

MODEL: DRPC-240-TGL

Embedded System with Intel® Tiger Lake-U CPU, 8 GB DDR4 SO-DIMM, M.2 Slot, PCIe x4 Slot, RS-232, RS-422/485, HDMI, DP++ and RoHS

User Manual



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Rev. 1.01 – 2022-09-26



| Date | Version | Change | |
|------------|---------|--------------------------------------|--|
| 2022-09-26 | 1.01 | Added BIOS Section | |
| | | Added SIM Moudle Installation | |
| | | Added SMbus & DIO Information | |
| | | Added System Jumper Configuration | |
| | | Modified Overview photos | |
| | | Modified Memory Installation photos | |
| | | Modified M.2 SSD Installation photos | |
| 2022-07-04 | 1.00 | Initial Release | |



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Manual Conventions



WARNING

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury. Warnings should be taken seriously.



CAUTION

Cautionary messages should be heeded to help reduce the chance of losing data or damaging the product.



NOTE

These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can help avoid making mistakes.



HOT SURFACE

This symbol indicates a hot surface that should not be touched without taking care.

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1.1





Introduction





1.1 Overview



Figure 1-1: DRPC-240-TGL

The DRPC-240-TGL is an embedded system with Intel® Tiger Lake-U processor and 8GB DDR4 SO-DIMM memory. It is designed for harsh environment applications, and supports DIN rail mounting method.

The DRPC-240-TGL accepts a wide range of DC power input (12V ~ 28V), allowing it to be powered anywhere. It is equipped with two USB 3.2 Gen 2 (10Gb/s), two USB 2.0, four 2.5GbE LAN, two RS-232 ports, two RS-422/485 ports, one HDMI and one DisplayPort++ to provide rich I/O options for various applications.

Furthermore, the DRPC-240-TGL also has a PCIe x4 slot that can support half-size expansion cards



1.2 Features

The DRPC-240-TGL features are listed below:

- Intel® Tiger Lake-U processor
- Two DDR4 SO-DIMM memory slot (8GB pre-installed)
- 1 x 2.5" SATA 6Gb/s HDD/SSD bay
- 2 x USB 3.2 Gen 2 (10Gb/s) port
- 2 x USB 2.0 port
- 4 x 2.5GbE LAN
- 1 x DIO
- Support M.2 A key and M.2 B key expansions
- Wide range DC power input (12V~28V)
- Cold forging heat dissipation
- PCIe x4 slot
- DIN rail mounting support
- RoHS compliant

1.3 Model Variations

| Model | Description |
|---------------------|---|
| | Fanless embedded system, Intel® Tiger Lake-U Celeron® |
| DRPC-240-TGL-U-CCS | 6305 1.8GHz (dual core, TDP 15W), 8GB DDR4 pre- |
| | installed memory, HDMI/DP++, four 2.5GbE LAN, |
| | four COM, DIO, 12~28V DC and RoHS |
| DRPC-240-TGL-U-i5CS | Fanless embedded system, Intel® Tiger Lake-U Core™ |
| | i5-1145G7E 1.5GHz (quad core, TDP 15W), 8GB DDR4 |
| | pre-installed memory, HDMI/DP++, four 2.5GbE LAN, |
| | four COM, DIO, 12~28V DC and RoHS |
| DRPC-240-TGL-U-i7CS | Fanless embedded system, Intel® Tiger Lake-U Core™ |
| | i7-1185G7E 1.8GHz (quad core, TDP 15W), 8GB DDR4 |
| | pre-installed memory, HDMI/DP++, four 2.5GbE LAN, |
| | four COM, DIO, 12~28V DC and RoHS |

Table 1-1: Model Description

1.4 Technical Specifications

| Model | | DRPC-240-TGL- | DRPC-240-TGL- | DRPC-240-TGL- | |
|---------------|--------------|--|------------------|-----------------|--|
| | | U-i7CS | U-i5CS | U-CCS | |
| Color | | Black | | | |
| Chassis | Dimensions | 91 x 150 x 100 | 81 x 150 x 190 | 81 x 150 x 190 | |
| | (WxDxH) (mm) | 01 X 150 X 190 | | | |
| Chassis | System Fan | Fanless | | | |
| | Chassis | Extruded aluminum allow | | | |
| | Construction | Extruded aluminum alloy | | | |
| | | Intel® Core™ i7- | Intel® Core™ i5- | Intol® Coloron® | |
| | | 1185G7E 1.8GHz | 1145G7E 1.5GHz | | |
| | CPU | (up to 4.4GHz | (up to 4.1GHz, | (dual-core 15W) | |
| | | quad-core, 15W | quad-core, 15W | | |
| Motherboard | | TDP) | TDP) | IDF) | |
| | Chipset | SoC | | | |
| | BIOS | For motherboard BIOS | | | |
| | Memory | 2 x SO-DIMM DDR4 3200 MHz (8GB pre-installed) | | | |
| Storage | HDD Bay | 1 x 2.5" SATA 6Gb/s HDD/SSD bay | | | |
| | | 2 x USB 3.2 Gen 2 (10Gb/s) | | | |
| | 058 | 2 x USB 2.0 | | | |
| | | 4 x RJ-45: | | | |
| | Ethorpot | 1 x 2.5GbE by Intel® I225LM | | | |
| | Ethernet | 3 x 2.5GbE by Intel® I225V (colay I225LM) | | | |
| | | (support optional PoE af module) | | | |
| I/O Interface | COM | 2 x RS-422/485 with AFC (DB-9, with 2.5kV isolation) | | | |
| | COM | 2 x RS-232 (DB-9, with 2.5kV isolation) | | | |
| | Digital I/O | 12-bit digital I/O (6-in/ 6-out) | | | |
| | Dicploy | 1 x HDMI (up to 3840 x 2160 @ 30Hz) | | | |
| | ызріау | 1 x DP++ (up to 4096 x 2304 @ 60Hz) | | | |
| | Wireless | 1 x 802.11a/b/g/n/ac (optional) | | | |
| TPM | | Support Intel PTT | | | |

The DRPC-240-TGL technical specifications are listed below.

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DRPC-240-TGL Embedded System

| | | 1 x Power button 1 x Reset button | |
|-------------|---|--|--|
| | | 1 x Reset button | |
| | | | |
| | Others | 1 x AT/ATX switch | |
| | Others | 1 x Power LED (green) | |
| | | 1 x HDD LED (yellow) | |
| | | 4-pin external system fan connector | |
| | MO | 1 x 2230 A key (PCIe x1, USB 2.0) | |
| Expansions | M.2 | 1 x 3042/52/80 B key (PCIe x2, USB, 3.0, USB 2.0) | |
| | Rear Panel | 1 x PCIe Gen 3 x4 (optional) | |
| | Power Input | Terminal block: 12V – 28V DC | |
| Power | Power | 12V @ 6.98A (Intel ® Core™ i5-1145G7E with 8GB | |
| | Consumption | memory) | |
| | Mounting | DIN-Rail | |
| | | -20°C – 60°C with airflow (SSD), | |
| | Operating temp. | 10% – 95%, non-condensing | |
| | Storogo Tomp | -40°C – 85°C, | |
| | Storage remp. | 10% – 95%, non-condensing | |
| Doliobility | Operating Shock | Half-sine shock test 5G, 11ms, 100 shocks per axis (SSD) | |
| Reliability | Operating | | |
| | Vibration | WIE-STD-810G 514.0C-1 (SSD) | |
| | Weight | 2 15/2 5 kg | |
| | | 2.15/2.5 Kg | |
| | (Net/Gross) | | |
| | (Net/Gross) Safety/EMC | CE/ FCC | |
| | (Net/Gross) Safety/EMC Watchdog Timer | CE/ FCC Programmable, 1~255 sec./min. | |
| Reliability | Operating Temp. Storage Temp. Operating Shock Operating Vibration Weight | DIN-Rail -20°C – 60°C with airflow (SSD), 10% – 95%, non-condensing -40°C – 85°C, 10% – 95%, non-condensing Half-sine shock test 5G, 11ms, 100 shocks per axis (SSD) MIL-STD-810G 514.6C-1 (SSD) 2.15/2.5 kg CE/ FCC | |

Table 1-2: Technical Specifications



1.5 Front Panel

The DRPC-240-TGL front panel contains:

- 4 x 2.5GbE LAN
- 2 x USB 3.2 Gen 2 port
- 2 x USB 2.0 port
- 2 x RS-232 port
- 2 x RS-422/485 port



Figure 1-2: DRPC-240-TGL Front Panel

1.6 Rear Panel

The DRPC-240-TGL rear panel contains:

- 1 x DC IN
- 1 x Remote power
- 1 x Power button
- 1 x Reset button
- 1 x DP++
- 1 x HDMI
- ATX/AT switch

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Figure 1-3: DRPC-240-TGL Rear Panel

1.7 Right Side Panel

The DRPC-240-TGL right side panel contains:

1 x System fan connector

Figure 1-4: DRPC-240-TGL Right Side Panel





1.8 Dimensions

The physical dimensions of the DRPC-240-TGL series are shown below.

With fan:





Figure 1-5: DRPC-240-TGL Dimensions





With expansion layer & fan:













Figure 1-6: DRPC-240-TGL Dimensions







Unpacking



2.1 Unpacking

To unpack the embedded system, follow the steps below:

- Step 1: Use box cutters, a knife or a sharp pair of scissors that seals the top side of the external (second) box.
- Step 2: Open the external (second) box.
- **Step 3:** Use box cutters, a knife or a sharp pair of scissors that seals the top side of the internal (first) box.
- Step 4: Lift the system out of the boxes.
- Step 5: Remove both polystyrene ends, one from each side.
- Step 6: Pull the plastic cover off the system.
- Step 7: Make sure all the components listed in the packing list are present.

2.2 Packing List



If some of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the DRPC-240-TGL from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@ieiworld.com.

The DRPC-240-TGL is shipped with the following components:

DRPC-240-TGL Embedded System

| Quantity | Item and Part Number | Image |
|----------|-----------------------|-------|
| 1 | DRPC-240-TGL series | |
| 1 | DIN rail mounting kit | |
| 1 | Screw pack | |

Table 2-1: Packing List

| Optional | |
|--------------------------------------|--|
| Wi-Fi module | |
| (P/N : EMB-WIFI-KIT02I3-R10) | |
| Power adapter (120W) | |
| (P/N : 63040-010120-300-RS) | |
| Power adapter (220W) | |
| (P/N : 63040-010230-000-RS) | |

| Optional | |
|--|------------|
| Power cable | 200.0±10.0 |
| (P/N: 32102-054800-100-RS) | |
| Power cord | |
| (P/N: 32702-000400-200-RS) | |
| PoE power module | |
| (P/N: GPOE-DRPC-240-R10) | |
| 1-slot expansion chassis with riser card | |
| (P/N: TXC-DRPC-240-1S-R10) | |
| External fan module | |
| (P/N: TXC-DRPC-240-1S-R10) | · · |
| DIO cable | |
| (P/N: 32031-000600-100-RS) | |

Table 2-2: Optional Packing List





Installation

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3.1 Anti-static Precautions

🖄 WARNING:

Failure to take ESD precautions during the maintenance of the DRPC-240-TGL may result in permanent damage to the DRPC-240-TGL and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the DRPC-240-TGL. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the DRPC-240-TGL is accessed internally, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- Wear an anti-static wristband. Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- Self-grounding: Before handling the board, touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- Use an anti-static pad. When configuring the DRPC-240-TGL, place it on an anti-static pad. This reduces the possibility of ESD damaging the DRPC-240-TGL.

3.2 Installation Precautions

During installation, be aware of the precautions below:

- Read the user manual: The user manual provides a complete description of the DRPC-240-TGL, installation instructions and configuration options.
- DANGER! Disconnect Power: Power to the DRPC-240-TGL must be disconnected during the installation process or when the rear panel is



opened. Failing to disconnect the power may cause severe injury to the body and/or damage to the system.

- Qualified Personnel: For safety reasons, the DRPC-240-TGL must be installed and operated only by trained and qualified personnel. Maintenance, upgrades, or repairs may only be carried out by qualified personnel who are familiar with the associated dangers.
- Air Circulation: Make sure there is sufficient air circulation when installing the DRPC-240-TGL. The DRPC-240-TGL's cooling vents must not be obstructed by any objects. Blocking the vents can cause overheating of the DRPC-240-TGL. Leave at least 5 cm of clearance around the DRPC-240-TGL to prevent overheating.
- Grounding: The DRPC-240-TGL should be properly grounded. The voltage feeds must not be overloaded. Adjust the cabling and provide external overcharge protection per the electrical values indicated on the label attached to the back of the DRPC-240-TGL.

3.3 Back Cover Removal

Before installing or maintaining the internal components, the back cover must be removed from the DRPC-240-TGL. Follow the steps below to complete the task.

- Step 1: Turn the DRPC-240-TGL over and remove the six screws on the back cover. (See Figure 3-1)
- Step 2: Take off the back cover.







Figure 3-1: Removing the Back Cover

3.4 HDD Bracket Removal

The HDD bracket must be removed first before installing a hard disk or M.2 modules.

- Step 1: Remove the 3 screws on the side panels. (See Figure 3-2)
- **Step 2:** Remove the HDD bracket as indicated by the arrows.



Figure 3-2: Removing the HDD Bracket

3.5 Memory Installation

The DRPC-240-TGL is pre-installed with an 8GB memory module. Users can add or replace memory with different capability by themselves, the installation procedures are described below.

Step 1: Open the two handles of the memory slot (See Figure 3-3).



Figure 3-3: Open the two handles of the Memory Slot

Step 2: Remove the old memory module and insert a new memory module. Carefully align the memory module with the notch on the memory socket (Figure 3-4).



Figure 3-4: Insert the Memory Moudle into the slot

Step 3: Once aligned, press down until the memory module is properly seated and the two handles fully clip into place (See Figure 3-5).



Figure 3-5: Press down the Memory Moudle until properly seated

3.6 Storage Installation

The DRPC-240-TGL supports two types of storage, one M.2 B Key and one SATA Connector supported 2.5" SSD/HDD. Please follow the steps below before installing.

3.6.1 M.2 SSD Installation

Step 1: Remove the onboard M.2 retention screw, and adjust the stud position according to the size of your M.2 SSD. Note that you must purchase a M.2 SSD that is compliant with the specification of the DRPC-240-TGL (See Figure 3-6).



Figure 3-6: Adjust the onboard stud position



Step 2: Insert the M.2 SSD into the M.2 slot and fasten the screw removed previously (See Figure 3-7).



Figure 3-7: Insert and secure the M.2 moudle

3.6.2 HDD/SSD 2.5-inch Installation

- Step 1: Pace the HDD backet onto the rear of the 2.5-inch hard disk. Fasten 4 screws to secure it.
- **Step 2:** Plug in the hard drive cable and install the HDD bracket back into the DRPC-240-TGL (pay attention to the positioning stud) by using 4screws (**Figure 3-8**).



Figure 3-8: HDD Installation

3.7 SIM Module Installation (Optional)

The SIM card slot allows installation of the SIM card based on M.2 B-key signals. To install a SIM card, please follow the steps below.

Step 1: Slide the upper cover to the release position according to the direction of the unlocking symbol (See Figure 3-9).



Figure 3-9: Slide the Upper Cover to the Release Position

Step 2: Open the upper cover of the SIM slot, and orient the SIM card to align with the notch of the SIM slot (See Figure 3-10).



Figure 3-10: Open the Upper Cover of the SIM Slot

Step 3: Place the SIM card onto the SIM card slot, then close the upper cover of the SIM card slot (See Figure 3-11).



Figure 3-11: Install the SIM Card and Close the Upper Cover

Step 4: Slide the upper cover to the lock position according to the direction of the locking symbol (See Figure 3-12).



Figure 3-12: Slide the Upper Cover to the Locking Position



3.8 Wi-Fi Module Installation (Optional)

The Wi-Fi module is an optional accessory. You can purchase it from IEI or other providers. Note that you have to purchase Wi-Fi module, internal antenna and external antenna. It is suggested to purchase an internal antenna longer than 200mm.

To install the Wi-Fi module, follow the steps below.

- Step 1: Remove the M.2 A key retention screw.
- Step 2: Insert the Wi-Fi module (IEI P/N: EMB-WIFI-KIT02I3-R10, including one Intel AX210 wireless Bluetooth function module, two 300mm internal antennas and two 108mm external antennas) and secure the screw.
- **Step 3:** Secure one end of the internal antenna to the Wi-Fi module.
- **Step 4:** Knock out the reserved antenna holes on the chassis, and secure the other end of the internal antenna on the chassis.
- Step 5: Install the external antennas (See Figure 3-13).



Figure 3-13: Wi-Fi Module Installation

3.9 PoE Power Module Installation (Optional)

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This PoE power module provides PoE function to the 4 LAN ports of the DRPC-240 to offer a maximum power consumption of 60W, and a single port power consumption of 15W. To install the PoE module, follow the steps below.

- **Step 1:** Align the PoE power module (GPOE-DRPC-240-R10) with the 4 studs and 2 pin headers, and install them in place after positioning.
- Step 2: Secure the PoE power module with four retention screws.
- Step 3: The PoE power module comes with a heat sink, so you need to uncover the opening reserved for the heat sink before re-installing the back cover. Remove the two retention screws to uncover the opening on the back cover, and then re-install the back cover using 6 retention screws (See Figure 3-14).







Figure 3-14: PoE Power Module Installation
3.10 External Fan Module Installation (Optional)

When encountering high performance and high heat that need additional cooling, the optional external fan can help the DRPC-240-TGL solve the thermal problem. To install the optional external fan, follow the steps below.

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- **Step 1:** Remove the 4 screws (2 on the front panel, 2 on the rear panel) on the DRPC-240-TGL as shown in the figure below.
- **Step 2:** Install the expansion fan module (SF-DRPC-240-R10) to the DRPC-240-TGL, and secure it using the 4 screws removed previously.
- Step 3: Connect the fan cable to the fan connector on the side panel (See Figure 3-15).



Figure 3-15: External Fan Module Installation

3.11 Adding External I/O Ports (Optional)

Additional two external I/O ports can be added on the DRPC-240-TGL, such as DIO. To do this, follow the steps below.

Step 1: Connect one end of the I/O cable to the pin headers on the motherboard





the cable to the knockout hole (See Figure 3-16).



Figure 3-16: I/O Cable Installation

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3.12 Expansion Chassis Installation (Optional)

The DRPC-240-TGL provides an option for adding PCIe x4 function, which is achieved by installing the expansion chassis (P/N: TXC-DRPC-240-1S-R10). The installation steps are described below.

Step 1: Install the riser card on the expansion chassis with 2 screws.



Figure 3-17: Install the Riser Card on the Expansion Chassis

- **Step 2:** Before installing the expansion chassis, ensure the fan wire inside the system will not be pressed or damaged (adjust the wiring if necessary). Align the riser card on the expansion chassis with the PCIe x4 slot inside the DRPC-240.
- **Step 3:** Once aligned, insert the riser card into the PCIe slot. Secure the expansion chassis with 8 screws.



Figure 3-18: Expansion Chassis Installation

Step 4: To install an expansion card, remove the cover on the top of the expansion chassis by removing the 5 screws. Remove the blank bracket and install the PCIe card. Reinstall the bracket screw and the top cover after installing the card



Figure 3-19: Remove the Blank Bracket and Install the PCIe Card





3.13 Back Cover Installation

After installing all the internal components of the system, the back cover must be reinstalled. Use the 6 screws previously removed to secure the back cover to the chassis.



Figure 3-20 Back Cover Installation

3.14 External Device Connection

3.14.1 HDMI Display Device Connection

To connect the HDMI/DP devices, please plug in HDMI/DP connector in the right direction as shown below (Figure 3-21):



Figure 3-21: HDMI Display Device Connection

3.14.2 Ethernet Connection

The LAN connectors allow connection to an external network.

Step 1: Locate the RJ-45 connectors. The locations of the RJ-45 connectors are shown in Figure 3-22.



Step 2: Align the connectors. Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the DRPC-240-TGL (See Figure 3-22).



Figure 3-22: LAN Connection

Step 3: Insert the LAN cable RJ-45 connector. Once aligned, gently insert the LAN cable RJ-45 connector into the on-board RJ-45 connector (See Figure 3-23).



Figure 3-23: RJ-45 Ethernet Connector

The RJ-45 Ethernet connector has two status LEDs, one green and one yellow. The green LED indicates activity on the port and the yellow LED indicates the port is linked. (See Table 3-1).

| Activity/Link LED | | Speed LED | |
|-------------------|----------------|-----------|---------------------|
| STATUS | DESCRIPTION | STATUS | DESCRIPTION |
| Off | No link | Off | 100 Mbps connection |
| SSYellow | Linked | Orange | 1 Gbp connection |
| Blinking | TX/RX activity | Green | 2.5 Gbps connection |

 Table 3-1: RJ-45 Ethernet Connector LEDs

3.14.3 USB Device Connection

The DRPC-240-TGL has two USB 3.2 and two USB 2.0 ports. To connect a USB device, please follow the instructions below.

- Step 1: Located the USB connectors. The locations of the USB connectors are shown in Chapter 1.
- Step 2: Align the connectors. Align the USB device connector with one of the connectors on the I/O panel (See Figure 3-24).
- Step 3: Insert the device connector. Once aligned, gently insert the USB device connector into the onboard connector.



Figure 3-24: USB Connection

3.14.4 DB-9 RS-232/422/485 Serial Port Connection

The DRPC-240-TGL has two RS-232 serial ports and two RS-422/485 serial ports. The pinouts for the serial ports are listed in the **Table 3-2**.

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| PIN NO. | RS232 | RS422 | RS485 |
|---------|-------|-------|-------|
| 1 | DCD# | TX- | TX- |
| 2 | RXD | TX+ | TX+ |
| 3 | TXD | RX+ | |
| 4 | DTR# | RX- | |
| 5 | GND | | |
| 6 | DSR# | | |
| 7 | RTS# | | |
| 8 | CTS# | | |
| 9 | RI# | | |

Table 3-2: RS-232 (COM1/2) & RS-422/485 (COM3/4) Connector Pinouts



Figure 3-25: DB-9 RS-232/422/485 Serial Port Connector



Figure 3-26: Serial Device Connection





3.14.5 Power Input, 3-pin Terminal Black

The power connector connects the leads of a 12 V~28 V DC power supply into the terminal block. Make sure that the power and ground wires are attached to the correct sockets of the connector (See Figure 3-27).



Figure 3-27: Power Input Terminal Connection

3.14.6 ATX/AT Mode Selection

AT and ATX power modes can both be used on the DRPC-240-TGL. The selection is made through an AT/ATX switch on the top panel as shown below (See Figure 3-28).



Figure 3-28: ATX/AT Mode Selection

3.14.7 Remote Power Connector

This remote power switch connector can be connected to an external switch for remote control of power on and off (See Figure 3-29).



Figure 3-29: Remote Power Connector

3.15 Powering On/Off the System



Make sure a power supply with the correct input voltage is being fed into the system. Incorrect voltages applied to the system may cause damage to the internal electronic components and may also cause injury to the user.

- Power on the system: press the power button for 3 seconds
- **Power off** the system: press the power button for 6 seconds
- The power of this system can be less than 250w-20A.



Figure 3-30: Power Button



3.16 Power Input & LED

There is a power connector on the panel. The power connector is a 3-pin terminal block. Supported power input voltage: 12-28V (See Figure 3-31).



Figure 3-31: Power Input



Figure 3-32: Power LED

| Power LED Indicator | Description |
|---------------------|----------------|
| Breathing Orange | Standby mode. |
| Solid blue | Power-on mode. |

Table 3-3: Power LED Indicators Description



The power LED turns off when the power cable is unplugged from the system.





3.17 Available Drivers

All the drivers for the DRPC-240-TGL are available on IEI Resource Download Center (<u>https://download.ieiworld.com</u>). Type DRPC-240-TGL and press Enter to find all the relevant software, utilities, and documentation.



Figure 3-33: IEI Resource Download Center

3.17.1 Driver Download

To download drivers from IEI Resource Download Center, follow the steps below.

Step 1: Go to <u>https://download.ieiworld.com</u>. Type DRPC-240-TGL sand press Enter.



Step 2: All product-related software, utilities, and documentation will be listed. You can choose **Driver** to filter the result.

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| All Type BIOS Datasheet | Driver | G SDK | User Manual Utility | Others |
|--|------------|---------|---------------------|----------------|
| WAFER-BT-i1 | | | | Product Info ► |
| Embedded Computer Single Board Computer Embedded Board | | | | |
| 3.5" SBC with Intel® 22nm Atom™/Celeron® on-I | board SoC | | | |
| File Name | Published | Version | File Chec | cksum |
| 7B000-001033-RS V2.3.iso (2.23 GB) | 2017/10/03 | 2.30 | 3B2DB1F792779A93A8F | 50DDBC3943E30 |
| 0 1 | | | | |

Step 3: Click the driver file name on the page and you will be prompted with the following window. You can download the entire ISO file (●), or click the small arrow to find an individual driver and click the file name to download (●).





To install software from the downloaded ISO image file in Windows 10 (or later), double-click the ISO file to mount it as a virtual drive to view its content.





System Motherboard





4.1 Ovreview

The connectors and jumpers of the system motherboard are listed in the following sections.

4.1.1 Layout

The following diagram shows the locations of the internal/external connectors and jumpers on the motherboard.



Figure 4-1: System Motherboard (Front)



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Figure 4-2: System Motherboard (Rear)

4.2 Internal Peripheral Connectors

The table below shows a list of the connectors on the motherboard.

| Label | Function |
|----------|---------------------------|
| SATA | Serial ATA connectors |
| SIM1 | SIM card connector |
| M2_A1 | M.2 A key card connector |
| M2_B1 | M.2 B key card connector |
| CPU/FAN1 | CPU fan connector |
| SMB1 | SMBUS & I2C BUS connector |
| DIO1 | Digital I/O connector |

Table 4-1: Internal Peripheral Connectors

4.2.1 SATA Connector (SATA1)

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | GND | 11 | +5V |
| 2 | GND | 12 | NC |
| 3 | GND | 13 | NC |
| 4 | GND | 14 | GND |
| 5 | GND | 15 | RX+ |
| 6 | GND | 16 | RX- |
| 7 | +5V | 17 | GND |
| 8 | +5V | 18 | TX- |
| 9 | +5V | 19 | TX+ |
| 10 | +5V | 20 | GND |

The DRPC-240-TGL has one SATA connector for SATA device connection.

Table 4-2: SATA Connector Pinoouts (SATA1)



Figure 4-3: SATA Connector

4.2.2 SIM Card Slot (SIM1)

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1 | SIM_VCC |
| 2 | SIM_RST |
| 3 | SIM_Clock |
| 5 | GND |
| 6 | NC |
| 7 | SIM_DATA |

Table 4-3: SIM Card Slot Pinouts (SIM1)





Figure 4-4: SIM Card Slot (SIM1)

4.2.3 M.2 A-Key Card Slot (M2_A1)

The M.2 A-Key card slot supports USB 2.0 and PCIe x1.

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | GND | 2 | +V3.3A |
| 3 | USB+ | 4 | +V3.3A |
| 5 | USB- | 6 | NC |
| 7 | GND | 8 | Module Key |
| 9 | Module Key | 10 | Module Key |
| 11 | Module Key | 12 | Module Key |
| 13 | Module Key | 14 | Module Key |
| 15 | Module Key | 16 | NC |
| 17 | NC | 18 | GND |
| 19 | NC | 20 | NC |
| 21 | NC | 22 | NC |
| 23 | GND | 24 | GND |
| 25 | NC | 26 | NC |
| 27 | NC | 28 | NC |
| 29 | GND | 30 | GND |
| 31 | NC | 32 | NC |
| 33 | GND | 34 | NC |
| 35 | PCIE_TX0+ | 36 | GND |
| 37 | PCIE_TX0- | 38 | NC |

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| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|--------------|---------|----------------|
| 39 | GND | 40 | NC |
| 41 | PCIE_RX0+ | 42 | NC |
| 43 | PCIE_RX0- | 44 | NC |
| 45 | GND | 46 | NC |
| 47 | CLK_PCIE0+ | 48 | NC |
| 49 | CLK_PCIE0- | 50 | NC |
| 51 | GND | 52 | BUF_PLT_RST# |
| 53 | PCIE_CLKREQ# | 54 | Pull Up +V3.3A |
| 55 | PCIE_WAKE# | 56 | Pull Up +V3.3A |
| 57 | GND | 58 | NC |
| 59 | NC | 60 | NC |
| 61 | NC | 62 | NC |
| 63 | GND | 64 | NC |
| 65 | NC | 66 | NC |
| 67 | NC | 68 | NC |
| 69 | GND | 70 | NC |
| 71 | NC | 72 | +V3.3A |
| 73 | NC | 74 | +V3.3A |
| 75 | GND | | |

Table 4-4: M.2 A-Key Card Slot Pinouts (M2_A1)

4.2.4 M.2 B-Key Card Slot (M2_B1)

The M.2 B-Key card slot supports USB 3.0 and SIM card.

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | GND | 2 | VCC3 |
| 3 | GND | 4 | VCC3 |
| | | | FULL_CARD_ |
| 5 | GND | 6 | POWER_OFF# |
| 7 | USBD+ | 8 | N/C |
| 9 | USBD- | 10 | N/C |
| 11 | GND | 12 | Module Key |
| 13 | Module Key | 14 | Module Key |



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| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|---------------|
| 15 | Module Key | 16 | Module Key |
| 17 | Module Key | 18 | Module Key |
| 19 | Module Key | 20 | N/C |
| 21 | GND | 22 | N/C |
| 23 | GND | 24 | N/C |
| 25 | C N/ | 26 | N/C |
| 27 | GND | 28 | N/C |
| 29 | USB3.0_RX- | 30 | UIM_RST |
| 31 | USB3.0_RX+- | 32 | UIM_CLK |
| 33 | GND | 34 | UIM_DATA |
| 35 | USB3.0_TX- | 36 | UIM_PWR |
| 37 | USB3.0_TX+ | 38 | N/C |
| 39 | GND | 40 | SMBCLK(1.8V) |
| 41 | PCIE_RXN0 | 42 | SMBDATA(1.8V) |
| 43 | PCIE_RXP0 | 44 | N/C |
| 45 | GND | 46 | N/C |
| 47 | PCIE_TXN0 | 48 | N/C |
| 49 | PCIE_TXP0 | 50 | PERST# |
| 51 | GND | 52 | N/C |
| 53 | PCIE_CLK# | 54 | PCIE_WAKE# |
| 55 | PCIE_CLK | 56 | N/C |
| 57 | GND | 58 | N/C |
| 59 | N/C | 60 | N/C |
| 61 | N/C | 62 | N/C |
| 63 | N/C | 64 | N/C |
| 65 | N/C | 66 | N/C |
| 67 | RST | 68 | N/C |
| 69 | GND | 70 | VCC3 |
| 71 | GND | 72 | VCC3 |
| 73 | GND | 74 | VCC3 |
| 75 | GND | | |

Table 4-5: M.2 B-Key Slot Pinouts (M2_B1)

4.2.5 CPU Fan Connector

The CPU fan connector can provide 12V/500mA to a CPU fan.

| PIN NO. | DESCRIPTION |
|---------|--------------------|
| 1 | GND |
| 2 | +V12S |
| 3 | Rotation Signal |
| 4 | PWM Control Signal |

Table 4-6: CPU Fan Connector Pinouts (CPU/FAN1)

4.2.6 SMBus & I2C Bus Connector

The SMBus (System Management Bus) connector and the I²C connector provide lowspeed system management communications.

| PIN NO. | DESCRIPTION |
|---------|-----------------|
| 1 | GND |
| 2 | SMBUS(I2C) DATA |
| 3 | SMBUS(I2C) CLK |
| 4 | +5V |

Table 4-7: SMbus & I2C Bus Connector Pinouts



Figure 4-5: SMbus & I2C Bus Connector



4.2.7 Digital I/O Connector

The product provides you with digital input / output.

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | GND | 8 | Output 0 |
| 2 | +5V | 9 | Input 5 |
| 3 | Output 5 | 10 | Input 4 |
| 4 | Output 4 | 11 | Input 3 |
| 5 | Output 3 | 12 | Input 2 |
| 6 | Output 2 | 13 | Input 1 |
| 7 | Output 1 | 14 | Input 0 |

Table 4-8: Digital I/O Connector Pinouts

4.3 External Peripheral Connectors

The table below shows a list of the external connectors of the system.

| Label | Function |
|--------------|--|
| HDMI1 | HDMI connector |
| DP1 | DisplayPort connector |
| USB2_CON1 | USB 3.2 Gen 2 connectors |
| USB1 | USB 2.0 connectors |
| COM1/2 | Dual-port serial port connector (RS-232) |
| COM3/4 | Dual-port serial port connector |
| | (RS-422/RS485) |
| PW_BTN1 | Remote power connector |
| PLAN1, PLAN2 | Dual LAN connectors |
| PWR1 | Power input connector |
| FAN1 | System fan connector |

Table 4-9: External Peripheral Connectors

4.3.1 HDMI Connector (HDMI1)

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | HDMI_DATA2 | 2 | GND |
| 3 | HDMI_DATA2# | 4 | HDMI_DATA1 |
| 5 | GND | 6 | HDMI_DATA1# |
| 7 | HDMI_DATA0 | 8 | GND |
| 9 | HDMI_DATA0# | 10 | HDMI_CLK |
| 11 | GND | 12 | HDMI_CLK# |
| 13 | N/C | 14 | N/C |
| 15 | HDMI_SCL | 16 | HDMI_SDA |
| 17 | GND | 18 | +5V |
| 19 | HDMI_HPD | | |

Table 4-10: HDMI Connector Pinouts (HDMI1)



Figure 4-6: HDMI Connector

4.3.2 DP Connector (DP1)

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|----------------|---------|-------------|
| 1 | +5V | 11 | AUXP |
| 2 | LANE1N | 12 | AUXN |
| 3 | LANE1P | 13 | GND |
| 4 | GND | 14 | LANE2P |
| 5 | LANE3N | 15 | LANE2N |
| 6 | LANE3P | 16 | GND |
| 7 | GND | 17 | LANE0P |
| 8 | AUX_CTRL_DET_D | 18 | LANEON |
| 9 | GND | 19 | +3.3V |
| 10 | HPD | | |

 Table 4-11: DP Connector Pinouts (DP1)

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Figure 4-7: DP Connector

4.3.3 USB 3.2 Gen 2 Connectors (USB2_CON1)

The DRPC-240-TGL has two USB 3.2 Gen 2 (10Gb/s) connectors.

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | VCC | 10 | VCC |
| 2 | USB_DATA- | 11 | USB_DATA- |
| 3 | USB_DATA+ | 12 | USB_ DATA+ |
| 4 | GND | 13 | GND |
| 5 | USB3_RX- | 14 | USB3_RX- |
| 6 | USB3_RX+ | 15 | USB3_ RX+ |
| 7 | GND | 16 | GND |
| 8 | USB3_TX- | 17 | USB3_TX- |
| 9 | USB3_TX+ | 18 | USB3_TX+ |

Table 4-12: USB 3.2 Gen 2 Connector Pinouts (USB2_CON1)

4.3.4 USB 2.0 Connectors (USB1)

The DRPC-240-TGL provides two USB 2.0 connectors for USB device connection.

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | USB_VCC | 5 | USB_VCC |
| 2 | DATA- | 6 | DATA- |
| 3 | DATA+ | 7 | DATA+ |
| 4 | GND | 8 | GND |

 Table 4-13: USB 2.0 Connector Pinouts (USB1)

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Figure 4-8: USB 2.0 Connector

4.3.5 RS-232 Connectors (COM1/2)

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | DCD | 6 | DSR |
| 2 | RXD | 7 | RTS |
| 3 | TXD | 8 | CTS |
| 4 | DTR | 9 | RI |
| 5 | ISOCOM_GND | | |

Table 4-14: RS-232 Connector Pinouts (COM1, COM2)



Figure 4-9: RS-232 Connector

4.3.6 Remote Power Connector (PW_BTN1)

This connector is for remote power control.

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1 | GND |
| 2 | PWRBTN_SW# |

Table 4-15: Remote Power Connector (PW_BTN1)



4.3.7 RS-422/485 Serial Port Connectors (COM3/4)

| Mode | RS-422 | RS-485 |
|---------|-------------|-------------|
| PIN NO. | DESCRIPTION | DESCRIPTION |
| 1 | TXD- | DATA- |
| 2 | TXD+ | DATA+ |
| 3 | RXD+ | N/A |
| 4 | RXD- | N/A |
| 5 | ISOCOM_GND | N/A |
| 6 | N/A | N/A |
| 7 | N/A | N/A |
| 8 | N/A | N/A |
| 9 | N/A | N/A |

Table 4-16: RS-422/485 Serial Port Connector Pinouts (COM3, COM4)

4.3.8 Dual LAN Connectors (PLAN1, PLAN2)

The DRPC-240-TGL has four RJ-45 Ethernet connectors.

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | MDIA3- | 5 | MDIA1+ |
| 2 | MDIA3+ | 6 | MDIA2+- |
| 3 | MDIA2- | 7 | MDIA0- |
| 4 | MDIA1- | 8 | MDIA0+ |

Table 4-17: LAN Connector Pinouts (PLAN1, PLAN2)



Figure 4-10: RJ-45 Connector

4.3.9 Power Input Connector (PWR1)

This connector supports +12V ~ +28V DC power input.

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1 | +12V~28V |
| 2 | +12V~28V |
| 3 | GND |

Table 4-18: Power Input Connector Pinouts (PWR1)

4.3.10 System Fan Connector

The system fan connector can provide 12V/500mA to a system fan.

| PIN NO. | DESCRIPTION |
|---------|--------------------|
| 1 | GND |
| 2 | +V12S |
| 3 | Rotation Signal |
| 4 | PWM Control Signal |

Table 4-19: System Fan Connector Pinouts (FAN1)

4.4 System Jumper Settings

The table below shows a list of the Jumper Settings of the system.

| Label | Function |
|-----------|---------------------------|
| J_ATX_AT1 | AT/ATX Power Mode Setting |
| J_CMOS1 | Clear CMOS Setup |

Table 4-20: System Jumper Settings



4.4.1 AT/ATX Power Mode Setting (J_ATX_AT1)

Use the J_ATX_AT1 switch to specify the systems power mode as AT or ATX

| PIN NO. | DESCRIPTION |
|-------------|--------------------------|
| 1-2 (Right) | ATX Power Mode (default) |
| 2-3 (Left) | AT Power Mode |

Table 4-21:AT/ATX Power Mode Switch Pinouts



Figure 4-11: AT/ATX Power Mode Switch

4.4.1 Clear CMOS Setup (J_CMOS1)

To clear the CMOS Setup (for example if you have forgotten the password, you should clear the CMOS and then reset the password), you should take off the battery(BT1) and press the button for about 3 seconds. This will set back to normal operation mode.

| PIN NO. | DESCRIPTION | |
|--------------|------------------------------------|--|
| NC | Keep CMOS Setup (Normal Operation) | |
| Press button | Clear CMOS Setup | |

Table 4-22: Clear CMOS Button Pinouts



Figure 4-12: Clear CMOS Button







BIOS

Page 64

5.1 Introduction

The BIOS is programmed onto the BIOS chip. The BIOS setup program allows changes to certain system settings. This chapter outlines the options that can be changed.



Some of the BIOS options may vary throughout the life cycle of the product and are subject to change without prior notice.

5.1.1 Starting Setup

The UEFI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

- 1. Using keyboard: Press the DEL or F2 as soon as the system is turned on.
- 2. **Using touchscreen**: Press the **Setup** button on the upper right corner of the BIOS Starting Menu.

If the message disappears before the **DEL or F2** key is pressed, restart the computer and try again, then the BIOS Starting Menu will appear. Select "Setup" and press Enter to get into the BIOS Setup.



Figure 5-1: BIOS Starting Menu



5.1.2 Using Setup

The BIOS Setup menu can be navigated by using a keyboard or a touchscreen.

5.1.2.1 Keyboard Navigation

For keyboard navigation, use the navigation keys shown in Table 5-1.

| Key | Function |
|-------------|---|
| Up arrow | Move to previous item |
| Down arrow | Move to next item |
| Left arrow | Move to the item on the left hand side |
| Right arrow | Move to the item on the right hand side |
| + | Increase the numeric value or make changes |
| - | Decrease the numeric value or make changes |
| Page Up | Move to the previous page |
| Page Dn | Move to the next page |
| Esc | Main Menu – Quit and not save changes into CMOS |
| | Status Page Setup Menu and Option Page Setup Menu |
| | Exit current page and return to Main Menu |
| F1 | General help, only for Status Page Setup Menu and |
| | Option Page Setup Menu |
| F2 | Load previous values |
| F3 | Load optimized defaults |
| F4 | Save changes and Exit BIOS |
| <k></k> | Scroll help area upwards |
| <m></m> | Scroll help area downwards |

Table 5-1: BIOS Navigation Keys



5.1.2.2 Touch Navigation

For touchscreen navigation, use the on-screen navigation keys shown below.

| ← Setup | BIOS Information | | |
|-------------|---|--|-----------------------|
| | BIOS Vendor | American Megatrends | |
| Advanced | Core Version | 5.19 | ţļţ |
| Chipset | Compliancy | UEFI 2.7; PI 1.6 | Previous Values |
| Security | Project Version | Z697AR22.BIN | |
| Boot | Build Date and Time | 07/15/2022 09:02:59 | |
| Save & Exit | EC Version | Z697NR22.bin | Optimized Defaults |
| | Processor Information | | |
| | Name | TigerLake ULT | Back |
| | Displays the Processor Details. | | |
| | Туре | 11th Gen Intel(R) Core(TM) i7-1185G7E @ 2.80GHz | |
| | Displays the Processor Type. | | Soft kbd |
| | Speed | 2800 MHz | |
| ĪĘĴ. | Displays the Processor Speed. | | |
| | | 0v806C1 | Save & Exit |
| | | | |
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| On-screen Button | Function |
|--------------------|---|
| Previous Values | Load the last value you set. |
| Optimized Defaults | Load the factory default values in order to achieve |
| | the best performance. |
| Back | Return to the previous menu. |
| Soft kbd | Display the on-screen keyboard. |
| Save & Exit | Save the changes made to the BIOS options and |
| | reset the system. |

 Table 5-2: BIOS On-screen Navigation Keys

5.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window, press the **Esc** key.

5.1.4 Unable to Reboot after Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the clear CMOS button described in **Chapter 4**.

5.1.5 BIOS Menu Bar

The menu bar on top of the BIOS screen has the following main items:

- Main Changes the basic system configuration.
- Advanced Changes the advanced system settings.
- Chipset Changes the chipset settings.
- Security Sets User and Supervisor Passwords.
- Boot Changes the system boot configuration.
- Save & Exit Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

5.2 Main

The **Main** BIOS menu appears when the **BIOS Setup** program is entered. The **Main** menu gives an overview of the basic system information.

| 🗲 Setup | BIOS Information | | |
|---------------------|---|--|--------------------|
| Mala | BIOS Vendor | American Megatrends | |
| Advanced | Core Version | 5.19 | ţţţ |
| Chipset | Compliancy | UEFI 2.7; PI 1.6 | Previous Values |
| Security | Project Version | Z697AR22.BIN | |
| Boot Save & Exit | Build Date and Time | 07/15/2022 09:02:59 | Optimized |
| | EC Version | Z697NR22.bin | Defaults |
| | Processor Information | | |
| | Name | TigerLake ULT | Back |
| | Displays the Processor Details. | | |
| | Туре | 11th Gen Intel(R) Core(TM) i7-1185G7E @ 2.80GHz | Soft lebd |
| | Displays the Processor Type. | | SOFE KDG |
| | Speed | 2800 MHz | |
| | Displays the Processor Speed. | | Carro & Ewit |
| Ī. | | ∩vՋՌԲՐ1 | Save & Exit |
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| 🗲 Setun | Speed | 2800 MHz | |
|-------------|--|-----------------------|-----------------------|
| Jecup | Displays the Processor Speed. | | |
| Main | | 0x806C1 | 411 |
| Advanced | Displays the Processor ID. | | IŧĪ |
| Chipset | Stepping | во | Previous Values |
| Security | Displays the Processor Stepping. | | |
| Boot | Number of Processors | 4Core(s) / 8Thread(s) | • |
| Save & Exit | Displays number of CPU cores. | | Optimized Defaults |
| | Microcode Revision | AG | |
| | CPU Microcode Revision | | |
| | GT Info | 0x9A49 | Back |
| | Processor GT Info. Only valid if SNB stepping is D0 or a | above. | |
| | IGFX GOP Version | 17.0.1071 | |
| | IGFX GOP Version | | Soft kbd |
| | Memory RC Version | 2.0.2.8 | |
| | | | |
| | Total Memory | 8192 MB | Save & Exit |
| | | | |
| | | | |
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| | | | |



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DRPC-240-TGL Embedded System



BIOS Menu 3: Main (3/3)

➔ BIOS Information

The **BIOS** Information lists a brief summary of the BIOS. The fields in **BIOS** Information cannot be changed. The items shown in the system overview include:

- BIOS Vendor: Installed BIOS vendor
- Core Version: Current BIOS version
- Compliancy: Current UEFI & PI version
- Project Version: the board version
- Build Date: Date the current BIOS version was made
- EC Version: Current EC version
- BIOS Information

➔ Processor Information

The **Processor Information** lists a brief summary of the Processor. The fields in **Processor Information** cannot be changed. The items shown in the system overview include:

Name: Displays the processor details



- Type: Displays the processor type
- **Speed:** Displays the processor speed
- ID: Displays the processor ID
- Stepping: Displays the processor stepping
- Package: Displays the processor package
- Number of Processors: Displays number of CPU cores
- Microcode Revision: CPU Microcode revision
- GT Info: Processor GT Info. Only valid if SNB stepping is D0 or above
- IGFX GOP Version: Displays the IGFX GOP version
- Memory RC Version: Displays the memory RC version
- Total Memory: Displays the installed memory in the system
- Memory Speed: Displays the frequency of memory

→ PCH Information

The **PCH Information** lists a brief summary of the PCH. The fields in **PCH Information** cannot be changed. The items shown in the system overview include:

- Name: Displays the PCH name
- PCH SKU: Displays the PCH SKU
- Stepping: Displays the PCH stepping
- ME FW Version: Displays the ME firmware version
- ME Firmware SKU: Displays the ME firmware SKU
- PMC FW Version: Displays the PMC firmware version

The System Overview field also has two user configurable fields:

→ System Date [xx/xx/xx]

Use the **System Date** option to set the system date. Manually enter the day, month and year.

→ System Time [xx:xx:xx]

Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.



5.3 Advanced

Use the **Advanced** menu (**BIOS Menu 4**) to configure the CPU and peripheral devices through the following sub-menus:

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

| 🖌 Setun | RCACPISettings | |
|-------------|---|-----------------------|
| Jecup | System ACPI Parameters. | |
| Main | CPU Configuration | |
| Advanced | CPU Configuration Parameters | īłī |
| Chipset | PCH-FW Configuration | Previous Values |
| Security | Configure Management Engine Technology Parameters | |
| Boot | ACPI D3Cold settings | |
| Save & Exit | ACPI D3Cold related settings | Optimized Defaults |
| | Intel(R) Time Coordinated Computing | |
| | Intel(R) Time Coordinated Computing (Intel(R) TCC) options | |
| | Trusted Computing | Back |
| | Trusted Computing Settings | |
| | RTC Wake Settings | 27773 |
| | Enable system to wake from Soft-off,S3,S4,S5, using RTC alarm | Soft kbd |
| | EC H/W Monitor | |
| | Monitor hardware status | |
| | F81866 Super IO Configuration | Save & Exit |
| | | |
| | | |
| | Version 2 21 0052 Convright (C) 2022 AMI | |
| | Version 2.21.0055. Copyright (C) 2022 AMP | |




5.3.1 RC ACPI Settings

Use the **RC ACPI Settings** menu (**BIOS Menu 5**) to configure the system power control and distribution of the hardware device.

| | Low Power S0 Idle Capability | Enabled | \sim | |
|-------------|---|---|-------------------|--|
| Main | This variable determines if we enable ACPI Lo Smart connect) While this is enabled it also d | wer Power S0 Idle Capability (Mutual | ly exclusive with | |
| Advanced | Sinare connecty. While this is enabled, it also d | | | |
| Chipset | EC Notification | Enabled | \checkmark | |
| Security | Sends EC notification of Low Power S0 Idle Sta | ite | | |
| Boot | EC CS Debug Light | Disabled | \sim | |
| Save & Exit | When EC enters Low Power S0 Idle State, the (| When EC enters Low Power S0 Idle State, the CAPS LOCK light will be turned on | | |
| | EC Low Power Mode | Enabled | \sim | |
| | This option controls whether EC will go to Low | power mode during Low Power SO I | dle State | |
| | Sensor Standby | Disabled | V | |
| | Enable/Disable Sensor standby mode | | | |
| | CS PL1 Limit | Disabled | × | |
| | Limit PL1 (Power Limit 1) while in Connected S | standby | | |
| | PEP Constraints Configuration | | | |
| | Control which controllers get included in PEP of | constraint list | | |
| | LPIT Residency Counter | SLP SO | $\mathbf{\vee}$ | |
| | LPIT Residency Counter | SLP S0 | V | |



→ Low Power S0 Idle Capability [Disabled]

Use the **Low Power S0 Idle Capability** option to enable or disable the Low Power S0 Idle Capability.

| → | Disabled | DEFAULT | Disables Low Power S0 Idle Capability. |
|---|----------|---------|--|
| → | Enabled | | Enables Low Power S0 Idle Capability. |

The following options are available when the Low Power S0 Idle Capability option is enabled.

→ EC Notification [Disabled]

Use the **EC Notification** option to enable or disable the function of sending EC Notification when the system turns into Low Power S0 Idle State.

| → | Disabled | DEFAULT | Disables EC Notification function |
|---|----------|---------|-----------------------------------|
| → | Enabled | | Enables EC Notification function |

The following two options are available when the EC Notification option is enabled.

→ EC CS Debug Light [Disabled]

Use the **EC CS Debug Light** option to enable or disable the EC CS Debug Light function which controls the CAPS LOCK lights to be turned on when EC enters Low Power S0 Idle State.

| → | Disabled | DEFAULT | Disables EC CS Debug Light function |
|----------|----------|---------|-------------------------------------|
| → | Enabled | | Enables EC CS Debug Light function |

→ EC Low Power Mode [Disabled]

Use the **EC Low Power Mode** option to enable or disable the EC Low Power Mode which controls whether EC will go to low power mode during Low Power S0 Idle State.

| → | Disabled | DEFAULT | Disables EC Low Power Mode |
|---|----------|---------|----------------------------|
| → | Enabled | | Enables EC Low Power Mode |

→ Sensor Standby [Disabled]

Use the Sensor Standby option to enable or disable the Sensor Standby Mode.

| → | Disabled | DEFAULT | Disables Sensor Standby Mode |
|---|----------|---------|------------------------------|
| → | Enabled | | Enables Sensor Standby Mode |

→ CS PL1 Limit [Disabled]

Use the CS PL1 Limit option to enable or disable the Limit PL1 while in connected standby.

| → | Disabled | DEFAULT | Disables CS PL1 Limit Techonology. |
|---|----------|---------|------------------------------------|
| → | Enabled | | Enables CS PL1 Limit Techonology. |

When the CS PL1 Limit option is enabled, the CS PL1 Value option is available.

→ CS PL1 Value

Use the + or – key to change the **CS PL1** value. Enter a decimal number between 500 and 12500. For 12.50W, enter 12500.

→ LPIT Residency Counter [SLP S0]

Use the LPIT Residency Counter option to select the system power mode.



→ C10

5.3.2 CPU Configuration

Use the CPU Configuration menu (BIOS Menu 6 & BIOS Menu 7 & BIOS Menu 8 & BIOS Menu 9) to view detailed CPU specifications or enable the Intel Virtualization Technology.

| ← Setup | CPU Configuration | | |
|---------------------|--|--|--------------------|
| Main | Туре | 11th Gen Intel(R) Core(TM) i7-1185G7E @ 2.80GHz | |
| Advanced | Displays the Processor Type. | | ţţţ |
| Chipset Security | ID Displays the Processor ID. | 0x806C1 | Previous Values |
| Boot Save & Exit | Speed Displays the Processor Speed. | 2800 MHz | O ptimized |
| | L1 Data Cache Displays the Processor L1 Data Cache size. | 48 KB x 4 | Defaults |
| | L1 Instruction Cache Displays the Processor L1 Instruction Cache size. | 32 KB x 4 | Back |
| | L2 Cache Displays the Processor L2 Cache size. | 1280 KB x 4 | Soft kbd |
| | L3 Cache Displays the Processor L3 Cache size. | 12 MB | |
| iEi. | L4 Cache | N/A | Save & Exit |
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| | L4 Cache | N/A | |
|-------------|---|--|-----------------------|
| 🗲 Setup | Displays the Processor L4 eDRAM size. | | |
| Main | VMX | Supported | |
| Advanced | VMX Supported or Not | | tlt |
| Chinset | SMX/TXT | Supported | Previous |
| Convitu | SMX/TXT Supported or Not | | Values |
| Boot | Power Limit 1 | 15.0 | 4 |
| Save & Exit | Power Limit 1 in Milli Watts. BIOS will round to the nearest 1/8W when programming. 0 = no custom override. For 12.50W, enter 12500. Overclocking SKU: Value must be between Max(28000mW) and Min(5000mW) Power Limits (specified by PACKAGE_POWER_SKU_MSR). Other SKUs: This value must be between Min Power Limit and TDP Limit. | | Optimized Defaults |
| | Power Limit 2 | 28.0 | |
| | Power Limit 2 value in Milli Watts. BIOS will round to th value is 0, BIOS will program this value as 1.25*TDP. Fo control policies such that the package power does not | ne nearest 1/8W when programming. If the r 12:50W, enter 12500. Processor applies t exceed this limit. | Back |
| | Intel (VMX) Virtualization | Enabled V | |
| | Technology | All | Soft kbd |
| | When enabled, a VMM can utilize the additional hardw Technology. | are 1 2 3 | |
| | Active Processor Cores | All | |
| | Number of cores to enable in each processor package | | Save & Exit |
| LEI. | | | |
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BIOS Menu 7: CPU Configuration (2/4)



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BIOS Menu 8: CPU Configuration (3/4)



BIOS Menu 9: CPU Configuration (4/4)

➔ Intel (VMX) Virtualization Technology [Enabled]

Use the Intel (VMX) Virtualization Technology option to enable or disable virtualization on the system. When combined with third party software, Intel® Virtualization technology allows several OSs to run on the same system at the same time.

| → | Disabled | | Disables Intel Virtualization Technology. |
|---|----------|---------|---|
| → | Enabled | DEFAULT | Enables Intel Virtualization Technology. |

→ Active Processor Cores [All]

Use the **Active Processor Cores** BIOS option to enable numbers of cores in the processor package.

| → | All | DEFAULT | Enable all cores in the processor package. |
|---|-----|---------|--|
| → | 1 | | Enable one core in the processor package. |
| → | 2 | | Enable two cores in the processor package. |
| → | 3 | | Enable three cores in the processor package. |

→ Hyper-Threading [Enabled]

Use the Hyper-Threading option to enable or disable the Hyper-Threading Technology.

| → | Disabled | | Disables Hyper-Threading Technology |
|---|----------|---------|-------------------------------------|
| → | Enabled | DEFAULT | Enables Hyper-Threading Technology |

→ Intel(R) SpeedStep(tm) [Enabled]

Use the Intel(R) SpeedStep(tm) option to enable or disable the Intel® SpeedStep Technology which allows more than two frequency ranges to be supported.

| → | Disabled | | Disables Intel® SpeedStep Technology |
|---|----------|---------|--------------------------------------|
| → | Enabled | DEFAULT | Enables Intel® SpeedStep Technology |

→ C states [Disabled]

Use the **C states** option to enable or disable CPU power management which allows CPU to go to C states when it is not 100% utilized.

| → | Disabled | DEFAULT | Disables CPU power management |
|---|----------|---------|-------------------------------|
| → | Enabled | | Enables CPU power management |

➔ Intel Trusted Execution Technology [Disabled]

Use the **Intel Trusted Execution Technology** option to enable or disable the utilization of additional hardware capabilities provided by Intel (R) Trusted Execution.

| → | Disabled | DEFAULT | Disables Intel Trusted Execution Technology |
|---|----------|---------|---|
| → | Enabled | | Enables Intel Trusted Execution Technology |

➔ Power Limit 1

Use the + or – key to change the **Power Limit 1** value. BIOS will program the default values for Limit 1 and Power Limit 1 Time Window. For 12.50W, enter 12500.

➔ Power Limit 2

Use the + or – key to change the **Power Limit 2** value. BIOS will round to the nearest 1/8W when programming. 0 = no custom override. For 12.50W, enter 12500.

➔ Power Limit 1 Time Window [0]

Use the **Power Limit 1 Time Window** option to select the PL1 time duration. The value may vary from 0 to 128. For 0 is the default value

→ Turbo Mode [Enabled]

Use the **Turbo Mode** option to enable or disable Turbo Mode which requires Intel Speed Step or Intel Speed Shift to be available and enabled.

| → | Disabled | | Disables Turbo Mode Technology |
|----------|----------|---------|--------------------------------|
| → | Enabled | DEFAULT | Enables Turbo Mode Technology |

5.3.3 PCH-FW Configuration

The **PCH-FW Configuration** menu (**BIOS Menu 10**) allows Intel® Active Management Technology (AMT) options to be configured.

| ← Setup Main Advanced Chipset | AMT BIOS Features When disabled AMT BIOS Features are no longer suppor MBB Setup. Note: This option does not disable Manageability Features in Unconfigure ME | Enabled V Tt Disabled Enabled FW. | TIT Previous Values |
|--|--|--|-------------------------------|
| Security Boot Save & Exit | OEMFlag Bit 15: Unconfigure ME with resetting MEBx password to defar | | Optimizer Defaults Back |
| ifi. | | | Soft kbd |
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BIOS Menu 10: PCH-FW Configuration

→ AMT BIOS Features [Enabled]

Use AMT BIOS Features option to enable or disable the Intel® AMT function.

| 🗲 Ena | abled [| Default | Intel® AMT | is | enabled |
|-------|---------|---------|------------|----|---------|
| - 50 | ableu I | JEFAULI | | 15 | enabled |

→ Unconfigure ME [Disabled]

Use the **Unconfigure ME** option to unconfigure ME with resetting MEBx password to default.

| → | Disabled | Default | Not unconfigure ME with resetting MEBx password to default |
|----------|----------|---------|--|
| → | Enabled | | Unconfigure ME with resetting MEBx password to |

5.3.4 ACPI D3Cold Settings

Use the **ACPI D3Cold Settings** menu (**BIOS Menu 11**) to configure the Advanced Configuration and Power Interface (ACPI) options.



BIOS Menu 11: ACPI D3Cold Support

→ ACPI D3Cold Support [Disabled]

Use the **ACPI D3Cold Support** option to specify the sleep state the system enters when it is not being used.

| → | Enabled | | Enable D3Cold Mode |
|---|----------|---------|---------------------|
| → | Disabled | DEFAULT | Disable D3Cold Mode |



5.3.5 Intel(R) Time Coordinated Computing

Use the Intel(R) Time Coordinated Computing menu (BIOS Menu 12) to configure settings related to the Intel TCC options



BIOS Menu 12: Intel Time Coordinated Computing

→ AC Split Lock [Disabled]

Use the **#AC Split Lock** option to enable or disable the capability of asserting an #AC when any atomic operation has an operand that crosses two cache lines.

| → | Enabled | | Enable AC Split Lock Capability. |
|---|----------|---------|-----------------------------------|
| → | Disabled | DEFAULT | Disable AC Split Lock Capability. |

→ IFU Enable [Disabled]

Use the **IFU Enable** option to enable or disable the capability of prefetching the cache by instructions.

Enabled Enable the Instruction Fetch Unit Capability.
 Disabled DEFAULT Disable the Instruction Fetch Unit Capability.

→ Intel(R) TCC Mode [Disabled]

Use the **Intel(R) TCC Mode** option to enable or disable the capability of modifying system settings to improve real-time performance.

| → | Enabled | | Enable the Intel(R) TCC Mode Technology. |
|---|----------|---------|---|
| → | Disabled | DEFAULT | Disable the Intel(R) TCC Mode Technology. |

➔ IO Fabric Low Latency [Disabled]

Use the **IO Fabric Low Latency** option to enable or disable the capability of providing the most aggressive power management in the PCH IO fabrics.

| → | Enabled | | Enable IO Fabric Low Latency Technology. |
|----------|----------|---------|---|
| → | Disabled | DEFAULT | Disable IO Fabric Low Latency Technology. |

→ OPIO Recentering [Disabled]

Use the OPIO Recentering option to improve PCIe latency.

| → | Enabled | | Enable OPIO Recentering | Technology. |
|---|----------|---------|--------------------------|-------------|
| → | Disabled | DEFAULT | Disable OPIO Recentering | Technology. |

5.3.5.1 Intel(R) TCC Authentication Menu

Use the Intel(R) TCC Authentication submenu (BIOS Menu 13) to configure the Intel(R) TCC Authentication Menu options.



BIOS Menu 13: Intel(R) TCC Authentication Menu

→ Intel(R) TCC Authentication [Disabled]

Use the **Intel(R) TCC Authentication** option to enables or disables the ability to authenticate capsules generated by the data streams optimizer and cache configurator tools. Note that even if you disable authentication in BIOS, you are still required to sign the capsules. This is enforced to adhere to best security practices.

| → | Disabled | DEFAULT | Disable AC Split Lock |
|---|----------------------|---------|--------------------------|
| → | Non-OEM Enrolled Key | | Set Non-OEM Enrolled Key |
| → | OEM Enrolled Key | | Set OEM Enrolled Key |

5.3.6 Trusted Computing

Use the **Trusted Computing** menu (**BIOS Menu 14**) to configure settings related to the Trusted Computing Group (TCG) Trusted Platform Module (TPM).



BIOS Menu 14: PCH-FW Configuration

→ Security Device Support [Enable]

Use the Security Device Support option to configure support for the TPM.

- Disable
 TPM support is disabled.
- Enable DEFAULT TPM support is enabled.

→ Pending Operation [None]

Use the **Pending Operation** option to schedule an operation for the security device.

| → | None | DEFAULT | TPM information is previous. | |
|----------|-----------|---------|------------------------------|--|
| → | TPM Clear | | TPM information is cleared | |



5.3.7 RTC Wake Settings

The RTC Wake Settings menu (BIOS Menu 15) configures RTC wake event.

| ← Setup | Wake system with Fixed Time | Enabled V | |
|----------------|---|--------------------------------------|-----|
| O Dette | Enable or disable System wake on alarm event. W date::hr::min::sec specified | hen enabled, System will wake on the | |
| Main | Wake up every dev | | |
| Advanced | wake up every day | Disabled V | |
| Chipset | Disable/Enable RTC wake every day on the In::Init | n::sec specified. | Pr |
| Security | Wake up date | 1 | |
| Boot | select 1-31 for which day of the month that you | would like the system to wake up | |
| | Wake up hour | 0 | 00 |
| Save & EXIL | select 0-23 For example enter 3 for 3am and 15 f | or 3pm | De |
| | Wake up minute | [] | |
| | wake up minute | δ | |
| | 26/6/10-23 | | |
| | Wake up second | 0 | |
| | select 0-59 | | |
| | | | |
| | | | So |
| | | | |
| | | | |
| | | | Sav |
| | | | |
| | | | |
| | | | |
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BIOS Menu 15: RTC Wake Settings

→ Wake System with Fixed Time [Disabled]

Use the **Wake System with Fixed Time** option to specify the time the system should be roused from a suspended state.

| → | Disabled | DEFAULT | The real time clock (RTC) cannot generate a wake event |
|----------|----------|---------|--|
| → | Enabled | | If selected, the following appears with values that can be selected: |
| | | | *Wake up every day |
| | | | *Wake up date |
| | | | *Wake up hour |
| | | | *Wake up minute |
| | | | *Wake up second |

*Wake After setting the alarm, the computer turns itself on from a suspend state when the alarm goes off.

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5.3.8 EC H/W Monitor

The EC H/W Monitor menu (**BIOS Menu 16**) contains the smart fan mode configuration submenu and shows the state of H/W real-time operating temperature, fan speeds and system voltages.

| 🖌 Setun | Pc Health Status | | |
|------------------|---|---|-----------------------|
| C Secup | CPU temperature | : +64 °C | |
| Main Advanced | System temperature | : +40 °C | ţļţ |
| Chipset | CPU_FAN1 Speed | : N/A | Previous Values |
| Security | SYS_FAN1 Speed | : N/A | |
| Boot | +VCCCORE | : +1.703 V | \$ |
| Save & Exit | +VDDQ | : +1.174 V | Optimized Defaults |
| | +12V | : +11.729 V | |
| | +5V | : +4.877 V | Back |
| | +3.3VSB | : +3.245 V | |
| | Tcc Activation Offset | 0 | |
| | Offset from factory set Tcc activation temprature at activated. Tcc will be activated at: Tcc Activation Ter Offset range is 0 to 63. | which the Thermal Control Circuit must be np - Tcc Activation Offset. Tcc Activation | Soft kbd |
| | Smart Fan Mode Configuration | | |
| H | Smart Fan Mode Select | | Save & Exit |
| | | | |
| | Version 2.21.0053. Copyright (C) 2022 AMI | | |

BIOS Menu 16: ENE KB9068 Monitor

→ PC Health Status

The following system parameters and values are shown. The system parameters that are monitored are:

- System Temperatures:
 - O CPU Temperature
 - System Temperature
- Fan Speeds:



- CPU_FAN1 Speed
- SYS_FAN1 Speed
- Voltages:
 - +VCCCORE
 - +VDDQ
 - +12V
 - +5V
 - +3.3VSB

➔ Tcc Activation Offset [0]

Use the + or – key to change the **Tcc Activation Offset** value which offset from default value of Thermal Control Circuit (TCC) activation temperature when the TCC is activated. TCC Activation Offset range is 0 to 63.

5.3.8.1 Smart Fan Mode Configuration

Use the Smart Fan Mode Configuration submenu (BIOS Menu 17) to configure the CPU/system fan start/off temperature and control mode.

| 🖌 Setun | Smart Fan Mode Configuration | | |
|--|---|---|---|
| Main Advanced Chipset Security Boot Save & Exit | CPU_FAN1 Smart Fan Control Smart Fan Mode Select Auto mode fan start temperature Auto mode fan start temperature 1~100 Auto mode fan off temperature 1~100 Auto mode fan start PWM | Auto Mode Manual Mode Auto Mode 65 60 | Previous Values Optimized Defaults |
| | Auto mode fan start FWM 1-100 SYS_FAN1 Smart Fan Control Smart Fan Mode Select Auto mode fan start temperature 1~100 Auto mode fan off temperature Auto mode fan off temperature 1~100 | 30 Auto Mode 50 40 | Back Back Soft kbd |
| iei. | Auto mode fan start PWM Auto mode fan start PWM 1~100 Version 2.21.0053. Copyright (C) 2022 AMI | 30 | Save & Exit |

BIOS Menu 17: Smart Fan Mode Configuration



→ CPU_FAN1/SYS_FAN1 Smart Fan Control [Auto Mode]

Use the **CPU_FAN1/SYS_FAN1 Smart Fan Control** option to configure the CPU Smart Fan.

| → | Manual Mode | | The fan spins at the speed set in Manua | al Mode |
|----------|-------------|---------|---|---------|
| | | | settings. | |
| → | Auto Mode | DEFAULT | The fan adjusts its speed using Auto | Mode |
| | | | settinas. | |

→ Auto mode fan start temperature

If the CPU temperature is between fan off and fan start, the fan speed change to fan start **PWM**. To set a value, Use the + or - key to change the value or enter a decimal number between 1 and 100.

→ Auto mode fan off temperature

If the CPU temperature is lower than the value set this option, the fan speed change to be lowest. To set a value, Use the + or - key to change the value or enter a decimal number between 1 and 100.

→ Auto mode fan start PWM

Use the Auto mode fan Start PWM option to set the PWM start value. Use the + or - key to change the value or enter a decimal number between 1 and 100.

→ Auto mode fan slope PWM

Use the Auto mode fan slope PWM option to select the linear rate at which the PWM mode increases with respect to an increase in temperature. Use the + or - key to change the value or enter a decimal number between 1 and 8

5.3.9 F81866 Super IO Configuration

Use the **F81866 Super IO Configuration** menu (**BIOS Menu 18**) to set or change the configurations for the serial ports.

| ← Setup Main Advanced Chipset | F81866 Super IO Configuration Super IO Chip F81866 System Super IO Chip Parameters. Serial Port 1 Configuration Set Dependence of Serial Port 1 (COM4) | †∏† Previous |
|--|--|-------------------------------|
| Security Boot Save & Exit | Set Parameters of Serial Port 1 (COMA) Set Parameters of Serial Port 2 (COMB) Serial Port 3 Configuration Set Parameters of Serial Port 3 (COMC) Serial Port 4 Configuration Set Parameters of Serial Port 4 (COMD) | Optimizer Defaults Back |
| IEI. | | Soft kbd |
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BIOS Menu 18: F81866 Super IO Configuration



5.3.9.1 Serial Port 1 Configuration

Use the Serial Port 1 Configuration menu (BIOS Menu 19) to configure the serial port 1.



BIOS Menu 19: Serial Port 1 Configuration Menu

→ Serial Port [Enabled]

Use the Serial Port option to enable or disable the serial port.

- Disabled
 Disable the serial port
- Enabled DEFAULT Enable the serial port

➔ Device Settings

The Device Settings option shows the serial port IO port address and interrupt address.

IO=3F8h; Serial Port I/O port address is 3F8h and the interrupt
 IRQ=4 address is IRQ4



5.3.9.2 Serial Port 2 Configuration

Use the Serial Port 2 Configuration menu (BIOS Menu 20) to configure the serial port 2.



BIOS Menu 20: Serial Port 2 Configuration Menu

→ Serial Port [Enabled]

Use the Serial Port option to enable or disable the serial port.

- Disabled
 Disable the serial port
- Enabled DEFAULT Enable the serial port
- ➔ Device Settings

The Device Settings option shows the serial port IO port address and interrupt address.

IO=2F8h; Serial Port I/O port address is 2F8h and the interrupt address is IRQ3



5.3.9.3 Serial Port 3 Configuration

Use the Serial Port 3 Configuration menu (BIOS Menu 21) to configure the serial port 3.



BIOS Menu 21: Serial Port 3 Configuration Menu

→ Serial Port [Enabled]

Use the Serial Port option to enable or disable the serial port.

- Disabled
 Disable the serial port
- Enabled DEFAULT Enable the serial port

➔ Device Settings

The **Device Settings** option shows the serial port IO port address and interrupt address.

IO=3E8h; Serial Port I/O port address is 3E8h and the interrupt address is IRQ10

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→ Serial Port Mode [RS422]

Use the Serial Port Mode option to set the RS-422/485 serial port mode.

| → | RS422 | DEFAULT | Select the RS-422 serial port mode |
|---|-------|---------|------------------------------------|
| → | RS485 | | Select the RS-485 serial port mode |

5.3.9.4 Serial Port 4 Configuration

Use the Serial Port 4 Configuration menu (BIOS Menu 22) to configure the serial port 4.

| | Serial Port A Configuration | | |
|---------------------------------|--|------------------|-----------------------|
| ← Setup | Serial Port | 0 | |
| Advanced Chipset | Enable or Disable Serial Port (COM) Device Settings Set Parameters of Serial Port 4 (COMD) | IO=2E8h; IRQ=10; | Previous Values |
| Security Boot Save & Exit | Serial Port Mode The Serial Port can setting RS232/422/485 mode | R5422 | Optimized Defaults |
| | | | Back |
| | | | Soft kbd |
| | | | Save & Exit |
| | Version 2.21.0053. Copyright (C) 2022 AM | I | |

BIOS Menu 22: Serial Port 4 Configuration Menu

→ Serial Port [Enabled]

Use the Serial Port option to enable or disable the serial port.

| → | Disabled | | Disable the serial port |
|---|----------|---------|-------------------------|
| → | Enabled | DEFAULT | Enable the serial port |



➔ Device Settings

The Device Settings option shows the serial port IO port address and interrupt address.

| → | IO=2E8h; | Serial Port I/O port address is 2E8h and the interrup | |
|---|----------|---|--|
| | IRQ=10 | address is IRQ10 | |

→ Serial Port Mode [RS422]

Use the Serial Port Mode option to set the RS-422/485 serial port mode.

| → | RS422 | DEFAULT | Select the RS-422 serial port mode |
|---|-------|---------|------------------------------------|
| → | RS485 | | Select the RS-485 serial port mode |

5.3.10 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 23 & BIOS Menu 24**) allows the console redirection options to be configured. Console Redirection allows users to maintain a system remotely by re-directing keyboard input and text output through the serial port.

| 🗲 Setun | COM1 | |
|---------------------|---|-----------------------|
| e beeup | Console Redirection | |
| Main | Console Redirection Enable or Disable. | 411 |
| Advanced | Console Redirection Settings | Iŧī |
| Chipset Security | The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings. | Values |
| Boot | COM2 | |
| Save & Exit | Console Redirection | Optimized Defaults |
| | Console Redirection Enable or Disable. | |
| | | |
| | The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings. | Back |
| | СОМЗ | |
| | Console Redirection | Soft kbd |
| | Console Redirection Enable or Disable. | |
| | | |
| | The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings. | Save & Exit |
| | | |
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BIOS Menu 23: Serial Port Console Redirection (1/2)

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BIOS Menu 24: Serial Port Console Redirection (2/2)

→ Console Redirection [Disabled]

Use Console Redirection option to enable or disable the console redirection function.

| → | Disabled | DEFAULT | Disabled the console redirection function |
|---|----------|---------|---|
| → | Enabled | | Enabled the console redirection function |

The **Console Redirection Settings** submenu will be available when the **Console Redirection** option is enabled.

5.3.10.1 Console Redirection Settings

The following options are available in the **Console Redirection Settings** submenu (**BIOS Menu 25**) when the **COM Console Redirection** (for COM1 to COM4) option is enabled.





BIOS Menu 25: COM Console Redirection Settings

→ Terminal Type [ANSI]

Use the Terminal Type option to specify the remote terminal type.

| → | VT100 | | The target terminal type is VT100 |
|---|---------|---------|-------------------------------------|
| → | VT100+ | | The target terminal type is VT100+ |
| → | VT-UTF8 | | The target terminal type is VT-UTF8 |
| → | ANSI | DEFAULT | The target terminal type is ANSI |

→ Bits per second [115200]

9600

→

Use the **Bits per second** option to specify the serial port transmission speed. The speed must match on the other side. Long or noisy lines may require lower speeds.

Sets the serial port transmission speed at 9600.

| → | 19200 | | Sets the serial port transmission speed at 19200. |
|---|--------|---------|--|
| → | 38400 | | Sets the serial port transmission speed at 38400. |
| → | 57600 | | Sets the serial port transmission speed at 57600. |
| → | 115200 | DEFAULT | Sets the serial port transmission speed at 115200. |

→ Data Bits [8]

Use the **Data Bits** option to specify the number of data bits.

| → | 7 | | Sets the data bits at 7. |
|---|---|---------|--------------------------|
| → | 8 | DEFAULT | Sets the data bits at 8. |

→ Parity [None]

Use the **Parity** option to specify the parity bit that can be sent with the data bits for detecting the transmission errors.

| → | None | DEFAULT | No parity bit is sent with the data bits. |
|----------|-------|---------|---|
| → | Even | | The parity bit is 0 if the number of ones in the data bits is even. |
| → | Odd | | The parity bit is 0 if the number of ones in the data bits is odd. |
| → | Mark | | The parity bit is always 1. This option does not allow for error detection. |
| → | Space | | The parity bit is always 0. T This option does not allow for error detection. |

→ Stop Bits [1]

Use the **Stop Bits** option to specify the number of stop bits used to indicate the end of a serial data packet. Communication with slow devices may require more than 1 stop bit.

| → | 1 | DEFAULT | Sets the number of stop bits at 1. |
|----------|---|---------|------------------------------------|
| → | 2 | | Sets the number of stop bits at 2. |

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5.3.11 NVMe Configuration

Use the **NVMe Configuration** (**BIOS Menu 26**) menu to display the NVMe controller and device information.







5.4 Chipset

Use the **Chipset** menu (**BIOS Menu 27**) to access the PCH IO and System Agent (SA) configuration menus.

Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.

| ← Setup Main Advanced Chipset | System Agent (SA) Configuration System Agent (SA) Parameters PCH-IO Configuration PCH Parameters | 다. Previous Values |
|--|---|---------------------------------|
| Security Boot Save & Exit | ► | Optimized Defaults Back |
| I. | Version 2.21.0053. Copyright (C) 2022 AMI | Soft kbd |





5.4.1 System Agent (SA) Configuration

Use the **System Agent (SA) Configuration** menu (**BIOS Menu 28**) to configure the System Agent (SA) parameters.

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BIOS Menu 28: System Agent (SA) Configuration

→ VT-d [Enabled]

Use the VT-d option to enable or disable the VT-d capability.



→ WRC Feature [Enabled]

Use the WRC Feature option to enable or disable the capability of writing cache.

| → | Disabled | Disable the WRC Feature capability |
|---|----------|------------------------------------|
| | | |

Enabled DEFAULT Enable the WRC Feature capability

→ VCRt mapping to PEG [Enabled]

Use the VCRt mapping to PEG option to enable or disable the capability of mapping VCRt to PEG.

| → | Disabled | | Disable the VCRt capability |
|---|----------|---------|-----------------------------|
| → | Enabled | DEFAULT | Enable the VCRt capability |

5.4.1.1 Memory Configuration

Use the Memory Configuration submenu (BIOS Menu 29) to view memory information.

| ← Setup Main Advanced Chipset Security | Memory Configuration DIMM1 Controller Channel Slot Subtitle Size Memory Size in the Slot. | Populated & Enabled 4096 MB (DDR4) Populated & Enabled | TIT Previous Values |
|--|--|--|----------------------------------|
| Boot Save & Exit | DIMM2 Controller Channel Slot Subtitle Size Memory Size in the Slot. SA GV System Agent Geyserville. Can disable, fix to a specific Power Down Mode CKE Power Down Mode Control | 4096 MB (DDR4) Enabled r point, or enable frequency switching. Auto | Optimized Defaults Back |
| | Page Close Idle Timeout Page Close Idle Timeout Control Version 2.21.0053. Copyright (C) 2022 AMI | Enabled Enabled Disabled | Save & Exit |

BIOS Menu 29: Memory Configuration



5.4.1.2 Graphics Configuration

Use the **Graphics Configuration** (**BIOS Menu 30**) menu to configure the video device connected to the system.

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| 🗲 Setun | Graphics Configuration | |
|-------------|--|---|
| Main | Primary Display Select which of IGFX/PCI Graphics device should | Auto |
| Advanced | Internal Graphics | Enabled |
| Chipset | Keep IGFX enabled based on the setup options. | Auto |
| Security | DVMT Pre-Allocated | Disabled Enabled |
| Boot | Select DVMT 5.0 Pre-Allocated (Fixed) Graphics | Memory size used by the Internal Graphics Device. |
| Save & Exit | DVMT Total Gfx Mem | MAX |
| | | 2 |
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BIOS Menu 30: Graphics Configuration

→ Primary Display [Auto]

Use the **Primary Display** option to select the primary graphics controller the system uses. The following options are available:

- Auto Default
- IGFX
- PEG
- PCI
- SG



➔ Internal Graphics [Enabled]

Use the **Internal Graphics** option to configure whether to keep IGFX enabled. If user wants to support dual display by internal graphics and external graphics, this Internal Graphics option should be set to Enabled and the above Primary Display option should be set to IGFX.

| → | Auto | | Auto mode |
|---|----------|---------|----------------|
| → | Disabled | | Disables IGFX. |
| → | Enabled | Default | Enables IGFX. |

→ DVMT Pre-Allocated [64M]

Use the **DVMT Pre-Allocated** option to set the amount of system memory allocated to the integrated graphics processor when the system boots. The system memory allocated can then only be used as graphics memory, and is no longer available to applications or the operating system. Configuration options are listed below:

→ DVMT Total Gfx Mem [MAX]

Use the **DVMT Total Gfx Mem** option to select DVMT5.0 total graphic memory size used by the internal graphic device. The following options are available:



5.4.1.3 PCI Express Configuration

Use the **PCI Express Configuration** menu (**BIOS Menu 31**) to configure the PCI Express Configuration settings.



BIOS Menu 31: PEG Port Configuration

→ PCI Express Clock Gating [Enabled]

Use the **PCI Express Clock Gating** option to enable or disable the PCI Express Clock Gating capability for each root port.

| > | Disabled | | Disables the PCI Express Clock Gating Capability |
|-------------|----------|---------|--|
| → | Enabled | DEFAULT | Enables the PCI Express Clock Gating Capability |





5.4.1.3.1 PCIEX4_1

Use the PCIEX4_1 submenu (BIOS Menu 32) to control the PCI Express Root Port.

| | DOLDVA 1 | | |
|---------------------------------|--|----------------------------------|----------|
| 🗲 Setup | PCIEX4_1 | Enabled | \sim |
| Jecap | Control the PCI Express Root Port. | Disabled | |
| Main | PCIe Speed | Enabled | X |
| Advanced | Configure PCIe Speed | Auto | |
| Auvanceu | comigue rele speed | | |
| Chipset | ASPM | Disabled | V |
| Security Boot Save & Exit | Set the ASPM Level: Force LOs - Force all links to LOs State AUTO - BIOS auto configure DISABLE - Disables ASPM | | |
| Save & Exit | L1 Substates | Disabled | ~ |
| | PCI Express L1 Substates settings.L1SS cannot | be enabled when CLKREQMSG is dis | abled |
| | PTM | Enabled | V |
| | Enable/Disable Precision Time Measurement | | |
| | VC | Enabled | V |
| | Enable/Disable Virtual Channel | | |
| | Multi-VC | Disabled | v |
| | Enable/Disable Multi Virtual Channel | | |
| iei. | | | s |
| | Version 2.21.0053. Copyright (C) 2022 | AMI | |

BIOS Menu 32: PCIEX4_1

→ PCIEX4_1 [Enabled]

Use the **PCIEX4_1** option to enable or disable the PCIEX4_1 capability.

| → | Disabled | | Disable the PCIEX4_1 capability |
|---|----------|---------|---------------------------------|
| → | Enabled | DEFAULT | Enable the PCIEX4_1 capability |

→ PCle Speed [Auto]

Use the **PCIe Speed** option to specify the PCI Express port speed. Configuration options are listed below.

| → | Auto | DEFAULT | Auto mode. |
|---|------|---------|-------------------------------|
| → | Gen1 | | Configure PCIe Speed to Gen1. |



| → | Gen2 | Configure PCIe Speed to Gen2. |
|----------|------|-------------------------------|
| → | Gen3 | Configure PCIe Speed to Gen3. |
| → | Gen4 | Configure PCIe Speed to Gen4 |

→ ASPM [Disabled]

Use the **ASPM** option to set the ASPM level. Configuration options are listed below.

| → | Disabled | DEFAULT | Disables ASPM |
|---|----------|---------|---------------|
| → | L1 | | Set L1 Level |

→ PTM [Disabled]

Use the **PTM** option to enable or disable the Precision Time Measurement. Configuration options are listed below.

| → | Disabled | DEFAULT | Disables the PTM Technology |
|---|----------|---------|-----------------------------|
| → | Enabled | | Enables the PTM Technology |

→ VC [Disabled]

Use the **VC** option to enable or disable the Virtual Channel. Configuration options are listed below.

| → | Disabled | DEFAULT | Disables the Virtual Channel Technology |
|---|----------|---------|---|
| → | Enabled | | Enables the Virtual Channel Technology |

The following options are available when the VC option is enabled.

→ Multi-VC [Disabled]

Use the **Multi-VC** option to enable or disable the Multi Virtual Channel. Configuration options are listed below.

| → | Disabled | DEFAULT | Disables the Multi-VC Technology |
|---|----------|---------|----------------------------------|
| → | Enabled | | Enables the Multi-VC Technology |



5.4.2 PCH-IO Configuration

Use the PCH-IO Configuration menu (BIOS Menu 33) to configure the PCH parameters.

| ← Setup | PCH-IO Configuration | | | |
|---------------------------------|--|---|-----------------|--|
| | Auto Power Button Status | [Disable (ATX)] | | |
| Main | Show Auto Power Button Function state if Enabled in power on will auto Press power button | | | |
| Advanced | Restore AC Power Loss | Last State | \sim | |
| Chipset | Select AC power state when power is re-applied afte | er a power failure. | | |
| Security Boot Save & Exit | Power Saving Function(ERP) | | | |
| | Enable to reduce power consumption in system off | Enable to reduce power consumption in system off state. | | |
| | M2_B1 PCIE/USB Switch | PCIE | $\mathbf{\vee}$ | |
| | M2_B1 PCIE/USB Switch | | | |
| | Enable Timed GPIO0 | Enabled | V | |
| | Enable/Disable Timed GPI00. When disabled, it disables cross time stamp time-synchronization as extension of Hammock Harbor time synchronization. | | | |
| | Enable Timed GPIO1 | Enabled | \sim | |
| | Enable/Disable Timed GPI01. When disabled, it disab extension of Hammock Harbor time synchronization | bles Disabled Enabled | | |
| | PCI Express Configuration | | | |
| | PCI Express Configuration settings | | | |
| | SATA And RST Configuration | | | |
| | SATA Device Options Settings | | | |
| | HD Audio Configuration | HD Audio Configuration | | |
| | HD Audio Subsystem Configuration Settings | | | |
| | Legacy IO Low Latency | Disabled | × | |
| | Set to enable low latency of legacy IO. Some systems require lower IO latency irrespective of nower. This is a tradeoff between nower and IO latency. | | | |

BIOS Menu 33: PCH-IO Configuration

→ Auto Power Button Function [Disabled (ATX)]

Use the **Auto Power Button Function** BIOS option to show the power mode state. Use the **J_ATX_AT1** to switch the AT/ATX power mode.

- → Enabled (AT) The system power mode is AT.
- → Disabled (ATX) The system power mode is ATX.
→ Restore AC Power Loss [Last State]

Use the **Restore AC Power Loss** BIOS option to specify what state the system returns to if there is a sudden loss of power to the system when the power mode is ATX.

| → | Power Off | | The system remains turned off |
|---|------------|---------|--|
| → | Power On | | The system turns on |
| → | Last State | DEFAULT | The system returns to its previous state. If it was on, it |
| | | | turns itself on. If it was off, it remains off. |

→ Power Saving Function(EUP) [Disabled]

Use the **Power Saving Function(EUP)** BIOS option to enable or disable the power saving function.

| → | Disabled | DEFAULT | Power saving function is disabled. | |
|---|----------|---------|------------------------------------|--|
|---|----------|---------|------------------------------------|--|

Enabled Power saving function is enabled. It will reduce power consumption when the system is off.

→ M2_B1 PCIE/USB Switch [PCIE]

Use the M2_B1 PCIE/USB Switch BIOS option to select whether to use the PCIe or the USB signal from the M2_B1 socket.

PCIE DEFAULT Use the PCIe signal
 USB Use the USB signal

→ Enable Timed GPIO0 [Disabled]

Use the **Enable Timed GPIO0** BIOS option to enable or disable the cross time, stamp time as extension of Hammock Harbor time synchronization.

| Disabled DEFAULT Timed GPIO0 capability | lity is disabled. |
|---|-------------------|
|---|-------------------|

Enabled
 Timed GPIO0 capability is enabled.

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→ Enable Timed GPIO1 [Disabled]

Use the **Enable Timed GPIO1** BIOS option to enable or disable the cross time, stamp time as extension of Hammock Harbor time synchronization.

| → | Disabled | DEFAULT | Timed GPIO1 capability is disabled. |
|---|----------|---------|-------------------------------------|
| _ | | | |

Enabled Timed GPIO1 capability is enabled.

→ Legacy IO Low Latency [Disabled]

Use the **Legacy IO Low Latency** BIOS option to enable or disable the Legacy IO Low Latency which is a tradeoff between power and IO latency.

Disabled DEFAULT Legacy IO Low Latency technology is disabled.

Enabled
 Legacy IO Low Latency technology is enabled.

5.4.2.1 PCI Express Configuration

Use the PCI Express Configuration submenu (BIOS Menu 34) to configure the PCI Express Root Port Settings.



BIOS Menu 34: PCI Express Configuration

→ DMI Link ASPM Control [Disabled]

Use the **DMI Link ASPM Control** option to control the Active State Power Management of the DMI Link.

| → | Disabled | DEFAULT | Auto mode. |
|---|----------|---------|-------------------|
| → | L0s | | Set to L0s mode. |
| → | L1 | | Set to L1 mode |
| → | L0sL1 | | Set to L0sL1 mode |
| → | Auto | | Set to Auto mode |



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5.4.2.1.1 M2_B1

Use the M2_B1 submenu (BIOS Menu 35) to configure the M2_B1 PCI Root Port Setting.

| 🗲 Setup | M2_B1 Control the PCI Express Root Port. | Enabled V | |
|---------------------|--|---------------------|--------------------|
| Main Advanced | PCIe Speed | Auto | ţţţ |
| Chipset Security | Detect Non-Compliance Device | Disabled V | Previous Values |
| Boot | ASPM | Disabled V | * |
| Save & EXIL | Set the ASPM Level: Force LOs - Force all links to LOs State AUTO - BIOS auto configure DISABLE - Disables ASPM | | Defaults |
| | L1 Substates PCI Express L1 Substates settings. | Disabled V | Back |
| | PTM | Enabled | |
| | | Disabled Enabled | Soft kbd |
| | | | |
| | | | Save & Exit |
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BIOS Menu 35: PCIe Slot Configuration Submenu

→ M2_B1 [Enabled]

Use the M2_B1 option to enable or disable the PCI Express configuration of M.2 socket.

| → | Disabled | Disable the M2_B1 capability | ty |
|---|----------|------------------------------|----|
| _ | | | |

Enabled DEFAULT Enable the M2_B1 capability

→ PCle Speed [Auto]

Use the PCIe Speed option to specify the PCI Express port speed .

| → | Auto | DEFAULT | Auto mode. |
|---|------|---------|-------------------------------|
| → | Gen1 | | Configure PCIe Speed to Gen1. |
| → | Gen2 | | Configure PCIe Speed to Gen2. |
| → | Gen3 | | Configure PCIe Speed to Gen3. |



→ Detect Non-Compliance Device [Disabled]

Use the **Detect Non-Compliance Device** option to configure whether to detect if a noncompliance PCI Express device is connected to the PCI Express port.

| → | Disabled | DEFAULT | Do not detect if a non-compliance PCI Express |
|---|----------|---------|--|
| | | | device is connected to the PCI Express port. |
| → | Enabled | bled | Detect if a non-compliance PCI Express device is |
| | | | connected to the PCI Express port. |

→ ASPM [Disabled]

Use the **ASPM** option to set the ASPM level. Configuration options are listed below.

| → | Disabled | DEFAULT | Auto mode. |
|---|----------|---------|-------------------|
| → | L0s | | Set to L0s mode. |
| → | L1 | | Set to L1 mode |
| → | L0sL1 | | Set to L0sL1 mode |
| → | Auto | | Set to Auto mode |

→ L1 Substates [Disabled]

Use the **L1 Substates** option to select the PCI Express L1 Substates settings. Configuration options are listed below.

| → | Disabled | DEFAULT | Auto mode. |
|---|-------------|---------|------------|
| → | L1.1 | | |
| → | L1.1 & L1.2 | | |

→ PTM [Disabled]

Use the **PTM** option to enable or disable the Precision Time Measurement. Configuration options are listed below.

| → | Disabled | DEFAULT | Disables the PTM Technology |
|---|----------|---------|-----------------------------|
| → | Enabled | | Enables the PTM Technology |

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5.4.2.1.2 M2_A1

Use the M2_A1 submenu (BIOS Menu 36) to configure the M2_A1 PCI Root Port Setting.

| 🗲 Setup | M2_B1 | Enabled V | |
|-------------|--|--|-----------------------|
| Main | | | |
| | PCIe Speed | Auto 🗸 | <u>+1</u> + |
| Advanced | Configure PCIe Speed | | Previous |
| Chipset | Detect Non-Compliance Device | Disabled V | Values |
| Security | Detect Non-Compliance PCI Express Device. If enab | le, it will take more time at POST time. | |
| Boot | ASPM | Disabled V | |
| Save & Exit | Set the ASPM Level: Force LOs - Force all links to LOs State AUTO - BIOS auto configure DISABLE - Disables ASPM | | Optimized Defaults |
| | L1 Substates | Disabled V | Back |
| | PCI Express L1 Substates settings. | | |
| | РТМ | Enabled V | |
| | Enable/Disable Precision Time Measurement | Disabled Enabled | Soft kbd |
| | | | Save & Exit |
| | Version 2,21.0053. Copyright (C) 2022 AMI | | |

BIOS Menu 36: PCIe Slot Configuration Submenu

→ M2_A1 [Enabled]

Use the M2_A1 option to enable or disable the PCI Express configuration of M.2 socket.

| → | Disabled | | Disable the M2_A1 capability |
|---|----------|---------|------------------------------|
| → | Enabled | DEFAULT | Enable the M2_A1 capability |

→ PCle Speed [Auto]

Use the PCIe Speed option to specify the PCI Express port speed .

| → | Auto | DEFAULT | Auto mode. |
|---|------|---------|-------------------------------|
| → | Gen1 | | Configure PCIe Speed to Gen1. |
| → | Gen2 | | Configure PCIe Speed to Gen2. |
| → | Gen3 | | Configure PCIe Speed to Gen3. |



→ Detect Non-Compliance Device [Disabled]

Use the **Detect Non-Compliance Device** option to configure whether to detect if a noncompliance PCI Express device is connected to the PCI Express port.

| → | Disabled | DEFAULT | Do not detect if a non-compliance PCI Express |
|---|----------|---------|--|
| | | | device is connected to the PCI Express port. |
| → | Enabled | | Detect if a non-compliance PCI Express device is |
| | | | connected to the PCI Express port. |

→ ASPM [Disabled]

Use the **ASPM** option to set the ASPM level. Configuration options are listed below.

| → | Disabled | DEFAULT | Auto mode. |
|---|----------|---------|-------------------|
| → | L0s | | Set to L0s mode. |
| → | L1 | | Set to L1 mode |
| → | L0sL1 | | Set to L0sL1 mode |
| → | Auto | | Set to Auto mode |

→ L1 Substates [Disabled]

Use the **L1 Substates** option to select the PCI Express L1 Substates settings. Configuration options are listed below.

| → | Disabled | DEFAULT | Auto mode. |
|---|-------------|---------|--------------------|
| → | L1.1 | | Set to L1.1 |
| → | L1.1 & L1.2 | | Set to L1.1 & L1.2 |

→ PTM [Disabled]

Use the **PTM** option to enable or disable the Precision Time Measurement. Configuration options are listed below.

| → | Disabled | DEFAULT | Disables the PTM Technology |
|---|----------|---------|-----------------------------|
| → | Enabled | | Enables the PTM Technology |

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5.4.2.2 SATA And RST Configuration

Use the **SATA And RST Configuration** menu (**BIOS Menu 37**) to change and/or set the configuration of the SATA devices installed in the system.

| ← Setup | SATA And RST Configuration | | |
|------------------|--|---------------------|-------------|
| Main | SATA Controller(s) | Enabled V | |
| Advanced | Enable/Disable SATA Device. | | ţţţ |
| Chipset | SATA Mode Selection | AHCI V | Previous |
| Security Boot | SATA2 | Empty | |
| Save & Exit | Hot Plug | Disabled | Optimized |
| | Designates this port as Hot Pluggable. | Disabled Enabled | Back |
| | | | Soft kbd |
| IEI. | Version 2 21 0053. Convright (C) 2022. | AMI | Save & Exit |

BIOS Menu 37: SATA Configuration

→ SATA Controller(s) [Enabled]

Use the SATA Controller(s) option to configure the SATA controller(s).

| → | Enabled | DEFAULT | Enables the on-board SATA controller(s). |
|---|----------|---------|---|
| → | Disabled | | Disables the on-board SATA controller(s). |

→ SATA Mode Selection [AHCI]

Use the SATA Mode Selection option to determine how the SATA devices operate.

→ AHCI DEFAULT Configures SATA devices as AHCI device.



→ Hot Plug [Disabled]

Use the Hot Plug option to designate the correspondent port as hot-pluggable.

| → | Disabled | DEFAULT | Disables the hot-pluggable function of the SATA port. |
|---|----------|---------|---|
| → | Enabled | | Designates the SATA port as hot-pluggable. |

5.4.2.3 HD Audio Configuration

Use the **HD Audio Configuration** menu (**BIOS Menu 38**) to configure the HD Audio Subsystem settings.

| ← Setup Main Advanced | HD Audio Subsystem Configuration Settings HD Audio Enabled Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled | ŤĻŤ Previous |
|---------------------------------|---|---|
| Security Boot Save & Exit | Enabled = HDA will be unconditionally enabled. | Values Optimized Defaults Back |
| i Fi. | Version 2.21.0053. Copyright (C) 2022 AMI | Soft kbd |

BIOS Menu 38: HD Audio Configuration

→ HD Audio [Enabled]

Use the HD Audio option to enable or disable the High Definition Audio controller.

Disabled The onboard High Definition Audio controller is disabled.
 Enabled DEFAULT The onboard High Definition Audio controller is enabled.



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5.5 Security

Use the Security menu (BIOS Menu 39) to set system and user passwords.

| ← Setup Main Advanced Chipset Security | IT ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup. If ONLY the User's password is set, then this is a power on password and must be entered to | ŤĻŤ Previous Values |
|--|---|----------------------------------|
| Boot Save & Exit | boot or enter Setup. In Setup the User will have Administrator rights. The password length must be in the following range: Minimum length 3 Maximum length 20 | Optimized Defaults Back |
| | Administrator Password - Not Installed Set Administrator Password - Not Installed Set User Password Version 2.21.0053. Copyright (C) 2022 AMI | Save & Exit |

BIOS Menu 39: Security

➔ Administrator Password

Use the Administrator Password to set or change a administrator password.

➔ User Password

Use the **User Password** to set or change a user password.



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5.6 Boot

Use the Boot menu (BIOS Menu 40) to configure system boot options.



BIOS Menu 40: Boot Menu

5.6.1 Boot Configuration

→ Quiet Boot [Enabled]

Use the Quiet Boot BIOS option to select the screen display when the system boots.

| → | Disabled | | Normal POST messages displayed |
|---|----------|---------|---|
| → | Enabled | DEFAULT | OEM Logo displayed instead of POST messages |

→ Launch PXE OpROM [Disabled]

Use the **Launch PXE OpROM** option to enable or disable boot option for legacy network devices.

Disabled DEFAULT Ignore all PXE Option ROMs
 Enabled Load PXE Option ROMs.

5.6.2 Boot Option Priorities

Use the Boot Option # N to choose the system boots from the peripherals you selected The following Boot Options are listed as an example.

➔ Boot Option #1

Sets the system boot order UEFI: KingstonDataTraveler2.0 as the second priority.



➔ Boot Option #2

Sets the system boot order ADATA SP580 as the first priority.

→ Windows Boot Manager (P1: ADATA SSD SP580 240GB)

➔ Disabled



5.7 Save & Exit

Use the **Save & Exit** menu (**BIOS Menu 41**) to load default BIOS values, optimal failsafe values and to save configuration changes.





→ Save Changes and Reset

Use the **Save Changes and Reset** option to save the changes made to the BIOS options and reset the system.

➔ Discard Changes and Reset

Use the **Discard Changes and Reset** option to exit the system without saving the changes made to the BIOS configuration setup program.

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→ Restore Defaults

Use the **Restore Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F3 key can be used for this operation.**

→ Save as User Defaults

Use the Save as User Defaults option to save the changes done so far as user defaults.

➔ Restore User Defaults

Use the Restore User Defaults option to restore the user defaults to all the setup options.





Safety Precautions



A.1 Safety Precautions

🖄 warning:

The precautions outlined in this appendix should be strictly followed. Failure to follow these precautions may result in permanent damage to the DRPC-240-TGL.

Please follow the safety precautions outlined in the sections that follow:

A.1.1 General Safety Precautions

Please ensure the following safety precautions are adhered to at all times.

- Make sure the power is turned off and the power cord is disconnected when moving, installing or modifying the system.
- Do not apply voltage levels that exceed the specified voltage range.
 Doing so may cause fire and/or an electrical shock.
- Electric shocks can occur if opened while still powered on.
- Do not drop or insert any objects into the ventilation openings.
- If considerable amounts of dust, water, or fluids enter the system, turn off the power supply immediately, unplug the power cord, and contact the system vendor.
- This equipment is not suitable for use in locations where children are likely to be present.
- DO NOT:
 - Drop the system against a hard surface.
 - \circ $\,$ In a site where the ambient temperature exceeds the rated temperature

A.1.2 Anti-static Precautions



Failure to take ESD precautions during the installation of the DRPC-240-TGL may result in permanent damage to the DRPC-240-TGL and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the DRPC-240-TGL. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the DRPC-240-TGL is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

- Wear an anti-static wristband. Wearing a simple anti-static wristband can help to prevent ESD from damaging any electrical component.
- Self-grounding: Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- Use an anti-static pad. When configuring or working with an electrical component, place it on an anti-static pad. This reduces the possibility of ESD damage.

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A.1.3 Product Disposal

Risk of explosion if the battery is replaced by an incorrect type;

Replacement of a battery with an incorrect type that can defeat a safeguard (for example, in the case of some lithium battery types);

Disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery, that can result in an explosion;

Leaving a battery in an extremely high temperature surrounding environment that can result in an explosion or the leakage of flammable liquid or gas;

A battery subjected to extremely low air pressure that may result in an explosion or the leakage of flammable liquid or gas.

Dispose of used batteries according to instructions and local regulations.

- Outside the European Union If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.
- Within the European Union:



EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your display products, please follow the guidance of your local authority, or ask

the shop where you purchased the product. The mark on electrical and electronic products only applies to the current European Union Member States.

Please follow the national guidelines for electrical and electronic product disposal.



When maintaining or cleaning the DRPC-240-TGL, please follow the guidelines below.

A.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the DRPC-240-TGL, please read the details below.

- The interior of the DRPC-240-TGL does not require cleaning. Keep fluids away from the DRPC-240-TGL interior.
- Be cautious of all small removable components when vacuuming the DRPC-240-TGL.
- Turn the DRPC-240-TGL off before cleaning the DRPC-240-TGL.
- Never drop any objects or liquids through the openings of the DRPC-240-TGL.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the DRPC-240-TGL.

A.2.2 Cleaning Tools

Some components in the DRPC-240-TGL may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use when cleaning the DRPC-240-TGL.

- Cloth Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the DRPC-240-TGL.
- Water or rubbing alcohol A cloth moistened with water or rubbing alcohol can be used to clean the DRPC-240-TGL.
- Using solvents The use of solvents is not recommended when cleaning the DRPC-240-TGL as they may damage the plastic parts.
- Vacuum cleaner Using a vacuum specifically designed for computers is one of the best methods of cleaning the DRPC-240-TGL. Dust and dirt can restrict the airflow in the DRPC-240-TGL and cause its circuitry to corrode.
- Swabs Swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas. Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.



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Regulatory Compliance



DECLARATION OF CONFORMITY

CE

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This equipment is in conformity with the following EU directives:

- EMC Directive 2014/30/EU
- Low-Voltage Directive 2014/35/EU
- RoHS II Directive 2015/863/EU

If the user modifies and/or install other devices in the equipment, the CE conformity declaration may no longer apply.

If this equipment has telecommunications functionality, it also complies with the requirements of the R&TTE Directive 1999/5/EC.

English

IEI Integration Corp declares that this equipment is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Български [Bulgarian]

IEI Integration Corp. декларира, че този оборудване е в съответствие със

съществените изисквания и другите приложими правила на Директива 1999/5/ЕС.

Česky [Czech]

IEI Integration Corp tímto prohlašuje, že tento zařízení je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.

Dansk [Danish]

IEI Integration Corp erklærer h rved, at følgen e udstyr overholder de væsentlige krav og øvrige relevante krav i dire tiv 1999/5/EF.

Deutsch [German]

IEI Integration Corp, erklärt dieses Gerät entspricht den grundlegenden Anforderungen und den weiteren entsprechenden Vorgaben der Richtlinie 1999/5/EU.

Eesti [Estonian]

IEI Integration Corp deklareerib seadme seadme vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.

Español [Spanish]

IEI Integration Corp declara que el equipo cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.

Ελληνική [Greek]

ΙΕΙ Integration Corp ΔΗΛΩΝΕΙ ΟΤΙ ΕΞΟΠΛΙΣΜΟΣ ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.

Français [French]

IEI Integration Corp déclare que l'appareil est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.

Italiano [Italian]

IEI Integration Corp dichiara che questo apparecchio è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.

Latviski [Latvian]

IEI Integration Corp deklarē, ka iekārta atbilst būtiskajām prasībām un citiem ar to saistītajiem noteikumiem Direktīvas 1999/5/EK.

Lietuvių [Lithuanian]

IEI Integration Corp deklaruoja, kad šis įranga atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.

Nederlands [Dutch]

IEI Integration Corp dat het toestel toestel in overeenstem ing is met de e sentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.

Malti [Maltese]

IEI Integration Corp jiddikjara li dan prodott jikkonforma mal-ħtiġijiet essenzjali u ma prowedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.

Magyar [Hungarian]

IEI Integration Corp nyilatkozom, hogy a berendezés megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.

Polski [Polish]

IEI Integration Corp oświadcza, że wyrobu jest zgodny z zasadniczymi wymogami oraz

pozostałymi stosownymi postanowieniami Dyrektywy 1 99/5/EC.

Português [Portuguese]

IEI Integration Corp declara que este equipamento está conforme com os requisitos essenciais e outras dis osições da Directiva 1999/5/CE.

Româna [Romanian]

IEI Integration Corp declară că acest echipament este in conformitate cu cerințele esențiale și cu celelalte prevederi relevante ale Directivei 1999/5/CE.

Slovensko [Slovenian]

IEI Integration Corp izjavlja, da je ta opreme v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.



Slovensky [Slovak]

IEI Integration Corp týmto vyhlasuje, že zariadenia spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.

Suomi [Finnish]

IEI Integration Corp vakuut aa täten että I itteet on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.

Svenska [Swedish]

IEI Integration Corp förklarar att denna utrustningstyp står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

ROHS STATEMENT



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The label on the product indicates this product conforms to European (EU) Restriction of Hazardous Substances (RoHS) that set maximum concentration limits on hazardous materials used in electrical and electronic equipment.



FCC WARNING



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

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

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.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator & your body.

CHINA ROHS



The label on the product indicates the estimated "Environmentally Friendly Use Period" (EFUP). This is an estimate of the number of years that these substances would "not leak out or undergo abrupt change." This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.





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DRPC-240-TGL Embedded System

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Hazardous Materials Disclosure



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D.1 RoHS II Directive (2015/863/EU)

The details provided in this appendix are to ensure that the product is compliant with the RoHS II Directive (2015/863/EU). The table below acknowledges the presences of small quantities of certain substances in the product, and is applicable to RoHS II Directive (2015/863/EU).

Please refer to the following table.

| Part Name | Toxic or Hazardous Substances and Elements | | | | | | | | | |
|---|--|-----------------|-----------------|------------------------------------|--------------------------------------|---|--|------------------------------------|----------------------------|-----------------------------------|
| | Lead (Pb) | Mercury (Hg) | Cadmium (Cd) | Hexavalent Chromium (CR(VI)) | Polybrominated Biphenyls (PBB) | Polybrominated Diphenyl Ethers (PBDE) | Bis(2-ethylhexyl) phthalate (DEHP) | Butyl benzyl phthalate (BBP) | Dibutyl phthalate (DBP) | Diisobutyl phthalate (DIBP) |
| Housing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Display | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Printed Circuit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Board | | | | | | | | | | |
| Metal Fasteners | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cable Assembly | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fan Assembly | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Power Supply | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Assemblies | | | | | | | | | | |
| Battery | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in Directive (EU) 2015/863. | | | | | | | | | | |

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in Directive (EU) 2015/863.

D.2 China RoHS

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符 合中国 RoHS 标准规定的限量要求。

本产品上会附有"环境友好使用期限"的标签,此期限是估算这些物质"不会有泄漏或突变"的 年限。本产品可能包含有较短的环境友好使用期限的可替换元件,像是电池或灯管,这些元 件将会单独标示出来。

| 部件名称 | 有毒有害物质或元素 | | | | | | | | | |
|--------|----------------------|-----------|-----------|-----------------|---------------|-----------------|--|--|--|--|
| | 帖 (Pb) | 表 (Hg) | 编 (Cd) | 六价铬 (CR(VI)) | 多溴联苯 (PBB) | 多溴二苯醚 (PBDE) | | | | |
| 壳体 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 显示 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 印刷电路板 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 金属螺帽 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 电缆组装 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 风扇组装 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 电力供应组装 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| 电池 | 0 | 0 | 0 | 0 | 0 | 0 | | | | |
| | | | | | | | | | | |

O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11364-2014 與 GB/T26572-

2011 标准规定的限量要求以下。

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11364-2014 與 GB/T26572-2011 标准规定的限量要求。

