USER MANUAL

ENT-610M

1.00-04252016-093700

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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.

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.
- ☐ Lay this equipment on a reliable flat surface before setting it up.
- ☐ Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
- ☐ Place the power cord in such a way that people cannot step on it.
- ☐ Always unplug the power cord before inserting any add-on card or module.
- ☐ If any of the following situations arises, get the equipment checked by authorized service personnel:
  - The power cord or plug is damaged.
  - Liquid has penetrated into the equipment.
  - The equipment has been exposed to moisture.
  - The equipment has not worked well or you cannot get it work according to User's Manual.
  - The equipment has dropped and damaged.
  - The equipment has obvious sign of breakage.
- ☐ Do not leave this equipment in an environment unconditioned 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

Packing List

- ENT-610M board
- Ethernet/DC power transmittal cable
- Ethernet/DC Power/Audio converter board
- Audio cable
- DC-in cable

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1. Product Overview

The VIA ENT-610M is an all-in-one touch panel starter kit for In-vehicle infotainment and digital applications. It is powered by a 1.0GHz VIA Cortex A9 dual-core SoC with a power efficient graphics processor to create remarkable performance for digital signage applications.

The VIA ENT-610M provides support for extensive connectivity options, including two USB 2.0 ports, one LVDS connector, one PCAP touch-screen connector, two GPIO connectors for system buttons, one 10/100Mbps Ethernet port, and one line-out audio connector.

1.1. Key Features

- 1.0GHz VIA Cortex-A9 dual-core SoC
- Wide input voltage range supporting 9~36V DC-in
- Lockable connectors
- Optional Wi-Fi support
- Optional 10.1" projective capacitive touch screen support

1.2. Product Specifications

- **Processor:**
  - 1.0GHz VIA Cortex-A9 dual-core SoC
- **System Memory:**
  - 512MB DDR3 SDRAM
- **Storage:**
  - 4GB eMMC Flash memory
- **Boot Loader:**
  - 4MB SPI Flash ROM
- **Graphics:**
  - Mali-400 dual processor GPU
  - 2 integrated, independent 3D/2D graphics processing units
  - Graphics engine supporting OpenGL® ES 2.0 hardware acceleration
  - Supports MPEG-2, VC-1 and H.264 video decoding up to 1080p
- **LAN:**
  - ASIX AX88772CLF USB to 10/100Mbps Ethernet controller
- **Audio:**
  - VIA VT1603 SPI Audio Codec
- **Touch Screen:**
  - ZEITEC ZET6223WTA Projective capacitive touch screen controller
- **Onboard I/O:**
  - 1 X USB connector for optional USB Wi-Fi module
  - 2 X GPIO connector for system button
  - 1 X LVDS connector
  - 1 X Touch screen interface connector
  - 1 X 10/100Mbps Ethernet connector
  - 1 X Audio connector (supports Line-out)
  - 1 X DC-in connector
- **External I/O:**
  - 1 X USB 2.0 port
  - 1 X Micro SD card slot
- **Operating System:**
  - Android 4.2
- **Power Supply:**
  - 9~36V DC-in
- **Operating Temperature:**
  - 0°C ~ 45°C
- **Operating Humidity:**
  - 0% ~ 90% (relative humidity; non-condensing)
- **Form Factor:**
  - 17.5cm x 12.0cm (6.87"x4.72")

Note:

As the operating temperature provided in the specifications is a result of the test performed in VIA's 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 suggested to execute a solid testing and take all the variables into consideration when building the system. Please ensure that the system runs well under the operating temperature in terms of application.

1.3. Layout Diagram

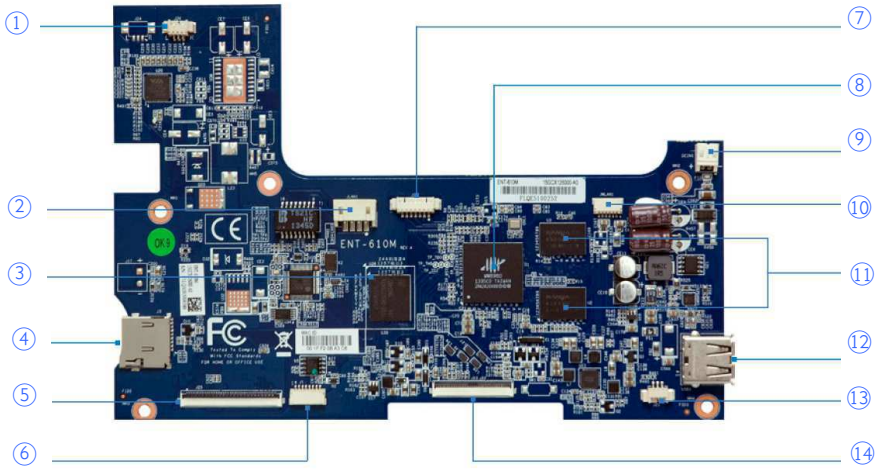

Figure 1: Layout diagram of the ENT-610M (top view)

Items	Description	Items	Description
①	Audio Line-out	⑧	VIA Cortex-A9 Dual-Core SoC
②	Ethernet	⑨	DC-in
③	eMMC	⑩	WLAN USB
④	Micro SD Card slot	⑪	DDR3 SODIMM
⑤	Touch Screen connector	⑫	USB2.0
⑥	Debug (TX/RX)	⑬	GPI for Front Button
⑦	GPI for Front Button	⑭	10.1" LVDS LCD

Table 1: Layout description of the ENT-610M (top view)

2. Ports and Connectors Pinout

2.1. Volume (J19)

Pin	Signal	Pin	Signal
1	VCC33	2	GND
3	NC	4	GPIO10 (Volume-)
5	NC	6	GPIO8 (Volume+)
7	NC		

Table 2: Volume pinout

2.2. Power Input (DCIN1)

Pin	Signal	Pin	Signal
1	GND	2	24VIN

Table 3: Power input pinout

2.3. Power/return button (J21)

Pin	Signal	Pin	Signal
1	GPIO3	2	GND
3	PWRBTN-		

Table 4: Power/return pinout

2.4. Debug port (J1)

Pin	Signal	Pin	Signal
1	UART0TXD	2	UART0RXD
3	SFCLK	4	GND
5	SFDO	6	SFDI
7	SFCS0-		

Table 5: Debug port pinout

2.5. Micro SD card slot (J3)

Pin	Signal	Pin	Signal
1	SD0DATA2	2	SD0DATA3
3	SD0CMD	4	VCC
5	SD0CLK	6	GND
7	SD0DATA0	8	SD0DATA1
9	SD0CD		

Table 6: Micro SD card slot pinout

2.6. WiFi connector (JWLAN1)

Pin	Signal	Pin	Signal
1	VIN	2	nUSBH2-
3	nUSBH2+	4	GND
5	VCC WIFI	6	NC

Table 7: WiFi connector pinout

2.7. 10/100 LAN connector (JLAN1)

Pin	Signal	Pin	Signal
1	TX+	2	TX-
3	RX+	4	RX-

Table 8: 10/100 LAN connector pinout

2.8. Line-Out (J26)

Pin	Signal	Pin	Signal
1	LINEOUT_R	2	I2S_AGND
3	LINEOUT_L		

Table 9: Line-out pinout

2.9. Type A USB connector (USB1)

Pin	Signal	Pin	Signal
1	VBUS	2	D-
3	D+	4	GND

Table 10: Type A USB connector pinout

2.10. Touch connector (J25)

Pin	Signal	Pin	Signal
1	GND	2	SENSE17
3	SENSE16	4	SENSE15
5	SENSE14	6	SENSE13
7	SENSE12	8	SENSE11
9	SENSE10	10	SENSE09
11	SENSE08	12	SENSE07
13	SENSE06	14	SENSE05
15	SENSE04	16	SENSE03
17	SENSE02	18	SENSE01
19	SENSE00	20	GND
21	GND	22	DRIVE29
23	DRIVE28	24	DRIVE27
25	DRIVE26	26	DRIVE25
27	DRIVE24	28	DRIVE23
29	DRIVE22	30	DRIVE21
31	DRIVE20	32	DRIVE19
33	DRIVE18	34	DRIVE17
35	DRIVE16	36	DRIVE15
37	DRIVE14	38	DRIVE13
39	DRIVE12	40	DRIVE11
41	DRIVE10	42	DRIVE09
43	DRIVE08	44	DRIVE07
45	DRIVE06	46	DRIVE05
47	DRIVE04	48	DRIVE03
49	DRIVE02	50	DRIVE01
51	DRIVE00	52	GND

Table 11: Touch connector pinout

2.11. LVDS connector (J22)

Pin	Signal	Pin	Signal
1	VCOM	2	VCC_LCD
3	VCC_LCD	4	NC
5	RESET	6	STBY
7	GND	8	TXOU_T0-
9	TXOU_T0+	10	GND
11	TXOU_T1-	12	TXOU_T1+
13	GND	14	TXOU_T2-
15	TXOU_T2+	16	GND
17	T_CLK-	18	T_CLK+
19	GND	20	TXOU_T3-
21	TXOU_T3+	22	GND
23	NC	24	NC
25	GND	26	NC
27	NC	28	SELB
29	AVDD_11V	30	GND
31	LED-	32	LED-
33	SHLR	34	UPDN
35	VGL	36	NC
37	NC	38	VGH
39	LED+	40	LED+

Table 12: LVDS connector pinout

Appendix A. Mating Connector Vendor Lists

The following tables listed the mating connector vendor lists of ENT-610M.

Connectors	Part No.	Mating Vendor	Mating P/N
DCIN1	99G30-02079C	ACES	86809 Series
JWLAN1	99G30-170432	ACES	87214 Series
J1	99G30-170252	ACES	87214 Series
J26, J21	99G30-170562	ACES	85206 Series
J19	99G30-170622	ACES	85206 Series
JLAN1	99G30-17094D	ACES	86809 Series

Table 13: ENT-610M mating connector vendor list

Taiwan Headquarters

1F, 531 Zhong-Zheng Road
Xindian, Taipei, 23148
Taiwan

TEL: 886.2.2218.5452
FAX: 886.2.2218.5453
Email: embedded@via.com.tw

USA

940 Mission Court
Fremont, CA 94539
USA

TEL: 1.510.683.3300
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
Haiden District, Beijing, 100084
China

TEL: 86.10.59852288
FAX: 86.10.59852299
Email: embedded@viatech.com.cn

Europe

Email: embedded@via-tech.eu