ASUS IoT

S4S-J6-FRA

User Manual

(Edition 1)

About this manual

This manual provides information about the hardware features of your industrial motherboard, organized through the following parts:

1. Specifications Summary
2. Block Diagram
3. Motherboard Layout
4. Pin Assignments
   - Jumper Settings
   - Connector & Header List

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1. Specifications Summary

i. Motherboard

Item	Specification
Processor	(deigned with Intel® Elkhart Lake platform) - Intel® Celeron® Processor J6412 (TDP: 10W)
Chipset	Intel® Elkhart Lake Intel Gen11 Graphics Engines (SoC integrated)
Memory	2x DDR4 3200 MT/s, SO-DIMM, Non-ECC Support Max.: 16GB
Display	1 x HDMI 1 x DP 1 x eDP 1 x 2*20 LVDS Dual Channel 24-bit (Primary)
Expansion	1 x M-Key for M.2 2280 Key module (NVMe/PCIe, auto detect), support PCIex2 & SATA mode 1x PCIex16 1 x half-size mPCIe
Ethernet	1 x Gigabit LAN (RJ45) - Speed 10/100/1000 Mbps
Audio	Realtek ALC897 High Definition Audio, 1 x Line-out
Storage	1 x SATA Gen 3.0, up to 6Gb/s
Internal connector	Serial Port: 1 x RS232 5V/12V/RI Select, switched by BIOS, support 1A current limit 1x M.2 M key 1x Mini-PCIe (half-size) 1x SATA Gen 3.0, Up to 6Gb/s 1x System Fan Header 1x CPU Fan Header(PWM) 1 x Buzzer, required onboard design 1 x Clear CMOS Header 2 x Amplifier Header 1 x eDP 2*15 pin Header 1 x 2*20pin LVDS Signal header 1 x 2 pin LCD panel monitor switch header 1 x 6 pin LVDS panel VCC power selection jumper 1 x 8 pin LVDS inverter connector
Security	1 x SPI TPM Header
BIOS	AMI UEFI 256Mbit (default UEFI mode)
BIOS Item	Watchdog Timer Support Hardware Monitor Support Fan Speed Support

	Temperature Support Voltage Support
Environment	Operating Temperature: 0~50°C Non-Operating Temperature: -40~85°C Relative Humidity: 10%~85% (*For ASUS, the chamber supports 15%~95%)
Dimension	Proprietary, 150 x 130 mm
Certification	CE, FCC Class B
OS Support	Windows® 10 (64-bit) Windows® 10 IoT Enterprise (64-bit)

ii. I/O Board

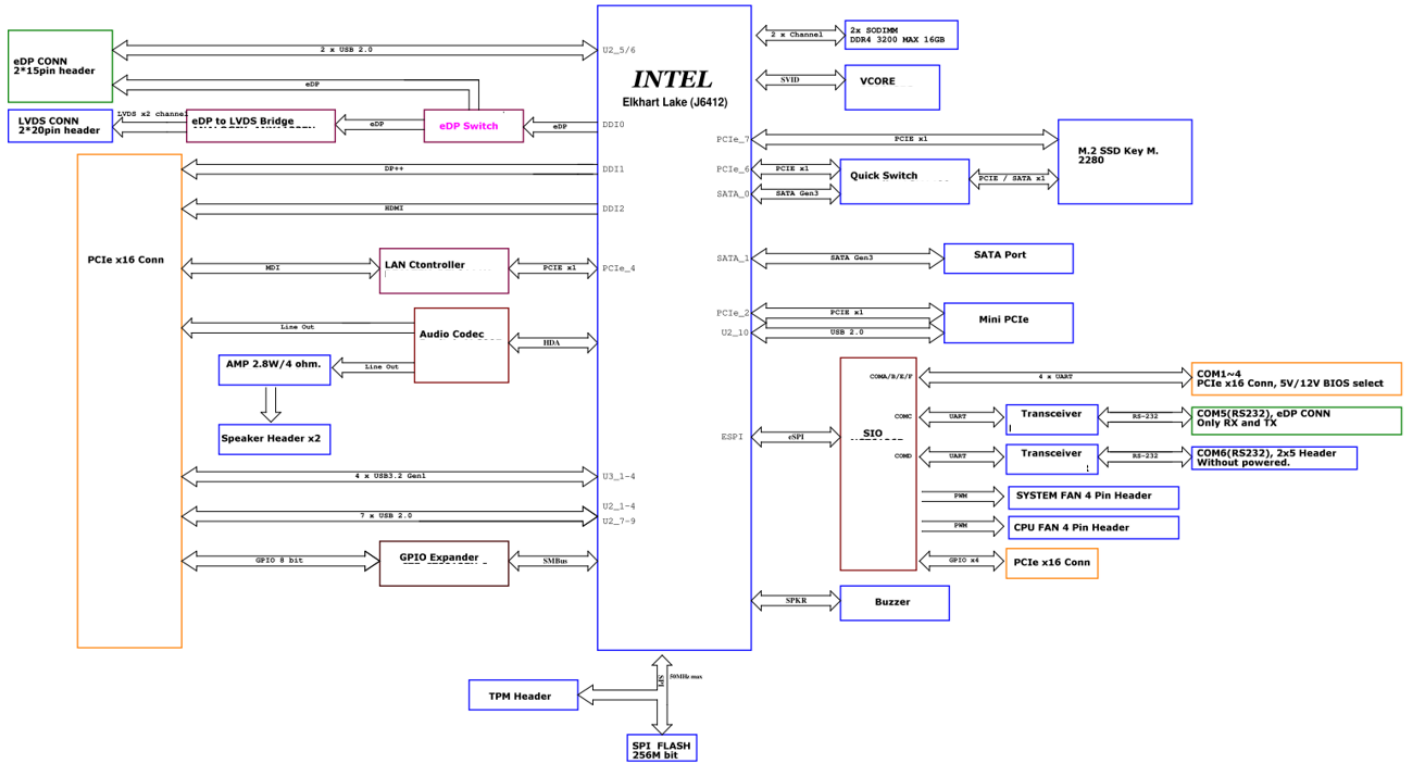
Item	**Specification**
Rear I/O	3 x RS232 5/12/Ring switch by BIOS (COM1-2), support 1A current limit 1 x Audio Jack, (Line-out) 1 x RJ45 4 x USB3.2 Gen1 1 x Serial Port (RJ45), 5/12/Ring switch by BIOS (COM3), support 1A current limit 1 x RJ11 1 x HDMI 1 x DP 1x Phone Jack, line out 1x DC OUT, DV 12V out 1x 4-pin DC Jack 1x PWR/Storage statusLED (*up-side:RED, down-side:GREEN) 1x PWR Switch 1x Extended I/O (*support 1 x USB2.0) 1x Front USB2.0
Power	12V DC-IN (Supported by additional cable)
Expansion Slot	1 x PCIe x16
Environment	Operating Temperature: 0~50°C Non-Operating Temperature: -40~85°C Relative Humidity: 10%~85% (*For ASUS, the chamber supports 15%~95%)
Dimension	Proprietary, 190 x 60mm

iii. Bridge Board

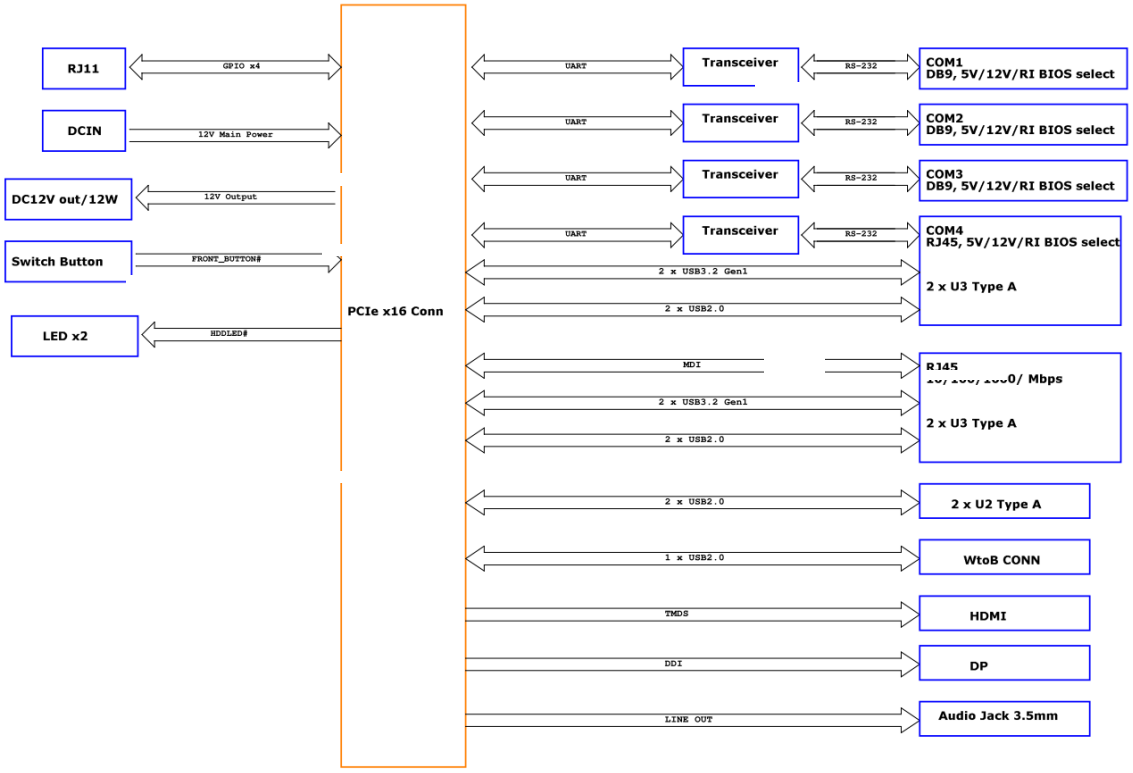
Dimension	Proprietary, 100 x 38.5mm

2. Block Diagram

i. Motherboard



ii. I/O board

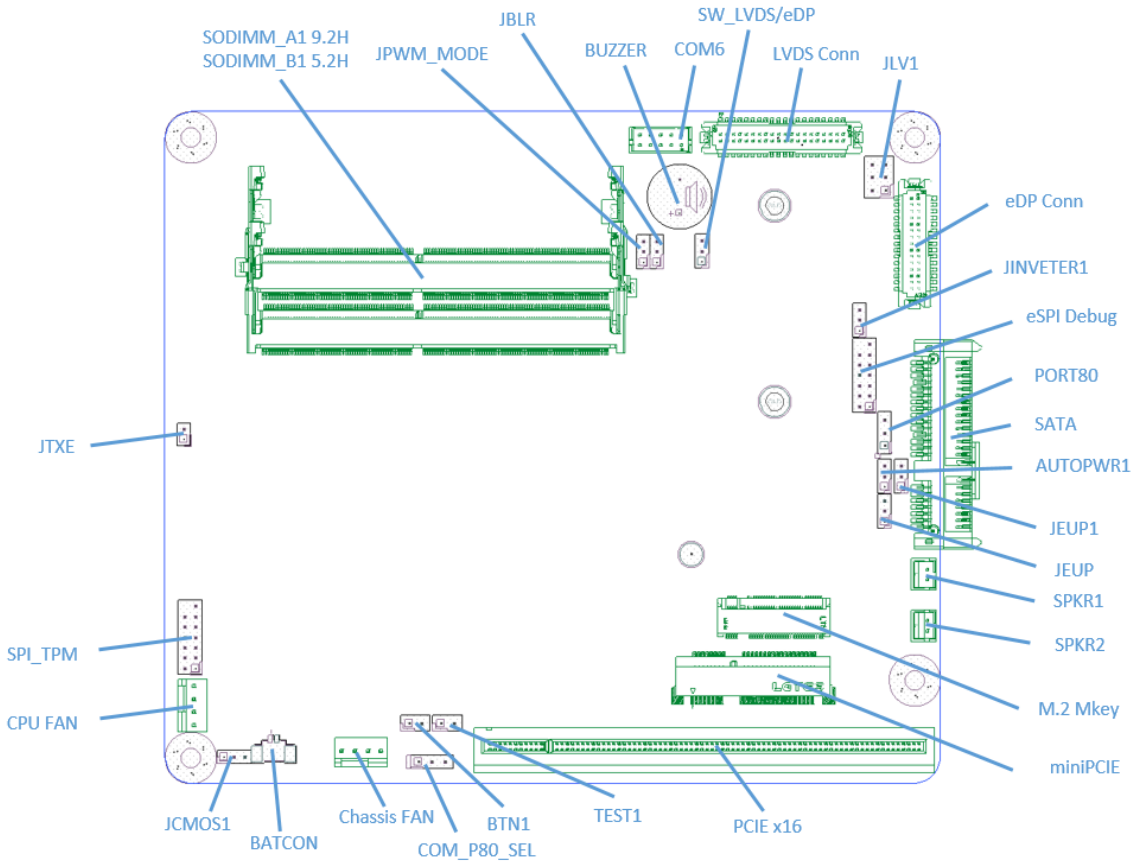


iii. Bridge board

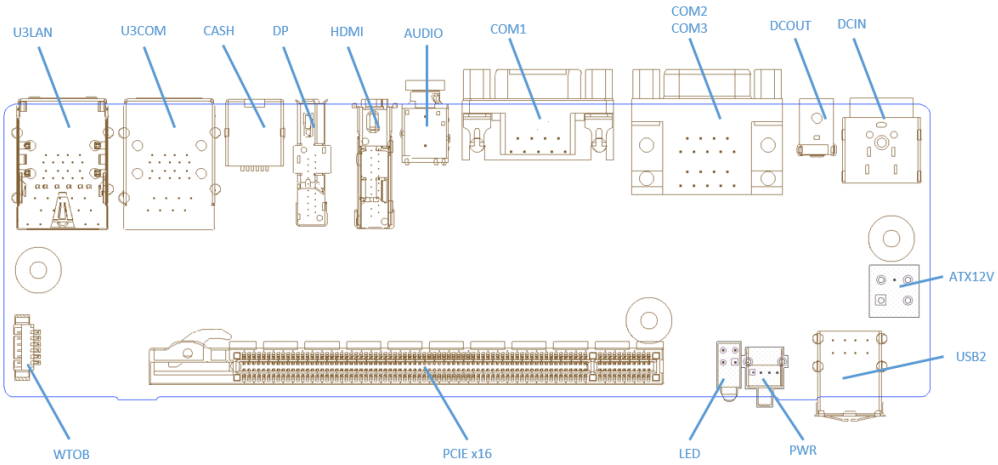
None

3. Motherboard Layout

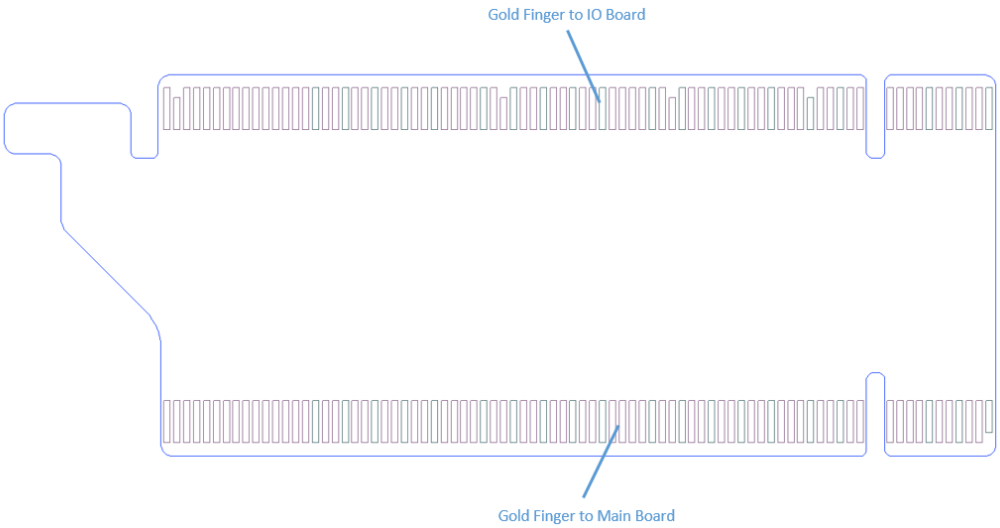
i. Motherboard



ii. I/O Board



iii. Bridge Board



4. Pin Assignments

4.1 Connector

4.2 Jumper Settings

i. Motherboard

- **Connector/Header**

BATCON

Pin	Signal Pin Definition
1	+BAT
2	GND

LVDS

Pin	Signal Pin Definition	Pin	Signal Pin Definition
1	BKL_PWR	2	BKL_PWR
3	BKL_PWR	4	BKL_PWR
5	BKL_PWR	6	GND
7	+3V	8	GND
9	LCD_VCC	10	LCD_VCC
11	LVDS_DDC_SCL	12	LVDS_DDC_DAT
13	LCD_BL_PWM_CN	14	LCD_VDDEN
15	LCD_ENABKLT_CN	16	GND
17	LVDS_TX_TA0N	18	LVDS_TX_TA0P
19	LVDS_TX_TB0N	20	LVDS_TX_TB0P
21	LVDS_TX_TC0N	22	LVDS_TX_TC0P
23	LVDS_TX_TCLK0N	24	LVDS_TX_TCLK0P
25	LVDS_TX_TD0N	26	LVDS_TX_TD0P
27	GND	28	GND
29	LVDS_TX_TA1N	30	LVDS_TX_TA1P
31	LVDS_TX_TB1N	32	LVDS_TX_TB1P
33	LVDS_TX_TC1N	34	LVDS_TX_TC1P
35	LVDS_TX_TCLK1N	36	LVDS_TX_TCLK1P
37	LVDS_TX_TD1N	38	LVDS_TX_TD1P
39	GND	40	GND

eDP

Pin	Signal Pin Definition	Pin	Signal Pin Definition
1	BKL_PWR	2	BKL_PWR
3	GND	4	GND

5	LCD_VCC	6	LCD_VCC
7	LCD_BL_PWM	8	EDP_VDDEN
9	LCD_ENABKLT	10	GND
11	SW_OUT_EDP_TX1_DN	12	SW_OUT_EDP_TX1_DP
13	SW_OUT_EDP_TX0_DN	14	SW_OUT_EDP_TX0_DP
15	GND	16	GND
17	SW_OUT_EDP_AUX_N	18	SW_OUT_EDP_AUX_P
19	GND	20	GND
21	EDP_D0_N	22	EDP_D0_P
23	EDP_D1_N	24	EDP_D1_P
25	LS_COMC_TXD	26	LS_COMC_RXD
27	+5V_USB2_EDP	28	EDP_HPD
29	+5V_USB2_EDP	30	GND

SPI TPM

Pin	Signal Pin Definition
1	+VCC_SPI_TPM
2	S_SPI_TPM_IRQ#
3	S_PLTRST#
4	S_SPI_TPM_CS2#
5	NC
6	T_SPI_BIOS_WP#
7	+3VSB_SPI
8	GND
9	F_SPI_CS0#
10	T_SPI_CLK
11	T_SPI_MISO
12	T_SPI_MOSI
13	T_SPI_HOLD#
14	NC

COM6

Pin	Signal Pin Definition
1	COMD_DCD#
2	COMD_RXD
3	COMD_TXD
4	COMD_DTR#
5	GND

6	COMD_DSR#
7	COMD_RTS#
8	COMD_CTS#
9	COMD_RI#
10	NC

BTN1

Pin	Signal Pin Definition
1	PWRBTN#_PANEL
2	GND

TEST1

Pin	Signal Pin Definition
1	+5V_FPANEL
2	GND

CPU_FAN

Pin	Signal Pin Definition
1	GND
2	+12V
3	O_CPUFANIN
4	O_CPUFAN_PWM

CHA_FAN

Pin	Signal Pin Definition
1	GND
2	+12V
3	O_CHAFANIN
4	O_CHAFAN_PWM

SPKR1

Pin	Signal Pin Definition
1	ROUTN
2	ROUTP

SPKR2

Pin	Signal Pin Definition
1	LOUTN

2	LOUTP

PORT80

Pin	Signal Pin Definition
1	GND
2	O_COMC_TXD
3	+3V

- **Jumper**

JXTE

Function	Jumper Pin
ME_UNLOCK	1-2
ME_LOCK	None (Default)

COM_P80_SEL

Function	Jumper Pin
COM_FUNCTION	1-2 (Default)
P80_FUNCTION	2-3

AUTOPWR1

Function	Jumper Pin
ATX	1-2 (Default)
AT	2-3

JEUP

Function	Jumper Pin
Enable ERP	1-2 (Default)
Disable ERP	2-3

JEUP1

Function	Jumper Pin
EUP	1-2
Non-EUP	2-3 (Default)

JCMOS1

Function	Jumper Pin
Normal	1-2 (Default)
Clear	2-3

SW_LVDS/eDP(Selection of LVDS or eDP panel)

Function	Jumper Pin
LVDS	1-2 (Default)
eDP	2-3

JINVETER1(Voltage Provided to Panel Backlight)

Function	Jumper Pin
5V	1-2
12V	2-3 (Default)

JLV1(Voltage provided to panel)

Function	Jumper Pin
3.3V	1-2 (Default)
5V	3-4
12V	5-6

JBLR(Panel Backlight PWM Polarity)

Function	Jumper Pin
Reverse	1-2
Forward	2-3 (Default)

JPWM_MODE(Backlight adjustment mode)

Function	Jumper Pin
Reverse	1-2
Forward	2-3 (Default)

ii. I/O board

- **Connector/Header**

ATX-12V

Pin	Signal Pin Definition
1	GND
2	GND
3	DC_PWR
4	DC_PWR

DCIN

Pin	Signal Pin Definition
1	DC_PWR
2	DC_PWR
3	GND
4	GND

DC OUT

Pin	Signal Pin Definition
1	+12V_DCOUT
2	GND

PWR

Pin	Signal Pin Definition
1	PWRBTN#_PANEL
2	GND
3	PWRBTN#_PANEL
4	GND

CASH

Pin	Signal Pin Definition
1	GND
2	DRAWER1
3	DRAW_SWITCH
4	DRAWER_VOLT
5	DRAWER2
6	GND

WTOB

Pin	Signal Pin Definition
1	+5V_USB2
2	+5V_USB2
3	USB2_PN9_CN
4	USB2_PP9_CN
5	GND
6	GND

- **Jumper**

None

iii. Bridge board

- **Connector/Header**

None

- **Jumper**

None