



USER MANUAL

VIA IVT01

Fanless low-power platform for
AIoT applications with octa-core
MediaTek i500 processor



Copyright

Copyright ©2022 VIA Technologies Incorporated. All rights reserved.

No part of this document may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language, in any form or by any means, electronic, mechanical, magnetic, optical, chemical, manual or otherwise without the prior written permission of VIA Technologies, Incorporated.

Trademarks

All trademarks are the property of their respective holders.

Disclaimer

No license is granted, implied or otherwise, under any patent or patent rights of VIA Technologies. VIA Technologies makes no warranties, implied or otherwise, in regard to this document and to the products described in this document. The information provided in this document is believed to be accurate and reliable as of the publication date of this document. However, VIA Technologies assumes no responsibility for the use or misuse of the information (including use or connection of extra device/equipment/add-on card) in this document and for any patent infringements that may arise from the use of this document. The information and product specifications within this document are subject to change at any time, without notice and without obligation to notify any person of such change.

VIA Technologies, Inc. reserves the right to make changes to the products described in this manual at any time without prior notice.

Regulatory Compliance

FCC-A Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his personal expense.

Notice 1

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

Notice 2

Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

Notice 3

The product described in this document is designed for general use, VIA Technologies assumes no responsibility for the conflicts or damages arising from incompatibility of the product. Check compatibility issue with your local sales representatives before placing an order.

Notice 4

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



Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

Battery Recycling and Disposal

- Only use the appropriate battery specified for this product.
- Do not re-use, recharge, or reheat an old battery.
- Do not attempt to force open the battery.
- Do not discard used batteries with regular trash.
- Discard used batteries according to local regulations.



Safety Precautions

- Always read the safety instructions carefully.
- Keep this User's Manual for future reference.
- All cautions and warnings on the equipment should be noted.
- Keep this equipment away from humidity.
- Put this equipment on a reliable flat surface before setting it up.
- Check the voltage of the power source and adjust to 110/220V before connecting the equipment to the power inlet.
- Do not place the power cord where people will step on it.
- Always unplug the power cord before inserting any add-on card or module.
- If any of the following situations arise, get the equipment checked by authorized service personnel:
 - The power cord or plug is damaged.
 - Liquid has entered into the equipment.
 - The equipment has been exposed to moisture.
 - The equipment is faulty or you cannot get it work according to User's Manual.
 - The equipment has been dropped and damaged.
 - The equipment has an obvious sign of breakage.
- Do not leave this equipment in extreme temperatures or in a storage temperature above 60°C (140°F). The equipment may be damaged.
- Do not leave this equipment in direct sunlight.
- Never pour any liquid into the opening. Liquid can cause damage or electrical shock.
- Do not place anything over the power cord.
- Do not cover the ventilation holes. The openings on the enclosure protect the equipment from overheating.

Box Contents

Items for IVT01

- 1 x IVT01
- 1 x Power cable
- 1 x USB cable

Ordering Information

Part Number	Description
IVT-01-1E20A0	VIA IVT01 is an Android™ system with 8" FHD LCD panel and capacitive touch screen. It is powered by the 2.0GHz MediaTek i500 octa-core processor with 4GB LPDDR4 SDRAM, the system supports Wi-Fi, Bluetooth, LTE and GPS wireless connectivity as well as 16GB eMMC storage and a CMOS FHD front camera and also includes USB 2.0 connector, Micro SIM card slot, 3.5mm audio jack, connectors to support CAN, RS-232, GPIO and power input.



Revision History

Revision	Date	Description
1.00	07/02/2022	Initial release

1. Product Overview

The VIA IVT01 is an Android™ system with 8" FHD LCD panel and capacitive touch screen. It is powered by the 2.0GHz MediaTek i500 octa-core processor with 4GB LPDDR4 SDRAM, the system supports LTE, GPS with Dead Reckoning Technology, Wi-Fi and Bluetooth wireless connectivity as well as 16GB eMMC storage and a CMOS FHD front camera.

Measuring just 220mm (W) x 37mm (H) x 145mm (D), the system integrates a set of I/O features through the side panel, including USB 2.0 connector, Micro SIM card slot, 3.5mm audio jack, connectors to support CAN, RS-232, GPIO and power input.

Through the use of built-in IoT capability by combining AI with networking technology, it creates the opportunity of VIA IVT01 in automotive industry applications, such as fleet management, vehicle tracking, in-vehicle infotainment and telematics, etc.

1.1 Key Features

- High-performance MediaTek i500 octa-core processor
- 8.0" FHD capacitive touch screen
- Support for Wi-Fi, Bluetooth, LTE and GPS wireless connectivity
- CMOS FHD front camera support
- Wide input voltage range supporting 9V~36V DC-in

1.2 Product Specifications

Processor

- MediaTek i500 Octa-Core Cortex A7 and A53 @ 2.0 GHz

System Memory

- 4GB LPDDR4 SDRAM

Storage

- 16GB eMMC Flash

Graphics

- ARM Mali-G72 high-performance GPU
- 3D graphic accelerator capable of processing 2400M pixel/sec @ 800MHz
- OpenGL ES 3.1
- OpenCL ES 1.1
- Vulkan1.0
- Supports Cadence Tensilica Vision P6 x2

Wireless Connectivity

- MediaTek MT7668
 - Dual band (2.4GHz & 5GHz) Wi-Fi5 802.11 a/b/g/n/ac RF
 - Bluetooth 5.0

Audio

- MediaTek MT6358
- Nuvoton NAU8223 Stereo Filter-Free Class-D Audio Amplifier

LTE

- SIMCom SIM7600 series miniPCIe module

USB

- SMSC USB2514BI USB 2.0 High-Speed 4-Port Hub Controller

GPS

- Locosys MC-1612-DG Dead Reckoning and Multiple GNSS with ADR/UDR Auto Switch Function

Onboard I/O

- 1 2W speaker
- 1 Built-in microphone
- 1 MIPI DSI connector
- 1 MIPI CSI-2 connector
- 1 Touch screen connector
- 1 MiniPCIe slot (supports USB 2.0 host only)
- 1 Debug UART connector (supports TX/RX)
- 4 IPEX connectors (for internal RF antennas for Wi-Fi, Bluetooth and GPS)

Coastline I/O

- 1 x Power connector to support:
 - Power Input (ACC/IGN/BAT(DCIN)/GND)
 - 1 CAN
 - 5 GPI and 1 GPO
- 1 x RS-232 connector (optional) to support:
 - 2 RS232 (TX/RX/CTS/RTS)
- 1 x USB 2.0 host 4-pin connector (software controllable)
- 1 x Micro-SIM connector
- 1 x Reset switch
- 4 x Touch key
- 1 x 3.5mm phone jack (supports Headphone-out and MIC-in)

Power Supply

- DC 9~36V with 36W
- Support intelligent vehicle power management: ACC/IGN on/off delay and power protection
- Support Input Over Voltage Protection and Short Voltage Protection

Operating System

- Android 10 with preload GMS

Operating Temperature

- -10°C ~ 60°C

Operating Humidity

- 0% ~ 90% (relative humidity ; non-condensing)

Form Factor

- 220mm (W) x 37mm (H) x 145mm (D) (8.66" x 1.46" x 5.71")

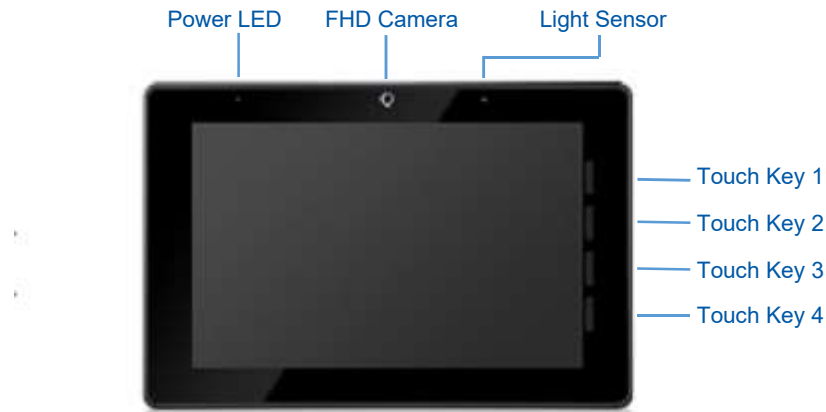


Notes:

1. As the operating temperature provided in the specifications is a result of testing performed in a testing chamber, a number of variables can influence this result. Please note that the working temperature may vary depending on the actual situation and environment. It is highly recommended to execute a solid testing program and take all variables into consideration when building the system. Please ensure that the system is stable under the required operating temperature in terms of the target application.
2. Please note that the lifespan of the onboard eMMC memory chip may vary depending on the amount of access. More frequent and larger data access on the eMMC memory will shorten its lifespan.

1.3 Layout Diagram

Front Side



Left Side



Rear Side



Right Side



Bottom Side

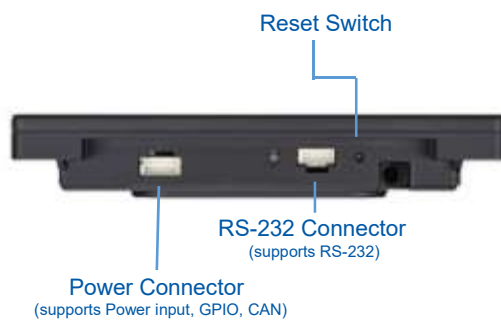


Figure 01: VIA IVT01 layout

2. Coastline I/O Connectors

This chapter provides information about the coastline connectors of the VIA IVT01 system.



Figure 02: IVT01 connector

2.1 Power Connector

The VIA IVT01 system is equipped with a power connector labeled 'POWER'. The pinouts of power connector are shown below.

Pin	Signal	Pin	Signal
1	GPI2	2	GPI1
3	GPI4	4	GPI5
5	CAN_L	6	GPI3
7	CAN_H	8	TRIGGER_D
9	VCC_BAT	10	GND
11	VCC_BAT	12	GND
13	VCC_BAT	14	GND
15	ACC_IN	16	IGN_IN

Table 01: POWER connector pinouts

2.2 RS-232 Connector

The VIA IVT01 system is equipped with a RS-232 connector labeled 'RS-232'. The pinouts of RS232 connector are shown below.

Pin	Signal	Pin	Signal
1	RS232_TXD2	2	RS232_RXD2
3	RS232_CTS2	4	RS232_RTS2
5	GND	6	NC
7	NC	8	NC
9	RS232_TXD3	10	RS232_RXD3
11	VRS232_CTS3	12	RS232_RTS3
13	GND	14	NC

Table 02: RS-232 connector pinouts

2.3 USB Connector

The VIA IVT01 system is equipped with a USB connector labeled 'USB'. The pinouts of USB connector are shown below.

Pin	Signal	Pin	Signal
1	5V	2	GND
3	USB_D-	4	USB_D+

Table 03: USB connector pinouts

3. System Installation

3.1 VESA Mount

The VIA IVT01 is equipped with a 75 x 75 mm square hole pattern on the rear cover, using M4 screws for attachment of the VESA mount holder.

Example:



VESA 75 x 75 mm

4. Software and Technical Support

4.1 Android Support

The VIA IVT01 features a complete software evaluation image featuring the Android 10 operating systems.

4.2 Technical Support and Assistance

- For utilities downloads and the latest documentation and information about the VIA IVT01, please visit our website at <https://www.viatech.com/en/products/systems/ivt01-android-tablet/>
- For technical support and additional assistance, always contact your local sales representative or distributor, or go to <https://www.viatech.com/en/support/driver-support-fag/technical-support/> for technical support.
- For OEM clients and system integrators developing a product for long-term production, other code and resources may also be made available. Please visit our website at <https://www.viatech.com/en/about/contact/> to submit a request.



Taiwan Headquarters

1F, 531 Zhong-zheng Road,
Xindian Dist., New Taipei City 231
Taiwan

Tel: 886-2-2218-5452
Fax: 886-2-2218-9860
Email: embedded@via.com.tw



USA

940 Mission Court
Fremont, CA 94539,
USA

Tel: 1-510-687-4688
Fax: 1-510-687-4654
Email: embedded@viatech.com



Japan

3-15-7 Ebisu MT Bldg. 6F,
Higashi, Shibuya-ku
Tokyo 150-0011
Japan

Tel: 81-3-5466-1637
Fax: 81-3-5466-1638
Email: embedded@viatech.co.jp



China

Tsinghua Science Park Bldg. 7
No. 1 Zongguancun East Road,
Haidian Dist., Beijing, 100084
China

Tel: 86-10-59852288
Fax: 86-10-59852299
Email: embedded@viatech.com.cn



Europe

Email: embedded@via-tech.eu