BW10 User Manual V3.0

Version:		
Version No.	Description	Issue Date:
V3.0	Initial version.	2020/03/04

1. Product Introduction

1.1. Hardware

The BW10 is based on the Intel Broadwell-U (or Haswell-U) platform.

1.2. Parameters

Broadwell-U

On-board Intel Broadwell Celeron Processor: 3205U, 1.5 GHz, TDP 15W

On-board Intel Broadwell Core Processor: i3-5010U, 2.1 GHz, TDP 15W

On-board Intel Broadwell Core Processor: i5-5200U, 2.2 GHz, TDP 15W

On-board Intel Broadwell Core Processor: i5-5257U, 2.7 GHz, TDP 28W

On-board Intel Broadwell Core Processor: i3-5500U, 2.4 GHz, TDP 15W

Haswall-U:

On-board Intel Haswell Core Processor: i3-4010U, 1.7 GHz, TDP 15W

On-board Intel Haswell Core Processor: i5-4200U, 1.6 GHz, TDP 15W

On-board Intel Haswell Core Processor: i7-4500U, 1.8 GHz, TDP 15W

Memory: single channel DDR3L-1600MHz, max 8GB

Display: integrated GPU, 1 x HDMI, 1 x VGA, 1 x LVDS, supporting dual channel and 24-bit display (eDP optional), supporting multi-display

Storage: 1 x SATA3.0, 1 x mSATA

USB: 2 x USB3.0. 6 x USB2.0 (onboard pin). The LAN#2 port can be configured as 2 x USB2.0 ports.

Ethernet Type: on-board 2 x Gigabyte network card

Audio: high definition audio chip, supporting rear line-out + mic-in ports, front line-out and mic-in onboard pin, and power amplifier

I/O: 10 x RS232 (JCOM2 can be changed to RS232/RS485)

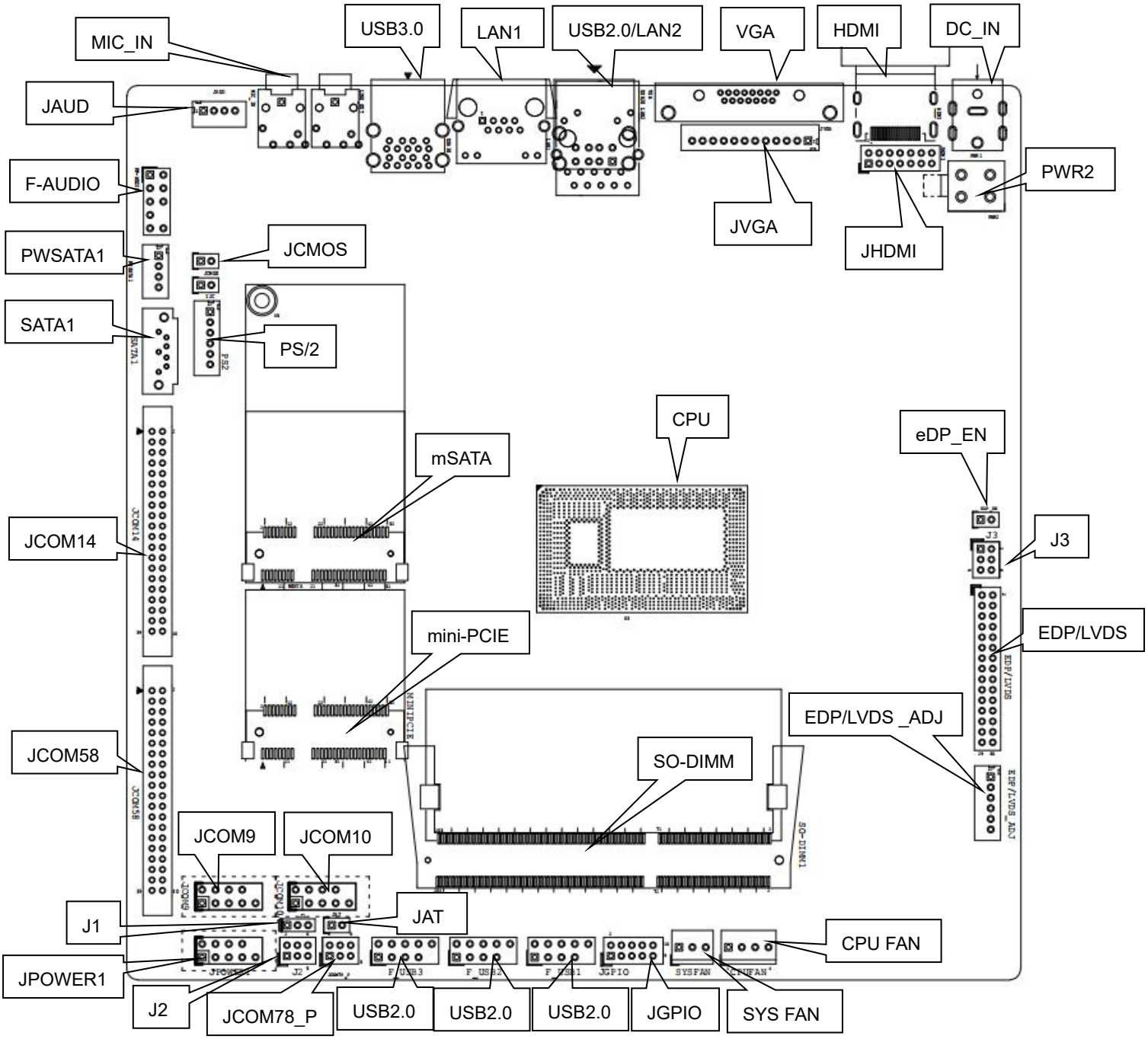
Expansion: 1 x mini PCIe slot, supporting Wi-Fi module; 1 x PS/2 interface (onboard pin) for keyboard and mouse; 8 x programmable GPIO (onboard pin)

Dimension: 170mm x 170mm

Power: DC 12V

Working temperature: -20℃~60℃

1.3. Diagram


MIC_IN
USB3.0
LAN1
USB2.0/LAN2
VGA
HDMI
DC_IN
JAUD
F-AUDIO
PWR2
JVGA
JHDMI
PWSATA1
JCMOS
SATA1
PS/2
CPU
eDP_EN
mSATA
JCOM14
J3
EDP/LVDS
mini-PCIE
EDP/LVDS _ADJ
JCOM58
SO-DIMM
JCOM9
JCOM10
J1
JAT
CPU FAN
JPOWER1
J2
JCOM78_P
USB2.0
USB2.0
USB2.0
JGPIO
SYS FAN

2. Hardware Function

2.1. Jumper Setting

How to identify the first header of jumpers and pins: Observe the mark beside the jumper or pins and find the header marked by “1” or bold line or triangular symbol. Or observe the rear panel and the header with square solder pad is the first header.

2.2. Memory

1 x DDR3L-1600MHz SO-DIMM slot, supporting max 8GB memory

2.3. Display Interface

Display: integrated GPU, 1 x HDMI 1.4, 1 x VGA, 1 x LVDS, supporting dual channel and 24-bit display, supporting multi-display

LVDS can be revised to 2-lane eDP, and the LVDS will be disabled.

The board is equipped with pin VGA and HDMI interface as backup option. The interface can work with the standard HDMI interface at the same time.

2.3.1. LVDS (screen printing: EDP/LVDS, EDP/LVDS_ADJ, J3, EDP_EN)

It's equipped with one LVDS interface supporting max dual channels and 24 bit. EDP_EN is the controlling jumper of LVDS.

The LVDS display power supply is controlled by J3. The voltage can be adjusted to 12V, 5V or 3.3V.

EDP/LVDS_ADJ controls the LVDS backlight adjustment,

LVDS data pin (screen printing: EDP/LVDS)

Signal	Pin		Signal
VCC	1	2	VCC
VCC	3	4	GND
GND	5	6	GND
A_DATA0_DN	7	8	A_DATA0_DP
A_DATA1_DN	9	10	A_DATA1_DP
A_DATA2_DN	11	12	A_DATA2_DP
GND	13	14	GND
A_CLK_DN	15	16	A_CLK_DP
A_DATA3_DN	17	18	A_DATA3_DP
B_DATA0_DN	19	20	B_DATA0_DP
B_DATA1_DN	21	22	B_DATA1_DP
B_DATA2_DN	23	24	B_DATA2_DP
GND	25	26	GND
B_CLK_DN	27	28	B_CLK_DP
B_DATA3_DN	29	30	B_DATA3_DP

EDP_EN (screen printing: EDP_EN)

Settings	EDP_EN
Open	Turn off the LVDS.
Close	Turn on the LVDS.

Display backlight brightness adjustment pin (screen printing: EDP/LVDS_ADJ)

Pin	Signal
1	GND
2	GND
3	LCD_BKL_ADJ
4	LCD_BKL_ON
5	12V
6	12V

Power supply jumper pin (screen printing: J3)

Pin	Settings	Function
1-2	Close	VCC(+3.3V)
3-4	Close	VCC(+5V)
5-6	Close	VCC(+12V)

Note: The LVDS display power supply is controlled by jumpers. The voltage can be adjusted to 12V, 5V or 3.3V. Don't short-circuit two or more interfaces with jumper cap.

2.3.2. eDP (optional)

It can be equipped with 2-lane eDP interface. The EDP/LVDS pin controls the eDP signal transmission, the EDP/LVDS_ADJ pin controls the backlight adjustment, and the J3 pin controls the display working voltage adjustment.

eDP data pin (screen printing: EDP/LVDS)

Signal	Pin		Signal
VCC	1	2	VCC
VCC	3	4	EDP_HPD
GND	5	6	GND
EDP_AUXN	7	8	EDP_AUXP
N/A	9	10	N/A
EDP_DATA0_P	11	12	EDP_DATA0_N
GND	13	14	GND
N/A	15	16	N/A
EDP_DATA1_P	17	18	EDP_DATA1_N
N/A	19	20	N/A
N/A	21	22	N/A
N/A	23	24	N/A
GND	25	26	GND
N/A	27	28	N/A
N/A	29	30	N/A

EDP_EN (screen printing: EDP_EN)

Settings	EDP_EN
Open	Turn off the eDP.

Settings	EDP_EN
Close	Turn on the eDP.

eDP display backlight brightness adjustment pin (screen printing: EDP/LVDS_ADJ)

Pin	Signal
1	GND
2	GND
3	LCD_BKL_ADJ
4	LCD_BKL_ON
5	12V
6	12V

eDP display power supply jumper (screen printing: J3)

Interface	Settings	Function
1-2	Close	VCC(+3.3V)
3-4	Close	VCC(+5V)
5-6	Close	VCC(+12V)

Note: The LVDS display power supply is controlled by jumpers. The voltage can be adjusted to 12V, 5V or 3.3V. Don't short-circuit two or more interfaces with jumper cap.

2.3.3. Onboard pin display interface (JHDMI, JVGA)

JHDMI (screen printing: JHDMI)

Signal	Pin		Signal
DATA2_P	1	2	DATA2_N
DATA1_P	3	4	DATA1_N
DATA0_P	5	6	DATA0_N
CLK_P	7	8	CLK_N
SCL	9	10	SDA
VCC_5V	11	12	GND
DETECT	13	14	GND

JVGA (screen printing: JVGA)

Pin	Signal
1	CRT_DDC_ DATA
2	CRT_DDC_ CLK
3	GND
4	VGA_B_R
5	GND
6	VGA_G_R
7	GND

Pin	Signal
8	VGA_R_R
9	GND
10	CRT_HSYNC1
11	CRT_VSYNC1
12	(NC)

2.4. Board power (screen printing: PWR1, PWR2)

12V DC-in power supply

PWR1

PWR2

Definition	Pin		Signal
GND	2	1	GND
VIN	4	3	VIN

2.5. USB (screen printing: F_USB1, F_USB2, F_USB3)

2 x USB3.0 rear port, 6 x USB2.0 onboard pin (2.54mm spacing)

USB pin (screen printing: F_USB1, F_USB2, F_USB3）

Signal	Pin		Signal
VCC 5V	1	2	VCC 5V
USB DATA-	3	4	USB DATA-
USB DATA+	5	6	USB DATA+
GND	7	8	GND
	9	10	(NC)

2.6. LAN

It's equipped with two RTL8111H-based gigabit Ethernet controlling RJ45 ports, supporting magic packet wake-up and PXE network guide. And the port with screen printing of USB2.0 LAN2 can be changed to 2 x USB2.0.

Interface LED indicators:

LI_LED (green)	Function	ACT_LED (orange)	Function
Always on	Network connected	Blinking	Data being transmitted

2.7. Audio interface (screen printing: FP_AUDIO, JAUD)

It's equipped with the ALC662 audio controlling chip. The green interface is for audio output (line-out), and the pink interface is for mic input (Mic-in). The FP_AUDIO controls the front audio and the JAUD controls the power amplifier output.

FP_AUDIO (screen printing: FP_AUDIO)

Signal	Pin		Signal
MIC2*L	1	2	AGND
MIC2*R	3	4	AVCC
FRO-R	5	6	MIC2-JD
F-IO-SEN(AGNG)	7	8	
FRO-L	9	10	LIN2-JD

JAUD (screen printing: JAUD)

Pin	Signal
1	L+
2	L-
3	R-
4	R+

2.8. COM (screen printing: JCOM14, JCOM58, JCOM9, JCOM10, JCOM78_P, J1, J2）

It provides 10 RS232 COM (onboard pins), and COM7 and COM8 are powered through jumper JCOM78_P with 5V or 12V voltage. COM2 can be set as RS232 or RS485 through jumper J1 and J2.

COM9, COM10 (screen printing: JCOM9, JCOM10)

Signal	Pin		Signal
DCD	1	2	RXD
TXD	3	4	DTR
GND	5	6	DSR
RTS	7	8	CTS
RI	9		

COM14, COM58 (screen printing: JCOM14, JCOM58)

Signal	Pin		Signal
DCD#	1	2	RXD
TXD	3	4	DTR#
GND	5	6	DSR#
RTS#	7	8	CTS#
RI#	9	10	(NC)
DCD#	11	12	RXD
TXD	13	14	DTR#
GND	15	16	DSR#
RTS#	17	18	CTS#
RI#	19	20	(NC)
DCD#	21	22	RXD
TXD	23	24	DTR#
GND	25	26	DSR#

Signal	Pin		Signal
DCD#	1	2	RXD
TXD	3	4	DTR#
GND	5	6	DSR#
RTS#	7	8	CTS#
RI#	9	10	(NC)
DCD#	11	12	RXD
TXD	13	14	DTR#
GND	15	16	DSR#
RTS#	17	18	CTS#
RTS#	27	28	CTS#
RI#	29	30	(NC)
DCD#	31	32	RXD
TXD	33	34	DTR#
GND	35	36	DSR#
RTS#	37	38	CTS#
RI#	39	40	(NC)

COM2 (COM2 is the pin11-19 in COM14)

Pin	RS232	RS485
11	DCD	DATA-
12	RXD	DATA+
13	TXD	(NC)
14	DTR	(NC)
15	GND	GND
16	DSR	(NC)
17	RTS	(NC)
18	CTS	(NC)
19	RI	(NC)

COM2 mode setting (screen printing: J1, J2)

JCOM2	
RS232	RS485
J1(1-2) J2(1-3、2-4)	J1(2-3) J2(3-5、4-6)

JCOM78_P (screen printing JCOM78_P)

Interface	Settings	Function
1-3	Close	COM7_5V
3-5	Close	COM7_12V
2-4	Close	COM8_5V

Interface	Settings	Function
4-6	Close	COM8_12V

2.9. SATA and mSATA (screen printing: SATA1, PWSATA1, MSATA)

It's equipped with 1 SATA3.0 port and 1 mSATA slot (same as SATA3.0), together with 1 4-pin hard drive power supply interface.

PWSATA1 (screen printing: PWSATA1)

Pin	Signal
1	+5V
2	GND
3	GND
4	+12V

2.10. PS/2 pin (screen printing: PS2)

The board is equipped with 1 set of 6-pin PS/2 socket, supporting a PS/2 keyboard and a KS/2 mouse.

PS2 (screen printing: PS2)

Pin	Signal
1	+5V
2	KB_DATA
3	KB_CLK
4	MS_ DATA
5	MS_CLK
6	GND

2.11. GPIO (screen printing: JGPIO)

The board is equipped with a set of 2 x 5pin as JGPIO pin (2.0mm spacing), supporting 8 programmable I/O lanes in total.

GPIO (screen printing: JGPIO)

Signal	Pin		Signal
SIO_GP70	1	2	3.3V
SIO_GP71	3	4	SIO_GP74
SIO_GP72	5	6	SIO_GP75
SIO_GP73	7	8	SIO_GP76
GND	9	10	SIO_GP77

2.12. Front panel interface (screen printing: JPOWER1)

The front control panel interfaces are to connect the functional buttons and indicators on the front panel.

JPOWER1 (screen printing: JPOWER1)

Signal	Pin		Signal
HDD_LED+	1	2	PWR_LED+

Signal	Pin		Signal
HDD_LED+	1	2	PWR_LED+
HDD_LED-	3	4	PWR_LED-
RST_BTN-	5	6	PWR_ON+
RST_BTN+	7	8	PWR_ON-
(NC)	9		

2.13. System fan (screen printing: SYSFAN)

SYS_FAN (screen printing: SYS_FAN)

Pin	Signal
1	GND
2	+5V
3	TAC

2.14. CPU fan (screen printing: CPU_FAN)

CPU_FAN (screen printing: CPU_FAN)

Pin	Signal
1	GND
2	+5V
3	TAC
4	CTL

2.15. Hardware auto start (screen printing: JAT)

JAT (screen printing: JAT)

Settings	JAT
Close	Hardware auto start

2.16. CMOS Clearance/Retention (screen printing: JCMOS)

CMOS is controlled by the onboard button battery. Clearing CMOS will permanently remove the previous system settings and restore the board to the original (factory settings) system settings.

Step 1: Turn off the PC and disconnect power adapter;

Step 2: Use the jumper cap to connect the 1st and 2nd headers of JCMOS for about 10 seconds and disconnect;

Step 3: When starting the device, press the <DEL> button to enter the BIOS, load the optimal default value and save and exit.

JCOMS

Settings	JCMOS
Close	Clear the CMOS

⚠ Don't clear COMS when the PC is connected to power in case the board is damaged.