

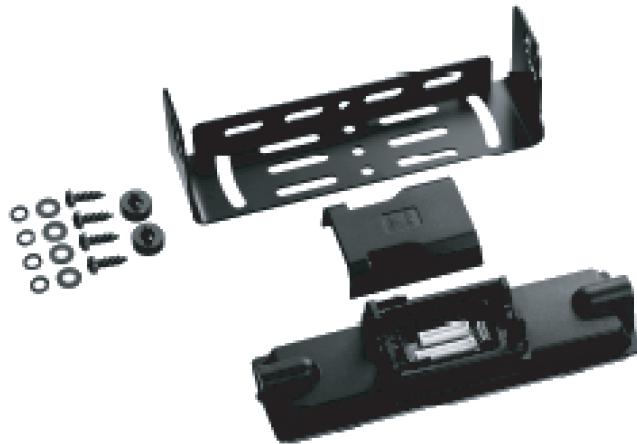
# KENWOOD

## SERVICE MANUAL

CONTROL HEAD INTERFACE KIT, CONTROL HEAD REMOTE KIT

### KRK-14H, KRK-15B

KRK-14H



KRK-15B



**Note :**

Lead free solder used in the board (material : Sn, Ag, In, Bi, melting point : 227 Centigrade)

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

This product uses Lead Free solder.

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# SECTION 1 PRECAUTION

This service manual does not describe PRECAUTION.

# SECTION 2 SPECIFIC SERVICE INSTRUCTIONS

## 2.1 INSTALLATION

### 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 series transceiver.

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

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

#### Note:

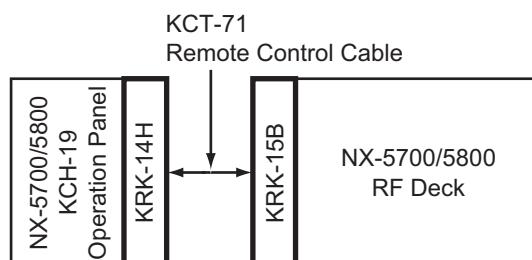
The KRK-14H has the common firmware of the NX-5700/5800.

When turning the transceiver power ON in the state from which the firmware version of the NX-5700/5800 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.

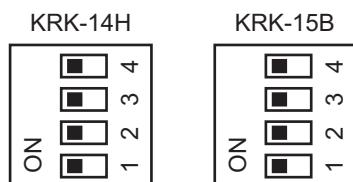
The firmware is written into the NX-5700/5800 RF Deck and KRK-14H at the same time.

### 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 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 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)

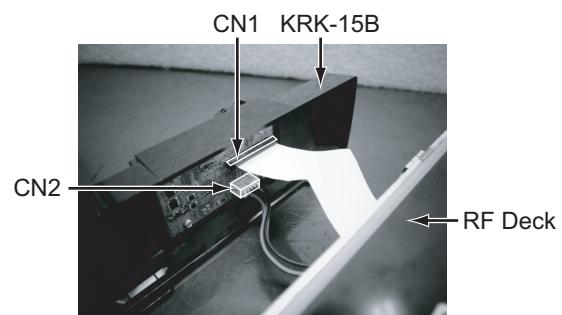


Fig.2

#### 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 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.)

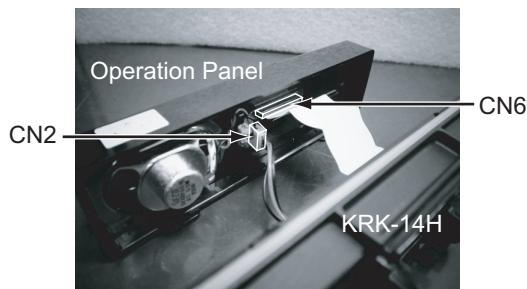


Fig.4

**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)

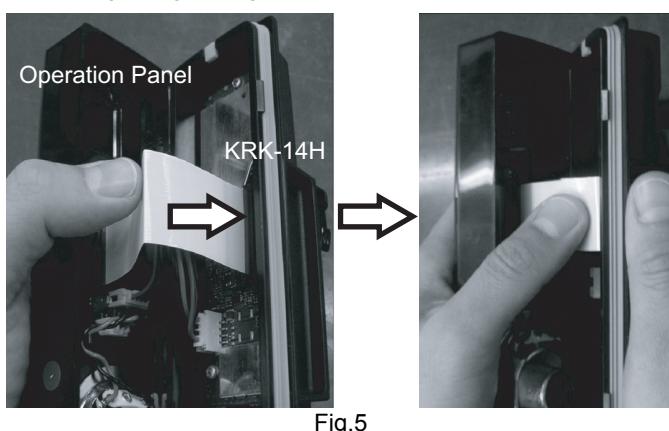
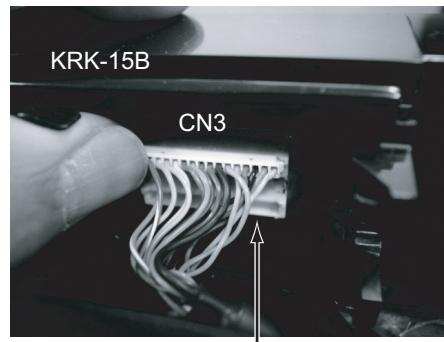


Fig.5

#### 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)



KCT-71 lead wire with connector

Fig.6

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

**Note:**

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



Cable Bush

Fig.7

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

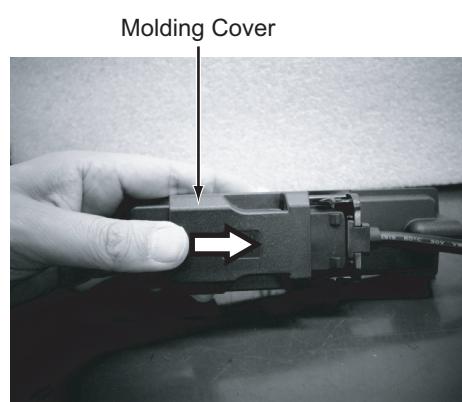


Fig.8

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

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

## 2.2 CIRCUIT DESCRIPTION

### 2.2.1 KRK-14H

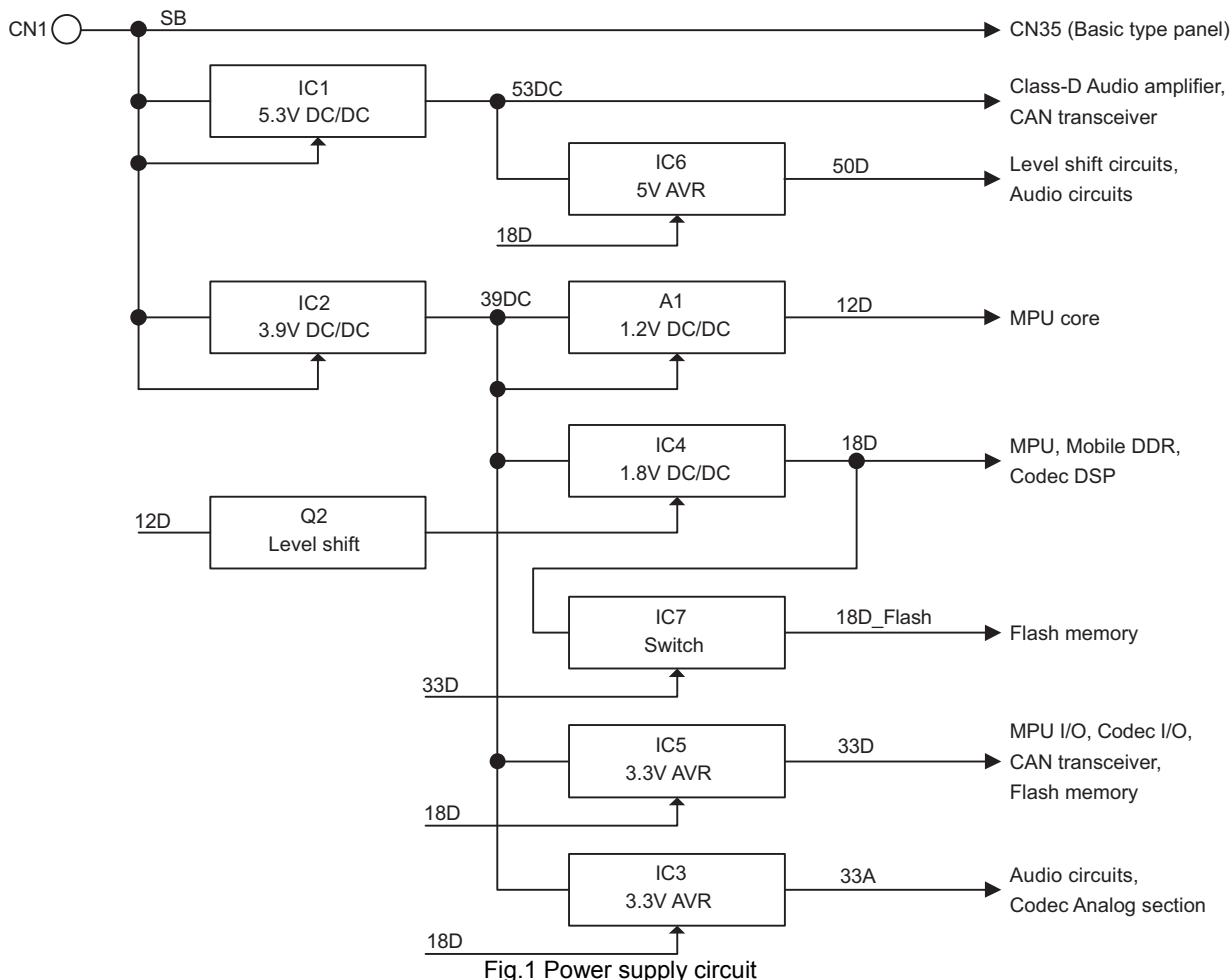
#### 2.2.1.1 Overview

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.



### 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).

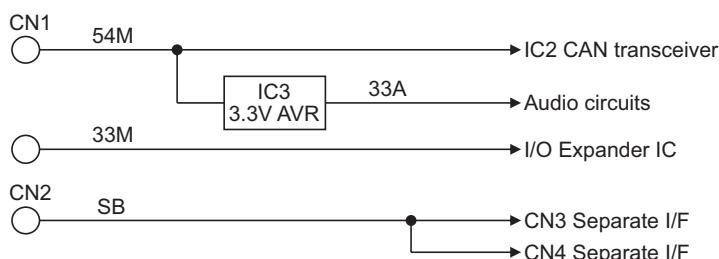


Fig.1 power supply circuit

### 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).

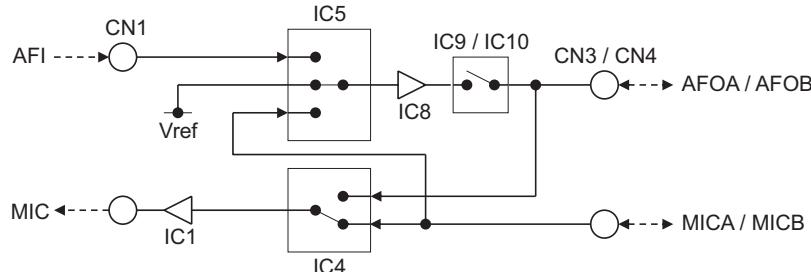


Fig.2 Simplified audio circuit

#### 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.

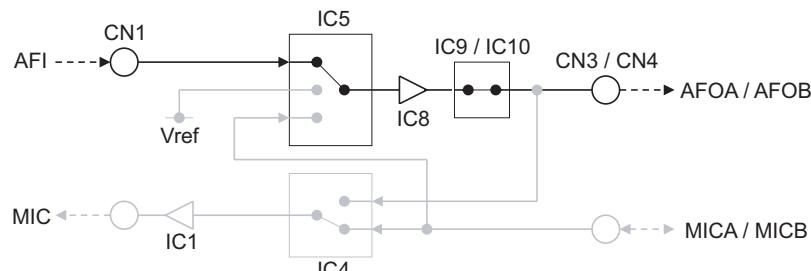


Fig.3 RX audio path

#### 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.

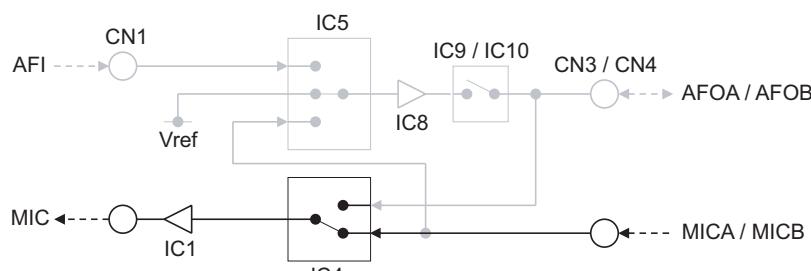


Fig.4 TX audio path

#### 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                                |
|------------|---------|-----|---|
| <b>CN1</b> |         |     |   |
| 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                          |
| <b>CN2</b> |         |     |   |
| 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                              |
|-------------|----------|-----|---------------------------------------|
| <b>CN35</b> |          |     |                                       |
| 1           | SP+      | O   | Speaker output plus                   |
| 2           | SP-      | O   | Speaker output minus                  |
| 3           | GND      | -   | Ground                                |
| 4           | SB       | O   | Switched power supply                 |
| <b>CN37</b> |          |     |                                       |
| 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                                |
|------------|---------|-----|---|
| <b>CN1</b> |         |     |   |
| 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                         |

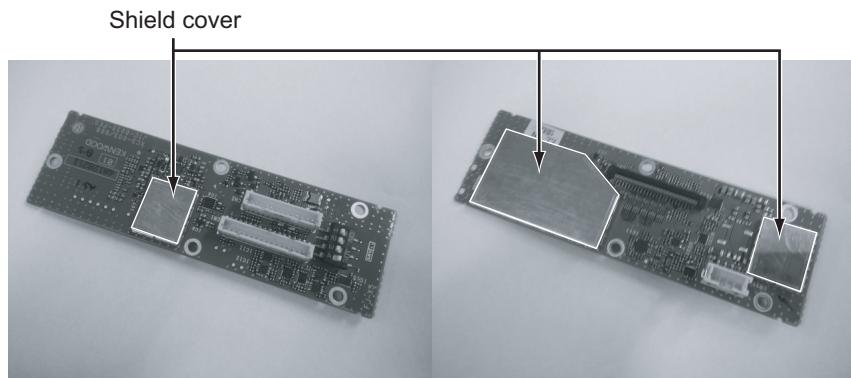
| Pin No.    | Name    | I/O | Function                               |
|------------|---------|-----|--|
| <b>CN4</b> |         |     |  |
| 1          | /PRST   | O   | Reset signal                           |
| 2          | /PSW    | I   | Detection signal input of power switch |
| 3          | MICA+   | 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

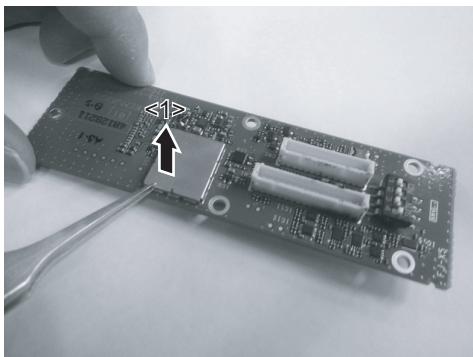
### 3.1 Precautions for Disassembly

#### 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.

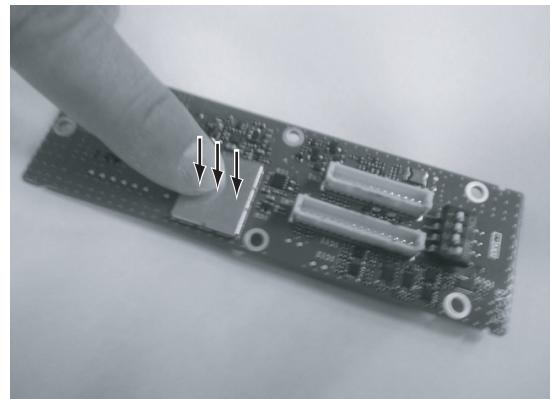


(2) Use tweezers to slightly lift the edge of the top cover. <1>



#### Note:

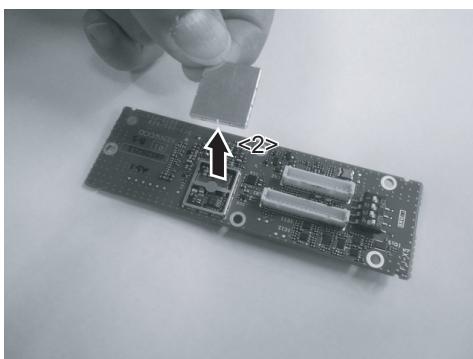
Push evenly on the top cover and be careful that you do not bend it as you install it on the shield cover.



(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

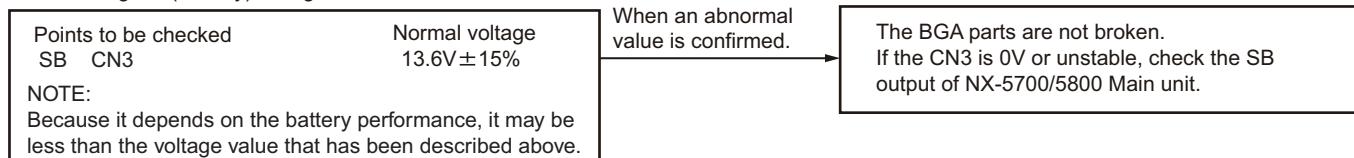
##### ■Overview

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 and KCH-19 directly. Confirm whether there is a defect in the KRK-14H and KRK-15B.

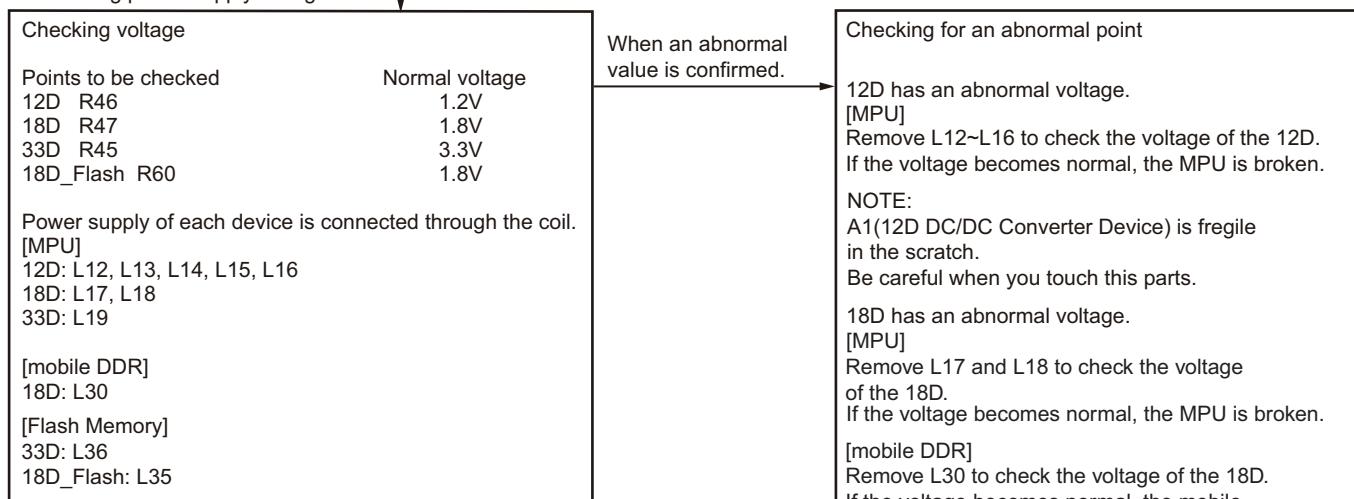
##### ■BGA parts

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

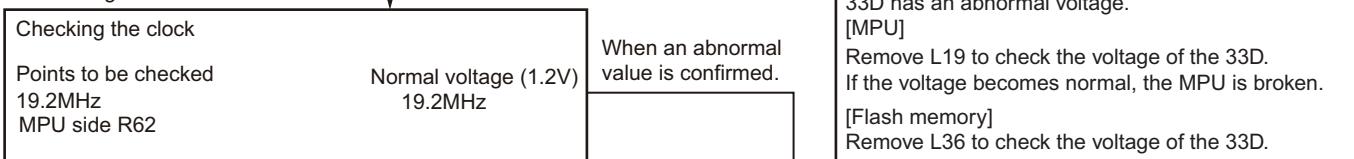
###### ● Checking SB (Battery) voltage



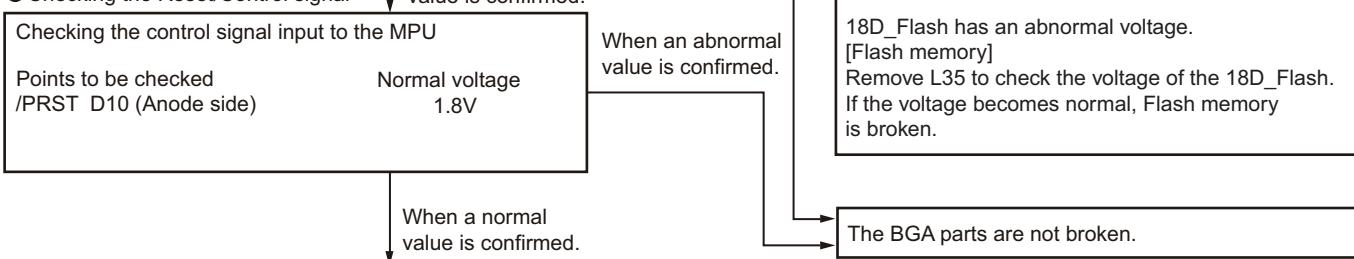
###### ● Checking power supply voltage



###### ● Checking the clock

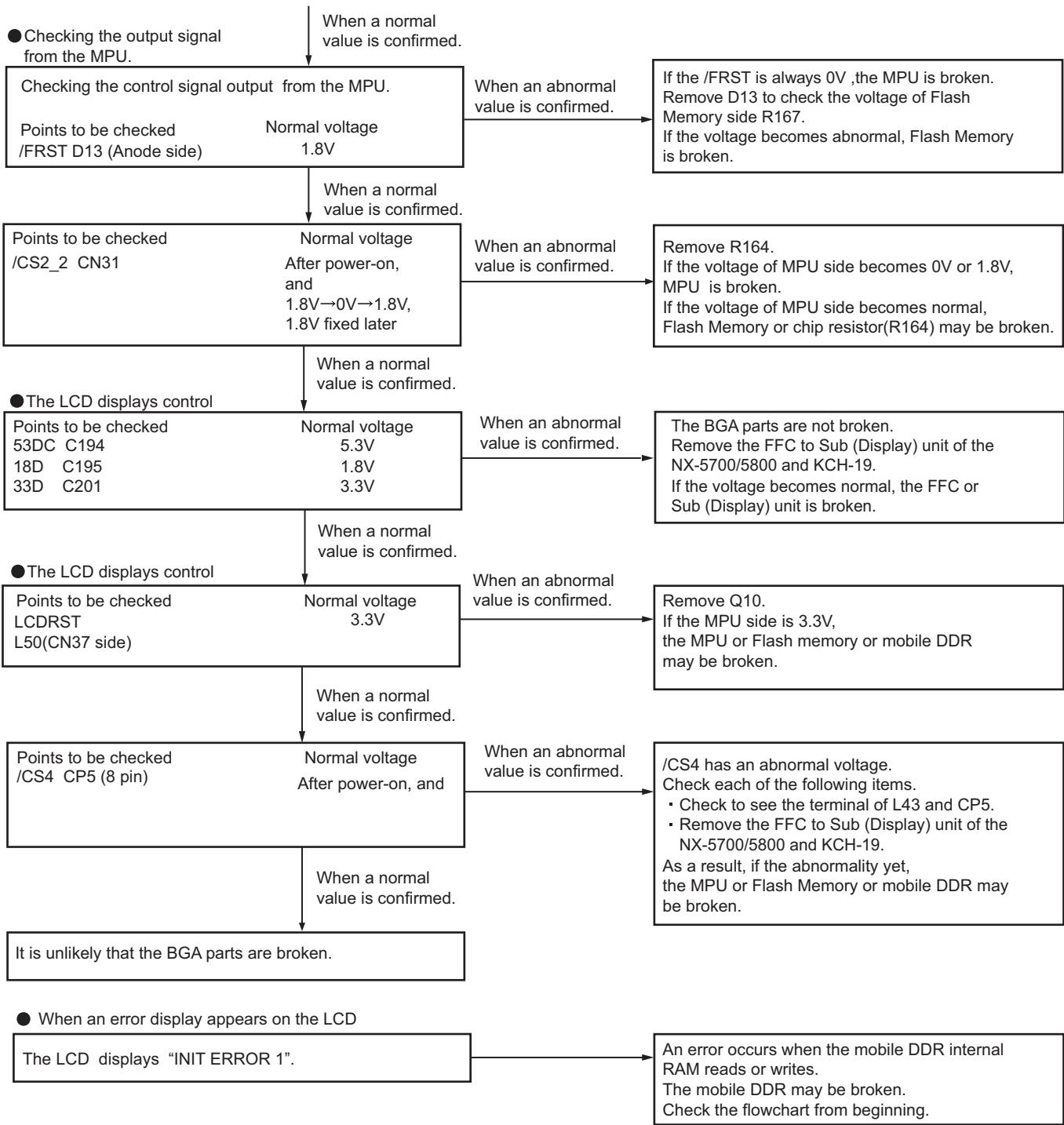


###### ● Checking the Reset/Control signal



When a normal value is confirmed.

**The BGA parts are not broken.**



## ■ 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                  |

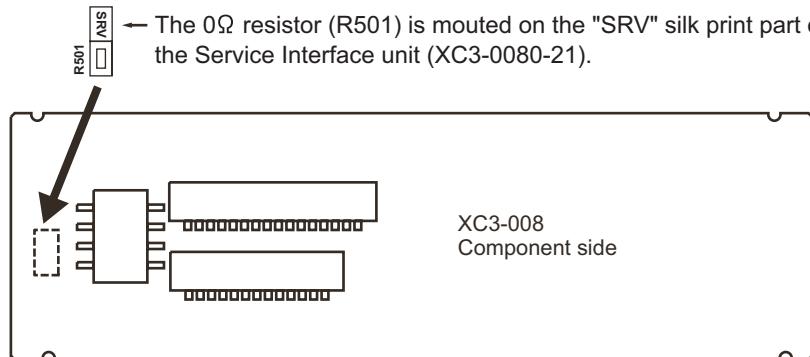
## 5.2 Replacing Interface Unit

### ■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 "Orginal 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 | Description           |
|-----------|-----------------------|
| Firmware  | NX-5700/5800 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).

#### Note:

You can only program firmware from the 8-pin microphone connector on the NX-5700/5800 or KCH-19 front panel.  
Using the 25-pin logic interface (D-SUB 25-pin) on the NX-5700/5800 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.

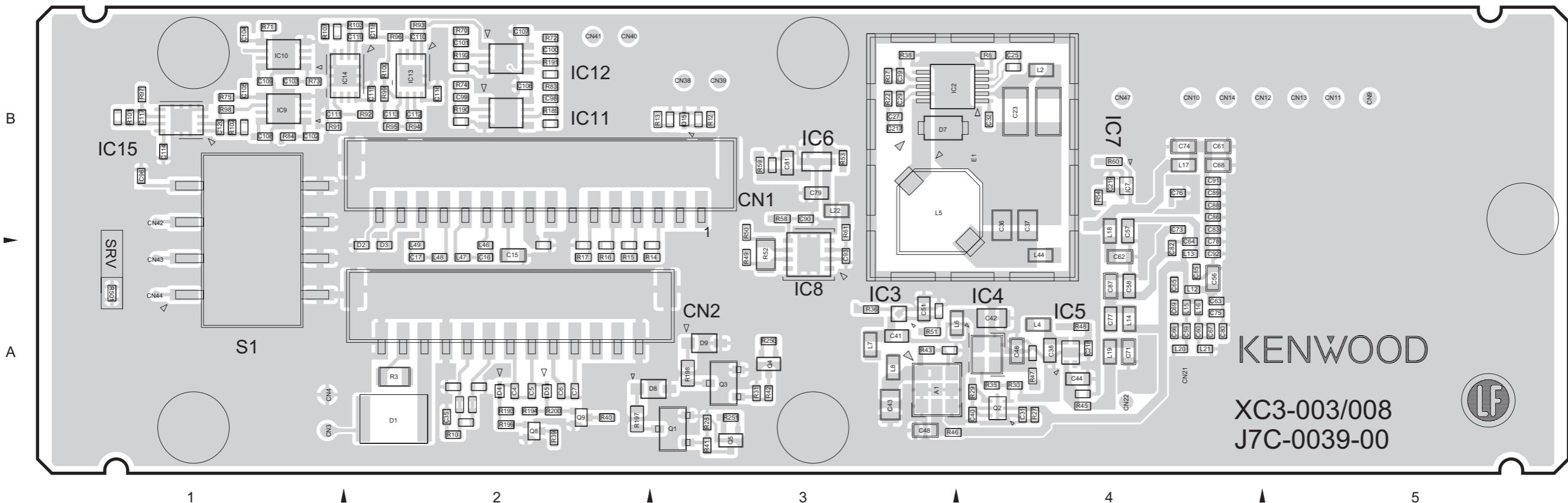
The Firmware is written to DECK (NX-5700/5800) and KRK-14H at the same time.

- If writing ends successfully, the checksum is calculated and a result is displayed.

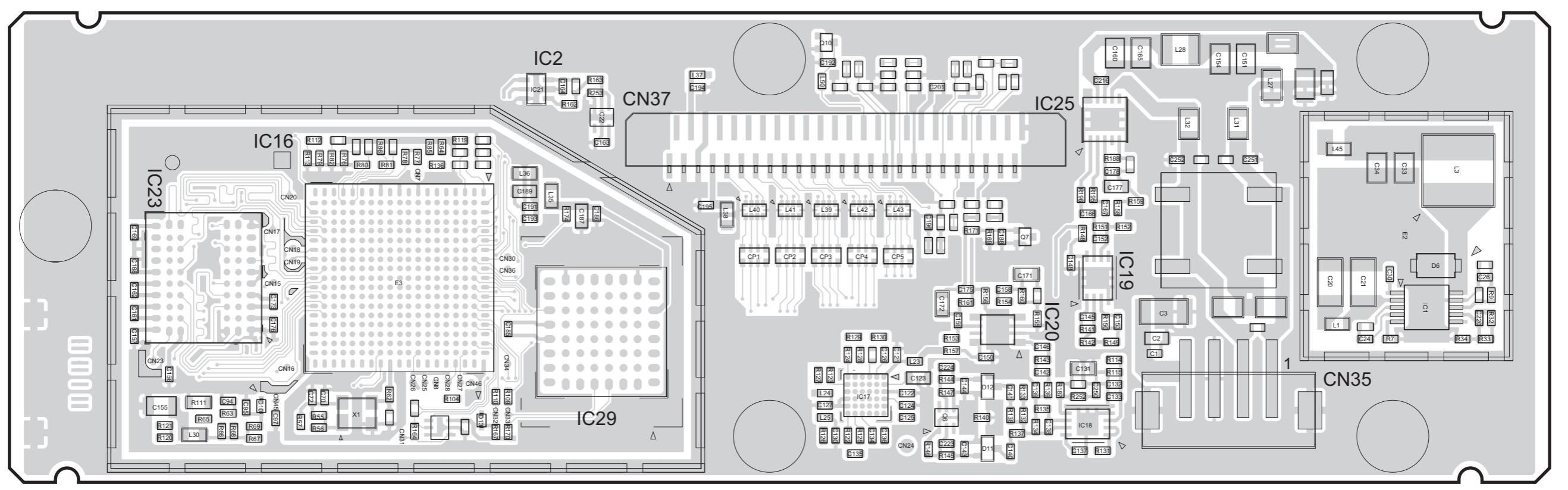
# PRINTED CIRCUIT BOARD

## ■ INTERFACE UNIT (XC3-0080-20 (KRK-14H\_M))

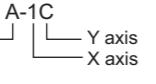
--- Component side view (J7C-0039-00) ---



--- Foil side view (J7C-0039-00) ---



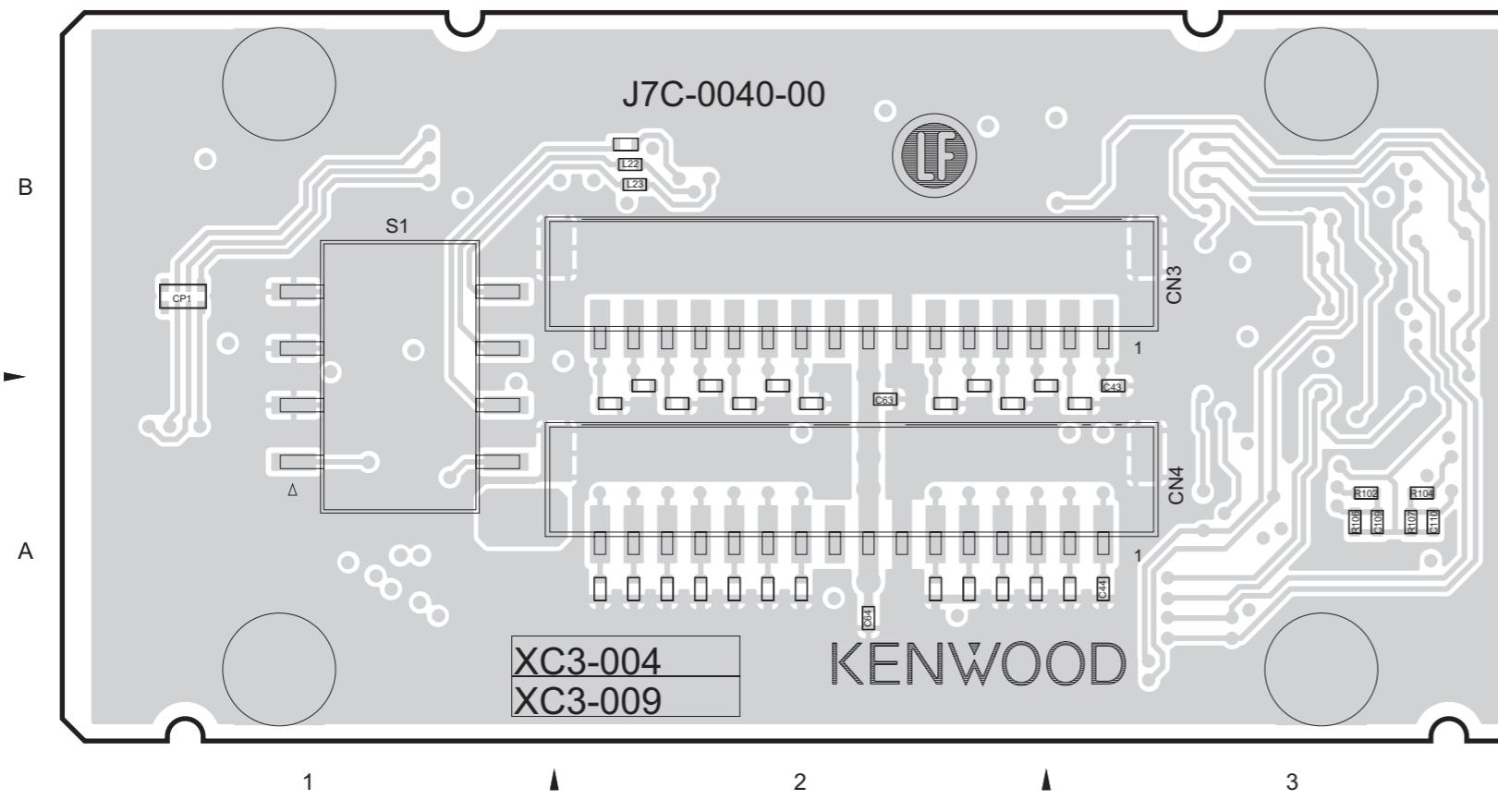
● ADDRESS TABLE OF BOARD PARTS

Each address may have an address error by one Side 

| REF.NO.           | LOCATION | REF.NO. | LOCATION | REF.NO.          | LOCATION | REF.NO. | LOCATION | REF.NO.      | LOCATION |
|-------------------|----------|---------|----------|------------------|----------|---------|----------|--------------|----------|
| <b>IC</b>         |          | R46     | A- 3A    | R142             | B- 2A    | C57     | A- 4B    | C146         | B- 2A    |
| IC1               | B- 1A    | R47     | A- 4A    | R143             | B- 2A    | C58     | A- 4A    | C148         | B- 2A    |
| IC2               | A- 3B    | R48     | A- 4A    | R144             | B- 2A    | C59     | A- 4A    | C150         | B- 2A    |
| IC3               | A- 3A    | R49     | A- 3A    | R145             | B- 2A    | C60     | A- 4A    | C151         | B- 1B    |
| IC4               | A- 4A    | R50     | A- 3B    | R146             | B- 3A    | C61     | A- 4B    | C152         | B- 2B    |
| IC5               | A- 4A    | R51     | A- 3A    | R147             | B- 2A    | C62     | A- 4A    | C153         | B- 2A    |
| IC6               | A- 3B    | R52     | A- 3A    | R148             | B- 2B    | C63     | A- 4A    | C154         | B- 2B    |
| IC7               | A- 4B    | R53     | A- 3B    | R149             | B- 2A    | C64     | A- 4A    | C155         | B- 5A    |
| IC8               | A- 3A    | R54     | A- 4B    | R150             | B- 2A    | C65     | A- 4A    | C156         | B- 5A    |
| IC9               | A- 1B    | R55     | B- 4A    | R151             | B- 2B    | C66     | A- 4A    | C157         | B- 5A    |
| IC10              | A- 1B    | R56     | B- 4A    | R152             | B- 2B    | C67     | A- 4A    | C158         | B- 2A    |
| IC11              | A- 2B    | R57     | B- 5A    | R153             | B- 2A    | C68     | A- 4B    | C159         | B- 2A    |
| IC12              | A- 2B    | R58     | A- 3B    | R154             | B- 2A    | C69     | A- 4A    | C160         | B- 2B    |
| IC13              | A- 2B    | R59     | A- 3B    | R155             | B- 2A    | C70     | B- 4A    | C161         | B- 5A    |
| IC14              | A- 2B    | R60     | A- 4B    | R156             | B- 2A    | C71     | A- 4A    | C162         | B- 5A    |
| IC15              | A- 1B    | R61     | A- 3B    | R157             | B- 2A    | C72     | B- 5A    | C163         | B- 4B    |
| IC16              | B- 4A    | R62     | B- 4A    | R158             | B- 2B    | C73     | A- 4B    | C164         | B- 4B    |
| IC17              | B- 3A    | R63     | B- 5A    | R159             | B- 2B    | C74     | A- 4B    | C165         | B- 2B    |
| IC18              | B- 2A    | R64     | B- 4B    | R160             | B- 2A    | C75     | A- 4A    | C166         | B- 2B    |
| IC19              | B- 2A    | R65     | B- 5A    | R161             | B- 2A    | C76     | A- 4B    | C167         | B- 2B    |
| IC20              | B- 2A    | R66     | B- 5A    | R162             | B- 4B    | C77     | A- 4A    | C168         | B- 5A    |
| IC21              | B- 4B    | R67     | B- 5A    | R163             | B- 4B    | C78     | A- 4A    | C169         | B- 5B    |
| IC22              | B- 4B    | R68     | B- 5A    | R164             | B- 4A    | C79     | A- 3B    | C171         | B- 2A    |
| IC23              | B- 5A    | R69     | B- 5A    | R167             | B- 4A    | C80     | A- 4A    | C172         | B- 2A    |
| IC25              | B- 2B    | R70     | A- 2B    | R169             | B- 2B    | C81     | A- 3B    | C173         | B- 5A    |
| IC29              | B- 4A    | R71     | A- 1B    | R170             | B- 4A    | C82     | A- 4A    | C175         | B- 2A    |
|                   |          | R72     | A- 2B    | R171             | B- 2B    | C83     | A- 4B    | C176         | B- 5A    |
|                   |          |         |          |                  |          |         |          | L50          | B- 3B    |
| <b>TRANSISTOR</b> |          | R73     | A- 1B    | R174             | B- 4B    | C85     | A- 4A    | C177         | B- 2B    |
| Q1                | A- 3A    | R74     | A- 2B    | R187             | B- 2A    | C86     | A- 4B    | C178         | B- 2B    |
| Q2                | A- 4A    | R75     | A- 1B    | R188             | B- 2B    | C87     | A- 4A    | C185         | B- 4A    |
| Q3                | A- 3A    | R76     | B- 4B    | R189             | A- 2B    | C88     | A- 4B    | C186         | B- 4B    |
| Q4                | A- 3A    | R77     | B- 4B    | R190             | A- 2B    | C89     | A- 4B    | C187         | B- 4B    |
| Q5                | A- 3A    | R78     | B- 4B    | R191             | A- 2B    | C90     | A- 3B    | C188         | B- 2B    |
| Q6                | B- 2A    | R79     | B- 4B    | R192             | A- 2B    | C91     | A- 4B    | C189         | B- 4B    |
| Q7                | B- 2B    | R80     | B- 4B    | R193             | A- 2A    | C92     | A- 4A    | C191         | B- 4B    |
| Q8                | A- 2A    | R81     | B- 4B    | R194             | A- 2A    | C93     | A- 3A    | C192         | B- 3B    |
| Q9                | A- 2A    | R82     | B- 4B    | R195             | B- 2B    | C94     | B- 5A    | C193         | B- 4B    |
| Q10               | B- 3B    | R83     | A- 2B    | R196             | B- 2B    | C95     | B- 5A    | C194         | B- 3B    |
|                   |          | R84     | A- 1B    | R197             | A- 2A    | C96     | A- 1B    | C195         | B- 3B    |
| <b>DIODE</b>      |          | R85     | B- 4B    | R198             | A- 3A    | C97     | B- 5A    | C196         | B- 3B    |
| D1                | A- 2A    | R86     | B- 4B    | R199             | A- 2A    | C98     | A- 2B    | C201         | B- 2B    |
| D2                | A- 2A    | R91     | A- 1B    | R200             | A- 2A    | C99     | A- 2B    | C216         | B- 2B    |
| D3                | A- 2A    | R92     | A- 2B    | R250             | A- 3A    | C100    | A- 2B    | C217         | A- 3B    |
| D4                | A- 2A    | R93     | A- 2B    | R251             | A- 3A    | C101    | A- 2B    | C218         | A- 4A    |
| D5                | A- 2A    | R94     | A- 2B    | R252             | B- 2A    | C102    | A- 1B    | C219         | A- 4B    |
| D6                | B- 1A    | R95     | A- 2B    | R253             | B- 4B    | C103    | A- 1B    | C220         | B- 1A    |
| D7                | A- 3B    | R96     | A- 2B    | R501             | A- 1A    | C104    | A- 1B    | C223         | B- 2A    |
| D8                | A- 3A    | R97     | A- 1B    |                  |          | C105    | A- 1B    | C224         | B- 2A    |
| D9                | A- 3A    | R98     | A- 1B    | <b>CAPACITOR</b> | C106     | A- 2B   | C250     | B- 2A        |          |
| D10               | B- 5A    | R99     | A- 2B    | C1               | B- 2A    | C107    | A- 2B    | C251         | B- 1B    |
| D11               | B- 2A    | R100    | A- 2B    | C2               | B- 2A    | C108    | A- 1B    | C252         | B- 2B    |
| D12               | B- 2A    | R101    | A- 1B    | C3               | B- 2A    | C109    | A- 1B    |              |          |
| D13               | B- 4A    | R102    | A- 1B    | C4               | A- 2A    | C110    | A- 2B    | <b>OTHER</b> |          |
| D15               | A- 3B    | R103    | A- 2B    | C5               | A- 2A    | C111    | A- 1B    | X1           | B- 4A    |
| <b>RESISTOR</b>   |          | R107    | A- 1B    | C6               | A- 2A    | C112    | A- 2B    |              |          |
| R3                | A- 2A    | R109    | B- 4A    | C15              | A- 2A    | C113    | A- 2B    | CN1          | A- 2B    |
| R7                | B- 1A    | R110    | B- 4A    | C16              | A- 2A    | C114    | A- 1B    | CN2          | A- 2A    |
| R8                | A- 4B    | R111    | B- 5A    | C17              | A- 2A    | C115    | A- 2B    | CN35         | B- 2A    |
| R9                | B- 1A    | R112    | B- 5B    | C20              | B- 1A    | C117    | A- 1B    | CN37         | B- 3B    |
| R10               | A- 2A    | R113    | B- 5B    | C21              | B- 1A    | C118    | A- 2B    | S1           | A- 1B    |
| R12               | A- 3B    | R114    | B- 2A    | C23              | A- 4B    | C119    | A- 2B    |              |          |
| R13               | A- 3B    | R115    | B- 2A    | C24              | B- 1A    | C120    | A- 1B    | CP1          | B- 3A    |
| R14               | A- 3A    | R119    | B- 4B    | C25              | A- 4B    | C121    | B- 3A    | CP2          | B- 3A    |
| R15               | A- 2A    | R120    | B- 5A    | C26              | B- 1A    | C122    | B- 3A    | CP3          | B- 3A    |
| R16               | A- 2A    | R121    | B- 5A    | C27              | A- 3B    | C123    | B- 3A    | CP4          | B- 3A    |
| R17               | A- 2A    | R122    | B- 3A    | C29              | A- 3B    | C124    | B- 3A    | CP5          | B- 3A    |
| R22               | A- 3B    | R123    | B- 3A    | C30              | B- 1A    | C125    | B- 3A    |              |          |
| R27               | A- 4A    | R124    | B- 3A    | C31              | A- 4A    | C126    | B- 3A    | A1           | A- 3A    |
| R28               | A- 3A    | R125    | B- 3A    | C32              | A- 4B    | C127    | B- 3A    |              |          |
| R29               | A- 4A    | R126    | B- 3A    | C33              | B- 1B    | C130    | B- 3A    | E1           | A- 4B    |
| R30               | A- 4A    | R127    | B- 3A    | C34              | B- 1B    | C131    | B- 2A    | E2           | B- 1B    |
| R31               | A- 3A    | R128    | B- 3A    | C35              | A- 2A    | C132    | B- 2A    | E3           | B- 4A    |
| R32               | B- 1A    | R129    | B- 3A    | C36              | A- 4B    | C133    | B- 2A    |              |          |
| R33               | B- 1A    | R130    | B- 3A    | C37              | A- 4B    | C134    | B- 3A    | L1           | B- 1A    |
| R34               | B- 1A    | R131    | B- 2A    | C38              | A- 4A    | C135    | B- 3A    | L2           | A- 4B    |
| R35               | A- 4A    | R132    | B- 2A    | C39              | A- 3B    | C136    | B- 3A    | L3           | B- 1B    |
| R36               | A- 3A    | R133    | B- 2A    | C40              | A- 4A    | C137    | B- 2A    | L4           | A- 4A    |
| R37               | A- 3B    | R134    | B- 2A    | C41              | A- 3A    | C138    | B- 2A    | L5           | A- 3B    |
| R38               | A- 3B    | R135    | B- 2A    | C42              | A- 4A    | C139    | B- 2A    | L6           | A- 4A    |
| R39               | A- 2A    | R136    | B- 4B    | C43              | A- 3A    | C140    | B- 2A    | L7           | A- 3A    |
| R40               | A- 2A    | R137    | B- 2A    | C44              | A- 4A    | C141    | B- 2A    | L8           | A- 3A    |
| R41               | A- 3A    | R138    | B- 2A    | C46              | A- 4A    | C142    | B- 2A    | L12          | A- 4A    |
| R42               | A- 3A    | R139    | B- 2A    | C48              | A- 3A    | C143    | B- 2A    | L13          | A- 4A    |
| R43               | A- 3A    | R140    | B- 2A    | C51              | A- 3A    | C144    | B- 2A    | L14          | A- 4A    |
| R45               | A- 4A    | R141    | B- 2A    | C56              | A- 4A    | C145    | B- 2A    | L            |          |

## ■ INTERFACE UNIT (XC3-0090-20 (KRK-15B\_M))

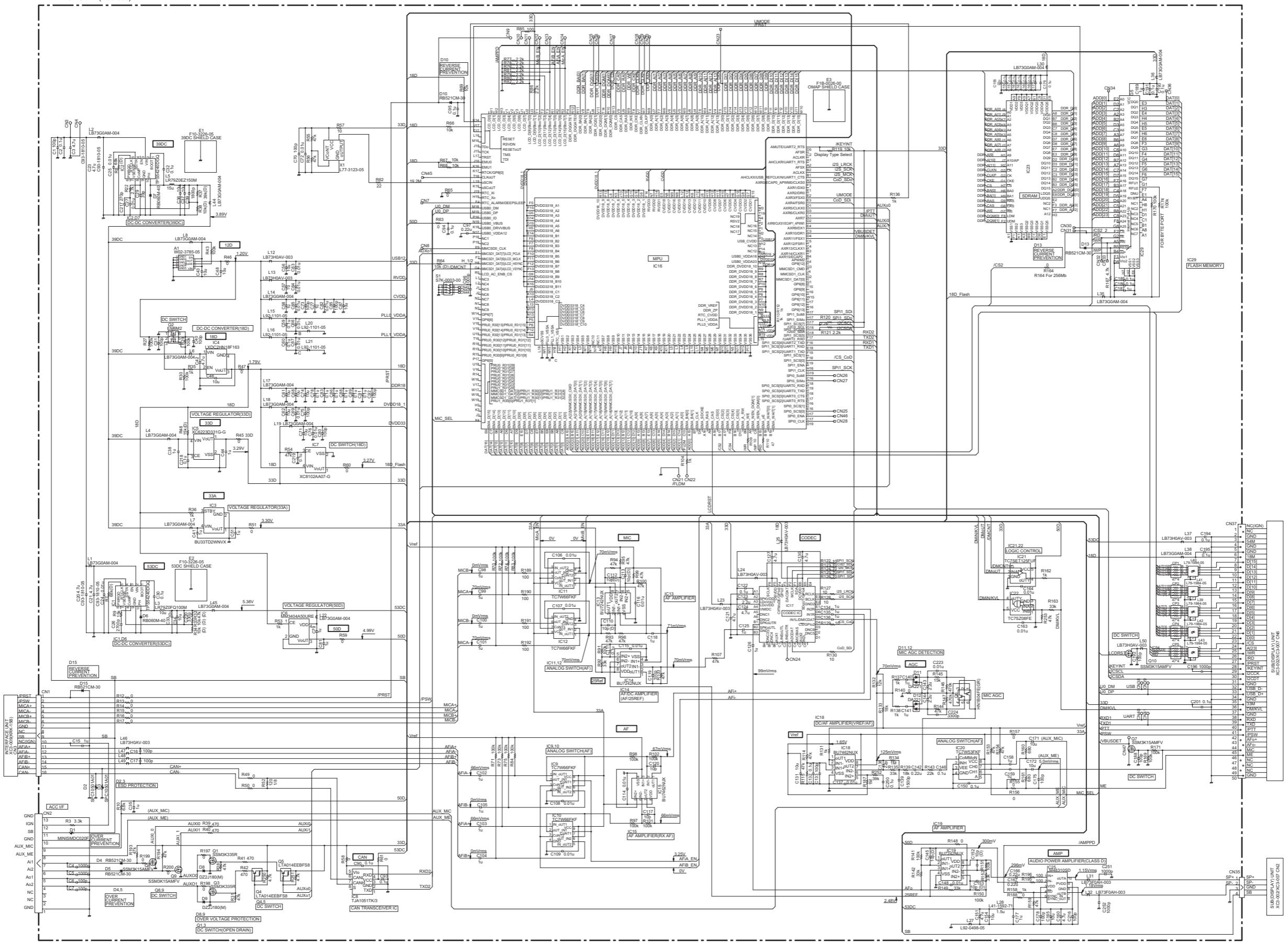
--- Component side view (J7C-0040-00) ---



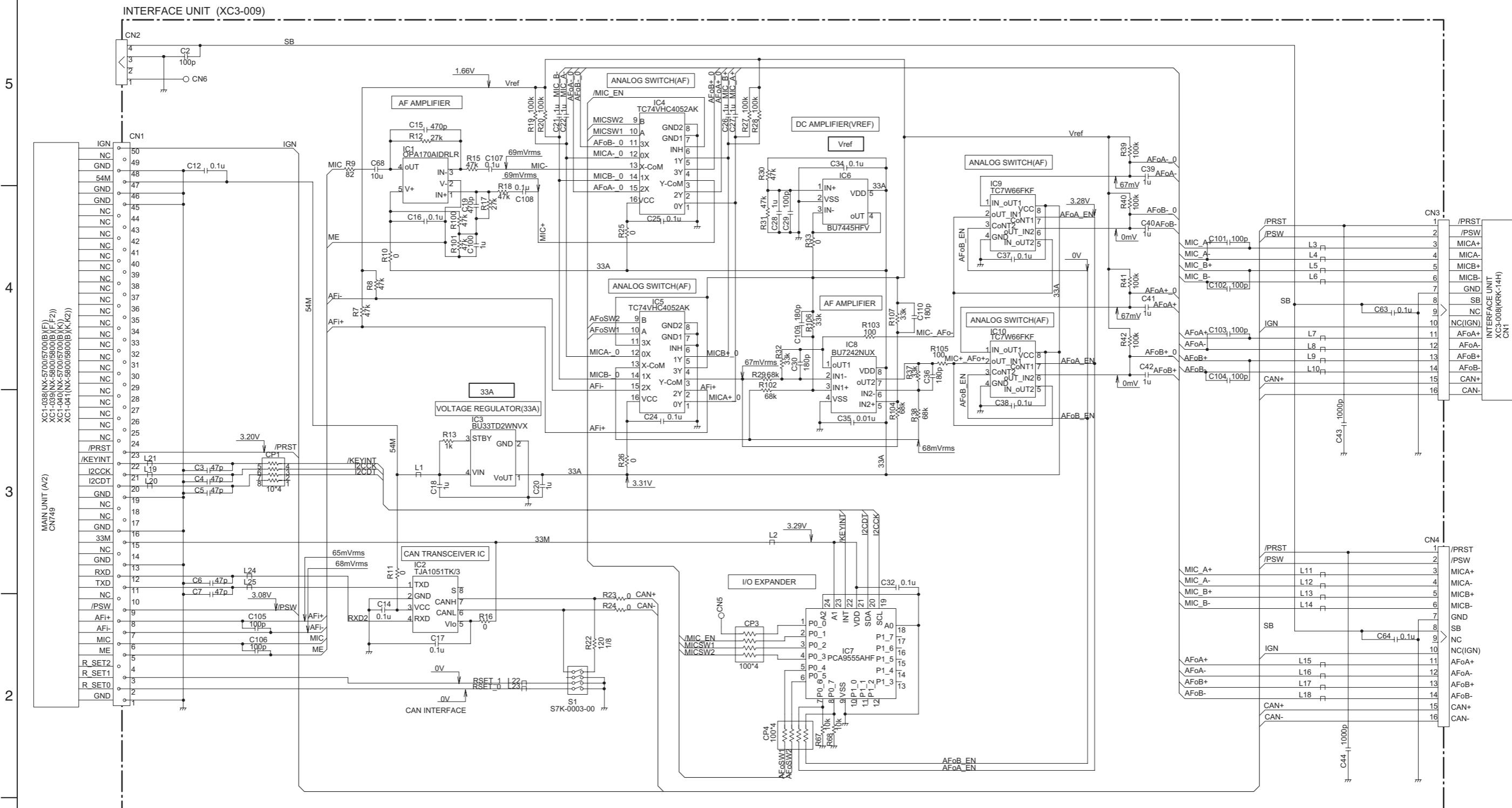
# SCHEMATIC DIAGRAM

■ INTERFACE UNIT (XC3-0080-20 (KRK-14H\_M))

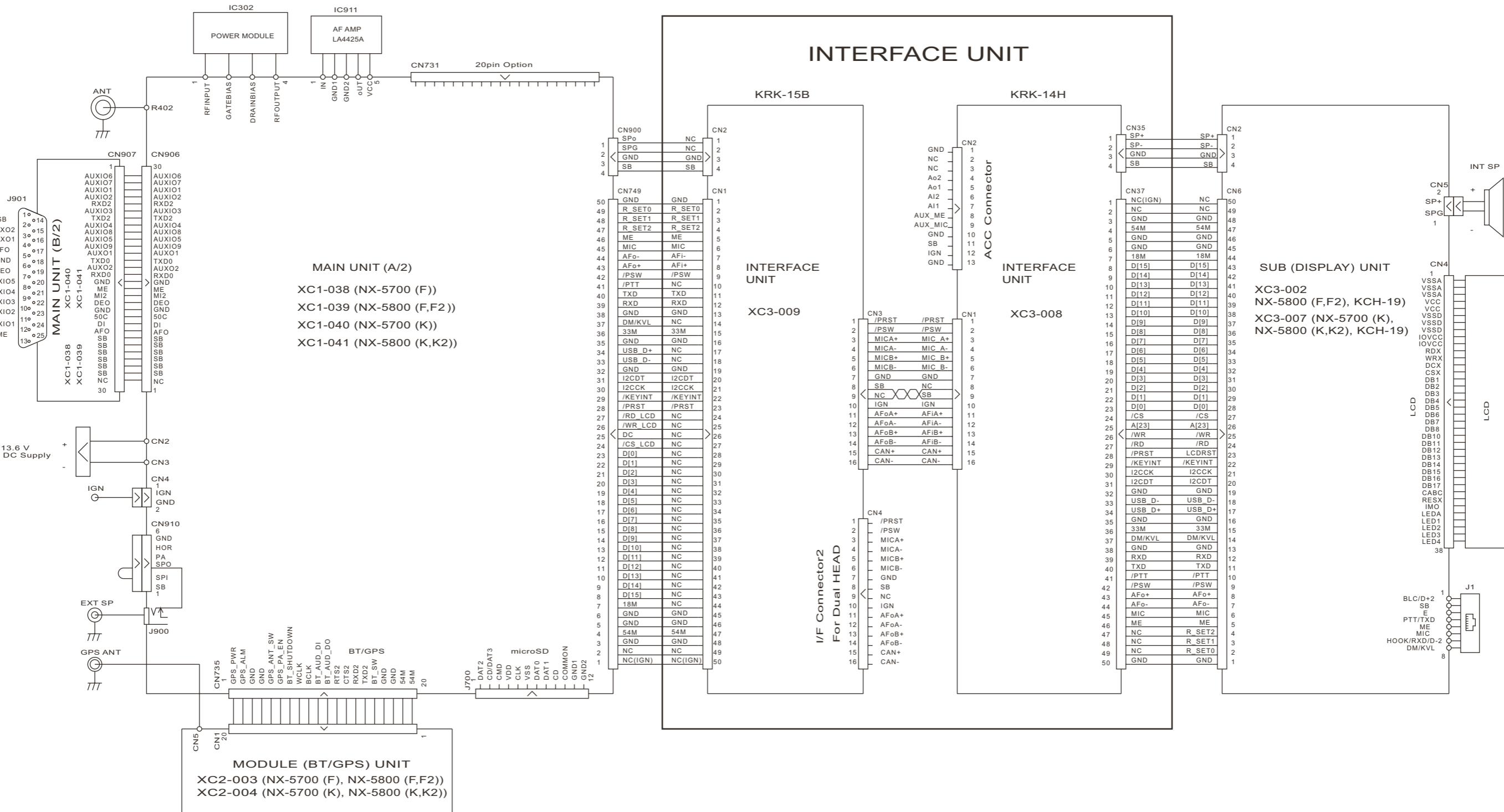
INTERFACE UNIT (XC3-008)



## ■ INTERFACE UNIT (XC3-0090-20 (KRK-15B\_M))



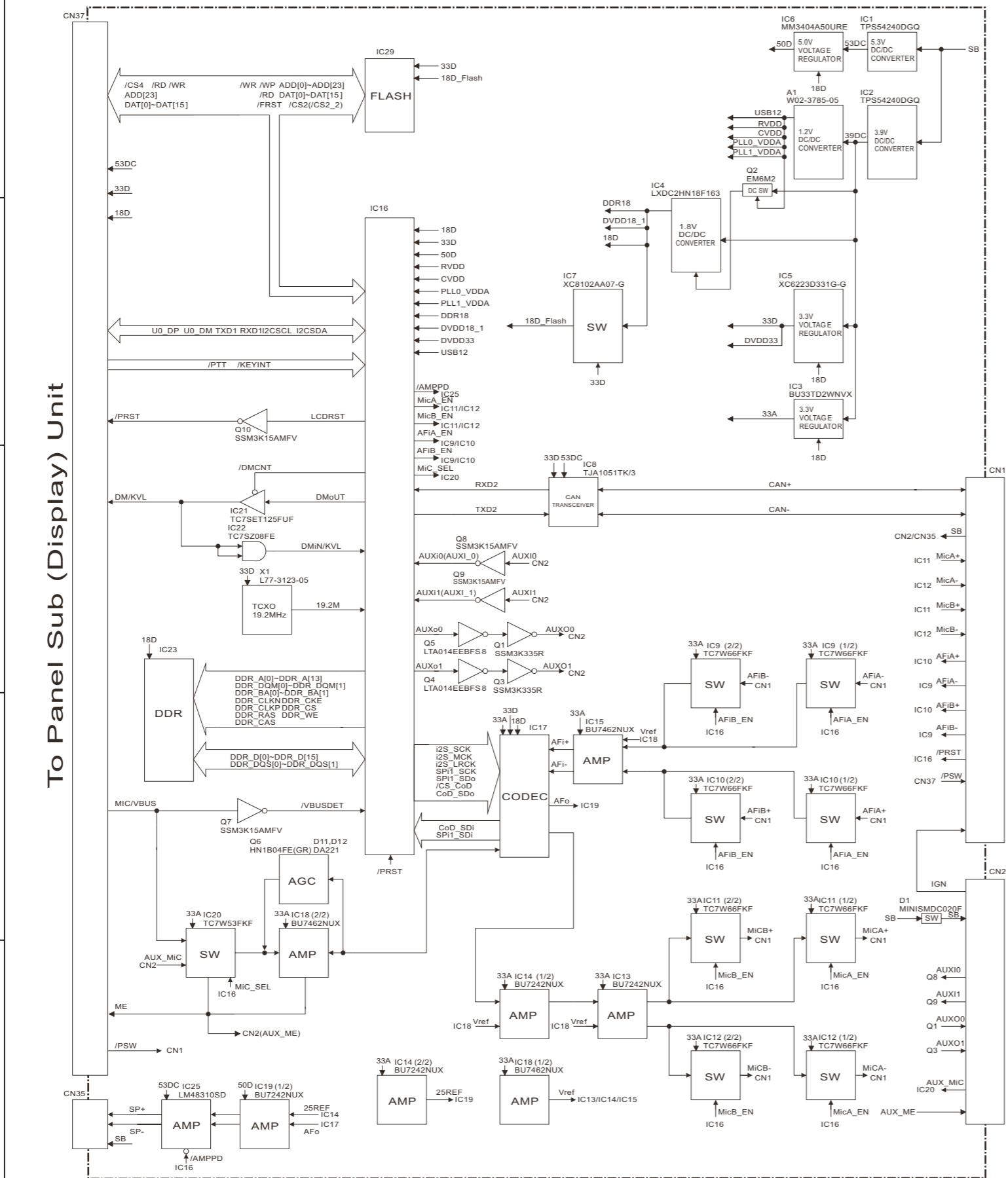
# INTERCONNECTION DIAGRAM



# BLOCK DIAGRAM

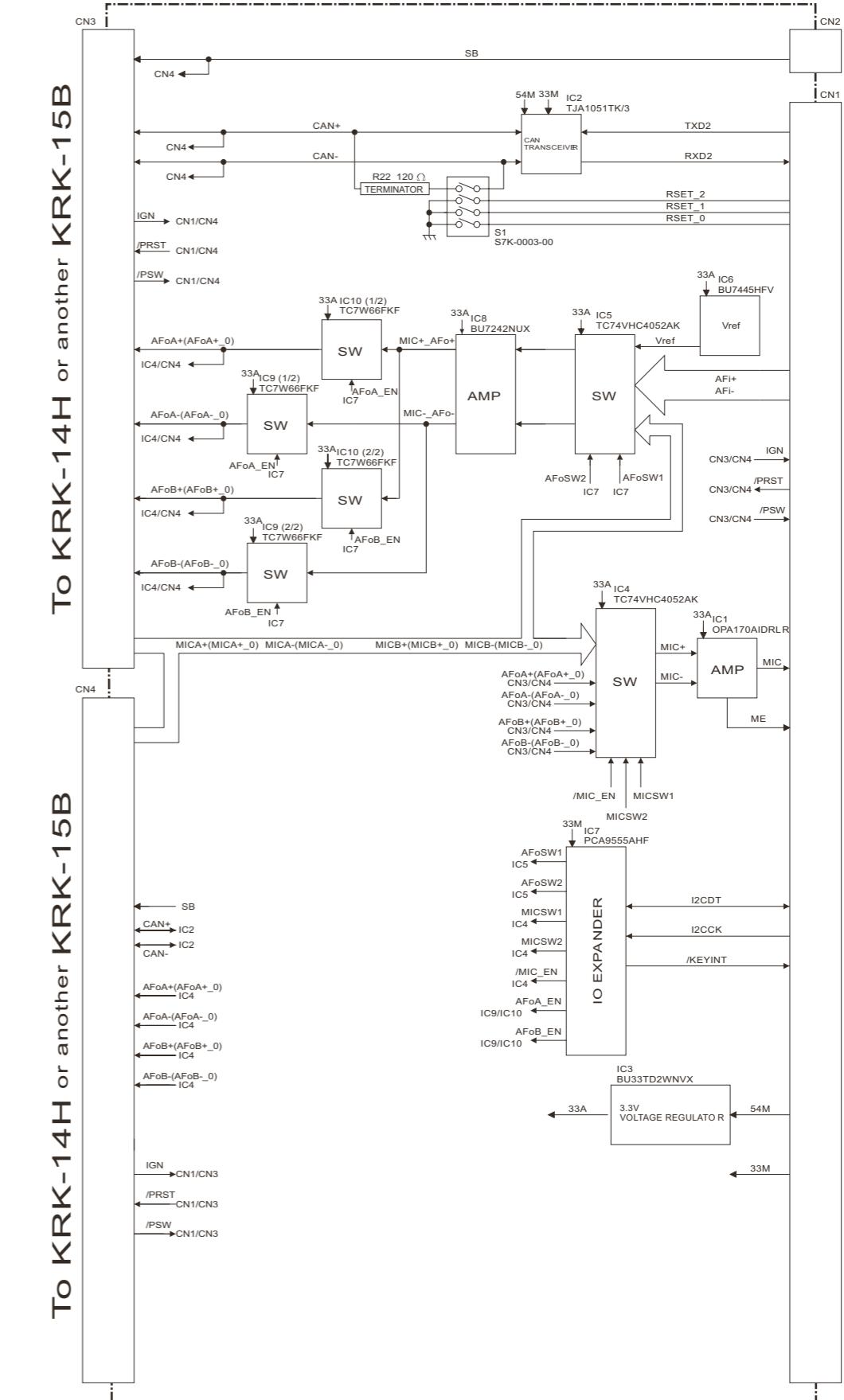
## ■ KRK-14H

Interface Unit (XC3-008)



## ■ KRK-15B

Interface Unit (XC3-009)



**MEMO**

# PARTS LIST

## [KRK-14H,KRK-15B]

\* SAFETY PRECAUTION

Parts identified by the  $\Delta$  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.

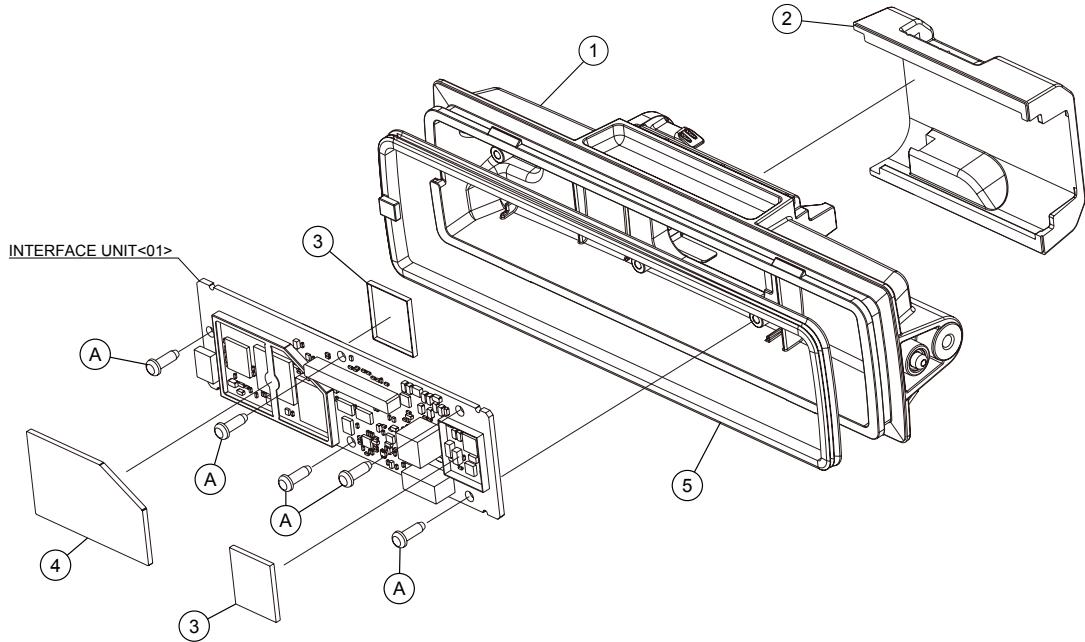
\* (x\_) in a description column shows the number of the used part.

### - Contents -

|  |     |
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| 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



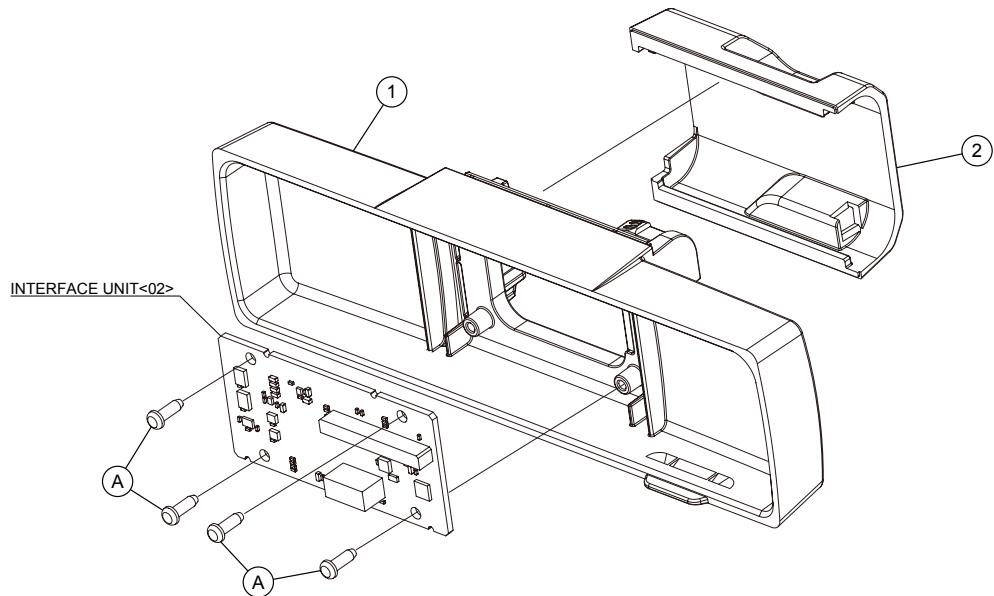
## General assembly

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  | XCB102A007-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 | BUT242NUX     | IC(MOS-IC) |       |  |
| IC14 | BUT242NUX     | IC(MOS-IC) |       |  |
| IC15 | BUT7462NUX    | IC(MOS-IC) |       |  |
| IC16 | -----         | MPU IC     | *Note |  |
| IC17 | -----         | MPU IC     | *Note |  |
| IC18 | BUT7462NUX    | IC(MOS-IC) |       |  |
| IC19 | BUT742NUX     | 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    | TRANSISTOR      |  |  |
| Q2  | EM6M2        | FET             |  |  |
| Q3  | SSM3K335R    | TRANSISTOR      |  |  |
| 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       |  |  |

|     |               |             |           |  |
|-----|---------------|-------------|-----------|--|
| 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   |  |
| C15 | CK73GBB1H105K | C CAPACITOR | 1.0UF K   |  |
| C16 | CC73HCH1H101J | C CAPACITOR | 100PF J   |  |
| C17 | CC73HCH1H101J | C CAPACITOR | 100PF J   |  |
| 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 | 0.010UF K |  |
| C25 | CK73HB1H103K  | C CAPACITOR | 0.010UF K |  |

| △ Symbol No. | Part No.      | Part Name   | Description | Local |
|--------------|---------------|-------------|-------------|-------|
| C26          | CK73HB1H272K  | C CAPACITOR | 270UF K     |       |
| C27          | CK73HB1H103K  | C CAPACITOR | 0.010UF 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 | 180UF 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      |       |
| 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 | 0.010UF K   |       |
| C64          | CK73HB1H103K  | C CAPACITOR | 0.010UF K   |       |
| C65          | CK73HB1H103K  | C CAPACITOR | 0.010UF K   |       |
| C66          | CK73HB1H103K  | C CAPACITOR | 0.010UF K   |       |
| C67          | CK73HB1H103K  | C CAPACITOR | 0.010UF K   |       |
| C68          | CK73GB0J106K  | C CAPACITOR | 10UF K      |       |
| C69          | CK73HB1H103K  | C CAPACITOR | 0.010UF K   |       |
| C70          | CC73HCH1H101J | C CAPACITOR | 100PF J     |       |
| C71          | CK73GB0J106K  | C CAPACITOR | 10UF K      |       |
| C72          | CK73HB1H103K  | C CAPACITOR | 0.010UF K   |       |
| C73          | CC73HCH1H101J | C CAPACITOR | 100PF J     |       |
| C74          | CK73GB0J106K  | C CAPACITOR | 10UF K      |       |
| C75          | CC73HCH1H101J | C CAPACITOR | 100PF J     |       |
| C76          | CK73HB1H103K  | C CAPACITOR | 0.010UF 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 | 0.010UF 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 | 0.0H10UF 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     |       |
| C106         | CK73HB1H103K  | C CAPACITOR | 0.010UF K   |       |
| C107         | CK73HB1H103K  | C CAPACITOR | 0.010UF K   |       |
| C108         | CK73HB1H103K  | C CAPACITOR | 0.010UF K   |       |
| C109         | CK73HB1H103K  | C CAPACITOR | 0.010UF K   |       |
| C110         | CC73HCH1H100D | C CAPACITOR | 10PF D      |       |
| C111         | CK73HB1E104K  | C CAPACITOR | 0.10UF K    |       |

| △ Symbol No. | Part No.      | Part Name   | Description | Local | △ Symbol No. | Part No.      | Part Name   | Description  | Local |
|--------------|---------------|-------------|-------------|-------|--------------|---------------|-------------|--------------|-------|
| C112         | CC73HCH1H100D | C CAPACITOR | 10PF D      |       | C250         | CK73HB1E104K  | C CAPACITOR | 0.10UF K     |       |
| C113         | CC73HCH1H100D | C CAPACITOR | 10PF D      |       | C251         | CK73HBB1H102K | C CAPACITOR | 1000PF K     |       |
| C114         | CK73HB1H103K  | C CAPACITOR | 0.010UF K   |       | C252         | CK73HBB1H102K | C CAPACITOR | 1000PF K     |       |
| C115         | CK73HB1H103K  | C CAPACITOR | 0.010UF K   |       | R3           | RK73FB2B332J  | MG RESISTOR | 3.3K J 1/8W  |       |
| C116         | CK73HB1H103K  | C CAPACITOR | 0.010UF K   |       | R7           | RK73HH1J683D  | MG RESISTOR | 68K D 1/16W  |       |
| C117         | CC73HCH1H100D | C CAPACITOR | 10PF D      |       | R8           | RK73HH1J683D  | MG RESISTOR | 68K D 1/16W  |       |
| C118         | CK73HB1C105K  | C CAPACITOR | 1.0UF K     |       | R9           | RK73HH1J153D  | MG RESISTOR | 15K D 1/16W  |       |
| C119         | CC73HCH1H101J | C CAPACITOR | 100PF J     |       | R10          | RK73HB1J682J  | MG RESISTOR | 6.8K J 1/16W |       |
| C120         | CC73HCH1H100D | C CAPACITOR | 10PF D      |       | R12          | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       |
| C121         | CK73HB0J475M  | C CAPACITOR | 4.7UF M     |       | R13          | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       |
| C122         | CK73HB1E104K  | C CAPACITOR | 0.10UF K    |       | R14          | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       |
| C123         | CK73GXR1C225K | C CAPACITOR | 2.2UF K     |       | R15          | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       |
| C124         | CK73HB0J475M  | C CAPACITOR | 4.7UF M     |       | R16          | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       |
| C125         | CK73HB1C105K  | C CAPACITOR | 1.0UF K     |       | R17          | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       |
| C126         | CK73HB1C105K  | C CAPACITOR | 1.0UF K     |       | R22          | RK73HB1J272J  | MG RESISTOR | 2.7K J 1/16W |       |
| C127         | CK73HB0J475M  | C CAPACITOR | 4.7UF M     |       | R27          | RK73HB1J04J   | MG RESISTOR | 100K J 1/16W |       |
| C130         | CK73HB0J475M  | C CAPACITOR | 4.7UF M     |       | R28          | RK73HH1J473D  | MG RESISTOR | 47K D 1/16W  |       |
| C131         | CK73GB0J106K  | C CAPACITOR | 10UF K      |       | R29          | RK73HB1J104J  | MG RESISTOR | 100K J 1/16W |       |
| C132         | CK73HB1E104K  | C CAPACITOR | 0.10UF K    |       | R30          | RK73HB1J104J  | MG RESISTOR | 100K J 1/16W |       |
| C133         | CC73HCH1H101J | C CAPACITOR | 100PF J     |       | R31          | RK73HH1J473D  | MG RESISTOR | 47K D 1/16W  |       |
| C134         | CK73HB1C105K  | C CAPACITOR | 1.0UF K     |       | R32          | RK73HH1J473D  | MG RESISTOR | 47K D 1/16W  |       |
| C135         | CK73HB1C105K  | C CAPACITOR | 1.0UF K     |       | R33          | RK73HH1J103D  | MG RESISTOR | 10K D 1/16W  |       |
| C136         | CK73HB1C105K  | C CAPACITOR | 1.0UF K     |       | R34          | RK73HH1J103D  | MG RESISTOR | 10K D 1/16W  |       |
| C137         | CK73HB1H103K  | C CAPACITOR | 0.010UF K   |       | R35          | RK73HB1J102J  | MG RESISTOR | 1.0K J 1/16W |       |
| C138         | CC73HCH1H220G | C CAPACITOR | 22PF G      |       | R36          | RK73HB1J102J  | MG RESISTOR | 1.0K J 1/16W |       |
| C139         | CK73HB1H152K  | C CAPACITOR | 0.015UF K   |       | R37          | RK73HH1J393D  | MG RESISTOR | 39K D 1/16W  |       |
| C140         | CK73HB1C105K  | C CAPACITOR | 1.0UF K     |       | R38          | RK73HH1J103D  | MG RESISTOR | 10K D 1/16W  |       |
| C141         | CK73HB1C105K  | C CAPACITOR | 1.0UF K     |       | R39          | RK73HB1J471J  | MG RESISTOR | 470 J 1/16W  |       |
| C142         | CK73HB1A224K  | C CAPACITOR | 0.22UF K    |       | R40          | RK73HB1J471J  | MG RESISTOR | 470 J 1/16W  |       |
| C143         | CK73HB0J225K  | C CAPACITOR | 2.2UF K     |       | R41          | RK73HB1J471J  | MG RESISTOR | 470 J 1/16W  |       |
| C144         | CK73HB0J225K  | C CAPACITOR | 2.2UF K     |       | R42          | RK73HB1J471J  | MG RESISTOR | 470 J 1/16W  |       |
| C145         | CC73HCH1H100D | C CAPACITOR | 10PF D      |       | R43          | RK73HB1J104J  | MG RESISTOR | 100K J 1/16W |       |
| C146         | CK73HB1E104K  | C CAPACITOR | 0.10UF K    |       | R45          | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       |
| C148         | CK73HB1H103K  | C CAPACITOR | 0.010UF K   |       | R46          | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       |
| C150         | CK73HB1E104K  | C CAPACITOR | 0.10UF K    |       | R47          | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       |
| C151         | CK73FXR1E475K | C CAPACITOR | 4.7UF K     |       | R48          | RK73HB1J102J  | MG RESISTOR | 1.0K J 1/16W |       |
| C152         | CC73HCH1H100D | C CAPACITOR | 10PF D      |       | R49          | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       |
| C153         | CC73HCH1H100D | C CAPACITOR | 10PF D      |       | R50          | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       |
| C154         | CK73FB1C106K  | C CAPACITOR | 10UF K      |       | R51          | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       |
| C155         | CK73FXR0J226M | C CAPACITOR | 22UF M      |       | R52          | RK73FB2B151J  | MG RESISTOR | 150 J 1/8W   |       |
| C156         | CK73HB1E104K  | C CAPACITOR | 0.10UF K    |       | R53          | RK73HB1J102J  | MG RESISTOR | 1.0K J 1/16W |       |
| C157         | CK73HB1E104K  | C CAPACITOR | 0.10UF K    |       | R54          | RK73HH1J473D  | MG RESISTOR | 47K D 1/16W  |       |
| C158         | CK73HB1C105K  | C CAPACITOR | 1.0UF K     |       | R55          | RK73HH1J473D  | MG RESISTOR | 47K D 1/16W  |       |
| C159         | CK73HB1C105K  | C CAPACITOR | 1.0UF K     |       | R56          | RK73HH1J473D  | MG RESISTOR | 47K D 1/16W  |       |
| C160         | CK73FXR1E475K | C CAPACITOR | 4.7UF K     |       | R57          | RK73HB1J100J  | MG RESISTOR | 10 J 1/16W   |       |
| C161         | CK73HB1E104K  | C CAPACITOR | 0.10UF K    |       | R58          | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       |
| C162         | CK73HB1E104K  | C CAPACITOR | 0.10UF K    |       | R59          | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       |
| C163         | CK73HB1H103K  | C CAPACITOR | 0.010UF K   |       | R60          | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       |
| C164         | CK73HB1H103K  | C CAPACITOR | 0.010UF K   |       | R61          | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       |
| C165         | CK73FB1C106K  | C CAPACITOR | 10UF K      |       | R62          | RK73HB1J220J  | MG RESISTOR | 22 J 1/16W   |       |
| C166         | CK73HB1A224K  | C CAPACITOR | 0.22UF K    |       | R63          | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       |
| C167         | CK73HB1A224K  | C CAPACITOR | 0.22UF K    |       | R64          | RK73HH1J103D  | MG RESISTOR | 10K D 1/16W  |       |
| C168         | CK73HB1E104K  | C CAPACITOR | 0.10UF K    |       | R65          | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       |
| C169         | CK73HB1E104K  | C CAPACITOR | 0.10UF K    |       | R66          | RK73HH1J103D  | MG RESISTOR | 10K D 1/16W  |       |
| C171         | CK73GB0J106K  | C CAPACITOR | 10UF K      |       | R67          | RK73HH1J103D  | MG RESISTOR | 10K D 1/16W  |       |
| C172         | CK73GB0J106K  | C CAPACITOR | 10UF K      |       | R68          | RK73HH1J103D  | MG RESISTOR | 10K D 1/16W  |       |
| C173         | CK73HB1E104K  | C CAPACITOR | 0.10UF K    |       | R69          | RK73HH1J103D  | MG RESISTOR | 10K D 1/16W  |       |
| C175         | CC73HCH1H101J | C CAPACITOR | 100PF J     |       | R70          | RK73HB1J104J  | MG RESISTOR | 100K J 1/16W |       |
| C176         | CK73HB1E104K  | C CAPACITOR | 0.10UF K    |       | R71          | RK73HB1J104J  | MG RESISTOR | 100K J 1/16W |       |
| C177         | CK73GB1E105K  | C CAPACITOR | 1.0UF K     |       | R72          | RK73HB1J104J  | MG RESISTOR | 100K J 1/16W |       |
| C178         | CC73HCH1H101J | C CAPACITOR | 100PF J     |       | R73          | RK73HB1J104J  | MG RESISTOR | 100K J 1/16W |       |
| C185         | CK73HB1E104K  | C CAPACITOR | 0.10UF K    |       | R74          | RK73HB1J104J  | MG RESISTOR | 100K J 1/16W |       |
| C186         | CK73HB1E104K  | C CAPACITOR | 0.10UF K    |       | R75          | RK73HB1J104J  | MG RESISTOR | 100K J 1/16W |       |
| C187         | CK73GB1E105K  | C CAPACITOR | 1.0UF K     |       | R76          | RK73HB1J222J  | MG RESISTOR | 2.2K J 1/16W |       |
| C188         | CC73HCH1H101J | C CAPACITOR | 100PF J     |       | R77          | RK73HB1J222J  | MG RESISTOR | 2.2K J 1/16W |       |
| C189         | CK73GB1E105K  | C CAPACITOR | 1.0UF K     |       | R78          | RK73HB1J222J  | MG RESISTOR | 2.2K J 1/16W |       |
| C191         | CK73HB1E104K  | C CAPACITOR | 0.10UF K    |       | 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    |       | R82          | RK73HB1J222J  | MG RESISTOR | 2.2K J 1/16W |       |
| C196         | CK73HB1H102K  | C CAPACITOR | 1000PF K    |       | R83          | RK73HB1J104J  | MG RESISTOR | 100K J 1/16W |       |
| C216         | CC73HCH1H101J | C CAPACITOR | 100PF J     |       | R84          | RK73HB1J104J  | MG RESISTOR | 100K J 1/16W |       |
| C217         | CC73HCH1H271J | C CAPACITOR | 270PF J     |       | R85          | RK73HB1J101J  | MG RESISTOR | 100 J 1/16W  |       |
| C219         | CK73HB1E104K  | C CAPACITOR | 0.10UF K    |       | R86          | RK73HB1J222J  | MG RESISTOR | 2.2K J 1/16W |       |
| C220         | CC73HCH1H331J | C CAPACITOR | 330PF J     |       | R91          | RK73HB1J104J  | MG RESISTOR | 100K J 1/16W |       |
| C223         | CK73HB1H103K  | C CAPACITOR | 0.010UF K   |       | R92          | RK73HB1J333J  | MG RESISTOR | 33K J 1/16W  |       |
| C224         | CK73HBB1H332K | C CAPACITOR | 0.0033UF K  |       | R93          | RK73HH1J473D  | MG RESISTOR | 47K D 1/16W  |       |

| △ Symbol No. | Part No.      | Part Name   | Description  | Local | △ Symbol No. | Part No.      | Part Name                   | Description  | Local |
|--------------|---------------|-------------|--------------|-------|--------------|---------------|-----------------------------|--------------|-------|
| 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         | RK73HB1J000J  | MG RESISTOR                 | 0.0 J 1/16W  |       |
| R96          | RK73HH1J473D  | MG RESISTOR | 47K D 1/16W  |       | R196         | RK73HB1J000J  | MG RESISTOR                 | 0.0 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                 | 47K 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  | SMALL FIXED INDUCTOR(10UH)  |              |       |
| 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  | SMALL FIXED INDUCTOR(15UH)  |              |       |
| 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          | LB73FOAH-003  | CHIP FERRITE                |              |       |
| R138         | RK73HB1J102J  | MG RESISTOR | 1.0K J 1/16W |       | L32          | LB73FOAH-003  | CHIP FERRITE                |              |       |
| 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  |       | A1           | W02-3785-05   | DC/DC CONVERTER             |              |       |
| R156         | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       | CN1          | EA710AC-1516B | WIRE TO BOARD CONNECTOR SMD |              |       |
| R157         | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       | CN2          | EA710AC-1513B | WIRE TO BOARD CONNECTOR SMD |              |       |
| R158         | RK73HB1J102J  | MG RESISTOR | 1.0K J 1/16W |       | CN35         | E41-2673-05   | PIN ASSY                    |              |       |
| R159         | RK73HH1J473D  | MG RESISTOR | 47K D 1/16W  |       | CN37         | E40-6913-05   | FLAT CABLE CONNECTOR        |              |       |
| R160         | RK73HB1J681J  | MG RESISTOR | 680 J 1/16W  |       | CP1          | RK74HB1J470J  | NET RESISTOR                | 47 J 1/16W   |       |
| R161         | RK73HB1J681J  | MG RESISTOR | 680 J 1/16W  |       | CP2          | RK74HB1J470J  | NET RESISTOR                | 47 J 1/16W   |       |
| R162         | RK73HB1J102J  | MG RESISTOR | 1.0K J 1/16W |       | CP3          | RK74HB1J470J  | NET RESISTOR                | 47 J 1/16W   |       |
| R163         | RK73HB1J333J  | MG RESISTOR | 33K J 1/16W  |       | CP4          | RK74HB1J470J  | NET RESISTOR                | 47 J 1/16W   |       |
| R164         | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       | CP5          | RK74HB1J470J  | NET RESISTOR                | 47 J 1/16W   |       |
| R167         | RK73HB1J472J  | MG RESISTOR | 4.7K J 1/16W |       | E1           | F10-3226-05   | SHIELDING CASE              |              |       |
| R168         | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       | E2           | F10-3226-05   | SHIELDING CASE              |              |       |
| R169         | RK73HB1J104J  | MG RESISTOR | 100K J 1/16W |       | E3           | F1B-0026-00   | SHIELDING CASE              |              |       |
| R170         | RK73HB1J104J  | MG RESISTOR | 100K J 1/16W |       | S1           | S7K-0003-00   | DIP SWITCHES                |              |       |
| R171         | RK73HB1J104J  | MG RESISTOR | 100K J 1/16W |       | X1           | L77-3123-05   | TCXO(19.MHZ)                |              |       |
| R187         | RK73HB1J105J  | MG RESISTOR | 1.0 M 1/16W  |       |              |               |                             |              |       |
| R188         | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |       |              |               |                             |              |       |
| R189         | RK73HB1J101J  | MG RESISTOR | 100 J 1/16W  |       |              |               |                             |              |       |
| R190         | RK73HB1J101J  | MG RESISTOR | 100 J 1/16W  |       |              |               |                             |              |       |
| R191         | RK73HB1J101J  | MG RESISTOR | 100 J 1/16W  |       |              |               |                             |              |       |
| R192         | RK73HB1J101J  | MG RESISTOR | 100 J 1/16W  |       |              |               |                             |              |       |
| R193         | RK73HH1J473D  | MG RESISTOR | 47K D 1/16W  |       |              |               |                             |              |       |

# INTERFACE UNIT

**XC3-0090-20(KRK-15B\_M)**

**Block No. [0][2]**

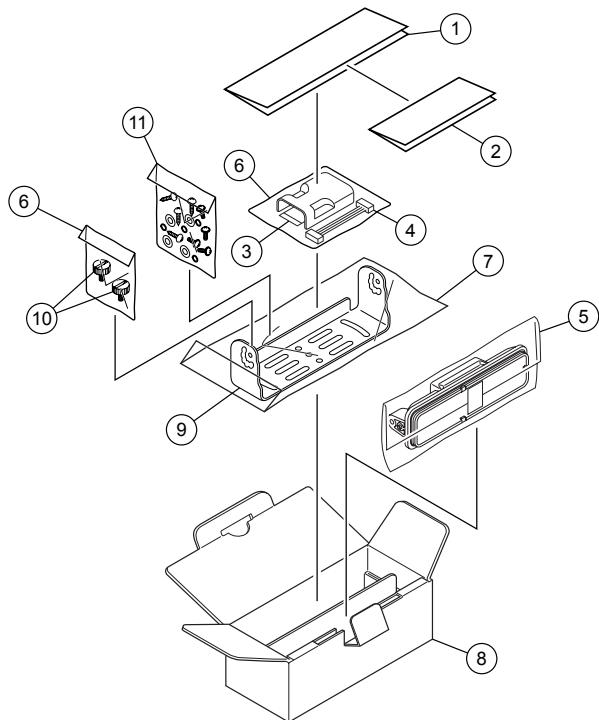
| △ Symbol No. | Part No. | Part Name | Description | Local |
|--------------|----------|-----------|-------------|-------|
|--------------|----------|-----------|-------------|-------|

|      |               |             |              |  |
|------|---------------|-------------|--------------|--|
| IC1  | OPA170AIDRLR  | IC(MOS-IC)  |              |  |
| IC2  | TJA1051TK/3   | IC(MOS-IC)  |              |  |
| IC3  | BU33TD2WNVX   | IC(MOS-IC)  |              |  |
| IC4  | TC74VHC4052AK | IC(MOS-IC)  |              |  |
| IC5  | TC74VHC4052AK | IC(MOS-IC)  |              |  |
| IC6  | BU7445HFV     | IC(MOS-IC)  |              |  |
| IC7  | PCA9555AHF    | IC(MOS-IC)  |              |  |
| IC8  | BU7242NUX     | IC(MOS-IC)  |              |  |
| IC9  | TC7W66FKF     | IC(MOS-IC)  |              |  |
| IC10 | TC7W66FKF     | IC(MOS-IC)  |              |  |
| C2   | CC73HCH1H101J | C CAPACITOR | 100PF J      |  |
| C3   | CC73HCH1H470J | C CAPACITOR | 47PF J       |  |
| C4   | CC73HCH1H470J | C CAPACITOR | 47PF J       |  |
| C5   | CC73HCH1H470J | C CAPACITOR | 47PF J       |  |
| C6   | CC73HCH1H470J | C CAPACITOR | 47PF J       |  |
| C7   | CC73HCH1H470J | C CAPACITOR | 47PF J       |  |
| C12  | CK73HB1E104K  | C CAPACITOR | 0.10UF K     |  |
| C14  | CK73HB1E104K  | C CAPACITOR | 0.10UF K     |  |
| C15  | CK73HB1E1471K | C CAPACITOR | 470PF K      |  |
| C16  | CK73HB1E104K  | C CAPACITOR | 0.10UF K     |  |
| C17  | CK73HB1E104K  | C CAPACITOR | 0.10UF K     |  |
| C18  | CK73GB1E105K  | C CAPACITOR | 1.0UF K      |  |
| C19  | CK73HB1E1471K | C CAPACITOR | 470PF K      |  |
| C20  | CK73GB1E105K  | C CAPACITOR | 1.0UF K      |  |
| C21  | CK73GB1E105K  | C CAPACITOR | 1.0UF K      |  |
| C22  | CK73GB1E105K  | C CAPACITOR | 1.0UF K      |  |
| C24  | CK73HB1E104K  | C CAPACITOR | 0.10UF K     |  |
| C25  | CK73HB1E104K  | C CAPACITOR | 0.10UF K     |  |
| C26  | CK73GB1E105K  | C CAPACITOR | 1.0UF K      |  |
| C27  | CK73GB1E105K  | C CAPACITOR | 1.0UF K      |  |
| C28  | CK73GB1E105K  | C CAPACITOR | 1.0UF K      |  |
| C29  | CC73HCH1H101J | C CAPACITOR | 100PF J      |  |
| C30  | CC73HCH1H181J | C CAPACITOR | 180PF J      |  |
| C32  | CK73HB1E104K  | C CAPACITOR | 0.10UF K     |  |
| C34  | CK73HB1E104K  | C CAPACITOR | 0.10UF K     |  |
| C35  | CK73HB1H103K  | C CAPACITOR | 0.010UF K    |  |
| C36  | CC73HCH1H181J | C CAPACITOR | 180PF J      |  |
| C37  | CK73HB1E104K  | C CAPACITOR | 0.10UF K     |  |
| C38  | CK73HB1E104K  | C CAPACITOR | 0.10UF K     |  |
| C39  | CK73GB1E105K  | C CAPACITOR | 1.0UF K      |  |
| C40  | CK73GB1E105K  | C CAPACITOR | 1.0UF K      |  |
| C41  | CK73GB1E105K  | C CAPACITOR | 1.0UF K      |  |
| C42  | CK73GB1E105K  | C CAPACITOR | 1.0UF K      |  |
| C43  | CK73HB1H102K  | C CAPACITOR | 1000PF K     |  |
| C44  | CK73HB1H102K  | C CAPACITOR | 1000PF K     |  |
| C63  | CK73HB1E104K  | C CAPACITOR | 0.10UF K     |  |
| C64  | CK73HB1E104K  | C CAPACITOR | 0.10UF K     |  |
| C68  | CK73GB0J106K  | C CAPACITOR | 10UF K       |  |
| C100 | CK73GB1E105K  | C CAPACITOR | 1.0UF K      |  |
| C101 | CC73HCH1H101J | C CAPACITOR | 100PF J      |  |
| C102 | CC73HCH1H101J | C CAPACITOR | 100PF J      |  |
| C103 | CC73HCH1H101J | C CAPACITOR | 100PF J      |  |
| C104 | CC73HCH1H101J | C CAPACITOR | 100PF J      |  |
| C105 | CC73HCH1H101J | C CAPACITOR | 100PF J      |  |
| C106 | CC73HCH1H101J | C CAPACITOR | 100PF J      |  |
| C107 | CK73HB1E104K  | C CAPACITOR | 0.10UF K     |  |
| C108 | CK73HB1E104K  | C CAPACITOR | 0.10UF K     |  |
| C109 | CC73HCH1H181J | C CAPACITOR | 180PF J      |  |
| C110 | CC73HCH1H181J | C CAPACITOR | 180PF J      |  |
| R7   | RK73HB1J473J  | MG RESISTOR | 47K J 1/16W  |  |
| R8   | RK73HB1J473J  | MG RESISTOR | 47K J 1/16W  |  |
| R9   | RK73HB1J820J  | MG RESISTOR | 82 J 1/16W   |  |
| R10  | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |  |
| R11  | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |  |
| R12  | RK73HB1J273J  | MG RESISTOR | 27K J 1/16W  |  |
| R13  | RK73HB1J102J  | MG RESISTOR | 1.0K J 1/16W |  |
| R15  | RK73HB1J473J  | MG RESISTOR | 47K J 1/16W  |  |
| R16  | RK73HB1J000J  | MG RESISTOR | 0.0 J 1/16W  |  |
| R17  | RK73HB1J273J  | MG RESISTOR | 27K J 1/16W  |  |
| R18  | RK73HB1J473J  | MG RESISTOR | 47K J 1/16W  |  |

| △ Symbol No. | Part No.      | Part Name                   | Description  | Local |
|--------------|---------------|-----------------------------|--------------|-------|
| R19          | RK73HB1J104J  | MG RESISTOR                 | 100K J 1/16W |       |
| R20          | RK73HB1J104J  | MG RESISTOR                 | 100K J 1/16W |       |
| R22          | RK73FB2B121J  | MG RESISTOR                 | 120 J 1/8W   |       |
| R23          | RK73HB1J000J  | MG RESISTOR                 | 0.0 J 1/16W  |       |
| R24          | RK73HB1J000J  | MG RESISTOR                 | 0.0 J 1/16W  |       |
| R25          | RK73HB1J000J  | MG RESISTOR                 | 0.0 J 1/16W  |       |
| R26          | RK73HB1J000J  | MG RESISTOR                 | 0.0 J 1/16W  |       |
| R27          | RK73HB1J104J  | MG RESISTOR                 | 100K J 1/16W |       |
| R28          | RK73HB1J104J  | MG RESISTOR                 | 100K J 1/16W |       |
| R29          | RK73HB1J683J  | MG RESISTOR                 | 68K J 1/16W  |       |
| R30          | RK73HB1J473J  | MG RESISTOR                 | 47K J 1/16W  |       |
| R31          | RK73HB1J473J  | MG RESISTOR                 | 47K J 1/16W  |       |
| R32          | RK73HB1J333J  | MG RESISTOR                 | 33K J 1/16W  |       |
| R33          | RK73HB1J000J  | MG RESISTOR                 | 0.0 J 1/16W  |       |
| R37          | RK73HB1J333J  | MG RESISTOR                 | 33K J 1/16W  |       |
| R38          | RK73HB1J683J  | MG RESISTOR                 | 68K J 1/16W  |       |
| R39          | RK73HB1J104J  | MG RESISTOR                 | 100K J 1/16W |       |
| R40          | RK73HB1J104J  | MG RESISTOR                 | 100K J 1/16W |       |
| R41          | RK73HB1J104J  | MG RESISTOR                 | 100K J 1/16W |       |
| R42          | RK73HB1J104J  | MG RESISTOR                 | 100K J 1/16W |       |
| R67          | RK73HB1J103J  | MG RESISTOR                 | 10K J 1/16W  |       |
| R68          | RK73HB1J103J  | MG RESISTOR                 | 10K J 1/16W  |       |
| R100         | RK73HB1J473J  | MG RESISTOR                 | 47K J 1/16W  |       |
| R101         | RK73HB1J473J  | MG RESISTOR                 | 47K J 1/16W  |       |
| R102         | RK73HB1J683J  | MG RESISTOR                 | 68K J 1/16W  |       |
| R103         | RK73HB1J101J  | MG RESISTOR                 | 100 J 1/16W  |       |
| R104         | RK73HB1J683J  | MG RESISTOR                 | 68K J 1/16W  |       |
| R105         | RK73HB1J101J  | MG RESISTOR                 | 100 J 1/16W  |       |
| R106         | RK73HB1J333J  | MG RESISTOR                 | 33K J 1/16W  |       |
| R107         | RK73HB1J333J  | MG RESISTOR                 | 33K J 1/16W  |       |
| L1           | LB73G0AM-004  | CHIP FERRITE BEADS          |              |       |
| L2           | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L3           | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L4           | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L5           | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L6           | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L7           | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L8           | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L9           | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L10          | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L11          | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L12          | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L13          | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L14          | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L15          | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L16          | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L17          | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L18          | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L19          | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L20          | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L21          | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L22          | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L23          | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L24          | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| L25          | LB73H0AV-003  | CHIP FERRITE BEADS          |              |       |
| CN1          | E40-6913-05   | FLAT CABLE CONNECTOR        |              |       |
| CN2          | E41-2673-05   | PIN ASSY                    |              |       |
| CN3          | EA710AC-1516B | WIRE TO BOARD CONNECTOR SMD |              |       |
| CN4          | EA710AC-1516B | WIRE TO BOARD CONNECTOR SMD |              |       |
| CP1          | RK74HB1J100J  | NET RESISTOR                | 10 J 1/16W   |       |
| CP3          | RK74HB1J101J  | NET RESISTOR                | 100 J 1/16W  |       |
| CP4          | RK74HB1J101J  | NET RESISTOR                | 100 J 1/16W  |       |
| S1           | S7K-0003-00   | DIP SWITCHES                |              |       |

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

Block No.M3MM



## Packing and accessories

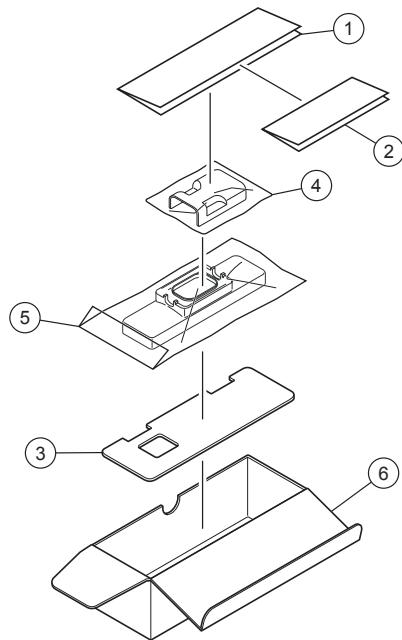
Block No. [M][3][M][M]

Local

| △ Symbol No. | Part No.    | Part Name                              | Description | Block No. [M][3][M][M] | Local |
|--------------|-------------|--|-------------|------------------------|-------|
| 1            | -----       | PAMPHLET(ROHS)                         |             |                        |       |
| 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)

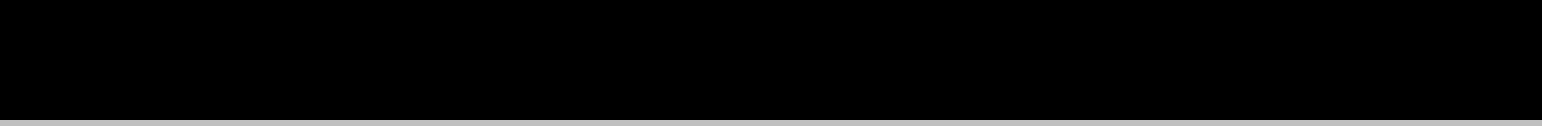
Block No.M4MM



## Packing and accessories

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

| △ Symbol No. | Part No.    | Part Name                     | Description |  |
|--------------|-------------|-------------------------------|-------------|--|
| 1            | -----       | PAMPHLET(ROHS)                |             |  |
| 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 BU

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(No.RA021<Rev.001>)

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