

IT32 Motherboard

3.5" SBC with Intel® 11th Generation Core i5 Processor, HDMI, LVDS, Dual 2.5Giga Ethernet, and M.2 NGFF Interface



User Manual

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Contents

Preface	3
About This User Manual	5
Chapter 1: General Information	6
1.1 Introduction	7
1.2 Features	7
1.3 Motherboard Specifications	8
1.4 Functional Description	10
1.5 Physical Description	
Chapter 2: Hardware Installation	12
2.1 Motherboard Components	13
2.1.1 Component Side	13
2.1.2 I/O Side	14
2.1.3 Solder Side	14
2.2 Memory Module (SO-DIMM) Installation	15
2.3 I/O Equipment Installation	
2.3.1 12V DC in	16
2.3.2 Serial COM Port	16
2.3.3 HDMI	16
2.3.4 Ethernet Interface	16
2.3.5 USB Port	16
2.3.6 Audio	16
2.4 Jumper Settings	
2.4.1 JP2: Panel Power Selector	
2.4.2 JP3: VR/Chipset Control Selector	18
2.4.3 JP4: Backlight Power Selector	
2.4.4 JP5: PWM/DC Mode Control Selector	
2.5 Mainboard Connectors	19
2.5.1 External I/O Side Connectors	19
2.5.2 Internal I/O Side Connectors	
Chapter 3: Driver Installation	
3.1 Chipset Driver	
3.2 Graphic Driver	32
3.3 Management Engine (ME)	
3.4 Audio Driver	36
3.5 Ethernet Driver	
3.6 DTT Driver	
3.7 GNA Driver	
3.8 Serial IO Driver	43

3.9 Resistive Touch Driver for Windows 11 System	46
3.10 Thermal Control AP	50
Chapter 4: INSYDE H20 BIOS Setup	57
4.1 How and When to Use BIOS Setup	58
4.2 BIOS Functions	59
4.2.1 Main Menu	59
4.2.2 Advanced	60
4.2.3 Security	78
4.2.4 Power	79
4.2.5 Boot	80
4.2.6 Exit	
4.3 Using Recovery Wizard to Restore Computer	
4.4 How to Enable Watchdog	
Chapter 5: Technical Support	
5.1 Drivers	
5.2 Software Development Kit (SDK)	

Preface

Copyright Notice

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Warranty

We warrant that each of its products will be free from material and workmanship defects for a period of one year from the invoice date. (Standard is one-year, extended warranty will need to discuss with our sales representatives. If the customer discovers a defect, we will, at its option, repair or replace the defective product at no charge to the customer, provided it is returned during the warranty period of one year, with transportation charges prepaid. The returned product must be properly packaged in its original packaging to obtain warranty service.

If the serial number and the product shipping data differ by over 30 days, the in- warranty service will be made according to the shipping date. In the serial numbers the third and fourth two digits give the year of manufacture, and the fifth digit means the month (e. g., with A for October, B for November and C for December).

For example, the serial number 1W16Axxxxxxx means October of year 2016.

Packing List

Before using this Motherboard, please make sure that all the items listed below are present in your package:

- IT32 Motherboard
- User Manual

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Customer Service

We provide a service guide as below for any problem by the following steps:

First, contact your distributor, sales representative, or our customer service center for technical support if you need additional assistance.

You need to prepare the following information before you call:

- Product serial number
- Peripheral attachments
- Software (OS, version, application software, etc.)
- Detailed problem description
- The exact wording of any error messages

In addition, free technical support is available from our engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products. Please do not hesitate to call or e- mail us.

Advisory Conventions

Four types of advisories are used throughout the user manual to provide helpful information or to alert you to the potential for hardware damage or personal injury. These are Notes, Important, Cautions, and Warnings. The following is an example of each type of advisory.



NOTE:

A note is used to emphasize helpful information

IMPORTANT:

An important note indicates information that is important for you to know.



CAUTION

A Caution alert indicates potential damage to hardware and explains how to avoid the potential problem.



WARNING!

An Electrical Shock Warning indicates the potential harm from electrical hazards and how to avoid the potential problem.

Safety Precautions



CAUTION

Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

Safety and Warranty

- 1. Please read these safety instructions carefully.
- 2. Please keep this user manual for later reference.
- 3. Please disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
- 4. For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
- 5. Keep this equipment away from humidity.
- 6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage.
- 7. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
- 8. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
- 9. All cautions and warnings on the equipment should be noted.
- 10. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
- 11. If any of the following situations arises, get the equipment checked by service personnel:
 - A. The power cord or plug is damaged.
 - B. Liquid has penetrated into the equipment.
 - C. The equipment has been exposed to moisture.
 - D. The equipment does not work well, or you cannot get it to work according to the user's manual.
 - E. The equipment has been dropped and damaged.
 - F. The equipment has obvious signs of breakage.

About This User Manual

This User Manual provides information about using the IT32 Motherboard. The documentation set for the IT32 Motherboard provides information for specific user needs, and includes:

• **IT32 Motherboard User Manual** – contains detailed description on how to use the motherboard, its components and features.



NOTE:

Some pictures in this guide are samples and can differ from actual product.

Chapter 1: General Information

This chapter includes the IT32 Motherboard background information.

- 1.1 Introduction
- 1.2 Features
- 1.3 Motherboard Specifications
- 1.4 Functional Description
- 1.5 Physical Description

1.1 Introduction

Thank you for choosing the IT32 Motherboard. This motherboard can be integrated with Intel® Core i5-1135G7 4 Core 2.4GHz (up to 4.2GHz) which offers a high-performance computing platform with low power consumption. The new motherboard supports 262-pin SO-DIMM DDR4 at speeds of 3200 MHz, up to 32GB. This motherboard supports Intel® Core[™] processor: Intel® 11th Generation Core[™] based on 64-bit, multi-core processor and built on 10-nanometer processor technology.

In peripheral connectivity, IT32 Motherboard features one M.2 Key-E with PCIe x1, USB 2.0 for wireless, one M.2 Key-M, 2242/2280 with SATAIII or PCIe SSD, one Serial ATA III (6Gb/s) connectors, one RS232/422/485 (Default RS232) DB9 connector, three serial ports (internal connectors), 2 super-speed USB 3.2 Gen2x1 (10Gbps) connectors and four hi-speed USB 2.0 connectors (four pin headers). Additionally, IT32 SBC features build-in a 12V DC in power adapter. Abundant I/O connectors and expandability makes IT32 Motherboard to be the right fit in the majority of industrial computer applications such as machine vision and control, gaming, POS, KIOSK systems, industrial automation, and others. Powerful processor in 3.5" form-factor meets the demanding performance requirements of modern industrial applications.

1.2 Features

IT32 Motherboard features:

- 3.5" Form Factor (146mm x 102mm)
- Intel® 11th. Tiger Lake Core i5-1135G7 processor
- Intel® Iris® Xe Graphics supports DirectX 12.1 and OpenGL 4.6
- 1 x SODIMM, DDR4 3200MHz, support up to 32GB
- Integrated Dual Gigabit Ethernet
- 1 x M.2 (Key E) with PCIe x1+USB 2.0 for wireless
- 1 x M.2 (Key M, 2242/2280) with PCIe or SATAIII for SSD
- 2 x USB 3.2 Gen2x1
- 1 x SATA III

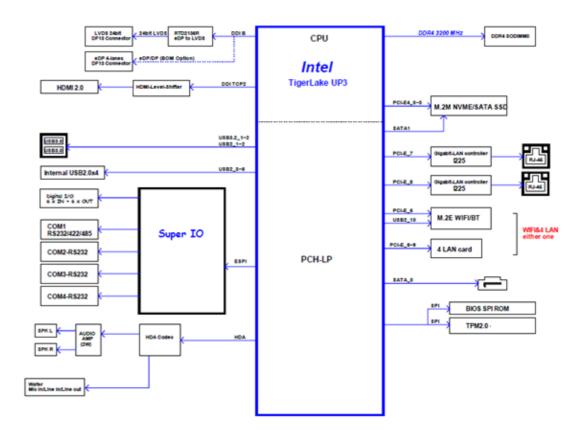
1.3 Motherboard Specifications

Model Name				
	IT32			
	CPU	Intel Core i5-1135G7 2.4GHz (up to 4.2GHz)		
	Chipset	Intel® SoC Integrated		
	System Memory	1 x Non ECC SO-DIMM, DDR4 3200 MHz, Max. 32GB		
System Specifications	Storage	1 x M.2 M-Key 2242 SATA SSD, Max. 512GB or 1 x M.2 M-Key 2280 NVMe SSD, Max. 4TB 1 x SATA III, Max. 2TB (Optional)		
opeenieutiene	BIOS	Insyde System BIOS		
	Graphic	Intel® Iris® Xe Graphics		
	Audio	Realtek HD Audio Codec		
	LAN	2 x Intel® Ethernet controller		
	USB	2 x USB 3.2 Gen2x1 (10Gbps)		
		Supports DirectX 12.1 and OpenGL 4.6		
Display Specifications	Display Interface	HDMI supports HDMI 2.0 , Max resolution up to 4096x2304 @60Hz		
opeemeations	interface	eDp: supports eDP 1.4a , Max resolution up to 1920 x		
		1200@60Hz		
I/O Ports Specification	External I/O	2 x USB 3.2 Gen2x1 (10Gbps) 2 x RJ-45 for 2.5Giga LAN with LED 1 x HDMI 2.0 1 x RS232/422/485 (Default RS232) 1 x (+12V) Power Input with 2.5φ DC jack		
	Internal I/O	3 x RS232 Serial Console to 2x5 Pin Header 1 x Power 6P Wafer 1 x SPK R / SPK L 2 x USB 2.0 Pin Wafer (4 Ports) 1 x Digital I/O (12-bit GPIO) / 14-pin (2x7) 1 x CPU FAN Connector 1 x SATA III Connectors 1 x SATA Power Connector 1 x +12V for external power (Yellow) / 2-pin 1 x +5V for external power (Red) / 2-pin 1 x +5V for external power (Red) / 2-pin 1 x +3.3V for external power (Blue) / 2-pin 1 x HTC battery wafer 1 x Panel inverter / 7-pin 1 x LVDS / 40-pin(2x20) DF-13 connector 1 x eDP / 30-pin(2x15) DF-13 connector 1 x Brightness control /3-pin 1 x 3pin(1x3) for Digital panel backlight brightness control 1 x 3pin(1x3) VR/Software brightness switch jumper 1 x 3pin(1x3) PWM/DC brightness switch jumper 1 x 3pin(1x3) 3.3V/5V PWM Level switch jumper 1 x Front panel / 10-pin(2x5) 1 x Audio (Mic-in / Line-in / Line-out) / 12-pin(2x6)		
	Expansions Slot	1 x M.2 (Key E) with PCIe x1+USB 2.0 for wireless 1 x M.2 (Key M, 2242/2280) with SATAIII SSD or PCIe Gen3		
	0101	1×101.2 (reg 101, 2242/2200) with SATAIN SSD of PCIE Gens		

	Model Name			
		IT32		
		x4 SSD		
Security	ТРМ	TPM 2.0		
Mechanical Specifications	Dimensions	146 (W)x 102(L) mm		
	Operating Temp.	0°C ~ 60°C		
Environment Considerations	Storage Temp.	-40°C ~ 70°C		
	Operating Humidity	10% ~ 95%, non-condensing		
Power	Power Input	+12V Power Input		
Management	Power Consumption	Maximum 80W		
Packing List	Standard	IT32 Single Board Computer IT32 Manual-		

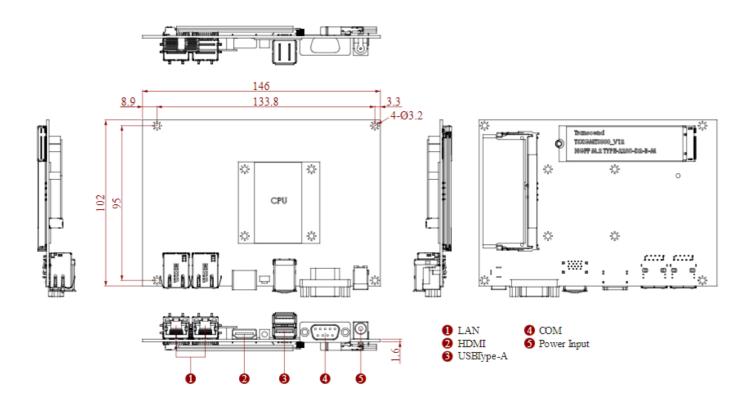
1.4 Functional Description

Function block



1.5 Physical Description

Board Dimensions



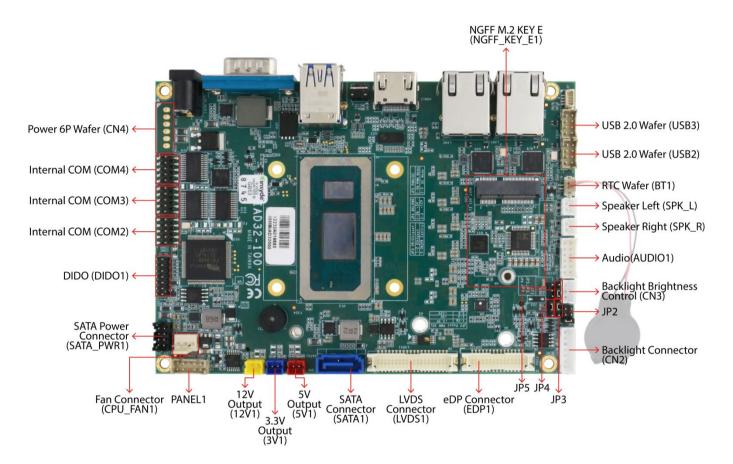
Chapter 2: Hardware Installation

This chapter provides information on how to use jumpers and connectors on the IT32 motherboard.

- 2.1 Motherboard Components
- 2.2 Memory Module Installation
- 2.3 I/O Equipment Installation
- 2.4 Jumper Settings
- 2.5 Motherboard Connectors

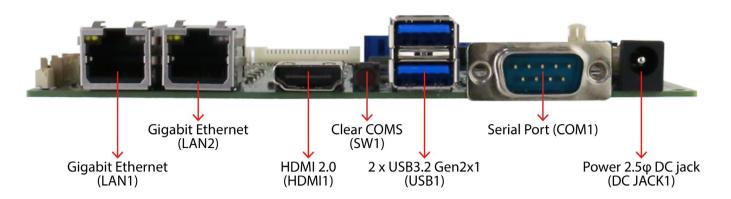
This chapter provides information on how to use jumpers and connectors on the IT32 Motherboard. Be cautious while working with these modules. Carefully read the content of this chapter in order to avoid any damages.

2.1 Motherboard Components

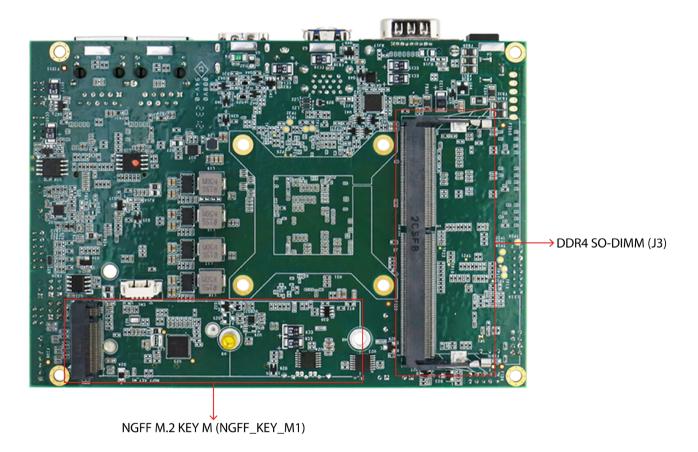


2.1.1 Component Side

2.1.2 I/O Side



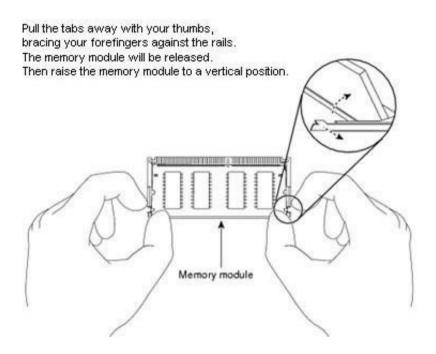
2.1.3 Solder Side



2.2 Memory Module (SO-DIMM) Installation

The IT32 SBC Motherboard has one 262-pin SODIMM slot. The socket supports DDR4. When installing the memory unit, please follow the steps below:

- 1. Firmly insert the SO-DIMM at an angle of about 30-degree into the slot. Align the SO-DIMM with the slot until it is fully inserted. The notch on the SO-DIMM should match the break on the slot.
- 2. Press downwards on SO-DIMM until the retaining clips at both ends fully snap closed and the SO-DIMM is properly seated.





CAUTION

The SO-DIMM only fits in one correct orientation. It will cause permanent damage to the development board and the SO-DIMM if the SO-DIMM is forced into the slot at the incorrect orientation.

2.3 I/O Equipment Installation

2.3.1 12V DC in

The IT32 Motherboard allows plugging 12V DC-IN jack on the board without another power module converter under power consumption by Intel® 11th Generation Core i5 Processor.

2.3.2 Serial COM Port

One RS-232 connectors build-in the rear I/O can optional supports RS-422/ 485. You can change serial COM port setting through BIOS. Three RS232 (2x5, 10pin) wafers build-in the internal I/O. *When an optional touch-screen ordered with PPC, serial COM port can be connected to a serial or an optional touch-screen.

2.3.3 HDMI

The Motherboard has one HDMI port that can be connected to an external LCD monitor. Use HDMI cable to connect to an external LCD monitor, and connect the power cable to the outlet. The HDMI connector is a standard 19-pin HDMI connector.

2.3.4 Ethernet Interface

The Motherboard is equipped with Intel® Gigabit-LAN Controller. It is supported by major network operating systems. The Ethernet ports provide two standard RJ-45 jacks.

2.3.5 USB Port

Six USB devices (four with pin headers) may be connected to the system though an adapter cable. Various adapters may come with USB ports. USB usually connect the external system to the system. The USB ports support hot plug-in connection. Whatever, you should install the device driver before you use the device.

2.3.6 Audio

The High-Definition Audio Codec capabilities are provided by a Realtek chipset supporting digital audio outputs. The audio interface includes three jacks: line-in, line-out and mic-in

2.4 Jumper Settings

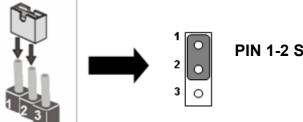
This section explains how to set jumpers for correct configuration of the motherboard.



NOTE:

A pair of needle nose pliers may be helpful when working with jumpers. If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes. Generally, you simply need a standard cable to make most connections.

The jumper setting diagram is shown below. When the jumper cap is placed on both pins, the jumper is SHORT. The illustration below shows a 3-pin jumper; pins 1 and 2 are short. If you remove the jumper cap, the jumper is OPEN.



PIN 1-2 SHORT PIN 3 OPEN

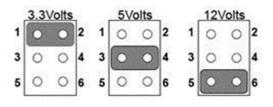


CAUTION

To avoid damaging the module, always turn off the power supply before setting jumpers or clearing CMOS.

Label	Function	Note	
Jumpers			
JP2	Panel Power Selector	2x3 header, pitch 2.0mm	
JP3	VR/Chipset Control Selector	1x3 header, pitch 2.0mm	
JP4	Backlight Power Selector	1x3 header, pitch 2.0mm	
JP5	PWM/DC Mode Control Selector	1x3 header, pitch 2.0mm	

2.4.1 JP2: Panel Power Selector



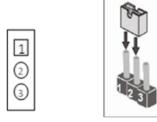
Pin №	Signal Name
1-2 (Default)	+3.3V
3-4	+5V
5-6	+12V

2.4.2 JP3: VR/Chipset Control Selector



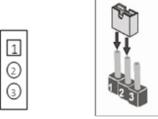
Pin №	Signal Name
1-2	Chipset
2-3(Default)	VR Control

2.4.3 JP4: Backlight Power Selector



Pin №	Signal Name
1-2 (Default)	+5V
2-3	+12V

2.4.4 JP5: PWM/DC Mode Control Selector



Pin №	Signal Name
1-2 (Default)	PWM Mode
2-3	DC Mode

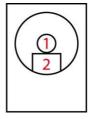
2.5 Mainboard Connectors

2.5.1 External I/O Side Connectors

Label	Function	Note	
Connector			
DCJACK1	DC Jack	2.5 φ DC Jack	
COM1	Serial port (RS232/422/485)	D-Sub9 (Male)	
USB1	2 x USB 3.2 Gen2 x1 (10Gbps)	USB Type A	
HDMI1	HDMI 2.0 Signal	HDMI Type A	
LAN1, LAN2	2.5Gigabit Ethernet	RJ45+LED	
SW1	Clear CMOS, Reset	Button	

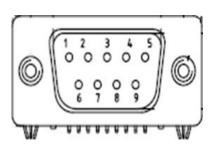
2.5.1.1 DCJACK1: Power 2.5 \u03c6 DC Jack Connector

The DC power input for the IT32 Motherboard allows a voltage input of 12V DC.



Pin №	Signal Name	Pin №	Signal Name
1	12VDC	2	GND

2.5.1.2 COM1: D-Sub9 (Male)



Pin №	RS232	RS422	RS485
1	DCD	TxD-	D-
2	RXD	TxD+	D+
3	TXD	RxD+	NC
4	DTR	RxD-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	TRTD	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

Note: Refer to BIOS to change serial COM port settings.

2.5.1.3 USB1, USB2: USB 3.2

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Pin №	Signal Name	Pin №	Signal Name
1	+5V	2	USB_D-
3	USB_D+	4	GND
5	STDA_SSRX-	6	STDA_SSRX+
7	GND_DRAIN	8	STDA_SSTX-
9	STDA_SSTX+		

2.5.1.4 HDMI1 : HDMI 2.0 Type A

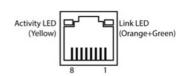
Use HDMI connector to connect the IT32 to an external monitor.

19	1
18	

Pin №	Signal Name	Pin №	Signal Name
1	HDMI_DET	2	NV
3	HDMI_D2P	4	GND
5	HDMI_D2M	6	HDMI_D1P
7	GND	8	HDMI_D1M
9	HDMI_D0P	10	GND
11	HDMI_D0M	12	HDMI_CLKP
13	GND	14	HDMI_CLKM
15	HDMI_CEC_OUT	16	GND
17	DDC_CLOCK	18	DDC_DATA
19	+5V	20	GND

2.5.1.5 LAN1, LAN2: 2.5Gigabit Ethernet

IT32 has two Ethernet connectors located on the front. Ethernet ports provide a standard RJ45 jack connector with LED indicators on the front side to show its Active/ Link status and Speed status.



Pin №	Signal Name	Pin №	Signal Name
1	TX1+	2	TX1-
3	TX2+	4	TX2-
5	TX3+	6	TX3-
7	TX4+	8	TX4-

2.5.2 Internal I/O Side Connectors

Label	Function	Note
Connectors		
CN2	Backlight Connector	7p P:2.0mm DIP 180°
CN3	Backlight Brightness Control	3p P:2.0mm DIP 180°
CN4	Power 6P Wafer	Wafer 6p DIP
USB2	USB2.0 Wafer	2*4p P:2.0mm DIP 180°
USB3	USB2.0 Wafer	2*4p P:2.0mm DIP 180°
BT1	RTC Battery Wafer	2P wafer, pitch 1.25 mm
SPK_L	Speaker Left	Wafer/2p P:2.0mm SIP 180°
SPK_R	Speaker Right	Wafer/2p P:2.0mm SIP 180°
AUDIO1	Audio	2x6 wafer, pitch 2.0mm
EDP1	eDP Connector	DF13 2*15p P:1.25mm SMD 180° White color
LVDS1	LVDS Connector	2*20p P:1.25mm SMD 180° White color
SATA1,	SATA Connector	WATM-07ABN4A2B8UW
SATA_PWR1	SATA Power Connector	2*4p P:2.0mm DIP 180°
5V1	5V Power Output Wafer	2p P:2.0mm DIP 180°, red color (5V Output)
3V1	3.3V Power Output Wafer	2p P:2.0mm DIP 180°, blue color (3.3V Output)
12V1	12V Power Output Wafer	2p P:2.0mm DIP 180°, yellow color (12V Output)
PANEL 1	Front Panel Pin Header	2*5p P:2.0mm SMD 180°
CPU_FAN1	CPU Fan	3P wafer, pitch 2.54mm
DIDO1	Digital Input / Digital Output	2x7 wafer, pitch 2.0mm
COM2	Internal COM Port (RS232)	2*5p P:2.0mm SMD 180°
COM3	Internal COM Port (RS232)	2*5p P:2.0mm SMD 180°
COM4	Internal COM Port (RS232)	2*5p P:2.0mm SMD 180°
NGFF_KEY_E1	NGFF M.2 KEY E Connector	NXSE0-S6705-TP50
NGFF_KEY_M1	NGFF M.2 KEY M Connector	NGFF M.2 KEY M Connector
J3	DDR4 SO- DIMM slot	ASAAC26-J2SB0-7H 5.2mm STD

2.5.2.1 CN2: Backlight Connector

	1	000000
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Pin №	Signal Name	Pin №	Signal Name
1	+BKLPWR_R	2	+BKLPWR_R
3	+BKLPWR_R	4	GND
5	BRIGHT	6	GND
7	BLON_5V		

Note: Please refer to JP1 settings to select Power Rating.

2.5.2.2 CN3: Backlight Brightness Control

VR Knob

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Pin №	Signal Name	Pin №	Signal Name
1	+V5S	2	VRD_ADC
3	GND		

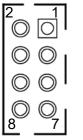
2.5.2.3 CN4: Power 6P Wafer

3



Pin №	Signal Name	Pin №	Signal Name
1	+12V	2	+12V
3	+12V	4	DC_GND
5	DC_GND	6	DC_GND

2.5.2.4 USB2, USB3: USB2.0 Wafer

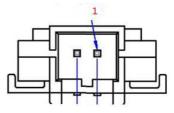


		_	
Pin <mark>№</mark>	Signal Name	Pin №	Signal Name
1	USB_VCC	2	USB_VCC
3	USB_DN	4	USB_DN
5	USB_DP	6	USB_DP
7	GND	8	GND

2 ©	1	1
\bigcirc	\bigcirc	I
\bigcirc	\bigcirc	I
0 8	\bigcirc_{7}	

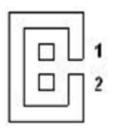
Pin №	Signal Name	Pin №	Signal Name
1	USB_VCC	2	USB_VCC
3	USB_DN	4	USB_DN
5	USB_DP	6	USB_DP
7	GND	8	GND

2.5.2.5 BT1: RTC Battery Connector



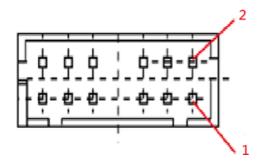
Pin №	Signal Name	Pin №	Signal Name
1	GND	2	+3.3V

2.5.2.6 SPK_L, SPK_R: Speaker Out



Pin №	Signal Name	Pin №	Signal Name
1	LOUT+	2	LOUT-

2.5.2.7 AUDIO1: Audio



Pin №	Signal Name	Pin №	Signal Name
1	LINE_OUT_R	2	LINE_OUT_L
3	+5V	4	GND
5	LINE_IN_R	6	LINE_IN_L
7	MIC_R	8	MIC_L
9	GND	10	LINE_OUT_JACK
11	MIC_JACK DET	12	LINE_IN_JACK

2.5.2.8 EDP1: eDP Connector

1	eDP	29
2		30

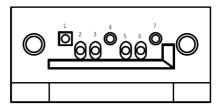
Pin №	Signal Name	Pin №	Signal Name
1	EMB_AUXN	2	NC
3	EMB_AUXP	4	NC
5	GND	6	GND
7	DP_TXN3_C	8	+VCC_EDP_BKLT
9	DP_TXP3_C	10	+VCC_EDP_BKLT
11	GND	12	EPD_HPD
13	DP_TXN2_C	14	GND
15	DP_TXP2_C	16	GND
17	GND	18	GND
19	DP_TXN1_C	20	GND
21	DP_TXP1_C	22	LCDVDD
23	GND	24	LCDVDD
25	DP_TXN0_C	26	LCDVDD
27	DP_TXP0_C	28	LCDVDD
29	GND	30	+VCC_EDP_BKLT

2.5.2.9 LVDS1: LVDS Connector



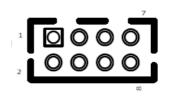
Pin №	Signal Name	Pin №	Signal Name
1	LCDVDD	2	LVDS0_TX0_N
3	LCDVDD	4	LVDS0_TX0_P
5	LCDVDD	6	LVDS0_TX1_N
7	GND	8	LVDS0_TX1_P
9	GND	10	LVDS0_TX2_N
11	GND	12	LVDS0_TX2_P
13	GND	14	LVDS0_CLK_N
15	GND	16	LVDS0_CLK_P
17	GND	18	LVDS0_TX3_N
19	GND	20	LVDS0_TX3_P
21	GND	22	LVDS1_TX0_N
23	GND	24	LVDS1_TX0_P
25	GND	26	LVDS1_TX1_N
27	GND	28	LVDS1_TX1_P
29	GND	30	LVDS1_TX2_N
31	GND	32	LVDS1_TX2_P
33	GND	34	LVDS1_CLK_N
35	GND	36	LVDS1_CLK_P
37	GND	38	LVDS1_TX3_N
39	GND	40	LVDS1_TX3_P

2.5.2.10 SATA1: SATA Connector



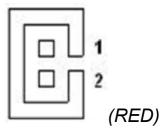
Pin №	Signal Name	Pin №	Signal Name
1	GND	2	SATA_TXP
3	SATA_TXN	4	GND
5	SATA_RXN	6	SATA_RXP
7	GND		

2.5.2.11 SATA_PWR1: SATA Power Connector



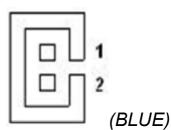
Pin №	Signal Name	Pin №	Signal Name
1	+12V	2	+12V
3	GND	4	GND
5	GND	6	GND
7	+5V	8	+5V

2.5.2.12 5V1: 5V Power Output



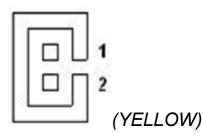
Pin №	Signal Name	Pin №	Signal Name
1	+5V	2	GND

2.5.2.13 3V1: 3.3V Power Output



Pin №	Signal Name	Pin №	Signal Name
1	+3.3V	2	GND

2.5.2.14 12V1: 12V Power Output



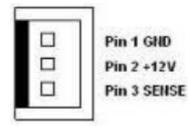
Pin №	Signal Name	Pin №	Signal Name
1	+12V	2	GND

2.5.2.15 PANEL1: Front Panel Pin Header

10	\bigcirc	\bigcirc	\bigcirc	۹ ۵
2 🔘	\bigcirc	\bigcirc	\bigcirc	O 10

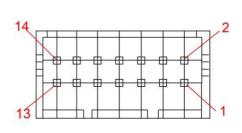
Pin №	Signal Name	Pin №	Signal Name
1	+5V	2	+3.3V
3	GND	4	SATA_LED#
5	PWRBTN#	6	GND
7	Backlight_ADJ+	8	FP_RST_N
9	Backlight_ADJ-	10	+5V

2.5.2.16 CPU_FAN1: Fan Connector



Pin №	Signal Name	Pin №	Signal Name
1	GND	2	+12V
3	SENSE		

2.5.2.17 DIDO1: Digital Input / Digital Output



Pin №	Signal Name	Pin №	Signal Name
1	GND	2	DIO_5V
3	DOUT3	4	DOUT1
5	DOUT2	6	DOUT0
7	DINT3	8	DINT1
9	DINT2	10	DINT0
11	GPIO53_IN0	12	GPIO56_OUT0
13	GPIO54_IN1	14	GPIO57_OUT1

2.5.2.18 COM2, COM3, COM4: Serial Ports

]-[]-[]-]-[]-[]-]-[]-[]-[]-				10 -[]- -[]-
Pin №	Signal Name	Pin №	Signal Name	
1	DCDE#	2	DSRE#	
3	RXDE	4	RTSE#	
5	TXDE	6	CTSE#	
7	DTRE#	8	RIE#	
9	GND	10	GND	

2.5.2.19 NGFF_KEY_E1: NGFF M.2 KEY E Connector

IT32 NGFF M.2 connector supports M.2 card applications:

1. PCIe I/F + USB

2.5.2.20 NGFF_KEY_M1: NGFF M.2 KEY M Connector

IT32 NGFF M.2 connector supports M.2 card applications:

1. PCIe I/F + USB

Chapter 3: Driver Installation

This chapter contains driver installation instructions for IT32 motherboard

- 3.1 Chipset Driver Installation
- 3.2 Graphic Driver Installation
- 3.3 Management Engine (ME)
- 3.4 Audio Driver Installation
- 3.5 Ethernet Driver Installation
- 3.6 DTT Installation
- 3.7 GNA Installation
- 3.8 Serial IO Driver
- 3.9 Resistive Touch Driver for Windows 11 System
- 3.10 Thermal Control AP

This chapter contains driver installation guide. Follow the instructions below to complete the installation. You will quickly complete the installation. This chapter provides instructions on how to install drivers on the IT32 Motherboard.

3.1 Chipset Driver

Follow instructions below to install Chipset driver.

1. Open the Driver CD (included in the package) and select **SetupChipset** driver.

\rightarrow ~ \uparrow	> RDVD (D:)	> M116TG Driver > Int	el Chipset V10.1.8460.8229 >			~ C	
Quick access	Name	^	Date modified	Туре	Size		
	DriverF	iles	3/28/2022 1:18 AM	File folder			
Desktop	📌 📄 mup		7/17/2020 8:47 AM	XML Document	951 KB		
	* BetupC	hipset	7/17/2020 8:44 AM	Application	2,870 KB		
Documents	WixLice	enseNote	7/17/2020 8:42 AM	Text Document	4 KB		
Pictures	*						
🚞 driver pic							
OneDrive							
This PC							
RDVD (D:)							
Network							

2. Installation window will pop up, select Next.

Intel(R) Chipset Device Software Welcome	(intel)
You are about to install the following product:	
Intel(R) Chipset Device Software	
It is strongly recommended that you exit all programs before continu	ing.
Press Next to continue, or press Cancel to exit the setup program.	
Next	Cancel

3. Select Accept to agree with the terms of license agreement.



4. Check the ReadMe file information, select Install to continue.

Readme File	Information			intel
Product Package Install		Chipset Device So 0.1.18460.8229	**************************************	******
NOTE:		st of supported ease Notes	chipsets, pleas	e refer
*******	S OF THIS DC			
1. Overva 2. System	.ew n Requirement	3		

5. Wait for the driver to be installed. When installation completed, select **Restart Now** to restart your computer.



3.2 Graphic Driver

Follow instructions below to install Graphic driver.

1. Open the Driver CD (included in the package) and select **Installer** driver.

win64 D New ~ 🔏		↑↓ Sort ~ 🗮 View ~				_	
\rightarrow \cdot \uparrow	→ RDVD (D:) → TigerLake Win11 Driver	> win64 >			~ C		
C WMDIO APP v1	Name	Date modified	Туре	Size			
늘 WMDIO APP v1	Craphics	5/16/2022 2:54 AM	File folder				
声 9266_UAD_2021	installation_readme	5/16/2022 2:54 AM	Text Document	9 KB			
📒 TigerLake Win1	installer	5/16/2022 2:54 AM	Application	88,473 KB			
in64	license	5/16/2022 2:54 AM	Text Document	37 KB			
538909-I219-N	readme	5/16/2022 2:54 AM	Text Document	568 KB			
🔊 🚞 Chipset-10.1.'							
🚞 gna-03.00.00.							
intel_DTT_8.7.							
> 🚞 IntelCSME_TG							
) 🚞 ISH_Kit_5.4.1.4							
SerialIO_30.10							
🖌 🚞 win64							
> 🚞 Graphics							
win64 ems 1 item selected 4							≡

2. Installation window will pop up, click Begin installation



3. Check the I agree to the Intel Terms and Conditions, then click Next >.

intel. Graphics	5 Driver Installer	×
Pre-Install	Before starting, we need to verify if a driver update is needed.	
Setup		
Install		
Done!	I agree to the Intel Terms and Conditions	
	Nex	t,

4. After installation is completed, click Finish.

intel. Graphics Driver Installer	
Pre-Install Installation complete!	
Setup	
Install	
- Danel	
	Optional reboot Finish

3.3 Management Engine (ME)

Follow instructions below to install Management Engine (ME).

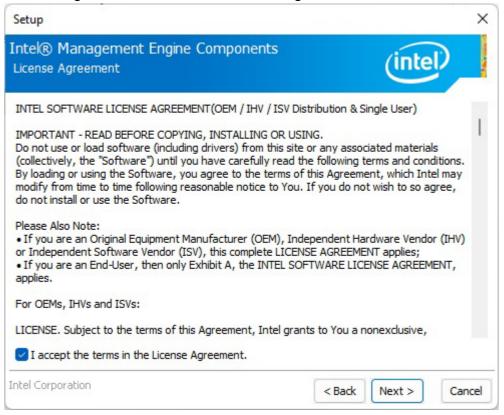
1. Open the Driver CD (included in the package) and select **MEISetup** driver.

\rightarrow ~ \uparrow		« Intel_(R)_CSME_15.0.30.	1611_C0_Consume	r > Installers > MEI-Only Ir	nstaller MSI >		~ C	
🛨 Quick access		Name		Date modified	Туре	Size		
Desktop	*	IntelMEFWVer.dll		3/10/2021 4:11 PM	Application exten	20 KB		
Desktop	*	🔙 MEISetup		3/10/2021 4:11 PM	Application	3,385 KB		
Documents	*	🚞 MEOnlyMUP3		3/10/2021 4:11 PM	Compressed (zipp	3,098 KB		
Pictures	*	🕋 mup		3/10/2021 4:11 PM	XML Document	13 KB		
driver pic	*							
📥 OneDrive								
This PC								
RDVD (D:)								
l Network								
-								

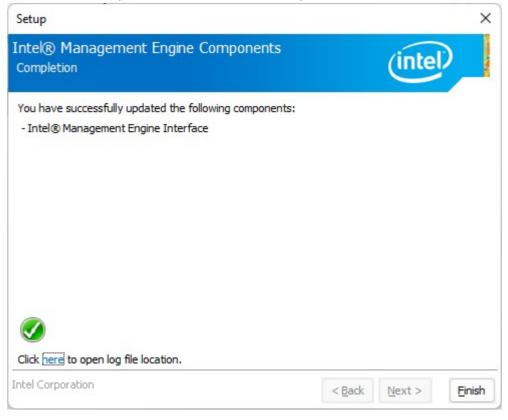
2. Select **Next** to start the installation.



3. Select **Next** to agree with the terms of license agreement.



4. When installation completed, select **Finish** complete installation.



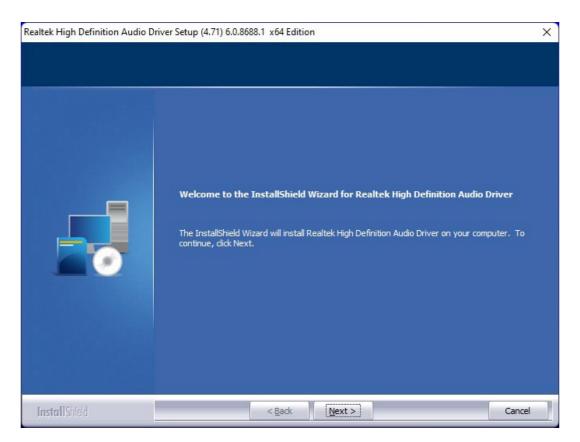
3.4 Audio Driver

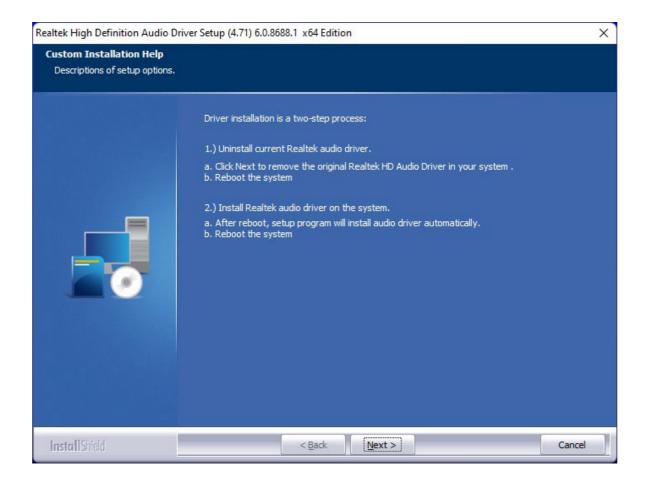
Follow instructions below to install Audio driver.

1. Open the Driver CD (included in the package) and select **Setup** driver.

→ * ↑	> RDVD (D:) > 8688_FF00_PG471_V	Vin10_RS2_RS3_RS4_RS5_19H1_Win7_V	/HQL >		 Ø Search 8688_FF00_PG47
🛨 Quick access	Name	Date modified	Type Contiguration sett	Size	
Desktop	(ii) 0x0401	5/15/2012 8:30 AM	Configuration sett	20 KB	
✓ Downloads #	E 0x0409	3/22/2010 10:44 AM	Configuration sett	22 KB	
Documents	🗐 0x0410	6/21/2010 8:37 AM	Configuration sett	25 KB	
Pictures *	6x0410	3/15/2012 6:55 AM	Configuration sett	15 KB	
	i 0x0411	4/2/2012 8:44 AM	Configuration sett	14 KB	
🚞 driver pic	(i) 0x0413	6/21/2010 8:39 AM	Configuration sett	25 KB	
 OneDrive 	(a) 0x0413	6/21/2010 8:39 AM	Configuration sett	24 KB	
📮 This PC	acc415	4/24/2013 4:55 AM	Configuration sett	24 KB	
- RDVD (D:)	@ 0x0416	9/16/2014 5:55 PM	Configuration sett	24 KB	
	€ 0x0419	6/21/2010 8:43 AM	Configuration sett	23 KB	
Network	🔊 0x0421	6/21/2010 8:37 AM	Configuration sett	25 KB	
	☐ 0x0424	6/21/2010 8:45 AM	Configuration sett	24 KB	
	₩ 0x0804	6/21/2010 8:49 AM	Configuration sett	11 KB	
	0x0816	9/8/2014 5:34 PM	Configuration sett	25 KB	
	ChCfg	2/8/2011 8:56 AM	Application	75 KB	
	data1	4/14/2019 2:00 PM	Cabinet File	6,008 KB	
	data1.hdr	4/14/2019 2:00 PM	HDR File	45 KB	
	data2	4/14/2019 2:00 PM	Cabinet File	1 KB	
	S ISSetup.dll	4/14/2019 2:13 PM	Application exten	792 KB	
	layout.bin	4/14/2019 2:00 PM	BIN File	2 KB	
	RtlExUpd.dll	4/14/2019 2:13 PM	Application exten	2,790 KB	
	Setup	4/14/2019 2:13 PM	Application	1,176 KB	
	🖟 setup	4/14/2019 2:04 PM	So Configuration sett	6 KB	
	setup.inx	4/14/2019 2:00 PM	Date modified: 4/14/2019 1 INX File	548 KB	
	setup.isn	5/12/2014 5:07 AM	ISN File	254 KB	
	setup.iss	5/30/2005 9:01 AM	ISS File	1 KB	
	USetup.iss	11/13/2007 8:18 AM	ISS File	1 KB	

2. Select **Next** to continue.





3. When installation completed, select **Yes, I want to restart my computer now**. Then click **Finish**.

Realtek High Definition Audio Driv	ver Setup (4.71) 6.0.8688.1 x64 Edition					
	Uninstall Complete					
	InstallShield Wizard has finished uninstalling Realtek High Definition Audio Driver.					
	Realtek audio driver has been uninstalled. If you want to re-install the Realtek audio driver, please restart the computer. Realtek setup program will install audio driver automatically after reboot.					
	Yes, I want to restart my computer now.					
	No, I will restart my computer later.					
	InstallShield Wizard has finished uninstalling Realtek High Definition Audio Driver.To complete the uninstallation, you must restart your computer.					
InstallShield	< Back Finish Cancel					

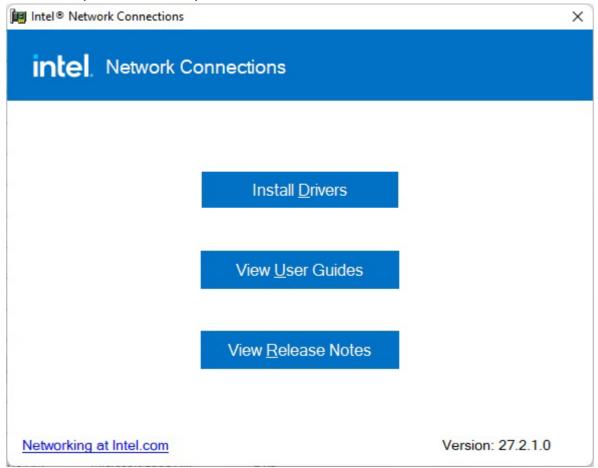
3.5 Ethernet Driver

Follow instructions below to install LAN driver.

1. Open the Driver CD (included in the package) and select LAN driver.

> * * 1	> This PC > Desktop > 27_2_1			
🛨 Quick access	Name ^^	Date modified 3/ 10/ 2022 3:19 AM	Type File tolaer	Size
Desktop 📌	PRO40GB	5/16/2022 3:20 AM	File folder	
🛓 Downloads 🛷	DR01000	5/16/2022 3:20 AM	File folder	
Documents 📌	PRO2500	5/16/2022 3:20 AM	File folder	
Pictures #	PROAVE	5/16/2022 3:20 AM	File folder	
driver pic	PROCGB	5/16/2022 3:20 AM	File folder	
	PROXGB	5/16/2022 3:20 AM	File folder	
 OneDrive 	TI RDMA	5/16/2022 3:20 AM	File folder	
This PC	3rd_party_licenses	5/16/2022 3:19 AM	Text Document	18 KB
ALAN (D:)	3rd_party_licenses_BSD	5/16/2022 3:19 AM	Text Document	8 KB
Network	3rd_party_licenses_GPL	5/16/2022 3:19 AM	Text Document	30 KB
- HEWOK	3rd_party_licenses_tools	5/16/2022 3:19 AM	Text Document	11 KB
	间 Autorun	5/16/2022 3:19 AM	Application	122 KB
	Autorun.exe.config	5/16/2022 3:19 AM	CONFIG File	2.KB
	Autorun	5/16/2022 3:19 AM	Configuration sett	1 KB
	C index	5/16/2022 3:19 AM	Microsoft Edge H	2 KB
	C legaldis	5/16/2022 3:19 AM	Microsoft Edge H	1 KB
	C license	5/16/2022 3:19 AM	Microsoft Edge H	12 KB
	icense	5/16/2022 3:19 AM	Microsoft Edge P	153 KB
	icense	5/16/2022 3:19 AM	Text Document	10 KB
	license_notice	5/16/2022 3:19 AM	Text Document	1 KB
	note	5/16/2022 3:19 AM	GIF File	1 KB
	readme	5/16/2022 3:20 AM	Text Document	127 KB
	a Release_Notes	5/16/2022 3:20 AM	Microsoft Edge P	344 KB
	i style	5/16/2022 3:20 AM	Cascading Style S	3 KB
	verfile.tic	5/16/2022 3:20 AM	TIC File	1 KB
	C warranty	5/16/2022 3:20 AM	Microsoft Edge H	9 KB
	C webnet	5/16/2022 3:20 AM	Microsoft Edge H	1.KB

2. When compression is complete, select Install Drivers.



3. Select OK.



4. Select **Close** to close the window.

Installing Drivers	
Drivers for Intel® Network Connections were successfully installed	4 .
<u>C</u> lose	

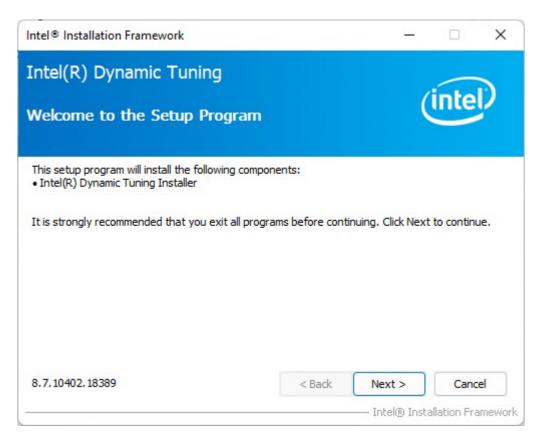
3.6 DTT Driver

Follow instructions below to install DTT driver.

1. Open the Driver CD (included in the package) and select **DTT** driver.

driver						_	
🕀 New 🗸	0 6 9 6 0	\uparrow Sort \sim \equiv View \sim					
÷ → • ↑	> RDVD (D:) > M116TG Driver > Intel	Dynamic Tuning V8.7.10402.18389	> driver >		~ C	, Search driver	
🛨 Quick access	Name	Date modified	Туре	Size			
	a drivers	11/8/2021 6:23 PM	File folder				
	mup	11/8/2021 6:23 PM	File folder				
	Dtt_8.7.10402.18389_Install	11/19/2020 2:57 AM	Application	9,559 KB			
-	License	11/19/2020 2:56 AM	Text Document	36 KB			
	•						
📒 driver pic							
OneDrive							
This PC							
RDVD (D:)							
🚈 Network							
	L 0.22 M/P						
items 1 item selecte	d 9.33 MB						

2. When compression is complete, select Next.



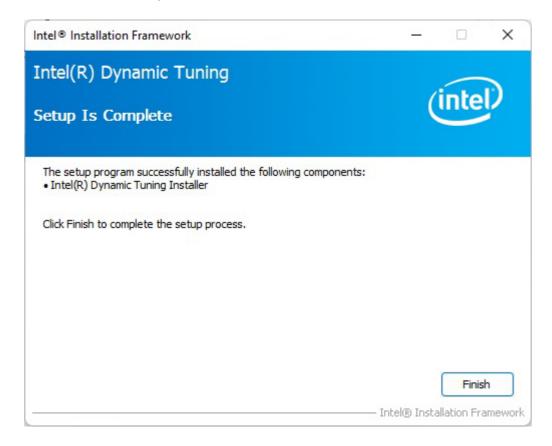
3. Read the license agreement, and then select Yes.

Intel® Installation Framework	– 🗆 X
Intel(R) Dynamic Tuning License Agreement	(intel)
You must accept all of the terms of the license agreement in order to program. Do you accept the terms?	o continue the setup
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User) IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING. Do not use or load software (including drivers) from this site or any (collectively, the "Software") until you have carefully read the follow By loading or using the Software, you agree to the terms of this Ag modify from time to time following reasonable notice to You. If you do not install or use the Software.	ving terms and conditions. reement, which Intel may
Please Also Note: • If you are an Original Equipment Manufacturer (OEM), Inc < <u>B</u> ack	dependent Hardware Yes No - Intel® Installation Framework

4. System displays the installed packages, select Next.

ntel® Installation Framework	
Intel(R) Dynamic Tuning Setup Progress	(intel)
Please wait while the following setup operations are perform	ed:
Copying File: C:\Program Files\Intel\Intel(R) Dynamic Tuning Copying File: C:\Program Files\In	gUninstall\th-TH\setup.exe.dll gUninstall\tr-TR\License.txt gUninstall\tr-TR\setup.exe.dll gUninstall\zh-CN\License.txt gUninstall\zh-CN\setup.exe.dll gUninstall\zh-TW\License.txt gUninstall\zh-TW\setup.exe.dll gUninstall\zh-TW\setup.exe.dll
	Next >
	Intel® Installation Frame

5. When installation is completed, select Finish to close the window.



3.7 GNA Driver

Follow instructions below to install GNA driver.

1. Open the Driver CD (included in the package) and select **GNA** driver.

	> RDVD (D:) > M116TG Driver > gna				~ C	🔎 Search gna	
	Name	Date modified	Туре	Size			
	CHANGELOG.md	11/5/2020 8:37 PM	MD File	3 KB			
	🧼 gna	11/5/2020 8:37 PM	Security Catalog	11 KB			
	🗟 gna	11/5/2020 8:37 PM	Setup Information	9 KB			
	🗟 gna.sys	11/5/2020 8:37 PM	System file	83 KB			
*	intel Simplified Software License	11/5/2020 8:37 PM	Microsoft Edge P	218 KB			
	* * *	Name CHANGELOG.md Gamma gna gna gna gna gna gna gna gna gna	Name Date modified CHANGELOG.md 11/5/2020 8:37 PM Image: state	Name Date modified Type CHANGELOG.md 11/5/2020 8:37 PM MD File Image: state sta	Name Date modified Type Size CHANGELOG.md 11/5/2020 8:37 PM MD File 3 KB Image: state sta	Name Date modified Type Size CHANGELOG.md 11/5/2020 8:37 PM MD File 3 KB gran 11/5/2020 8:37 PM Security Catalog 11 KB gran 11/5/2020 8:37 PM Setup Information 9 KB gransys 11/5/2020 8:37 PM System file 83 KB	Name Date modified Type Size CHANGELOG.md 11/5/2020 8:37 PM MD File 3 KB gran 11/5/2020 8:37 PM Security Catalog 11 KB gran 11/5/2020 8:37 PM Setup Information 9 KB gran.sys 11/5/2020 8:37 PM System file 83 KB

2. Right click, select Install.

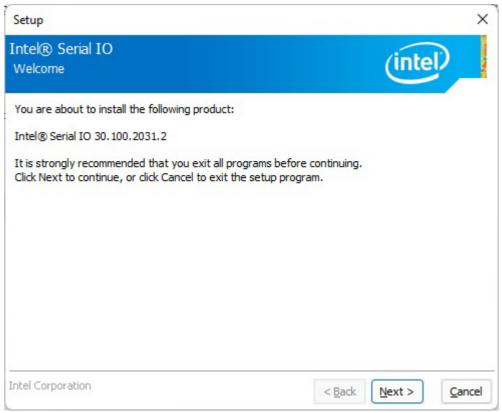
🧛 gna1-Paint		- 0 ×
✓ □ ↓ □ ↓ □ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	A ↓ N// ○□□ Δ Δ Δ 0" ↓ A ↓ N// ○□□ Δ Δ Δ 0" ↓ A ↓ N// ○□□ Δ Δ Δ 0" ↓ A ↓ N// ○□□ Δ Δ Δ 0" ↓ A ↓ N// ○□□ Δ Δ Δ 0" ↓ A ↓ N// ○□ □ Δ Δ 0" ↓ ↓ A ↓ N// ○□ □ Δ Δ 0" ↓ ↓ A ↓ N// ○□ □ Δ Δ 0" ↓ ↓ A ↓ N// ○□ □ Δ Δ 0" ↓ ↓ A ↓ N// ○□ □ Δ Δ 0" ↓ ↓ A ↓ N// ○□ □ Δ Δ 0" ↓ ↓ A ↓ N// ○□ □ Δ Δ 0" ↓ ↓ A ↓ ↓ ↓ ↓ ↓ A ↓ ↓ ↓ ↓ ↓ B ↓ ↓ ↓ ↓ ↓	లి.
Image: A set of the s	Dolete RDVD (D) Rename	
	25 × 634px 🗄 Size 76.4x8	100%
e	📕 🖓 📕 🧧	へ 健 CH 3:03 AM 5/16/2022 ク

3.8 Serial IO Driver

Follow instructions below to install SIO driver.

1. Open the Driver CD (included in the package) and select **SetupSerialIO** driver.

2. Select Next to start the installation.



3. Select **Next** to agree with the terms of license agreement.

Setup	×
Intel® Serial IO License Agreement	(intel)
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distr	ibution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USIN Do not use or load software (including drivers) from this site or (collectively, the "Software") until you have carefully read the By loading or using the Software, you agree to the terms of the modify from time to time following reasonable notice to You. If do not install or use the Software.	r any associated materials following terms and conditions. his Agreement, which Intel may
Please Also Note: • If you are an Original Equipment Manufacturer (OEM), Indep or Independent Software Vendor (ISV), this complete LICENSE • If you are an End-User, then only Exhibit A, the INTEL SOFT applies.	E AGREEMENT applies;
For OEMs, IHVs and ISVs:	
LICENSE. Subject to the terms of this Agreement, Intel grants	to You a nonexclusive,
I accept the terms in the License Agreement.	
Intel Corporation	< Back Next > Cancel

4. Click Next.

Set	tup	×
	tel® Serial IO adme File Information	
**	*****	
*		1
*	Production Version Release	1
*		
*	Microsoft Windows* 10 64 bit	
*		
*		
*	Intel(R) Serial IO Driver	
*		
*		
*	NOTE: This document refers to systems containing the following Intel processors/chipsets:	
*	following interprocessors/chipsets:	
*	Intel(R) 300 Series Chipset Family On-Package Platform Controller	
*	Hub (PCH)	
*	Intel(R) 300 Series and Intel(R) C240 Series Chipset Family Platform	
*	Controller Hub.	
*	Intel(R) 400 Series Chipset Family On-Package Platform Controller Hub.	
*	Intel(R) 400 Series Chipset Family Platform Controller Hub.	
Inte	Corporation < <u>B</u> ack <u>Next</u> > <u>C</u> an	cel

Setup	×
Intel® Serial IO Confirmation	(intel)
You are about to install the following components: - Intel® Serial IO GPIO Driver	
Intel Corporation	< Back Next > Cancel

5. When installation completed, select **Yes, I want to restart my computer now**. Then click **Finish**.



3.9 Resistive Touch Driver for Windows 11 System

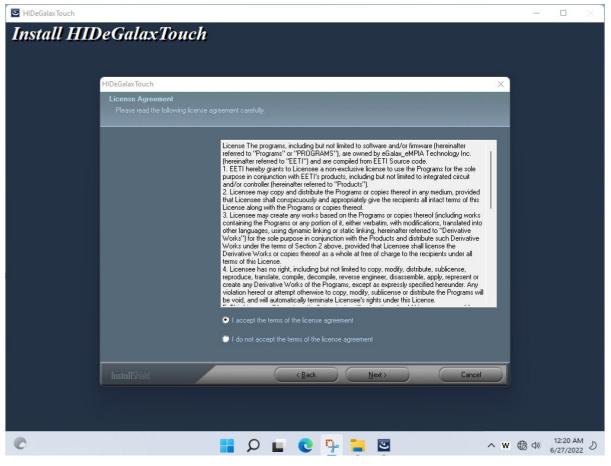
Follow instructions below to install touch driver.

1. Click setup

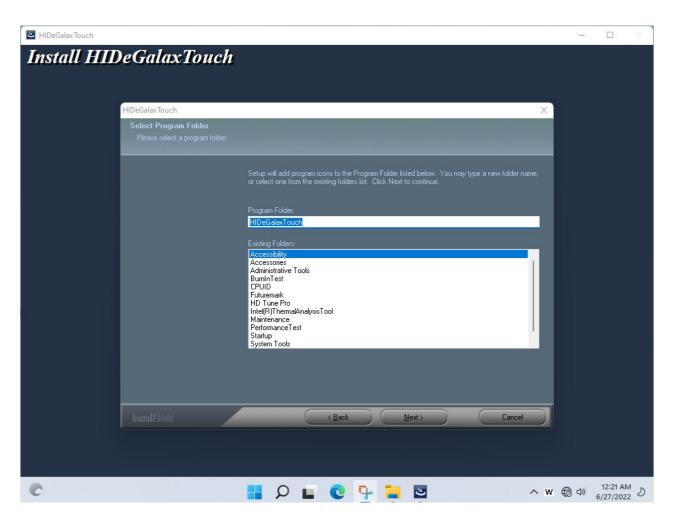
🕀 New 🖌 🔏	0	î e) & Ū	\uparrow Sort \cdot \equiv View \cdot \cdot	••
÷ → · ↑	> HID	eGalaxTouch_2.13.0.14728-forSingleTo	uchDev ~ C 🔎	Search HIDeGalaxTouch_2.13
📩 Quick access		Name ^	Date modified 7/16/2019 12:11 AM	Type Size Configuration sett
E Desktop	*	Conexe	11/17/2008 9:47 PM	lcon
↓ Downloads	*	🗟 ISSetup.dll	8/21/2011 8:08 AM	Application exten
Documents	*	layout.bin	9/26/2020 2:52 AM	BIN File
Z Pictures	*	search	4/13/2003 4:38 AM	AVI File
🚞 spreadsheet		🔄 setup	9/26/2020 2:52 AM	Application
🚞 Storage & USB		🔊 setup	2/18/2017 12:20 AM	Configuration sett
🚞 writing		setup.inx	11/24/2019 10:19 PM	INX File
OneDrive		🗋 setup.isn	8/21/2011 9:45 AM	ISN File
		setup.iss	5/8/2018 4:11 AM	ISS File
This PC		📄 setup	9/6/2018 3:39 AM	Text Document
🖆 Network		🗋 uninstall.iss	9/6/2018 3:06 AM	ISS File
			5/25/2020 1:16 AM	Application

2. Click Next to continue

IIDeGalaxTouch	3 <u></u> 4		×
Install HIDeGalaxTouch			
HIDeGalaxTouch ×			
Welcome to the InstallShield Wizard for HIDeGalaxTouch			
The InstallShield Wizard will install HIDeGalaxTouch on your computer. To continue, click Next.			
InstallShield <u>Rack</u> <u>Next</u> Cancel			
C -	₩ (6) (1)	12:20 AN	1 D
	v 4⊗ dn	12:20 AN 6/27/2023	20

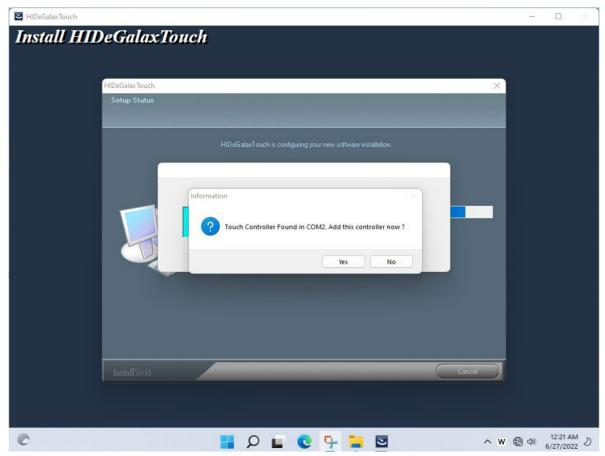


HIDeGalaxTouch		<u>8681</u> 6		×
Install HID	DeGalaxTouch			
	HIDeGalaxTouch X			
	Choose Destination Location			
	Select folder where setup will install files.			
	Setup will install HIDeGalaxTouch in the following folder.			
	To install to this folder, click Next. To install to a different folder, click Browse and select another folder.			
	Destination Folder- C:\Program Files (x86)\HIDeGalaxTouch Browse			
	InstallShield Cancel Cancel			
C	📕 🔎 🖬 💽 🔤 🛛 🔺 🕸 👘	a) (1)	12:20 AI 6/27/202	M D



In HIDeGalaxTouch	<u>3180</u> 3		×
Install HIDeGalaxTouch	ļ		
	×		
Setup Type Select the setup type that best suits your needs.			
Select the features you want to install, and deselect the features you do not want to install. Click Next to continue.			
Create a Utility shortcut on desktop			
InstallShield <u>Rack</u> <u>Next</u> Cancel	2		
	W 🛞 🕬	12:21 A	

3. Click **Yes** to add this controller.

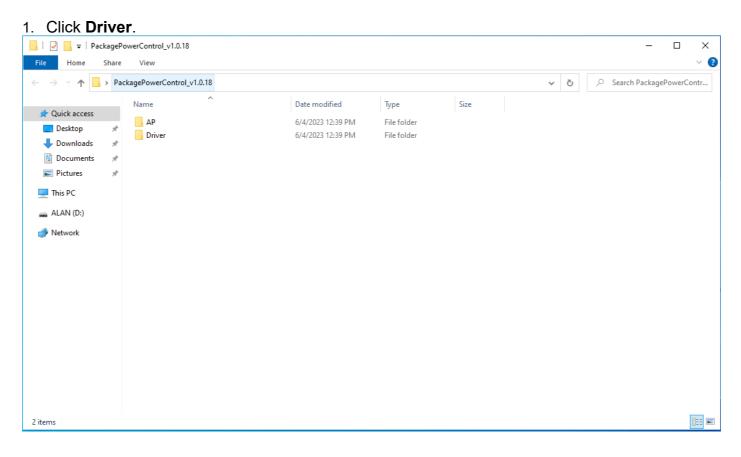


4. Restart the computer now and finish the setup.

IIDeGalaxTouch	3 <u>111</u> 5		× 1
Install HIDeGalaxTouch			
HIDeGalaxTouch	1		
InstallShield Wizard Complete			
Setup has finished installing HIDeGalaxTouch on your computer.			
 Yes, I want to restart my computer now. No, I will restart my computer later. The driver has been installed. To ensure proper operation the computer needs to be restarted. 			
InstallShield < Back Finish Carcel	J.		
	€ 4×	12:23 AI 6/27/202	м 22 Д

3.10 Thermal Control AP

Follow instructions below to install Thermal Control AP.



:==

→ * ↑	> Pac	kagePowerControl_v1.0.18 → Driver				~	ē	Search Driver	
		Name	Date modified	Туре	Size				
Quick access		Hottab Driver(WMMIO) v3.1.0.1	6/4/2023 12:39 PM	File folder					
Desktop	*								
Downloads	*								
Documents	A								
Pictures	*								
This PC									
ALAN (D:)									
Network									

1 item

2. Click WMMIO_64bit.

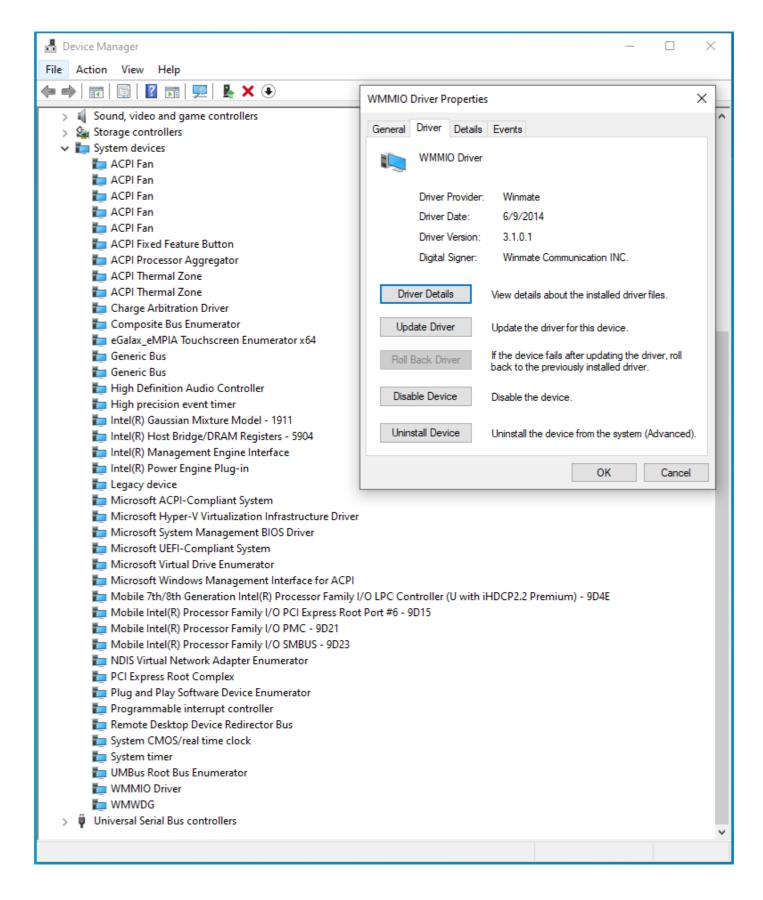
📙 💆 📙 🖛 Hotta	b Driver(WMMIO) v3.1.0.1					— C	- X
File Home SI	hare View						~ ?
$\leftarrow \rightarrow \land \uparrow \square $	$PackagePowerControl_v1.0.18 \rightarrow Driver \rightarrow Hottab$	Driver(WMMIO) v3.1.0.1		`	ٽ /	Hottab Drive	er(WMMI
	Name ^	Date modified	Туре	Size			
✓ Quick access Desktop Downloads Documents Pictures This PC ALAN (D:)	WMMIO_32bit WMMIO_64bit Hottab_WMMIO_Driver Installation Guid	6/4/2023 12:39 PM 6/4/2023 12:39 PM 3/25/2016 4:00 PM	File folder File folder Microsoft Edge P	240 KB			
💣 Network							
3 items							

📙 🛃 🥃 🗸 WMMIO_64bit						- 0	×
File							~ 🕐
Open <u>n</u> ew window	Open Windows Powe <u>r</u> Shell	> WMMIO_64bit >		ٽ ~		MMIO_64bit	
Open Windows Powe <u>r</u> Shell		Туре	Size				
Open Windows Powe <u>r</u> Shell Open a window you can use to	Open Windows PowerShell as <u>a</u> dministrator	File folder					
type commands at a Windows PowerShell		Application Windows Batch File	80 KB 1 KB				
		Security Catalog	9 KB				
🕐 Help		Setup Information	2 KB				
X <u>C</u> lose							
ALAN (D:)							
💣 Network							
5 items							
😕 Administrator: Windows Powe	erShell				_		×
PS C:\Users\user\Desktop\Pa	ackagePowerControl_v1.0.18\Drive	r\Hottab Driver(W	MMIO) v3.1	.0.1\WMMIO_64	↓ bit> .\inst	all.bat	~
	-			_			
r							
🔰 Administrator: Windows Powe	erShell				_		×
PS C:\Users\user\Desktop\Pa	ackagePowerControl_v1.0.18\Drive	r\Hottab Driver(W	MMIO) v3.1	.0.1\WMMIO_64	4bit≻ .\inst	all.bat	^

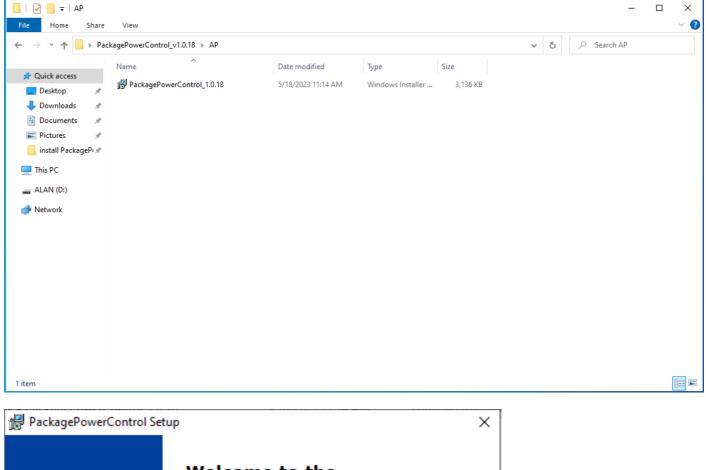
C:\Users\user\Desktop\PackagePowerControl_v1.0.18\Driver\Hottab Driver(WMMIO) v3.1.0.1\WMMIO_64bit>DEVCON.EXE INSTALL wm mio.inf "root\wmmio" Device node created. Install is complete when drivers are installed... Updating drivers for root\wmmio from C:\Users\user\Desktop\PackagePowerControl_v1.0.18\Driver\Hottab Driver(WMMIO) v3.1. 0.1\WMMIO_64bit\wmmio.inf. Drivers installed successfully

Drivers installed successfully.

C:\Users\user\Desktop\PackagePowerControl_v1.0.18\Driver\Hottab Driver(WMMIO) v3.1.0.1\WMMIO_64bit>pause Press any key to continue . . .

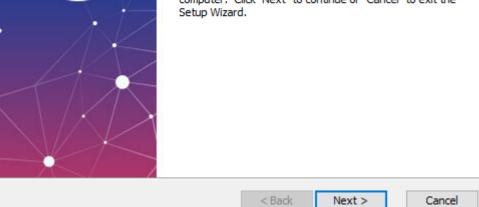




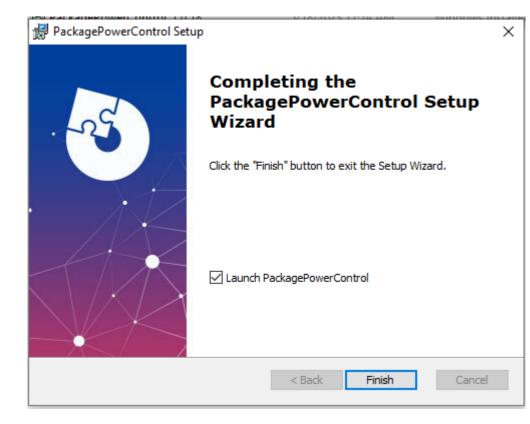


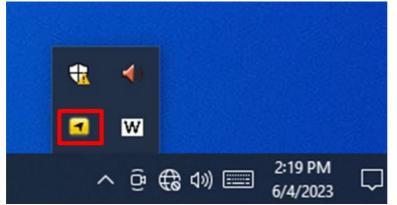
Welcome to the PackagePowerControl Setup Wizard

The Setup Wizard will install PackagePowerControl on your computer. Click "Next" to continue or "Cancel" to exit the Setup Wizard.



🔀 PackagePowerControl Setup		—		×
Select Installation Folder				-
This is the folder where PackagePowerControl wi	ll be installed.			-23
To install in this folder, click "Next". To install to a "Browse".	different folder, ent	er it bek	ow or click	
<u>F</u> older:				
C:\Program Files (x86)\PackagePowerControl\Pac	kagePowerControl		Browse	
Advanced Installer				
<	Back Next >	•	Cance	4
PackagePowerControl Setup Ready to Install The Setup Wizard is ready to begin the Package	PowerControl installa	tion	5	×
Ready to Install The Setup Wizard is ready to begin the Package Click "Install" to begin the installation. If you wa installation settings, click "Back". Click "Cancel" t	nt to review or chan		f your	×
Ready to Install The Setup Wizard is ready to begin the Package Click "Install" to begin the installation. If you wa installation settings, click "Back". Click "Cancel" to Advanced Installer	nt to review or chan	ge any o	f your	5





Chapter 4: INSYDE H20 BIOS Setup

This chapter describes the different settings available in the INSYDE BIOS that comes with the board.

- 4.1 How and When to Use BIOS Setup
- 4.2 BIOS Functions
- 4.3 Using Recovery Wizard to Restore Computer
- 4.4 How to Enable Watchdog

4.1 How and When to Use BIOS Setup

To enter the BIOS setup, you need to connect an external USB keyboard, external monitor and press Del key when the prompt appears on the screen during start up. The prompt screen shows only few seconds so need press Del key quickly.



IMPORTANT:

Updated BIOS version may be published after the manual released. Check the latest version of BIOS on the website.

You may need to run BIOS setup utility for reasons listed below:

- 1. Error message on screen indicates to check BIOS setup
- 2. Restoring the factory default settings.
- 3. Modifying the specific hardware specifications
- 4. Necessity to optimize specifications

BIOS Navigation Keys

The following keys are enabled during POST:

Key	Function
Del	Enters the BIOS setup menu.
F7	Display the boot menu. Lists all bootable devices that are connected to the system. With cursor ↑and cursor ↓and by pressing <enter>, select the device used for the boot.</enter>
Pause	Pressing the [Pause] key stops the POST. Press any other key to resume the POST.

The following Keys can be used after entering the BIOS Setup.

Key	Function
F1	Help
F5/ F6	Change Values
F9	Setup Defaults
F10	Save & Exit
Esc	Exit
Enter	Select SubMenu
$ \uparrow/\downarrow \\ \leftarrow/\rightarrow $	Select Item
\leftarrow/\rightarrow	Select Item

For items marked ► press **<Enter>** for more options.



NOTE:

You can press the F1, F2, F3, F4, –/+, and Esc keys by connecting a USB keyboard to your computer.

4.2 BIOS Functions

4.2.1 Main Menu

The Main menu displays the basic information about your system including BIOS version, processor RC version, system language, time, and date.

When you enter BIOS setup, the first menu that appears on the screen is the main menu. It contains the system information including BIOS version, processor RC version, system language, time, and date.

InsydeH20 Setup Utility Rev. 5.			
HainAdvancedSecurityPowerInsydeH20VersionSerialNumberProcessorTypeSystemBusSpeedSystemMemorySpeedCacheRAMTotalMemoryController0Channe10SODIMMOPlatformPlatformConfigurationCPUID:CPUCPUSpeed:CPUStepping:NumberOfProcessors:HicrocodeHicrocodeRev:GTInfo:SMX/TXT:PCHPCHRev / SKUGOPVer:IntelMELanguageSystemTimeSystemDate	Boot Exit IT32.004 1W7777788888 11th Gen Inte 2.40GHz 100 HHz 2400 MT/s 5120 KB 4096 MB 0x806C1 (Tige 1400 HHz 806C1 (B0 Ste 4 Core(s) / 8 000008A 0x9A49 Un-Supported	el(R) Core(TM) i5-113567 @ erLake ULT) epping) 3 Thread(s) ng) / TGL PCH-LP U Premium	Rev. 5. Select the current default language used by the InsydeH2O.
	i/↓Select Item -/→Select Item	F5/F6 Change Values Enter Select ▶ SubMenu	F9 Setup Defaults F10 Save and Exit

BIOS Setting	Description	Setting Option	Effect
Language	Displays the system language. [English] is set up by default.	Adjustment of the language	Set the language in other language. The language in this device is English.
System Time	This is current time setting. The time is maintained by the battery when the device is turned off.	Date and time changes.	Set the time in the format: [hh/mm/ss]
System Date	This is current date setting.	Date and time changes.	Set the date in the format [mm/dd/yyyy];

4.2.2 Advanced

Select the Advanced Tab from the setup menu to enter the advanced BIOS setup screen. You can select any of the items on the left frame of the screen to go to the sub menu for the item, such as CPU Configuration. You can use the <Arrow> keys enter all advanced BIOS setup options. The advanced BIOS setup menu is shown below. The submenus described on the following pages.



CAUTION

Handle advanced BIOS settings page with caution. Any changes can affect the operation of your computer.

Main Advanced Security	Ins Power Boot Exit	ydeH20 Setup Utility	Rev. 5
Hain Advanced Security Chipset Configuration POWER & Performance System Agent (SA) Configur PCCH-IO Configuration PCH-FW Configuration >SIO F81968		Advanced Chi	oset Configuration Options
F1 Help Esc Exit	1/↓ Select Item +/→ Select Item		etup Defaults ave and Exit

BIOS Setting	Description	Setting Option	Effect
CPU	Configures Trusted	Enter	Opens submenu
Configuration	Computing parameters		
Power & Performance	Configures Power & Performance parameters	Enter	Opens submenu
System Agent Configuration	Configures System Agent Configuration parameters	Enter	Opens submenu
PCH-OI Configuration	Configures PCH-OI parameters	Enter	Opens submenu
PCH-FM Configuration	Configures PCH-FM parameters	Enter	Opens submenu
SIO F81968	Configures SIO F81968 parameters	Enter	Opens submenu
Console Redirection	Configures Console Redirection parameters	Enter	Opens submenu

4.2.2.1 CPU Configuration

Advanced	InsydeH20 Setup Utility	Rev. 5.0
Advanced CPU Configuration Type ID Speed VHX SHX/TXT Intel (VHX) Virtualization Technology Active Processor Cores Hyper-Threading AES	11th Gen Intel(R) Core(TH) 15-113567 0 2.40GHz 0x806C1 1400 HHz Supported Not Supported <ii> <enabled> <all> <enabled> <enabled> <enabled></enabled></enabled></enabled></all></enabled></ii>	When enabled, a YMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
F1 Help 1/4 Select Esc Exit +/+ Select		F9 Setup Defaults F10 Save and Exit

BIOS Setting	Description	Setting Option	Effect
Intel (VMM) Virtualization Technologyl	Enable or disable Intel Virtualization Technology.	Enable/Disable	When enabled, a VMM can utilized the additional hardware capabilities provided by Vanderpool Technology.
Active Processor Cores	Number of core to enable in each processor package	All / 1 / 2/ 3	Select number of core to enable in each processor package
AES	Enable or disable AES (Advanced Encyption Standard)	Enable/Disable	Enable or disable AES

4.2.2.2 Power & Performance

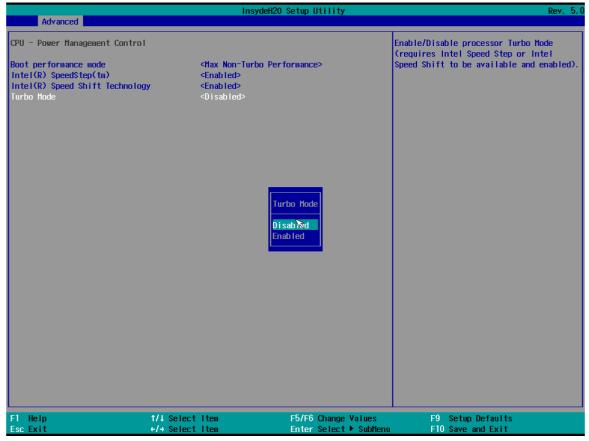
Adverted	Ins	ydeH20 Setup Utility		Rev. 5.
Advanced				
Power & Performance		CI	PU - Power Management Contro	ol Options
►CPU - Power Management	Control			
F1 Help	1/1 Select Item	F5/F6 Change Values	F9 Setup Defaults	
Esc Exit	←/→ Select Item	Enter Select 🕨 SubMenu	F10 Save and Exit	

BIOS Setting	Description	Setting Option	Effect
CPU – Power	Configure CPU –	Enter	Enters sub-menu
Management	Power Management		
Control	Control parameters		

	InsydeH20 3	Setup Utility	Rev. 5.0
Advanced			
CPU - Power Management Control Boot performance mode Intel(R) SpeedStep(tm) Intel(R) SpeedShift Technology Turbo Mode Power Limit 4 Override Power Limit 4 Lock C states ►Custom P-state Table	<turbo formance:<br="" per=""><enabled> <enabled> <enabled> I500001 <oisabled> <oisabled> <oisabled> </oisabled></oisabled></oisabled></enabled></enabled></enabled></turbo>		Select the performance state that the BIOS will set starting from reset vector.
	J Select Item → Select Item	F5/F6 Change Values Enter Select ► SubMenu	F9 Setup Defaults F10 Save and Exit
ESC EXIT +/-		Enter serect + sudneriu	

BIOS Setting	Description	Setting Option	Effect
Boot Performance Mode	Configure Boot Performance Mode parameters	 Max non-turbo performance Max battery Turbo Performance 	Enters sub-menu
Intel SpeedStep (ta)	Configure Intel SpeedStep (ta) parameters	Enabled/ Disabled	Allows more than two frequency ranges to be supported
Intel Speed Shift Technology	Configure Intel Speed Shift Technology parameters	Enabled/ Disabled	Enable/ Disable Intel Speed Shift Technology support. Enabling will expose the CPP v2 interface to allow for hardware-controlled P- states
-Turbo Mode	Enable or disable Turbo Mode	Enabled/ Disabled	Enable/ Disable processor Turbo Mode (requires EMTTM enabled too). Auto means enabled, unless max turbo ratio is bigger than 16 – SKL AO W/A

4.2.2.2.1 How to Enable/Disable Turbo Mode



4.2.2.3 System Agent (SA) Configuration

InsydeH20 Setu	p Utility	Rev. 5.0
	I	Graphics Configuration
Suppor ted		
<enabled></enabled>		
: I tem F5/I	F6 Change Values	F9 Setup Defaults F10 Save and Exit
	Suppor ted <enab led=""></enab>	Suppor ted <enabled></enabled>

BIOS Setting	Description	Setting Option	Effect
Graphics Configuration	Configure Graphics Configuration parameters	Enter	Opens sub-menu
PEG Port Configuration	Configure PEG Port Configuration parameters	Enter	Opens sub-menu
Vt-d	Intel® Virtualization Technology for Directed I/O	Enabled Disabled	Vt-d capability

4.2.2.3.1 Graphics Configuration

	Insyd	deH20 Setup Utility	Rev. 5
Advanced			
Graphics Configuration			Graphics turbo IMON current values supported (14-31)
Graphics Turbo IMON Current	[31]		
Primary Display	<auto></auto>		
Select PCIE Card	<auto></auto>		
Aperture Size	<256MB>		
DVMT Pre-Allocated	<60M>		
DVMT Total Gfx Mem	<256M>		
-1 Help	↑/↓ Select Item	F5/F6 Change Values	F9 Setup Defaults
sc Exit	+/→ Select Item	Enter Select ► SubMenu	F10 Save and Exit

BIOS Setting	Description	Setting Option	Effect
Graphics Turbo IMON Current	Graphics Turbo IMON Current values supported	14-31	Select Graphics Turbo IMON Current values supported
Primary Display	Select Primary Display	Auto IGFX PEG PCI	Select which of IGFX/PEG/ PCI Graphics device should be primary display or select SG for Switchable Gfx
Aperture Size	Select the aperture size	128MB 256MB 512MB 1024MB 2048 MB	Select the aperture size Note: Above 4MB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature please disable CSM port
DVMT Pre- Allocated	Select DVMT Pre- Allocated	0M~60M	Select DVMT 5.0 Pre-Allocated (Fixed) Graphic Memory size used by Internal Graphic Device
DVMT Total Gfx Mem	Select DVMT Total Gfx Mem	256M 128M MAX	Select DVMT 5.0 Total Graphic Memory size used by the Internal Graphic Device

4.2.2.3<u>.2 VT-d</u>

	InsydeH20 Setup Utility	Rev. 5.0
Advanced		
System Agent (SA) Configuration		VT-d capability
VT-d	Suppor ted	
▶Graphics Configuration		
VT−d	<enabled> VT-d Disabled Enabled</enabled>	
F1Help1/4SelectEscExit+/+Select		F9 Setup Defaults F10 Save and Exit

BIOS Setting	Description	Setting Option	Effect
VT-d	Intel® Virtualization	Enabled Disabled	Vt-d capability
	Technology for Directed I/O		

4.2.2.4 PCH-IO Configuration

	Insyde	eH20 Setup Utility	Rev.
Advanced			
PCH-10 Configuration			PCI Express Configuration settings
PCI Express Configuration SATA And RST Configuration PUSB Configuration			
State After G3	<\$5 State>		
l Help sc Exit	1/↓ Select Item +/→ Select Item	F5/F6 Change Values Enter Select ▶ SubMenu	F9 Setup Defaults F10 Save and Exit

BIOS Setting	Description	Setting Option	Effect
PCI Express Configuration	Configure PCI Express settings	Enter	Opens sub-menu
SATA And RST Configuration	Configure SATA And RST settings	Enter	Opens sub-menu
USB Configuration	Configure USB settings	Enter	Opens sub-menu
State After G3			S0 = auto power on after power failure S5 = keep power off after power failure

4.2.2.4.1 PCI Express Configuration

	Insy	vdeH2O Setup Utility		Rev. 5
Advanced				
PCI Express Configuration			PCI Express Root Port Settings.	
PCI Express Root Port 1		ured as USB/SATA/UFS/GbE		
PCI Express Root Port 2	Lane config	ured as USB/SATA/UFS/GbE		
▶PCI Express Root Port 3 ▶PCI Express Root Port 4				
PCI Express Root Port 4				
PCI Express Root Port 6				
PCI Express Root Port 7				
PCI Express Root Port 8				
▶PCI Express Root Port 9 ▶PCI Express Root Port 10				
PCI Express Root Port 11	Lane config	ured as USB/SATA/UFS/GbE		
CI Express Root Port 12		ured as USB/SATA/UFS/GbE		
1 Help	1/↓ Select Item	F5/F6 Change Values	F9 Setup Defaults	
sc Exit	←/→ Select Item	Enter Select 🕨 SubMenu	F10 Save and Exit	

BIOS Setting	Description	Setting Option	Effect
PCI Express Clock Gating	PCI Express Clock Gating settings	Enabled Disabled	PCI Express Clock Gating Enable/ Disable for each root port
PCI Port assigned to LAN	PCI Port assigned to LAN settings	Value	Choose value
PCI Express Root Port 5	Control the PCI Express Root Port 5	Enter	Opens sub-menu

	Insydel	H20 Setup Utility	Rev. 5.0
Advanced			
PCI Express Root Port 5	<enabled></enabled>	Cor	ntrol the PCI Express Root Port.
Connection Type	<\$lot>		
ASPM	<disabled></disabled>		
L1 Substates	<disabled></disabled>		
ACS	<enabled></enabled>		
PTM	<enabled></enabled>		
DPC	<enabled></enabled>		
EDPC	<enabled></enabled>		
URR	<disabled></disabled>		
FER	<disabled></disabled>		
NFER	<disabled></disabled>		
CER	<disabled></disabled>		
SEFE	<disabled></disabled>		
SENFE	<disabled></disabled>		
SECE	<disabled></disabled>		
PME SCI	<enabled></enabled>		
Hot Plug	<disabled></disabled>		
Advanced Error Reporting	<enabled></enabled>		
PCIe Speed	<auto></auto>		
Transmitter Half Swing	<d i="" led="" sab=""></d>		
Detect Timeout	[0]		
Extra Bus Reserved	[0]		
Reserved Memory	[10]		
Reserved 1/0	[4]		
PCH PCIe LTR Configuration			
LTR	<enabled></enabled>		
Snoop Latency Override	<auto></auto>		
Non Snoop Latency Override	<auto></auto>		
Force LTR Override	<disabled></disabled>		
LTR Lock	<d i="" led="" sab=""></d>		
F1 Help Esc Exit	1/↓ Select Item +/→ Select Item	F5/F6 Change Values Enter Select ► SubMenu	F9 Setup Defaults F10 Save and Exit

BIOS Setting	Description	Setting Option	Effect
PCI Express Root Port 5	Control the PCI Express Root Port 5	Enter	Opens sub-menu
Topology	Topology settings	Unknown x1 x4 SATA Express M2	Identify the SATA Topology if it is Default or ISATA or Flex or Direct Connect or M2
ASPM	ASPM settings	Auto L0sL1 L1 L0s Disabled	Automatically enable ASPM based on reported capabilities and known issues
L1 Substrates	PCIE Express L1 Substrates settings	Disabled L1.1 L1.2 L1.1 & L1.2	PCIE Express L1 Substrates settings
Gen3 Eq Phase3 Method	Gen3 Eq Phase3 Method settings	Hardware Static Coefic Software Search	PCIe Gen3 Equalization Phase 3 Method
ACS	Access Control Services Extended Capability settings	Disabled Enabled	Enable/ Disable Access Control Services Extended Capability
PCIe Speed	Configure PCIe Speed	Auto	Configure PCIe Speed

		Gen1 Gen2 Gen3	
PCH PCIE4 LTR	PCH PCI Latency Reporting Enable/ Disable	Disabled Enabled	PCH PCI Latency Reporting Enable/ Disable
PCIE4 LTR Lock	PCIE4 LTR Lock settings	Disabled Enabled	PCIE4 LTR Configuration Lock
PCIE4 CLKREQ Mapping Override	PCIE4 CLKREQ Mapping Override	Default No CLKREQ Custom Number	PCIE4 CLKREQ Mapping Override for default platform mapping

4.2.2.4.2 SATA and RST Configuration

	InsydeH20	Setup Utility		Rev. 5.
Advanced				
SATA And RST Configuration			Enable/Disable SATA Device.	
SATA Controller(s)	<enabled></enabled>			
SATA Mode Selection	<ahc1></ahc1>			
Serial ATA Port O	Empty			
Software Preserve	Unknown			
Port O	<enabled></enabled>			
Hot Plug	<disabled></disabled>			
Configured as eSATA	Hot Plug supported	1		
External	<disabled></disabled>			
Spin Up Device	<disabled></disabled>			
SATA Device Type	<hard disk="" drive=""></hard>			
Topology	<unknown></unknown>			
SATA Port 0 DevSlp	<disabled></disabled>			
DITO Configuration	<disabled></disabled>			
DITO Value	[625]			
DM Value	[15]			
Serial ATA Port 1	ADATA IM2S3164 (25	56 (JGB)		
Software Preserve	SUPPORTED			
Port 1	<enabled></enabled>			
Hot Plug	<disabled></disabled>			
Configured as eSATA	Hot Plug supported	1		
External	<disabled></disabled>	•		
Spin Up Device	<disabled></disabled>			
SATA Device Type	<pre> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"> <u style="text-align: center;"></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></u></pre>			
	 			
SATA Port 1 DevSlp	<d i="" led="" sab=""></d>			
DITO Configuration	<pre><disabled></disabled></pre>			
DITO Value	[625]			
DM Value	[15]			
Serial ATA Port 2	Empty			
Software Preserve	Unknown			
Port 2	<enabled></enabled>			
F1 Help	↑/↓ Select Item	F5/F6 Change Values	F9 Setup Defaults	
Esc Exit	+/→ Select Item	Enter Select ► SubMenu	F10 Save and Exit	

4.2.2.4.3 USB Configuration

	Insydel	420 Setup Utility	Rev. 5.0
Advanced			
USB Configuration			Selectively Enable/Disable the corresponding USB port from reporting a Device Connection to the controller.
USB Port Disable Override	<disable></disable>		
F1 Help	1/↓ Select Item	F5/F6 Change Values	F9 Setup Defaults
Esc Exit	+/→ Select Item	Enter Select ► SubMenu	F10 Save and Exit

BIOS Setting	Description	Setting Option	Effect
USB Port	USB Port Disable	Disable Select	Selectively Enable/ Disable the
Disable Override	Override	Per-Pin	corresponding USB port from reporting
	configuration		a Device Connection to the controller

4.2.2.4.4 State After G3

	Ins	ydeH20 Setup Utility	Rev. 5.0
Advanced			
PCH-10 Configuration PPCI Express Configuration PSATA And RST Configuration PUSB Configuration			Specify what state to go to when power is re-applied after a power failure (G3 state).
State After G3	<s5 state=""></s5>	State After G3 S0 State \$5 State	
	1/↓ Select Item +/+ Select Item	F5/F6 Change Values Enter Select ▶ SubMenu	F9 Setup Defaults F10 Save and Exit

BIOS Setting	Description	Setting Option	Effect
State After G3	State After G3 configuration	S0 State S5 State	Specify what state to go to when power is re-applied after a power failure (G3 state)

4.2.2.5 PCH-FW Configuration

<u> </u>	Insydel	120 Setup Utility	Rev. 5.0
Advanced			
HE Firmware Version HE Firmware Mode HE Firmware SKU HE Firmware Status 1 HE Firmware Status 2	15.0.10.1574 Normal Mode Consumer SKU 0x90000255 0x88100106		When Disabled HE will be put into ME Temporarily Disabled Mode.
HE State HE Unconfig on RTC Clear Comms Hub Support JHI Support Core Bios Done Message	<enabled> <d i="" sabled=""> <d i="" sabled=""> <d i="" sabled=""> <enabled></enabled></d></d></d></enabled>		
▶Firmware Update Configuration ▶PTT Configuration	1		
F1 Help	1/1 Select Item	F5/F6 Change Values	F9 Setup Defaults
Esc Exit	+/+ Select Item	Enter Select ► SubMenu	F10 Save and Exit

BIOS Setting	Description	Setting Option	Effect
ME State	ME State configuration	Disabled Enabled	When Disabled ME will be put into ME Temporarily Disabled Mode
Manageability Features State	Manageability Features State configuration	Disabled Enabled	Enable/ Disable Intel Manageability Features Note: this option disabled/ enables Manageability Features support in FW. To disable support platform must be in an unprovisioned state first.
AMT BIOS Features	AMT BIOS Features	Disabled Enabled	Enable/ Disable Intel Active Management Technology BIOS Extension. Note: iAMT H/W Is always enabled. This option just controls the BIOS Extension execution.
AMT Configuration	AMT Configuration	Enter	Opens sub-menu
ME Unconfig on RTC Clear State	ME Unconfig on RTC Clear State	Disabled Enabled	Disabling this option will cause ME not to unconfigure on RST clear
Comms Hub Support	Comms Hub Support	Disabled Enabled	Enable/Disable support for Comms Hub

JHI Support	JHI Support	Disabled Enabled	Enable/Disable Intel DAL Host Interface Service (JHI)
Core BIOS Done Message	Core BIOS Done Message	Disabled Enabled	Enable /Disable Core BIOS Done message sent to ME
Firmware Update Configuration	Firmware Update Configuration	Enter	Opens sub-menu
PTT Configuration		Enter	Opens sub-menu
ME Debug Configuration			

4.2.2.6 SIO F81968

Advanced	Insyde	eH20 Setup Utility	Rev. 5.0
F81968 Chip 1 I/O Configuration Port ÞUART Port 1 Configuration	4Eh/4Fh	U	ART Configuration
 FUART Port 2 Configuration FUART Port 3 Configuration FUART Port 4 Configuration FHardware Monitor Watch-Dog Timer FGP10 Group 0 Configuration FGP10 Group 5 Configuration FGP10 Group 7 Configuration 	<always off=""></always>		
F1 Help Esc Exit	1/↓ Select Item +/→ Select Item	F5/F6 Change Values Enter Select ⊨ SubMenu	F9 Setup Defaults F10 Save and Exit

BIOS Setting	Description	Setting Option	Effect
UART Port 1 ~	Configure Serial	Disable	No configuration
UART Port 4	port settings	Enable	User configuration
		Auto	EFI/OS chooses configuration
WDT	Watchdog Timer configuration	Disable Enable	Enable or disable Watchdog Timer
Hardware Monitor	Hardware Monitor	Enter	Opens sub-section
GPIO Group 0 Configuration	GPIO Group 0 Configuration	Enter	Opens sub-section

4.2.2.6.1 Hardware Monitor

Advanced	Insy	deH20 Setup Utility	Rev. 5.
Hardware Monitor		0	: Stop updating 15: Update sensors data per specified
Refresh Cycle	[1]		econd
Voltage			
3VCC	3.296 V		
/core	1.304 V		
/12\$	12.144 V		
/35	3.296 V		
3VSB	3.296 V		
/BAT	3.088 V		
5VSB	5. 136 V		
Temperature			
Temperature 1	25.0 °C/ 7	7.0 °F	
Temperature 2	44.0 °C/ 11	1.2 °F	
Fan Speed			
FAN IN1	N/A		
°1 Help	1/1 Select Item	F5/F6 Change Values	F9 Setup Defaults
Esc Exit	←/→ Select Item	Enter Select 🕨 SubMenu	F10 Save and Exit

BIOS Setting	Description	Setting Option	Effect
FAN1 Mode	FAN1 Mode configuration	Manual Linear Stage	Select FAN1 Mode
			configuration

4.2.2.6.2 GPIO Configuration

InsydeH20 Setup Utility		Rev. 5.0
<input/>		
<enabled></enabled>		
<enabled></enabled>		
<input/>		
<input/>		
- Track Look		
<mput></mput>		
	<input/> <enabled> <input/> <enabled> <input/> Input></enabled></enabled>	<input/> <enab led=""> <input/> <t< td=""></t<></enab></enab></enab></enab></enab></enab></enab></enab></enab></enab></enab></enab></enab></enab></enab></enab></enab></enab>

BIOS Setting	Description	Setting Option	Effect
Internal Resistance	Internal Resistance configuration	Push Pull Open Drain	User can pull internal resistance push-pull / open-drain
Input/ Output Mode	GPIO pin configuration	Input Output	Set GPIO pin is input or output

4.2.3 Security

Main Advanced Security Power Boo	InsydeH20 Setup Utility	Rev. 5.
Current TPM Device TPM State	<tpm (dtpm)="" 2.0=""> All Hierarchies Enabled, Owned</tpm>	TrEE Protocol Version: 1.0 or 1.1
TPM Active PCR Hash Algorithm TPM Hardware Supported Hash Algorithm BlOS Supported Hash Algorithm TrEE Protocol Version TPM Availability	SHA1, SHA256, SHA384, SHA512, SH3_256 <1.1> <available></available>	
TPH Operation Clear TPH Supervisor Password User Password	<no operation=""> [] Not Installed Not Installed</no>	
Set Supervisor Password Set User Password Set All Hdd Password Set All Haster Hdd Password		
⊧Storage Password Setup Page		
· · · · · · · · · · · · · · · · · · ·	:lect Item F5/F6 Change Values :lect Item Enter Select ≻ SubMe	F9 Setup Defaults enu F10 Save and Exit

BIOS Setting	Description	Setting Option	Effect
TrEE	Choose TrEE	1.0	TrEE Protocol Version:
Protocol Version	Protocol Version	1.1	1.0 or 1.1
TPM Availability	TPM Availability configuration	Available Hidden	When hidden don't exposes TPM to 0
TPM Operation	TPM Operation configuration	[]	Select one of the supported operations to change TPM2state
Clear TPM	Clear TPM configuration	[]	Select to Clear TPM
Set Supervisor	Set Supervisor Password	Enter New	Install or change the
Supervisor Password	Fassword	password	password and the length of password must be greater
			than one character

4.2.4 Power

	InsydeH20	Setup Utility	Rev. 5.0
Main Advanced Security Powe	r Boot Exit		
			Enable/Disable ACP1 \$1/\$3 \$leep state
ACPI S3 Auto Wake on S5	<enabled> <disabled></disabled></enabled>		
	t/l Select Item +/→ Select Item	F5/F6 Change Values Enter Select ► SubHenu	F9 Setup Defaults F10 Save and Exit

BIOS Setting	Description	Setting Option	Effect
ACPI S3	ACPI S3 configuration	Disabled Enabled	Enable/ Disable ACPI S1/S3 Sleep state
Auto Wake on S5	Auto Wake on S5 configuration	Disabled By Every Day By Every Month	Auto Wake on S5, by Day or Month or fixed time of every day

<u>4.2.5 Boot</u>

Main Advanced Security	Power Boot Exit	eH20 Setup Utility	Rev. 5.0
Quick Boot Quiet Boot Network Stack PXE Boot capability Timeout Automatic Failover	<enabled> <enabled> <disabled> <disabled> [0] <enabled></enabled></disabled></disabled></enabled></enabled>		Allows InsydeH2O to skip certain tests while booting. This will decrease the time needed to boot the system.
▶Boot Type Order			
F1 Help Esc Exit	1/1 Select Item +/→ Select Item	F5/F6 Change Values Enter Select ► SubMenu	F9 Setup Defaults F10 Save and Exit

BIOS Setting	Description	Setting	Effect
Boot Type	Boot Type configuration	UEFI Boot Type	Select boot type to Dual type, Legacy type or UEFI type
Quick Boot	Quick Boot configuration	Enabled Disabled	Allows InsydeH20 to skip certain tests while booting. This will decrease the time needed to boot the system
Quiet Boot	Quiet Boot configuration	Enabled Disabled	Disable or enable booting in text Mode.
Network Stack	Network Stack configuration	Disabled Enabled	Network Stack Support: Windows 8 Bitlocker Unlock UEFI IPv4/ IPv6 PXE Legacy PXE OPROM
Timeout	Timeout	[Value]	Timeout settings
Automatic Failover		Enable	If boot to default device fail, it will directly try to boot next device
		Disable	If boot to default device fail, it will pop warning message then go to firmware UI
Boot Type Order	Boot Type Order	Enter	Opens sub-menu

4.2.5.1 PXE Boot

1. Press del to boot BIOS setup utility then change "Network Stack" setting to enable at Boot page.

2. Change Boot capability to UEFI:Ipv4/IPv6 that support both protocol.

		nsydeH20 Setup Utility		Rev. 5.0
Main Advanced Security Pow	er Boot Exit			
Boot Type Quick Boot Quiet Boot Network Stack PXE Boot capability Power Up In Standby Support Add Boot Options ACPI Selection USB Boot UEFI 0S Fast Boot USB Hot Key Support Timeout Automatic Failover >Boot Type Order	<uef1 boot<br=""><enabled> <enabled> <disabled> <disabled> <first> <acpi5, d=""> <enabled> <enabled> [0] <enabled> [0] <enabled></enabled></enabled></enabled></enabled></acpi5,></first></disabled></disabled></enabled></enabled></uef1>		Disabled : Support Network Stack UEFI PXE : IPv4/IPv6 Legacy : Legacy PXE OPROH only	
F1 Help Esc Exit	1/↓ Select Item +/+ Select Item	F5/F6 Change Values Enter Select ► SubMen	F9 Setup Defaults u F10 Save and Exit	

82 IT32 SBC User Manual

3. Type F10 to save setting and exit then reboot it will auto connects media server. If you see picture as bellow please checks your server.



4. You also can press "esc" go into boot manager to choose which one LAN you want to do PXE if you have more than one LAN.

Boot I	1anager
Boot Option Menu EFI Boot Devices EFI Network 1 for IPv6 (88-88-88-88-87-88) EFI Network 1 for IPv4 (88-88-88-88-87-88) EFI Network 0 for IPv6 (00-03-E1-19-19-21) EFI Network 0 for IPv4 (00-03-E1-19-19-21) Windows Boot Hanager (H.2 (S42) 3ME4) Internal EFI Shell † and 4 to change option, ENTER to select an option, ESC to ex	it
	ß
F1 Help Esc Exit	t/l Select Item Enter Select ▶ SubHenu

<u>4.2.6 Exit</u>

Main Advanced Security Power Boot Exit Exit Saving Changes Save Change Without Exit Exit system setup and save your Exit Discarding Changes Load Outlinal Defaults Save Changes Save Changes Load Custom Defaults Discard Changes Save Changes Save Changes Discard Changes Save Changes Save Changes Save Changes	InsydeH20 Setup Util	InsydeH20			nsydeH20 Setup Utility			Rev.
xit Saving Changes ave Change Without Exit xit Discarding Changes oad Optimal Defaults oad Custom Defaults ave Custom Defaults iscard Changes	Boot Exit		er Boot Exit	ed Security Pow				
xit Saving Changes ave Change Without Exit xit Discarding Changes oad Optimal Defaults oad Custom Defaults ave Custom Defaults iscard Changes						Evit evet	ov eves hae autes wa	ur changes
ave Change Without Exit (it Discarding Changes and Optimal Defaults bad Custom Defaults iscard Changes				nanges		EATC 3930	chi setup unu suve ju	in chunges
ad Optimal Defaults ad Custom Defaults ve Custom Defaults scard Changes				ithout Exit				
ad Custom Defaults ve Custom Defaults scard Changes								
ve Custom Defaults scard Changes								
scard Changes								
	R				R			
Help 1/↓ Select Item F5/F6 Change Values F9 Setup Defaults c Exit +/+ Select Item Enter Select ▶ SubHenu F10 Save and Exit								

4.3 Using Recovery Wizard to Restore Computer



Note:

Before starting the recovery process, make sure to backup all user data. The data will be lost after the recovery process.



Important:

Before starting the recovery process, remove any expansion card.

To enable quick one-key recovery procedure:

- 1. Connect the computer to the power source. Make sure the computer stays plugged in to power source during the recovery process.
- 2. Turn on the computer, and when the boot screen shows up, press **F6** to initiate the Recovery Wizard.
- 3. The following screen shows the Recovery Wizard. Click Recovery button to continue.

Recovery Wizard
Click " Recovery " to restore your system. WARNING! The process will clear all of your data.
If you do not want to restore your system please press " Quit " to reboot. Quit

4. A warning message about data loss will show up. Make sure the data is backed up before recovery, and click **Yes** to continue.



5. Wait the recovery process to complete. During the recovery process, a command prompt will show up to indicate the percent of recovery process complete. After complete the recovery process, the system will be turned off automatically. Please restart your system manually to complete the OS initialize process.

4.4 How to Enable Watchdog

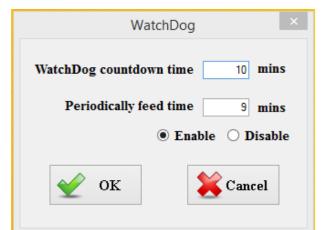
To enable Watchdog, you need to download Winmate Watchdog utility. Find more information on Watchdog in "Watchdog Guide" that you can download from Winmate Download Center or File Share.

To enable watchdog in Watchdog AP follow the instructions below:

- 1. On the right bottom side of the desktop screen, click **triangle button** to show hidden icons.
- 2. Click ^W icon to open Watchdog utility.



3. In Watchdog utility window set countdown time and periodically feed time, or disable watchdog.



Example:

Every 10 min watchdog will monitor the system, in case any error occurs the system will restart automatically when the countdown time reaches 0.

Every 9 min watchdog timer will be reset to 10 min.

Setting	Description
Watchdog Countdown Time	The system automaticity restarts when this countdown time reaches zero. <i>Default: 10 min</i>
Periodically Feed Time	To set a cycle time to automatically reset watchdog timer. <i>Default: 9 min</i>
Enable / Disable	Enable or disable watchdog. <i>Default: Enable</i>

Chapter 5: Technical Support

This chapter contains directory to technical support.

- 5.1 Drivers
- 5.2 Software Development Kit (SDK)

This chapter includes the directory for technical support. Free technical support is available from our engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products. If any problem occurs immediately contact us.

5.1 Drivers

The list of drivers available for IT32 Motherboard:

Item	Driver
1	Chipset Driver
2	Graphics Driver
3	ME Driver
4	Audio Driver
5	LAN Driver
6	DTT Driver
7	GNA Driver
8	Serial IO Driver
9	Resistive Touch Driver
10	Package Power Control Driver
11	Winset_Watch Dog Driver
12	WMDIO APP

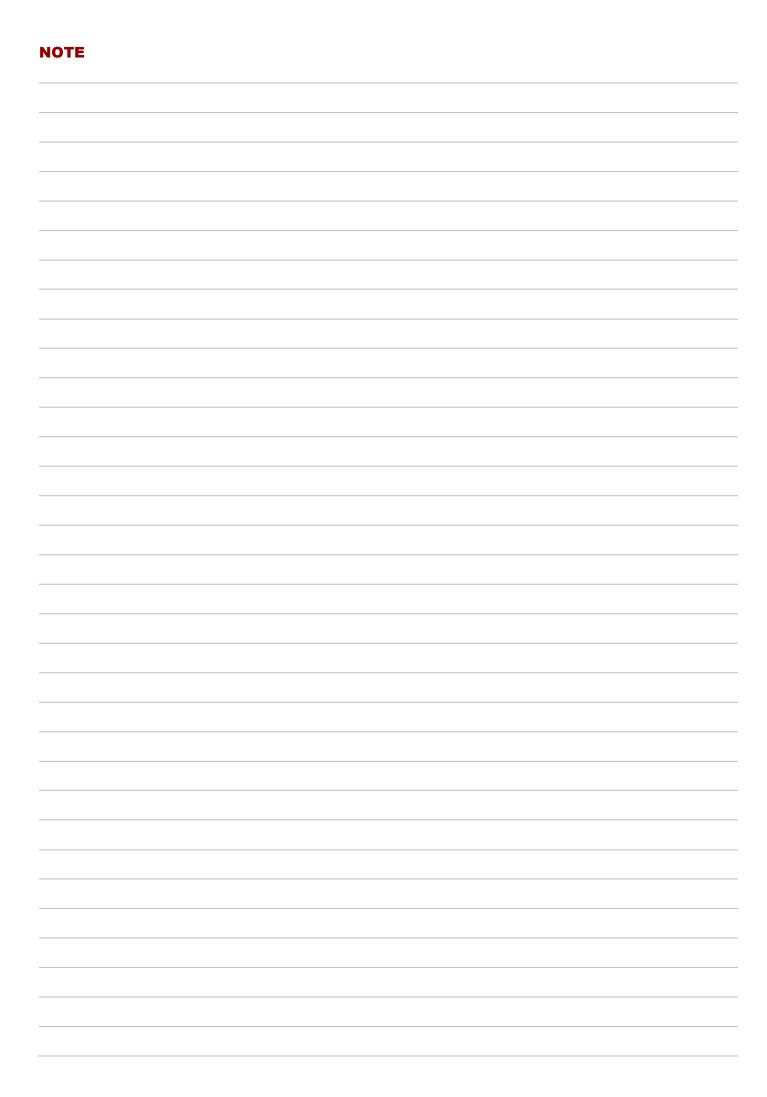
To find the Drivers, please refer to Winmate website or contact us.

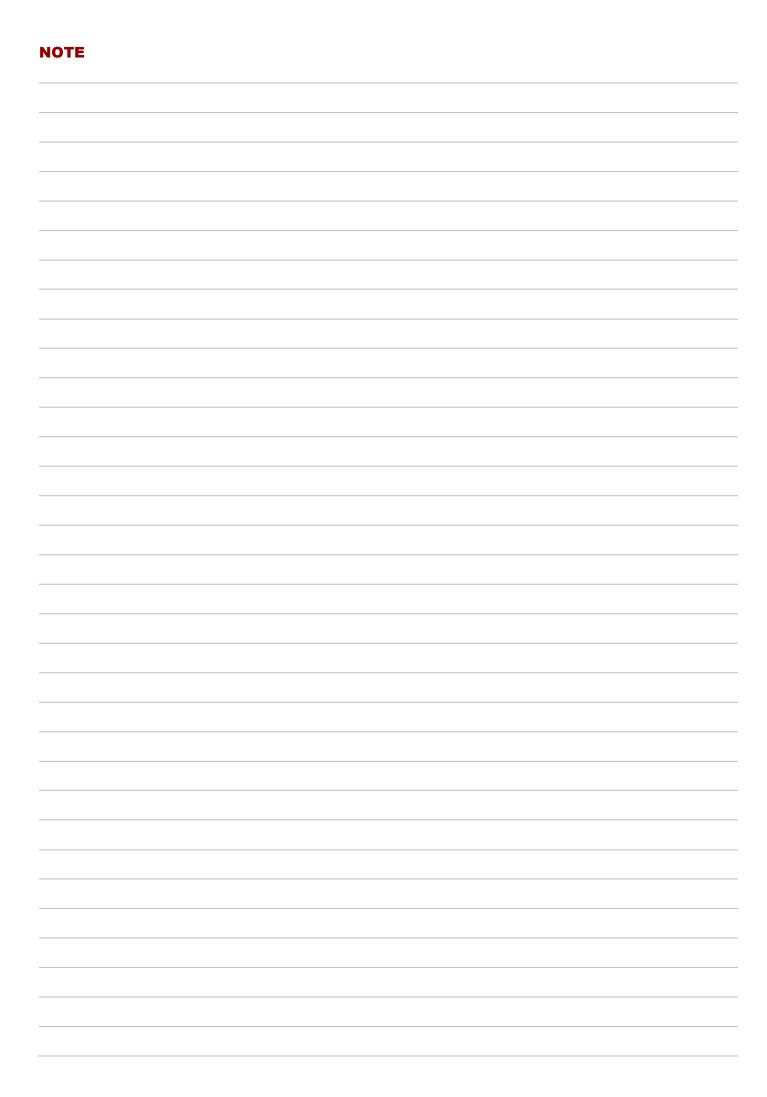
5.2 Software Development Kit (SDK)

The list of SDK available for IT32 Motherboard

Item	File Type	Description
1	SDK	Watchdog SDK
2	SDK	Digital IO SDK

To find the SDK, please refer to Winmate website or contact us.







Winmate Inc. 9F, No.111-6, Shing-De Rd., San-Chung District, New Taipei City 24158, Taiwan, R.O.C www.winmate.com

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