Control Head configuration.(6) Re-assemble it to the Multi RF Deck configuration, and turn the power ON.

Error Display	Note
 <p>FIRM MISMATCH</p> <p>Red LED lights <input type="radio"/></p> <p>↓ 3 seconds</p> <p>Version Info D1: K. 12. 34. 56. 78 D2: K. 12. 34. 56. 78 D3: K. 12. 34. 56. 78</p> <p>Red LED lights <input type="radio"/></p> <p>↓ 3 seconds</p> <p>Check SUM D1: 47B7 D2: 47B7 D3: 47B7</p> <p>Red LED lights <input type="radio"/></p> <p>↓ 3 seconds</p> <p>Version Info H1: K. 12. 34. 56. 78 H2: K. 12. 34. 56. 78</p> <p>Red LED lights <input type="radio"/></p> <p>↓ 3 seconds</p> <p>Check SUM H1: 47B7 H2: 47B7</p> <p>Red LED lights <input type="radio"/></p>	<p>If the firmware version of each RF Deck and/or Control Head is not the same, "FIRM MISMATCH" will be displayed.</p> <p>Sequence of the transition of display is shown below.</p> <p>"FIRM MISMATCH"</p> <p>↓ Firmware Version of each RF Deck</p> <p>↓ Firmware Check Sum of each RF Deck</p> <p>↓ Firmware Version of each Control Head</p> <p>↓ Firmware Check Sum of each Control Head</p> <p>↓ "FIRM MISMATCH"</p> <p>Troubleshooting</p> <ol style="list-style-type: none"> (1) Return the condition of subscriber unit to Single RF Deck/Single Control Head configuration. (2) Re-write a firmware (R1.6 or above) to all RF Deck and Control Head, with Single RF Deck/Single Control Head configuration. (3) Re-assemble it to the Multi RF Deck configuration, and turn the power ON.

Error Display	Note
	<p>If Radio Feature License (KWD-5004MR) is not activated in all RF Deck and /or Control Head, "FEATURE ERROR" will be displayed.</p> <p>Troubleshooting</p> <ol style="list-style-type: none"> (1) Open the Transceiver Information window of programming software, and confirm whether the necessary Radio Feature License is installed into all RF Deck. If communication with programming software is impossible or the RF Deck selection window is not displayed, please proceed to the next step. (2) Return the condition of subscriber unit to Single RF Deck/Single Control Head configuration, and confirm whether the setting of software option "Multi RF Deck" of all RF Deck is activated. (3) If "FEATURE ERROR" is displayed, activate the software option "Multi RF Deck" of its RF Deck. (4) Re-assemble it to the Multi RF Deck configuration, and turn the power ON.
	<p>If the programming data is not written in all RF Deck and /or Control Head, "UNPROGRAM" will be displayed.</p> <p>Troubleshooting</p> <ol style="list-style-type: none"> (1) Write a programming data in Multi RF Deck configuration. If communication with programming software is impossible or if writing of Multi RF Deck data is impossible, please proceed to the next step. Note that the programming data should have channel data. (2) Return the condition of subscriber unit to Single RF Deck/Single Control Head configuration. (3) Write a programming data for Multi RF Deck into all RF Deck. (4) Re-assemble it to the Multi RF Deck configuration, and turn the power ON.
 <p>Red LED lights ●</p>	<p>If the programming data of each RF Deck is not the same, "FPU MISMATCH" will be displayed.</p> <p>Troubleshooting</p> <ol style="list-style-type: none"> (1) Please confirm a FPU Data. Particularly, if FPU > Product Information > Control Head Configuration is not correct, FPU MISMATCH is shown. (2) Write a programming data in Multi RF Deck configuration. If communication with programming software is impossible or if writing of Multi RF Deck data is impossible, please proceed to the next step. Note that the programming data should have channel data. (3) Return the condition of subscriber unit to Single RF Deck/Single Control Head configuration. (4) Write a programming data for Multi RF Deck into all RF Deck. (5) Re-assemble it to the Multi RF Deck configuration, and turn the power ON.
 <p>Red LED lights ●</p> <p>↓ 3 seconds</p> <p>HeadType Info H1:KCH-19 H2:KCH-20R</p> <p>Red LED lights ●</p>	<p>If the programming data classifying a kind of the Control Head and physical configuration of the Control Head does not match, "HEADTYPE ERROR" will be shown on the display.</p> <p>Troubleshooting</p> <ol style="list-style-type: none"> (1) Confirm whether the Control Head Configuration in the Production Information of KPG-D1 and physical configuration is matched. (2) Return the condition of subscriber unit to Single RF Deck/Single Control Head configuration. (3) Write a correct programming data for Multi RF Deck, which matches the Control Head Configuration in the Production Information of KPG-D1 and physical configuration, into all RF Deck. Note that the programming data should have channel data. (4) Re-assemble it to the Multi RF Deck configuration, and turn the power ON.

Error Display	Note
	<p>"UNIT NOT FOUND" is displayed when the programming data created by KPG-D1 is mismatched to the actual hardware setting.</p> <p>Troubleshooting</p> <ol style="list-style-type: none"> (1) Confirm whether the KRK-14H and KRK-15B is connected in the Multi Head configuration. (2) If the symptom is not improved, confirm whether the power is supplied to all RF Deck in the Multi Head configuration. (3) If the symptom is not improved, return the condition of subscriber unit to Single RF Deck/Single Control Head configuration. (4) Re-write a firmware (R1.6 or above) and programing data of Multi RF Deck to all RF Deck and Control Head, with Single RF Deck/Single Control Head configuration. (5) Re-assemble it to the Multi RF Deck configuration, and turn the power ON.

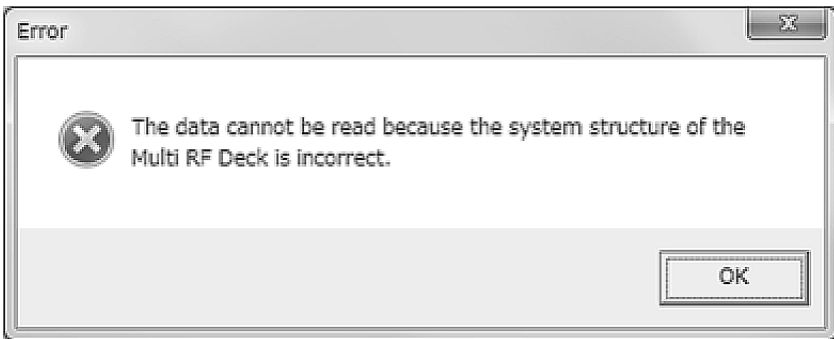
5.3.2 KPG-D1

It describes Troubleshooting for the error messages displayed when Programming data is created using KPG-D1.

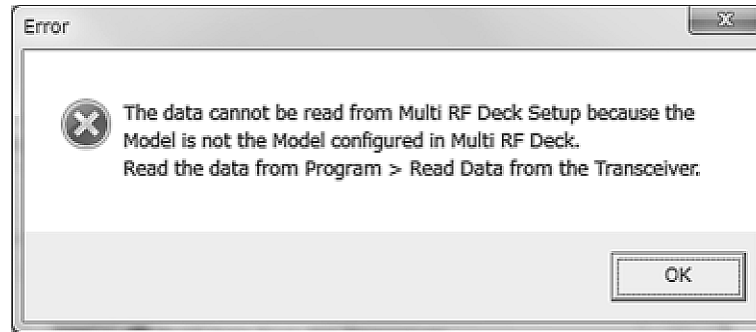
Error Message List

Case No.	Error Message
1-1	The data cannot be read because the system structure of the Multi RF Deck is incorrect.
1-2	The data cannot be read from Multi RF Deck Setup because the Model is not the Model configured in Multi RF Deck. Read the data from Program > Read Data from the Transceiver.
2-1	One or more errors have been detected in the following: "Emergency DTMF ID (Key)"
2-2	One or more errors have been detected in the following: "Direct Channel"
2-3	One or more errors have been detected in the following: "Home Channel"
2-4	Control Head cannot be configured in Bluetooth Interface Selection. To configure Control Head in Bluetooth Interface Selection, enable Bluetooth Serial Port Profile in Product Information for all RF Deck Data.
2-5	Control Head 1 or Control Head 2 cannot be configured in SD Card Selection. To configure Control Head 1 or Control Head 2 in SD Card Selection, enable microSD in Product Information for all RF Deck Data.
2-6	The following function is incorrectly configured: "Emergency Zone-Channel"

Case1 : When Multi RF Deck Setup data is read.

Case1-1

<p>Display Condition This message is displayed when SU was "FPU MISMATCH".</p>
<p>Troubleshooting Write the correct programming data to RF Deck that is connected by Multi RF Deck Setup.</p>

Case1-2

**Display Condition**

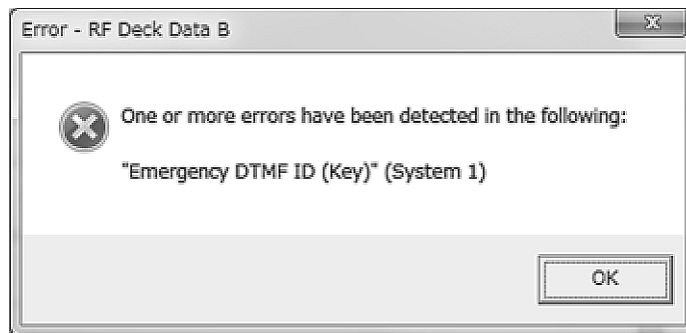
This message is displayed when the software option "Multi RF Deck" is not activated or SU that are connected is Portable radio.

Troubleshooting

Read the programming data from the RF Deck that is connected.

Case2 : When Multi RF Deck Setup data is written.

Case2-1

**Display Condition**

This message is displayed when "Emergency DTMF ID (Key)" is blank in the following conditions.

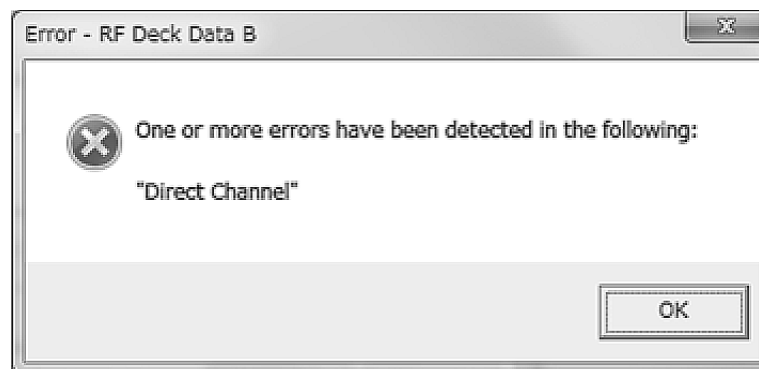
- Emergency Key (AUX) of Key Assignment is set to check.
- Emergency ID is set to DTMF.

Troubleshooting

Emergency ID of the appropriate RF Deck needs to be set to other than DTMF.

"Emergency Key (AUX)" of RF Deck Data that is configured by Master Operation Data needs to be set to Uncheck.

Case2-2

**Display Condition**

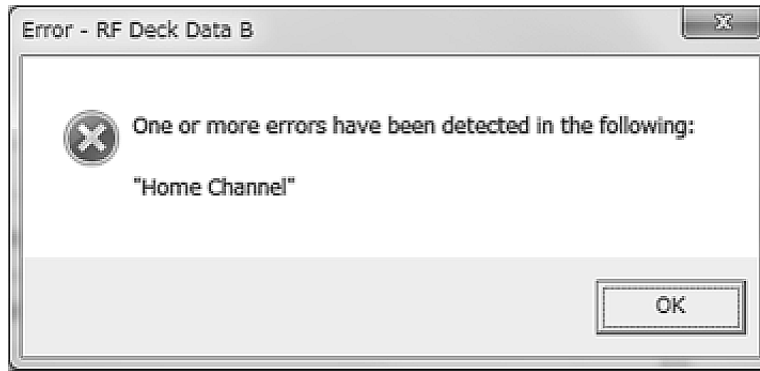
This message is displayed when Key Function is set to Direct Channel 1-5 and Zone-Channel is configured to the incorrect Direct Channel.

Troubleshooting

Zone-Channel of the correct RF Deck needs to be configured.

Direct Channel 1-5 of RF Deck Data that is configured by Master Operation Data needs to be canceled.

Case2-3

**Display Condition**

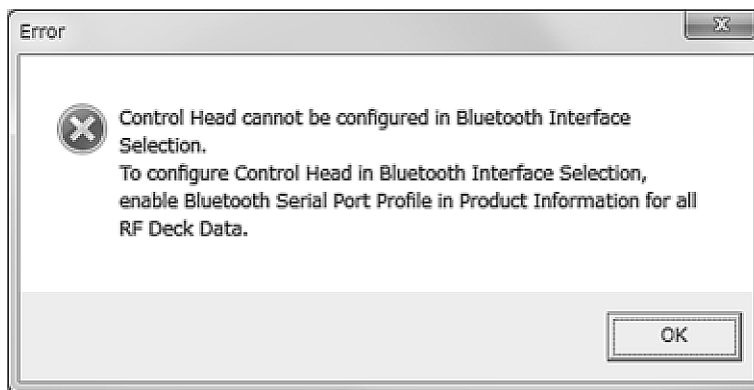
This message is displayed when there is no Zone for Home Channel.

Troubleshooting

Zone of the correct RF Deck needs to be set to Home Channel.

Home Channel of RF Deck Data that is configured by Master Operation Data needs to be canceled.

Case2-4

**Display Condition**

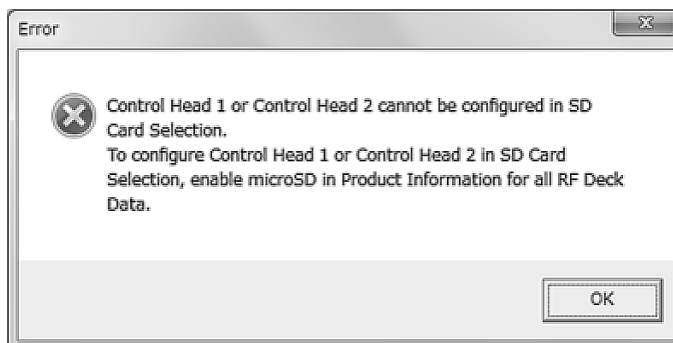
This message is displayed when "Bluetooth Interface Selection" is set to Control Head and it's not unified Bluetooth SPP Setting (Check or Uncheck) of all RF Deck.

Troubleshooting

Bluetooth SPP Setting (Check or Uncheck) of all RF Deck needs to be unified.

Bluetooth Interface Profile of RF Deck Data that is configured by Master Operation Data needs to be set to RF Deck.

Case2-5

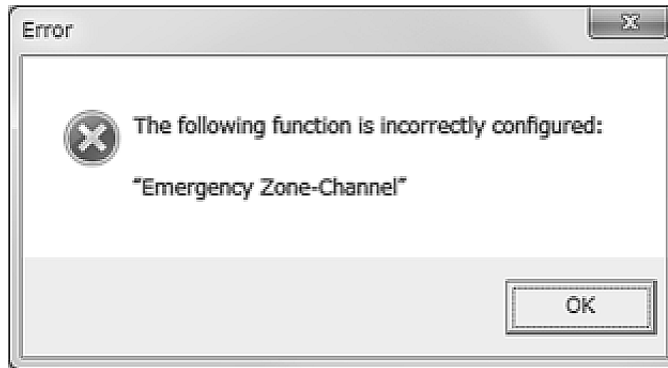
**Display Condition**

This message is displayed when "SD Card Selection" is set to Control Head1 or Control Head2 and The software option "microSD" of at least one RF Deck is not checked.

Troubleshooting

The software option "microSD" of all RF Deck need to be checked.

"SD Card Selection" of RF Deck Data that is configured by Master Operation Data needs to be set to RF Deck.



Display Condition

This message is displayed when "Emergency Channel Type" is Fixed and one of the following settings is configured.

- Zone or Channel set to be "None".
- RF Deck Data that does not exist in the Emergency RF Deck is configured.
- Zone-Channel for Emergency Zone-Channel does not exist in the RF Deck Data set to Emergency RF Deck.

The system type of Zone-Channel is Voting (Analog), Voting with Signaling (Analog), P25 Voting with NAC, Site Roaming (NXDN) and Site Roaming with RAN (NXDN).

Troubleshooting

After "OK" button is pressed during the error display, the following window is displayed.

It needs to be configured inapplicable "display condition" in this window.

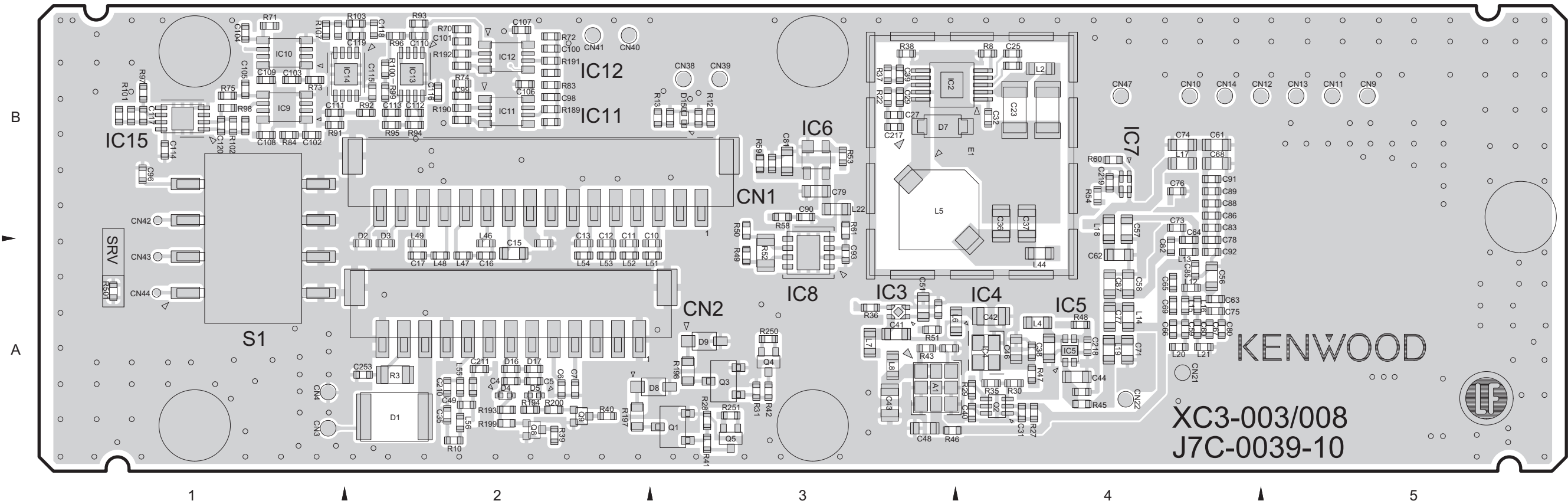


MEMO

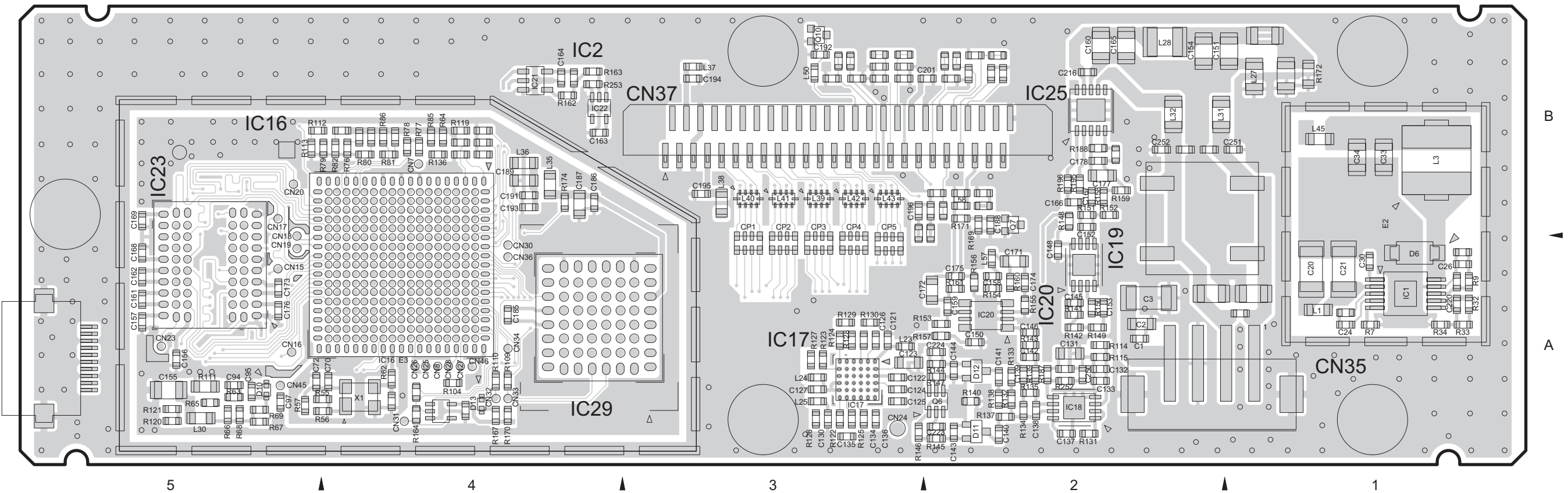
PRINTED CIRCUIT BOARD

■ INTERFACE UNIT (XC3-0080-20 (KRK-14H_M))

--- Component side view (J7C-0039-10) ---



--- Foil side view (J7C-0039-10) ---



● ADDRESS TABLE OF BOARD PARTS

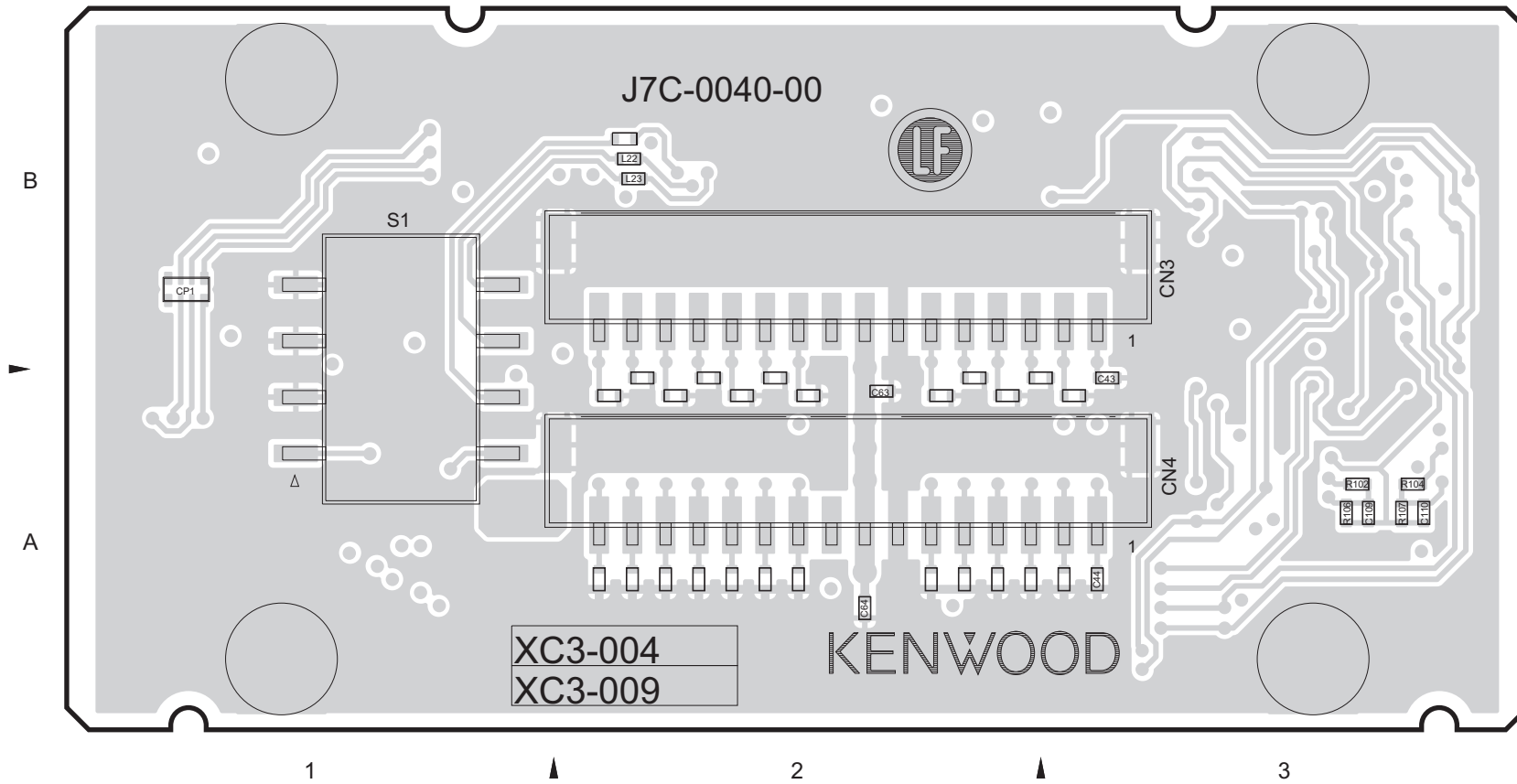
Each address may have an address error by one interval.



REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION
IC		R48	A-4A	R144	B-2A	C48	A-3A	C142	B-2A	L5	A-3B
IC1	B-1A	R49	A-3A	R145	B-2A	C49	A-2A	C143	B-2A	L6	A-4A
IC2	A-3B	R50	A-3B	R146	B-3A	C51	A-3A	C144	B-2A	L7	A-3A
IC3	A-3A	R51	A-3A	R147	B-2A	C56	A-4A	C145	B-2A	L8	A-3A
IC4	A-4A	R52	A-3A	R148	B-2B	C57	A-4B	C146	B-2A	L12	A-4A
IC5	A-4A	R53	A-3B	R149	B-2A	C58	A-4A	C148	B-2A	L13	A-4A
IC6	A-3B	R54	A-4B	R150	B-2A	C59	A-4A	C150	B-2A	L14	A-4A
IC7	A-4B	R55	B-4A	R151	B-2B	C60	A-4A	C151	B-1B	L15	A-4A
IC8	A-3A	R56	B-4A	R152	B-2B	C61	A-4B	C152	B-2B	L16	A-4A
IC9	A-1B	R57	B-5A	R153	B-2A	C62	A-4A	C153	B-2A	L17	A-4B
IC10	A-1B	R58	A-3B	R154	B-2A	C63	A-4A	C154	B-2B	L18	A-4B
IC11	A-2B	R59	A-3B	R155	B-2A	C64	A-4A	C155	B-5A	L19	A-4A
IC12	A-2B	R60	A-4B	R156	B-2A	C65	A-4A	C156	B-5A	L20	A-4A
IC13	A-2B	R61	A-3B	R157	B-2A	C66	A-4A	C157	B-5A	L21	A-4A
IC14	A-2B	R62	B-4A	R158	B-2B	C67	A-4A	C158	B-2A	L22	A-3B
IC15	A-1B	R63	B-5A	R159	B-2B	C68	A-4B	C159	B-2A	L23	B-3A
IC16	B-4A	R64	B-4B	R160	B-2A	C69	A-4A	C160	B-2B	L24	B-3A
IC17	B-3A	R65	B-5A	R161	B-2A	C70	B-4A	C161	B-5A	L25	B-3A
IC18	B-2A	R66	B-5A	R162	B-4B	C71	A-4A	C162	B-5A	L27	B-1B
IC19	B-2A	R67	B-5A	R163	B-4B	C72	B-5A	C163	B-4B	L28	B-2B
IC20	B-2A	R68	B-5A	R164	B-4A	C73	A-4B	C164	B-4B	L30	B-5A
IC21	B-4B	R69	B-5A	R167	B-4A	C74	A-4B	C165	B-2B	L31	B-2B
IC22	B-4B	R70	A-2B	R169	B-2B	C75	A-4A	C166	B-2B	L32	B-2B
IC23	B-5A	R71	A-1B	R170	B-4A	C76	A-4B	C167	B-2B	L35	B-4B
IC25	B-2B	R72	A-2B	R171	B-2B	C77	A-4A	C168	B-5A	L36	B-4B
IC29	B-4A	R73	A-1B	R172	B-1B	C78	A-4A	C169	B-5B	L37	B-3B
		R74	A-2B	R174	B-4B	C79	A-3B	C171	B-2A	L38	B-3B
		R75	A-1B	R187	B-2A	C80	A-4A	C172	B-2A	L39	B-3B
TRANSISTOR		R76	B-4B	R188	B-2B	C81	A-3B	C173	B-5A	L40	B-3B
Q1	A-3A	R77	B-4B	R189	A-2B	C82	A-4A	C174	B-2A	L41	B-3B
Q2	A-4A	R78	B-4B	R190	A-2B	C83	A-4B	C175	B-2A	L42	B-3B
Q3	A-3A	R79	B-4B	R191	A-2B	C85	A-4A	C176	B-5A	L43	B-3B
Q4	A-3A	R80	B-4B	R192	A-2B	C86	A-4B	C177	B-2B	L44	A-4A
Q5	A-3A	R81	B-4B	R193	A-2A	C87	A-4A	C178	B-2B	L45	B-1B
Q6	B-2A	R82	B-4B	R194	A-2A	C88	A-4B	C185	B-4A	L46	A-2A
Q7	B-2B	R83	A-2B	R195	B-2B	C89	A-4B	C186	B-4B	L47	A-2A
Q8	A-2A	R84	A-1B	R196	B-2B	C90	A-3B	C187	B-4B	L48	A-2A
Q9	A-2A	R85	B-4B	R197	A-2A	C91	A-4B	C188	B-2B	L49	A-2A
Q10	B-3B	R86	B-4B	R198	A-3A	C92	A-4A	C189	B-4B	L50	B-3B
		R91	A-1B	R199	A-2A	C93	A-3A	C191	B-4B	L51	A-3A
DIODE		R92	A-2B	R200	A-2A	C94	B-5A	C192	B-3B	L52	A-2A
D1	A-2A	R93	A-2B	R250	A-3A	C95	B-5A	C193	B-4B	L53	A-2A
D2	A-2A	R94	A-2B	R251	A-3A	C96	A-1B	C194	B-3B	L54	A-2A
D3	A-2A	R95	A-2B	R252	B-2A	C97	B-5A	C195	B-3B	L55	A-2A
D4	A-2A	R96	A-2B	R253	B-4B	C98	A-2B	C196	B-3B	L56	A-2A
D5	A-2A	R97	A-1B	R501	A-1A	C99	A-2B	C201	B-2B	L57	B-2A
D6	B-1A	R98	A-1B			C100	A-2B	C210	A-2A	L58	B-2B
D7	A-3B	R99	A-2B	CAPACITOR		C101	A-2B	C211	A-2A		
D8	A-3A	R100	A-2B	C1	B-2A	C102	A-1B	C216	B-2B		
D9	A-3A	R101	A-1B	C2	B-2A	C103	A-1B	C217	A-3B		
D10	B-5A	R102	A-1B	C3	B-2A	C104	A-1B	C218	A-4A		
D11	B-2A	R103	A-2B	C4	A-2A	C105	A-1B	C219	A-4B		
D12	B-2A	R104	B-4A	C5	A-2A	C106	A-2B	C220	B-1A		
D13	B-4A	R107	A-1B	C6	A-2A	C107	A-2B	C223	B-2A		
D15	A-3B	R109	B-4A	C7	A-2A	C108	A-1B	C224	B-2A		
D16	A-2A	R110	B-4A	C10	A-3A	C109	A-1B	C250	B-2A		
D17	A-2A	R111	B-5A	C11	A-2A	C110	A-2B	C251	B-1B		
		R112	B-5B	C12	A-2A	C111	A-1B	C252	B-2B		
RESISTOR		R113	B-5B	C13	A-2A	C112	A-2B	C253	A-2A		
R3	A-2A	R114	B-2A	C15	A-2A	C113	A-2B				
R7	B-1A	R115	B-2A	C16	A-2A	C114	A-1B	OTHER			
R8	A-4B	R119	B-4B	C17	A-2A	C115	A-2B	X1	B-4A		
R9	B-1A	R120	B-5A	C20	B-1A	C116	A-2B				
R10	A-2A	R121	B-5A	C21	B-1A	C117	A-1B	CN1	A-2B		
R12	A-3B	R122	B-3A	C23	A-4B	C118	A-2B	CN2	A-2A		
R13	A-3B	R123	B-3A	C24	B-1A	C119	A-2B	CN35	B-2A		
R22	A-3B	R124	B-3A	C25	A-4B	C120	A-1B	CN37	B-3B		
R27	A-4A	R125	B-3A	C26	B-1A	C121	B-3A				
R28	A-3A	R126	B-3A	C27	A-3B	C122	B-3A	S1	A-1B		
R29	A-4A	R127	B-3A	C29	A-3B	C123	B-3A				
R30	A-4A	R128	B-3A	C30	B-1A	C124	B-3A	CP1	B-3A		
R31	A-3A	R129	B-3A	C31	A-4A	C125	B-3A	CP2	B-3A		
R32	B-1A	R130	B-3A	C32	A-4B	C126	B-3A	CP3	B-3A		
R33	B-1A	R131	B-2A	C33	B-1B	C127	B-3A	CP4	B-3A		
R34	B-1A	R132	B-2A	C34	B-1B	C130	B-3A	CP5	B-3A		
R35	A-4A	R133	B-2A	C35	A-2A	C131	B-2A				
R36	A-3A	R134	B-2A	C36	A-4B	C132	B-2A	A1	A-3A		
R37	A-3B	R135	B-2A	C37	A-4B	C133	B-2A				
R38	A-3B	R136	B-4B	C38	A-4A	C134	B-3A	E1	A-4B		
R39	A-2A	R137	B-2A	C39	A-3B	C135	B-3A	E2	B-1B		
R40	A-2A	R138	B-2A	C40	A-4A	C136	B-3A	E3	B-4A		
R41	A-3A	R139	B-2A	C41	A-3A	C137	B-2A				
R42	A-3A	R140	B-2A	C42	A-4A	C138	B-2A	L1	B-1A		
R43	A-3A	R141	B-2A	C43	A-3A	C139	B-2A	L2	A-4B		
R44	A-4A	R142	B-2A	C44	A-4A	C140	B-2A	L3	B-1B		
R45	A-4A	R143	B-2A	C46	A-4A	C141	B-2A	L4	A-4A		
R46	A-3A										
R47	A-4A										

■ INTERFACE UNIT (XC3-0090-20 (KRK-15B_M))

--- Component side view (J7C-0040-00) ---



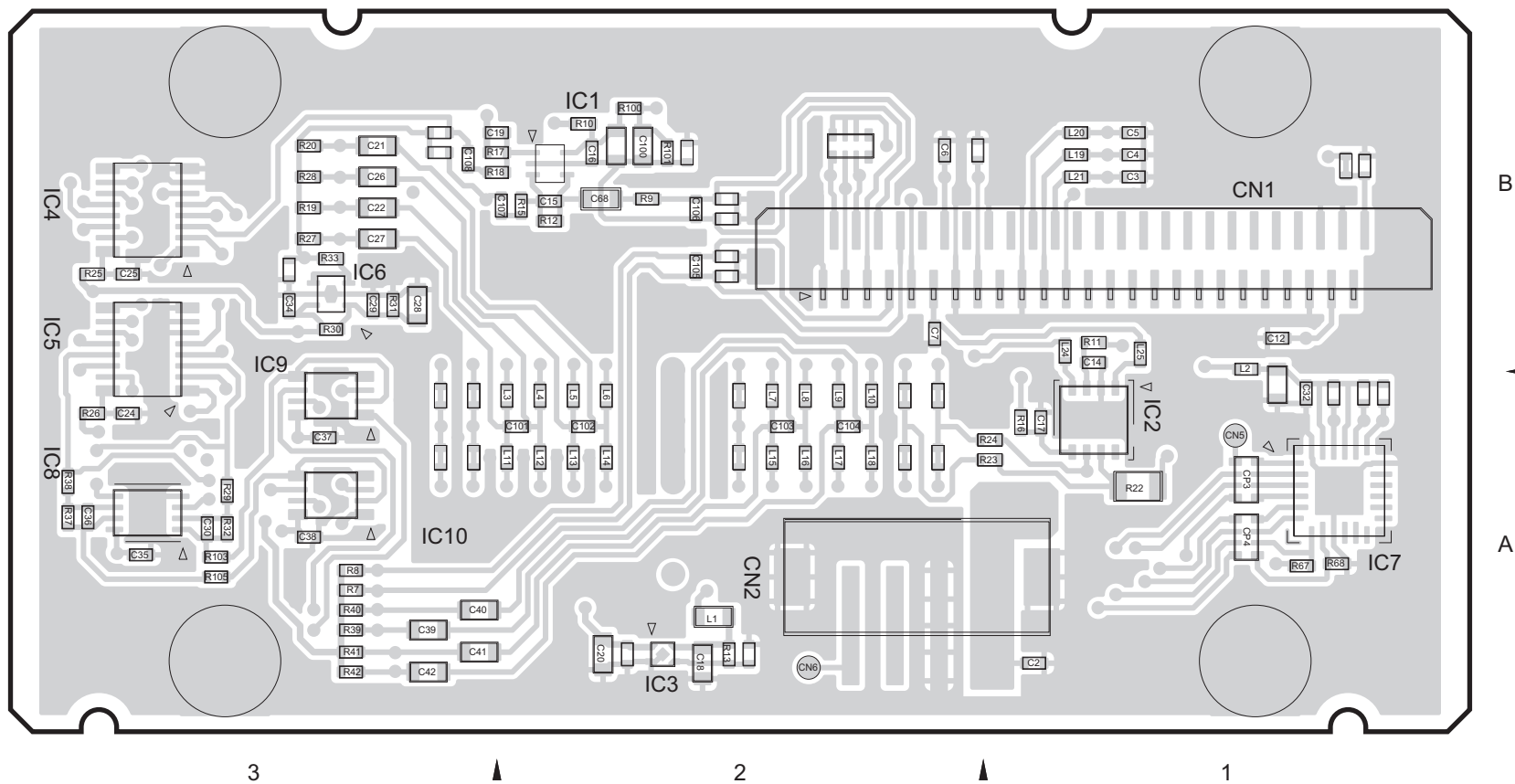
● ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one interval.



REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION	REF.NO.	LOCATION
IC		R29	B-3A	C17	B-1A	C105	B-2B	L15	B-2A
IC1	B-2B	R30	B-3B	C18	B-2A	C106	B-2B	L16	B-2A
IC2	B-1A	R31	B-3B	C19	B-3B	C107	B-2B	L17	B-2A
IC3	B-2A	R32	B-3A	C20	B-2A	C108	B-3B	L18	B-2A
IC4	B-3B	R33	B-3B	C21	B-3B	C109	A-3A	L19	B-1B
IC5	B-3B	R37	B-3A	C22	B-3B	C110	A-3A	L20	B-1B
IC6	B-3B	R38	B-3A	C24	B-3A			L21	B-1B
IC7	B-1A	R39	B-3A	C25	B-3B	OTHER		L22	A-2B
IC8	B-3A	R40	B-3A	C26	B-3B	CN1	B-1B	L23	A-2B
IC9	B-3A	R41	B-3A	C27	B-3B	CN2	B-2A	L24	B-1B
IC10	B-3A	R42	B-3A	C28	B-3B	CN3	A-2B	L25	B-1B
		R67	B-1A	C29	B-3B	CN4	A-2A		
RESISTOR		R68	B-1A	C30	B-3A				
R7	B-3A	R100	B-2B	C32	B-1A	S1	A-1B		
R8	B-3A	R101	B-2B	C34	B-3B				
R9	B-2B	R102	A-3A	C35	B-3A	CP1	A-1B		
R10	B-2B	R103	B-3A	C36	B-3A	CP3	B-1A		
R11	B-1B	R104	A-3A	C37	B-3A	CP4	B-1A		
R12	B-2B	R105	B-3A	C38	B-3A				
R13	B-2A	R106	A-3A	C39	B-3A	L1	B-2A		
R15	B-2B	R107	A-3A	C40	B-3A	L2	B-1B		
R16	B-1A			C41	B-3A	L3	B-2A		
R17	B-3B	CAPACITOR		C42	B-3A	L4	B-2A		
R18	B-3B	C2	B-1A	C43	A-3A	L5	B-2A		
R19	B-3B	C3	B-1B	C44	A-3A	L6	B-2A		
R20	B-3B	C4	B-1B	C63	A-2A	L7	B-2A		
R22	B-1A	C5	B-1B	C64	A-2A	L8	B-2A		
R23	B-1A	C6	B-2B	C68	B-2B	L9	B-2A		
R24	B-1A	C7	B-2B	C100	B-2B	L10	B-2A		
R25	B-3B	C12	B-1B	C101	B-2A	L11	B-2A		
R26	B-3A	C14	B-1B	C102	B-2A	L12	B-2A		
R27	B-3B	C15	B-2B	C103	B-2A	L13	B-2A		
R28	B-3B	C16	B-2B	C104	B-2A	L14	B-2A		

--- Foil side view (J7C-0040-00) ---



SCHEMATIC DIAGRAM

INTERFACE UNIT (XC3-0080-20 (KRK-14H_M))

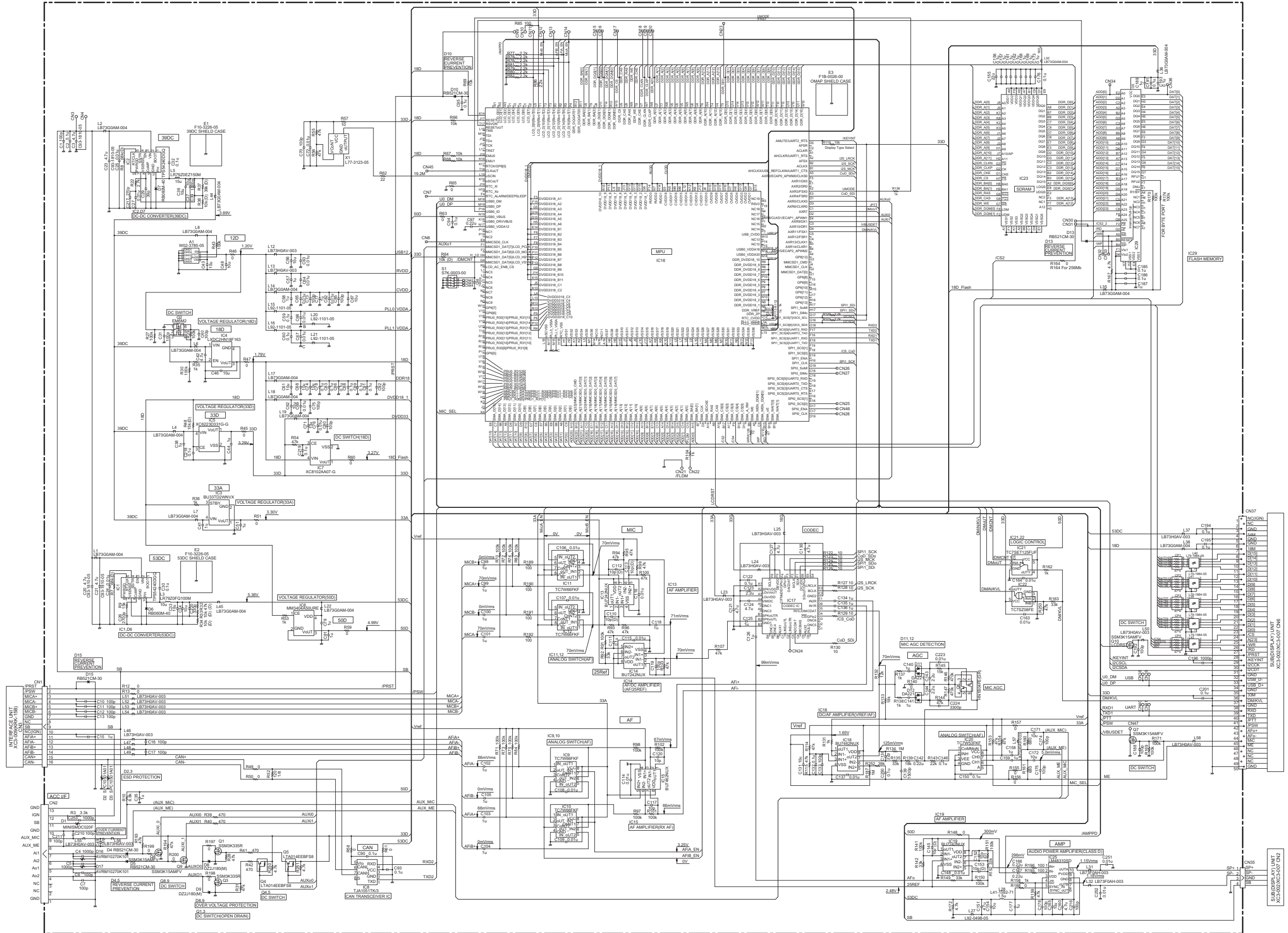
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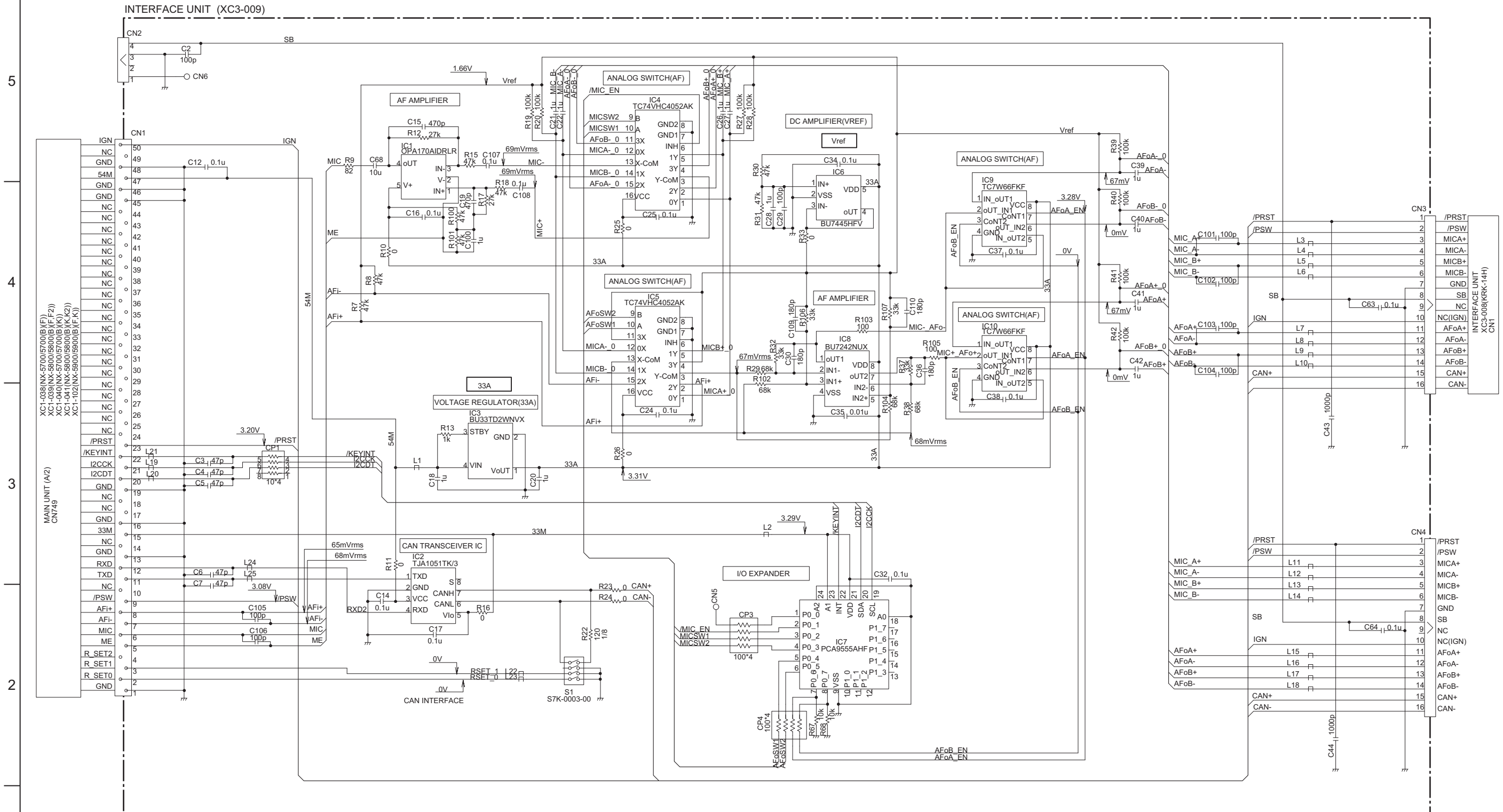
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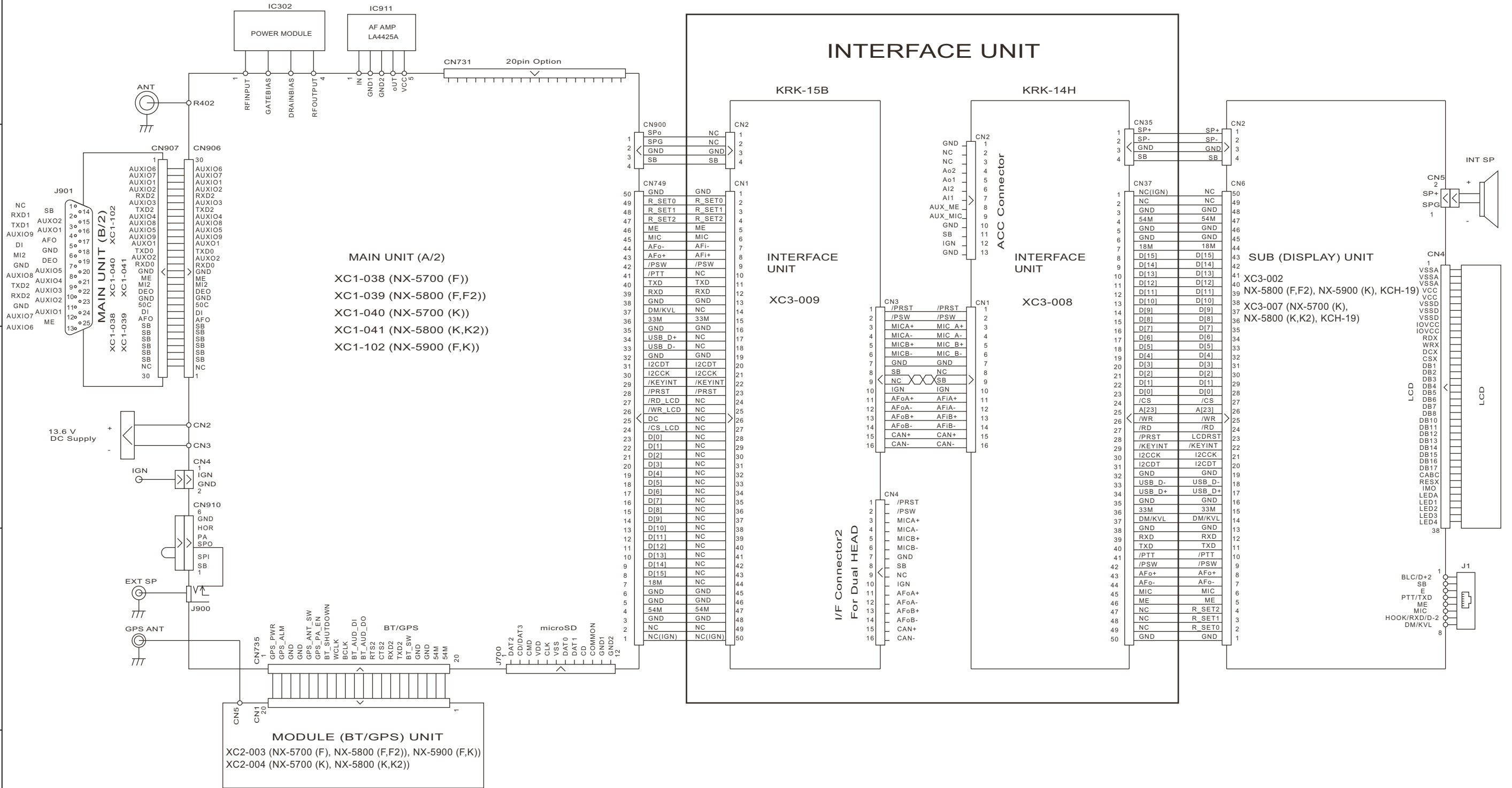


INTERFACE UNIT (XC3-0090-20 (KRK-15B_M))



INTERCONNECTION DIAGRAM

5
4
3
2
1



MEMO

PARTS LIST

[KRK-14H,KRK-15B]

* SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

* BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine parts be used.

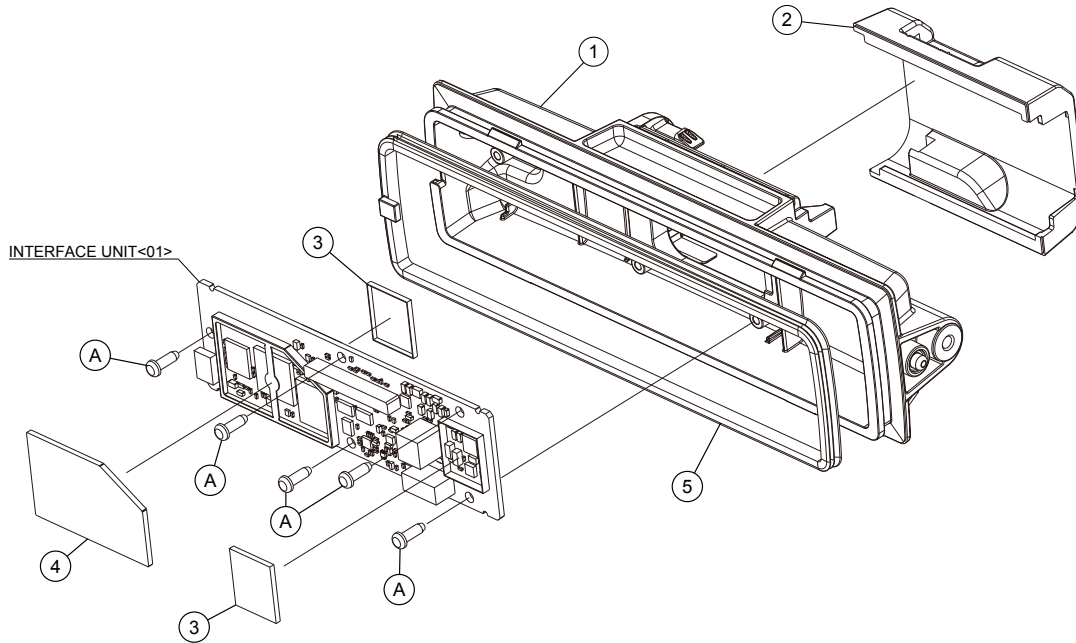
* (x_) in a description column shows the number of the used part.

- Contents -

Exploded view of general assembly and parts list	3-2
Electrical parts list	3-4
Packing materials and accessories parts list	3-8

Exploded view of general assembly and parts list (KRK-14H)

Block No.M1MM



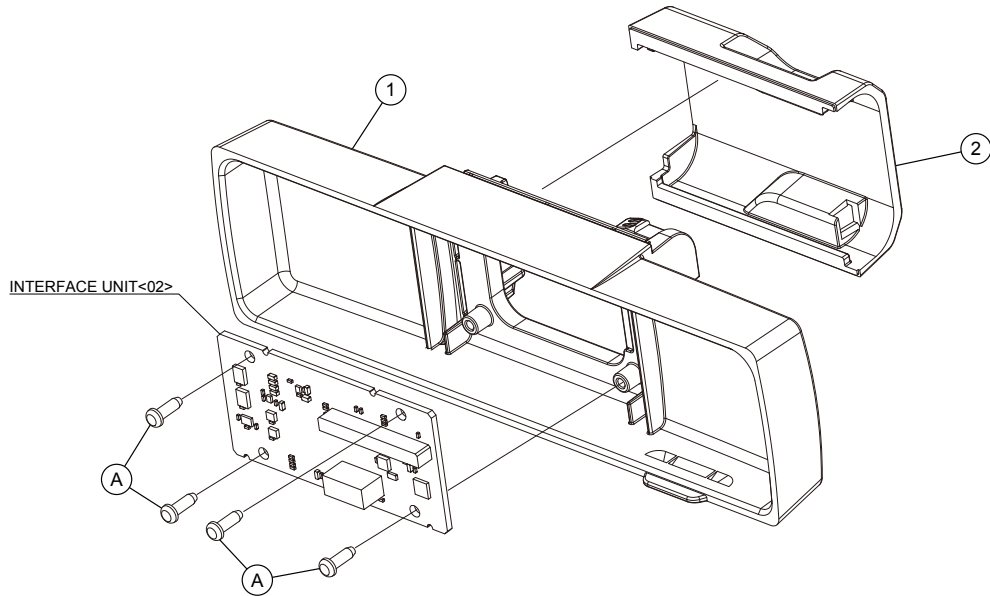
General assembly

Block No. [M][1][M][M]

△ Symbol No.	Part No.	Part Name	Description	Local
1	A2D-0001-00	REAR PANEL		
2	F0G-0002-00	MOLDING COVER		
3	F10-3225-05	SHIELDING COVER(DC/DC)	(x2)	
4	F1B-0027-00	SHIELDING COVER(OMAP)		
5	G5D-0017-00	PACKING(FRONT)		
A	N80-2608-48	P.HEAD T.SCREW	(x5)	
-	XC3-0080-21	SERVICE INTERFACE UNIT		

Exploded view of general assembly and parts list (KRK-15B)

Block No.M2MM



General assembly

Block No. [M][2][M][M]

△ Symbol No.	Part No.	Part Name	Description	Local
1	A6C-0001-00	MAIN PANEL		
2	F0G-0002-00	MOLDING COVER		
A	N80-2608-48	P.HEAD T.SCREW	(x4)	

Electrical parts list

INTERFACE UNIT

XC3-0080-20(KRK-14H_M)

***Note : This part cannot be replaced. Therefore, this part is not supplied as a service part.**

Block No. [0][1]

Symbol No.	Part No.	Part Name	Description	Local
IC1	TPS54240DGQ	IC(MOS-IC)		
IC2	TPS54240DGQ	IC(MOS-IC)		
IC3	BU33TD2WNVX	IC(MOS-IC)		
IC4	LXDC2HN18F163	IC(MOS-IC)		
IC5	XC6223D331G-G	IC(MOS-IC)		
IC6	MM3404A50URE	IC(MOS-IC)		
IC7	XC8102AA07-G	IC(MOS-IC)		
IC8	TJA1051TK/3	IC(MOS-IC)		
IC9	TC7W66FKF	IC(MOS-IC)		
IC10	TC7W66FKF	IC(MOS-IC)		
IC11	TC7W66FKF	IC(MOS-IC)		
IC12	TC7W66FKF	IC(MOS-IC)		
IC13	BU7242NUX	IC(MOS-IC)		
IC14	BU7242NUX	IC(MOS-IC)		
IC15	BU7462NUX	IC(MOS-IC)		
IC16	-----	MPU IC	*Note	
IC17	-----	MOS-IC	*Note	
IC18	BU7462NUX	IC(MOS-IC)		
IC19	BU7242NUX	IC(MOS-IC)		
IC20	TC7W53FKF	IC(MOS-IC)		
IC21	TC7SET125FUF	IC(MOS-IC)		
IC22	TC7SZ08FE	IC(MOS-IC)		
IC23	-----	SRAM IC	*Note	
IC25	LM48310SD	ANALOG IC		
IC29	-----	ROM IC	*Note	
Q1	SSM3K335R	FET		
Q2	EM6M2	FET		
Q3	SSM3K335R	FET		
Q4	LTA014EEBFS8	DIGI TRANSISTOR		
Q5	LTA014EEBFS8	DIGI TRANSISTOR		
Q6	HN1B04FE(GR)	TRANSISTOR		
Q7	SSM3K15AMFV	FET		
Q8	SSM3K15AMFV	FET		
Q9	SSM3K15AMFV	FET		
Q10	SSM3K15AMFV	FET		
D1	MINISMDC020F	VARISTOR		
D2	SPC10501A01	VARISTOR		
D3	SPC10501A01	VARISTOR		
D4	RB521CM-30	DIODE		
D5	RB521CM-30	DIODE		
D6	RB060M-40	DIODE		
D7	RB060M-40	DIODE		
D8	DZ2J180(M)	ZENER DIODE		
D9	DZ2J180(M)	ZENER DIODE		
D10	RB521CM-30	DIODE		
D11	DA221	DIODE		
D12	DA221	DIODE		
D13	RB521CM-30	DIODE		
D15	RB521CM-30	DIODE		
D16	AVRM10270K101	VARISTOR		
D17	AVRM10270K101	VARISTOR		
C1	CC73HCH1H101J	C CAPACITOR	100PF J	
C2	CK73GBB1H104K	C CAPACITOR	0.10UF K	
C3	C93-1810-05	C CAPACITOR	4.7UF K	
C4	CK73HBB1H102K	C CAPACITOR	1000PF K	
C5	CK73HBB1H102K	C CAPACITOR	1000PF K	
C6	CC73HCH1H101J	C CAPACITOR	100PF J	
C7	CC73HCH1H101J	C CAPACITOR	100PF J	
C10	CC73HCH1H101J	C CAPACITOR	100PF J	
C11	CC73HCH1H101J	C CAPACITOR	100PF J	
C12	CC73HCH1H101J	C CAPACITOR	100PF J	
C13	CC73HCH1H101J	C CAPACITOR	100PF J	
C15	CK73GB1H105K	C CAPACITOR	1.0UF K	
C16	CC73HCH1H101J	C CAPACITOR	100PF J	
C17	CC73HCH1H101J	C CAPACITOR	100PF J	

Symbol No.	Part No.	Part Name	Description	Local
C20	C93-1810-05	C CAPACITOR	4.7UF K	
C21	C93-1810-05	C CAPACITOR	4.7UF K	
C23	C93-1810-05	C CAPACITOR	4.7UF K	
C24	CK73HB1H103K	C CAPACITOR	10000PF K	
C25	CK73HB1H103K	C CAPACITOR	10000PF K	
C26	CK73HB1H272K	C CAPACITOR	2700PF K	
C27	CK73HB1H103K	C CAPACITOR	10000PF K	
C29	CC73HCH1H390G	C CAPACITOR	39PF G	
C30	CK73HB1E104K	C CAPACITOR	0.10UF K	
C31	CC73HCH1H101J	C CAPACITOR	100PF J	
C32	CK73HB1E104K	C CAPACITOR	0.10UF K	
C33	CK73FB1C106K	C CAPACITOR	10UF K	
C34	CK73FB1C106K	C CAPACITOR	10UF K	
C35	CK73HB1C105K	C CAPACITOR	1.0UF K	
C36	CK73FB1C106K	C CAPACITOR	10UF K	
C37	CK73FB1C106K	C CAPACITOR	10UF K	
C38	CK73GB1E105K	C CAPACITOR	1.0UF K	
C39	CK73HB1H182K	C CAPACITOR	1800PF K	
C40	CC73HCH1H101J	C CAPACITOR	100PF J	
C41	CK73GB1E105K	C CAPACITOR	1.0UF K	
C42	CK73FXR1E475K	C CAPACITOR	4.7UF K	
C43	CK73FB1C106K	C CAPACITOR	10UF K	
C44	CK73GB1E105K	C CAPACITOR	1.0UF K	
C46	CK73GB0J106K	C CAPACITOR	10UF K	
C48	CK73GB0J106K	C CAPACITOR	10UF K	
C49	CC73HCH1H101J	C CAPACITOR	100PF J	
C51	CK73GB1E105K	C CAPACITOR	1.0UF K	
C56	CK73GB0J106K	C CAPACITOR	10UF K	
C57	CK73GB1E105K	C CAPACITOR	1.0UF K	
C58	CK73GB1E105K	C CAPACITOR	1.0UF K	
C59	CK73HB1E104K	C CAPACITOR	0.10UF K	
C60	CK73HB1E104K	C CAPACITOR	0.10UF K	
C61	CK73GB0J106K	C CAPACITOR	10UF K	
C62	CK73GB0J106K	C CAPACITOR	10UF K	
C63	CK73HB1H103K	C CAPACITOR	10000PF K	
C64	CK73HB1H103K	C CAPACITOR	10000PF K	
C65	CK73HB1H103K	C CAPACITOR	10000PF K	
C66	CK73HB1H103K	C CAPACITOR	10000PF K	
C67	CK73HB1H103K	C CAPACITOR	10000PF K	
C68	CK73GB0J106K	C CAPACITOR	10UF K	
C69	CK73HB1H103K	C CAPACITOR	10000PF K	
C70	CC73HCH1H101J	C CAPACITOR	100PF J	
C71	CK73GB0J106K	C CAPACITOR	10UF K	
C72	CK73HB1H103K	C CAPACITOR	10000PF K	
C73	CC73HCH1H101J	C CAPACITOR	100PF J	
C74	CK73GB0J106K	C CAPACITOR	10UF K	
C75	CC73HCH1H101J	C CAPACITOR	100PF J	
C76	CK73HB1H103K	C CAPACITOR	10000PF K	
C77	CK73GB1E105K	C CAPACITOR	1.0UF K	
C78	CK73HB1E104K	C CAPACITOR	0.10UF K	
C79	CK73GB1E105K	C CAPACITOR	1.0UF K	
C80	CC73HCH1H101J	C CAPACITOR	100PF J	
C81	CK73GB1E105K	C CAPACITOR	1.0UF K	
C82	CK73HB1H103K	C CAPACITOR	10000PF K	
C83	CK73HB1E104K	C CAPACITOR	0.10UF K	
C85	CC73HCH1H101J	C CAPACITOR	100PF J	
C86	CK73HB1E104K	C CAPACITOR	0.10UF K	
C87	CK73GB0J106K	C CAPACITOR	10UF K	
C88	CK73HB1E104K	C CAPACITOR	0.10UF K	
C89	CK73HB1E104K	C CAPACITOR	0.10UF K	
C90	CK73HB1E104K	C CAPACITOR	0.10UF K	
C91	CK73HB1E104K	C CAPACITOR	0.10UF K	
C92	CC73HCH1H101J	C CAPACITOR	100PF J	
C93	CK73HB1E104K	C CAPACITOR	0.10UF K	
C94	CK73HB1E104K	C CAPACITOR	0.10UF K	
C95	CK73HB1E104K	C CAPACITOR	0.10UF K	
C96	CK73HBB1H102K	C CAPACITOR	1000PF K	
C97	CK73HB1A224K	C CAPACITOR	0.22UF K	
C98	CK73HB1C105K	C CAPACITOR	1.0UF K	
C99	CK73HB1C105K	C CAPACITOR	1.0UF K	
C100	CK73HB1C105K	C CAPACITOR	1.0UF K	
C101	CK73HB1C105K	C CAPACITOR	1.0UF K	
C102	CK73HB1C105K	C CAPACITOR	1.0UF K	
C103	CK73HB1C105K	C CAPACITOR	1.0UF K	
C104	CK73HB1C105K	C CAPACITOR	1.0UF K	
C105	CK73HB1C105K	C CAPACITOR	1.0UF K	

△ Symbol No.	Part No.	Part Name	Description	Local	△ Symbol No.	Part No.	Part Name	Description	Local
C106	CK73HB1H103K	C CAPACITOR	10000PF K		C196	CK73HBB1H102K	C CAPACITOR	1000PF K	
C107	CK73HB1H103K	C CAPACITOR	10000PF K		C201	CK73HB1E104K	C CAPACITOR	0.10UF K	
C108	CK73HB1H103K	C CAPACITOR	10000PF K		C210	CC73HCH1H101J	C CAPACITOR	100PF J	
C109	CK73HB1H103K	C CAPACITOR	10000PF K		C211	CC73HCH1H101J	C CAPACITOR	100PF J	
C110	CC73HCH1H100D	C CAPACITOR	10PF D		C216	CC73HCH1H101J	C CAPACITOR	100PF J	
C111	CK73HB1E104K	C CAPACITOR	0.10UF K		C217	CC73HCH1H271J	C CAPACITOR	270PF J	
C112	CC73HCH1H100D	C CAPACITOR	10PF D		C218	CK73HB1E104K	C CAPACITOR	0.10UF K	
C113	CC73HCH1H100D	C CAPACITOR	10PF D		C219	CK73HB1E104K	C CAPACITOR	0.10UF K	
C114	CK73HB1H103K	C CAPACITOR	10000PF K		C220	CC73HCH1H331J	C CAPACITOR	330PF J	
C115	CK73HB1H103K	C CAPACITOR	10000PF K		C223	CK73HB1H103K	C CAPACITOR	10000PF K	
C116	CK73HB1H103K	C CAPACITOR	10000PF K		C224	CK73HBB1H332K	C CAPACITOR	3300PF K	
C117	CC73HCH1H100D	C CAPACITOR	10PF D		C250	CK73HB1E104K	C CAPACITOR	0.10UF K	
C118	CK73HB1C105K	C CAPACITOR	1.0UF K		C251	CK73HBB1E103K	C CAPACITOR	0.01UF K	
C119	CC73HCH1H101J	C CAPACITOR	100PF J		C252	CK73HBB1E103K	C CAPACITOR	0.01UF K	
C120	CC73HCH1H100D	C CAPACITOR	10PF D		C253	CK73HBB1H102K	C CAPACITOR	1000F K	
C121	CK73HB0J475M	C CAPACITOR	4.7UF M		R3	RK73FB2B332J	MG RESISTOR	3.3K J 1/8W	
C122	CK73HB1E104K	C CAPACITOR	0.10UF K		R7	RK73HH1J683D	MG RESISTOR	68K D 1/16W	
C123	CK73GXR1C225K	C CAPACITOR	2.2UF K		R8	RK73HH1J683D	MG RESISTOR	68K D 1/16W	
C124	CK73HB0J475M	C CAPACITOR	4.7UF M		R9	RK73HH1J153D	MG RESISTOR	15K D 1/16W	
C125	CK73HB1C105K	C CAPACITOR	1.0UF K		R10	RK73HB1J682J	MG RESISTOR	6.8K J 1/16W	
C126	CK73HB1C105K	C CAPACITOR	1.0UF K		R12	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W	
C127	CK73HB0J475M	C CAPACITOR	4.7UF M		R13	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W	
C130	CK73HB0J475M	C CAPACITOR	4.7UF M		R22	RK73HB1J272J	MG RESISTOR	2.7K J 1/16W	
C131	CK73GB0J106K	C CAPACITOR	10UF K		R27	RK73HB1J104J	MG RESISTOR	100K J 1/16W	
C132	CK73HB1E104K	C CAPACITOR	0.10UF K		R28	RK73HH1J473D	MG RESISTOR	47K D 1/16W	
C133	CC73HCH1H101J	C CAPACITOR	100PF J		R29	RK73HB1J104J	MG RESISTOR	100K J 1/16W	
C134	CK73HB1C105K	C CAPACITOR	1.0UF K		R30	RK73HB1J104J	MG RESISTOR	100K J 1/16W	
C135	CK73HB1C105K	C CAPACITOR	1.0UF K		R31	RK73HH1J473D	MG RESISTOR	47K D 1/16W	
C136	CK73HB1C105K	C CAPACITOR	1.0UF K		R32	RK73HH1J473D	MG RESISTOR	47K D 1/16W	
C137	CK73HB1H103K	C CAPACITOR	10000PF K		R33	RK73HH1J103D	MG RESISTOR	10K D 1/16W	
C138	CC73HCH1H220G	C CAPACITOR	22PF G		R34	RK73HH1J103D	MG RESISTOR	10K D 1/16W	
C139	CK73HBB1H152K	C CAPACITOR	1500PF K		R35	RK73HB1J102J	MG RESISTOR	1.0K J 1/16W	
C140	CK73HB1C105K	C CAPACITOR	1.0UF K		R36	RK73HB1J102J	MG RESISTOR	1.0K J 1/16W	
C141	CK73HB1C105K	C CAPACITOR	1.0UF K		R37	RK73HH1J393D	MG RESISTOR	39K D 1/16W	
C142	CK73HB1A224K	C CAPACITOR	0.22UF K		R38	RK73HH1J103D	MG RESISTOR	10K D 1/16W	
C143	CK73HB0J225K	C CAPACITOR	2.2UF K		R39	RK73HB1J471J	MG RESISTOR	470 J 1/16W	
C144	CK73HB0J225K	C CAPACITOR	2.2UF K		R40	RK73HB1J471J	MG RESISTOR	470 J 1/16W	
C145	CC73HCH1H100D	C CAPACITOR	10PF D		R41	RK73HB1J471J	MG RESISTOR	470 J 1/16W	
C146	CK73HB1E104K	C CAPACITOR	0.10UF K		R42	RK73HB1J471J	MG RESISTOR	470 J 1/16W	
C148	CK73HB1H103K	C CAPACITOR	10000PF K		R43	RK73HB1J104J	MG RESISTOR	100K J 1/16W	
C150	CK73HB1E104K	C CAPACITOR	0.10UF K		R45	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W	
C151	CK73FXR1E475K	C CAPACITOR	4.7UF K		R46	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W	
C152	CC73HCH1H100D	C CAPACITOR	10PF D		R47	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W	
C153	CC73HCH1H100D	C CAPACITOR	10PF D		R48	RK73HH1J153D	MG RESISTOR	15K D 1/16W	
C154	CK73FB1C106K	C CAPACITOR	10UF K		R49	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W	
C155	CK73FXR0J226M	C CAPACITOR	22UF M		R50	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W	
C156	CK73HB1E104K	C CAPACITOR	0.10UF K		R51	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W	
C157	CK73HB1E104K	C CAPACITOR	0.10UF K		R52	RK73FB2B121J	MG RESISTOR	120 J 1/8W	
C158	CK73HB1C105K	C CAPACITOR	1.0UF K		R53	RK73HB1J102J	MG RESISTOR	1.0K J 1/16W	
C159	CK73HB1C105K	C CAPACITOR	1.0UF K		R54	RK73HH1J473D	MG RESISTOR	47K D 1/16W	
C160	CK73FXR1E475K	C CAPACITOR	4.7UF K		R55	RK73HH1J473D	MG RESISTOR	47K D 1/16W	
C161	CK73HB1E104K	C CAPACITOR	0.10UF K		R56	RK73HH1J473D	MG RESISTOR	47K D 1/16W	
C162	CK73HB1E104K	C CAPACITOR	0.10UF K		R57	RK73HB1J100J	MG RESISTOR	10 J 1/16W	
C163	CK73HB1H103K	C CAPACITOR	10000PF K		R58	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W	
C164	CK73HB1H103K	C CAPACITOR	10000PF K		R59	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W	
C165	CK73FB1C106K	C CAPACITOR	10UF K		R60	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W	
C166	CK73HB1A224K	C CAPACITOR	0.22UF K		R61	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W	
C167	CK73HB1A224K	C CAPACITOR	0.22UF K		R62	RK73HB1J220J	MG RESISTOR	22 J 1/16W	
C168	CK73HB1E104K	C CAPACITOR	0.10UF K		R63	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W	
C169	CK73HB1E104K	C CAPACITOR	0.10UF K		R64	RK73HH1J103D	MG RESISTOR	10K D 1/16W	
C171	CK73GB0J106K	C CAPACITOR	10UF K		R65	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W	
C172	CK73GB0J106K	C CAPACITOR	10UF K		R66	RK73HH1J103D	MG RESISTOR	10K D 1/16W	
C173	CK73HB1E104K	C CAPACITOR	0.10UF K		R67	RK73HH1J103D	MG RESISTOR	10K D 1/16W	
C174	CC73HCH1H101J	C CAPACITOR	100PF J		R68	RK73HH1J103D	MG RESISTOR	10K D 1/16W	
C175	CC73HCH1H101J	C CAPACITOR	100PF J		R69	RK73HH1J103D	MG RESISTOR	10K D 1/16W	
C176	CK73HB1E104K	C CAPACITOR	0.10UF K		R70	RK73HB1J104J	MG RESISTOR	100K J 1/16W	
C177	CK73GB1E105K	C CAPACITOR	1.0UF K		R71	RK73HB1J104J	MG RESISTOR	100K J 1/16W	
C178	CC73HCH1H101J	C CAPACITOR	100PF J		R72	RK73HB1J104J	MG RESISTOR	100K J 1/16W	
C185	CK73HB1E104K	C CAPACITOR	0.10UF K		R73	RK73HB1J104J	MG RESISTOR	100K J 1/16W	
C186	CK73HB1E104K	C CAPACITOR	0.10UF K		R74	RK73HB1J104J	MG RESISTOR	100K J 1/16W	
C187	CK73GB1E105K	C CAPACITOR	1.0UF K		R75	RK73HB1J104J	MG RESISTOR	100K J 1/16W	
C188	CC73HCH1H101J	C CAPACITOR	100PF J		R76	RK73HB1J222J	MG RESISTOR	2.2K J 1/16W	
C189	CK73GB1E105K	C CAPACITOR	1.0UF K		R77	RK73HB1J222J	MG RESISTOR	2.2K J 1/16W	
C191	CK73HB1E104K	C CAPACITOR	0.10UF K		R78	RK73HB1J222J	MG RESISTOR	2.2K J 1/16W	
C192	CC73HCH1H101J	C CAPACITOR	100PF J		R79	RK73HB1J222J	MG RESISTOR	2.2K J 1/16W	
C193	CK73HB1E104K	C CAPACITOR	0.10UF K		R80	RK73HB1J222J	MG RESISTOR	2.2K J 1/16W	
C194	CK73HB1E104K	C CAPACITOR	0.10UF K		R81	RK73HB1J222J	MG RESISTOR	2.2K J 1/16W	
C195	CK73HB1E104K	C CAPACITOR	0.10UF K						

△ Symbol No.	Part No.	Part Name	Description	Local	△ Symbol No.	Part No.	Part Name	Description	Local
R82	RK73HB1J222J	MG RESISTOR	2.2K J 1/16W		R174	RK73HB1J104J	MG RESISTOR	100K J 1/16W	
R83	RK73HB1J104J	MG RESISTOR	100K J 1/16W		R187	RK73HB1J105J	MG RESISTOR	1.0M J 1/16W	
R84	RK73HB1J104J	MG RESISTOR	100K J 1/16W		R188	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W	
R85	RK73HB1J101J	MG RESISTOR	100 J 1/16W		R189	RK73HB1J101J	MG RESISTOR	100 J 1/16W	
R86	RK73HB1J222J	MG RESISTOR	2.2K J 1/16W		R190	RK73HB1J101J	MG RESISTOR	100 J 1/16W	
R91	RK73HB1J104J	MG RESISTOR	100K J 1/16W		R191	RK73HB1J101J	MG RESISTOR	100 J 1/16W	
R92	RK73HB1J333J	MG RESISTOR	33K J 1/16W		R192	RK73HB1J101J	MG RESISTOR	100 J 1/16W	
R93	RK73HH1J473D	MG RESISTOR	47K D 1/16W		R193	RK73HH1J473D	MG RESISTOR	47K D 1/16W	
R94	RK73HH1J473D	MG RESISTOR	47K D 1/16W		R194	RK73HH1J473D	MG RESISTOR	47K D 1/16W	
R95	RK73HH1J473D	MG RESISTOR	47K D 1/16W		R195	RK73HB1J101J	MG RESISTOR	100 J 1/16W	
R96	RK73HH1J473D	MG RESISTOR	47K D 1/16W		R196	RK73HB1J101J	MG RESISTOR	100 J 1/16W	
R97	RK73HB1J104J	MG RESISTOR	100K J 1/16W		R197	RK73GB2A000J	MG RESISTOR	0.0 J 1/10W	
R98	RK73HB1J104J	MG RESISTOR	100K J 1/16W		R198	RK73GB2A000J	MG RESISTOR	0.0 J 1/10W	
R99	RK73HH1J473D	MG RESISTOR	47K D 1/16W		R199	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W	
R100	RK73HH1J473D	MG RESISTOR	47K D 1/16W		R200	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W	
R101	RK73HB1J104J	MG RESISTOR	100K J 1/16W		R250	RK73HB1J472J	MG RESISTOR	4.7K J 1/16W	
R102	RK73HB1J104J	MG RESISTOR	100K J 1/16W		R251	RK73HB1J472J	MG RESISTOR	4.7K J 1/16W	
R103	RK73HH1J473D	MG RESISTOR	47K D 1/16W		R252	RK73HB1J393J	MG RESISTOR	39K J 1/16W	
R104	RK73HB1J102J	MG RESISTOR	1.0K J 1/16W		R253	RK73HB1J473J	MG RESISTOR	4.7K J 1/16W	
R107	RK73HH1J473D	MG RESISTOR	47K D 1/16W						
R109	RK73HB1J100J	MG RESISTOR	10 J 1/16W		L1	LB73G0AM-004	CHIP FERRITE BEADS		
R110	RK73HB1J470J	MG RESISTOR	47 J 1/16W		L2	LB73G0AM-004	CHIP FERRITE BEADS		
R111	RK73GH2A49R9D	MG RESISTOR	49.9 D 1/10W		L3	LR79Z0FQ100M	CHIP INDUCTOR		
R112	RK73HB1J102J	MG RESISTOR	1.0K J 1/16W		L4	LB73G0AM-004	CHIP FERRITE BEADS		
R113	RK73HB1J102J	MG RESISTOR	1.0K J 1/16W		L5	LR79Z0EZ150M	CHIP INDUCTOR		
R114	RK73HH1J473D	MG RESISTOR	47K D 1/16W		L6	LB73G0AM-004	CHIP FERRITE BEADS		
R115	RK73HH1J473D	MG RESISTOR	47K D 1/16W		L7	LB73G0AM-004	CHIP FERRITE BEADS		
R119	RK73HH1J103D	MG RESISTOR	10K D 1/16W		L8	LB73G0AM-004	CHIP FERRITE BEADS		
R120	RK73HB1J222J	MG RESISTOR	2.2K J 1/16W		L12	LB73H0AV-003	CHIP FERRITE BEADS		
R121	RK73HB1J222J	MG RESISTOR	2.2K J 1/16W		L13	LB73H0AV-003	CHIP FERRITE BEADS		
R122	RK73HB1J100J	MG RESISTOR	10 J 1/16W		L14	LB73G0AM-004	CHIP FERRITE BEADS		
R123	RK73HB1J100J	MG RESISTOR	10 J 1/16W		L15	L92-1101-05	CHIP FERRITE		
R124	RK73HB1J100J	MG RESISTOR	10 J 1/16W		L16	L92-1101-05	CHIP FERRITE		
R125	RK73HB1J100J	MG RESISTOR	10 J 1/16W		L17	LB73G0AM-004	CHIP FERRITE BEADS		
R126	RK73HB1J100J	MG RESISTOR	10 J 1/16W		L18	LB73G0AM-004	CHIP FERRITE BEADS		
R127	RK73HB1J100J	MG RESISTOR	10 J 1/16W		L19	LB73G0AM-004	CHIP FERRITE BEADS		
R128	RK73HB1J100J	MG RESISTOR	10 J 1/16W		L20	L92-1101-05	CHIP FERRITE		
R129	RK73HB1J100J	MG RESISTOR	10 J 1/16W		L21	L92-1101-05	CHIP FERRITE		
R130	RK73HB1J100J	MG RESISTOR	10 J 1/16W		L22	LB73G0AM-004	CHIP FERRITE BEADS		
R131	RK73HB1J102J	MG RESISTOR	1.0K J 1/16W		L23	LB73H0AV-003	CHIP FERRITE BEADS		
R132	RK73HB1J123J	MG RESISTOR	12K J 1/16W		L24	LB73H0AV-003	CHIP FERRITE BEADS		
R133	RK73HB1J183J	MG RESISTOR	18K J 1/16W		L25	LB73H0AV-003	CHIP FERRITE BEADS		
R134	RK73HB1J105J	MG RESISTOR	1.0M J 1/16W		L27	L92-0498-05	CHIP FERRITE		
R135	RK73HB1J333J	MG RESISTOR	33K J 1/16W		L28	L41-1592-71	SMALL FIXED INDUCTOR(1.5UH)		
R136	RK73HB1J102J	MG RESISTOR	1.0K J 1/16W		L30	LB73G0AM-004	CHIP FERRITE BEADS		
R137	RK73HB1J102J	MG RESISTOR	1.0K J 1/16W		L31	LB73F0AH-003	CHIP FERRITE BEADS		
R138	RK73HB1J102J	MG RESISTOR	1.0K J 1/16W		L32	LB73F0AH-003	CHIP FERRITE BEADS		
R139	RK73HB1J183J	MG RESISTOR	18K J 1/16W		L35	LB73G0AM-004	CHIP FERRITE BEADS		
R140	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W		L36	LB73G0AM-004	CHIP FERRITE BEADS		
R141	RK73HB1J104J	MG RESISTOR	100K J 1/16W		L37	LB73H0AV-003	CHIP FERRITE BEADS		
R142	RK73HB1J333J	MG RESISTOR	33K J 1/16W		L38	LB73G0AM-004	CHIP FERRITE BEADS		
R143	RK73HB1J223J	MG RESISTOR	22K J 1/16W		L39	L79-1984-05	FILTER		
R144	RK73HH1J473D	MG RESISTOR	47K D 1/16W		L40	L79-1984-05	FILTER		
R145	RK73HB1J153J	MG RESISTOR	15K J 1/16W		L41	L79-1984-05	FILTER		
R146	RK73HB1J474J	MG RESISTOR	470K J 1/16W		L42	L79-1984-05	FILTER		
R147	RK73HB1J474J	MG RESISTOR	470K J 1/16W		L43	L79-1984-05	FILTER		
R148	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W		L44	LB73G0AM-004	CHIP FERRITE BEADS		
R149	RK73HB1J333J	MG RESISTOR	33K J 1/16W		L45	LB73G0AM-004	CHIP FERRITE BEADS		
R150	RK73HB1J104J	MG RESISTOR	100K J 1/16W		L46	LB73H0AV-003	CHIP FERRITE BEADS		
R151	RK73HB1J104J	MG RESISTOR	100K J 1/16W		L47	LB73H0AV-003	CHIP FERRITE BEADS		
R152	RK73HB1J333J	MG RESISTOR	33K J 1/16W		L48	LB73H0AV-003	CHIP FERRITE BEADS		
R153	RK73HH1J473D	MG RESISTOR	47K D 1/16W		L49	LB73H0AV-003	CHIP FERRITE BEADS		
R154	RK73HH1J473D	MG RESISTOR	47K D 1/16W		L50	LB73H0AV-003	CHIP FERRITE BEADS		
R155	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W		L51	LB73H0AV-003	CHIP FERRITE BEADS		
R156	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W		L52	LB73H0AV-003	CHIP FERRITE BEADS		
R157	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W		L53	LB73H0AV-003	CHIP FERRITE BEADS		
R158	RK73HB1J102J	MG RESISTOR	1.0K J 1/16W		L54	LB73H0AV-003	CHIP FERRITE BEADS		
R159	RK73HH1J473D	MG RESISTOR	47K D 1/16W		L55	LB73H0AV-003	CHIP FERRITE BEADS		
R160	RK73HB1J681J	MG RESISTOR	680 J 1/16W		L56	LB73H0AV-003	CHIP FERRITE BEADS		
R161	RK73HB1J681J	MG RESISTOR	680 J 1/16W		L57	LB73H0AV-003	CHIP FERRITE BEADS		
R162	RK73HB1J102J	MG RESISTOR	1.0K J 1/16W		L58	LB73H0AV-003	CHIP FERRITE BEADS		
R163	RK73HB1J333J	MG RESISTOR	33K J 1/16W						
R164	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W		A1	W02-3785-05	DC/DC CONVERTER		
R167	RK73HB1J472J	MG RESISTOR	4.7K J 1/16W		CN1	EA710AC-1516B	WIRE TO BOARD CONNECTOR SMD		
R169	RK73HB1J104J	MG RESISTOR	100K J 1/16W		CN2	EA710AC-1513B	WIRE TO BOARD CONNECTOR SMD		
R170	RK73HB1J104J	MG RESISTOR	100K J 1/16W		CN35	E41-2673-05	PIN ASSY		
R171	RK73HB1J104J	MG RESISTOR	100K J 1/16W		CN37	E40-6913-05	FLAT CABLE CONNECTOR		
R172	RK73GB2A472J	MG RESISTOR	4.7K J 1/10W		CP1	RK74HB1J470J	NET RESISTOR	47 J 1/16W	

△ Symbol No.	Part No.	Part Name	Description	Local	△ Symbol No.	Part No.	Part Name	Description	Local
CP2	RK74HB1J470J	NET RESISTOR	47 J 1/16W		C110	CC73HCH1H181J	C CAPACITOR	180PF J	
CP3	RK74HB1J470J	NET RESISTOR	47 J 1/16W		R7	RK73HB1J473J	MG RESISTOR	47K J 1/16W	
CP4	RK74HB1J470J	NET RESISTOR	47 J 1/16W		R8	RK73HB1J473J	MG RESISTOR	47K J 1/16W	
CP5	RK74HB1J470J	NET RESISTOR	47 J 1/16W		R9	RK73HB1J820J	MG RESISTOR	82 J 1/16W	
E1	F10-3226-05	SHIELDING CASE			R10	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W	
E2	F10-3226-05	SHIELDING CASE			R11	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W	
E3	F1B-0026-00	SHIELDING CASE			R12	RK73HB1J273J	MG RESISTOR	27K J 1/16W	
S1	S7K-0003-00	DIP SWITCHES			R13	RK73HB1J102J	MG RESISTOR	1.0K J 1/16W	
X1	L77-3123-05	TCXO(19.2MHz)			R15	RK73HB1J473J	MG RESISTOR	47K J 1/16W	

INTERFACE UNIT

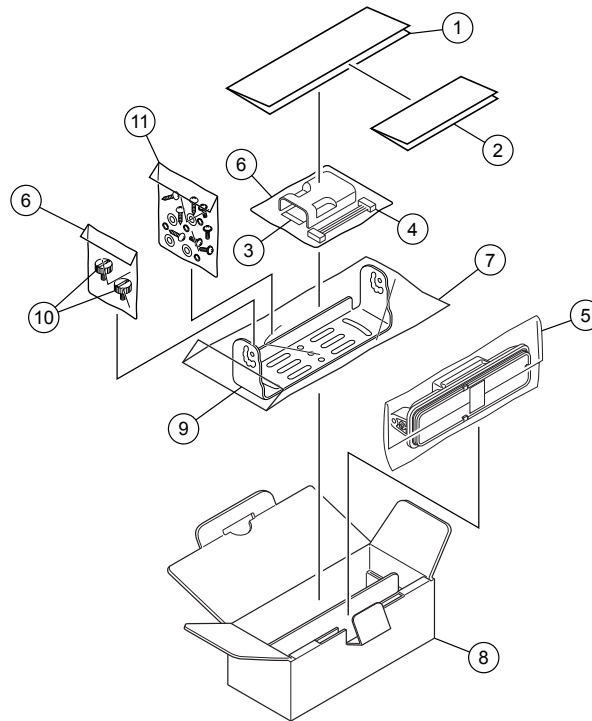
XC3-0090-20(KRK-15B_M)

Block No. [0][2]

△ Symbol No.	Part No.	Part Name	Description	Local	△ Symbol No.	Part No.	Part Name	Description	Local
IC1	OPA170AIDRLR	IC(MOS-IC)			R26	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W	
IC2	TJA1051TK/3	IC(MOS-IC)			R27	RK73HB1J104J	MG RESISTOR	100K J 1/16W	
IC3	BU33TD2WNVX	IC(MOS-IC)			R28	RK73HB1J104J	MG RESISTOR	100K J 1/16W	
IC4	TC74VHC4052AK	IC(MOS-IC)			R29	RK73HB1J683J	MG RESISTOR	68K J 1/16W	
IC5	TC74VHC4052AK	IC(MOS-IC)			R30	RK73HB1J473J	MG RESISTOR	47K J 1/16W	
IC6	BU7445HFV	IC(MOS-IC)			R31	RK73HB1J473J	MG RESISTOR	47K J 1/16W	
IC7	PCA9555AHF	IC(MOS-IC)			R32	RK73HB1J333J	MG RESISTOR	33K J 1/16W	
IC8	BU7242NXX	IC(MOS-IC)			R33	RK73HB1J000J	MG RESISTOR	0.0 J 1/16W	
IC9	TC7W66FKF	IC(MOS-IC)			R37	RK73HB1J333J	MG RESISTOR	33K J 1/16W	
IC10	TC7W66FKF	IC(MOS-IC)			R38	RK73HB1J683J	MG RESISTOR	68K J 1/16W	
C2	CC73HCH1H101J	C CAPACITOR	100PF J		R39	RK73HB1J104J	MG RESISTOR	100K J 1/16W	
C3	CC73HCH1H470J	C CAPACITOR	47PF J		R40	RK73HB1J104J	MG RESISTOR	100K J 1/16W	
C4	CC73HCH1H470J	C CAPACITOR	47PF J		R41	RK73HB1J104J	MG RESISTOR	100K J 1/16W	
C5	CC73HCH1H470J	C CAPACITOR	47PF J		R42	RK73HB1J104J	MG RESISTOR	100K J 1/16W	
C6	CC73HCH1H470J	C CAPACITOR	47PF J		R67	RK73HB1J103J	MG RESISTOR	10K J 1/16W	
C7	CC73HCH1H470J	C CAPACITOR	47PF J		R68	RK73HB1J103J	MG RESISTOR	10K J 1/16W	
C12	CK73HB1E104K	C CAPACITOR	0.10UF K		R100	RK73HB1J473J	MG RESISTOR	47K J 1/16W	
C14	CK73HB1E104K	C CAPACITOR	0.10UF K		R101	RK73HB1J473J	MG RESISTOR	47K J 1/16W	
C15	CK73HBB1H471K	C CAPACITOR	470PF K		R102	RK73HB1J683J	MG RESISTOR	68K J 1/16W	
C16	CK73HB1E104K	C CAPACITOR	0.10UF K		R103	RK73HB1J101J	MG RESISTOR	100 J 1/16W	
C17	CK73HB1E104K	C CAPACITOR	0.10UF K		R104	RK73HB1J683J	MG RESISTOR	68K J 1/16W	
C18	CK73GB1E105K	C CAPACITOR	1.0UF K		R105	RK73HB1J101J	MG RESISTOR	100 J 1/16W	
C19	CK73HBB1H471K	C CAPACITOR	470PF K		R106	RK73HB1J333J	MG RESISTOR	33K J 1/16W	
C20	CK73GB1E105K	C CAPACITOR	1.0UF K		R107	RK73HB1J333J	MG RESISTOR	33K J 1/16W	
C21	CK73GB1E105K	C CAPACITOR	1.0UF K		L1	LB73G0AM-004	CHIP FERRITE BEADS		
C22	CK73GB1E105K	C CAPACITOR	1.0UF K		L2	LB73H0AV-003	CHIP FERRITE BEADS		
C24	CK73HB1E104K	C CAPACITOR	0.10UF K		L3	LB73H0AV-003	CHIP FERRITE BEADS		
C25	CK73HB1E104K	C CAPACITOR	0.10UF K		L4	LB73H0AV-003	CHIP FERRITE BEADS		
C26	CK73GB1E105K	C CAPACITOR	1.0UF K		L5	LB73H0AV-003	CHIP FERRITE BEADS		
C27	CK73GB1E105K	C CAPACITOR	1.0UF K		L6	LB73H0AV-003	CHIP FERRITE BEADS		
C28	CK73GB1E105K	C CAPACITOR	1.0UF K		L7	LB73H0AV-003	CHIP FERRITE BEADS		
C29	CC73HCH1H101J	C CAPACITOR	100PF J		L8	LB73H0AV-003	CHIP FERRITE BEADS		
C30	CC73HCH1H181J	C CAPACITOR	180PF J		L9	LB73H0AV-003	CHIP FERRITE BEADS		
C32	CK73HB1E104K	C CAPACITOR	0.10UF K		L10	LB73H0AV-003	CHIP FERRITE BEADS		
C34	CK73HB1E104K	C CAPACITOR	0.10UF K		L11	LB73H0AV-003	CHIP FERRITE BEADS		
C35	CK73HB1H103K	C CAPACITOR	0.010UF K		L12	LB73H0AV-003	CHIP FERRITE BEADS		
C36	CC73HCH1H181J	C CAPACITOR	180PF J		L13	LB73H0AV-003	CHIP FERRITE BEADS		
C37	CK73HB1E104K	C CAPACITOR	0.10UF K		L14	LB73H0AV-003	CHIP FERRITE BEADS		
C38	CK73HB1E104K	C CAPACITOR	0.10UF K		L15	LB73H0AV-003	CHIP FERRITE BEADS		
C39	CK73GB1E105K	C CAPACITOR	1.0UF K		L16	LB73H0AV-003	CHIP FERRITE BEADS		
C40	CK73GB1E105K	C CAPACITOR	1.0UF K		L17	LB73H0AV-003	CHIP FERRITE BEADS		
C41	CK73GB1E105K	C CAPACITOR	1.0UF K		L18	LB73H0AV-003	CHIP FERRITE BEADS		
C42	CK73GB1E105K	C CAPACITOR	1.0UF K		L19	LB73H0AV-003	CHIP FERRITE BEADS		
C43	CK73HB1H102K	C CAPACITOR	1000PF K		L20	LB73H0AV-003	CHIP FERRITE BEADS		
C44	CK73HB1H102K	C CAPACITOR	1000PF K		L21	LB73H0AV-003	CHIP FERRITE BEADS		
C63	CK73HB1E104K	C CAPACITOR	0.10UF K		L22	LB73H0AV-003	CHIP FERRITE BEADS		
C64	CK73HB1E104K	C CAPACITOR	0.10UF K		L23	LB73H0AV-003	CHIP FERRITE BEADS		
C68	CK73GB0J106K	C CAPACITOR	10UF K		L24	LB73H0AV-003	CHIP FERRITE BEADS		
C100	CK73GB1E105K	C CAPACITOR	1.0UF K		L25	LB73H0AV-003	CHIP FERRITE BEADS		
C101	CC73HCH1H101J	C CAPACITOR	100PF J		CN1	E40-6913-05	FLAT CABLE CONNECTOR		
C102	CC73HCH1H101J	C CAPACITOR	100PF J		CN2	E41-2673-05	PIN ASSY		
C103	CC73HCH1H101J	C CAPACITOR	100PF J		CN3	EA710AC-1516B	WIRE TO BOARD CONNECTOR SMD		
C104	CC73HCH1H101J	C CAPACITOR	100PF J		CN4	EA710AC-1516B	WIRE TO BOARD CONNECTOR SMD		
C105	CC73HCH1H101J	C CAPACITOR	100PF J		CP1	RK74HB1J100J	NET RESISTOR	10 J 1/16W	
C106	CC73HCH1H101J	C CAPACITOR	100PF J		CP3	RK74HB1J101J	NET RESISTOR	100 J 1/16W	
C107	CK73HB1E104K	C CAPACITOR	0.10UF K		CP4	RK74HB1J101J	NET RESISTOR	100 J 1/16W	
C108	CK73HB1E104K	C CAPACITOR	0.10UF K		S1	S7K-0003-00	DIP SWITCHES		
C109	CC73HCH1H181J	C CAPACITOR	180PF J						

Packing materials and accessories parts list (KRK-14H)

Block No.M3MM



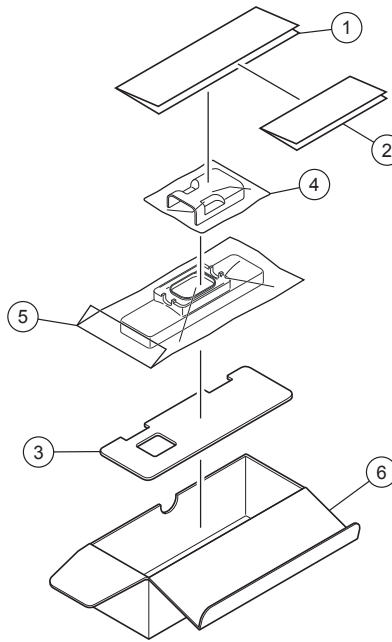
Packing and accessories

Block No. [M][3][M][M]
Local

Symbol No.	Part No.	Part Name	Description
1	-----	PAMPHLET(FCC/WEEE/ROHS2)	
2	-----	PAMPHLET	
3	E3F-0019-00	FLAT CABLE(50PIN TO HEAD)	
4	E3H-0008-00	LEAD WIRE WITH CONNECTOR(4PIN TO HEAD)	
5	-----	ANTI-STATIC BAG	
6	-----	PROTECTION BAG(60/110/0.07)	(x2)
7	-----	PROTECTION BAG(100/250/0.07)	
8	H5A-0244-00	ITEM CARTON	
9	J1K-0003-00	BRACKET	
10	N08-0550-14	DRESSED SCREW(BRACKET)	(x2)
11	N9X-0009-00	SCREW SET	

Packing materials and accessories parts list (KRK-15B)

Block No.M4MM



Packing and accessories

Block No. [M][4][M][M]
Local

△ Symbol No.	Part No.	Part Name	Description
1	-----	PAMPHLET(FCC/WEEE/ROHS2)	
2	-----	PAMPHLET	
3	H1C-0004-00	PACKING FIXTURE	
4	-----	PROTECTION BAG(MOLDING COVER)	
5	-----	PROTECTION BAG (100/250/0.07)	
6	H5A-0245-00	ITEM CARTON	



KENWOOD

JVC KENWOOD Corporation
Communications Systems Business Unit

(No.RA021<Rev.002>)

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