IAC-IMX93-KIT Hardware Manual

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Version Records

Version	Hardware Platform	Description	Date
V1.00	IAC-IMX93-MB V1.00	First Release	2023-11

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Notice: This manual introduces the hardware interface of the IAC-IMX93-KIT Development Board.

Ⅰ. Preface

1.1 Company Profile

Zhejiang Qiyang Intelligent Technology Co., Ltd., established in 2007, which locates in Hangzhou, Zhejiang, PRC. It is a high-end technological enterprise that specializes in exploitation, fabrication, and selling embedded computer mainboards . With 10 years of experiences, Qiyang has established the completed service chain from the design concept to mass production successfully.
The R&D team is organized by 30 more technical engineers. Qiyang focus on providing functional embedded hardware, software tool and customization solutions. It has been applied to Industrial Control, Internet of Things, New Retail, Smart Medical, Electricity Device, Environmental Surveillance, Charging Pile etc.
With the growth of the business, Qiyang has set up an SMT factory in Zhuji, Zhejiang province, which is 5000 ㎡, with a 2xSMT production line. The SMT factory performs the ISO9001 Quality Management System strictly. Relying on the solid production ability, the SMT factory's annual capacity is about a million sets, which totally guarantee the delivery date.

Qiyang has a thorough sales marketing network, professional sales ,and after-sales team to provide full technical support and service. The business has spread over 120 countries and areas, it helps the clients to introduce the products into the market efficiently and successfully.The combination and extension of research and development, production capacity, and market, that provide a solid foundation for Qiyang to provide specialized, globalized embedded hardware and software.

We offer:

l.Software/Hardware Mainboard

Based on the CPU solution from NXP,Rockchip,MTK,Renesas,TI,Atmel,Cirrus Logic etc, Qiyang provides the ARM development kit/system on module/industrial board and periphery products, paired tools and software for the user do further exploitation.

2.Customization Service

Fully taking the advantage of the technical accumulation on the ARM platform and Linux, Android, Ubuntu OS, Qiyang provides the efficient OEM/ODM service to the users.

Sincerely thanks for using Qiyang's product, we will try our best to offer you the technical supports!

1.2.IAC-IMX93-KIT Development Board Use Suggestion:

1. Please read the instructions firstly, before using the single board computer;
2. Before using, please check the packing list and see whether there is a missing file in the CD;
3. Please understand the basic structure and composition of development board, including the hardware resource allocation etc.;
4. If you need to develop on Linux operation system and flash program into the development board, in addition to this document, we also suggest reading another document ***IAC-IMX93-KIT Linux User Manual;***
5. If you need to develop on Linux operation system and flash program into the development board, in addition to this document, we also suggest reading another document ***IAC-IMX93-KIT Linux User Manual*** and ***IAC-IMX93-Kit System Flashing Manual;***
6. ***IAC-IMX93-KIT*** development board supports batch order.

Ⅱ. Production Description

2.1. Chipset Outline

IAC-IMX93-Kit development kit adopts NXP I.MX93 application processors, it delivers efficient machine learning (ML) acceleration, energy flex architecture and state-of-the-art security to support energy-efficient edge computing.i.MX 93 processors offer fast and efficient ML inferencing along with a rich set of peripherals and high-performance application cores for automotive, industrial and consumer IoT market segments.

The i.MX 93 applications processors are the first in the i.MX portfolio to integrate the scalable Arm® Cortex®-A55 core, bringing best-in-class performance and energy efficiency to Linux-based edge applications. Based on Arm's DynamIQ technology, the A55 core features the latest Armv8-A architecture extensions with dedicated instructions to accelerate machine learning (ML). The operating speed reaches up to 1.7Ghz, and it integrates a 0.5TOPS NPU unit, significantly accelerating machine learning inference.

The i.MX 93 family contains MIPI-CSI and parallel image sensor interfaces along with the NPU to support both monochrome and RGB (color) vision applications. The i.MX93 application processor offers

a 2-lane MIPI-CSI camera interface capable of supporting 1080p@60 resolution and enables direct connection to external camera module and ISP. The application processors offer capabilities including down scaling, color space conversion, de-interlacing, alpha insertion, cropping and rotation of images for machine vision and other ML-related applications.

The i.MX 93 applications processors contain a 4-lane MIPI-DSI capable of supporting 1080p60 resolution, a 4-lane LVDS and parallel display interfaces capable of 720p60 resolution. Additionally, it features a high-efficiency pixel pipeline to perform 2D graphics processing to realize cost-effective GUI solutions. It is capable of image rotation (90°, 180°, 270°), image resize, color space conversion, multiple pixel format support (RGB, YUV444, YUV422, YUV420, YUV400) and standard 2D-DMA operations.

A 250 MHz Arm® Cortex®-M33 processor performs time critical real-time compute and control. The integrated Cortex-M33 core associated with the CAN FD interfaces provides a robust local control network for industrial applications. Additionally, the built-in Arm Cortex M33 in conjunction with the NPU can be used for low-power wake-word detection.

i.MX 935X/933X BLOCK DIAGRAM:

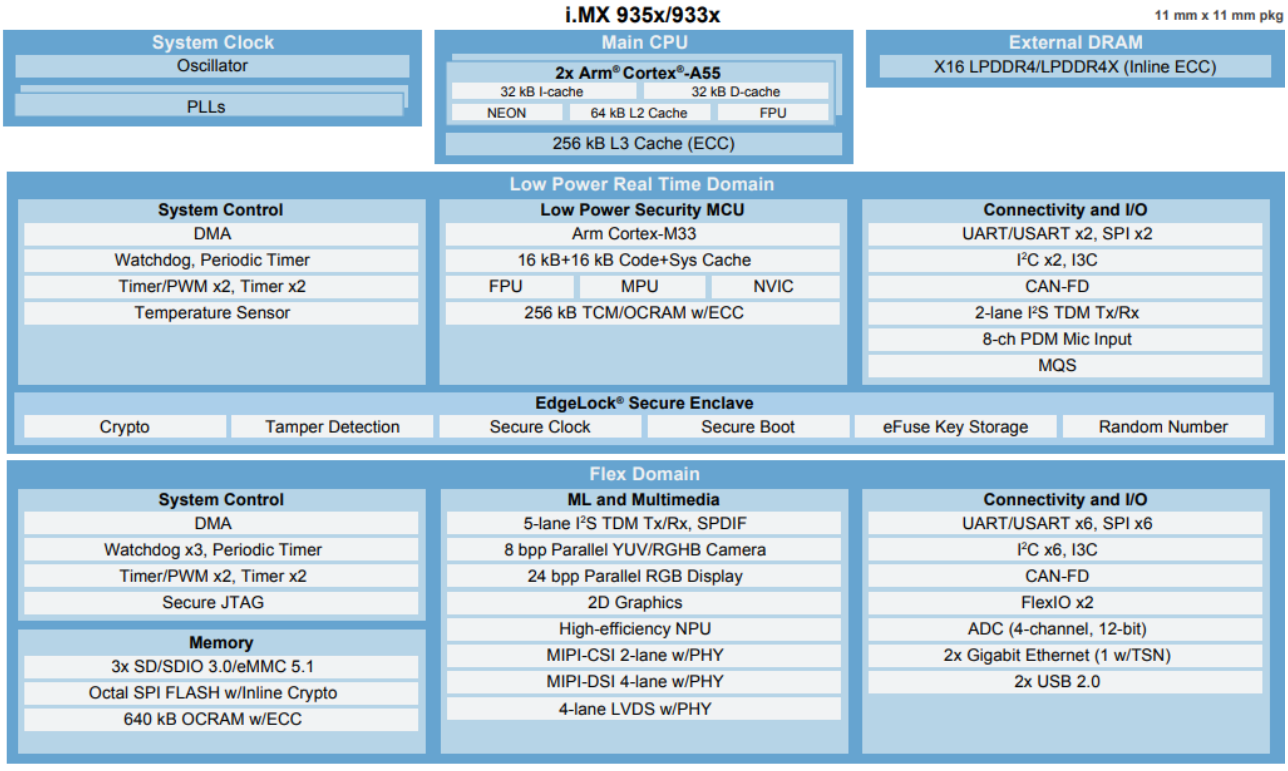

Chart 1

Detailed Parameters:

CORE	CPU	● Two Arm®Cortex®-A55 1.7GHz ● 32 KB L1 Instruction Cache，32 KB L1 Data Cache ● 64 KB unified L2 cache ● Support of 64-bit Armv8-A architecture ● 256 KB cluster L3 cache
	MCU	● Arm®Cortex®-M33 250MHz ● Support FPU、MPU、NVIC、FPB、DWT、ITM ● 256 KB tightly coupled memory (TCM)
Memory	On-chip memory	● Boot ROM (256 KB) for Cortex ®-A55 ● Boot ROM (256 KB) for Cortex®-M33 ● On-chip RAM (640 KB)
	External memory	● 16-bit DRAM interface: LPDDR4X/LPDDR4 with inline ECC ● One eMMC 5.1 (8-bit) compliance with HS400 DDR signaling to support up to 400 MB/sec ● One SDXC (4-bit, no eMMC5.1, with extended capacity) ● One SDIO (4-bit, SD/SDIO 3.01 compliance with 200 MHz SDR signaling and up ● to 100 MB/sec) ● FlexSPI Flash with support for XIP (for Cortex®-A55 in low-power mode) and support for either one Octal SPI or Quad SPI FLASH device. It also supports both Serial NOR and Serial NAND flash using the FlexSPI.
On-chip Unit	GPU	● GC7000UL with OpenCL and Vulkan support ● Supports OpenGL ES 1.1, 2.0, 3.0, OpenCL 1.2, Vulkan ● GC520L for 2D acceleration
	NPU	● 0.5 TOPS ● NPU targets 8-bit and 16-bit integer RNN ● Handles 8-bit weights
	ISI	● Supports one source of up to 2K horizontal resolution ● Supports pixel rate up to 200 Mpixel/s
LCDIF Display Controller	LCDIF	● The LCDIF can drive any of three displays: 1*MIPI DIS;1*LVDS;1*Parallel Display ● MIPI DSI: up to 1920x1200p60 ● LVDS: up to 1366x768p60 or 1280x800p60 ● Parallel Display：up to 1366x768p60 or 1280x800p60
Video Input Interface	MIPI CSI	● Complaint with MIPI CSI-2 specification v1.3 and MIPI D-PHY specification v1.2 ● Support up to 2 Rx data lanes (plus 1 Rx clock lane) ● Support 80 Mbps – 1.5 Gbps per lane data rate in high speed operation ● Support 10 Mbps data rate in low power operation
Audio		● SAI-1 supports 2-lane and SAI-3 supports 1 lane ● SAI2 support 4 lanes ● SAI2 and SAI3 support glue-less switching between PCM and stereo DSD

		Operation ● One SPDIF supports raw capture mode that can save all the incoming bits into audio buffer ● 24-bit PDM supports up to 8-microphones (4 lanes)
	USB	● Two USB 2.0 controllers and PHYs interfaces
	ENET	● Two Ethernet controllers (capable of simultaneous operation) ● One Gigabit Ethernet controller with support for Energy Efficient Ethernet (EEE), Ethernet AVB, and IEEE 1588 ● One Gigabit Ethernet controller with support for TSN in addition to EEE, Ethernet AVB, and IEEE 1588
	uSDHC	● Three Ultra Secure Digital Host Controller (uSDHC) interfaces
	CAN/CANFD	● Two Controller Area Network (FlexCAN) modules, each optionally supporting flexible data-rate (FD)
	UART	● Eight Low Power Universal Asynchronous Receiver/Transmitter (LPUART) modules
	I2C	● Eight Low Power I2C modules
	SPI	● Eight Low Power SPI (LPSPI) modules

2.2. Development Board Resources

Hardware information	CPU	NXP i.MX93 processor
	Core	i.MX93 Dual ARM® Cortex™-A55 @1.7Ghz+ 1*Cortex-M33@ 250 MHz
	NPU	Neural Processing Unit: 0.5TOPS
	ISI	Resolution is up to 2K
	RAM	1GB LPDDR4
	Flash	8GB eMMC (16GB eMMC,32GB eMMC optional)
	PMIC	NXP PCA9451 PMU
	Ethernet	2-ch network chipset adopts RGMII mode to support 10M/100M/1000Mbps Ethernet perfectly.
	WiFi	Onboard with WiFi module, it supports 2.4GHz/5GHz dual band WIFI, 802.11a/b/g/n/ac protocol.
	Communication	1-ch RS232 Debug UART
		3-ch RS232 UART (3-wire RS232)
		1-ch RS485
		2-ch CAN FD
	Display	1-ch 4-Lane MIPI_DSI display interface, the resolution is up to 1920x1200@60
		1-ch single LVDS display interface, the resolution is up to 1280x800@60, 1366x768@60
	Audio	1-ch Dual channel stereo Speaker, amplifier output
		MIC audio input
	USB	3-ch USB2.0 HOST
		1-ch USB Type-c
	Camera	1-ch MIPI-CSI (dual channel)
	Input	Standard I2C capacitive touch panel
	Extension	MINI-PCIE (USB2.0), it can connects 4G module externally
	Storage	1-ch TF card socket
	Others	Reset Circuit, Watchdog Circuit, RTC
	Power Input	+12V DC
Software Resource	Tools	Development environment: virtual machine VM16.5.0+Ubuntu 20.04 or other Linux distribution.
		Application developing and debugging tools
		Cross-compiler
		Common terminal developing and debugging tools
	System	The matched Image file for the operating system

	Image	
	Test program	Interface application demo test program and test program source code
	Source code	Bootloader, kernel, file system source code
	Manual	Hardware manual, test manual, device manual, etc
	Schematic	Schematic of the Carrier board (PDF file)
	Mechanical Chart	Carrier board mechanical drawing (DXF file)
Electrical characteristics	Layer/ Size	SOM Size:49mm*35mm 6-layer board high-precision immersion gold process
		Carrier Board Size:160mm*110mm 4-layer board high-precision immersion gold process
	Power Consumption	Power consumption ≤5W (No loaded consumption).
	Operation Temperature	-40℃ ~ +85℃
	Storage Temperature	-40℃ ~ +85℃
	Working Humidity	5% to 95%, non-condensing
	SOM Option1	1GB DDR/8GB eMMC（-40℃ ~ +85℃）

2.3 SOM Resources

IAC-IMX93-CM SOM adopts 6-layer PCB board high-precision immersion gold technology, high TG board, with reliable electrical performance and anti-interference performance. It integrated with CPU, LPDDR4, eMMC, power management chip, etc. The board-to-board connector leads to 160 pins, which fully expand the hardware resources of i.MX93, and it can be multiplexed as different signals, which the users could make the carrier board on their own needs.

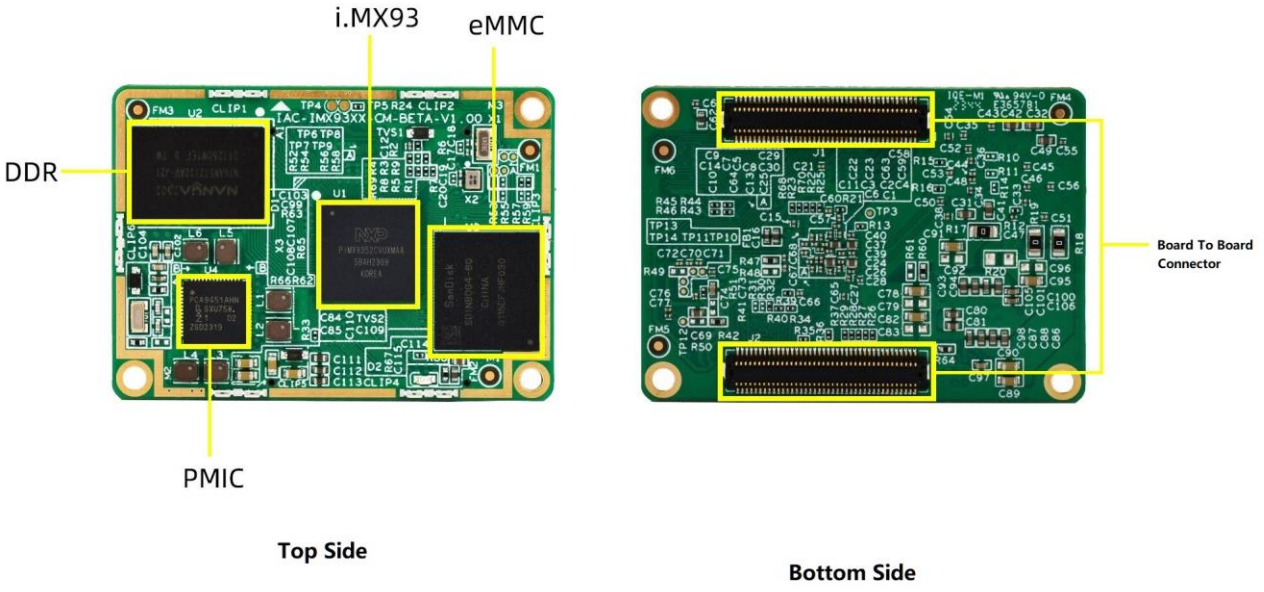

Chart 2

◆Onboard with NXP I.MX93 processor

◆Onboard with 1GB LPDDR4,8GB eMMC(Standard)

◆Adopts 6-layer PCB high precision gold immersion process

◆SOM Size:49mm*35mm, it suits for various embedded applications

◆Adopts 2*80Pin board to board connector to draw out the SOM resources

◆Adopts 5V, onboard with power management chipset

◆OS:Linux6.1.22, QT6.5.0

The pin definition of the SOM, please refer to the interface function of carrier board.

Ⅲ.Carrier Board Interface Function

Carrier Board's Block Diagram-Top Side

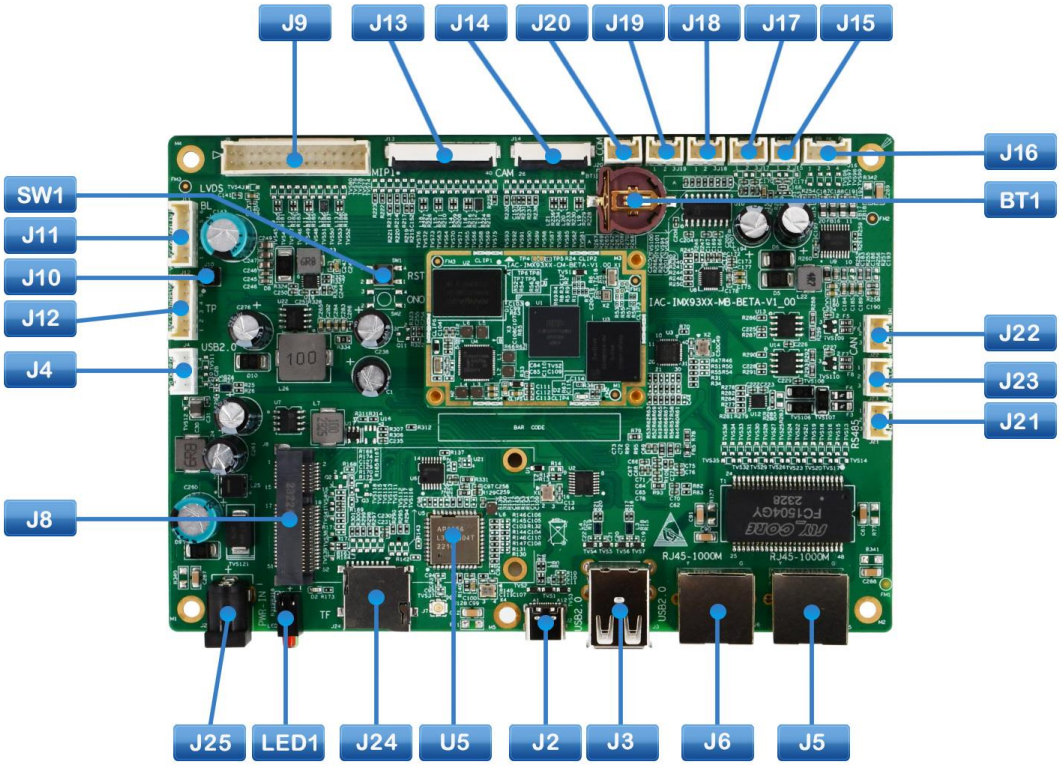

Chart 3

Carrier Board's Block Diagram-Bottom Side

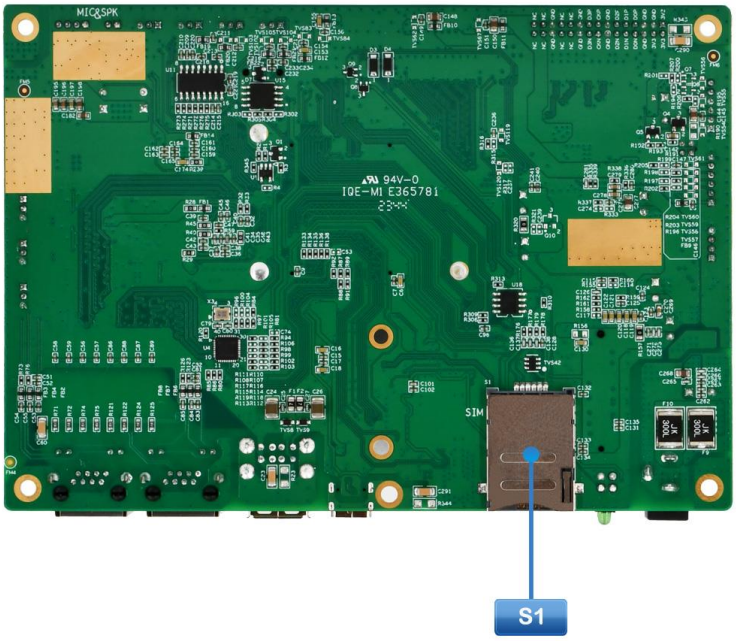

Chart 4

3.1 Interfaces' Functional Description

Label	Function
J2	TYPE-C USB2.0
J3	Double-deck TYPE-A USB2.0
J4	PHB2.0 USB2.0
J5	Gigabit Ethernet Port

J6	Gigabit Ethernet port
J7	WiFi -IPEx antenna port
J8	MINI-PCIE (USB2.0)
S1	SIM Card Socket
J9	Single channel LVDS
J10	Backlight 12V/5V switch contact pin
J11	Backlight
J12	I2C_touch
J13	MIPI-DSI
J14	MIPI-CSI
J15	MIC
J16	Dual channel stereo_ speaker
J17	RS232 (Option)
J18	RS232 (DEBUG)
J19	RS232
J20	RS232
J21	RS485
J22	CAN
J23	CAN
J24	TF Card Socket
J25	DC 12V
SW1	RESET Button
SW2	ON/OFF Button

3. 2 Pin Definition

J1A: (Pin Definition from SOM to Carrier Board through Board To Board Connector)

Multiplexing GPIO	Signal Name	PIN #	PIN#	Signal Name	Multiplexing GPIO
	MIPI_DSI_CLK_P	1	2	LVDS_D3_P	
	MIPI_DSI_CLK_N	3	4	LVDS_D3_N	
	MIPI_DSI_D0_P	5	6	LVDS_D2_P	
	MIPI_DSI_D0_N	7	8	LVDS_D2_N	
	MIPI_DSI_D1_P	9	10	LVDS_CLK_P	
	MIPI_DSI_D1_N	11	12	LVDS_CLK_N	
	MIPI_DSI_D2_P	13	14	LVDS_D1_P	
	MIPI_DSI_D2_N	15	16	LVDS_D1_N	
	MIPI_DSI_D3_P	17	18	LVDS_D0_P	
	MIPI_DSI_D3_N	19	20	LVDS_D0_N	
	GND	21	22	GND	
	MIPI_CSI_CLK_P	23	24	USB1_VBUS_3V3	
	MIPI_CSI_CLK_N	25	26	USB1_D_N	
	MIPI_CSI_D1_P	27	28	USB1_D_P	
	MIPI_CSI_D1_N	29	30		
	MIPI_CSI_D0_P	31	32	GND	
	MIPI_CSI_D0_N	33	34	USB2_D_N	
	GND	35	36	USB2_D_P	
		37	38	GND	
	CPU_ONOFF	39	40	CAN1_TXD	GPIO1_IO08
	GND	41	42	CAN1_RXD	GPIO1_IO09
GPIO_IO06	GPIO_WDT_EN	43	44	UART6_RXD	GPIO_IO05

GPIO_IO07	GPIO_WDT_FEED	45	46	UART6_TXD	GPIO_IO04
GPIO_IO09	UART7_RXD	47	48	UART7_TXD	GPIO_IO08
GPIO_IO03	GPIO_TP_nRST	49	50	GPIO_HUB_nRST	GPIO_IO10
GPIO_IO02	GPIO_TP_nINT	51	52	UART7_nRTS	GPIO_IO11
GPIO_IO01	UART5_RXD	53	54	GPIO_AUD_AMP_nSD	GPIO_IO13
GPIO_IO00	UART5_TXD	55	56	GPIO_RUN_LED	GPIO_IO012
	I2C1_SCL	57	58	UART4_RXD	GPIO_IO15
	I2C1_SDA	59	60	UART4_TXD	GPIO_IO14
	I2C2_SCL	61	62	UART4_nRTS	GPIO_IO17
	I2C2_SDA	63	64	UART4_nCTS	GPIO_IO16
GPIO1_IO12	SAI1_TXC	65	66	GPIO_4G_PWR_EN	GPIO_IO19
GPIO1_IO14	SAI1_RXD0	67	68	GPIO_4G_nDIS	GPIO_IO18
GPIO1_IO13	SAI1_TXD0	69	70	GPIO_4G_nRST	GPIO_IO20
GPIO1_IO111	SAI1_TXFS	71	72	GPIO_BL_EN	GPIO_IO21
	UART1_TXD	73	74	GPIO_BL_PWR_EN	GPIO_IO22
	UART1_RXD	75	76	PWM_OUT	GPIO_IO23
GPIO1_IO07	UART2_TXD	77	78	CAN2_RXD	GPIO_IO27
GPIO1_IO06	UART2_RXD	79	80	CAN2_TXD	GPIO_IO25

J1B:(Pin Definition from SOM to Carrier Board through Board To Board Connector）

Multiplexing GPIO	Signal Name	PIN #	PIN#	Signal Name	Multiplexing GPIO
	VCC_SYS_5V0	1	2	VCC_SYS_5V0	
	VCC_SYS_5V0	3	4	VCC_SYS_5V0	
	G VCC_SYS_5V0	5	6	VCC_SYS_5V0	
	GND	7	8	GND	

	GND	9	10	GND	
	GND	11	12	GND	
	VCC_SYS_1V8	13	14	VCC_SYS_3V3	
	VCC_SYS_1V8	15	16	VCC_SYS_3V3	
	GND	17	18	GND	
	PMIC_nRST	19	20	GND	
	WDT_nRST	21	22	PMIC_CLK_32K	
GPIO3_IO28	GPIO_WIFI_nINT	23	24	GPIO_WIFI_REG_ON	GPIO3_IO26
GPIO3_IO29	GPIO_BT_nINT	25	26	GPIO_BT_REG_ON	GPIO3_IO27
GPIO3_IO30	GPIO_CAM_nRST	27	28	GPIO_WAKE_BT	GPIO3_IO28
GPIO3_IO31	GPIO_CAM_PWDN	29	30	GPIO_CAM_PWR_EN	GPIO3_IO29
	GND	31	32	GND	
GPIO4_IO23	ENET2_RXC	33	34	ENET2_TXC	GPIO4_IO21
GPIO4_IO22	ENET2_RX_CTL	35	36	ENET2_TX_CTL	GPIO4_IO20
GPIO4_IO24	ENET2_RD0	37	38	ENET2_TD0	GPIO4_IO19
GPIO4_IO25	ENET2_RD1	39	40	ENET2_TD2	GPIO4_IO17
GPIO4_IO26	ENET2_RD2	41	42	ENET2_TD1	GPIO4_IO18
GPIO4_IO27	ENET2_RD3	43	44	ENET2_TD3	GPIO4_IO16
GPIO4_IO14	ENET2_MDC	45	46	ENET1_MDC	GPIO4_IO00
GPIO4_IO15	ENET2_MDIO	47	48	ENET1_MDIO	GPIO4_IO01
GPIO4_IO09	ENET1_RXC	49	50	ENET1_TXC	GPIO4_IO07
GPIO4_IO08	ENET1_RX_CTL	51	52	ENET1_TX_CTL	GPIO4_IO06
GPIO4_IO10	ENET1_RD0	53	54	ENET1_TD1	GPIO4_IO04
GPIO4_IO11	ENET1_RD1	55	56	ENET1_TD3	GPIO4_IO02
GPIO4_IO12	ENET1_RD2	57	58	ENET1_TD0	GPIO4_IO05

GPIO4_IO13	ENET1_RD3	59	60	ENET1_TD2	GPIO4_IO03
	GND	61	62	SD2_nCD	GPIO3_IO00
GPIO3_IO25	SD3_DATA3	63	64	SD2_CLK	GPIO3_IO01
GPIO3_IO24	SD3_DATA2	65	66	SD2_CMD	GPIO3_IO02
GPIO3_IO23	SD3_DATA1	67	68	SD2_DATA1	GPIO3_IO04
GPIO3_IO22	SD3_DATA0	69	70	SD2_DATA3	GPIO3_IO06
GPIO3_IO21	SD3_CMD	71	72	SD2_DATA0	GPIO3_IO03
GPIO3_IO20	SD3_CLK	73	74	SD2_DATA2	GPIO3_IO05
	VCC_SD2	75	76	VCC_SD_3V3	
GPIO_IO29	GPIO_ENET2_nRST	77	78	GPIO_ENET1_nRST	GPIO_IO26
GPIO_IO28	GPIO_ENET2_nINT	79	80	GPIO_ENET1_nINT	GPIO0_IO24

J15：MIC

PIN#	Signal Name
1	AUD_MIC+
2	AUD_MIC-

J16: Dual Channel Stereo_Speaker Output (Amplifier)

PIN#	Signal Name
1	AUD_AMP_OUTPL
2	AUD_AMP_OUTNL
3	AUD_AMP_OUTPR
4	AUD_AMP_OUTNR

J18: Debug UART (RS232)

PIN#	Signal Name

1	TXD
2	RXD
3	GND

J17/J19/J20:RS232

PIN#	Signal Name
1	TXD
2	RXD
3	GND

J21:RS485

PIN#	Signal Name
1	RS485_B
2	RS485_A
3	GND

J22/J23: CAN

PIN#	Signal Name
1	CANH
2	CANL
3	GND

J12: I2C (Touch Panel Port)

PIN#	Signal Name
1	VCC_EXT_3V3
2	TP_I2C_SCL

3	TP_I2C_SDA
4	TP_nINT
5	TP_nRST
6	GND

J11: BL (LCD Backlight port)

PIN#	Signal Name
1	VCC_BL（5.0V/12.0V）
2	VCC_BL（5.0V/12.0V）
3	GND
4	GND
5	LED_EN（3.3V/5.0V）
6	LED_PWM（PWM）

J10:5.0V/12.0V Jumper

Signal Name	PIN#	PIN#	Signal Name
VCC_EXT_12V0	1	2	VCC_BL
VCC_EXT_5V0	3	4	VCC_BL

J13：MIPI-DSI

PIN#	Signal Name
1	LCD1_TP_I2C_SDA
2	LCD1_TP_I2C_SCL
3	LCD1_TP_nRST
4	LCD1_TP_nINT
5	LCD1_BL_EN

6	VCC_EXT_5V0（VCC-5.0V）
7	VCC_EXT_5V0（VCC-5.0V）
8	VCC_EXT_5V0（VCC-5.0V）
9	VCC_EXT_5V0（VCC-5.0V）
10	GND
11	GND
12	GND
13	NC
14	LCD1_nRST
15	NC
16	GND
17	DSI_D3_N
18	DSI_D3_P
19	GND
20	DSI_D0_N
21	DSI_D0_P
22	GND
23	DSI_CLK_N
24	DSI_CLK_P
25	GND
26	DSI_D1_N
27	DSI_D1_P
28	GND
29	DSI_D2_N
30	DSI_D2_P
31	GND

32	LCD1_BL_PWM
33	GND
34	GND
35	GND
36	GND
37	VCC_EXT_12V0（VCC-12.0V）
38	VCC_EXT_12V0（VCC-12.0V）
39	VCC_EXT_12V0（VCC-12.0V）
40	VCC_EXT_12V0（VCC-12.0V）

J9：LVDS

Signal Name	PIN#	PIN#	Signal Name
VCC_EXT_3V3	1	2	VCC_EXT_3V3
GND	3	4	VCC_EXT_3V3
GND	5	6	GND
LCD0_D0_P	7	8	LCD0_D0_N
LCD0_D1_P	9	10	LCD0_D1_N
LCD0_D2_P	11	12	LCD0_D2_N
GND	13	14	GND
LCD0_CLK_P	15	16	LCD0_CLK_N
LCD0_D3_P	17	18	LCD0_D3_N
GND	19	20	GND
NC	21	22	NC
NC	23	24	NC
GND	25	26	GND
NC	27	28	NC

NC	29	30	NC

J14: MIPI-CSI

PIN#	Signal Name
1	VCC_EXT_5V0（VCC-5.0V）
2	GND
3	VCC_EXT_3V3（VCC-3.3V）
4	VCC_EXT_3V3（VCC-3.3V）
5	GND
6	CSI1_CK_N
7	CSI1_CK_P
8	GND
9	CSI1_D0_N
10	CSI1_D0_P
11	GND
12	CSI1_D1_N
13	CSI1_D1_P
14	GND
15	NC
16	NC
17	GND
18	NC
19	NC
20	GND
21	CSI1_I2C_SDA
22	CSI1_I2C_SCL

23	CSI1_PWDN
24	CSI1_nRST
25	GND
26	CSI1_PWR_EN

J4：USB2.0

PIN#	Signal Name
1	VCC_EXT_5V0（VCC-5.0V）
2	HUB_DP3_DM
3	HUB_DP3_DP
4	GND

Ⅳ.Structure & Size:

Unit of measurement: mm, if needs the receptacle's size, please email us : supports@qiyangtech.com;

4.1 SOM Dimension

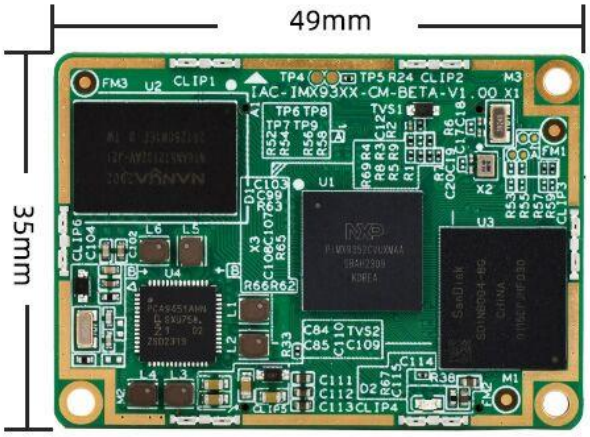

Chart 5

4.2 Carrier Board Dimension

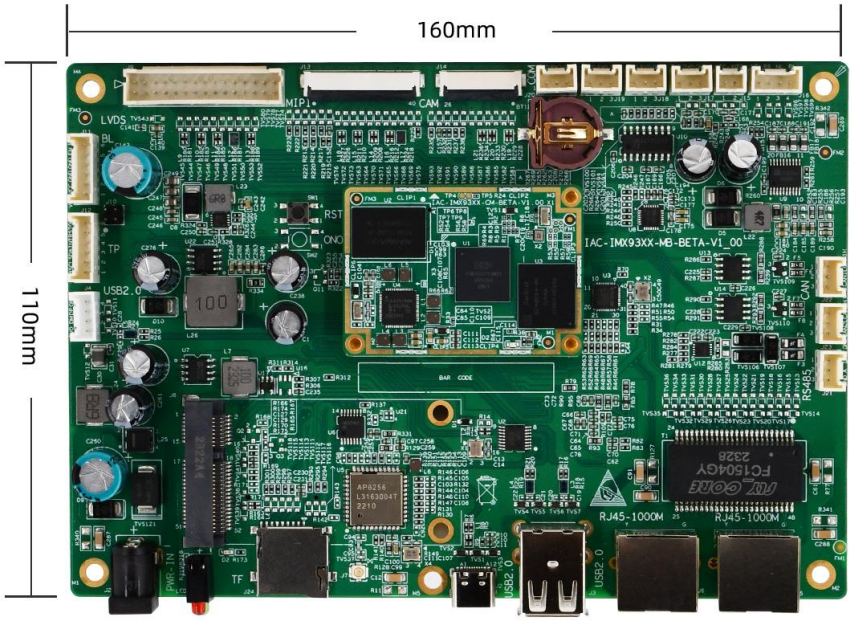

Chart 6

Ⅴ.Connection Picture

Take a notice about the location of the SOM （Below Picture）

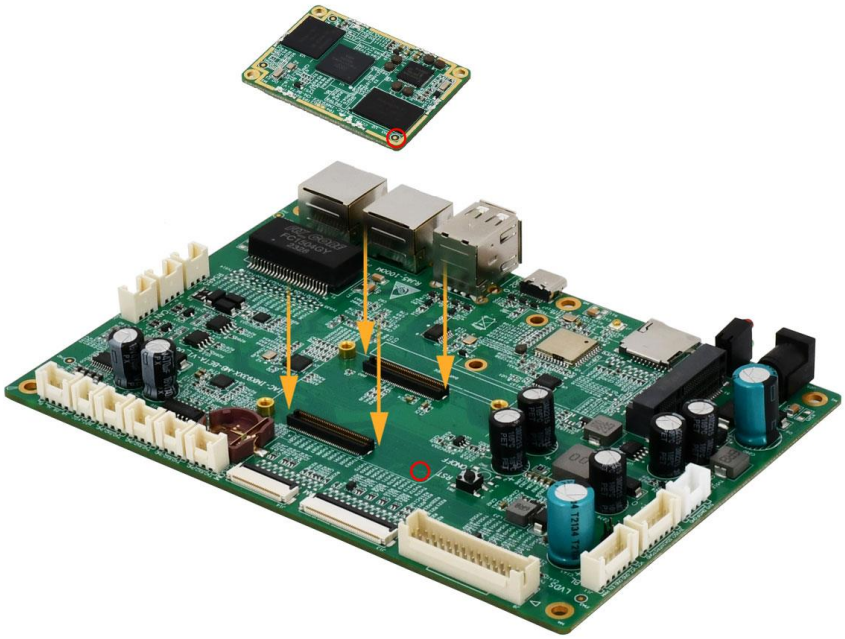

Chart 7

Ⅵ.Electrical Property

Items	Parameters
Operation Temp.	-40℃ ~ +85℃
Storage Temp.	-40℃ ~ +85℃
Humidity	5%~95%, non-condensing
SOM Dimension	49mm*35mm,6-layer high precision immersion gold process
Carrier Board Dimension	160mm*110mm,4-layer high precision immersion gold process
Power Consumption	5W, non-loaded consumption
Power	DC12V/2.5A

Ⅶ.Software Description:

IAC-IMX8MM-KIT provides software support, mainly Linux.

IAC-IMX93-KIT Linux User Manual introduces how to establish and use the development environment in Linux OS specifically. If you need details, please refer to that manual.

Ⅷ.Remark

1. Before connecting to LCD, please confirm LCD power specification.
2. Please use the original connecting accessories to avoid damaging the main board.
3. We ensure offering communication technology support through E-mail, telephone for lifelong technical support service.
4. We ensure offering 6-months repair service for free, if malfunction occurs in warranty because of quality problem. Under that circumstance, please contact our retailer or our company with purchase receipt within warranty period, we are willing to repair or replace.
5. Under these circumstances, we do not offer repair for free:

● Over warranty time;

● Do not attach purchase receipt;

● Liquid inlet, damp or mold;

● Malfunction and damage is not due to product quality but drops, intense sharking, arbitrarily modify, disoperation after purchase;

● Damage of force majeure.

6. We reserve intellectual property for the software and hardware technical data of **IAC-IMX93-KIT**; users can only use them for teaching, testing, researching. Shall not be engaged in any commercial purpose. Shall not distribute them on the Internet. Shall not intercept, modify them to tamper copyright.
7. We accept batch order; we can offer technical support and service.

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