Smart PDM assembly_User_Manual_Rev1.2

Version:
1.2
Date:
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For any question, please contact Chengdu Vantron Technology, Ltd.

Change History

This document describes **SMART PDM ASSEMBLY (MODEL:10-8231)** briefly and is intended for all readers. This table describes the version and release date.

Version	Date	Description	Author
1.0	2023/9/4	First release	ZLL
1.1	2023/9/12	Add FCC compliance statement	ZLL
1.2	2023/12/12	Change the description of SMA connector	ZLL

Foreword

Copyright

While all information contained herein have been carefully checked to assure its accuracy in technical details and printing, Vantron assumes no responsibility resulting from any error or features of this manual, or from improper uses of this manual or the software. Please contact our technical department for relevant operation solutions if there is any problem that cannot be solved according to this manual.

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Symbol Conventions

The symbols that may be found in this document are defined as follows:

Symbol	Type	Description
	Notice	Important information and regulations
	Caution	Caution for latent damage to system or harm to personnel

Statement & Disclaimer

It is recommended to read and comply with this manual which provides important guidance and helps decreasing the danger of injury, electric shock, fire, or any damage to the device. Vantron assumes no legal liability of accidents resulting from failure of conforming to the safety instructions.

Limitation of Liability/Non-warranty

For direct or indirect damage to this device or other devices of Vantron caused by failure of conforming to this manual or the safety instructions on device label, Vantron assumes neither warranty nor legal liability even if the device is still under warranty.

Safety Instructions

- ✧ Keep and comply with all operation instructions, warnings, and information.
- ✧ Pay attention to warnings on this device.
- ✧ Read the following precautions so as to decrease the danger of injury, electric shock, fire, or any damage to the device.
- ✧ Operations and service instructions are provided with the equipment.

Precautions

- ✧ Pay attention to the product labels/safety instructions printed on silk screens.
- ✧ Do not try repairing this product unless declared in this manual.

- ✧ Keep away from heat source, such as heater, heat dissipater, or engine casing.
- ✧ Do not insert other items into the slot (if any) of this device.
  - • Ensure ventilation of the ventilation slot.
  - • System fault may arise if other items are inserted into this device.
- ✧ Installation: ensure correct installation according to instructions from the manufacturer with recommended installation tools.
- ✧ Ensure ventilation and smoothness according to relevant ventilation standards.

Safety Instructions for Power Cables and Accessories

 Use Proper power source only. Start only with power source that satisfies voltage label and the voltage necessary according to this manual. Please contact technical support personnel of Vantron for any uncertainty about the requirements of necessary power source.

 Use tested power source. This product still contains a button lithium battery as a real-time clock after its external power source is removed and therefore should not be short-circuited during transportation or placed under high temperature.

 Place cables properly: Do not place cables at any place with extrusion danger.

Cleaning Instructions

- ✧ Please power off before cleaning the device.
- ✧ Do not use spray detergent.
- ✧ Clean with a damp cloth.
- ✧ Do not try cleaning exposed electronic components unless with a dust collector.
- ✧ Support for special fault: Power off and contact technical support personnel of Vantron in case of the following faults:
  - • The device is damaged.
  - • The temperature is excessively high.
  - • Fault is still not solved after operations according to the manual.

Table of Contents

1 Introduction

1.1 Introduction to Vantron

Vantron offers ARM-and ATOM-based Single Boards Computer (SBC) platforms including Cirrus Logic EP9315, Rock Chip RK3128, RK3368, RK3288, RK3399, RK3566, RK3568, NXP i.MX6, i.MX8, LS1023/1043,TI OMAP35xx CortexA8series and Intel SkyLake and ApolloLake processor boards. In additional to offering the standard SBCs, we also provide professional customized board design services. Our seamless project management, efficient error-free development process, strong fundamentals in technology, sufficient human resources, and on-time delivery will guarantee the success in your project development.

Based on the idea of “Application Ready” products and services, our embedded computers have embedded basic operation systems which include the drivers of its interfaces. So it is easy to be used by adding your application software only. It can speed up Time to Market of your products, and save more cost.

2 Overview

2.1 Introduction

SMART PDM ASSEMBLY (MODEL:10-8231) is a multimedia processor based on Rockchip RK3566 with Andriod11. The device is a terminal controller designed for shower room, supporting communication interface including CAN, Ethernet, WIFI&BT, RTC, and other features.

2.2 Features

Features List		
No.	**Item**	**Target**
1	**CPU**	RK3566, Cortex-A55 Quad-Core, 1.8GHz (Max), PMIC RK809-5.
2	**Mem**	LPDDR4-1866 4GB.
3	**EEPROM**	2Kb (256 x 8), BL24C02P, for device information.
4	**Flash**	eMMC5.1 32GB.
5	**Vedio out**	HDMI 2.0 Type-A.
6	**Audio**	3.5mm.
7	**Button**	1*Reset button, 1xOTG host/slave switch button.

8	**USB**	1*USB2.0 OTG (Type-A) for debug and program software; 1*USB3.0 HOST Type-A.
9	**LAN**	1*RJ45 - Signal port 10/100/1000Mbps Ethernet connector with indicator LEDs.
10	**CAN**	Support 1xCAN Interface. 1xM12 connector and 2xM8 connector.
11	**Wireless**	WIFI 802.11a/b/g/n/ac, Bluetooth 5.0, with AP6256. External Antenna.
12	**Power LED**	1*Power, with Red LED.
13	**System LED**	1*System, with Green LED.
14	**CAN LED**	1*CAN, with Green LED.
15	**User LED**	1*User Define, with Green LED.
16	**RTC**	Supported by HT1382, with Coin Battery.
17	**Power**	1*DC 24V/2.5A input. 1*DC 24V/1A output. 2*DC 5V/0.33A output.
18	**OS**	Android 11.
19	**Regulations certification**	FCC.
20	**GMS Certification**	Supported.
21	**Operation Temp.**	0~60℃.
22	**Storage Temp.**	-20~80℃.

2.3 Customer Information

Order Information (Example)	
MODEL: 10-8231	Smart PDM assembly

Note: Please contact Vantron for more details.

2.4 Order Information

Order Information (Example)	
MODEL: IPC-RK66-TMS-GEN2	ARM IPC,V2,RK3566,4GB/32GB/HDMI/WIFI,Android11,0~60℃,RoHS

Note: Please contact Vantron for more details.

3 Product Description

3.1 Product Appearance

Figure 3-1-1 Overall Unit

3.2 Device Interface

① 10/100/1000Mbps ethernet, RJ45 port with LED.
② HDMI 2.0 video output, HDMI TYPE-A port.
③ L/R Audio output, 3.5mm port.
④ USB 3.0, USB TYPE-A port.
⑤ USB 2.0 OTG, USB TYPE-A port.
⑥ OTG ID switch.
⑦ DC24V Power input, 1×3×3.81mm phoenix.

Figure 3-2-1 Front View of IBOX

① RP-SMA-J antenna connector, used for WIFI and BT.
② LED indicators.
③ Reset Button, press to reset the system.
④ CAN-1, M8 connector with 5V@0.33A power output.
⑤ CAN-2, M8 connector with 5V@0.33A power output.
⑥ CAN-3, M12 connector with 24V@1A power output.

Figure 3-2-2 Back View of IBOX

4 Hardware Operation Note

This chapter introduces how to use and install the device.

4.1 Operating Environment

When assembling, debugging and operating the device, please ensure that there are not any hazards and that the environment meets the following requirements:

- Operating temperature: -0℃~60℃；
- Operating humidity: 5%~95%RH (No condensation)

5 Hardware Description

5.1 Power Input

The device is configured with an AC/DC power adapter which supplies DC 24V power. 1×3×3.81mm phoenix terminal is the power input connector. Theoretically, the max. power consumption of the overall unit is 24W, including the 24V/1A output and the 2x5V/0.33A.

Figure 5-1-1 DC24V power input connector

5.2 Power Output & CAN Interface

The device supports 3 CAN interfaces, which includes two M8 with 5V@0.33A power output and one M12 with 24V@1A power output. the mechanical PIN will make sure paring correctly. The PIN assignment is shown as follow:

Figure 5-2-1 Power Output & CAN Interface

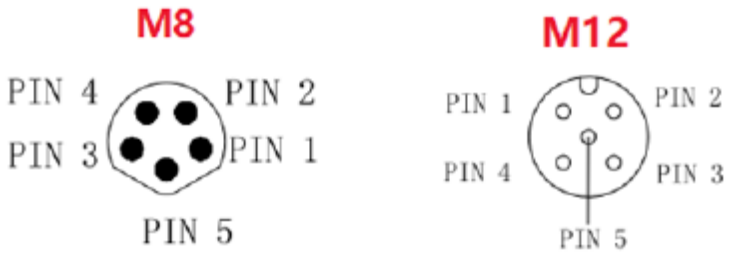

Table 5-2-1 M8 & M12 Connector Signal Definition

	PIN Number	Signal
M8	1	GND
	2	CANH
	3	CANL
	4	Vout 5V
	5	NC
M12	1	Vout 24V
	2	CANL
	3	CANH
	4	GND
	5	NC

5.3 ETH Communication Interface

The device supports one ETH data network access of 10/100/1000Mbps and the connector is RJ45 with LEDs. The green LED indicates the link of 1000Mbps, while the yellow LED indicates the data transmission.

Figure 5-3-1 ETH Interface

5.4 HDMI

The device has a HDMI 2.0 type-A output.

Figure 5-4-1 HDMI Interface

5.5 Audio

The device has a 3.5mm audio connector, providing Line OUT audio.

Figure 5-5-1 Audio Interface

5.6 USB3.0 HOST

The device supports USB3.0 HOST with 1* type-A connector.

Figure 5-6-1 USB Interface

5.7 USB2.0 OTG

The device supports USB2.0 OTG interface and can make interactive communications with the peripheral device by using USB2.0 Type-A connector. The interface can achieve the switching of HOST and DEVICE through OTG ID DIP switch.

DIP switch is dialed to the upper of USB2.0 OTG interface (HOST) which can be connected to the peripheral device (such as mouse, keyboard and U disk). DIP switch is dialed to the below of USB2.0 OTG interface (Device) which can perform programming and read the device information.

Figure 5-7-1 OTG Interface

5.8 WIFI&BT

The device supports WIFI 802.11a/b/g/n/ac, Bluetooth 5.0 for wireless Internet, hotspot and file transfer. Besides, the device is configured with 2.4G&5GHz dual-frequency rod antenna which is connected to the device through SMA connector.

Figure 5-8-1 Antenna Interface

5.9 LED

The device has 4 LED, of which 3 LED serve as indicators and 1 LED is custom.

Figure 5-9-1 LED indication

Table 5-9-1 LED Definition

LED Name	Indication	Remark
CAN	On: CAN module is normal	
	Off: CAN module is abnormal	
PWR	On: The system (3.3V) is powered on normally	
	Off: The system (3.3V) is powered on abnormally	
USER	On: Not defined	
	Off: Not defined	
SYS	On: The system is started normally	
	Off: The system is started abnormally	

5.10 Button

The device has 1 button used for RESET. the RESET button is shown as follows:

Figure 5-10-1 Reset button

6 Software Note

The software loading system is pre-installed in SMART PDM ASSEMBLY (MODEL:10-8231). Please refer to the software manual for more software information.

7 Tips

 **Waste Disposal**

It is recommended that you disassemble the device before abandoning it in conformity with local regulations. Please ensure that the abandoned batteries are disposed according to local regulations on waste disposal. Do not throw batteries into fire (explosive) or put in common waste canister. Products or product packages with the sign of “explosive” should not be disposed like household waste but delivered to specialized electrical & electronic waste recycling/disposal center. Proper disposal of this sort of waste helps avoiding harm and adverse effect upon surroundings and people’s health. Please contact local organizations or recycling/disposal center for more recycling/disposal methods of related products.

Comply with the following safety tips:

 **Do not use in combustible and explosive environment**

Keep away from combustible and explosive environment for fear of danger.

 **Keep away from all energized circuits**

Operators should not remove enclosure from the device. Only the group or person with factory certification is permitted to open the enclosure to adjust and replace the structure and components of the device. Do not change components unless the power cord is removed. In some cases, the device may still have residual voltage even if the power cord is removed. Therefore, it is a must to remove and fully discharge the device before contact to avoid injury.

 **Unauthorized changes to this product or its components are prohibited**

In the aim of avoiding accidents as far as possible, it is not allowed to replace the system or change components unless with permission and certification. Please contact the technical department of Vantron or local branches for help.

 **Pay attention to caution signs**

Caution signs in this manual remind of possible danger. Please comply with relevant safety tips below each sign. Meanwhile, you should strictly conform to all safety tips for operation environment.

 **Notice**

Considering that reasonable efforts have been made to assure accuracy of this manual, Vantron assumes no responsibility of possible missing contents and

information, errors in contents, citations, examples, and source programs.

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FCC compliance statement

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.
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Exposure to radio frequency energy：

The radiated output power of this device meets the limits of FCC radio frequency exposure limits. This device should be operated with a minimum separation distance of 20 cm (8 inches) between the equipment and a person’s body.

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.

Appendix A: How to Contact Us

If you have any problem or want to know more about our products, visit

www.vantrontech.com or contact us.

US Office: Vantron Technology, Inc. Address: 48434 Milmont Ave., Fremont, CA 94538-7324
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Email: sales@vantrontech.com

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