EmQ-i230J

Qseven® CPU Module

User's Manual

Version 1.0

2020.06

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Revision History

Version	Release Time	Description
1.0	2020.06	Initial release

Copyright Notice

The information in this document is subject to change without prior notice in order to improve the reliability, design and function. It does not represent a commitment on the part of the manufacturer.

Under no circumstances will the manufacturer be liable for any direct, indirect, special, incidental, or consequential damages arising from the use or inability to use the product or documentation, even if advised of the possibility of such damages.

Declaration of Conformity

CE

The CE symbol on your product indicates that it is in compliance with the directives of the Union European (EU). A Certificate of Compliance is available by contacting Technical Support.

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from ARBOR. Please contact your local supplier for ordering information.

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

Warning

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC Class A

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1)This device may not cause harmful interference, and

(2)This device must accept any interference received, including interference that may cause undesired operation.

NOTE:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

RoHS

ARBOR Technology Corp. certifies that all components in its products are in compliance and conform to the European Union's Restriction of Use of Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive 2002/95/EC.

The above mentioned directive was published on 2/13/2003. The main purpose of the directive is to prohibit the use of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE) in electrical and electronic products. Member states of the EU are to enforce by 7/1/2006.

ARBOR Technology Corp. hereby states that the listed products do not contain unintentional additions of lead, mercury, hex chrome, PBB or PBDB that exceed a maximum concentration value of 0.1% by weight or for cadmium exceed 0.01% by weight, per homogenous material. Homogenous material is defined as a substance or mixture of substances with uniform composition (such as solders, resins, plating, etc.). Lead-free solder is used for all terminations (Sn(96-96.5%), Ag(3.0-3.5%) and Cu(0.5%)).

SVHC / REACH

To minimize the environmental impact and take more responsibility to the earth we live, Arbor hereby confirms all products comply with the restriction of SVHC (Substances of Very High Concern) in (EC) 1907/2006 (REACH --Registration, Evaluation, Authorization, and Restriction of Chemicals) regulated by the European Union.

All substances listed in SVHC < 0.1 % by weight (1000 ppm)

Warning

Single Board Computers and their components contain very delicate Integrated Circuits (IC). To protect the Single Board Computer and its components against damage from static electricity, you should always follow the following precautions when handling it:

1. Disconnect your Single Board Computer from the power source when you want to work on the inside.
2. Hold the board by the edges and try not to touch the IC chips, leads or circuitry.
3. Use a grounded wrist strap when handling computer components.
4. Place components on a grounded antistatic pad or on the bag that comes with the Single Board Computer, whenever components are separated from the system.

Replacing the Lithium Battery

Incorrect replacement of the lithium battery may lead to a risk of explosion.

The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer.

Do not throw lithium batteries into the trash-can. It must be disposed of in accordance with local regulations concerning special waste.

Technical Support

If you have any technical difficulties, please do not hesitate to call or e-mail our customer service.

http://www.arbor-technology.com

E-mail:info@arbor.com.tw

Warranty

This product is warranted to be in good working order for a period of two years from the date of purchase. Should this product fail to be in good working order at any time during this period, we will, at our option, replace or repair it at no additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster.

Vendor assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, or inability to use this product. Vendor will not be liable for any claim made by any other related party. Vendors disclaim all other warranties, either expressed or implied, including but not limited to implied warranties of merchantability and fitness for a

particular purpose, with respect to the hardware, the accompanying product's manual(s) and written materials, and any accompanying hardware. This limited warranty gives you specific legal rights.

Return authorization must be obtained from the vendor before returned

merchandise will be accepted. Authorization can be obtained by calling or faxing the vendor and requesting a Return Merchandise Authorization (RMA) number. Returned goods should always be accompanied by a clear problem description.

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Chapter 1

Introduction

1.1. Features

- Fanless Design
- Soldered Onboard Intel® Atom™ Processor E3800 family
- Integrated Gigabit Ethernet
- Soldered Onboard eMMC(OEM Request)
- Dual Channels 24-bit LVDS, DDI Port
- Wide Range Operating Temp.: -40 ~ 85ºC

1.2. About this Manual

This manual is intended for experienced users and integrators with hardware knowledge of computers. If you are not sure about the description in this manual, consult your vendor before further handling.

We recommend that you keep one copy of this manual for the quick reference for any necessary maintenance in the future. Thank you for choosing ARBOR products.

1.3. Specifications

Form Factor	Qseven® CPU Module
Processor	Soldered onboard Intel® Atom™ Processor E3800 family E3825 1.33GHz or E3845 1.91GHz
Memory	Soldered onboard 2GB/4GB DDR3L SDRAM
BIOS	Insyde BIOS
Watchdog	1~255 levels reset
USB 2.0	8 x USB 2.0 ports
Expansion	3 x PCIex1, I2C,SDIO
Storage	2 x Serial ATA ports with 300MB/s HDD transfer rate up to 64GB eMMC 4.5 (OEM Request)
Ethernet	1 x Intel® i210IT PCIe GbE controller
Audio	HD Link
Graphics Chipset	Integrated Intel® Gen7 Graphic
Graphics Interface	Analog RGB/DVI: Analog RGB (via RSV pin), with resolution up to 2048x1536
	LCD: Dual Channel 24-bit LVDS, with resolution up to 1920x1200
	DDI port: 1 x DDI port
OS Support	Windows 7 32-bit/64-bit Windows 10 64-bit Linux: Ubuntu
Power Requirement	DC 5V, 5VSB
Power Consumption	0.94A@12V with E3825 (Typical, with PBQ-3000)
Operating Temp.	-40 ~ 85°C (-40 ~ 185°F)
Operating Humidity	10 ~ 95% @ 85°C (non-condensing)
Dimension (L x W)	70 x 70 mm (2.76” x 2.76”)

1.4. Inside the Package

Before starting with the installation, make sure the following items are shipped. If any of the items is missing or appears damaged, contact your local dealer or distributor.

1 x EmQ-i230J Qseven® CPU Module

1 x Quick Installation Guide

1.5. Ordering Information

EmQ-i230J-WT-E3825-2G	Intel® Atom™ Processor E3825 Qseven® CPU module with 2GB memory soldered on module
EmQ-i230J-WT-E3845-2G	Intel® Atom™ Processor E3845 Qseven® CPU module with 2GB memory soldered on module
EmQ-i230J-WT-E3825-4G	Intel® Atom™ Processor E3825 Qseven® CPU module with 4GB memory soldered on module
EmQ-i230J-WT-E3845-4G	Intel® Atom™ Processor E3845 Qseven® CPU module with 4GB memory soldered on module
EmQ-i230JD-WT-E3825-2G	Intel® Atom™ Processor E3825 Qseven® CPU module with 2GB memory soldered on module,w/ 32GB eMMC (OEM Request)
EmQ-i230JD-WT-E3845-2G	Intel® Atom™ Processor E3845 Qseven® CPU module with 2GB memory soldered on module,w/ 32GB eMMC (OEM Request)
EmQ-i230JD-WT-E3825-4G	Intel® Atom™ Processor E3825 Qseven® CPU module with 4GB memory soldered on module,w/ 32GB eMMC (OEM Request)
EmQ-i230JD-WT-E3845-4G	Intel® Atom™ Processor E3845 Qseven® CPU module with 4GB memory soldered on module,w/ 32GB eMMC (OEM Request)

1.6. Optional Accessories

HS-230J-F1	Heat spreader 70x65x8mm
HS-0000-W3	Universal evaluation heat sink kit with thermal pad 70x65x29.8mm, only used on a flat-type heat spreader
PBQ-3000	Qseven® R1.2 carrier board in EPIC form factor
CBK-06-3000-00	Cable kit 1 x USB cable 1 x USB2 cable 2 x Serial port cables 1 x SATA cable 1 x SATA power cable

1.7. Driver(7.1A) Installation Note

To install the drivers, please visit our website at **www.arbor-technology.com** and download the driver pack from the product page.

Windows 7

Driver	Path
Audio	\EmQ-i230J\Win7\Audio\32bit_Win7_R273
	\EmQ-i230J\Win7\Audio\64bit_Win7_R273
Chipset	\EmQ-i230J\Win7\Chipset
Ethernet	\EmQ-i230J\Win7\LAN\PROWin32
	\EmQ-i230J\Win7\LAN\PROWinx64
Graphics	\EmQ-i230J\Win7\Graphic\32bit
	\EmQ-i230J\Win7\Graphic\64bit
Processor IO	\EmQ-i230J\Win7\Processor IO\Win7_IO_Drivers
TXE Patch	\EmQ-i230J\Win7\TXE Patch

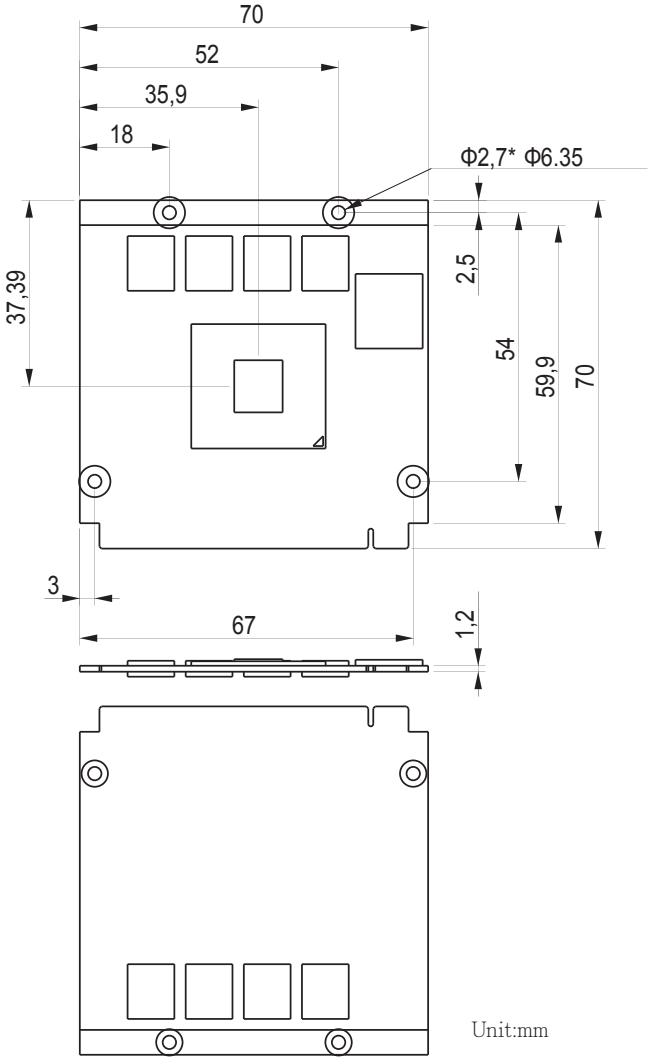
Windows 10

Driver	Path
Audio	\EmQ-i230J\Win10\Audio\Win32
	\EmQ-i230J\Win10\Audio\Win64
GPIO I2C	\EmQ-i230J\Win10\GPIO I2C\windows10 32_64
Ethernet	\EmQ-i230J\Win10\LAN\Win32_64
Graphics	\EmQ-i230J\Win10\Graphic\Win32\win10_36_15_0_1091
	\EmQ-i230J\Win10\Graphic\Win64\win10_37_15_0_1091
INF	\EmQ-i230J\Win10\INF\Win32_64
TXE Patch	\EmQ-i230J\Win10\TXE

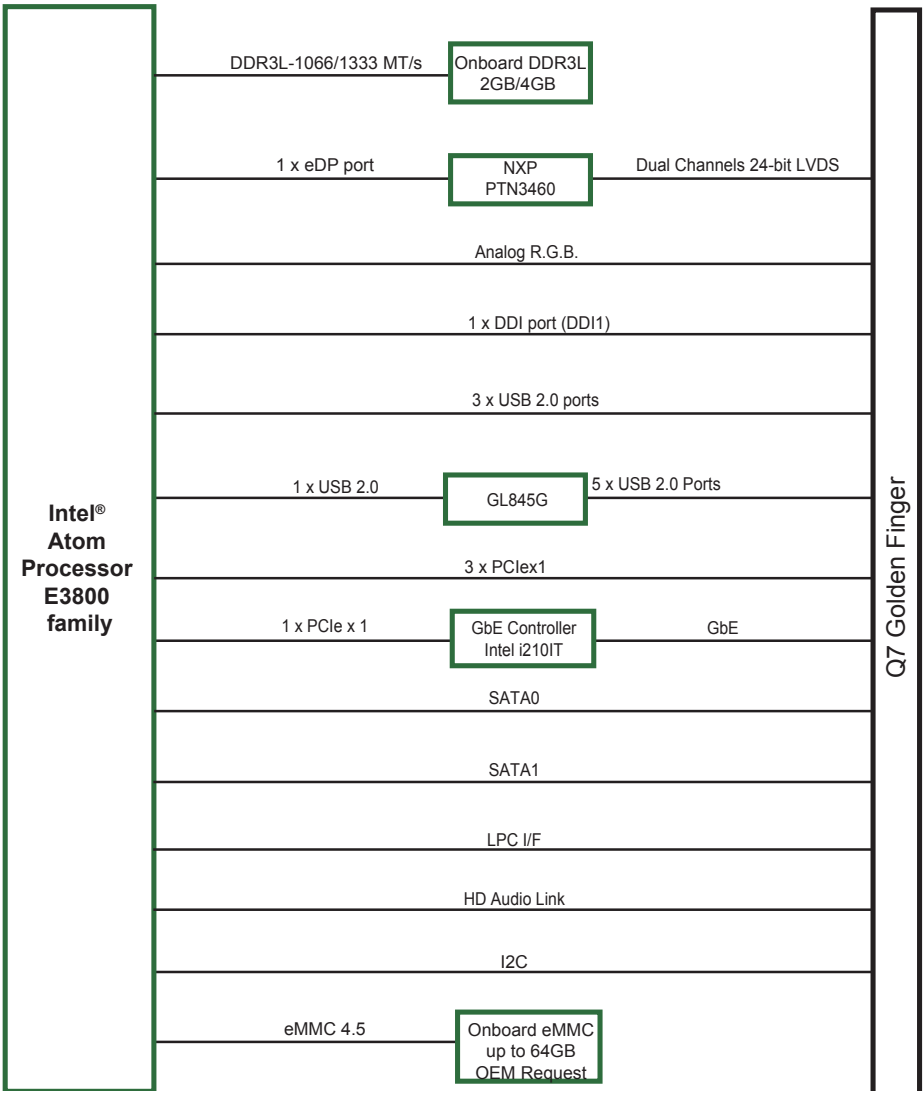
Chapter 2

Board Overview

2.1. Board Dimensions



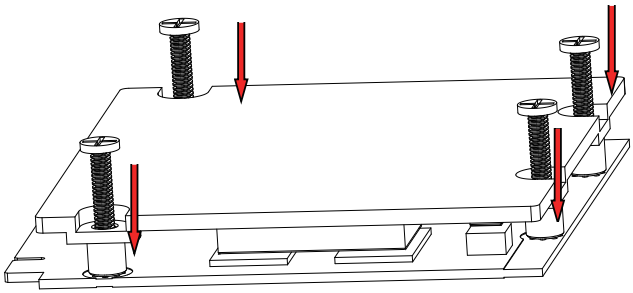
2.2. Block Diagram



Heat Spreader Installation

To install the heat spreader:

See the illustration below. Mount the heat spreader to the board. Fix the heat spreader in place with fours screws.



2.3. Connector Pin Definition

Pin	Signal	Pin	Signal
1	GND	2	GND
3	GBE_MDI3-	4	GBE_MDI2-
5	GBE_MDI3+	6	GBE_MDI2+
7	GBE_LINK100#	8	GBE_LINK1000#
9	GBE_MDI1-	10	GBE_MDI0-
11	GBE_MDI1+	12	GBE_MDI0+
13	GBE_LINK#	14	GBE_ACT#
15	GBE_V1P5	16	SUS_S4#
17	WAKE#	18	SUS_S3#
19	SUS_STAT#	20	PWRBTN#
21	SLEEP#	22	LID#
23	GND	24	GND
	KEY		KEY
25	GND	26	PWRGD
27	BATLOW#	28	RSTBTN#
29	SATA0_TX+	30	SATA1_TX+
31	SATA0_TX-	32	SATA1_TX-
33	SATA_ACT#	34	GND
35	SATA0_RX+	36	SATA1_RX+
37	SATA0_RX-	38	SATA1_RX-
39	GND	40	GND
41	BIOS_DISABLE#	42	SDIO_CLK#
43	SDIO_CD#	44	SDIO_LED (N/C)
45	SDIO_CMD	46	SDIO_WP
47	SDIO_PWR#	48	SDIO_DAT1
49	SDIO_DAT0	50	SDIO_DAT3
51	SDIO_DAT2	52	SDIO_DAT5 (N/C)
53	SDIO_DAT4 (N/C)	54	SDIO_DAT7 (N/C)
55	SDIO_DAT6 (N/C)	56	RSVD (N/C)
57	GND	58	GND
59	HDA_SYNC	60	SMB_CLK
61	HDA_RST#	62	SMB_DAT
63	HDA_BIT_CLK	64	SMB_ALERT#

Pin	Signal	Pin	Signal
65	SDATA_IN0	66	I2C_CLK
67	SDATA_OUT	68	I2C_DAT
69	THRM#	70	WDTRIG#
71	THRM_ALERT#	72	WDOUT (N/C)
73	GND	74	GND
75	USB_P7-	76	USB_P6-
77	USB_P7+	78	USB_P6+
79	OVCUR#_C2	80	OVCUR#_C1
81	USB_P5-	82	USB_P4-
83	USB_P5+	84	USB_P4+
85	USB_-OC2/3	86	USB_-OC0/1
87	USB_P3-	88	USB_2P
89	USB_P3+	90	USB_2N
91	USB_HOST_PRES#(N/C)	92	USB_HC_SEL (N/C)
93	USB_P1-	94	USB_0N
95	USB_P1+	96	USB_0P
97	GND	98	GND
99	LVDS_A0+	100	LVDS_B0+
101	LVDS_A0-	102	LVDS_B0-
103	LVDS_A1+	104	LVDS_B1+
105	LVDS_A1-	106	LVDS_B1-
107	LVDS_A2+	108	LVDS_B2+
109	LVDS_A2-	110	LVDS_B2-
111	LCD_VDDEN	112	LVDS_BKLTEN
113	LVDS_A3+	114	LVDS_B3+
115	LVDS_A3-	116	LVDS_B3-
117	GND	118	GND
119	LVDS_A_CLK+	120	LVDS_B_CLK+
121	LVDS_A_CLK-	122	LVDS_B_CLK-
123	LVDS_BLT_CTRL	124	RSVD (N/C)
125	LVDS_DID_DAT	126	CRT_DDC_DATA
127	LVDS_DID_CLK	128	CRT_DDC_CLK
129	CAN0_TX (N/C)	130	CAN0_RX (N/C)

Pin	Signal	Pin	Signal
131	DP1_TX3_P	132	SDVO_INT+ (N/C)
133	DP1_TX3_N	134	SDVO_INT- (N/C)
135	GND	136	GND
137	DP1_TX1_P	138	DPI0_AUXP
139	DP1_TX1_N	140	DPI0_AUXN
141	GND	142	GND
143	DP1_TX2_P	144	SDVO_TVCLKIN+ (N/C)
145	DP1_TX2_N	146	SDVO_TVCLKIN- (N/C)
147	GND	148	GND
149	DP1_TX0_P	150	DDI0_DDCDATA
151	DP1_TX0_N	152	DDI0_DDCCLK
153	DDI0_HPDET#	154	DP_HPD#
155	PCIE_CLKP0	156	PCIE_WAKE#
157	PCIE_CLKN0	158	PCIE_RST#
159	GND	160	GND
161	PCIE3_TX+ (N/C)	162	PCIE3_RX+ (N/C)
163	PCIE3_TX- (N/C)	164	PCIE3_RX- (N/C)
165	GND	166	GND
167	PCIE2_TX+	168	PCIE2_RX+
169	PCIE2_TX-	170	PCIE2_RX-
171	EXCD0_PERST#	172	EXCD1_PERST#
173	PCIE1_TX+	174	PCIE1_RX+
175	PCIE1_TX-	176	PCIE1_RX-
177	EXCD0_CPPE#	178	EXCD1_CPPE#
179	PCIE0_TX+	180	PCIE0_RX+
181	PCIE0_TX-	182	PCIE0_RX-
183	GND	184	GND
185	LPC_AD0	186	LPC_AD1
187	LPC_AD2	188	LPC_AD3
189	LPC_CLK0	190	LPC_FRAME#
191	SERIRQ	192	LPC_LDRQ# (N/C)
193	VCC_RTC	194	SPKR
195	FAN_TACHOIN (N/C)	196	FAN_PWMOUT

Pin	Signal	Pin	Signal
197	GND	198	GND
199	SPI_MOSI	200	SPI_CS0#
201	SPI_MISO	202	SPI_CS1# (N/C)
203	SPI_SCLK	204	CRT_RED
205	VCC_5V_SB	206	VCC_5V_SB
207	CRT_VSYNC	208	CRT_GREEN
209	CRT_HSYNC	210	CRT_BLUE
211	+5V	212	+5V
213	+5V	214	+5V
215	+5V	216	+5V
217	+5V	218	+5V
219	+5V	220	+5V
221	+5V	222	+5V
223	+5V	224	+5V
225	+5V	226	+5V
227	+5V	228	+5V
229	+5V	230	+5V

Chapter 3

BIOS

The BIOS Setup utility is featured by Insyde BIOS to configure the system settings stored in the system's BIOS ROM. Insyde BIOS is activated once the computer powers on.

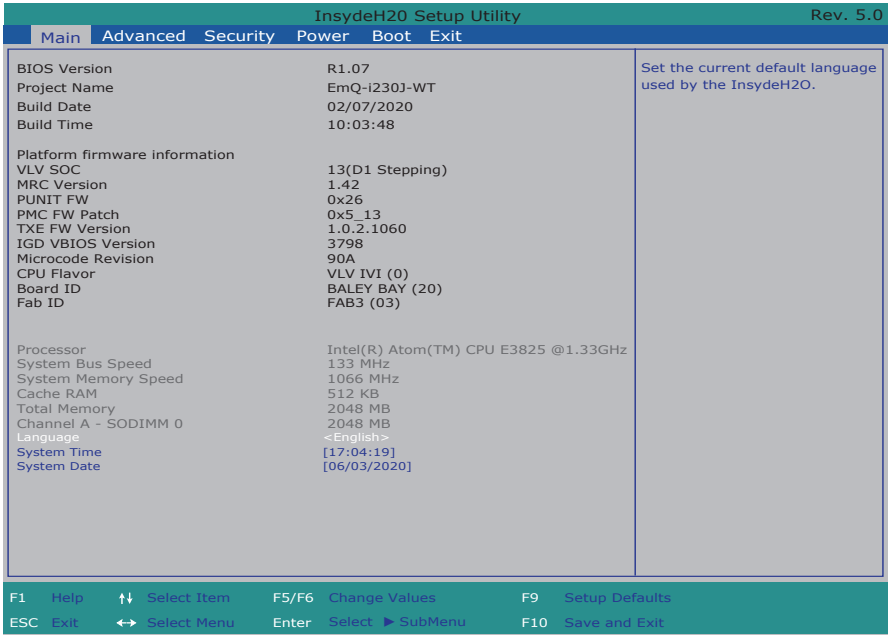
After entering the utility, use the left/right arrow keys to navigate between the top menus and use the down arrow key to access one.

Menu	Description
Main	See 3.1. Main on page 15
Advanced	See 3.2. Advanced on page 16
Security	See 3.3. Security on page 24
Power	See 3.4. Power on page 25
Boot	See 3.5. Boot on page 26
Exit	See 3.6. Exit on page 28

NOTE: For system stability and performance, this BIOS utility is constantly improved. The screenshots demonstrated and descriptions hereinafter are for reference only and may not exactly meet what is presented onscreen.

3.1. Main

The **Main** menu displays some BIOS info and features the settings of **System Date** and **System Time**.



The BIOS info displayed is:

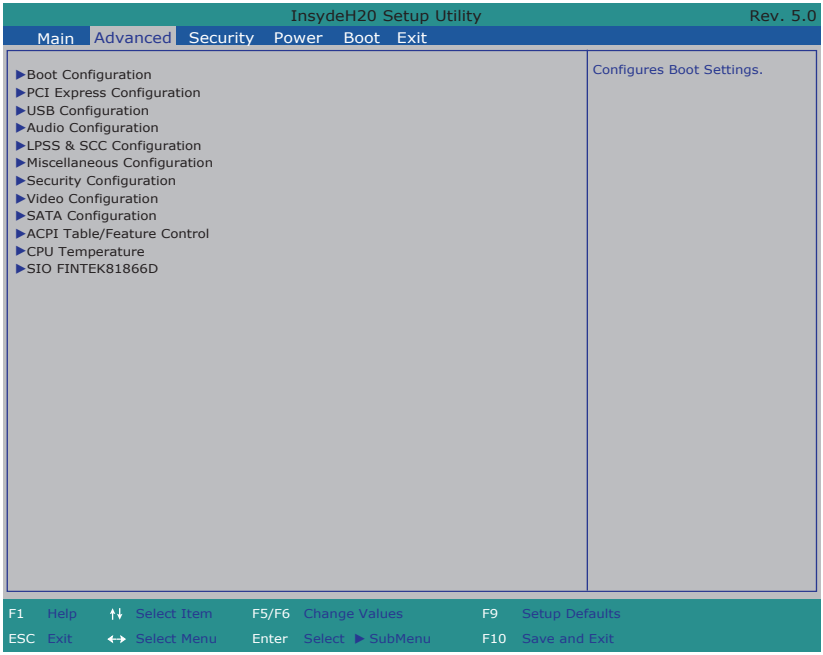
Info Item	Description
BIOS Version	Delivers the computer's BIOS version.
Project name	Delivers the name of the project
Build Date and Time	Delivers the date and time when the BIOS Setup utility was created/ updated.
Platform firmware Information	Delivers the Platform firmware Information

The featured settings are:

Setting	Description
Language	Select the current default language used by the InsydeH20
System Time	Sets system time.
System Date	Sets system date.

3.2. Advanced

The **Advanced** menu controls the system's CPU, IDE, Super IO, AHCI and USB. It also helps users monitor hardware health.



The featured submenus are:

Submenu	Description
Boot Configuration	See 3.2.1. Boot Configuration on page 17
PCI Express Configuration	See 3.2.2. PCI Express Configuration on page 17
USB Configuration	See 3.2.3. USB Configuration on page 17
Audio Configuration	See 3.2.4. Audio Configuration on page 18
LPSS & SCC Configuration	See 3.2.5. LPSS & SCC Configuration on page 18
Miscellaneous Configuration	See 3.2.6. Miscellaneous Configuration on page 18
Security Configuration	See 4.2.7. Security Configuration on page 19
Video Configuration	See 3.2.8. Video Configuration on page 19
SATA Configuration	See 3.2.9. SATA Configuration on page 22
ACPI Table/Feature Control	See 3.2.10. ACPI Table/Feature Control on page 22
CPU Temperature	See 3.2.11. CPU Temperature on page 22
SIO FINTEK81866D	See 3.2.12. SIO FINTEK81866D on page 23

3.2.1. Boot Configuration

Setting	Description
Numlock	Select Power-on state for Num lock

3.2.2. PCI Express Configuration

Setting	Description
PCI Express Root Port 1/2/3 **On Board LAN Configuration**	▸ PCI Express Root Port Enables (default) /disables this PCIe port. ▸ PCIe Port Speed Options are: Auto (default), Gen 1, Gen 2 ▸ PCIe Port ASPM Options are: Disable : disables ASPM (default) L0s : force all links to L0s state L1 : force all links to L1 state L0sL1 : force all links to L0s+L1 state Auto : BIOS auto configure

3.2.3. USB Configuration

Setting	Description
EHCI Controller	Enables/disables EHCI controller Default: Enabled
USB EHCI debug	Enables/disables PCH EHCI debug capability Default: Disabled
USB Per-Port Control	Enabes/disables USB Per-port control Default: Enabled
USB Port #0, #1, #2, #3-7	Enables/disables USB port. Default: Enabled

3.2.4. Audio Configuration

Setting	Description
Audio Controller	Control detection of the Azalia device. Disabled: Azalia will be unconditionally disabled. Enabled (default): Azalia will be unconditionally enabled. Auto: Azalia will be enabled if present, disabled otherwise.

3.2.5. LPSS & SCC Configuration

Setting	Description
LPSS & SCC Device Mode	Set the mode of LPSS & SCC Device Options: ACPI mode(default)/PCI mode
OS Selection	Set the mode of OS Selection Options: Windows(default)/Android
SCC eMMC Boot Controller	Set the mode of eMMC Boot mode Options: Disable / Auto Detect (Default) / eMMC 4.41/ eMMC 4.5
eMMC Secure Erase	Enables/disables (default) eMMC secure erase
SCC SDIO Support	Enables (default) / disables SCC SDIO support
SCC SD Card Support	Enables (default) / disables SCC SD card support
DDR50 Capability Support for SDCard	Enables (default) / disabled DDR50 capability in SD card controller
LPSS DMA #1/2 Support	Enables (default) / disables LPSS DMA #1/2 Support
LPSS I2C #1 Support	Enables (default) / disables LPSS I2C #1 Support

3.2.6. Miscellaneous Configuration

Setting	Description / Available Options
State After G3	Set the state of System when power is re-applied after a Power failure (G3 state) Options are S0 State (default)/ S5 State
Clock Spread Spectrum	Enables/Disables (default) Clock Spread Spectrum

3.2.7. Security Configuration

This page shows the TXE related information, including TXE Configuration , TXE FW Version, TXE FW Capabilities, TXE FW Features, TXE FW OEM Tag and TXE Firmware Mode.

3.2.8. Video Configuration

3.2.8.1 Video Configuration

Setting	Description
Logo & SCU Resolution	Set Logo & SCU Resolution. Options are Auto (default) / 640 x480 / 800 x 600 / 1024 x 768

3.2.8.2 VBT Hook Configuration

Setting	Description
Configure CRT as	Set the option of CRT. Options are Default / CRT (default) / No Device
CRT EDID Support	Enables (default) / Disables CRT EDID Support
Configure DDI0 as	Set the option of DDI0. Options are Default/DisplayPort/ HDMI/DVI /DisplayPort with HDMI/ DVI Compatible / No Device
Configure DDI1 as	Set the option of DDI1. Options are Default/ LVDS (default) / DisplayPort/ HDMI/DVI / DisplayPort with HDMI/DVI Compatible / No Device
Configure eDP Panel Number as	Set the option of VBIOS eDP Panel Number. Options are 1,2,3 (default),4,5,6,7,8,9,10,11,12,13,14,15,16.
LFP EDID Support	Enables (default) / Disables LFP EDID Support
EFP EDID Support	Enables (default) / Disables EFP EDID Support

3.2.8.3 PTN3460 (eDP to LVDS) Configuration

Setting	Description
PTN3460 Output Format	Set the Output Format of PTN3460. Options are (00) VESA (24bpp) / (01) VESA or JEIDA (18bpp) (default) / (10) JEIDA (24bpp)
PTN3460 Channel Control	Set the Channel mode of PTN3460. Options are Single (default) / Dual.
PTN3460 EDID Table	Set the EDID Table of PTN3460. Options are: (0) 640 x 480 @60Hz (1) 800 x 600 @60Hz (2) 1024 x 768 @60Hz (default) (3) 1366 x 768 @60Hz (4) 1280 x 1024 @60Hz (5) 1920 x 1080 @60Hz (6) 1920 x 1080 @60Hz

3.2.8.4 GOP Configuration

Setting	Description
GOP Brightness Level	Set the Brightness Level of GOP. Default: 80
GOP Driver	Enables (default) / Disables GOP Driver

3.2.8.5 IGD Configuration

Setting	Description
Integrated Graphics Device	Enables (default) / disables Integrated Graphics Device.
Primary Display	Set IGD or PCI graphic device as the Primary Display. Options are Auto (default) / IGD / PCie.
RC6 (Render Standby)	Enables (default) / Disables Render standby support.
PAVC	Enables/disables Protected Audio Video control Default: LITE Mode
Power Management lock	Enables / disables (default) Power management lock.
DOP CG	Enables (default) / disables DOP Clock gating.
GTT Size	Set the GTT Size Options are 1MB/2MB (default)
Apeture Size	Set the Aperture size Options are 128MB / 256MB (default) / 512MB
IGD-DVMT Pre-Allocated	Set the DVMT5.0 Pre-Allocated (Fixed) Graphics Memory size used by the IGD. Default: 64M

IGD-DVMT total Gfx Mem	Set the size of DVMT 5.0 used by IGD Default: 256M
IGD Turbo	Enables/disables IGD Turbo Default: Auto
IGD Thermal	Enables/disables (default) IGD Thermal
Spread Spectrum clock	Enables/disables (default) Spread Spectrum clock

3.2.8.6 IGD- LCD Control

Setting	Description
Force Lid Status	Set mode of as the Primary Display. Options are ON (default) / OFF / Auto.
BIA	Set the mode of BIA. Options are Auto (default) /Disabled / Level 1 /Level 2 /Level 3 /Level 4 /Level 5.
ALS Support	Enables (default) / Disables ALS support.
IGD Flat Panel	Set resolution of IGD Flat Panel. Default: Auto
IGD Boot Type	Set the Boot Type of IGD Options: Auto (default) / VGA port / HDMI Port B / DP Port B / DP Port C/ eDP / DSI Port A / DSI Port C
Panel Scaling	Set the Scaling of Panel Options: Auto (default) / Centering / Stretching.
GMCH BLC Control	Set the mode of GMCH BLC Control Options: Auto (default) / PWM-Inverted / GMBus-Inverted / PWM-Normal / GMBus-Normal

3.2.9. SATA Configuration

Setting	Description
SATA Controller	Enables (default) /disables the present SATA controller.
SATA Test Mode	Enables/disables (default) the SATA test mode.
SATA Speed	Select SATA Speed Options: Gen1 / Gen 2 (default)
Chipset SATA Mode	Configures how to sun the SATA drives. ▸ Options available are **AHCI** (default) and **IDE**.
SATA Port 0/1 Hot Plug Capability	Enables/disables (default) hot-pluggable feature for the SATA port.
SATA Device Sleep Port 0, 1	Enables/disables (default) the SATA port device sleep mode.
Serial ATA Port 0, 1	Delivers the SATA port Media information and Security Mode.

3.2.10. ACPI Table/Feature Control

Setting	Description
FACP - RTC S4 Wakeup	This function will be avalible only when ACPI is enabled. Enables/disables S4 Wakup from RTC. Default: Enabled
APIC - IO APIC Mode	This item is valid only for WIN2K and WINXP. Also, a frech install of the OS must occur when APIC mode is desired. Enables/disables the APIC mode Default: Enabled
DSDT - ACPI S3	Enables/disables ACPI S3 state Default: Enabled
DSDT - ACPI S4	Enables/disables ACPI S4 state Default: Enabled

3.2.11. CPU Temperature

Setting	Description
Local Temperature	Displays Local Temperature
Remote Temperature	Displays Remote Temperature

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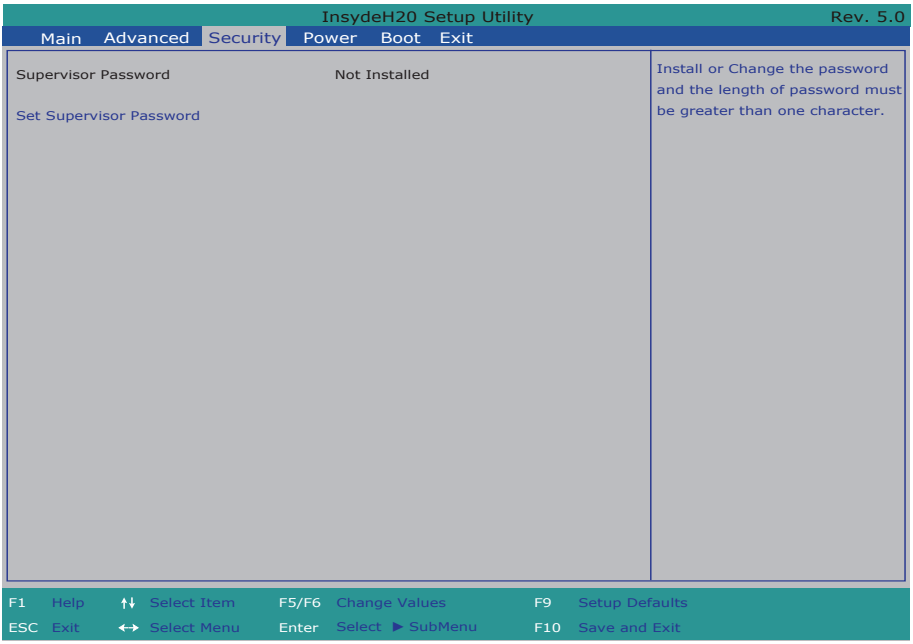
Setting	Description
Power Loss mode	Set the state of Power Loss mode Options are Always On(default)/Always Off
Serial Port A, B, C, D	▸ Serial Port Enables (default) /disables the Serial port. ▸ Base I/O Address Setup the Base I/O Address of the Serial Port. ▸ Interrupt Setup the Interrupt of the Serial Port

3.3. Security

The **Security** menu sets up the password for the system's administrator account. Once the administrator password is set up, this BIOS Setup utility is limited to access and will ask for the password each time any access is attempted.

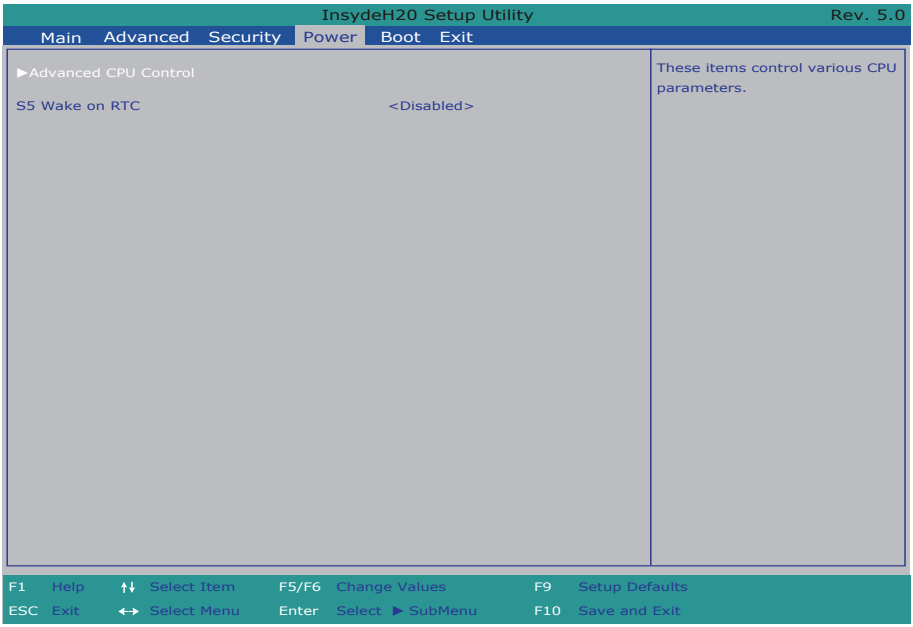


The featured setting is:

Setting	Description
Set Supervisor Password	To set up an administrator password: 1. Select **Set Supervisor Password**. An **Create New Password** dialog then pops up onscreen. 2. Enter your desired password that is no less than 3 characters and no more than 20 characters. 3. Hit [Enter] key to submit.

3.4. Power

The **Power** menu sets up the power option of system



The featured setting is:

Setting	Description
Advanced CPU Control	**Turbo Mode** Enables/disables processor Turbo mode (EMTTM enabled is required) Default: Auto **C-States** Enables/disables processor idle power saving states (C-states) Default: Disabled
S5 Wake on RTC	Enables or diables (default) auto wake on S5 state. When enabled, System will wake on the hr::min::sec specified.

3.5. Boot

The **Boot** menu configures how to boot up the system such as the configuration of boot device priority.

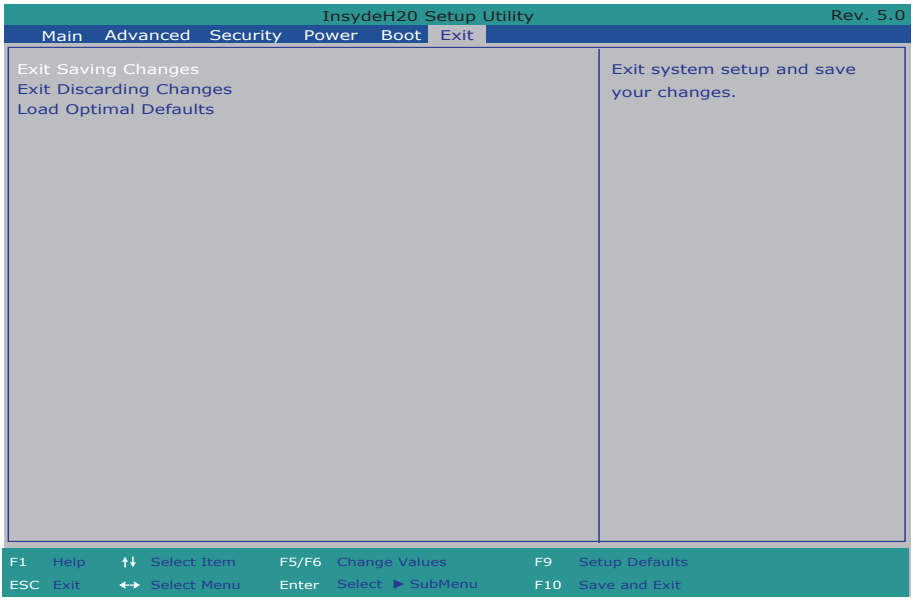
The featured settings are:

Setting	Description
Boot Type	Sets Boot Type. Options: Dual Boot Type / Legacy Boot Type (default) and UEFI Boot Type.
Quick Boot	Allow InsydeH20 to Skip certain tests while booting . This will descrese the time need to boot the system. Default: Enabled
Quiet Boot	Disables or enables booting in text mode. Default: Enabled
PXE boot to LAN	Disables or enables PXE boot to LAN. Default: Disabled
Power Up In Standby Support	Disable or enable Power Up In Standby Support. Default: Disabled
Add Boot Option	Position in Boot Order for Shell, Network and Removables. Options are First, Last, and Auto (default).

APCI Selection	Select boot to Acpi 3.0/Acpi 1.0B Options are Acpi 1.0B / Acpi 3.0 / Acpi 4.0 (default) / Acpi 5.0
USB Boot	Disables or enables booting to USB boot devices. Default: Enabled
Timeout	Set the waiting seconds before booting the default boot selection Default: 0
Automatic Failover	Enables/disables the Automatic Failover. Default: Enabled

3.6. Exit

The **Save & Exit** menu features a handful of commands to launch actions from the BIOS Setup utility regarding saving changes, quitting the utility and recovering defaults.



The features settings are:

Setting	Description
Exit Saving Changes	Saves the changes and quits the BIOS Setup utility.
Exit Discard Changes	Quits the BIOS Setup utility without saving the change(s).
Load Optimal Defaults	Restores all settings to defaults. ▸ This is a command to launch an action from the BIOS Setup utility rather than a setting.