DEBIX SOM A User Guide

Version: V2.0 (2023-08)

Complied by: Polyhex Technology Company Limited (http://www.polyhex.net/)

DEBIX SOM A is the first System on Module in the DEBIX industrial computer family. Just like DEBIX Model A single board computer, it is based on NXP i.MX 8M Plus processor with a Neural Processing Unit (NPU) operating at up to 2.3 TOPS, bringing us the same powerful system performance.

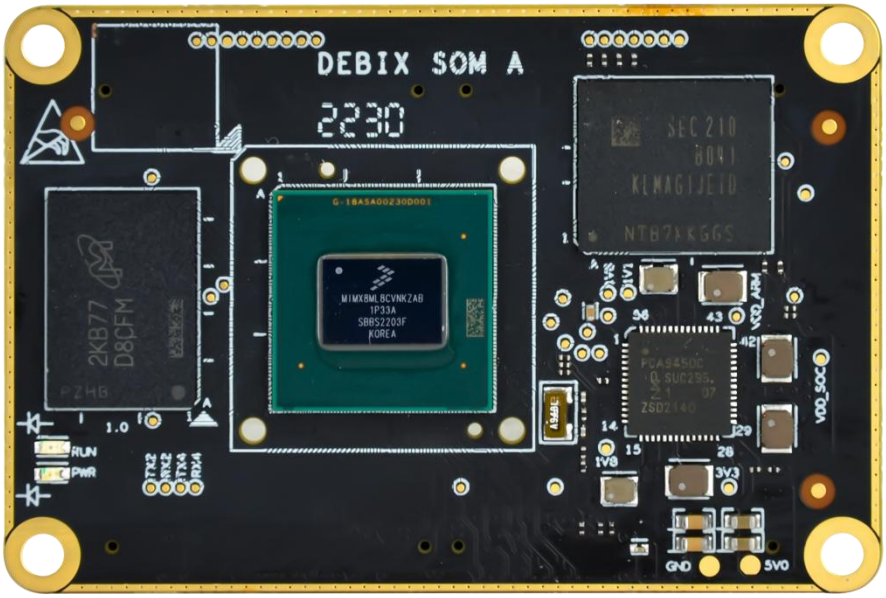

Figure 1 DEBIX SOM A

REVISION HISTORY		
Rev.	**Date**	**Description**
1.0	2022.12.01	First edition
1.1	2023.02.23	Added Chapter 1.6 Accessories cable for DEBIX SOM A I/O Board.
1.2	2023.04.23	Added eMMC formatting procedure and camera adapter board contents.
2.0	2023.07.29	Overall optimization of documentation, separate user manual for add-on boards.

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Chapter 1 Security

1.1. Safety Precaution

This document inform how to make each cable connection. In most cases, you will simply need to connect a standard cable.

Table 1 Terms and conventions

Symbol	Meaning
Warning! 	Always disconnect the power cord from the chassis whenever there is no workload required on it. Do not connect the power cable while the power is on. A sudden rush of power can damage sensitive electronic components. Only experienced electricians should open the chassis.
Caution! 	Always ground yourself to remove any static electric charge before touching *DEBIX* product. Modern electronic devices are very sensitive to electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag.

1.2. Safety Instruction

To avoid malfunction or damage to this product please observe the following:

1．Disconnect the device from the DC power supply before cleaning. Use a damp cloth. Do not use liquid detergents or spray-on detergents.

2．Keep the device away from moisture.

3．During installation, set the device down on a reliable surface. Drops and bumps will lead to damage.

4．Before connecting the power supply, ensure that the voltage is in the required range, and the way of wiring is correct.

5．Carefully put the power cable in place to avoid stepping on it.

6．If the device is not used for a long time, power it off to avoid damage caused by sudden

overvoltage.

7. Do not pour liquid into the venting holes of the enclosure, as this could cause fire or electric shock.

8. For safety reasons, the device can only be disassembled by professional personnel.

9. If one of the following situations occur, get the equipment checked by service personnel:

- The power cord or plug is damaged.
- Liquid has penetrated into the equipment.
- The equipment has been exposed to moisture.
- The equipment does not work well, or you cannot get it to work according to the user's manual.
- The equipment has been dropped and damaged.
- The equipment has obvious signs of breakage.

10. Do not place the device outside the specified ambient temperature range. This will damage the machine. It needs to be kept in an environment at controlled temperature.

11. Due to the sensitive nature of the equipment, it must be stored in a restricted access location, only accessible by qualified engineer.

DISCLAIMER: Polyhex disclaims all responsibility for the accuracy of any statement of this instructional document.

1.3. Declaration of Compliance

This product has passed the following certifications:

Table 2 Compliance Certification

Symbol	Meaning
CE	This equipment has passed CE certified.
RoHS	This equipment is manufactured in compliance with RoHS regulations.

	This equipment has passed UKCA certified.
	This equipment has passed FCC certified.
	This equipment has passed PSE certified.
	This equipment has passed C-Tick certified.
	This equipment is manufactured in compliance with RCM regulations.

1.4. Technical Support

1. Visit DEBIX website https://www.debix.io/ where you can find the latest information about the product.
2. Contact your distributor, sales representative or Polyhex's customer service center for technical support if you need additional assistance. Please have the following info ready before you call:
    - Product name and memory size
    - Description of your peripheral attachments
    - Description of your software(operating system, version, application software, etc.)
    - A complete description of the problem
    - The exact wording of any error messages

Discord Community (recommended): https://discord.com/invite/adaHHaDkH2

Email: *info@polyhex.net*

Chapter 2 DEBIX SOM A Introduction

DEBIX SOM A is an embedded SOM (system on module) board based on NXP i.MX 8M Plus, with commercial-grade and industrial-grade CPU options, it can be widely used in machine vision and machine learning, advanced multimedia, smart city, edge Computing and other scenarios that require high reliability.

Main features:

- Powerful quad-core Arm® Cortex®-A53 CPU with a neural processing unit (NPU) with a computing speed up to 2.3TOPS
- Two vision signal processors (ISP) and two camera inputs for efficient vision system
- In terms of multimedia, video codec (including H.265, H.264), 3D/2D image acceleration and various audio and voice functions
- Real-time control of Cortex-M7.
- Powerful network control provided by CAN FD, supporting dual Gigabit Ethernet, one of which supports TSN
- High industrial reliability with DRAM inline ECC
- Specially designed for harsh environmental conditions and temperature changes, the wide temperature range of the CPU from -40°C to 105°C makes it suitable for extreme industrial environments, transportation, industrial control and other fields.
- Support for Ubuntu, Android, Yocto, Windows 10 IoT

2.1. Overview

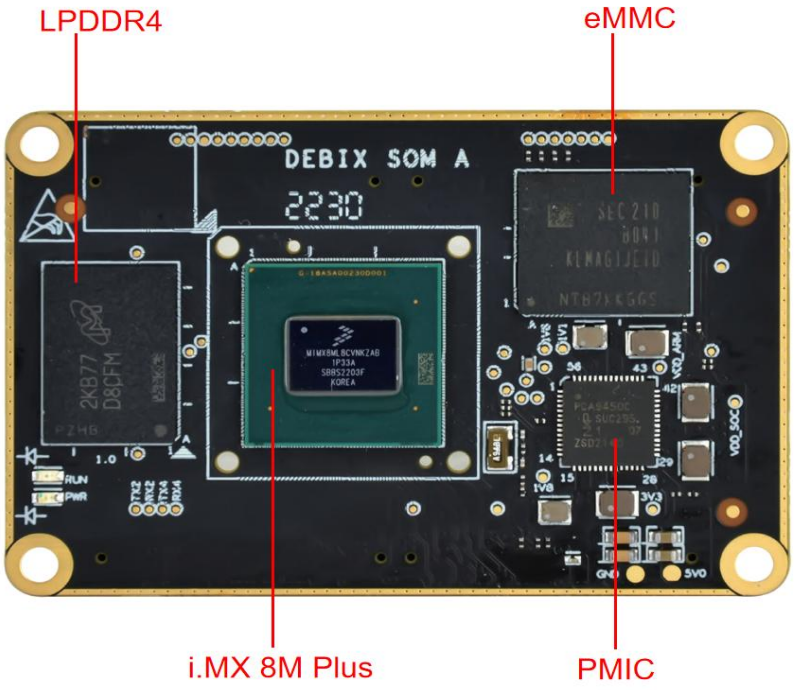

Figure 2 DEBIX SOM A Front

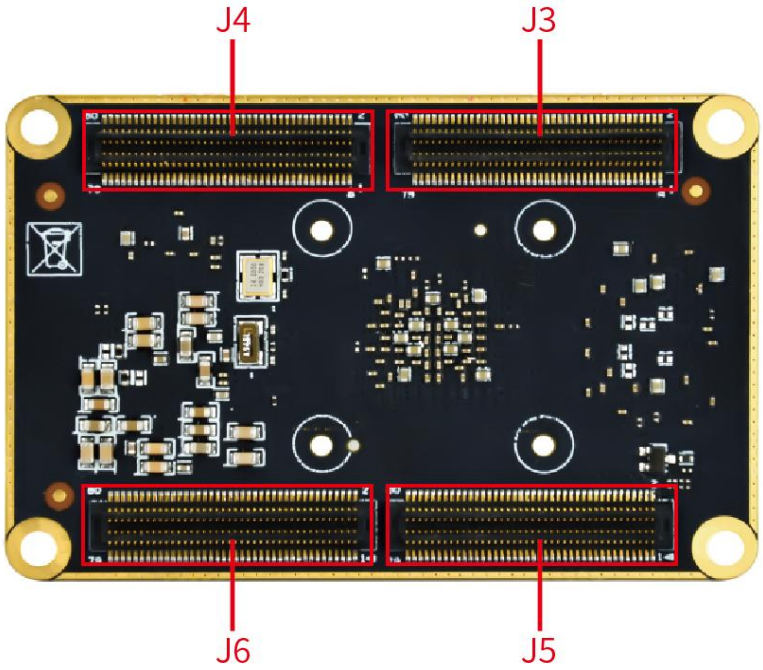

Figure 3 DEBIX SOM A Back

DEBIX SOM A utilizes NXP i.MX 8M Plus as Soc, supports dual Gigabit Ethernet, dual image signal processor and dual camera input, the data specifications are as follows:

Table 3 DEBIX SOM A specification

System	
CPU	i.MX 8M Plus, 4 x Cortex-A53 up to 1.8GHz, with 2.3TOPS computing power NPU, and C520L 3D GPU and GC7000UltraLite 3D GPU
Memory	2GB LPDDR4 (1GB/4GB/8BG optional)
Storage	1) Micro SD card communication interface (supports 8GB/16GB/32GB/64GB/128GB/256GB MicroSD card capacity) 2) Onboard eMMC (8GB/16GB/32GB/64GB/128GB/256GB optional)
OS	Ubuntu, Android11, Yocto-L5.10.72_2.2.0, Windows 10 IoT Enterprise **NOTE** Only 8GB LPDDR4 supports Windows 10 IoT Enterprise.
Communication	
Gigabit Network	2 x Gigabit Ethernet controller, one of which supports Time Sensitive Networking (TSN)
Video & Audio	
HDMI	1 x HDMI 2.0a, supports 3840 x 2160 @30Hz, 1920 x 1080 @120Hz, 1920 x 1080 @60Hz
LVDS	1 x LVDS, supports 4Lane and 8Lane
MIPI DSI	1 x MIPI DSI, supports 2560 x 1080 @60Hz
MIPI CSI	2 x MIPI CSI
Audio	Up to 6 x SAI (Simultaneous Audio Interface), HiFi4 DSP, 1 x SPDIF IN, 1 x SPDIF OUT **NOTE** 1 x SAI 8 TX and 8 RX channels, 1 x SAI 4 TX and 4 RX channels, 2 x SAI 2 TX and 2 RX channels, 2x SAI 1 TX and 1RX channels, each SAI supports I2S and AC97

External I/O Interface	
USB	2 x USB 3.0
UART	Up to 4 x UART
I2C	Up to 6 x I2C, leading to five I2C, i.e. I2C2~I2C6 (2 of them are multiplexed as SD1), I2C1 can't be configured.
SDIO	2 x SDIO 3.0
SPI	Up to 3 x ECSPI
PCIe	1 x PCIe Gen3
CAN	2 x CAN
GPIO	Default 13 x GPIO, other function pins can be configured as GPIO through software
Power Supply	
Power Input	3.5V~5V/2A
Mechanical & Environmental	
Connector	4 x double-sided contact board-to-board Plug connectors (model BB51024A-R80-10-32), 2 x 40pin/0.5mm pitch, matching various socket heights
Size (L x W x H)	60.0mm x 40.0mm x 5.6mm
Weight	23g
Operating Temperature	1) Industrial grade: -20°C~70°C 2) Industrial grade: -40°C~85°C

2.2. Composition

DEBIX SOM A consists of different computer components. The most important component is the "brain" of the computer, the system-on-chip (SoC) in the center of the motherboard.

The SoC contains most of the components of the computer, often containing both the central

processing unit (CPU) and the graphics processing unit (GPU). DEBIX SOM A has Random Memory (RAM), eMMC, and PMIC (PCA9450C), which is used to manage the power devices of the host machine, as shown in the figure below:

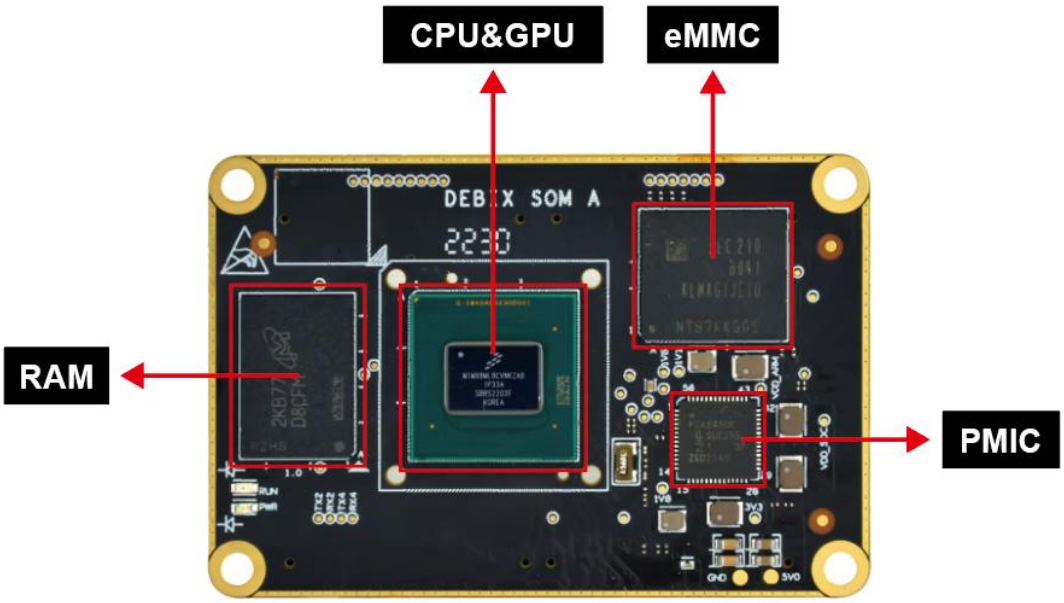

Figure 4 DEBIX SOM A

2.3. Interface

DEBIX SOM A has four external board-to-board Plug connectors, the model is BB51024A-R80-10-32, 2x 40pin/0.5mm pitch, matching four socket connectors of different heights, the model is BB51024W-R80- 30-32, BB51024W-R80-35-32, BB51024W-R80-40-32, BB51024W-R80-45-32, used to connect DEBIX SOM A I/O Board.

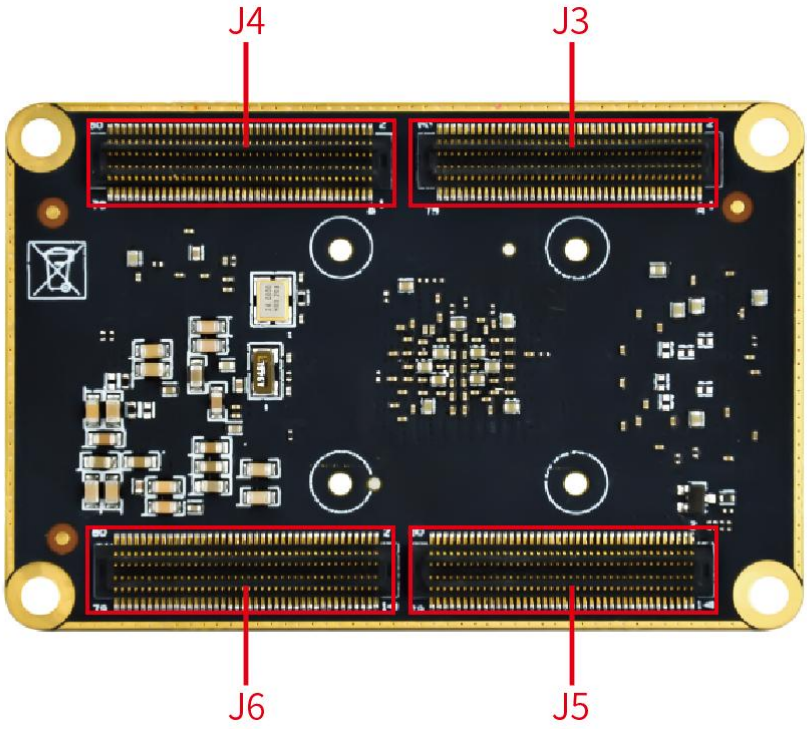

Figure 5

The table below lists the pinouts for the four connectors of DEBIX SOM A, as well as the corresponding CPU pin names for each pin.

Table 4 Header description of Pinout form

Table Column Name	Meaning
Default	The function pin definition we are using now (the definition given in the schematic diagram)
BALL_NAME	The pin name of the corresponding CPU
BALL	CPU pin number

2.3.1. J3 Pinout

Table 5 J3 Pinout

Pin	Default	BALL_NAME	BALL	NOTE
Pin1	GND			
Pin2	GND			

Pin3	GPIO1_IO06	GPIO1_IO06	A3	NVCC_GPIO, 1V8, Input with PD
Pin4	GPIO1_IO15	GPIO1_IO15	B5	NVCC_GPIO, 1V8, Input with PD
Pin5	GPIO1_IO05	GPIO1_IO05	B4	NVCC_GPIO, 1V8, Output high during reset, input with PU after reset
Pin6	GPIO1_IO14	GPIO1_IO14	A4	NVCC_GPIO, 1V8, Input with PD
Pin7	GPIO1_IO01	GPIO1_IO01	E8	NVCC_GPIO, 1V8, Output low during reset, input with PD after reset
Pin8	GPIO1_IO13	GPIO1_IO13	A6	NVCC_GPIO, 1V8, Input with PD
Pin9	GPIO1_IO00	GPIO1_IO00	A7	NVCC_GPIO, 1V8, Input with PD
Pin10	GPIO1_IO12	GPIO1_IO12	A5	NVCC_GPIO, 1V8, Input with PD
Pin11	GND			
Pin12	GPIO1_IO11	GPIO1_IO11	D8	NVCC_GPIO, 1V8, Input with PD
Pin13	USB1_RXN	USB1_RX_N	B9	VDD_USB_3P3, 3V3, Input
Pin14	GPIO1_IO10	GPIO1_IO10	B7	NVCC_GPIO, 1V8, Input with PD
Pin15	USB1_RXP	USB1_RX_P	A9	VDD_USB_3P3, 3V3, Input
Pin16	GPIO1_IO09	GPIO1_IO09	B8	NVCC_GPIO, 1V8, Input with PD
Pin17	GND			
Pin18	GPIO1_IO08	GPIO1_IO08	A8	NVCC_GPIO, 1V8, Input with PD
Pin19	USB1_TXN	USB1_TX_N	B10	VDD_USB_3P3, 3V3, Output
Pin20	GPIO1_IO07	GPIO1_IO07	F6	NVCC_GPIO, 1V8, Input with PD
Pin21	USB1_TXP	USB1_TX_P	A10	VDD_USB_3P3, 3V3, Output
Pin22	GND			
Pin23	GND			
Pin24	USB1_DN	USB1_D_N	E10	VDD_USB_3P3, 3V3, Input
Pin25	USB2_RXN	USB2_RX_N	B12	VDD_USB_3P3, 3V3, Input
Pin26	USB1_DP	USB1_D_P	D10	VDD_USB_3P3, 3V3, Input
Pin27	USB2_RXP	USB2_RX_P	A12	VDD_USB_3P3, 3V3, Input

Pin28	GND			
Pin29	GND			
Pin30	USB2_DN	USB2_D_N	E14	VDD_USB_3P3, 3V3, Input
Pin31	USB2_TXN	USB2_TX_N	B13	VDD_USB_3P3, 3V3, Output
Pin32	USB2_DP	USB2_D_P	D14	VDD_USB_3P3, 3V3, Input
Pin33	USB2_TXP	USB2_TX_P	A13	VDD_USB_3P3, 3V3, Output
Pin34	GND			
Pin35	GND			
Pin36	USB1_VBUS_3V3	USB1_VBUS	A11	VDD_USB_3P3, 3.3V, Input
Pin37	PCIE_CLKN	PCIE_REF_PAD_CLK_N	E16	VDD_PCI_1P8, 1V8, High-Z
Pin38	USB2_VBUS_3V3	USB2_VBUS	D12	VDD_USB_3P3, 3.3V, Input
Pin39	PCIE_CLKP	PCIE_REF_PAD_CLK_P	D16	VDD_PCI_1P8, 1V8, High-Z
Pin40	JTAG_TMS	JTAG_TMS	G14	NVCC_JTAG, 1V8, Input with PU
Pin41	GND			
Pin42	JTAG_TDO	JTAG_TDO	F14	NVCC_JTAG, 1V8, Input with PU
Pin43	PCIE_RXN	PCIE_RXN_N	B14	VDD_PCI_1P8, 1V8, Input, High-Z
Pin44	JTAG_TDI	JTAG_TDI	G16	NVCC_JTAG, 1V8, Input with PU
Pin45	PCIE_RXP	PCIE_RXN_P	A14	VDD_PCI_1P8, 1V8, Input, High-Z
Pin46	JTAG_MOD	JTAG_MOD	G20	NVCC_JTAG, 1V8, Input with PD
Pin47	GND			
Pin48	JTAG_TCK	JTAG_TCK	G18	NVCC_JTAG, 1V8, Input with PU
Pin49	PCIE_TXN	PCIE_TXN_N	B15	VDD_PCI_1P8, 1V8, Output, High-Z
Pin50	GND			
Pin51	PCIE_TXP	PCIE_TXN_P	A15	VDD_PCI_1P8, 1V8, Output, High-Z
Pin52	CSI1_DN0	MIPI_CSI1_D0_N	E18	VDD_MIPI_1P8, 1V8, Input
Pin53	GND			
Pin54	CSI1_DP0	MIPI_CSI1_D0_P	D18	VDD_MIPI_1P8, 1V8, Input

Pin55	DSI_DN0	MIPI_DSI1_D0_N	B16	VDD_MIPI_1P8, 1V8, Output low
Pin56	GND			
Pin57	DSI_DP0	MIPI_DSI1_D0_P	A16	VDD_MIPI_1P8, 1V8, Output low
Pin58	CSI1_DN1	MIPI_CSI1_D1_N	E20	VDD_MIPI_1P8, 1V8, Input
Pin59	DSI_DN1	MIPI_DSI1_D1_N	B17	VDD_MIPI_1P8, 1V8, Output low
Pin60	CSI1_DP1	MIPI_CSI1_D1_P	D20	VDD_MIPI_1P8, 1V8, Input
Pin61	DSI_DP1	MIPI_DSI1_D1_P	A17	VDD_MIPI_1P8, 1V8, Output low
Pin62	GND			
Pin63	GND			
Pin64	CSI1_CKN	MIPI_CSI1_CLK_N	E22	VDD_MIPI_1P8, 1V8, Input
Pin65	DSI_CKN	MIPI_DSI1_CLK_N	B18	VDD_MIPI_1P8, 1V8, Output low
Pin66	CSI1_CKP	MIPI_CSI1_CLK_P	D22	VDD_MIPI_1P8, 1V8, Input
Pin67	DSI_CKP	MIPI_DSI1_CLK_P	A18	VDD_MIPI_1P8, 1V8, Output low
Pin68	GND			
Pin69	GND			
Pin70	CSI1_DN2	MIPI_CSI1_D2_N	E24	VDD_MIPI_1P8, 1V8, Input
Pin71	DSI_DN2	MIPI_DSI1_D2_N	B19	VDD_MIPI_1P8, 1V8, Output low
Pin72	CSI1_DP2	MIPI_CSI1_D2_P	D24	VDD_MIPI_1P8, 1V8, Input
Pin73	DSI_DP2	MIPI_DSI1_D2_P	A19	VDD_MIPI_1P8, 1V8, Output low
Pin74	GND			
Pin75	DSI_DN3	MIPI_DSI1_D3_N	B20	VDD_MIPI_1P8, 1V8, Output low
Pin76	CSI1_DN3	MIPI_CSI1_D3_N	E26	VDD_MIPI_1P8, 1V8, Input
Pin77	DSI_DP3	MIPI_DSI1_D3_P	A20	VDD_MIPI_1P8, 1V8, Output low
Pin78	CSI1_DP3	MIPI_CSI1_D3_P	D26	VDD_MIPI_1P8, 1V8, Input
Pin79	GND			
Pin80	GND			

2.3.2. J4 Pinout

Table 6 J4 Pinout

Pin	Default	BALL_NAME	BALL	NOTE
Pin1	GND			
Pin2	GND			
Pin3	LVDS1_TX0_P	LVDS1_D0_P	A26	VDD_LVDS_1P8, 1V8
Pin4	CSI2_DN3	MIPI_CSI2_D3_N	B21	VDD_MIPI_1P8, 1V8, Input
Pin5	LVDS1_TX0_N	LVDS1_D0_N	B26	VDD_LVDS_1P8, 1V8
Pin6	CSI2_DP3	MIPI_CSI2_D3_P	A21	VDD_MIPI_1P8, 1V8, Input
Pin7	GND			
Pin8	GND			
Pin9	LVDS1_TX1_P	LVDS1_D1_P	A27	VDD_LVDS_1P8, 1V8
Pin10	CSI2_DN2	MIPI_DSI2_D2_N	B22	VDD_MIPI_1P8, 1V8, Input
Pin11	LVDS1_TX1_N	LVDS1_D1_N	B27	VDD_LVDS_1P8, 1V8
Pin12	CSI2_DP2	MIPI_DSI2_D2_P	A22	VDD_MIPI_1P8, 1V8, Input
Pin13	GND			
Pin14	GND			
Pin15	LVDS1_CLK_P	LVDS1_CLK_P	A28	VDD_LVDS_1P8, 1V8
Pin16	CSI2_CKN	MIPI_CSI2_CLK_N	B23	VDD_MIPI_1P8, 1V8, Input
Pin17	LVDS1_CLK_N	LVDS1_CLK_N	B28	VDD_LVDS_1P8, 1V8
Pin18	CSI2_CKP	MIPI_CSI2_CLK_P	A23	VDD_MIPI_1P8, 1V8, Input
Pin19	GND			
Pin20	GND			
Pin21	LVDS1_TX2_P	LVDS1_D2_P	B29	VDD_LVDS_1P8, 1V8
Pin22	CSI2_DN1	MIPI_CSI2_D1_N	B24	VDD_MIPI_1P8, 1V8, Input
Pin23	LVDS1_TX2_N	LVDS1_D2_N	C28	VDD_LVDS_1P8, 1V8
Pin24	CSI2_DP1	MIPI_CSI2_D1_P	A24	VDD_MIPI_1P8, 1V8, Input

Pin25	GND			
Pin26	GND			
Pin27	LVDS1_TX3_P	LVDS1_D3_P	C29	VDD_LVDS_1P8, 1V8
Pin28	CSI2_DN0	MIPI_CSI2_D0_N	B25	VDD_MIPI_1P8, 1V8, Input
Pin29	LVDS1_TX3_N	LVDS1_D3_N	D28	VDD_LVDS_1P8, 1V8
Pin30	CSI2_DP0	MIPI_CSI2_D0_P	A25	VDD_MIPI_1P8, 1V8, Input
Pin31	GND			
Pin32	GND			
Pin33	LVDS0_TX0_P	LVDS0_D0_P	D29	VDD_LVDS_1P8, 1V8
Pin34	NAND_DQS	NAND_DQS	R26	NVCC_NAND, 1V8, Input with PD
Pin35	LVDS0_TX0_N	LVDS0_D0_N	E28	VDD_LVDS_1P8, 1V8
Pin36	ONOFF	ONOFF	G22	NVCC_SNVS, 1V8, Input with PU
Pin37	GND			
Pin38	POR_B	POR_B	J29	NVCC_SNVS, 1V8, Input with PU
Pin39	LVDS0_TX1_P	LVDS0_D1_P	E29	VDD_LVDS_1P8, 1V8
Pin40	PMIC_ON_REQ	LVDS0_D1_P	F22	NVCC_SNVS, 1V8, Output high with PU
Pin41	LVDS0_TX1_N	LVDS0_D1_N	F28	VDD_LVDS_1P8, 1V8
Pin42	GND			
Pin43	GND			
Pin44	BOOT_MODE0	BOOT_MODE0	G10	NVCC_JTAG, 1V8, Input with PD
Pin45	LVDS0_CLK_P	LVDS0_CLK_P	F29	VDD_LVDS_1P8, 1V8
Pin46	BOOT_MODE1	BOOT_MODE1	F8	NVCC_JTAG, 1V8, Input with PD
Pin47	LVDS0_CLK_N	LVDS0_CLK_N	G28	VDD_LVDS_1P8, 1V8
Pin48	BOOT_MODE2	BOOT_MODE2	G8	NVCC_JTAG, 1V8, Input with PD
Pin49	GND			
Pin50	BOOT_MODE3	BOOT_MODE3	G12	NVCC_JTAG, 1V8, Input with PD
Pin51	LVDS0_TX2_P	LVDS0_D2_P	G29	VDD_LVDS_1P8, 1V8

Pin52	WDOG_B	GPIO1_IO02	B6	NVCC_GPIO, 1V8, Input with PU
Pin53	LVDS0_TX2_N	LVDS0_D2_N	H28	VDD_LVDS_1P8, 1V8
Pin54	GND			
Pin55	GND			
Pin56	CLKIN1	CLKIN1	K28	NVCC_CLK, 1V8, Input with PD
Pin57	LVDS0_TX3_P	LVDS0_D3_P	H29	VDD_LVDS_1P8, 1V8
Pin58	GND			
Pin59	LVDS0_TX3_N	LVDS0_D3_N	J28	VDD_LVDS_1P8, 1V8
Pin60	CLKOUT1	CLKOUT1	K29	NVCC_CLK, 1V8, Output low
Pin61	GND			
Pin62	GND			
Pin63	SD1_STROBE	SD1_STROBE	W26	NVCC_SD1, 1V8, Input with PD
Pin64	CLKIN2	CLKIN2	L28	NVCC_CLK, 1V8, Input with PD
Pin65	SD1_RESET_B	SD1_RESET_B	W25	NVCC_SD1, 1V8, Input with PD
Pin66	GND			
Pin67	SD1_CLK	SD1_CLK	W28	NVCC_SD1, 1V8, Input with PD
Pin68	CLKOUT2	CLKOUT2	L29	NVCC_CLK, 1V8, Output low
Pin69	SD1_CMD	SD1_CMD	W29	NVCC_SD1, 1V8, Input with PD
Pin70	GND			
Pin71	SD1_DATA0	SD1_DATA0	Y29	NVCC_SD1, 1V8, Input with PD
Pin72	SD1_DATA4	SD1_DATA4	U26	NVCC_SD1, 1V8, Input with PD
Pin73	SD1_DATA1	SD1_DATA1	Y28	NVCC_SD1, 1V8, Input with PD
Pin74	SD1_DATA5	SD1_DATA5	AA29	NVCC_SD1, 1V8, Input with PD
Pin75	SD1_DATA2	SD1_DATA2	V29	NVCC_SD1, 1V8, Input with PD
Pin76	SD1_DATA6	SD1_DATA6	AA28	NVCC_SD1, 1V8, Input with PD
Pin77	SD1_DATA3	SD1_DATA3	V28	NVCC_SD1, 1V8, Input with PD
Pin78	SD1_DATA7	SD1_DATA7	U25	NVCC_SD1, 1V8, Input with PD

Pin79	GND			
Pin80	GND			

2.3.3. J5 Pinout

Table 7 J5 Pinout

Pin	Default	BALL_NAME	BALL	NOTE
Pin1	GND			
Pin2	GND			
Pin3	I2C2_SCL	I2C2_SCL	AH6	NVCC_I2C_UART, 1V8, Input with PD
Pin4	UART1_TXD	UART1_TXD	AJ3	NVCC_I2C_UART, 1V8, Input with PD
Pin5	I2C2_SDA	I2C2_SDA	AE8	NVCC_I2C_UART, 1V8, Input with PD
Pin6	UART1_RXD	UART1_RXD	AD6	NVCC_I2C_UART, 1V8, Input with PD
Pin7	I2C3_SCL	I2C3_SCL	AJ7	NVCC_I2C_UART, 1V8, Input with PD
Pin8	UART1_CTS	UART3_RXD	AE6	NVCC_I2C_UART, 1V8, Input with PD
Pin9	I2C3_SDA	I2C3_SDA	AJ6	NVCC_I2C_UART, 1V8, Input with PD
Pin10	UART1_RTS	UART3_TXD	AJ4	NVCC_I2C_UART, 1V8, Input with PD
Pin11	I2C4_SCL	I2C4_SCL	AF8	NVCC_I2C_UART, 1V8, Input with PD
Pin12	UART2_TXD	UART2_TXD	AH4	NVCC_I2C_UART, 1V8, Input with PD
Pin13	I2C4_SDA	I2C4_SDA	AD8	NVCC_I2C_UART, 1V8, Input with PD
Pin14	UART2_RXD	UART2_RXD	AF6	NVCC_I2C_UART, 1V8, Input with PD
Pin15	GND			
Pin16	UART4_TXD	UART4_TXD	AH5	NVCC_I2C_UART, 1V8, Input with PD
Pin17	SAI1_TXC	SAI1_TXC	AJ12	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin18	UART4_RXD	UART4_RXD	AJ5	NVCC_I2C_UART, 1V8, Input with PD
Pin19	SAI1_TXD0	SAI1_TXD0	AJ11	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin20	GND			

Pin21	SAI1_TXD1	SAI1_TXD1	AJ10	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin22	SAI1_RXFS	SAI1_RXFS	AJ9	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin23	SAI1_TXD2	SAI1_TXD2	AH11	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin24	SAI1_RXC	SAI1_RXC	AH8	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin25	SAI1_TXD3	SAI1_TXD3	AD12	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin26	SAI1_RXD0	SAI1_RXD0	AC10	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin27	SAI1_TXD4	SAI1_TXD4	AH13	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin28	SAI1_RXD1	SAI1_RXD1	AF10	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin29	SAI1_TXD5	SAI1_TXD5	AH14	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin30	SAI1_RXD2	SAI1_RXD2	AH9	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin31	SAI1_TXD6	SAI1_TXD6	AC12	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin32	SAI1_RXD3	SAI1_RXD3	AJ8	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin33	SAI1_TXD7	SAI1_TXD7	AJ13	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin34	SAI1_RXD4	SAI1_RXD4	AD10	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin35	SAI1_TXFS	SAI1_TXFS	AF12	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin36	SAI1_RXD5	SAI1_RXD5	AE10	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin37	GND			
Pin38	SAI1_RXD6	SAI1_RXD6	AH10	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin39	SAI5_RXD0	SAI5_RXD0	AE16	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin40	SAI1_RXD7	SAI1_RXD7	AH12	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin41	SAI5_RXD1	SAI5_RXD1	AD16	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin42	SAI1_MCLK	SAI1_MCLK	AE12	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin43	SAI5_RXD2	SAI5_RXD2	AF16	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin44	GND			
Pin45	SAI5_RXD3	SAI5_RXD3	AE14	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin46	SAI5_RXFS	SAI5_RXFS	AC14	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin47	SAI2_TXC	SAI2_TXC	AH15	NVCC_SAI2_SAI3_SPDIF, 1V8, Input

				with PD
Pin48	SAI5_RXC	SAI5_RXC	AD14	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin49	SAI2_TXFS	SAI2_TXFS	AJ17	NVCC_SAI2_SAI3_SPDIF, 1V8, Input with PD
Pin50	SAI5_MCLK	SAI5_MCLK	AF14	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin51	SAI2_TXD	SAI2_TXD0	AH16	NVCC_SAI2_SAI3_SPDIF, 1V8, Input with PD
Pin52	SAI2_RXFS	SAI2_RXFS	AH17	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin53	SAI2_RXD	SAI2_RXD0	AJ14	NVCC_SAI2_SAI3_SPDIF, 1V8, Input with PD
Pin54	SAI2_RXC	SAI2_RXC	AJ16	NVCC_SAI1_SAI5, 1V8, Input with PD
Pin55	SAI3_TXC	SAI3_TXC	AH19	NVCC_SAI2_SAI3_SPDIF, 1V8, Input with PD
Pin56	SAI2_MCLK	SAI2_MCLK	AJ15	NVCC_SAI2_SAI3_SPDIF, 1V8, Input with PD
Pin57	SAI3_TXFS	SAI3_TXFS	AC16	NVCC_SAI2_SAI3_SPDIF, 1V8, Input with PD
Pin58	SAI3_MCLK	SAI3_MCLK	AJ20	NVCC_SAI2_SAI3_SPDIF, 1V8, Input with PD
Pin59	SAI3_TXD	SAI3_TXD	AH18	NVCC_SAI2_SAI3_SPDIF, 1V8, Input with PD
Pin60	SAI3_RXC	SAI3_RXC	AJ18	NVCC_SAI2_SAI3_SPDIF, 1V8, Input with PD
Pin61	GND			
Pin62	SAI3_RXFS	SAI3_RXFS	AJ19	NVCC_SAI2_SAI3_SPDIF, 1V8, Input with PD
Pin63	ECSPI2_SCLK	ECSPI2_SCLK	AH21	NVCC_ECSPI_HDMI, 1V8, Input with PD
Pin64	SAI3_RXD	SAI3_RXD	AF18	NVCC_SAI2_SAI3_SPDIF, 1V8, Input

				with PD
Pin65	ECSPI2_SS0	ECSPI2_SS0	AJ22	NVCC_ECSPI_HDMI, 1V8, Input with PD
Pin66	SPDIF_TX	SPDIF_TX	AE18	NVCC_SAI2_SAI3_SPDIF, 1V8, Input with PD
Pin67	ECSPI2_MOSI	ECSPI2_MOSI	AJ21	NVCC_ECSPI_HDMI, 1V8, Input with PD
Pin68	SPDIF_RX	SPDIF_RX	AD18	NVCC_SAI2_SAI3_SPDIF, 1V8, Input with PD
Pin69	ECSPI2_MISO	ECSPI2_MISO	AH20	NVCC_ECSPI_HDMI, 1V8, Input with PD
Pin70	SPDIF_EXT_CLK	SPDIF_EXT_CLK	AC18	NVCC_SAI2_SAI3_SPDIF, 1V8, Input with PD
Pin71	HDMI_DDC_SCL	HDMI_DDC_SCL	AC22	NVCC_ECSPI_HDMI, 1V8, Input with PD
Pin72	UART3_CTS	ECSPI1_MISO	AD20	NVCC_ECSPI_HDMI, 1V8, Input with PD
Pin73	HDMI_DDC_SDA	HDMI_DDC_SDA	AF22	NVCC_ECSPI_HDMI, 1V8, Input with PD
Pin74	UART3_RTS	ECSPI1_SS0	AE20	NVCC_ECSPI_HDMI, 1V8, Input with PD
Pin75	HDMI_HPD	HDMI_HPD	AE22	NVCC_ECSPI_HDMI, 1V8, Input with PD
Pin76	UART3_TXD	ECSPI1_MOSI	AC20	NVCC_ECSPI_HDMI, 1V8, Input with PD
Pin77	HDMI_CEC	HDMI_CEC	AD22	NVCC_ECSPI_HDMI, 1V8, Input with PD
Pin78	UART3_RXD	ECSPI1_SCLK	AF20	NVCC_ECSPI_HDMI, 1V8, Input with PD
Pin79	GND			
Pin80	GND			

2.3.4. J6 Pinout

Table 8 J6 Pinout

Pin	Default	BALL_NAME	BALL	NOTE
Pin1	GND			
Pin2	GND			
Pin3	EARC_N_HPD	EARC_N_HPD	AH22	VDD_EARC_1P8, 1V8, Output

Pin4	ENET_MDC	ENET_MDC	AH28	NVCC_ENET, 1V8, Input with PD
Pin5	EARC_P_UTIL	EARC_P_UTIL	AJ23	VDD_EARC_1P8, 1V8, Output
Pin6	ENET_MDIO	ENET_MDIO	AH29	NVCC_ENET, 1V8, Input with PD
Pin7	GND			
Pin8	ENET_TX_CTL	ENET_TX_CTL	AF24	NVCC_ENET, 1V8, Input with PD
Pin9	HDMI_TXCN	HDMI_TXC_N	AJ24	VDD_HDMI_1P8, 1V8
Pin10	ENET_TXC	ENET_TXC	AE24	NVCC_ENET, 1V8, Input with PD
Pin11	HDMI_TXCP	HDMI_TXC_P	AH24	VDD_HDMI_1P8, 1V8
Pin12	ENET_TD0	ENET_TD0	AC25	NVCC_ENET, 1V8, Input with PD
Pin13	GND			
Pin14	ENET_TD1	ENET_TD1	AE26	NVCC_ENET, 1V8, Input with PD
Pin15	HDMI_TXN0	HDMI_TX0_N	AJ25	VDD_HDMI_1P8, 1V8
Pin16	ENET_TD2	ENET_TD2	AF26	NVCC_ENET, 1V8, Input with PD
Pin17	HDMI_TXP0	HDMI_TX0_P	AH25	VDD_HDMI_1P8, 1V8
Pin18	ENET_TD3	ENET_TD3	AD24	NVCC_ENET, 1V8, Input with PD
Pin19	GND			
Pin20	ENET_RX_CTL	ENET_RX_CTL	AE28	NVCC_ENET, 1V8, Input with PD
Pin21	HDMI_TXN1	HDMI_TX1_N	AJ26	VDD_HDMI_1P8, 1V8
Pin22	ENET_RXC	ENET_RXC	AE29	NVCC_ENET, 1V8, Input with PD
Pin23	HDMI_TXP1	HDMI_TX1_P	AH26	VDD_HDMI_1P8, 1V8
Pin24	ENET_RD0	ENET_RD0	AG29	NVCC_ENET, 1V8, Input with PD
Pin25	GND			
Pin26	ENET_RD1	ENET_RD1	AG28	NVCC_ENET, 1V8, Input with PD
Pin27	HDMI_TXN2	HDMI_TX2_N	AJ27	VDD_HDMI_1P8, 1V8
Pin28	ENET_RD2	ENET_RD2	AF29	NVCC_ENET, 1V8, Input with PD
Pin29	HDMI_TXP2	HDMI_TX2_P	AH27	VDD_HDMI_1P8, 1V8
Pin30	ENET_RD3	ENET_RD3	AF28	NVCC_ENET, 1V8, Input with PD

Pin31	GND			
Pin32	GND			
Pin33	SD2_DATA0	SD2_DATA0	AC28	NVCC_SD2, 1V8, Input with PD
Pin34	SD2_WP	SD2_WP	AC26	NVCC_SD2, 1V8, Input with PD
Pin35	SD2_DATA1	SD2_DATA1	AC29	NVCC_SD2, 1V8, Input with PD
Pin36	SD2_nCD	SD2_CD_B	AD29	NVCC_SD2, 1V8, Input with PD
Pin37	SD2_DATA2	SD2_DATA2	AA26	NVCC_SD2, 1V8, Input with PD
Pin38	SD2_CLK	SD2_CLK	AB29	NVCC_SD2, 1V8, Input with PD
Pin39	GND			
Pin40	SD2_CMD	SD2_CMD	AB28	NVCC_SD2, 1V8, Input with PD
Pin41	QSPIA_SCLK	NAND_ALE	N25	NVCC_NAND, 1V8, Input with PD
Pin42	SD2_DATA3	SD2_DATA3	AA25	NVCC_SD2, 1V8, Input with PD
Pin43	PMIC_32K_OUT			
Pin44	QSPIA_nSS0	NAND_CE0_B	L26	NVCC_NAND, 1V8, Input with PD
Pin45	SYS_nRST			
Pin46	QSPIA_DATA0	NAND_DATA00	R25	NVCC_NAND, 1V8, Input with PD
Pin47	VSD_3V3			
Pin48	QSPIA_DATA1	NAND_DATA01	L25	NVCC_NAND, 1V8, Input with PD
Pin49	VSD_3V3			
Pin50	QSPIA_DATA2	NAND_DATA02	L24	NVCC_NAND, 1V8, Input with PD
Pin51	VSD_3V3			
Pin52	QSPIA_DATA3	NAND_DATA03	N24	NVCC_NAND, 1V8, Input with PD
Pin53	VDD_3V3			
Pin54	VDD_1V8			
Pin55	VDD_3V3			
Pin56	VDD_1V8			
Pin57	VDD_3V3			

Pin58	VDD_1V8			
Pin59	VDD_3V3			
Pin60	VDD_1V8			
Pin61	GND			
Pin62	GND			
Pin63	GND			
Pin64	GND			
Pin65	GND			
Pin66	GND			
Pin67	GND			
Pin68	GND			
Pin69	GND			
Pin70	GND			
Pin71	VSYS_5V			
Pin72	VSYS_5V			
Pin73	VSYS_5V			
Pin74	VSYS_5V			
Pin75	VSYS_5V			
Pin76	VSYS_5V			
Pin77	VSYS_5V			
Pin78	VSYS_5V			
Pin79	VSYS_5V			
Pin80	VSYS_5V			

2.4. Packing List

- DEBIX SOM A Singer Board

Chapter 3 DEBIX SOM A I/O Board

DEBIX SOM A I/O Board is a carrier board designed for DEBIX SOM A, which connects to DEBIX SOM A through four double-sided board-to-board socket connectors on its front side. It's all about full-featured interfaces supported by the core board based on i.MX 8M Plus, and provides a perfect solution combining the functions required for industrial control, IoT connection and multimedia.

Please refer to the DEBIX SOM A I/O Board User Manual for detailed interface and usage information.

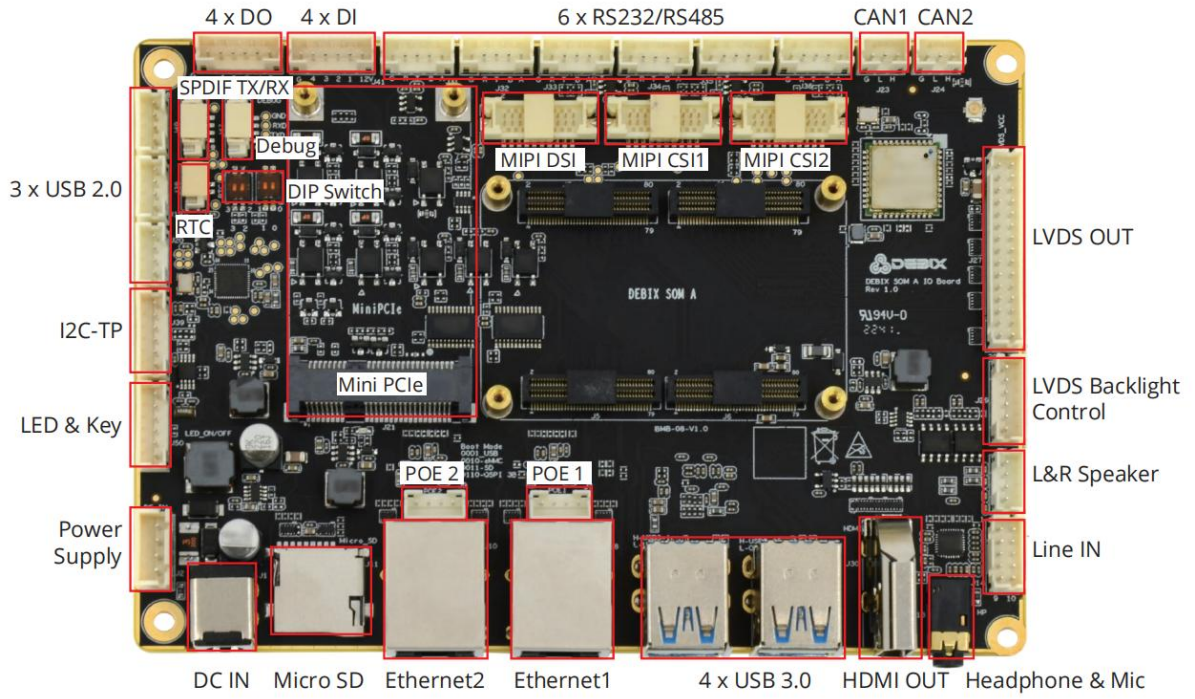

Figure 6 DEBIX SOM A I/O Board

Chapter 4 Camera Adapter Board for DEBIX SOM A I/O Board

Camera Adapter Board is an add-on board designed for DEBIX SOM A I/O Board to allow the connection with DEBIX Camera Modules. It has a FPC connector for the flexible flat cable of the camera module and a 2 x 10Pin connector for the CSI connection cable.

Please refer to the Camera Adapter Board User Manual for detailed interface and usage information.

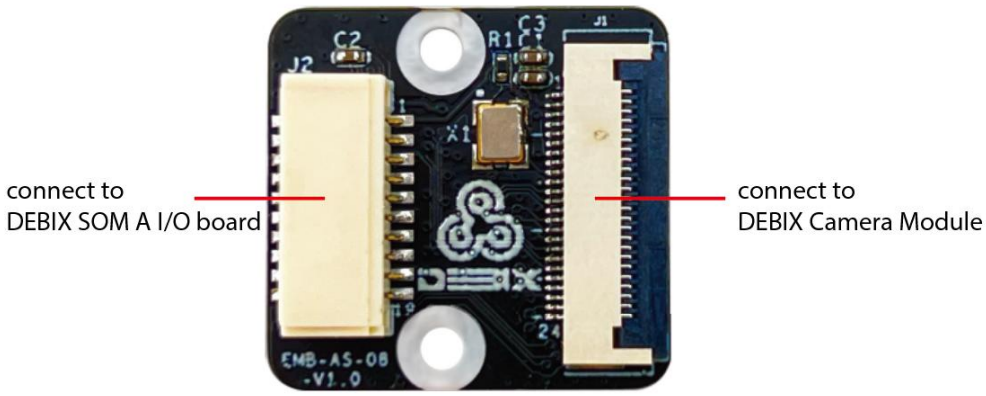

Figure 7 Camera Adapter Board for DEBIX SOM A I/O Board