



**MODEL:  
IKARPC-07A-A9**

**7" Android-Based Panel PC with Touchscreen  
Freescale™ i.MX6 ARM Cortex™ -A9 CPU, OBD-II, CAN, USB,  
Audio, RS-232, RoHS Compliant, IP 54 Front Panel**

## **User Manual**

# Revision

---

| Date             | Version | Changes                |
|------------------|---------|------------------------|
| October 28, 2015 | 1.01    | Updated product photos |
| June 12, 2015    | 1.00    | Initial release        |

# Copyright

---

## **COPYRIGHT NOTICE**

The information in this document is subject to change without prior notice in order to improve reliability, design and function and does not represent a commitment on the part of the manufacturer.

In no event will the manufacturer be liable for direct, indirect, special, incidental, or consequential damages arising out of the use or inability to use the product or documentation, even if advised of the possibility of such damages.

This document contains proprietary information protected by copyright. All rights are reserved. No part of this manual may be reproduced by any mechanical, electronic, or other means in any form without prior written permission of the manufacturer.

## **TRADEMARKS**

All registered trademarks and product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective owners.

# Manual Conventions

---



## **WARNING**

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury. Warnings should be taken seriously.



## **CAUTION**

Cautionary messages should be heeded to help reduce the chance of losing data or damaging the product.



## **NOTE**

These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can help avoid making mistakes.



## **HOT SURFACE**

This symbol indicates a hot surface that should not be touched without taking care.

# Table of Contents

|   |           |
|---|-----------|
| <b>1 INTRODUCTION.....</b>                    | <b>1</b>  |
| 1.1 OVERVIEW.....                             | 2         |
| 1.2 FEATURES.....                             | 2         |
| 1.3 FRONT PANEL.....                          | 3         |
| 1.3.1 LED Indicators.....                     | 4         |
| 1.4 REAR PANEL.....                           | 4         |
| 1.5 RIGHT SIDE PANEL.....                     | 6         |
| 1.6 TOP PANEL.....                            | 6         |
| 1.7 BOTTOM PANEL.....                         | 7         |
| 1.8 SYSTEM SPECIFICATIONS.....                | 7         |
| 1.9 DIMENSIONS.....                           | 10        |
| <b>2 UNPACKING.....</b>                       | <b>11</b> |
| 2.1 PACKING LIST.....                         | 12        |
| <b>3 INSTALLATION.....</b>                    | <b>14</b> |
| 3.1 ANTI-STATIC PRECAUTIONS.....              | 15        |
| 3.2 INSTALLATION PRECAUTIONS.....             | 15        |
| 3.3 INSTALLATION AND CONFIGURATION STEPS..... | 16        |
| 3.4 SD CARD INSTALLATION.....                 | 16        |
| 3.5 SIM CARD INSTALLATION.....                | 17        |
| 3.6 MOUNTING THE SYSTEM.....                  | 19        |
| 3.7 EXTERNAL I/O CONNECTORS.....              | 20        |
| 3.7.1 I/O Connector 1 (20-pin).....           | 20        |
| 3.7.2 I/O Connector 2 (24-pin).....           | 21        |
| 3.7.3 Video Input Connector.....              | 22        |
| 3.7.4 Power Input Connection.....             | 23        |
| 3.7.5 USB Connector.....                      | 24        |
| 3.8 SYSTEM MAINTENANCE.....                   | 24        |
| <b>4 USING THE IKARPC-07A-A9.....</b>         | <b>25</b> |

|  |           |
|--|-----------|
| 4.1 POWER-ON/OFF PROCEDURE .....         | 26        |
| 4.1.1 Installation Checklist .....       | 26        |
| 4.1.2 Power-on Procedure .....           | 26        |
| 4.1.3 Power-off Procedure .....          | 27        |
| 4.2 HOME SCREEN .....                    | 28        |
| 4.2.1 Navigation Buttons.....            | 28        |
| 4.2.2 Multiple Home Screens .....        | 29        |
| 4.2.3 Adding Shortcut.....               | 29        |
| 4.2.4 Favorites Tray.....                | 31        |
| 4.2.5 Arranging Home Screen.....         | 31        |
| 4.3 STATUS BAR .....                     | 32        |
| 4.4 SETTINGS .....                       | 34        |
| 4.4.1 WIRELESS & NETWORKS.....           | 34        |
| 4.4.1.1 More Settings .....              | 35        |
| 4.4.2 Sound.....                         | 36        |
| 4.4.3 Display.....                       | 37        |
| 4.4.4 Storage .....                      | 38        |
| 4.4.5 Apps.....                          | 39        |
| 4.4.6 Users .....                        | 39        |
| 4.4.7 Location Access.....               | 40        |
| 4.4.8 Security .....                     | 41        |
| 4.4.9 Language & Input.....              | 42        |
| 4.4.10 Backup & Reset.....               | 43        |
| 4.4.11 Add account.....                  | 44        |
| 4.4.12 Date & Time.....                  | 44        |
| 4.4.13 Accessibility .....               | 45        |
| 4.4.14 About Tablet .....                | 46        |
| 4.5 FILE MANAGEMENT .....                | 47        |
| 4.6 CAMERA.....                          | 49        |
| 4.7 SYSTEM UPDATE .....                  | 50        |
| <b>5 INTERFACE CONNECTORS .....</b>      | <b>51</b> |
| 5.1 PERIPHERAL INTERFACE CONNECTORS..... | 52        |
| 5.2 INTERNAL PERIPHERAL CONNECTORS ..... | 53        |
| 5.2.1 Camera Connector (CAMERA1) .....   | 54        |

## **IKARPC-07A-A9 In-vehicle Panel PC**

|  |           |
|--|-----------|
| 5.2.2 LED Connector (LED_BD2).....   | 54        |
| 5.2.3 LVDS Connector (CN2).....  | 55        |
| 5.2.4 Microphone Connector (MIC1).....   | 55        |
| 5.2.5 Programming Connector (MCU1).....  | 56        |
| 5.2.6 Programming Connector (JP2).....   | 56        |
| 5.2.7 Speaker Connector (SPK1).....  | 56        |
| 5.2.8 Touch Panel Connector (CN10).....  | 56        |
| <b>A REGULATORY COMPLIANCE .....</b>   | <b>58</b> |
| <b>B SAFETY PRECAUTIONS .....</b>  | <b>63</b> |
| B.1 SAFETY PRECAUTIONS.....  | 64        |
| B.1.1 General Safety Precautions.....  | 64        |
| B.1.2 Anti-static Precautions .....  | 65        |
| B.1.3 Product Disposal.....  | 66        |
| B.2 MAINTENANCE AND CLEANING PRECAUTIONS .....   | 66        |
| B.2.1 Maintenance and Cleaning.....  | 66        |
| B.2.2 Cleaning Tools.....  | 67        |
| <b>C OBD-II READER COMMAND .....</b>   | <b>68</b> |
| C.1 SELECT A CHIP INITIAL MODE: UPDATE F/W OR RUN F/W .....  | 69        |
| C.2 BOOT MODE .....  | 69        |
| C.3 RUN MODE.....  | 69        |
| C.4 INTO CAN_STANDARD V2.2.B (CAN STANDARD).....   | 71        |
| C.5 INTO TELEMATICS .....  | 73        |
| <b>D WATCHDOG TIMER .....</b>  | <b>77</b> |
| <b>E HAZARDOUS MATERIALS DISCLOSURE .....</b>  | <b>80</b> |
| E.1 HAZARDOUS MATERIALS DISCLOSURE TABLE FOR IPB PRODUCTS CERTIFIED AS<br>ROHS COMPLIANT UNDER 2002/95/EC WITHOUT MERCURY..... | 81        |

# List of Figures

---

|  |    |
|--|----|
| Figure 1-1: IKARPC-07A-A9 Panel PC .....                     | 2  |
| Figure 1-2: Front View .....                                 | 3  |
| Figure 1-3: LED Indicators .....                             | 4  |
| Figure 1-4: Rear View .....                                  | 5  |
| Figure 1-5: Right Side Panel .....                           | 6  |
| Figure 1-6: Top Panel .....                                  | 6  |
| Figure 1-7: Bottom Panel .....                               | 7  |
| Figure 1-8: Dimensions (unit: mm) .....                      | 10 |
| Figure 3-1: SD Card Slot Access Panel Retention Screw .....  | 16 |
| Figure 3-2: Install SD Card .....                            | 17 |
| Figure 3-3: SIM Card Slot Access Panel Retention Screw ..... | 17 |
| Figure 3-4: Install SIM Card .....                           | 18 |
| Figure 3-5: VESA Mount Retention Screw Holes .....           | 19 |
| Figure 3-6: IO 1 Connector Pinout Locations .....            | 20 |
| Figure 3-7: IO 2 Connector Pinout Locations .....            | 21 |
| Figure 3-8: Video Input Connector .....                      | 22 |
| Figure 3-9: Power Input Connector .....                      | 23 |
| Figure 3-10: ACC Power Cable .....                           | 23 |
| Figure 3-12: USB Connector .....                             | 24 |
| Figure 4-1: Power Connector and Power Button .....           | 27 |
| Figure 4-2: Power-off Confirmation Screen .....              | 28 |
| Figure 4-3: Navigation Buttons .....                         | 28 |
| Figure 4-4: Multiple Home Screens .....                      | 29 |
| Figure 4-5: Launcher Button .....                            | 30 |
| Figure 4-6: Launcher Page .....                              | 30 |
| Figure 4-7: Favorites Tray .....                             | 31 |
| Figure 4-8: Move and Trash Item on Home Screen .....         | 32 |
| Figure 4-9: Status Bar .....                                 | 32 |
| Figure 4-10: Status Bar – Setting Shortcut .....             | 33 |
| Figure 4-11: Status Bar – Notification .....                 | 33 |



## **IKARPC-07A-A9 In-vehicle Panel PC**

|  |           |
|--|-----------|
| <b>Figure 4-12: Wireless and Networks Settings .....</b>         | <b>34</b> |
| <b>Figure 4-13: More Settings Menu .....</b>                     | <b>35</b> |
| <b>Figure 4-14: Sound Menu .....</b>                             | <b>36</b> |
| <b>Figure 4-15: Display Menu .....</b>                           | <b>37</b> |
| <b>Figure 4-16: Storage Menu .....</b>                           | <b>38</b> |
| <b>Figure 4-17: Apps Menu .....</b>                              | <b>39</b> |
| <b>Figure 4-18: Users Menu .....</b>                             | <b>39</b> |
| <b>Figure 4-19: Location Access Menu .....</b>                   | <b>40</b> |
| <b>Figure 4-20: Security Menu .....</b>                          | <b>41</b> |
| <b>Figure 4-21: Language &amp; Input Menu .....</b>              | <b>42</b> |
| <b>Figure 4-22: Backup &amp; Reset Menu .....</b>                | <b>43</b> |
| <b>Figure 4-23: Add Account Menu .....</b>                       | <b>44</b> |
| <b>Figure 4-24: Date &amp; Time Menu .....</b>                   | <b>44</b> |
| <b>Figure 4-25: Accessibility Menu .....</b>                     | <b>45</b> |
| <b>Figure 4-26: About Tablet Menu .....</b>                      | <b>46</b> |
| <b>Figure 4-27: ES File Explorer Icon .....</b>                  | <b>47</b> |
| <b>Figure 4-28: ES File Explorer Screen .....</b>                | <b>48</b> |
| <b>Figure 4-29: Possible Storage Devices .....</b>               | <b>48</b> |
| <b>Figure 4-30: Camera Application .....</b>                     | <b>49</b> |
| <b>Figure 4-31: Additional System Updates .....</b>              | <b>50</b> |
| <b>Figure 5-1: Main Board Layout Diagram (Front Side) .....</b>  | <b>52</b> |
| <b>Figure 5-2: Main Board Layout Diagram (Solder Side) .....</b> | <b>52</b> |

# List of Tables

---

|  |             |
|--|-------------|
| Table 1-1: Technical Specifications .....                  | 9           |
| Table 2-1: Packing List .....                              | 13          |
| Table 3-1: IO 1 Connector Pinouts .....                    | 20          |
| Table 3-2: IO 2 Connector Pinouts .....                    | 21          |
| Table 3-3: Video Input Connector Pinouts .....             | 22          |
| Table 3-4: Power Input Connector Pinouts .....             | 23          |
| Table 4-1: Power State and Ignition System .....           | 錯誤! 尚未定義書籤。 |
| Table 4-2: Navigation Buttons .....                        | 29          |
| Table 4-3: Camera Application–Camera Setting Buttons ..... | 49          |
| Table 5-1: Peripheral Interface Connectors .....           | 53          |
| Table 5-2: Camera Connector (CAMERA1) Pinouts .....        | 54          |
| Table 5-3: LED Connector (LED_BD2) Pinouts .....           | 54          |
| Table 5-4: LVDS Connector (CN2) Pinouts .....              | 55          |
| Table 5-5: Microphone Connector (MIC1) Pinouts .....       | 55          |
| Table 5-6: Programming Connector (MCU1) Pinouts .....      | 56          |
| Table 5-7: Programming Connector (JP2) Pinouts .....       | 56          |
| Table 5-8: Speaker Connector (SPK1) Pinouts .....          | 56          |
| Table 5-9: Touch Panel Connector (CN10) Pinouts .....      | 57          |

**Chapter**

**1**

# **Introduction**

---

## 1.1 Overview



**Figure 1-1: IKARPC-07A-A9 Panel PC**

The IKARPC-07A-A9 is a 7" Android-based panel PC

At the heart of the system is the Freescale™ i.MX6 ARM Cortex™-A9 processor, offering low power in a powerful package. The system also offers a multimedia experience with a built-in camera, microphone and speaker. Other peripherals include one USB port, one video input connector, and two I/O connectors which support RS-232, OBD-II, CAN 2.0 B, digital I/O, USB and audio input/output. Wireless networking capabilities include Bluetooth and 802.11a/b/g/n.

## 1.2 Features

The IKARPC-07A-A9 features the following:

- 2-point projected capacitive touchscreen
- Freescale™ i.MX6 ARM Cortex™-A9 processor
- On-board 1.0 GB SDRAM memory
- Pre-installed Android 4.2 operating system
- 802.11a/b/g/n wireless
- Bluetooth + EDR Class 1
- 3.75G connectivity with optional external antenna
- Support OBD-II, CAN 2.0 B, digital I/O and RS-232

## IKARPC-07A-A9 In-vehicle Panel PC

- GPS antenna connector
- 5-megapixel front-facing camera, speaker, microphone
- IP 54 compliant front panel
- RoHS compliance

### 1.3 Front Panel

The front of the IKARPC-07A-A9 is a flat panel screen with a plastic frame. The components on the front panel are listed below:

- 5-megapixel camera
- Ambient light sensor
- LED indicators (see **Section 1.3.1**)
- Microphone
- RFID reader

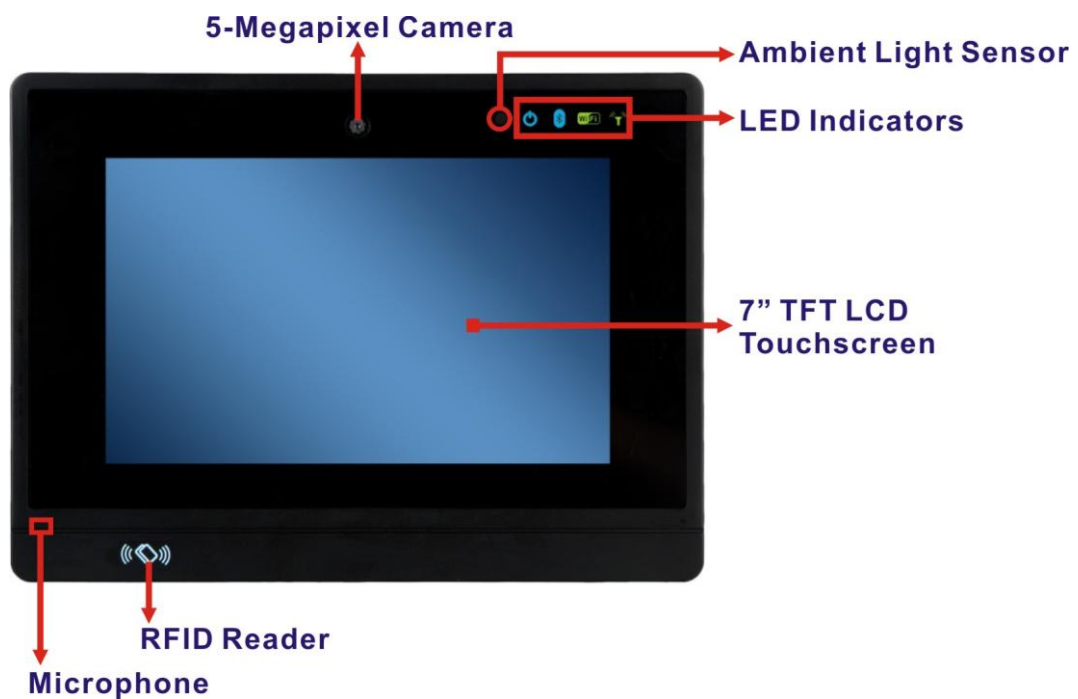


Figure 1-2: Front View

### 1.3.1 LED Indicators

The LED indicators on the front panel show the status of power, Bluetooth, Wi-Fi and GPRS/HSUPA connection.

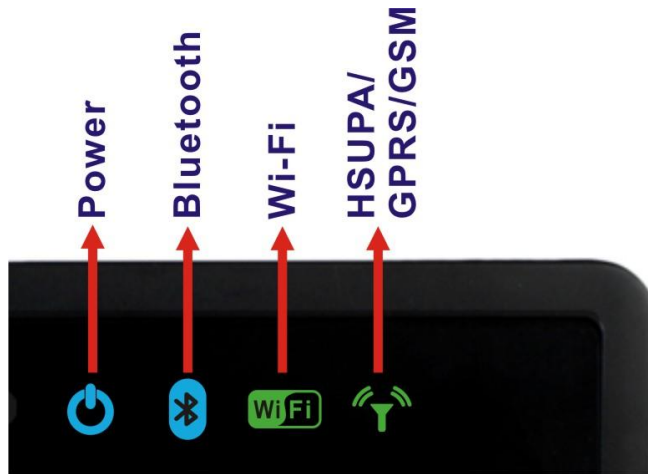


Figure 1-3: LED Indicators

## 1.4 Rear Panel

The rear panel has VESA mounting screw holes and an access panel for SD card and SIM card. The following I/O connectors can also be found on the rear panel.

- 1 x 12 V/24 V DC input connector
- 20-pin connector:
  - 1 x 10/100 Mbps LAN
  - 1 x CAN 2.0 B
  - 1 x OBD-II
  - 1 x USB
- 24-pin connector:
  - 1 x Audio line-out (R+L)
  - 1 x Audio line-in
  - 1 x RS-232
  - 2-bit digital input
  - 2-bit digital output
- 8-pin connector:
  - 4 x Video in

## IKARPC-07A-A9 In-vehicle Panel PC

- 1 x 3.75G antenna connector
- 1 x GPS antenna connector

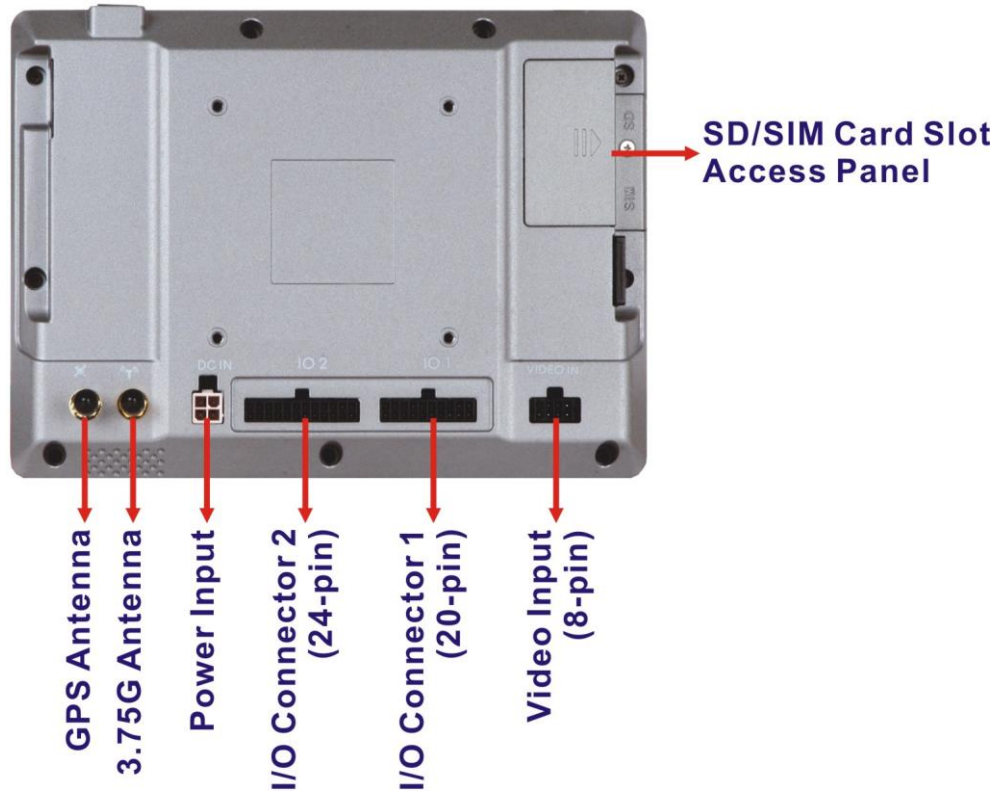


Figure 1-4: Rear View

### 1.5 Right Side Panel

The right side panel has one USB 2.0 host port.



Figure 1-5: Right Side Panel

### 1.6 Top Panel

The top panel has a power button. Press the power button for 4~6 seconds to power on the system.



Figure 1-6: Top Panel



## IKARPC-07A-A9 In-vehicle Panel PC

### 1.7 Bottom Panel

The bottom panel has a 2 W speaker.



Figure 1-7: Bottom Panel

### 1.8 System Specifications

The technical specifications for the IKARPC-07A-A9 systems are listed in **Table 1-1**.

| System                               |   |
|--------------------------------------|---|
| <b>CPU</b>                           | Freescale™ i.MX6 ARM Cortex™-A9 processor                   |
| <b>Memory</b>                        | On-board 1 GB SDRAM memory                                  |
| <b>Boot Flash</b>                    | On-board 8 GB iNAND flash                                   |
| <b>OS</b>                            | Android 4.2   |
| <b>Storage</b>                       | One SD card slot (SD 2.0 compatible, max. 32 GB)            |
| <b>Audio</b>                         | 1 x Speaker (2 W)<br>1 x Microphone                         |
| <b>Camera</b>                        | Front-facing 5-megapixel camera                             |
| <b>Watchdog Timer</b>                | Software programmable supports 1~255 sec. system reset      |
| <b>Real-time Clock</b>               | Battery backup RTC  |
| Display                              |   |
| <b>LCD</b>                           | 7" TFT LCD with LED backlight                               |
| <b>Max. Resolution</b>               | 1024 x 600 (WSVGA)  |
| <b>Brightness (cd/m<sup>2</sup>)</b> | 500   |
| <b>Contrast Ratio</b>                | 700:1   |
| <b>Viewing Angle</b>                 | 75/75/70/75 degree  |
| <b>Touchscreen</b>                   | 2-point projected capacitive touchscreen with USB interface |
| <b>Auto-dimming</b>                  | Ambient light sensor on the front panel                     |

| Communication                 |   |
|-------------------------------|---|
| <b>LAN</b>                    | 1 x 10/100 Mbps   |
| <b>Wireless LAN</b>           | 802.11a/b/g/n   |
| <b>Bluetooth</b>              | Bluetooth + HS  |
| <b>WWAN</b>                   | Built-in u-blox LISA-U200-02S 3.75G UMTS/HSPA+ module supports:<br>HSPA/UMTS-800/850/1900/2100 MHz<br>Quad-band EDGE/GPRS/GSM-850/900/1800/1900MHz                                    |
| <b>GPS</b>                    | Built-in u-blox NEO-M8N GPS module with external antenna  |
| <b>RFID</b>                   | On-board RFID antenna<br>13.56MHz protocols supported:<br>ISO/IEC 14443A, ISO/IEC 14443B PCD 106 kbit/s to 848 kbit/s<br>ISO/IEC 14443A, ISO/IEC 14443B PICC 106 kbit/s to 424 kbit/s |
| Power                         |   |
| <b>Power Input</b>            | 4-pin (2x2) Molex power connector supports DC or ACC power  |
| <b>DC Power</b>               | 12 V/24 V DC input via cigarette lighter power cable  |
| <b>ACC Power</b>              | ACC power on/off mode with software configurable delay time   |
| Physical Character            |   |
| <b>Construction Material</b>  | ABS + PC plastic front frame  |
| <b>Mounting</b>               | VESA 75 mm x 75 mm  |
| <b>Dimensions (W x H x D)</b> | 210 mm x 154 mm x 29 mm   |
| <b>Operation Temperature</b>  | -20°C ~ 60°C with air flow  |
| <b>Storage Temperature</b>    | -30°C ~ 70°C  |
| <b>Humidity</b>               | 5% ~ 85%, non-condensing  |
| <b>Net Weight</b>             | 800 g   |
| <b>Operating Shock</b>        | Half-sine wave shock 5 G, 11 ms, 3 shocks per axis  |
| <b>Operating Vibration</b>    | MIL-STD-810G 514.6C-1 (with SSD)  |
| <b>IP level</b>               | IP 54 compliant front panel   |
| <b>Safety</b>                 | CE, FCC, e-MARK   |
| Connectors and Buttons        |   |
| <b>Antenna Connectors</b>     | 1 x 3.75G antenna SMA female connector<br>1 x GPS antenna SMA female connector  |
| <b>Expansion Slot</b>         | 1 x SIM card slot   |
| <b>I/O Ports</b>              | 1 x 12 V/24 V DC input connector<br>1 x USB host port   |

## IKARPC-07A-A9 In-vehicle Panel PC

|                       |   |
|-----------------------|---|
|                       | 20-pin connector:<br>1 x 10/100 Mbps LAN<br>1 x CAN 2.0 B<br>1 x OBD-II<br>1 x USB  |
|                       | 24-pin connector:<br>1 x Audio line-out (R+L)<br>1 x Audio line-in<br>1 x RS-232<br>2-bit digital input<br>2-bit digital output |
|                       | 8-pin connector:<br>4 x Video input   |
| <b>Button</b>         | 1 x Power button  |
| <b>LED Indicators</b> | 1 x Power LED<br>1 x Bluetooth status LED<br>1 x Wi-Fi connection LED<br>1 x 3G connection LED                                  |

**Table 1-1: Technical Specifications**

## 1.9 Dimensions

The dimensions are shown below.

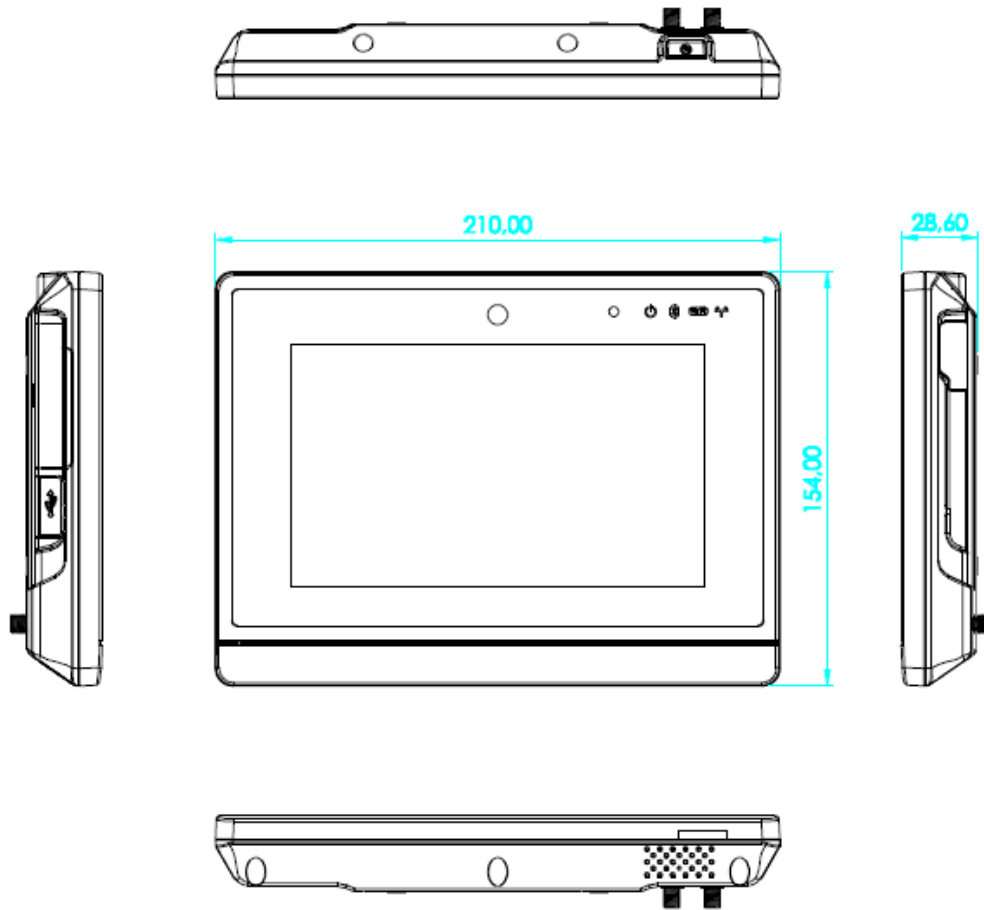


Figure 1-8: Dimensions (unit: mm)

**Chapter**

**2**

# **Unpacking**

---

To unpack the panel PC, follow the steps below:

**WARNING!**

The front side LCD screen has a protective plastic cover stuck to the screen. Only remove the plastic cover after the system has been properly installed. This ensures the screen is protected during the installation process.

---

**Step 1:** Use box cutters, a knife or a sharp pair of scissors that seals the top side of the external (second) box.

**Step 2:** Open the external (second) box.

**Step 3:** Use box cutters, a knife or a sharp pair of scissors that seals the top side of the internal (first) box.

**Step 4:** Lift the monitor out of the boxes.

**Step 5:** Remove both polystyrene ends, one from each side.

**Step 6:** Pull the plastic cover off the flat panel PC.

**Step 7:** Make sure all the components listed in the packing list are present.

## 2.1 Packing List





**NOTE:**

If any of the components listed in the checklist below are missing, do not proceed with the installation. Contact the IEI reseller or vendor the IKARPC-07A-A9 was purchased from or contact an IEI sales representative directly by sending an email to [sales@ieiworld.com](mailto:sales@ieiworld.com).

---

## IKARPC-07A-A9 In-vehicle Panel PC

The IKARPC-07A-A9 is shipped with the following components:

| Quantity | Item  | Image   |
|----------|---|---|
| 1        | IKARPC-07A-A9 panel PC                        |    |
| 1        | ACC power cable<br>(P/N: 32002-001900-100-RS) |    |
| 1        | GPS/GSM antenna<br>(P/N: 32506-000100-100-RS) |   |
| 1        | User manual CD and driver CD                  |  |

**Table 2-1: Packing List**

If any of these items are missing or damaged, contact the distributor or sales representative immediately.

Chapter

**3**

# Installation

---



## IKARPC-07A-A9 In-vehicle Panel PC

### 3.1 Anti-static Precautions

---



#### **WARNING:**

Failure to take ESD precautions during the maintenance of the IKARPC-07A-A9 may result in permanent damage to the IKARPC-07A-A9 and severe injury to the user.

---

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the IKARPC-07A-A9. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the IKARPC-07A-A9 is accessed internally, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband:*** Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding:*** Before handling the board, touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad:*** When configuring the IKARPC-07A-A9, place it on an anti-static pad. This reduces the possibility of ESD damaging the IKARPC-07A-A9.
- ***Only handle the edges of the PCB:*** When handling the PCB, hold the PCB by the edges.

### 3.2 Installation Precautions

When installing the flat panel PC, please follow the precautions listed below:

- **Power turned off:** When installing the flat panel PC, make sure the power is off. Failing to turn off the power may cause severe injury to the body and/or damage to the system.
- **Certified Engineers:** Only certified engineers should install and modify onboard functionalities.

- **Anti-static Discharge:** If a user open the rear panel of the flat panel PC, to configure the jumpers or plug in added peripheral devices, ground themselves first and wear an anti-static wristband.

### 3.3 Installation and Configuration Steps

The following installation steps must be followed.

- Step 1:** Unpack the system
- Step 2:** Install a SD card
- Step 3:** Install a SIM card
- Step 4:** Mount the system
- Step 5:** Connect peripheral devices
- Step 6:** Power up the system

### 3.4 SD Card Installation

To install the SD card, follow the instructions below.

- Step 1:** Remove the retention screw and lift the SD card slot access panel.

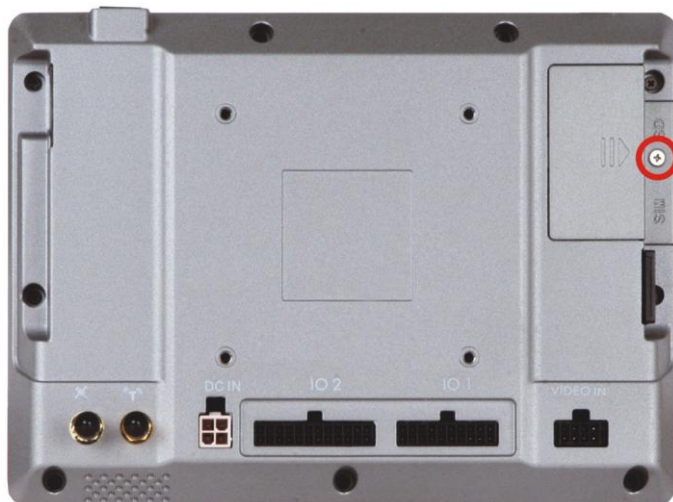


Figure 3-1: SD Card Slot Access Panel Retention Screw

## IKARPC-07A-A9 In-vehicle Panel PC

**Step 2:** Locate the SD card slot. Insert the SD card into the slot to install it. To remove the SD card, push the SD card inward to release it.



Figure 3-2: Install SD Card

**Step 3:** Replace the SD card slot access panel.

### 3.5 SIM Card Installation

To install the SIM card, follow the instructions below.

**Step 1:** Remove the retention screw and lift the SIM card slot access panel.

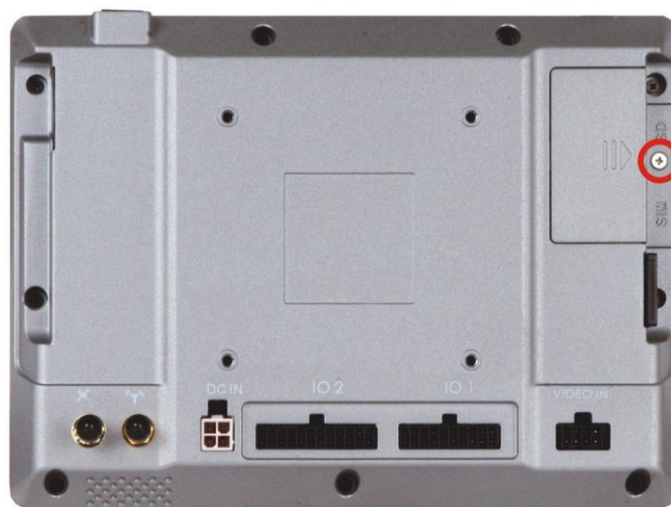


Figure 3-3: SIM Card Slot Access Panel Retention Screw

**Step 2:** Locate the SIM card slot. Insert the SIM card into the slot to install it. To remove the SIM card, slide the SIM card outward.



**Figure 3-4: Install SIM Card**

**Step 3:** Replace the SIM card slot access panel.



**WARNING:**

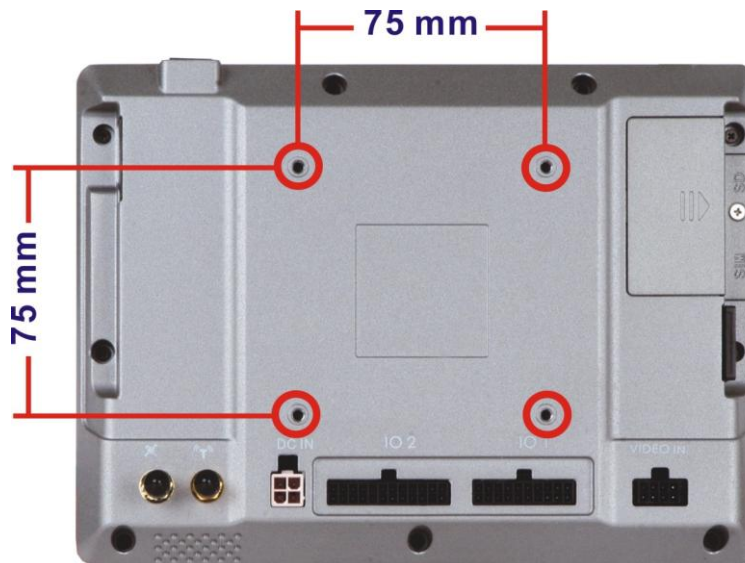
The IKARPC-07A-A9 is not compatible with a micro-SIM (3FF) adapter or a nano-SIM (4FF) adapter. Please install a mini-SIM (2FF or Standard SIM) card for proper network connection.

---

## IKARPC-07A-A9 In-vehicle Panel PC

### 3.6 Mounting the System

The IKARPC-07A-A9 is VESA (Video Electronics Standards Association) compliant and can be mounted on a mounting device with a 75 mm interface pad. The IKARPC-07A-A9 VESA mount retention screw holes are shown in **Figure 3-5**. Refer to the installation documentation that came with the mounting device to mount the IKARPC-07A-A9.



**Figure 3-5: VESA Mount Retention Screw Holes**



#### **NOTE:**

When purchasing the mounting device please ensure that it is VESA compliant and that the device has a 75 mm interface pad. If the mounting device is not VESA compliant it cannot be used to support the IKARPC-07A-A9.

---

### 3.7 External I/O Connectors

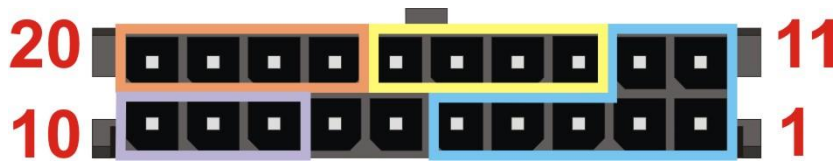
This section provides an overview of the external I/O connectors of the IKARPC-07A-A9.

#### 3.7.1 I/O Connector 1 (20-pin)

The 20-pin I/O connector (IO 1) supports the following external peripheral devices:

- 1 x 10/100 Mbps LAN
- 1 x CAN 2.0 B
- 1 x OBD-II
- 1 x USB

The pinouts for the IO 1 connector are listed in the figure and table below.



**Figure 3-6: IO 1 Connector Pinout Locations**

|                | Pin | Description | Pin | Description   |                        |
|----------------|-----|-------------|-----|---------------|------------------------|
| <b>OBD-II</b>  | 1   | OBD_CAN_H   | 11  | ISO9141-2-K   | <b>OBD-II</b>          |
|                | 2   | OBD_CAN_L   | 12  | ISO9141-2-L   |                        |
|                | 3   | GND         | 13  | LAN_MDI0-     | <b>10/100 Mbps LAN</b> |
|                | 4   | J2850_BUS+  | 14  | LAN_MDI0+     |                        |
|                | 5   | J2850_BUS-  | 15  | LAN_MDI1-     |                        |
|                | 6   | GND         | 16  | LAN_MDI1+     |                        |
|                | 7   | GND         | 17  | GND           | <b>USB 2.0</b>         |
| <b>CAN Bus</b> | 8   | GND         | 18  | USB DATA-     |                        |
|                | 9   | CAN_L       | 19  | USB DATA+     |                        |
|                | 10  | CAN_H       | 20  | USB VCC (+5V) |                        |

**Table 3-1: IO 1 Connector Pinouts**

## IKARPC-07A-A9 In-vehicle Panel PC

### 3.7.2 I/O Connector 2 (24-pin)

The 24-pin I/O connector (IO 2) supports the following external peripheral devices:

- 1 x Audio line-out (R+L)
- 1 x Audio line-in
- 1 x RS-232
- 2-bit digital input
- 2-bit digital output

The pinouts for the IO 2 connector are listed in the figure and table below.

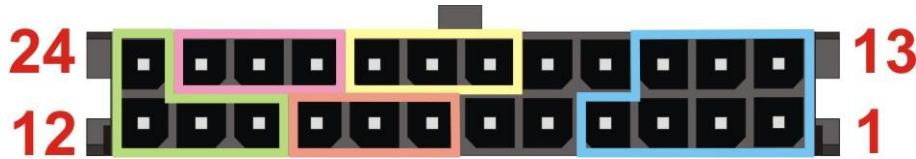


Figure 3-7: IO 2 Connector Pinout Locations

|                       | Pin | Description | Pin | Description |                      |
|-----------------------|-----|-------------|-----|-------------|----------------------|
| <b>COM</b>            | 1   | COM_TXD     | 13  | COM_RXD     | <b>COM</b>           |
|                       | 2   | NC          | 14  | NC          |                      |
|                       | 3   | COM_RTS     | 15  | COM_CTS     |                      |
|                       | 4   | COM_GND     | 16  | NC          |                      |
|                       | 5   | NC          | 17  | NC          |                      |
|                       | 6   | NC          | 18  | DIO_GND     | <b>Digital Input</b> |
| <b>Digital Output</b> | 7   | DIO_OUT_1   | 19  | DIO_IN_1    |                      |
|                       | 8   | DIO_OUT_2   | 20  | DIO_IN_2    |                      |
|                       | 9   | DIO_GND     | 21  | AUDIO_GND   | <b>Audio Line-in</b> |
| <b>Audio Line-out</b> | 10  | AUDIO_GND   | 22  | LINE_IN_L   |                      |
|                       | 11  | HP_OUT_L    | 23  | LINE_IN_R   |                      |
|                       | 12  | HP_OUT_R    | 24  | HP_DET_IN   |                      |

Table 3-2: IO 2 Connector Pinouts

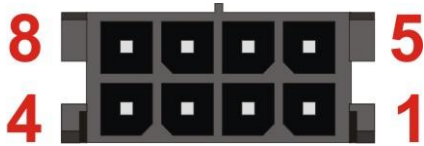


**NOTE:**

In order to play sounds through the headset connected to the audio line-out connector, the “Switch to HeadPhone” option must be enabled. Please refer to **Section 4.4.2** for detail information.

**3.7.3 Video Input Connector**

The IKARPC-07A-A9 has one 8-pin video input connector on the rear panel. The pinouts for the video input connector are listed in the figure and table below.



**Figure 3-8: Video Input Connector**

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1       | VIDEO_GND_3 |
| 2       | VIDEO_GND_2 |
| 3       | VIDEO_GND_1 |
| 4       | VIDEO_GND_0 |
| 5       | VIDEO_AIN_3 |
| 6       | VIDEO_AIN_2 |
| 7       | VIDEO_AIN_1 |
| 8       | VIDEO_AIN_0 |

**Table 3-3: Video Input Connector Pinouts**



## IKARPC-07A-A9 In-vehicle Panel PC

### 3.7.4 Power Input Connection

The IKARPC-07A-A9 has one 4-pin power input connector on the rear panel. The pinouts for the power input connector are listed in the figure and table below.

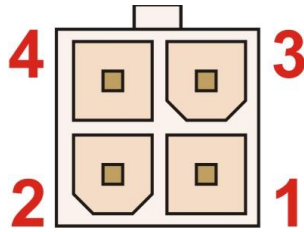


Figure 3-9: Power Input Connector

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1       | GND         |
| 2       | GND         |
| 3       | POWER       |
| 4       | ACC         |

Table 3-4: Power Input Connector Pinouts

The IKARPC-07A-A9 can use either ACC power or DC power from the power source. To use ACC power, connect the IKARPC-07A-A9 to the power source through the ACC power cable. See **Figure 3-10**.



Figure 3-10: ACC Power Cable

### 3.7.5 USB Connector

The IKARPC-07A-A9 has one USB 2.0 port on the right side panel. The USB port has a screw on the side for securing the USB devices, such as barcode scanners and smart card readers. The following diagram shows the USB port and the screw on the side panel.



Figure 3-11: USB Connector

### 3.8 System Maintenance

If the components of the IKARPC-07A-A9 fail, they must be replaced. Please contact the system reseller or vendor to purchase the replacement parts.



**NOTE:**

A user cannot replace a motherboard. If the motherboard fails it must be shipped back to IEI to be replaced. Please contact the system vendor, reseller or an IEI sales person directly.

**Chapter**

**4**

# **Using the IKARPC-07A-A9**

---

## 4.1 Power-On/Off Procedure

### 4.1.1 Installation Checklist

---

**WARNING:**

Make sure a power supply with the correct input voltage is being fed into the system. Incorrect voltages applied to the system may cause damage to the internal electronic components and may also cause injury to the user.

---

To power on the system please make sure of the following:

- The rear cover is installed
- All peripheral devices (antenna, serial communications devices etc.) are connected
- The system is securely mounted
- The power cables are plugged in

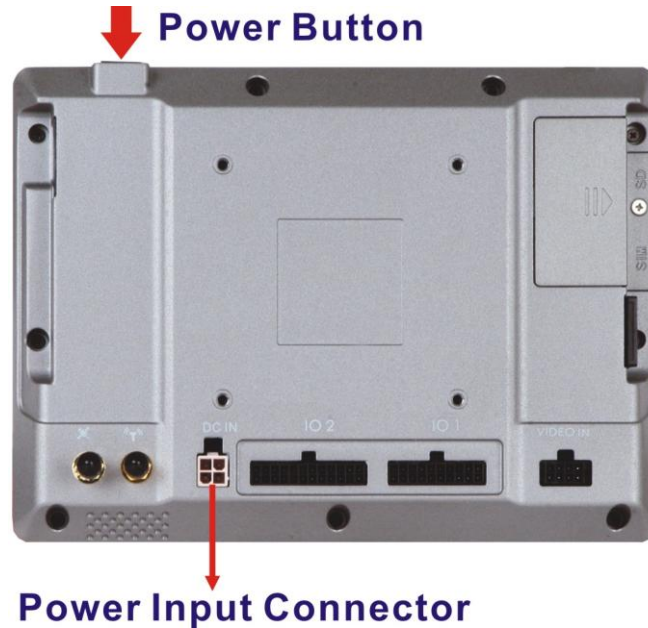
### 4.1.2 Power-on Procedure

To power-on the IKARPC-07A-A9 please follow the steps below:

**Step 1:** Connect the ACC power cable from the IKARPC-07A-A9 to the power source.

See **Section 3.7.4.**

## IKARPC-07A-A9 In-vehicle Panel PC

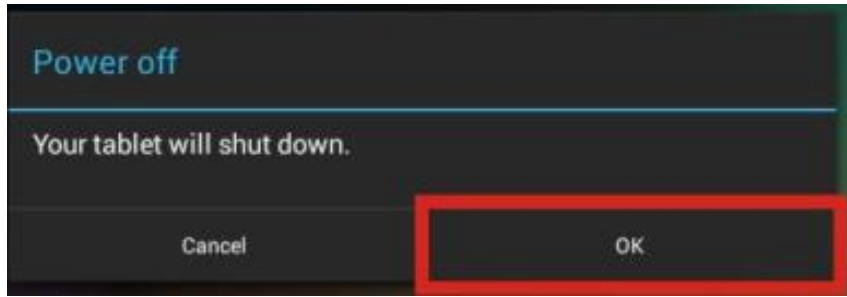
**Power Input Connector****Figure 4-1: Power Connector and Power Button**

**Step 2:** The system starts booting. When the main screen shows, press and slide the lock button on the screen to the unlock icon to unlock the system.

### 4.1.3 Power-off Procedure

To power-off the IKARPC-07A-A9 please follow the steps below:

- Step 1:** (1) Turn off the power source, or  
(2) Hold down the power button for **4~6 seconds** to turn off the system.
- Step 2:** The power-off confirmation window appears. Tap **OK** to turn off the system.



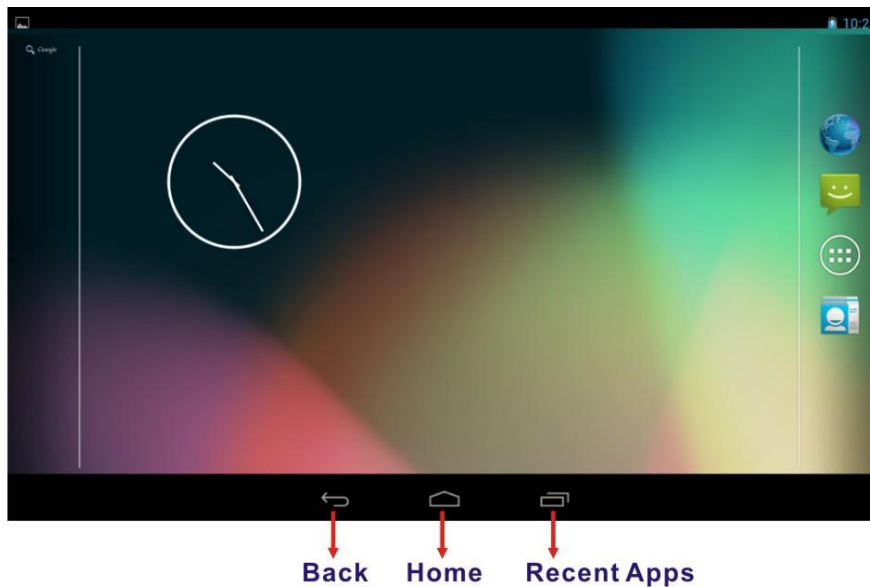
**Figure 4-2: Power-off Confirmation Screen**

## 4.2 Home Screen

The IKARPC-07A-A9 has multiple home screens allowing users to customize the screen with widgets, apps, folders and shortcuts. The following sections describe the basic technique to manage the home screen.

### 4.2.1 Navigation Buttons

The IKARPC-07A-A9 Android home screen has three navigation buttons to control the system. The navigation buttons are shown in **Figure 4-3** and described in **Table 4-1**.



**Figure 4-3: Navigation Buttons**

## IKARPC-07A-A9 In-vehicle Panel PC

| Buttons            | Description  |
|--------------------|--|
| <b>Back</b>        | Tap to return to the previous screen.              |
| <b>Home</b>        | Tap to return to the home screen.                  |
| <b>Recent Apps</b> | Tap to display all the recently used applications. |

Table 4-1: Navigation Buttons

### 4.2.2 Multiple Home Screens

Swipe left or right to switch. Long press an item on the home screen and when it vibrates drag the item to other screen.

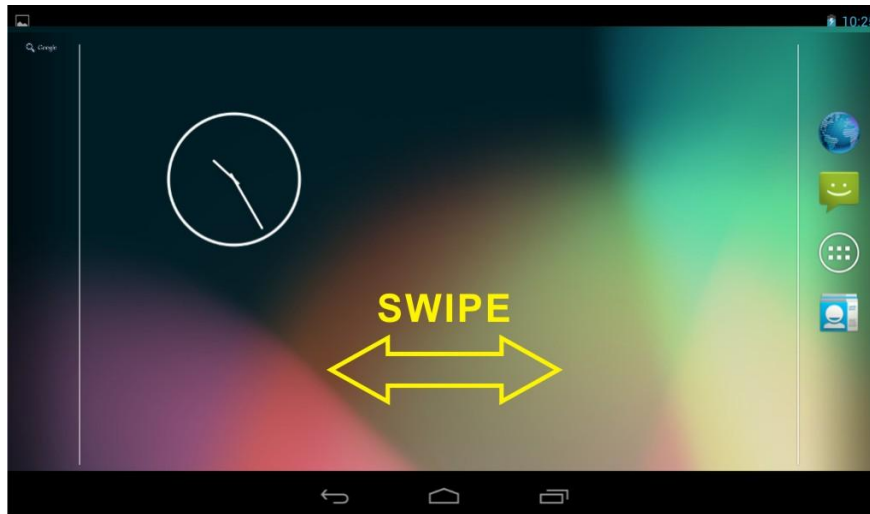
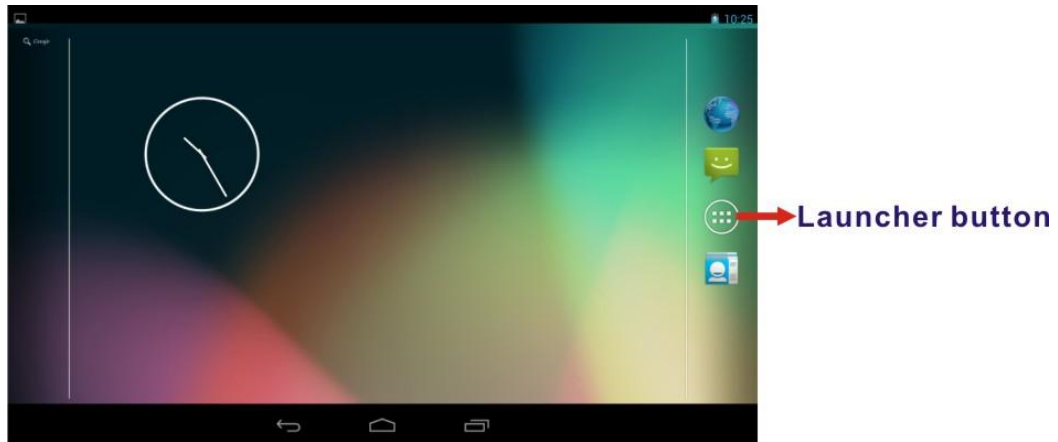


Figure 4-4: Multiple Home Screens

### 4.2.3 Adding Shortcut

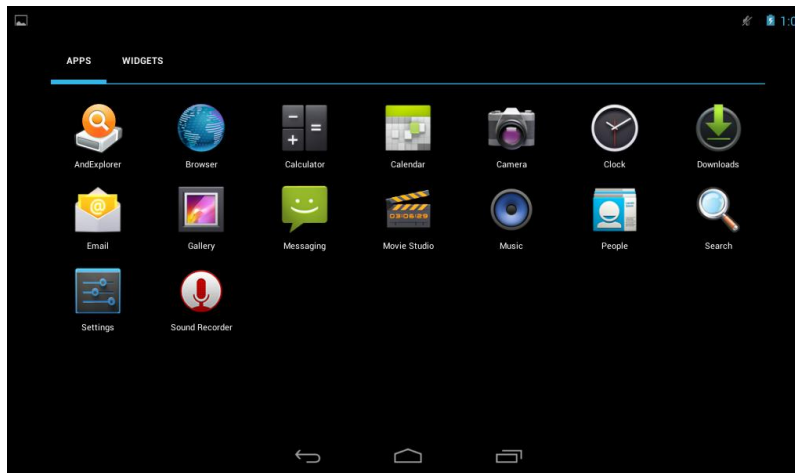
To add app or widget shortcuts on the home screen, follow the steps below.

**Step 1:** Click the launcher button on the home screen to access the launcher/widget page.



**Figure 4-5: Launcher Button**

**Step 2:** Long press an app icon or a widget (click the WIDGETS tab to access the widgets page). When it vibrates, drag app/widget to the home screen.



**Figure 4-6: Launcher Page**



## IKARPC-07A-A9 In-vehicle Panel PC

### 4.2.4 Favorites Tray

The Favorites tray at the side of each home screen allows users to keep the most important or frequently used shortcuts and folders.

Long press an item on the home screen. When it vibrates, drag it to the favorites tray or move it from the favorites tray. The launcher button at the center of the favorites tray is fixed and can not be moved.

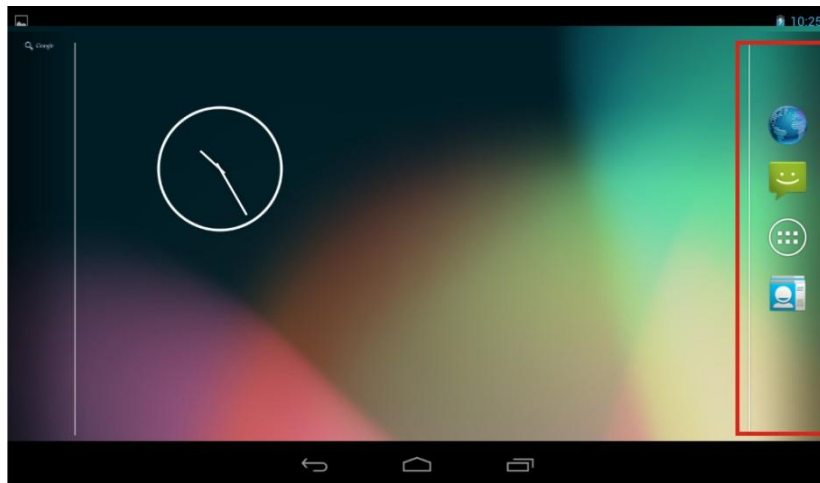
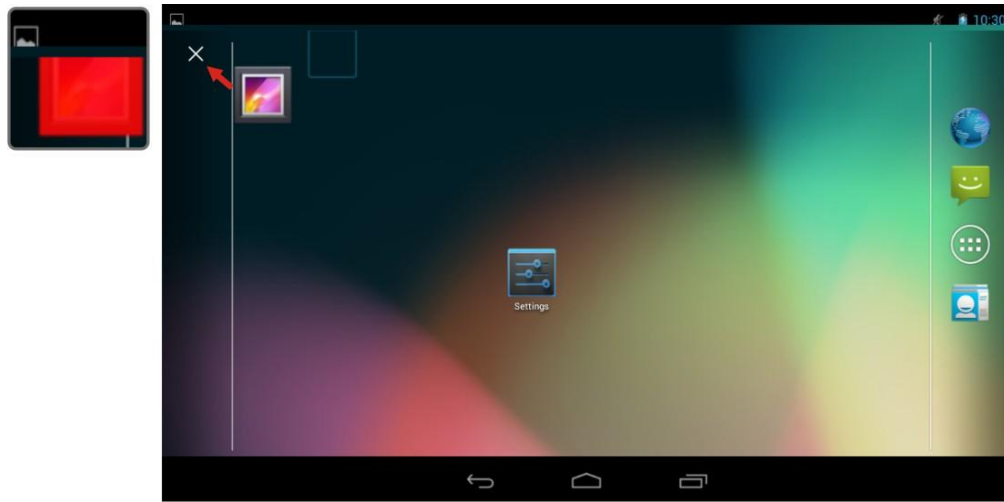


Figure 4-7: Favorites Tray

### 4.2.5 Arranging Home Screen

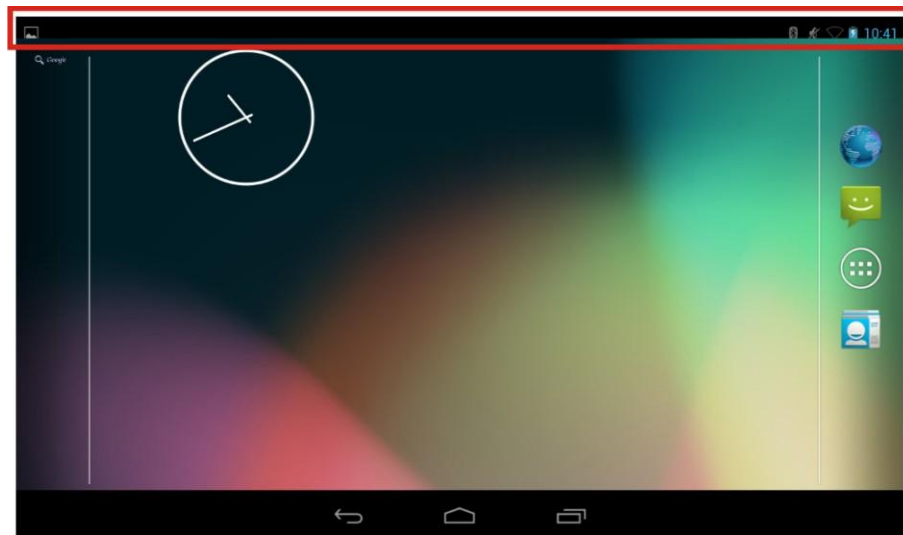
The items on the home screen can be moved and deleted. Long press an item on the home screen. When it vibrates, drag it where you want. To trash the item on the desktop, drag it to the “X” icon. Release the icon when it turns red.



**Figure 4-8: Move and Trash Item on Home Screen**

### **4.3 Status Bar**

The status bar on the top of the screen (**Figure 4-9**) displays the pending notifications and status, such as battery level or signal strength.



**Figure 4-9: Status Bar**

## IKARPC-07A-A9 In-vehicle Panel PC

Swipe down from the right of the status bar to view the setting shortcut.

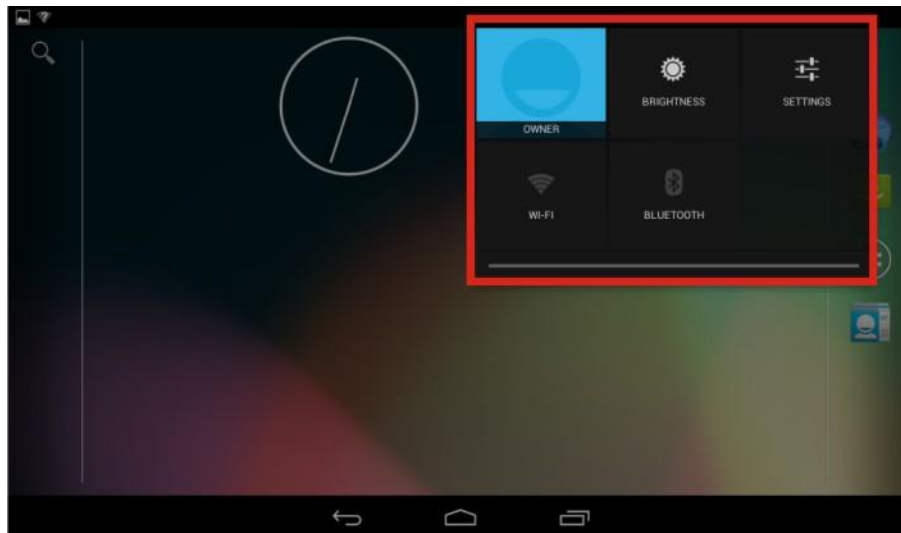


Figure 4-10: Status Bar – Setting Shortcut

Swipe down from the left of the status bar to view notification details.

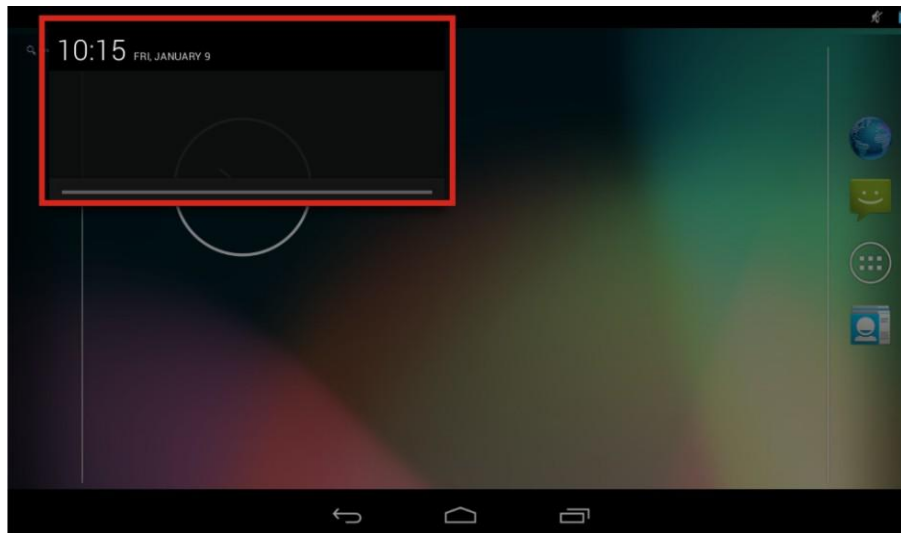
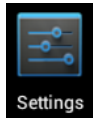


Figure 4-11: Status Bar – Notification

## 4.4 Settings

The Settings menu allows configuration to the IKARPC-07A-A9, such as Wi-Fi, volume, screen brightness, etc. To enter the Settings menu, tap **Settings** on the launcher page.



### 4.4.1 WIRELESS & NETWORKS



**Figure 4-12: Wireless and Networks Settings**

In the WIRELESS & NETWORKS field, the user can turn on/off the Wi-Fi and Bluetooth functions, and configure the network settings.

- **Wi-Fi**  
allows the user to turn on or turn off the Wi-Fi function. When the Wi-Fi function is turned on, tap this item to manage the access points.
- **Bluetooth**  
allows the user to turn on or turn off the Bluetooth function. When the Bluetooth function is turned on, tap this item to manage the Bluetooth connections.

## IKARPC-07A-A9 In-vehicle Panel PC

- **Data usage**  
displays the data usage in a certain period of time.
- **Ethernet configuration**  
configures the Ethernet settings.

### 4.4.1.1 More Settings

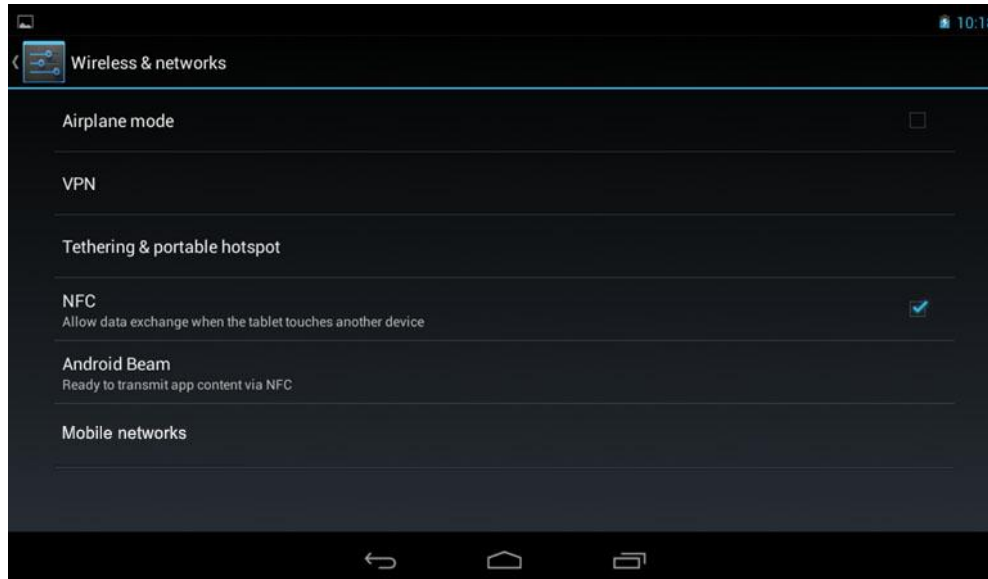


Figure 4-13: More Settings Menu

After tapping **More...** in the WIRELESS & NETWORKS field, the user can configure the following network settings.

- **Airplane mode**  
turns on or turns off the airplane mode.
- **VPN**  
sets up and manages Virtual Private Networks (VPNs).
- **Tethering & portable hotspot**  
allows the user to set this device as a portable Wi-Fi hotspot and configure the hotspot settings.
- **NFC**  
turns on or turns off the NFC function.

- **Android Beam**  
allows the user to beam app content to another NFC-capable device when it is enabled. This item is available only when the NFC function is turned on.
- **Mobile networks**  
configure Mobile network settings, including data enabled, data roaming, access point names, use only 2G networks, and network operators.

#### 4.4.2 Sound

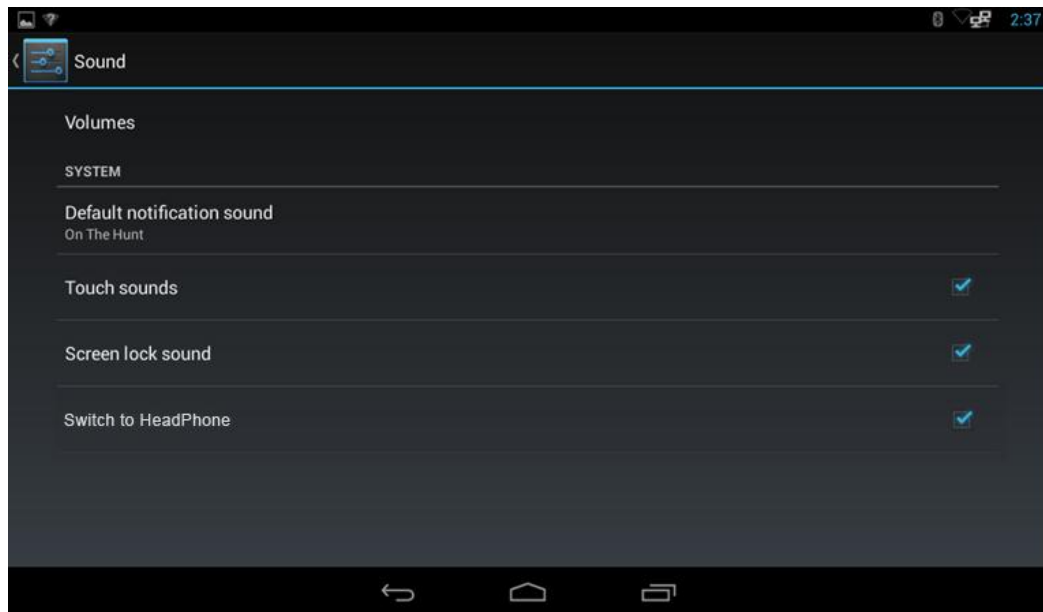


Figure 4-14: Sound Menu

Use the Sound menu to configure the following items.

- **Volumes**  
allowing the user to adjust the volume of alarms, notifications, music, video, games and other media.
- **Default notification sound**  
sets up the notification ringtone.
- **Touch sounds**  
enables or disables playing a sound when making screen selection.
- **Screen lock sound**  
enables or disables playing a sound when unlocking the home screen.

## IKARPC-07A-A9 In-vehicle Panel PC

- **Switch to HeadPhone**

allowing the user to play sounds through the headset connected to the audio line-out connector of the IKARPC-07A-A9.

### 4.4.3 Display

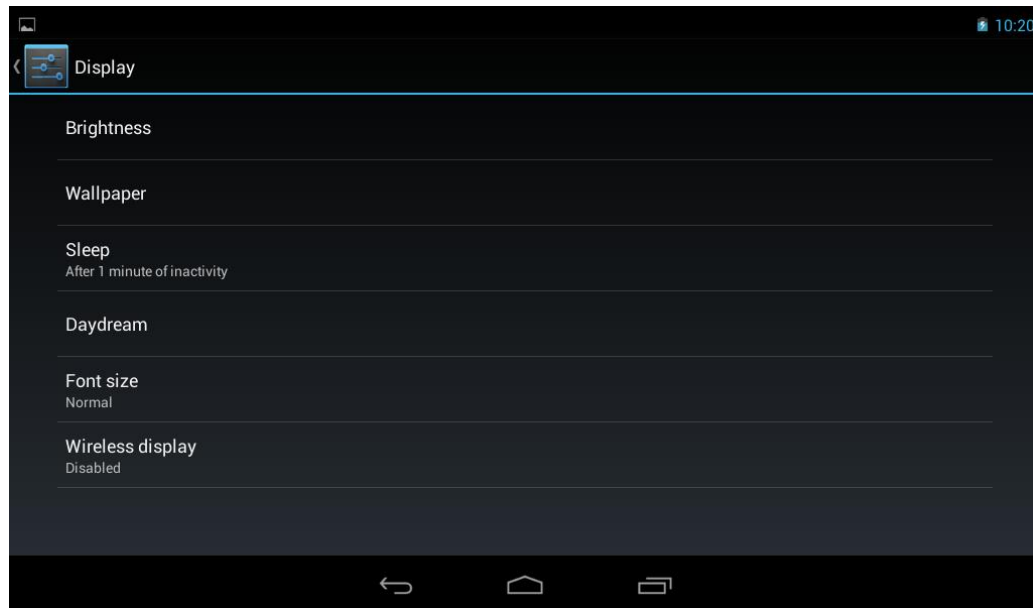


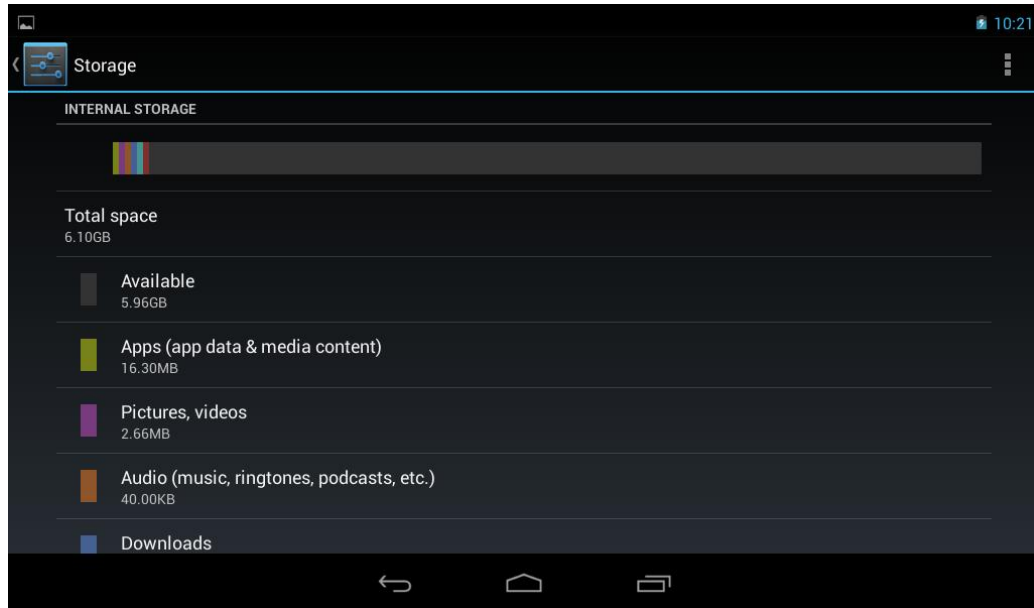
Figure 4-15: Display Menu

Use the Display menu to configure the following items.

- **Brightness**  
adjusts the screen brightness.
- **Wallpaper**  
sets up the wallpaper.
- **Sleep**  
sets up the time of inactivity after which the screen turns to sleep mode.
- **Daydream**  
configures the screensaver settings.
- **Font size**  
sets up the font size.
- **Wireless display**  
turns on or turns off the wireless display function and configures its settings.

### 4.4.4 Storage

The Storage menu displays the status of the internal storage and the installed SD card, and allows users to manage the data stored in them.



**Figure 4-16: Storage Menu**



## IKARPC-07A-A9 In-vehicle Panel PC

### 4.4.5 Apps

The Apps menu displays the applications installed in the device, and allows users to manage them.

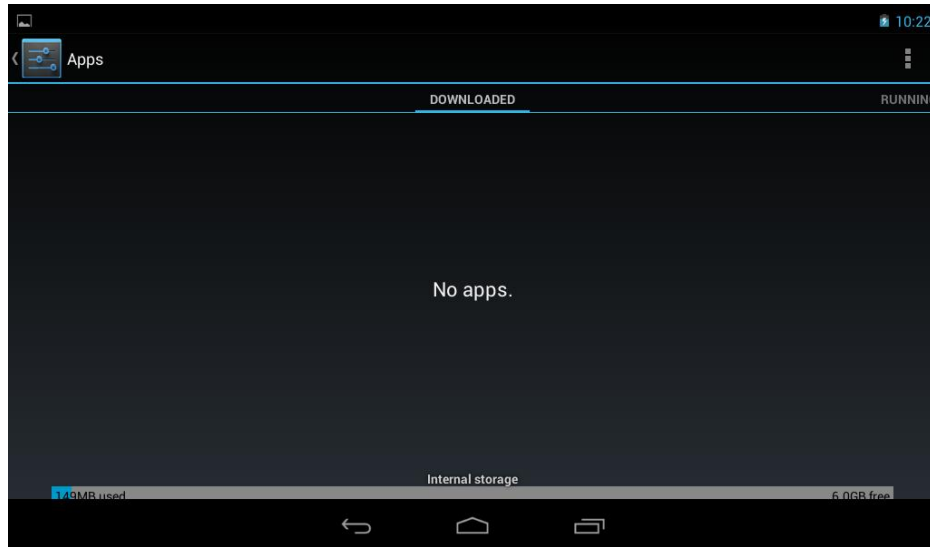


Figure 4-17: Apps Menu

### 4.4.6 Users

The Users menu allows the user to configure the owner information.

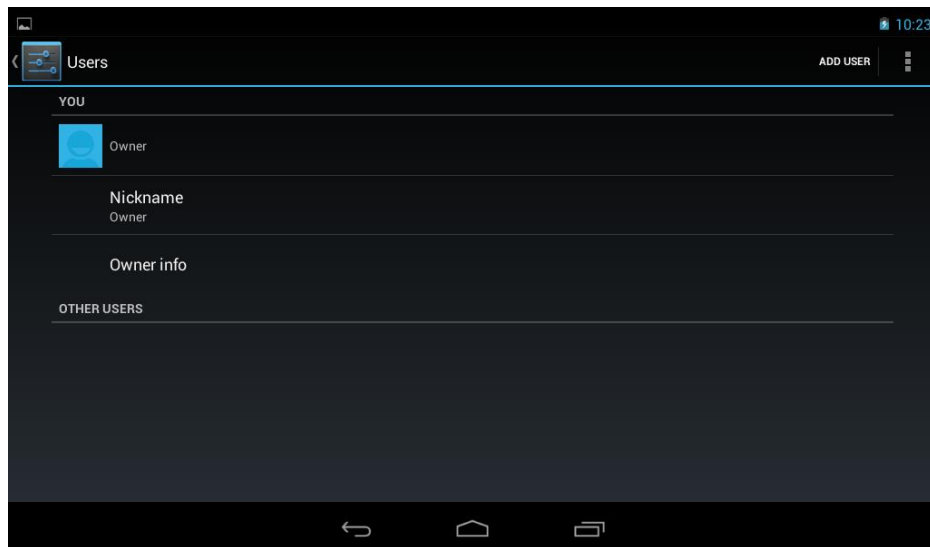


Figure 4-18: Users Menu

#### 4.4.7 Location Access

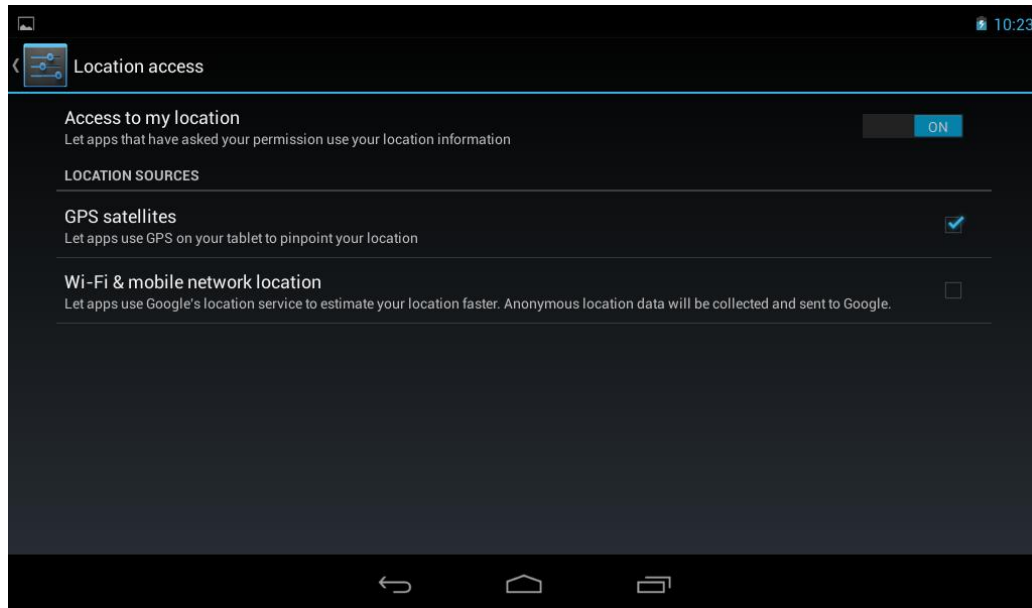


Figure 4-19: Location Access Menu

Use the Location access menu to configure the following items.

- **Access to my location**  
lets apps obtain the user's location information.
- **GPS satellites**  
allows apps to use the GPS in the device to pinpoint the user's location. This item is available only when the **Access to my location** item is enabled.
- **Wi-Fi & mobile network location**  
allows the apps to use Google's location service to estimate the user's location. This item is available only when the **Access to my location** item is enabled.

## IKARPC-07A-A9 In-vehicle Panel PC

## 4.4.8 Security

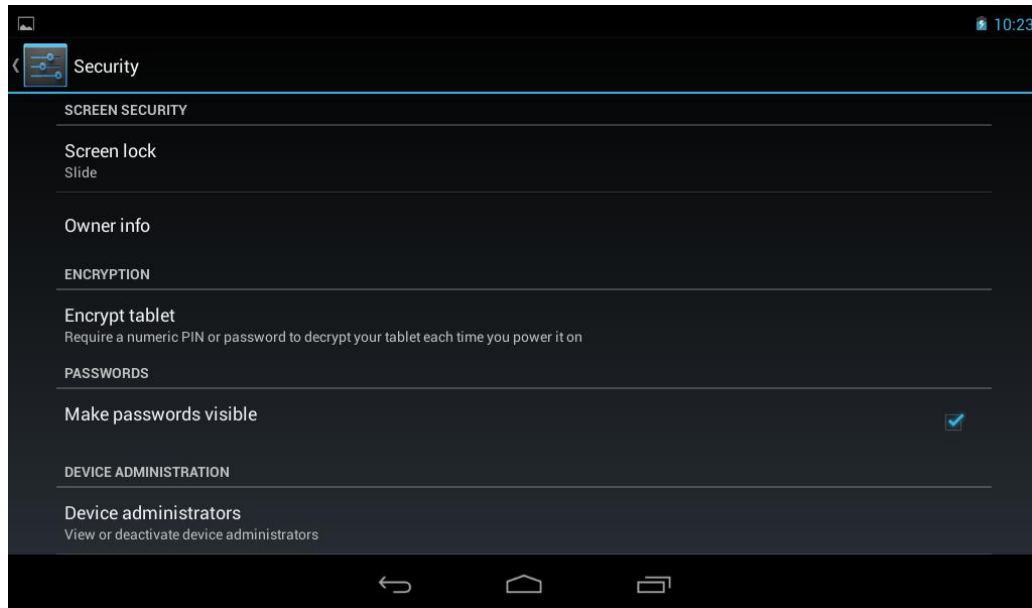


Figure 4-20: Security Menu

Use the Security menu to configure the following items.

- **Screen lock**  
sets up the way to unlock the screen.
- **Owner info**  
configures the owner information to display on the lock screen.
- **Make passwords visible**  
allows the device to show password when typing.
- **Device administrators**  
displays or deactivates the device administrators.
- **Unknown sources**  
allows installation of applications from unknown sources.
- **Trusted credentials**  
displays trusted CA certificates.
- **Install from SD card**  
allows the user to install certificates from the SD card.

## 4.4.9 Language & Input

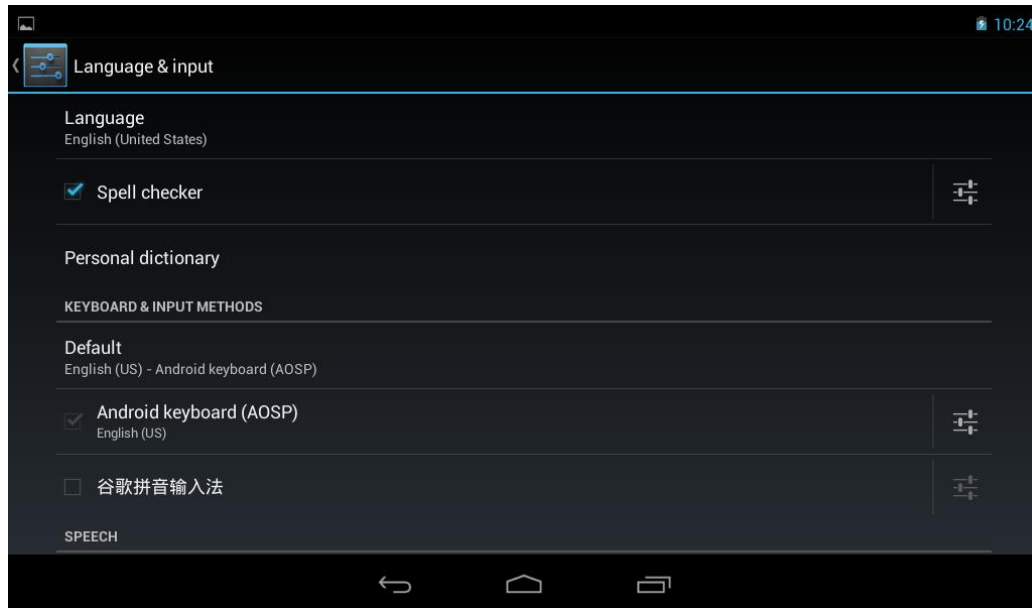


Figure 4-21: Language & Input Menu

Use the Language & input menu to configure the following items.

- **Language**  
sets up the language for IKARPC-07A-A9.
- **Spell checker**  
allows the user to enable the spell checking function and configure its settings.
- **Personal dictionary**  
configures the user dictionary.
- **KEYBOARD & INPUT METHODS**  
allows the user to set up the onscreen keyboard.
- **Text-to-speech output**  
configures the text-to-speech settings.
- **Pointer speed**  
sets up the pointer speed.

## IKARPC-07A-A9 In-vehicle Panel PC

### 4.4.10 Backup & Reset

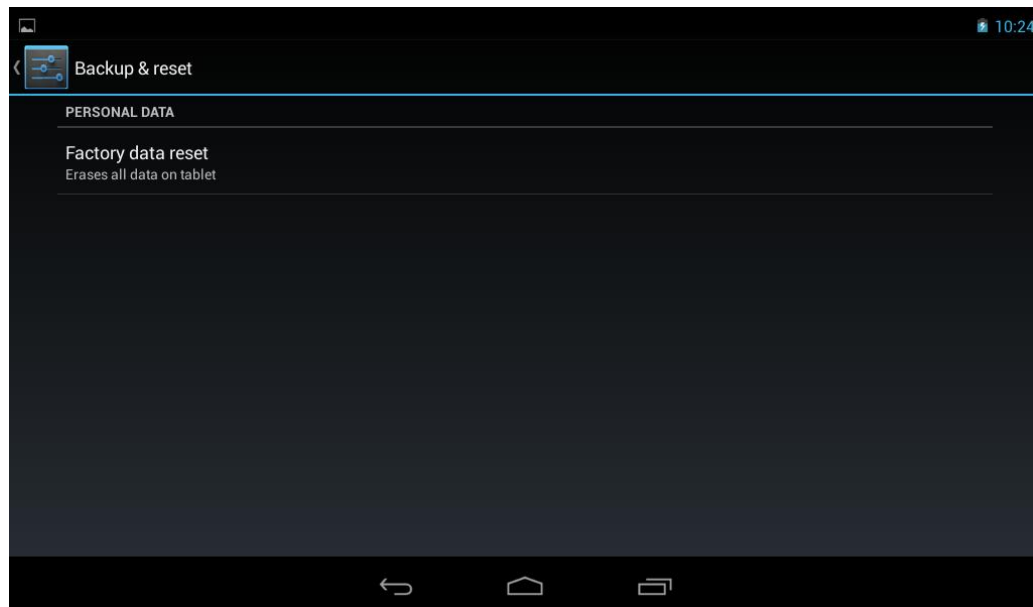


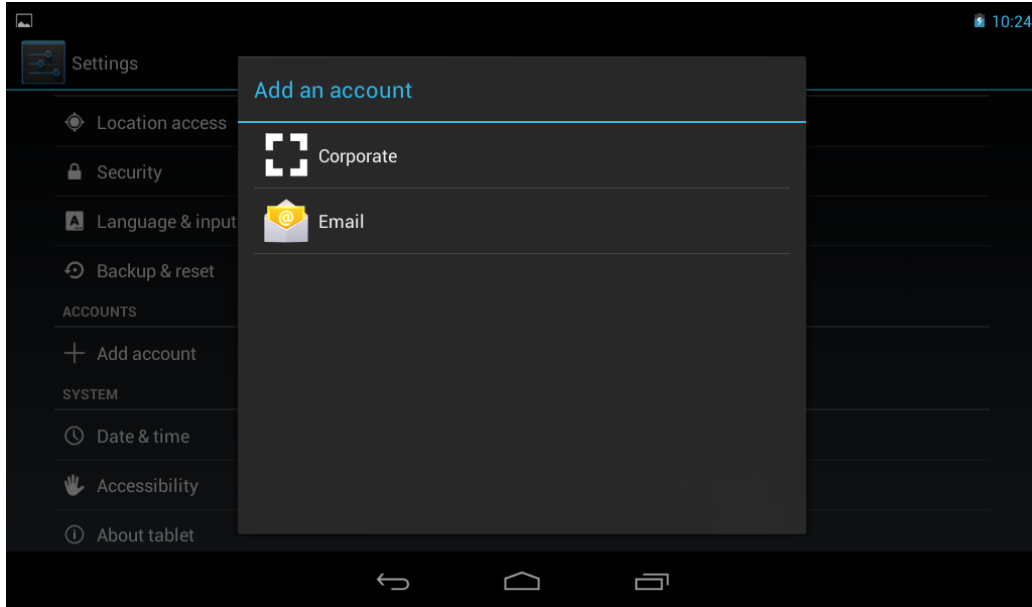
Figure 4-22: Backup & Reset Menu

Use the Back & reset menu to configure the following items.

- **Factory data reset**  
erases all data from the internal storage of the IKARPC-07A-A9.

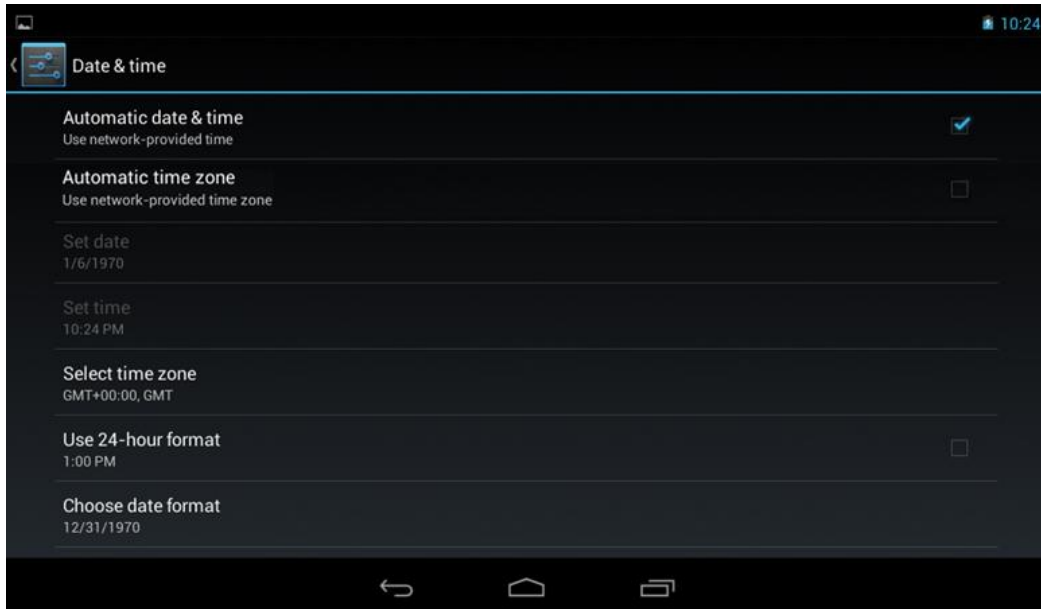
### 4.4.11 Add account

Tap **Add account** to start setting up an e-mail or corporate account.



**Figure 4-23: Add Account Menu**

### 4.4.12 Date & Time



**Figure 4-24: Date & Time Menu**

## IKARPC-07A-A9 In-vehicle Panel PC

Use the Date & time menu to configure the following items.

- **Automatic date & time**  
uses the network-provided time.
- **Automatic time zone**  
uses the network-provided time zone
- **Select time zone**  
sets up the time zone.
- **Use 24-hour format**  
uses the 24-hour format.
- **Choose date format**  
sets up the date format.

### 4.4.13 Accessibility

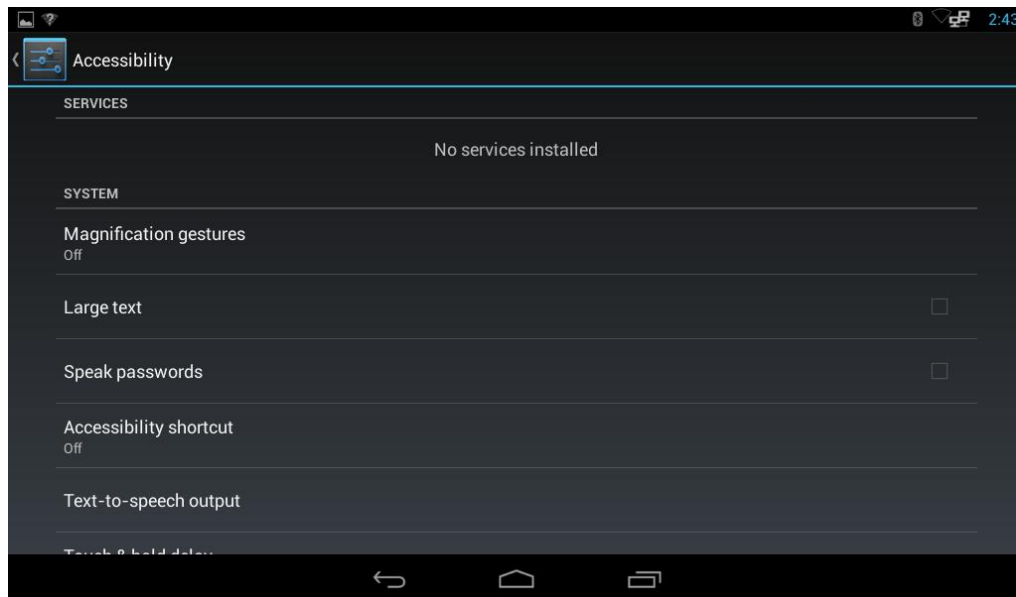


Figure 4-25: Accessibility Menu

Use the Accessibility menu to configure the following items.

- **Magnification gesture**  
allows the user to zoom in and out by triple-tapping the screen.
- **Large text**  
allows the device to display text in large font.

- **Speak passwords**  
allows the system to speak passwords.
- **Text-to-speech output**  
configures the text-to-speech settings.
- **Touch & hold delay**  
configures the touch & hold delay settings.
- **Enhance web accessibility**  
allows apps to install scripts from Google that make their web content more accessible.

#### 4.4.14 About Tablet

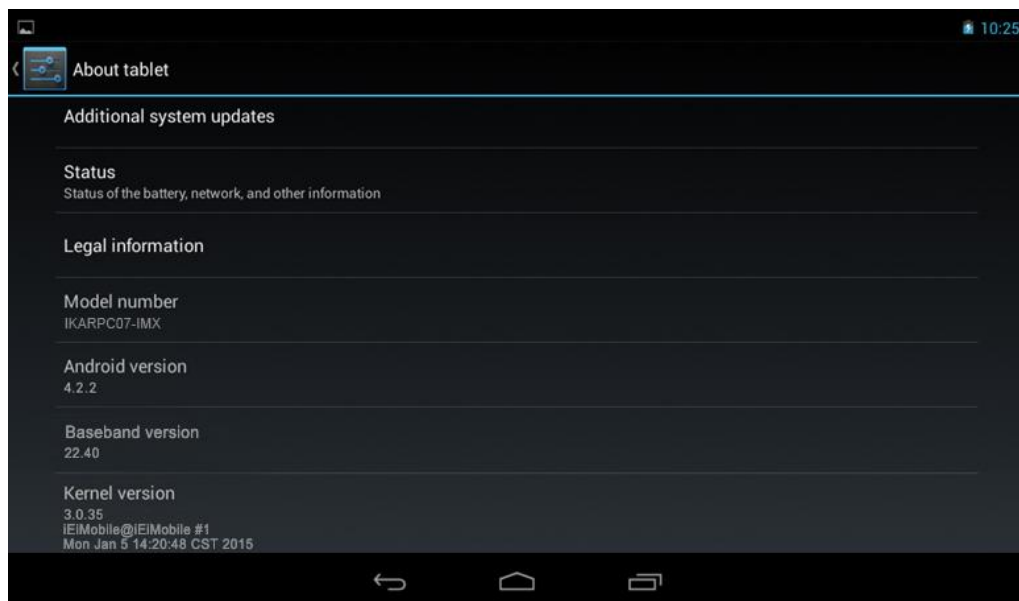


Figure 4-26: About Tablet Menu

Use the About tablet menu to display the following items.

- **Additional system updates**  
allows the user to update the system from OTA (over-the-air) or from the SD card.
- **Status**  
displays the status of batteries, network, signal, etc.
- **Legal information**  
displays the legal information.



## IKARPC-07A-A9 In-vehicle Panel PC

- **Model number**  
displays the model number.
- **Android version**  
displays the Android version.
- **Baseband version**  
displays the baseband version.
- **Kernel version**  
displays the kernel version.
- **Build number**  
displays the device build number.

### 4.5 File Management

The IKARPC-07A-A9 provides a file management tool that allows users to manage files in the internal storage and external storage devices. Tap **ES File Explorer** on the application page to launch it.



Figure 4-27: ES File Explorer Icon

The ES File Explorer application user interface appears (**Figure 4-28**). Tap the **storage** folder.



**Figure 4-28: ES File Explorer Screen**

The user can view all the possible storage devices, including

- **sdcard0**: internal storage of the IKARPC-07A-A9
- **sdcard1**: SD card connected to the IKARPC-07A-A9
- **usb1**: USB storage device connected to the USB host connector on the side panel. Refer to **Figure 1-5** for the connector location.

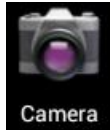


**Figure 4-29: Possible Storage Devices**

## IKARPC-07A-A9 In-vehicle Panel PC

### 4.6 Camera

The IKARPC-07A-A9 equips with a 5-megapixel front-facing auto-focus camera, and also accepts a video device through the video input connector on the rear panel. To manage the built-in camera or the connected video device, tap **Camera** on the Launcher page.



The user interface of the camera application appears. **Figure 4-30** and **Table 4-2** describe each button in detail.



**Figure 4-30: Camera Application**

After pressing the camera setting button on the top right side, the following three icons will appear in the middle of the screen. Adjust the settings if necessary.

|  |   |
|--|---|
|  | Switch between the front-facing camera and the video device connected to the video input connector on the rear panel. |
|  | Adjust exposure   |
|  | Enable or disable image location information.<br>Adjust the megapixel of the image size.                              |

**Table 4-2: Camera Application – Camera Setting Buttons**

## 4.7 System Update

If there is a newer version of OS or firmware available, please follow the steps below to update the system.

**Step 3:** If choosing to update the OS or firmware from the SD card, save the update file to an SD card and insert the SD card to the IKARPC-07A-A9 (see **Section 3.4** for the SD card installation instruction). The user can also update from OTA (over-the-air) via Wi-Fi connection.

**Step 4:** Access the Launcher page and click **Settings**. Scroll down to select **About Tablet**. Then, tap **Additional system updates**.

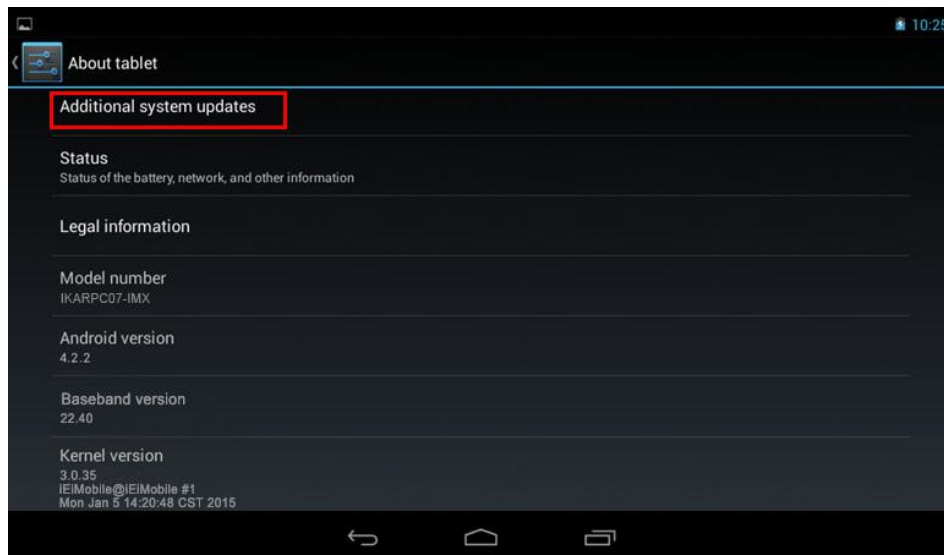


Figure 4-31: Additional System Updates

**Step 5:** The System Update page shows. Select either to update from OTA (over-the-air) or from the installed SD card.

**Chapter**

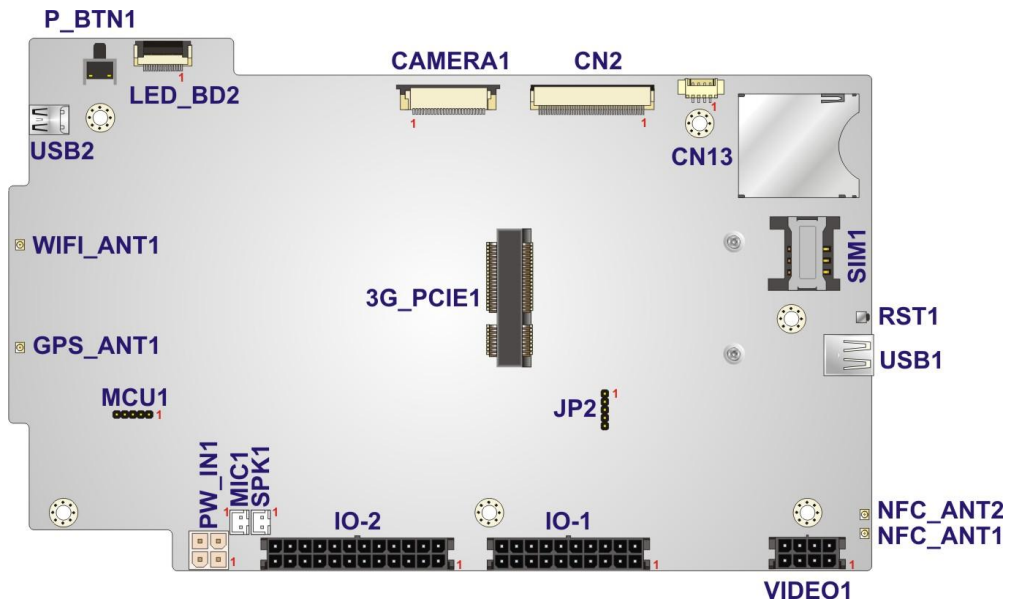
**5**

# **Interface Connectors**

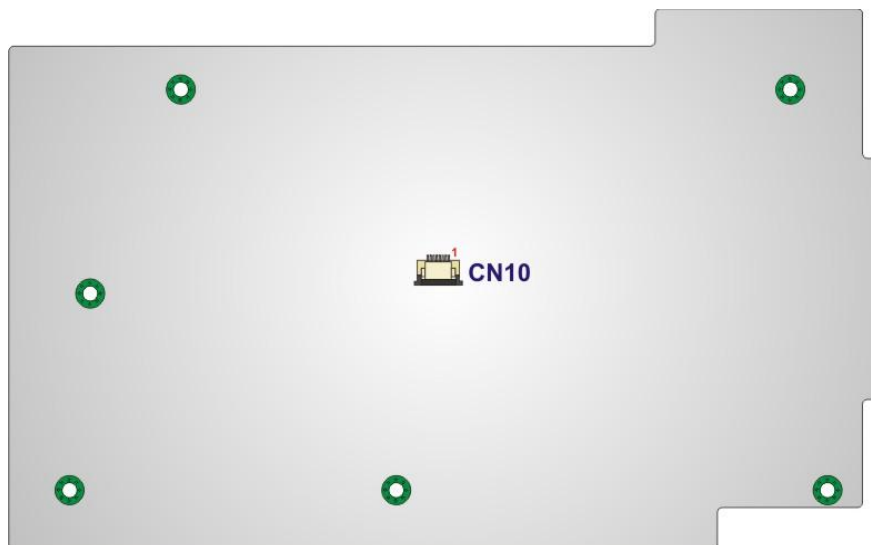
---

## 5.1 Peripheral Interface Connectors

The motherboard of the IKARPC-07A-A9 comes with a number of peripheral interface connectors and configuration jumpers. The connector locations are shown in **Figure 5-1** and **Figure 5-2**. The Pin 1 locations of the on-board connectors are also indicated in the diagrams below. The connector pinouts for these connectors are listed in the following sections.



**Figure 5-1: Main Board Layout Diagram (Front Side)**



**Figure 5-2: Main Board Layout Diagram (Solder Side)**

## IKARPC-07A-A9 In-vehicle Panel PC

### 5.2 Internal Peripheral Connectors

Internal peripheral connectors are found on the motherboard and are only accessible when the motherboard is outside of the chassis. The table below shows a list of the peripheral interface connectors on the IKARPC-07A-A9 motherboard. Pinouts of these connectors can be found in the following sections.

| Connector                            | Type                     | Label                |
|--------------------------------------|--------------------------|----------------------|
| Camera connector                     | 24-pin FPC               | CAMERA1              |
| GPS antenna connector                | Antenna connector        | GPS_ANT1             |
| LED connector                        | 12-pin FPC               | LED_BD2              |
| LVDS connector                       | 40-pin FPC               | CN2                  |
| Microphone connector                 | 2-pin wafer              | MIC1                 |
| PCIe Mini card slot for 3.75G module | Full-size PCIe Mini slot | 3G_PCIE1             |
| Power button                         | Push button              | P_BTN1               |
| Power input connector                | 4-pin Molex              | PW_IN1               |
| Programming connector                | 5-pin header             | MCU1<br>JP2          |
| Reset button                         | Push button              | RST1                 |
| RFID antenna connector               | Antenna connector        | NFC_ANT1<br>NFC_ANT2 |
| SD card socket                       | SD card socket           | CN13                 |
| SIM card socket                      | SIM card socket          | SIM1                 |
| Speaker connector                    | 2-pin wafer              | SPK1                 |
| Touch panel connector                | 8-pin FPC                | CN10                 |
| USB ports                            | External USB port        | USB1<br>USB2         |
| Wi-Fi antenna connector              | Antenna connector        | WIFI_ANT1            |

**Table 5-1: Peripheral Interface Connectors**

**5.2.1 Camera Connector (CAMERA1)**

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1       | GND         | 13      | NC          |
| 2       | CIM_AF2V8   | 14      | CIM_nRST    |
| 3       | NC          | 15      | NC          |
| 4       | NC          | 16      | NC          |
| 5       | GND         | 17      | NC          |
| 6       | MIPI_D1_P   | 18      | I2C_SDA1    |
| 7       | MIPI_D1_N   | 19      | I2C_SCL1    |
| 8       | MIPI_CLK_P  | 20      | CAMERA_PWD  |
| 9       | MIPI_CLK_N  | 21      | CAMERA_MCLK |
| 10      | MIPI_D0_P   | 22      | CIM_IO_1V5  |
| 11      | MIPI_D0_N   | 23      | CIM_IO1V8   |
| 12      | NC          | 24      | CIM_A2V8    |

**Table 5-2: Camera Connector (CAMERA1) Pinouts**

**5.2.2 LED Connector (LED\_BD2)**

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1       | VIO_3V3     |
| 2       | VIO_3V3     |
| 3       | VIO_3V3     |
| 4       | NC          |
| 5       | I2C_SDA     |
| 6       | I2C_SCL     |
| 7       | GND         |
| 8       | LED_3.5G    |
| 9       | LED_WLAN    |
| 10      | LED_BT      |
| 11      | GND         |
| 12      | GND         |

**Table 5-3: LED Connector (LED\_BD2) Pinouts**



**5.2.3 LVDS Connector (CN2)**

| PIN NO. | DESCRIPTION  | PIN NO. | DESCRIPTION |
|---------|--------------|---------|-------------|
| 1       | LCM_LEDA     | 21      | LCM_RIN3-   |
| 2       | LCM_LEDA     | 22      | GND         |
| 3       | VLCD_VGH     | 23      | LCM_CLK+    |
| 4       | GND          | 24      | LCM_CLK-    |
| 5       | GND          | 25      | GND         |
| 6       | VLCD_VGL     | 26      | LCM_RIN2+   |
| 7       | GND          | 27      | LCM_RIN2-   |
| 8       | VLCD_3V3     | 28      | GND         |
| 9       | LCM_LEDK     | 29      | LCM_RIN1+   |
| 10      | LCM_LEDK     | 30      | LCM_RIN1-   |
| 11      | GND          | 31      | GND         |
| 12      | VCC_LCD_AVDD | 32      | LCM_RIN0+   |
| 13      | GND          | 33      | LCM_RIN0-   |
| 14      | DIMO         | 34      | GND         |
| 15      | NC           | 35      | VLCD_3V3    |
| 16      | GND          | 36      | LCM_nRST    |
| 17      | NC           | 37      | NC          |
| 18      | NC           | 38      | VLCD_3V3    |
| 19      | GND          | 39      | VLCD_3V3    |
| 20      | LCM_RIN3+    | 40      | VLCD_VCOM   |

**Table 5-4: LVDS Connector (CN2) Pinouts**

**5.2.4 Microphone Connector (MIC1)**

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1       | MIC_IN_P    |
| 2       | MIC_IN_N    |

**Table 5-5: Microphone Connector (MIC1) Pinouts**

**5.2.5 Programming Connector (MCU1)**

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1       | MCLR        |
| 2       | MCU_PWR     |
| 3       | GND         |
| 4       | ICSPCLK2    |
| 5       | ICSPDAT2    |

**Table 5-6: Programming Connector (MCU1) Pinouts**

**5.2.6 Programming Connector (JP2)**

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1       | MCLR#-1     |
| 2       | 5V_OBD      |
| 3       | GND         |
| 4       | 2580_CLK    |
| 5       | 2580_DAT    |

**Table 5-7: Programming Connector (JP2) Pinouts**

**5.2.7 Speaker Connector (SPK1)**

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1       | SPK_OUT_P   |
| 2       | SPK_OUT_N   |

**Table 5-8: Speaker Connector (SPK1) Pinouts**

**5.2.8 Touch Panel Connector (CN10)**

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1       | TH_PWR      |
| 2       | GND         |
| 3       | CTP_DM5     |
| 4       | CTP_DP5     |

## IKARPC-07A-A9 In-vehicle Panel PC

|   |          |
|---|----------|
| 5 | CTP_RST# |
| 6 | I2C_SCL3 |
| 7 | I2C_SDA3 |
| 8 | CTP_INTR |

**Table 5-9: Touch Panel Connector (CN10) Pinouts**

Appendix

**A**

# Regulatory Compliance

---

**DECLARATION OF CONFORMITY**

This equipment is in conformity with the following EU directives:

- EMC Directive 2004/108/EC
- Low-Voltage Directive 2006/95/EC
- RoHS II Directive 2011/65/EU
- Ecodesign Directive 2009/125/EC

If the user modifies and/or install other devices in the equipment, the CE conformity declaration may no longer apply.

If this equipment has telecommunications functionality, it also complies with the requirements of the R&TTE Directive 1999/5/EC.

---

English

IEI Integration Corp declares that this equipment is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

---

Български [Bulgarian]

IEI Integration Corp. декларира, че този оборудване е в съответствие със съществените изисквания и другите приложими правила на Директива 1999/5/EC.

---

Česky [Czech]

IEI Integration Corp tímto prohlašuje, že tento zařizení je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.

---

Dansk [Danish]

IEI Integration Corp erklærer herved, at følgende udstyr overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.

---

Deutsch [German]

IEI Integration Corp, erklärt dieses Gerät entspricht den grundlegenden Anforderungen und den weiteren entsprechenden Vorgaben der Richtlinie 1999/5/EU.

---

Eesti [Estonian]

IEI Integration Corp deklareerib seadme seadme vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.

---

---

**Español [Spanish]**

IEI Integration Corp declara que el equipo cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.

---

**Ελληνική [Greek]**

IEI Integration Corp ΔΗΛΩΝΕΙ ΟΤΙ ΕΞΟΠΛΙΣΜΟΣ ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/EK.

---

**Français [French]**

IEI Integration Corp déclare que l'appareil est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.

---

**Italiano [Italian]**

IEI Integration Corp dichiara che questo apparecchio è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.

---

**Latviski [Latvian]**

IEI Integration Corp deklarē, ka iekārta atbilst būtiskajām prasībām un citiem ar to saistītajiem noteikumiem Direktīvas 1999/5/EK.

---

**Lietuvių [Lithuanian]**

IEI Integration Corp deklaruoja, kad šis įranga atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.

---

**Nederlands [Dutch]**

IEI Integration Corp dat het toestel toestel in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.

---

**Malti [Maltese]**

IEI Integration Corp jiddikjara li dan prodott jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.

---

**Magyar [Hungarian]**

IEI Integration Corp nyilatkozom, hogy a berendezés megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.

---

**Polski [Polish]**

IEI Integration Corp oświadcza, że wyrobu jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.

---

**Português [Portuguese]**

IEI Integration Corp declara que este equipamento está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.

---

## IKARPC-07A-A9 In-vehicle Panel PC

---

### Româna [Romanian]

IEI Integration Corp declară că acest echipament este în conformitate cu cerințele esențiale și cu celelalte prevederi relevante ale Directivei 1999/5/CE.

---

### Slovensko [Slovenian]

IEI Integration Corp izjavlja, da je ta opreme v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.

---

### Slovensky [Slovak]

IEI Integration Corp týmto vyhlasuje, že zariadenia spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.

---

### Suomi [Finnish]

IEI Integration Corp vakuuttaa täten että laitteet on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.

---

### Svenska [Swedish]

IEI Integration Corp förklarar att denna utrustningstyp står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

---

**FCC WARNING**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and(2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

You are cautioned that any change or modifications to the equipment not expressly approve by the party responsible for compliance could void your authority to operate such equipment.

**IMPORTANT NOTE:**

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.



**Appendix**

**B**

# **Safety Precautions**

---

**WARNING:**

The precautions outlined in this chapter should be strictly followed. Failure to follow these precautions may result in permanent damage to the IKARPC-07A-A9.

## B.1 Safety Precautions

Please follow the safety precautions outlined in the sections that follow:

### B.1.1 General Safety Precautions

Please ensure the following safety precautions are adhered to at all times.

- **Follow the electrostatic precautions** outlined below whenever the IKARPC-07A-A9 is opened.
- **Make sure the power is turned off and the power cord is disconnected** whenever the IKARPC-07A-A9 is being installed, moved or modified.
- **Do not apply voltage levels that exceed the specified voltage range.** Doing so may cause fire and/or an electrical shock.
- **Electric shocks can occur** if the IKARPC-07A-A9 chassis is opened when the IKARPC-07A-A9 is running.
- **Do not drop or insert any objects** into the ventilation openings of the IKARPC-07A-A9.
- **If considerable amounts of dust, water, or fluids enter the IKARPC-07A-A9**, turn off the power supply immediately, unplug the power cord, and contact the IKARPC-07A-A9 vendor.
- **DO NOT:**
  - Drop the IKARPC-07A-A9 against a hard surface.
  - Strike or exert excessive force onto the LCD panel.
  - Touch any of the LCD panels with a sharp object
  - In a site where the ambient temperature exceeds the rated temperature

## IKARPC-07A-A9 In-vehicle Panel PC

### B.1.2 Anti-static Precautions

---



#### **WARNING:**

Failure to take ESD precautions during the installation of the IKARPC-07A-A9 may result in permanent damage to the IKARPC-07A-A9 and severe injury to the user.

---

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the IKARPC-07A-A9. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the IKARPC-07A-A9 is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband:*** Wearing a simple anti-static wristband can help to prevent ESD from damaging any electrical component.
- ***Self-grounding:*** Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad:*** When configuring or working with an electrical component, place it on an anti-static pad. This reduces the possibility of ESD damage.
- ***Only handle the edges of the electrical component:*** When handling the electrical component, hold the electrical component by its edges.

### B.1.3 Product Disposal

---

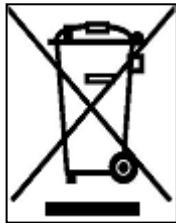
**CAUTION:**

Risk of explosion if battery is replaced by an incorrect type. Only certified engineers should replace the on-board battery.

Dispose of used batteries according to instructions and local regulations.

---

- Outside the European Union - If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.
- Within the European Union:



EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords.

When you need to dispose of your display products, please follow the guidance of your local authority, or ask the shop where you purchased the product. The mark on electrical and electronic products only applies to the current European Union Member States.

Please follow the national guidelines for electrical and electronic product disposal.

## B.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the IKARPC-07A-A9, please follow the guidelines below.

### B.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the IKARPC-07A-A9, please read the details below.

## IKARPC-07A-A9 In-vehicle Panel PC

- Except for the LCD panel, never spray or squirt liquids directly onto any other components. To clean the LCD panel, gently wipe it with a piece of soft dry cloth or a slightly moistened cloth.
- The interior of the IKARPC-07A-A9 does not require cleaning. Keep fluids away from the IKARPC-07A-A9 interior.
- Be cautious of all small removable components when vacuuming the IKARPC-07A-A9.
- Turn the IKARPC-07A-A9 off before cleaning the IKARPC-07A-A9.
- Never drop any objects or liquids through the openings of the IKARPC-07A-A9.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the IKARPC-07A-A9.
- Avoid eating, drinking and smoking within vicinity of the IKARPC-07A-A9.

### B.2.2 Cleaning Tools

Some components in the IKARPC-07A-A9 may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use when cleaning the IKARPC-07A-A9.

- **Cloth** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the IKARPC-07A-A9.
- **Water or rubbing alcohol** – A cloth moistened with water or rubbing alcohol can be used to clean the IKARPC-07A-A9.
- **Using solvents** – The use of solvents is not recommended when cleaning the IKARPC-07A-A9 as they may damage the plastic parts.
- **Vacuum cleaner** – Using a vacuum specifically designed for computers is one of the best methods of cleaning the IKARPC-07A-A9. Dust and dirt can restrict the airflow in the IKARPC-07A-A9 and cause its circuitry to corrode.
- **Cotton swabs** - Cotton swabs moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
- **Foam swabs** - Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Appendix

**C**

# **OBD-II Reader Command**

---

## IKARPC-07A-A9 In-vehicle Panel PC

### C.1 Select a Chip Initial Mode: UpDate F/W or RUN F/W

- AP sends query
- F/W receives query

|                 | 1   | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|-----------------|-----|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|
| Enter Boot Mode | 0x3 |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |
| Enter RUN Mode  | 0x3 |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |
|                 | 0   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |

### C.2 Boot Mode

- Launch AP: P1618QP (Pic18F Bootloader )
- Baud Rate:115200

### C.3 Run Mode

Any mode in Run mode

- AP sends query
- F/W receives query

|                           | 1  | 2 | 3 | 4        | 5        | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|---------------------------|----|---|---|----------|----------|---|---|---|---|----|----|----|----|----|----|----|----|----|----|
| Enter OBD-II              | \$ | M | A | 0x0<br>A | 0x0<br>D |   |   |   |   |    |    |    |    |    |    |    |    |    |    |
| Enter CAN Standard V2.2.B | \$ | M | B | 0x0<br>A | 0x0<br>D |   |   |   |   |    |    |    |    |    |    |    |    |    |    |
| Request mode & version    | \$ | M | R | 0x0<br>A | 0x0<br>D |   |   |   |   |    |    |    |    |    |    |    |    |    |    |

F/W returns (after receiving query)

|                                    | 1  | 2 | 3 | 4        | 5                      | 6                      | 7        | 8        | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|------------------------------------|----|---|---|----------|------------------------|------------------------|----------|----------|---|----|----|----|----|----|----|----|----|----|----|
| <b>Select a mode to send</b>       | \$ | M | 0 | 0x0<br>0 | Ver<br>(1)<br>0x1<br>0 | Ver<br>(2)<br>0x0<br>6 | 0x0<br>A | 0x0<br>D |   |    |    |    |    |    |    |    |    |    |    |
| <b>Tele mode response</b>          | \$ | M | 1 | 0x0<br>0 | Ver<br>(1)<br>0x1<br>0 | Ver<br>(2)<br>0x0<br>6 | 0x0<br>A | 0x0<br>D |   |    |    |    |    |    |    |    |    |    |    |
| <b>CAN S mode response</b>         | \$ | M | 2 | 0x0<br>0 | Ver<br>(1)<br>0x1<br>0 | Ver<br>(2)<br>0x0<br>6 | 0x0<br>A | 0x0<br>D |   |    |    |    |    |    |    |    |    |    |    |
| <b>Enter Tele mode to respond</b>  | \$ | M | T | 0x0<br>A | 0x0<br>D               |                        |          |          |   |    |    |    |    |    |    |    |    |    |    |
| <b>Enter CAN S mode to respond</b> | \$ | M | C | 0x0<br>A | 0x0<br>D               |                        |          |          |   |    |    |    |    |    |    |    |    |    |    |



## IKARPC-07A-A9 In-vehicle Panel PC

### C.4 Into CAN\_Standard V2.2.B (CAN standard)

- AP sends query
- F/W receives query

|                           | 1                 | 2             | 3                 | 4                | 5                         | 6             | 7             | 8                 | 9             | 10                | 11            | 12                | 13            | 14            | 15                | 16            | 17                           | 18          | 19          |
|---------------------------|-------------------|---------------|-------------------|------------------|---------------------------|---------------|---------------|-------------------|---------------|-------------------|---------------|-------------------|---------------|---------------|-------------------|---------------|------------------------------|-------------|-------------|
| <b>Sent by CAN</b>        | \$                | C             | T                 | 0x0A             | 0x0D                      |               |               |                   |               |                   |               |                   |               |               |                   |               |                              |             |             |
| <b>Set CAN baud</b>       | \$                | C             | B                 | xxx Baud         | 0x00<br>Reserved          | 0x0<br>A      | 0x0<br>D      |                   |               |                   |               |                   |               |               |                   |               |                              |             |             |
| <b>Set to send by CAN</b> | \$                | C             | X                 | 0x00<br>Reserved | TxIDE RTR<br>B0 B1<br>DLC | ID(1<br>)     | ID(2<br>)     | ID(3<br>)         | ID(4<br>)     | D1                | D2            | D3                | D4            | D5            | D6                | D7            | D8                           | 0x0<br>A    | 0x0<br>D    |
| <b>Setup menu</b>         | \$                | C             | M                 | M1ID(1)          | M1ID(2)                   | M1I<br>D(3)   | M1I<br>D(4)   | M1<br>F1I<br>D(1) | M1F<br>1ID(2) | M1<br>F1I<br>D(3) | M1F<br>1ID(4) | M1<br>F2I<br>D(1) | M1F<br>2ID(2) | M1F<br>2ID(3) | M1<br>F2I<br>D(4) | M2I<br>D(1)   | M2I<br>D(2)                  | M2I<br>D(3) | M2I<br>D(4) |
|                           | M2<br>F1I<br>D(1) | M2F<br>1ID(2) | M2<br>F1I<br>D(3) | M2F1ID(4<br>)    | M2F2ID(1)                 | M2F<br>2ID(2) | M2F<br>2ID(3) | M2<br>F2I<br>D(4) | M3F<br>3ID(1) | M3<br>F3I<br>D(2) | M3F<br>3ID(3) | M3<br>F3I<br>D(4) | M3F<br>4ID(1) | M3F<br>4ID(2) | M3<br>F4I<br>D(3) | M3F<br>4ID(4) | RxI<br>DE<br>xxx<br>xxx<br>x | 0x0<br>A    | 0x0<br>D    |
| <b>Read setting</b>       | \$                | C             | R                 | 0x0A             | 0x0D                      |               |               |                   |               |                   |               |                   |               |               |                   |               |                              |             |             |
| <b>Setup read menu</b>    | \$                | C             | G                 | 0x0A             | 0x0D                      |               |               |                   |               |                   |               |                   |               |               |                   |               |                              |             |             |

- F/W returns (after receiving query)

|                              | 1  | 2 | 3 | 4    | 5        | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|------------------------------|----|---|---|------|----------|---|---|---|---|----|----|----|----|----|----|----|----|----|----|
| <b>Set CAN baud complete</b> | \$ | C | 9 | 0x0A | 0x0<br>D |   |   |   |   |    |    |    |    |    |    |    |    |    |    |
| <b>CAN query setup</b>       | \$ | C | 3 | 0x0A | 0x0<br>D |   |   |   |   |    |    |    |    |    |    |    |    |    |    |

|            |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |      |      |     |
|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|------|-----|
| complete   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |      |      |     |
| Menu setup | \$     | C      | 4      | 0x0A   | 0x0    |        |        |        |        |        |        |        |        |        |        |        |      |      |     |
| complete   |        |        |        |        | D      |        |        |        |        |        |        |        |        |        |        |        |      |      |     |
| Read query | \$     | C      | 5      | xxx    | TxlD   | ID(1)  | ID(2)  | ID(3)  | ID(4)  | D1     | D2     | D3     | D4     | D5     | D6     | D7     | D8   | 0x0A | 0x0 |
| setup      |        |        |        | Bau    | E      |        |        |        |        |        |        |        |        |        |        |        |      |      | D   |
|            |        |        |        | d      | RTR    |        |        |        |        |        |        |        |        |        |        |        |      |      |     |
|            |        |        |        |        | B0     |        |        |        |        |        |        |        |        |        |        |        |      |      |     |
|            |        |        |        |        | B1     |        |        |        |        |        |        |        |        |        |        |        |      |      |     |
|            |        |        |        |        | DLC    |        |        |        |        |        |        |        |        |        |        |        |      |      |     |
| Read menu  | \$     | C      | 7      | M1I    | M1I    | M1I    | M1I    | M1F    | M1F    | M1F    | M1F    | M1F    | M1F    | M1F    | M1F    | M2I    | M2I  | M2I  | M2I |
| setup      |        |        |        | D(1)   | D(2)   | D(3)   | D(4)   | 1ID(1) | 1ID(2) | 1ID(3) | 1ID(4) | 2ID(1) | 2ID(2) | 2ID(3) | 2ID(4) |        |      |      |     |
|            |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |      |      |     |
|            | M2F    | M2F    | M2F    | M2F    | M2F    | M2F    | M2F    | M2F    | M3F    | M3F    | M3F    | M3F    | M3F    | M3F    | M3F    | M3F    | RxlD | 0x0A | 0x0 |
|            | 1ID(1) | 1ID(2) | 1ID(3) | 1ID(4) | 2ID(1) | 2ID(2) | 2ID(3) | 2ID(4) | 3ID(1) | 3ID(2) | 3ID(3) | 3ID(4) | 4ID(1) | 4ID(2) | 4ID(3) | 4ID(4) | E    |      | D   |
|            |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | xxx  |      |     |
|            |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | xxxx |      |     |
| Read CAN   | \$     | C      | 6      | xxx    | IDE    | ID(1)  | ID(2)  | ID(3)  | ID(4)  | D1     | D2     | D3     | D4     | D5     | D6     | D7     | D8   | 0x0A | 0x0 |
| complete   |        |        |        | Bau    | RTR    |        |        |        |        |        |        |        |        |        |        |        |      |      | D   |
|            |        |        |        | d      | B0     |        |        |        |        |        |        |        |        |        |        |        |      |      |     |
|            |        |        |        |        | B1     |        |        |        |        |        |        |        |        |        |        |        |      |      |     |
|            |        |        |        |        | DLC    |        |        |        |        |        |        |        |        |        |        |        |      |      |     |
| CAN starts | \$     | C      | 8      | 0x0A   | 0x0    |        |        |        |        |        |        |        |        |        |        |        |      |      |     |
| query      |        |        |        |        | D      |        |        |        |        |        |        |        |        |        |        |        |      |      |     |
| CAN query  | \$     | C      | E      | 0x0A   | 0x0    |        |        |        |        |        |        |        |        |        |        |        |      |      |     |
| error      |        |        |        |        | D      |        |        |        |        |        |        |        |        |        |        |        |      |      |     |
| CAN query  | \$     | C      | F      | 0x0A   | 0x0    |        |        |        |        |        |        |        |        |        |        |        |      |      |     |
| succeed    |        |        |        |        | D      |        |        |        |        |        |        |        |        |        |        |        |      |      |     |

## IKARPC-07A-A9 In-vehicle Panel PC

### C.5 Into Telematics

- F/W:Telematics
- AP: Telematics V1.005
  
- AP sends query
- F/W receives query

|                       | 1 | 2              | 3              | 4         | 5         | 6        | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|-----------------------|---|----------------|----------------|-----------|-----------|----------|---|---|---|----|----|----|----|----|----|----|----|----|----|
| Scan all              | Z | 0              | 0x0<br>D       |           |           |          |   |   |   |    |    |    |    |    |    |    |    |    |    |
| Scan all              | Z | 0x0<br>D       |                |           |           |          |   |   |   |    |    |    |    |    |    |    |    |    |    |
| Scan<br>OBD-II        | Z | 1              | 0x0<br>D       |           |           |          |   |   |   |    |    |    |    |    |    |    |    |    |    |
| Scan J1939            | Z | 2              | 0x0<br>D       |           |           |          |   |   |   |    |    |    |    |    |    |    |    |    |    |
| Scan FMS              | Z | 1              | 0x0<br>D       |           |           |          |   |   |   |    |    |    |    |    |    |    |    |    |    |
|                       |   |                |                |           |           |          |   |   |   |    |    |    |    |    |    |    |    |    |    |
| OBD-II<br>input PID-1 | A | Mo<br>de-<br>1 | Mo<br>de-<br>2 | PI<br>D-1 | PI<br>D-2 | 0x0<br>D |   |   |   |    |    |    |    |    |    |    |    |    |    |
| OBD-II<br>input PID-2 | B | Mo<br>de-<br>1 | Mo<br>de-<br>2 | PI<br>D-1 | PI<br>D-2 | 0x0<br>D |   |   |   |    |    |    |    |    |    |    |    |    |    |
| OBD-II<br>input PID-3 | C | Mo<br>de-<br>1 | Mo<br>de-<br>2 | PI<br>D-1 | PI<br>D-2 | 0x0<br>D |   |   |   |    |    |    |    |    |    |    |    |    |    |
| OBD-II<br>input PID-4 | D | Mo<br>de-<br>1 | Mo<br>de-<br>2 | PI<br>D-1 | PI<br>D-2 | 0x0<br>D |   |   |   |    |    |    |    |    |    |    |    |    |    |
| Reserved              | E |                |                |           |           |          |   |   |   |    |    |    |    |    |    |    |    |    |    |
| Reserved              | F |                |                |           |           |          |   |   |   |    |    |    |    |    |    |    |    |    |    |
| Reserved              | G |                |                |           |           |          |   |   |   |    |    |    |    |    |    |    |    |    |    |

|             |   |     |    |    |    |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------|---|-----|----|----|----|-----|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Reserved    | H |     |    |    |    |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| J1939 input | I | P   | P  | P  | P  | 0x0 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PSPF        |   | -1  | -2 | -1 | -2 | D   |  |  |  |  |  |  |  |  |  |  |  |  |  |
| FMS input   | J | P   | P  | P  | P  | 0x0 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PSPF        |   | -1  | -2 | -1 | -2 | D   |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Version     | Y | 0x0 |    |    |    |     |  |  |  |  |  |  |  |  |  |  |  |  |  |
|             |   | D   |    |    |    |     |  |  |  |  |  |  |  |  |  |  |  |  |  |

- F/W returns (after receiving query)

|                      | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |  |
|----------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|--|
| No device is scanned |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |  |
| Devices Scanned      |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |  |

## IKARPC-07A-A9 In-vehicle Panel PC

### OBD packet format (ASCII code)

OBD packet has five different format, they are:

1. CAN 11bits 250
2. CAN 29bits 250
3. CAN 11bits 500
4. CAN 29bits 500
5. Scanning

Each format has its input code, they are:

CAN 11bits 250: **A**

CAN 29bits 250: **B**

CAN 11bits 500: **C**

CAN 29bits 500: **D**

Scanning: **Z**

Example 1: To get PID=0104 from CAN 29bits 500 format

Input: **D0104+CR** (Use **ASCII code** as the input format of the firmware)

Output: **CAN 29bits 500, 0104 18DAF111 08 0241040000000000+LF+CR**

(Use **ASCII code** as the input format of the firmware)

**■** ID number   **■** Key-in value   **■** ID   **■** Len   **■** Data

**Other Information:** Data include eight different bytes

Byte 1: Data include some return information. For example,

1. 18DAF110 08 **06**4100BE1B301300

Byte1 is 06 followed by six non-zero values.

2. 18DAF110 08 **03**41043200000000

Byte1 is 03 followed by three non-zero values.

Byte 2: Mode is related with the Key-in value. For example:

**01**04 18DAF110 08 03**41**043200000000

Key-in value is 01, Byte 2 value will change to 41. The main difference is: 0 means to send out by query side, 4 means to send out by receiver side

Byte 3: PID is the same with the Key-in value. For example:

**0104** 18DAF110 08 0341**04**3200000000

Key-in value is 04, Byte 3 value will be 04.

Byte 4 define as A. (same with the PID code table on Wikipedia)

Byte 5 define as B. (same with the PID code table on Wikipedia)

Byte 6 define as C. (same with the PID code table on Wikipedia)

Byte 7 define as D. (same with the PID code table on Wikipedia)

As shown below:

|    |    |   |                    |   |   |     |                     |
|----|----|---|--------------------|---|---|-----|---------------------|
| 01 | 24 | 4 | O2S1_WR_lambda(1): | 0 | 2 | N/A | $((A*256)+B)/32768$ |
|    |    |   | Equivalence Ratio  | 0 | 8 | V   | $((C*256)+D)/8192$  |
| 01 | 25 | 4 | O2S2_WR_lambda(1): | 0 | 2 | N/A | $((A*256)+B)/32768$ |
|    |    |   | Equivalence Ratio  | 0 | 8 | V   | $((C*256)+D)/8192$  |
|    |    |   | Voltage            |   |   |     |                     |

Example 2: To Scan

Input: **Z+CR** (Use **ASCII code** as the input format of the firmware)

Output: CAN 11bits 250,1 NO SUPPORT+LF+CR

CAN 29bits 250,2 NO SUPPORT+LF+CR

CAN 11bits 500,3 NO SUPPORT+LF+CR

CAN 29bits 500,4 SUPPORT+LF+CR

(Use **ASCII code** as the input format of the firmware)

**Appendix**

**D**

# **Watchdog Timer**

---



**NOTE:**

The following discussion applies to DOS. Contact IEI support or visit the IEI website for drivers for other operating systems.

The Watchdog Timer is a hardware-based timer that attempts to restart the system when it stops working. The system may stop working because of external EMI or software bugs. The Watchdog Timer ensures that standalone systems like ATMs will automatically attempt to restart in the case of system problems.

A BIOS function call (INT 15H) is used to control the Watchdog Timer.

INT 15H:

| <b>AH – 6FH Sub-function:</b> |   |
|-------------------------------|---|
| AL – 2:                       | Sets the Watchdog Timer's period.   |
| BL:                           | Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup). |

**Table D-1: AH-6FH Sub-function**

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. When the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.



## IKARPC-07A-A9 In-vehicle Panel PC

**NOTE:**

The Watchdog Timer is activated through software. The software application that activates the Watchdog Timer must also deactivate it when closed. If the Watchdog Timer is not deactivated, the system will automatically restart after the Timer has finished its countdown.

**EXAMPLE PROGRAM:**

**; INITIAL TIMER PERIOD COUNTER**

;

**W\_LOOP:**

;

```

MOV     AX, 6F02H    ;setting the time-out value
MOV     BL, 30      ;time-out value is 48 seconds
INT     15H

```

;

**; ADD THE APPLICATION PROGRAM HERE**

;

```

CMP     EXIT_AP, 1  ;is the application over?
JNE     W_LOOP     ;No, restart the application

```

```

MOV     AX, 6F02H  ;disable Watchdog Timer
MOV     BL, 0;
INT     15H

```

;

**; EXIT ;**

Appendix

**E**

# Hazardous Materials Disclosure

---

## **E.1 Hazardous Materials Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury**

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

| Part Name                      | Toxic or Hazardous Substances and Elements |                       |                       |                              |                                |                                       |
|--------------------------------|--|-----------------------|-----------------------|------------------------------|--------------------------------|---------------------------------------|
|                                | Lead (Pb)                                  | Mercury (Hg)          | Cadmium (Cd)          | Hexavalent Chromium (CR(VI)) | Polybrominated Biphenyls (PBB) | Polybrominated Diphenyl Ethers (PBDE) |
| <b>Housing</b>                 | <input type="radio"/>                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/>          | <input type="radio"/>                 |
| <b>Display</b>                 | <input type="radio"/>                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/>          | <input type="radio"/>                 |
| <b>Printed Circuit Board</b>   | <input type="radio"/>                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/>          | <input type="radio"/>                 |
| <b>Metal Fasteners</b>         | <input type="radio"/>                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/>          | <input type="radio"/>                 |
| <b>Cable Assembly</b>          | <input type="radio"/>                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/>          | <input type="radio"/>                 |
| <b>Fan Assembly</b>            | <input type="radio"/>                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/>          | <input type="radio"/>                 |
| <b>Power Supply Assemblies</b> | <input type="radio"/>                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/>          | <input type="radio"/>                 |
| <b>Battery</b>                 | <input type="radio"/>                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/>        | <input type="radio"/>          | <input type="radio"/>                 |

O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006

## IKARPC-07A-A9 In-vehicle Panel PC

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有“环境友好使用期限”的标签，此期限是估算这些物质“不会有泄漏或突变”的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

| 部件名称   | 有毒有害物质或元素 |           |           |                 |               |                     |
|--------|-----------|-----------|-----------|-----------------|---------------|---------------------|
|        | 铅<br>(Pb) | 汞<br>(Hg) | 镉<br>(Cd) | 六价铬<br>(CR(VI)) | 多溴联苯<br>(PBB) | 多溴二苯<br>醚<br>(PBDE) |
| 壳体     | O         | O         | O         | O               | O             | O                   |
| 显示     | O         | O         | O         | O               | O             | O                   |
| 印刷电路板  | O         | O         | O         | O               | O             | O                   |
| 金属螺帽   | O         | O         | O         | O               | O             | O                   |
| 电缆组装   | O         | O         | O         | O               | O             | O                   |
| 风扇组装   | O         | O         | O         | O               | O             | O                   |
| 电力供应组装 | O         | O         | O         | O               | O             | O                   |
| 电池     | O         | O         | O         | O               | O             | O                   |

O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。  
X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。