Specifications for Approval

(Model:FW1172-AT-M)

H/W Version 1.5

Document version 1

Customer	
Description	IP Camera Main Board
Model Name	FW1172-AT-M
Customer's Model	
Version & Revision	PCB version 1.5
Issued Date	2018.02.26

Designed By	Checked By	Approved By

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1. Records of Revision

Table 1 Records of Revision

Date	Revision	Discription	Note
2017.06.13	V1.2_01	- First Creation	
2017.07.18	V1.2_02	Change CPU S2L55m to S2Lm33 in Table 2. Change 60fps @ 1920X1080 to 30fps @ 1920X1080 in Table 2. Change Maximum 60fps to Maximum 30fps 2.1.2 Video Streamer. Delete 3M Mode in 2.1.2 Video Streamer and Table 2.	
2018.02.26	V1.5_01	H/W REVISION : ADD LEVELSHIFTER(3.3V to 1.8V) Change CPU S2L33m to S2Lm55 in Table 2. J3.13,15,17,19,21,23,25,27 : NC	

2. Product Specifications and Highlights

Features

2.1. Product Specifications

2.1.1. Embedded System

High-performance 32 bit RISC SoC S2L55m

Embedded Linux OS Base

Built-in Web Server

Bayer input only (TTL 1.8V), The others are TTL(3.3V) interfaces except bayer & ethennet signals.

2.1.2. Video Streamer

Simultaneous Triple Streaming with H.264 / M-JPEG dual compression

Maximum 30fps@Full HD(1080p, 2M) / 30fps@3M Encoding / Transmission

Compression / Transmission speed Control, VBR/CBR Mode(32Kbps~12Mbps)

Adjustable Resolution (6 Step) :

2M Mode : Primary - 1920x1080, 1280x720, 704x480, 640X352, 320x176, 160x96

Secondary - 1280x720, 704x480, 640X352, 320x176, 160x96

Tertiary - 704x480, 640X352, 320x176, 160x96

Adjustable Quality Controls (6 Step) : Low Compression, highest, high, normal, low, lowest

2.1.3. Network

LAN Interface 10/100 Base-T Ethernet Auto Sensing

IEEE 802.3af PoE (Option) /IEEE 802.11b/g Wireless(Option) Support

ONVIF profile S support

HTTP, RTP/RTSP(Uni/Multicast), TCP/IP(v4/v6), UDP, FTP, Telnet, HTTPS, RARP, PPPoE, SNMP, PAP, CHAP, DHCP, NTP, SMTP client, uPnP & etc

Dynamic DDNS Support

Network Bandwidth Control

Remote Management (Remote configuration, S/W upgrades and Remote Reset)

2.1.4. Etc

Pre/Post Alarm Buffer

Event Video Transmission : e-mail, ftp, CGI notification

Hardware Motion Detection

Time Stamp

Video Stream Client Maximum 16 Multiple Access

Multi user access management by user ID/PW

Camera channel access and control authentication

2.2. Highlights Features

Table 2 Highlights Features

Model Name	FW1172-AT-M, version 1.1
Hardware	32bit Embedded CPU S2L55m, Flash 256Mbytes /SDRAM128M x16bit Linux version 3.10.73 operating system
Video compression	H.264, Motion JPEG
Resolution	6 Level : 1920x1080, 1280x720, 704x480, 640X352,320x176, 160x96
Frame rate	Primary upto 30fps @ 1920X1080
Video Streaming	Motion JPEG and H.264 Triple Streamming (Simultaneously) Independently Controllable frame rate and bandwidth
Time Stamp	Supported (Date/Time Only) in primary streem
Image setting	Compression levels: 6 level Color: color, black & white
Voice	G.711-ulaw, Sampling rates 8KHz, 16bit, Mono Audio, 1ch in & 1ch out
LAN interface	10/100BaseT Ethernet auto sensing IEEE 802.11a/b/g/n Built-in wireless (optional) by SD port
Alarm I/O Interface	1 TTL inputs and 1 TTL output
USB	USB Version 2.0
Serial Interface	COM Port: UART, TTL level, ports for console, serial input/output device Max Baudrate: 115200 bit/s
Security features	Multi user level protection for camera access, PTZ, Alarm I/O
Advanced Service	Up to 5.6M memory for Pre/Post alarm buffer E-Mail, FTP, IP notification, Alarm Notification to e-mail, CGI Call by event or schedule
Built-in Motion detections	Upto 4 zones Motion Sensitivity : 0 ~ 100 : 100 is hypersensitive
Privacy zone	Upto 8 zones
PTZ & UART Control Support	PTZ and UART device control through serial port(RS232 / RS485) (Support protocols; Pelco “P” & “D”, Vicon V1311RB, Samsung PTZ, Honeywell PTZ and X10 and Epson Printer)
Others	Transmit External data(ex:POS, Serial Data) transfer with Video IP notification by e-mail
PWR Consumption	Max. DC 3.3 Volt max 1200±100 mA, average 840±50 mA
Operating Environment	Temperature : 32° ~ 122°F (0° ~ 50°C), Humidity : 20 ~ 80% RH(non-condensing)
Simultaneous clients	Live-cast for up to 16 clients ???
Video access from Web browser	Video access from Web browser
Developer support	Provides HTTP CGI API, ActiveX control development kit
System integration support	Powerful API for software integration available at http://www.flexwatch.com, including Simple Viewer API, FlexWATCH Control SDK, event trigger data in video stream, embedded scripting and access to serial port peripherals over HTTP/TCP User can be installed user program daemon for event notification or sending image.
Supported protocols	HTTP, RTP/RTSP(Uni/Multicast), TCP/IP(v4/v6), UDP, FTP, Telnet, HTTPS, RARP, PPPoE, SNMP, PAP, CHAP, DHCP, NTP, SMTP client, uPnP & etc
Dimensions	Size : 42 mm(W) x 42 mm(H) x 5 mm(D)

3. Interface

3.1. Image

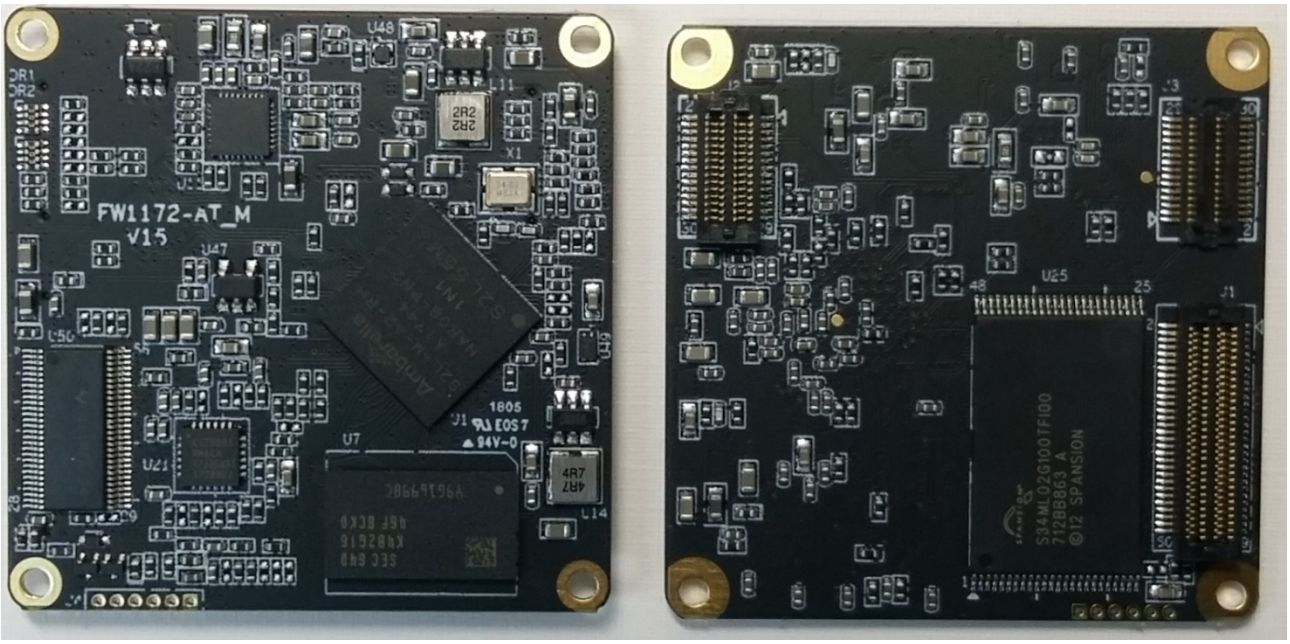

Figure 1 Top & Bottom View Image

3.2. Top View Part Layout

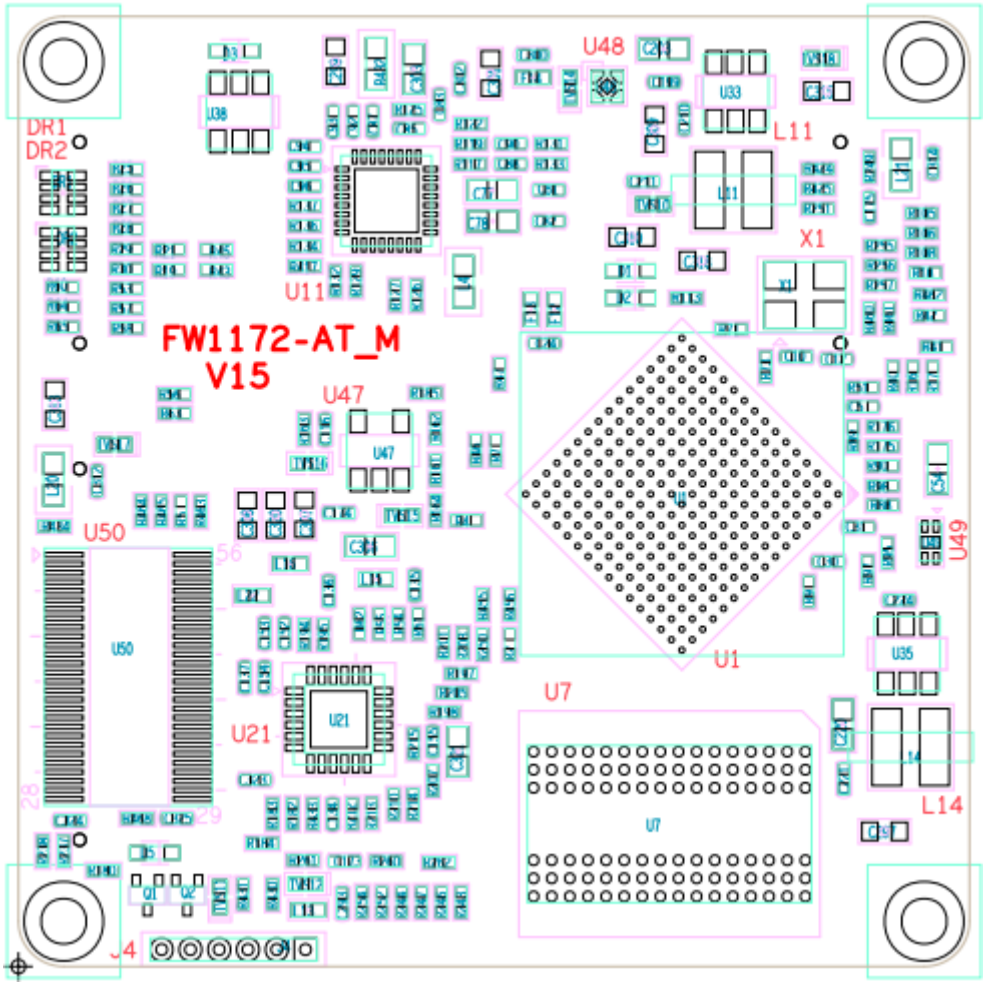

Figure 2 Top View Part Layout

3.3. Bottom View Part Layout

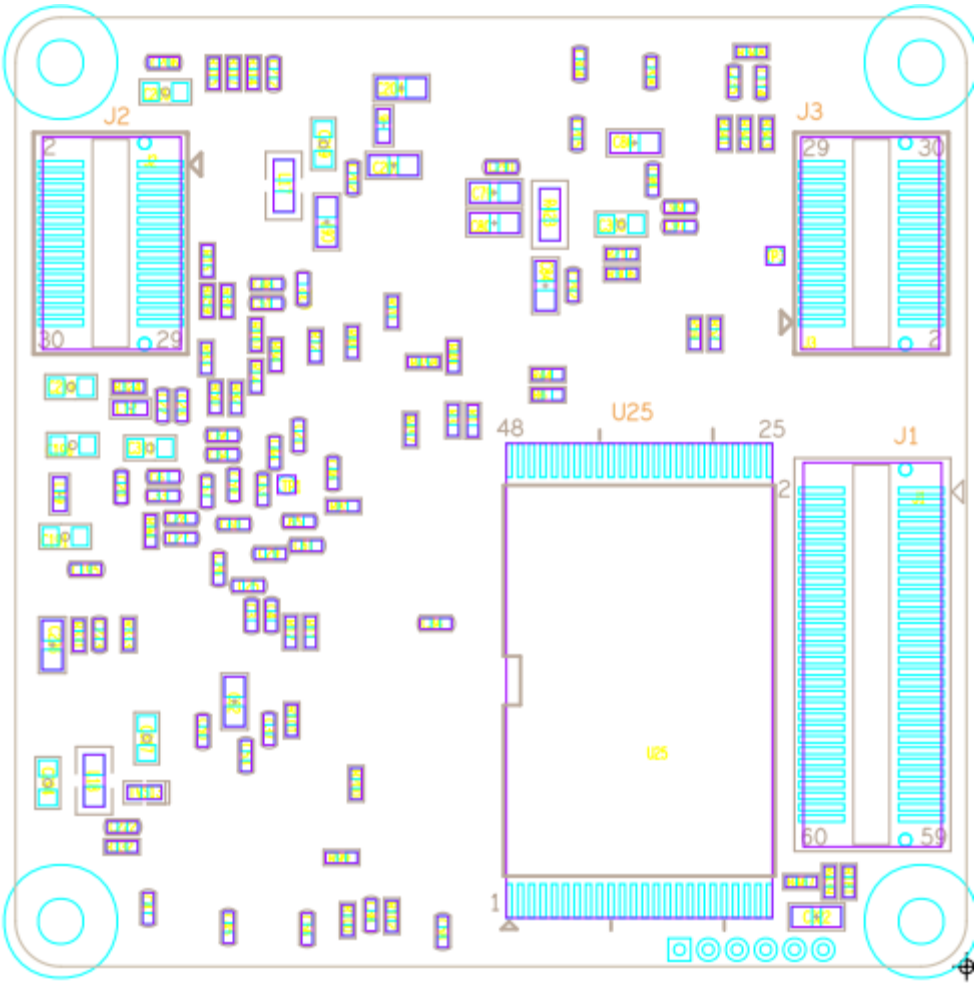

Figure 3 Bottom View Part Layout

3.4. Interface Specification

The J1 and J2 are default, the J3 is optional.

Table 3 J1 Interface Specification

Pin No	PIN NAME	DESCRIPTION	I/O	Pin No	PIN NAME	DESCRIPTION	I/O
1	GND	POWER GND	I	2	GND	POWER GND	I
3	VCC 3V3	POWER IN	I	4	EN_RX+	ETHERNET RX+	I
5	VCC 3V3	POWER IN	I	6	EN_RX-	ETHERNET RX-	I
7	VCC 3V3	POWER IN	I	8	GND	POWER GND	I
9	CLK_SI	SENSOR CLOCK	O	10	EN_TX+	ETHERNET TX+	O
11	AUDIO_OUTN	AUDIO OUT N	O	12	EN_TX-	ETHERNET TX-	O
13	MIC R INPUT	RESERVED	I	14	GND	POWER GND	I
15	ADC_CH1	RESERVED	I	16	LEFT MIC	AUDIO IN	I
17	GND	POWER GND	I	18	SPK OUTP	AUDIO OUT	O
19	USB_VBUS	USB VBUS	IN	20	MUTE	AUDIO MUTE	O
21	USB_DM	USB DM	I/O	22	GND	POWER GND	I
23	USB_DP	USB DP	I/O	24	VIDEO_OUTPUT	COMPOSITE OUTPUT	O
25	GND	POWER GND	I	26	GND	POWER GND	I
27	VDIN_HD	H SYNC	I	28	VDIN_VD	V SYNC	I
29	GND	POWER GND	I	30	GND	POWER GND	I
31	VDIN_D0	VIDEO DATA LSB1)	I	32	VDIN_D1	VIDEO DATA	I
33	VDIN_D2	VIDEO DATA	I	34	VDIN_D3	VIDEO DATA	I
35	VDIN_D4	VIDEO DATA	I	36	VDIN_D5	VIDEO DATA	I
37	VDIN_D6	VIDEO DATA	I	38	VDIN_D7	VIDEO DATA	I
39	VDIN_D8	VIDEO DATA	I	40	VDIN_D9	VIDEO DATA	I
41	VDIN_D10	VIDEO DATA	I	42	VDIN_D11	VIDEO DATA	I
43	VDIN_D12	VIDEO DATA	I	44	VDIN_D13	VIDEO DATA	I
45	VDIN_D14	VIDEO DATA	I	46	VDIN_D15	VIDEO DATA MSB	I
47	GND	POWER GND	I	48	GND	POWER GND	I
49	VDIN_CLK	PIXEL INPUT CLK	I	50	VCA_RDY_INT	RESERVED	I
51	GND	POWER GND	I	52	VCA_SPI_INT	RESERVED	I
53	EN_LINK	ETHERNET LINK LED	O	54	IRIS_PWM	PWM OUTPUT	O
55	EN_TXRX	ETHERNET TXRX LED, RESERVED	O	56	RESETn	SYSTEM RESET	O
57	IIC_SCL	IIC CLOCK	O	58	CAM_CTLIN	SENSOR CONTROL	I
59	IIC_SDA	IIC DATA	I/O	60	CAM_CTLOUT	SENSOR CONTROL	O

*) J1 : NLWBS-05-60C-3.0H(H BOSS)

Table 4 J4 Interface Specification

Pin No	PIN NAME	DESCRIPTION	I/O	Pin No	PIN NAME	DESCRIPTION	I/O
1	3.3V_IN	POWER IN	I	2	USB_DM	USB_DM	I/O
3	USB_DP	USB_DP	I/O	4	GND	POWER GND	I
5	3.3V	USB_BOOT POWER	O	6	USB_BOOT_A	USED FW UPDATE	I

*) To select the programming mode, short pins 5 and 6.

Table 5 J2 Interface Specification

Pin No	PIN NAME	DESCRIPTION	I/O	Pin No	PIN NAME	DESCRIPTION	I/O
1	GND	POWER GND	I	2	GND	POWER GND	I
3	UART0_RXD	UART0_RXD (TTL) 1)	I	4	UART1_RXD	UART1 RXD (TTL)	I
5	UART0_TXD	UART0_TXD (TTL)	O	6	UART1_RXD	UART1 TXD (TTL)	O
7	SD_CD	SD CARD DETECTIOND	I	8	UART1_RTS	UART1 RTS(TTL)	O
9	SD_CMD	SD COMMAND	O	10	VCC 3V3	POWER IN	I
11	SD_CLK	SD CLOCK	O	12	VCC 3V3	POWER IN	I
13	GND	POWER GND	O	14	VCC 3V3	POWER IN	I
15	SD_DAT0	SD DATA	I/O	16	GND	POWER GND	I
17	SD_DAT1	SD DATA	I/O	18	ICR_DAY	ICR_DAY	O
19	SD_DAT2	SD DATA	I/O	20	STATUS_LED	STATUS LED	O
21	SD_DAT3	SD DATA	I/O	22	DO (TTL)	EXTERNAL OUTPUT	O
23	RTC_CS	RTC CS/IRLED ON/OFF	O	24	DI (TTL)	EXTERNAL INPUT	I
25	RTC_DIO	RTC DIO	I/O	26	F_DEFAULT	FACTORY DEFAULT	I
27	RTC_CLK	RTC CLOCK	O	28	ICR_NIGHT	ICR_NIGHT	O
29	GND	POWER GND	I	30	GND	POWER GND	I

1) UART 0 IS CONSOLE. TTL 3.3V

*) J2 : NLWBS-05-30C-3.0H(H BOSS)

Table 6 J3 Interface Specification

Pin No	PIN NAME	DESCRIPTION	I/O	Pin No	PIN NAME	DESCRIPTION	I/O
1	UART1_RTS	UART1 RTS	O	2	GND	POWER GND	I
3	UART1_RXD	UART1 RXD	I	4	VCC 3V3	POWER IN	I
5	UART1_CTS	UART1 CTS	I	6	HVLD	VD OUT HVLD	
7	UART1_TXD	UART1 TXD	O	8	VSYNC	VD OUT SYNC	
9	VDOUT_VCLK	VOUT CLOCK	O	10	HSYNC	VD OUT HSYNC	
11	NC	NO CONNECTION		12	GND	POWER GND	I
13	NC	NO CONNECTION	O	14	ZOOM_A	ZOOM PHASE A	O
15	NC	NO CONNECTION	O	16	ZOOM_A-	ZOOM PHASE A-	O
17	NC	NO CONNECTION	O	18	ZOOM_B	ZOOM PHASE B	O
19	NC	NO CONNECTION	O	20	ZOOM_B-	ZOOM PHASE B	O
21	NC	NO CONNECTION	O	22	FOCUS_A	FOCUS PHASE A	O
23	NC	NO CONNECTION	O	24	FOCUS_A-	FOCUS PHASE A	O
25	NC	NO CONNECTION	O	26	FOCUS_B	FOCUS PHASE B	O
27	NC	NO CONNECTION	O	28	FOCUSB-	FOCUS PHASE B	O
29	GND	POWER GND	I	30	GND	POWER GND	I

*) J3 : NLWBP-05-30C-0.8H(H BOSS) . J3 is optional connector.

4. Mechanical

Drawings and Dimensions

Top side and Bottom side, Top view unit : mm

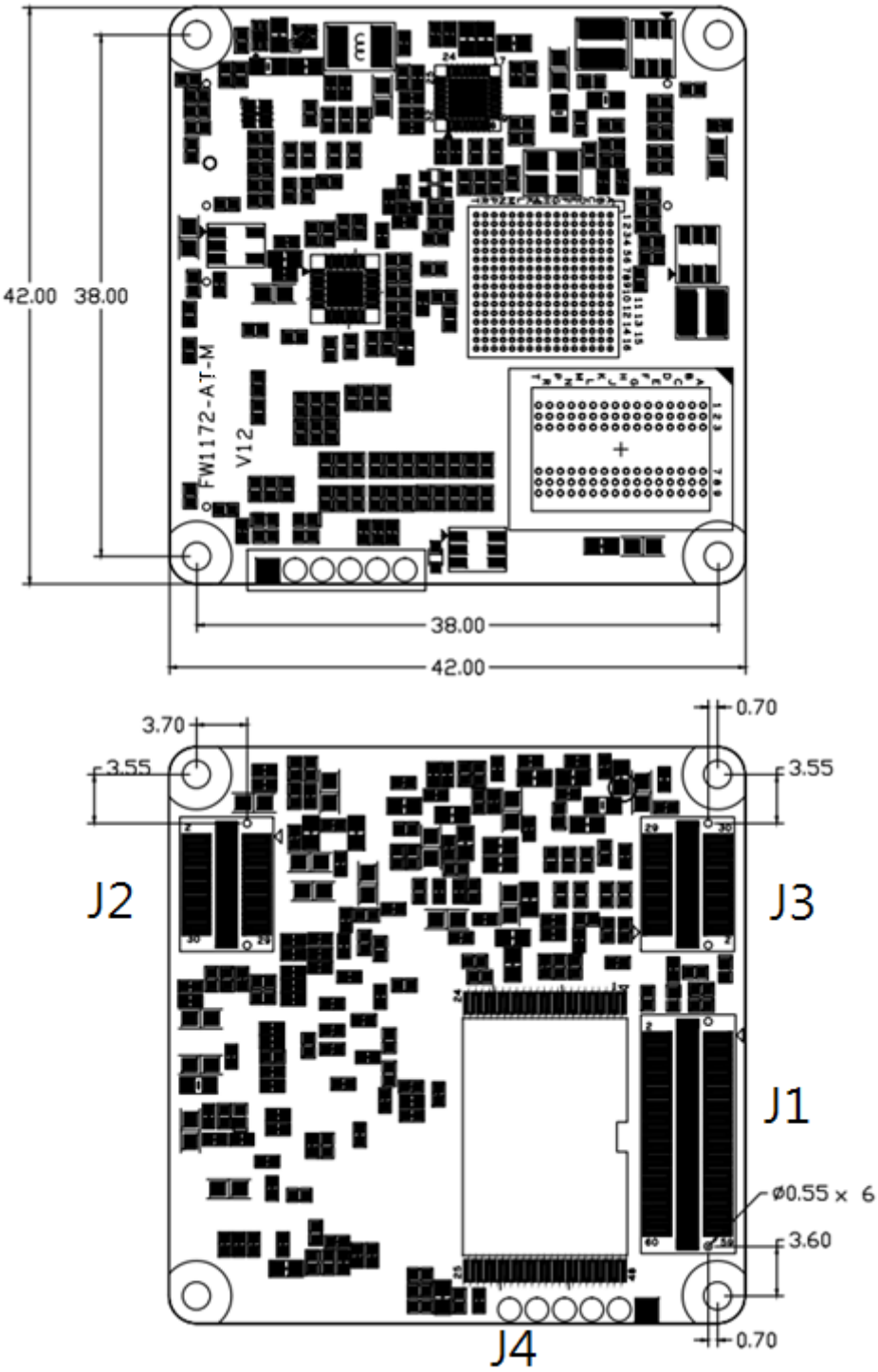

Figure 4 Mechanical Drawings and Dimensions