Rugged Laptop

RK12

User's Guide

Ⓑ Ⓒ

Notice

The company reserves the right to revise this publication or to change its contents without any notice. Information contained herein is for reference only and does not constitute a commitment on the part of the manufacturer or any subsequent vendor. They assume no responsibility or liability for any errors or inaccuracies that may appear in this publication nor are they in anyway responsible for any loss or damage resulting from the use (or misuse) of this publication.

Any of the software described in this manual is sold or licensed "as is". Should the programs prove defective following purchase, the buyer (and not the manufacturer, its distributor, or its dealer) assumes the entire cost of all necessary servicing, repair and any incidental or consequential damages resulting from any software defects.

Brand and product names mentioned in this publication may or may not be copyrights and/or registered trademarks of their respective companies. They are mentioned for identification purposes only and are not intended as an endorsement of that product or its manufacturer.

Trademarks

Radiation Exposure Statement

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

RF exposure warming

This equipment must be installed and operated in accordance with provided instructions and antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

Regulatory Information/ Disclaimers

Installation and use of this computer must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications (including the antennas) made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment.

The manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, or the substitution of the connecting cables and equipment other than manufacturer specified. It is the responsibility of the user to correct any interference caused by such unauthorized modification, substitution or attachment. Manufacturer and its authorized resellers or distributors will assume no liability for any damage or violation of government regulations arising from failing to comply with these guidelines.

Federal Communications Commission regulatory compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC 47 CFR Part 15 Subpart B
FCC 47 CFR Part 15 Subpart C
FCC 47 CFR Part 15 Subpart E

Note:
This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

● Reorient or relocate the receiving antenna.

● Increase the separation between the equipment and receiver.

● Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

● Consult the dealer or an experienced radio/TV technician for help.

I**mportant:**
Changes or modifications to this product not authorized by MilDef could void the electromagnetic compatibility (EMC) and wireless compliance and negate your authority to operate the product.
In order to maintain compliance with FCC regulations, compliant peripheral devices and shielded cables must be used with this equipment.

EU Declaration of Conformity

C E

The device is hereby confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility Directive (2014/30/EU), Radio Equipment Directive (2014/53/EU) and Low Voltage Directive (2014/35/EU), if used for its intended use and that the following standards have been applied:

1. **Safety**
    Applied Standard(s):
    EN 62368-1: 2014/A11:2017

2. **Health**
    Applied Standard(s):
    EN 62311 (2008)

3. **Radio Frequency Spectrum Usage**
    Applied Standard(s):
    EN 300 328 V2.1.1: 2016
    EN 301 893 V2.1.1: 2017
    EN 303 413 V1.1.1 (2017-06)

4. **Electromagnetic Compatibility Directive**
    Applied Standard(s):
    EN 55032: 2015+AC: 2016
    EN 61000-3-2:2014
    EN 61000-3-3:2013
    EN 55035:2017
    EN 55024: 2010+A1: 2015
    EN 301 489-1 V2.1.1 (2017-02)
    EN 301 489-17 V3.1.1 (2017-02)
    EN 301 489-19 V2.1.0 (2017-03)

Power Conservation

This computer consumes less power compared to conventional consumer computers. The power consumption may be further reduced by properly configuring the Power Management Setup.

It is recommended that the power saving features be enabled even when not running on battery power. Power Management features can conserve power without degrading system performance.

Power Safety

There are specific power requirements for your computer:

- Only use an approved AC adapter designed for this computer.
- There is a 3-prong grounded plug for the AC adapter. The 3rd prong is an important mechanism for ensuring product safety. Please do not neglect the importance of this mechanism. If you are unable to access a compatible outlet, please hire a qualified electrician to install a compatible outlet for you.
- When unplugging the AC power cord, please make sure to disconnect the cord by pulling from the plug head instead of pulling from the wire to prevent wire damage.
- Make sure the power outlet and any other extension cord(s) you use can support the total current load of all the connected devices.
- Before cleaning the computer, please make sure it is disconnected from any external power source.

> ⚠️ *Warning*
> *Before any upgrade procedures, make sure the power is turned off, and all the cables are disconnected. Also, it is advisable to remove your battery to prevent your computer from accidentally turning on.*

Battery Precautions

- Only use batteries designed for this computer. Using incompatible battery types may cause explosion, leakage or damage to the computer.

- Do not remove the battery from the computer while the computer is powered on.

- Do not continuously use a battery that has been dropped, or that appears damaged (e.g. bent or twisted) in any way. Even if the computer is able to continuously work with a damaged battery, the circuit damage may occur and possibly cause fire.

- Always use the charger designed for this computer to recharge the battery. Incorrect recharging may cause the battery to explode.

- Do not try to repair a battery by yourself. For battery service or replacement, please contact with your service representatives.

- Please dispose damaged battery promptly and carefully. Explosion or leakage may occur, if the battery is improperly handled or discarded.

Notice:
For safety, charging will stop if the internal temperature of the battery is out of range(<0°C; >50°C). Please note that charging could have stopped before the ambient temperature reaching these boundaries because the internal temperature of the battery does not equal to the ambient temperature.

⚠ *Battery Disposal & Caution:*
The product that you have purchased contains a rechargeable battery. The battery is recyclable. At the end of its service life, under various state and local laws, it may be illegal to dispose of this battery into the municipal waste stream. Check with your local solid waste officials for details in your area for recycling options or proper disposal. Danger of explosion may possibly occur, if the battery is incorrectly replaced. Replace only with the same or the equivalent battery recommended by the manufacturer. Discard the used battery according to the manufacturer's instructions.

Environmental Information, Material Safety & Recycling

All materials used in the manufacturing of this equipment are recyclable or environmentally friendly. Please recycle the packing materials in accordance with local regulations at the end of the product's service life.

Notice:

- The equipment may contain insignificant amount of hazardous substances for health and environment below control level.
- To avoid spreading such substances into the eco system and to minimize the pressure on the natural environment, you are encouraged to reuse or recycle most of the materials in a safe way after an end of the product life.
- For more information on collection, reuse and recycle of materials, please consult local or regional waste administrations for more information. You can also contact your dealer for more information on the environmental details of the equipment.
- The symbol of the crossed out wheeled bin indicates that the product (electrical and electronic equipment) should not be placed in municipal waste. Please check local regulations for disposal of electronic products.

TABLE OF CONTENTS

Chapter One - Getting Started

Unpacking

The following components are along with your computer. If there is any missing or damaged, please notify the dealer immediately.

- Computer Unit
- Removable HDD (Hard Disk Drive)
- Removable ODD (Optical Disk Drive)
- AC Adapter
- AC Power Cord
- Utility DVD
- Quick Guide
- Carrying Bag

Quick Operation

- Loosen the battery screw, remove the battery insulation sheet, and mount the battery.
- Connect the AC adapter with the computer and start charging the battery for at least 10 minutes.
- Turn ON the computer by pressing the power switch.

Notice:

- When ambient temperature is under +5℃ (This is the default setting for this computer.), the system may not boot up immediately. System will beep with LED heater light flashing to remind the user while heater working. Also, the frequency of the LED will become faster to remind the user while the temperature is approaching to be suitable. After 5~15 minutes, the system will boot up automatically.
- Under an emergency situation, it is able to skip heating for booting up the system immediately by pressing the power switch for >9 seconds. The speaker will also beep with a special sound. (It is not guaranteed all devices on the computer are possible to work properly.)
- Press the power switch again during the heating process will shut down the computer.
- Driver or application installation may be necessary for further operation.
- The following procedures will help to Turn OFF the computer:
  1. Press power switch to "**Shut Down**", "**Sleep**"* or "**Hibernate**"* depending on operating system (OS) and power management settings.
  2. Press power switch for 4 seconds for a "Hard" power off. But, note that the system will shut down immediately without saving any data or parameters.
  3. Click **Start** → **Shut Down** in Windows to Turn OFF.

Note:
➢ *Some operating systems may not support the above-mentioned functions.*

Appearance Overview

Display and Base
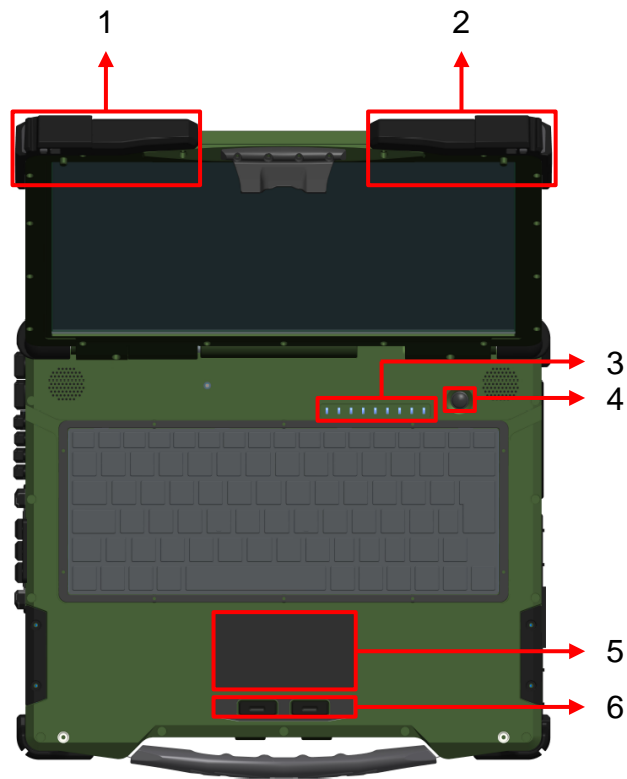
1. Optional Embedded Antennas: WLAN Aux, Bluetooth, GPS
2. Optional Embedded Antennas: WLAN Main
3. LED Indicators
4. Power Button (Black)
5. Touchpad
6. Left-click and Right-click

Right
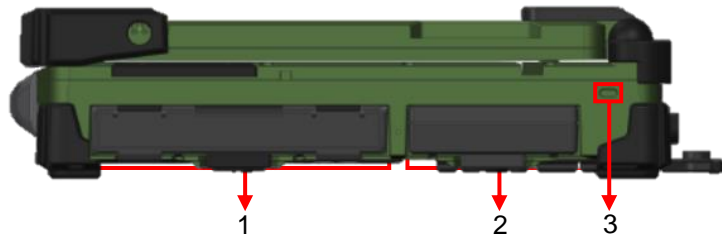
1.   Flex Bay:
     a.   Standard SATA ODD
     b.   Optional 2nd HDD/ 2nd Battery
2.   Standard SATAIII HDD
     Optional SATAIII SSD
3.   Kensington Lock Slot

Left
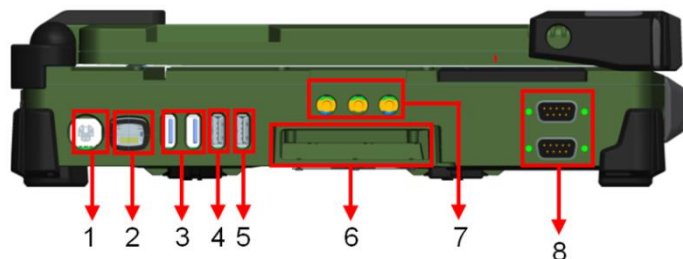
1.   PS/2 (Key Board/Mouse)
2.   GLAN RJ45 x 1
3.   USB 3.1 Gen 1 x 2
4.   USB 2.0 x 1 (Support 1.5A Fast Charging)
5.   USB 2.0 x 1
6.   Express Card Slot (PCI-E) x 1
7.   Audio Jack x 3 (Line-In/Microphone/Headphone)
8.   Optional Serial Port DB9 x 2 (Default: COM3, COM4)

Rear
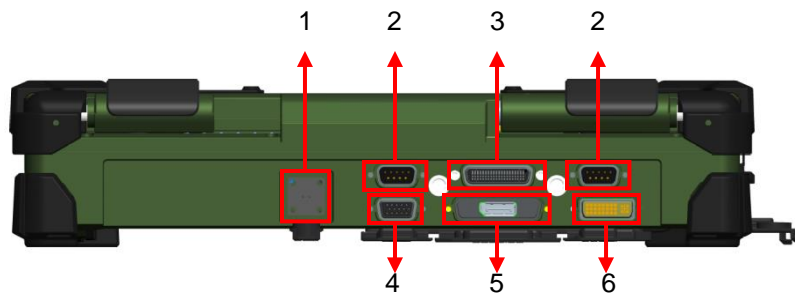
1. DC-In Conn. x 1
   -Standard: DC-In 2 pin
   -Optional: Military 3 pin
2. Serial Port DB9 x 2 (Default: COM1, COM2)
3. Docking Connector x 1
4. VGA x 1
5. Display Port x 1
6. DVI Port x 1

Bottom View
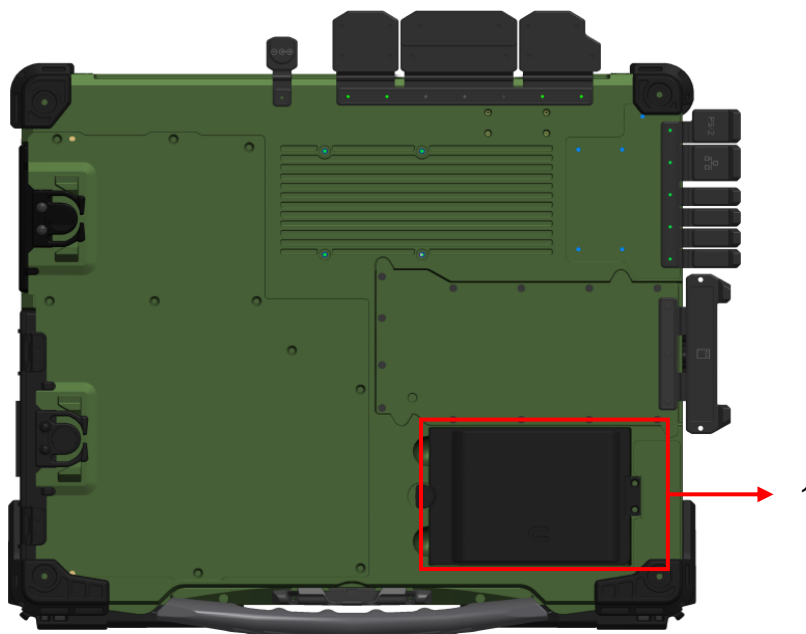
1. Primary Battery

Chapter Two - Operating Information

Workplace

A clean and moisture-free environment is preferred. Make room for air circulation. Remember to avoid areas from:

● Sudden or extreme changes in temperature.
● Extreme heat.
● Strong electromagnetic fields (near television set, motor rotation area, etc.).
● Dust or high humidity.

If it is necessary to work in a hostile environment, please regularly maintain your notebook computer by cleaning dust, water, and etc. to keep it in an optimal condition.

Ruggedness

This notebook computer is designed with rugged features such as vibration, shock, dust, and rain/ water protection. However, it is still necessary to provide appropriate protection while operating in harsh environments.

The notebook computer is also designed to withstand rainfall from top with mild wind blowing only. Please keep the keyboard facing up, i.e. normal operating direction, to maintain water resistance. NEVER immerse the unit in water, or spray water at an upside-down system. Doing so may cause permanent damage.

The D-sub connector caps on the rear of the computer are for dust and shock protection. The connectors are sealed internally. Other I/O ports and devices on the left or right must have caps tightly closed or cable inlets sealed while being exposed to water or dust.

There are optional gaskets for DB-9 and DB-25 connectors. You may install them to improve rain/ dust/ moisture resistance on your commercial type cable. Insert the packing into the male connector (with pins) and fasten the screws.

All connectors will be corroded if being exposed to water or moisture. Corrosion is accelerated if the power is ON. Please take proper water-resistant measures for cable connections. The DC jack and cables are sealed and may be operated with water splashing while attached. All port covers should be in place when no cable is attached.

Operating System

Your computer is designed to operate with Microsoft Windows 7/ Windows 10 64-bit Operating System. Please connect your computer with an external USB-interface drive, such as a USB thumb drive, and start the OS installation.

> ➤ *Note:*
> *RK12 only supports TPM2.0 in Windows 10, but TPM2.0 is not supported in Windows 7.*

Work with Power Button

Always turn on your device by using the power button. Press the power button about 2 seconds and the laptop will boot up. The device is equipped with a heater kit to enable work under low temperature. The heater will heat up the LCD to the temperature for booting up the system. Also, the heater will constantly monitor LCD temperature. Once the temperature becomes lower, the heater will heat up again to maintain the temperature for operation.

Note:

● When ambient temperature is under -15 °C (the default setting for your tablet computer), the system may not boot up immediately. System will beep with Heater LED light flashing orange to indicate that the heater is in operation. After 3~10 minutes (depending on the ambient temperature), the system will boot up automatically.

● In emergency situations, you can skip the heating process by pressing and holding the power button for 9~11 seconds then release. The speaker will beep with a special sound to signify that the heating process has been skipped (Please note that not all devices are guaranteed to work properly in this case).

● Press the power button again during the heating process will shut down the computer.

The following is a list of functions associated with your tablet computer's power button:

1. Press and hold for 9 ~ 11 seconds:
   The system will skip heating process and force boot up.
2. Press and hold for 5 ~ 8 seconds:
   Enable/Disable the sound of Heater.
3. Press and hold for 4 seconds under OS:
   Shut down the system.
4. Press and hold for 2 seconds:
   Boot up the system.
5. Press the power button for functions including:
   a. Power on the system.

b.   Force Shut Down.

c.   Sleep/Hibernate (Dependent on OS settings).

Boot Up and POST

Boot up
The computer turns ON and loads the operating system (such as Windows) into the system memory. This start-up procedure is called "boot up".

The ROM BIOS Power on Self-Test (POST)
Each time the computer powers on, it automatically performs a self-test of its memory and hardware devices.

Note:
When the device is boot at low temperature(<5℃) the system will have an additional stage (about 10 seconds) during POST to warm up and make sure all components work correct.

Shut down

Before shutting down, please always remember to save the unfinished works and close the application for preventing from any possible data loss or HDD damage.

"Shut down" will totally turn OFF the power of your notebook computer. If you want to start your notebook computer again, you need to press the power switch.

Sleep/Hibernate

Sleep
Under "Sleep" mode, the system will temporarily save your work into RAM.
You are able to do enter "Sleep" mode by directly clicking from your OS. Or, you can do the "Sleep" Mode settings in your OS. If you want to start your notebook computer again, all you need to press any key.

Hibernate
Under "Hibernate" mode, the system will save your work into HDD. You are able to do enter "Hibernate" mode by directly clicking from your OS. Or, you can do the "Hibernate" Mode in your OS. If you want to start your notebook computer again, you need to press the power switch.

Keyboard

The keyboard is functionally equivalent to a full size desktop keyboard. A sample layout is shown below.
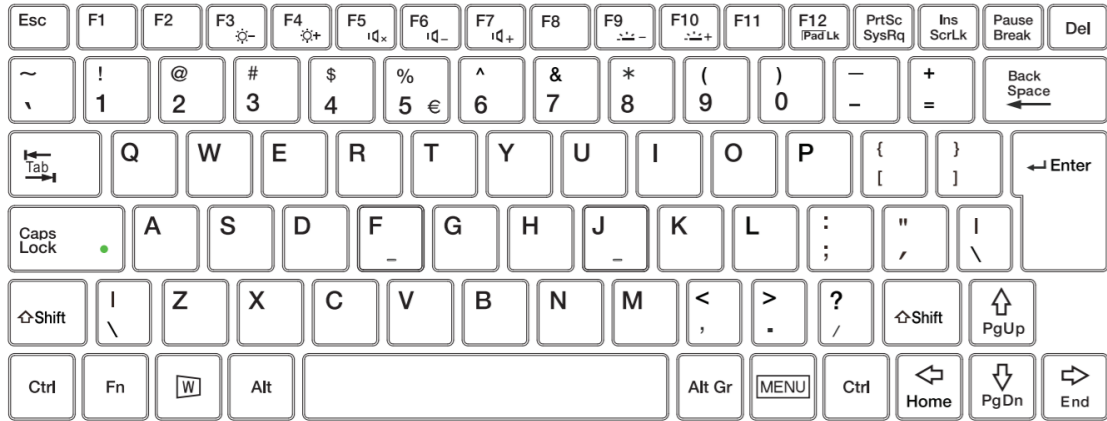
Function Key Combinations

Key	Description
[Fn] + [F3]	Decrease LCD brightness
[Fn] + [F4]	Increase LCD brightness
[Fn] + [F5]	Mute
[Fn] + [F6]	Volume down
[Fn] + [F7]	Volume up
[Fn] + [F9]	Decrease keyboard LED Backlight brightness
[Fn] + [F10]	Increase keyboard LED Backlight brightness
[Fn] + [F12]	Touchpad Lock/Unlock

LED Indicators

Your Notebook computer is designed with LED indicators to show computer status. The description of LED indicators and colors are provided for your operational reference.

LED Indicator	Description
📟	**Heater** Green
↕	**BT/WLAN/GPS/WWAN** Blue
1	**Keyboard Number Lock** Green * Reserved for CDP keyboard.
A	**Keyboard Caps Lock** Green
↕	**Keyboard Scroll Lock** Green
💾	**HDD in Use** Green
2	**Secondary Battery Charging** Orange (Charging)/ Flashing Orange (Low battery)
1	**Primary Battery** Orange (Charging)/ Flashing Orange (Low battery)
💡	**Power Indicator** Green (System ON)/ Flashing Red (S3 mode)

Hard Disk Drive (HDD) / Optional Solid State Drive (SSD)

Your Notebook computer is equipped with 2.5" SATA III Hard Disk Drive (HDD), or optional Solid State Drive (SSD) for data storage. HDD/SSD is user removable, providing convenience and security. It can **ONLY** be removed while power is **OFF**.

> *Note:*
>
> *NEVER drop your HDD/SSD or expose them to high temperature, high humidity, or any hazardous environment. NEVER try to disassemble the module. Static discharge may destroy your device and data. Always pick up the modules by touching the case only.*

Optical Disk Device (ODD)

There is a 5.25" type/ 12.7mm height **SATAIII interface** ODD. The actual device will depend on the model you purchased. The ODD may be used as a boot device if properly set in the BIOS.

The ODD accepts a variety of standard 12cm CDs, DVD-ROM (Single Layer, Dual Layer), DVD-Video, DVD-R*10 (1.4 GB, 2.8 GB, 4.7GB), DVD-RW (Ver.1.1/1.2 1.4 GB, 2.8 GB, 4.7 GB, 9.4 GB), DVD-R DL (8.5 GB), DVD-RAM (1.4 GB, 2.8 GB, 4.7 GB, 9.4 GB), +R (4.7 GB), +R DL (8.5 GB), +RW (4.7 GB), CD-Audio, CD-ROM (XA compatible), CD-R, Photo CD (multiple session compatible), Video CD, CD EXTRA, CD-RW, CD-TEXT and etc.

Caution: Do not use the IDE-interface ODD; it may cause the computer malfunction.

The following procedure assumes that all the necessary ODD utilities were installed on the computer. For ODD utility installation, please refer to "**Utilities and Drivers**". ODD also can be removed and swapped with the 2nd battery or 2nd SATA HDD.

Put disk into the ODD

While the power is ON, push the ejecting button of ODD. The tray will release. Then gently pull the tray out. Put the disk with its label facing up on the holder and push the tray back into the cabinet. Any dirt on the data side of the disk may cause to the erroneous read. Please avoid touching the data side.

Read from the ODD

The ODD may be designated as drive D: or higher depending on your configuration. You may access to it in DOS or Windows. Please avoid shock or vibration when the optical device is active.

Express Cards

The computer supports 54 mm or 34 mm wide ExpressCard. You can install an ExpressCard while the computer is running. The computer automatically detects the card.

To install an ExpressCard:

– Hold the card with the top side of the card.

– Slide the card into the slot until the card is completely seated in its connector.

To remove an ExpressCard:

Press the card and remove the card gently.

The following illustration shows the insertion of ExpressCard 54mm:
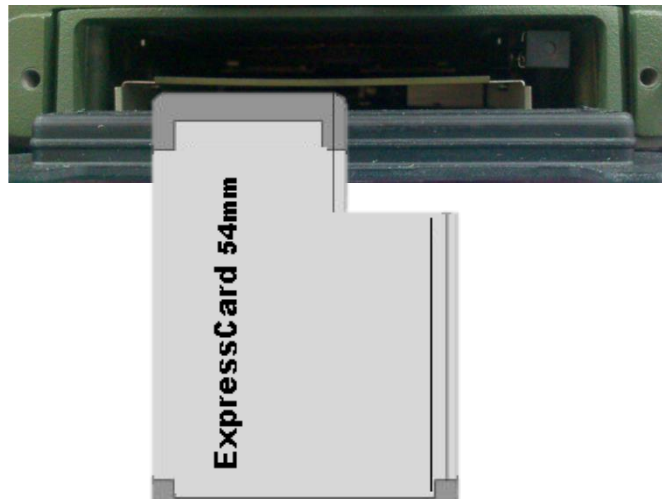
RTC

Battery backed up RTC (Real Time Clock/Calendar) is built in an on-board CMOS (Complementary Metal Oxide Semiconductor) chip. The RTC keeps track of the time and date while the computer is off. The CMOS chip also stores system setup information.

Replacing Modules

To remove the modules:
1. Turn OFF the computer or hibernate.
2. Disconnect all cables from the computer.
3. Use a coin to turn and loose the screws on the modules.
4. Remove the battery from the compartment.
5. Push the latch knob to release the ODD or HDD module and push them outward.
6. Remove the module from the computer.
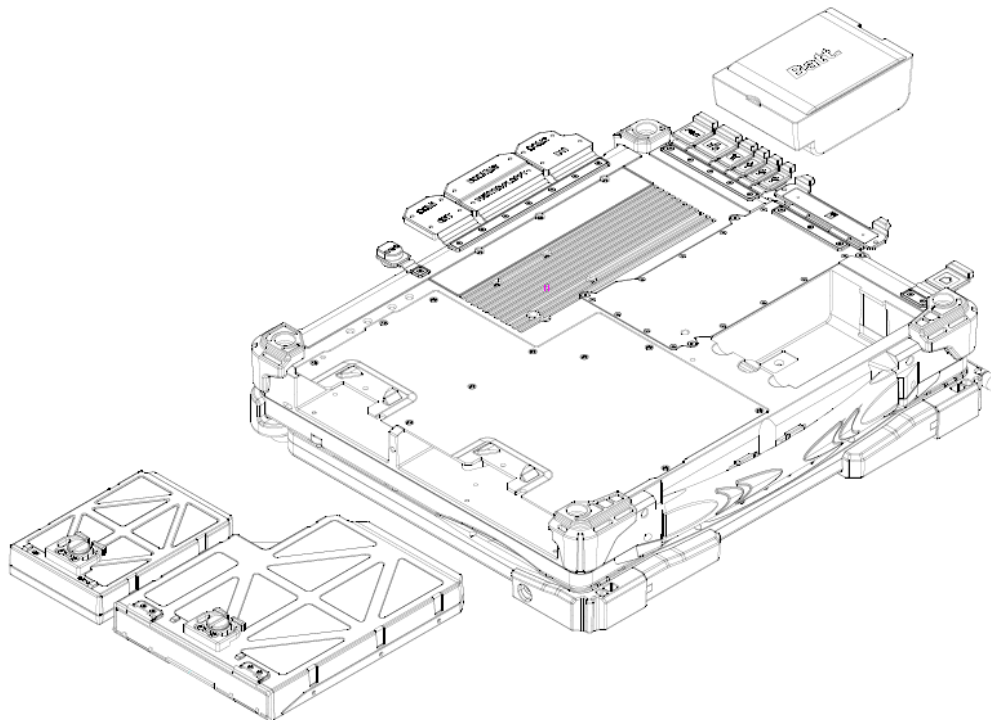
To re-install the modules:
Gently push the module into the slot. Fasten the screw to fix the module.

⚠ *Caution:*
You must turn the power OFF before replacing the ODD and HDD modules.

System Manager

System Manager is an app which allows user to access information (System, battery) ,and set RF device, function keys easily.

1. System information:
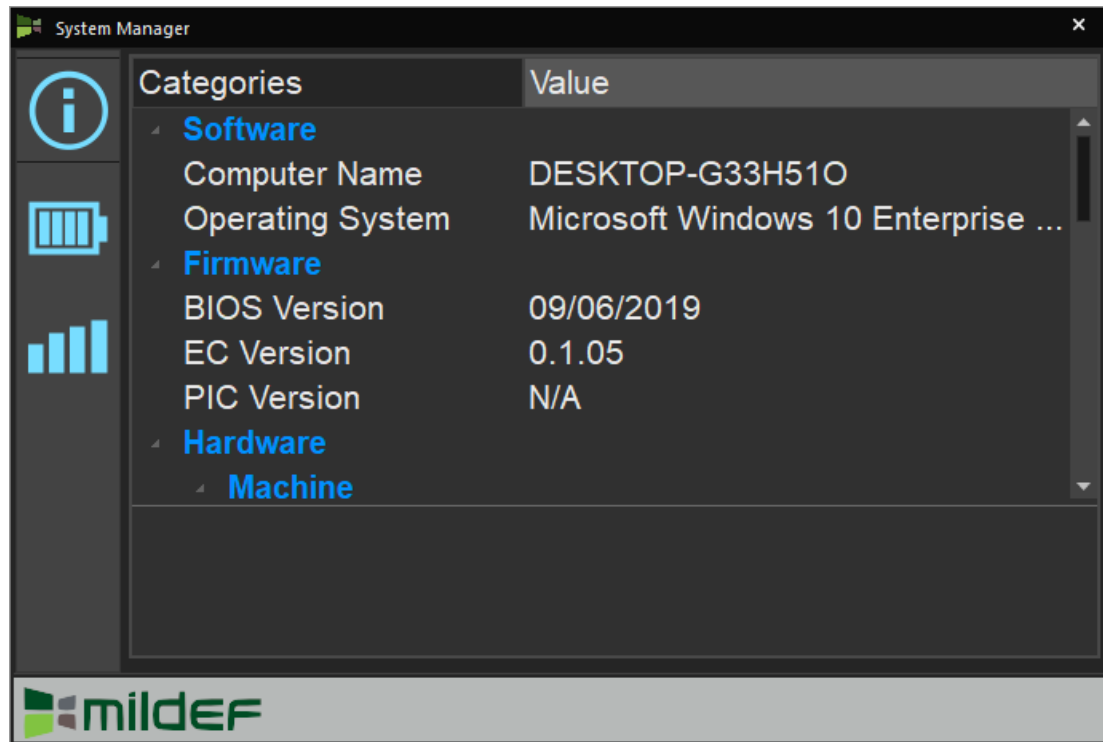
2. Battery information:
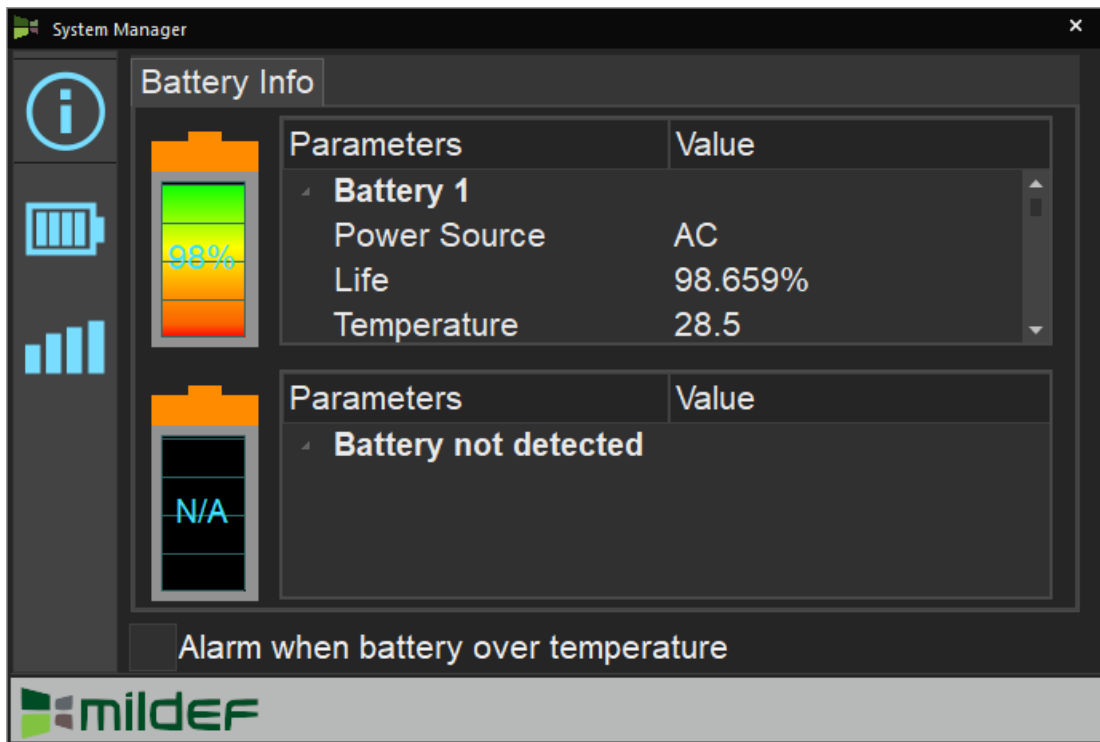
3. RF Device control panel:
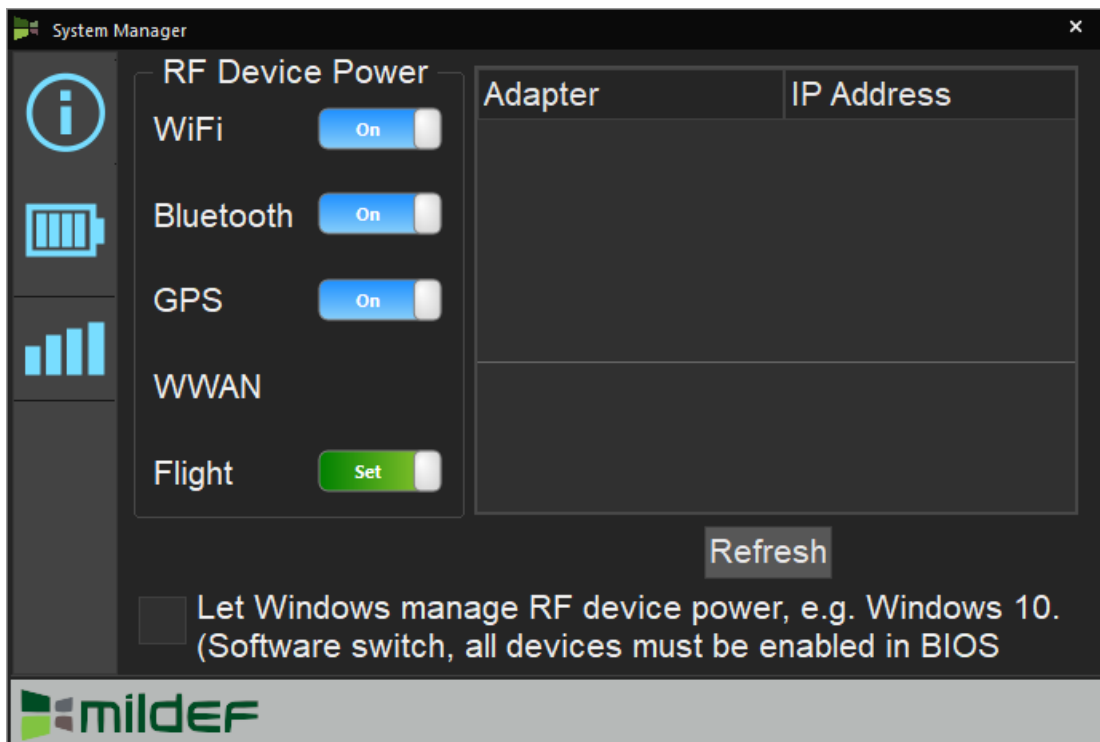
Available Function Items List

None
Open/ Execute a selected file
Open URL in default browser
Change display output
Brightness up
Brightness down
Volume up
Volume down
Volume mute
Launch on-screen keyboard
Launch Windows Mobility Center
Launch File Explorer

Setting Light Sensor

Light sensor can detect the ambient light and adjust the brightness of your tablet computer, hence improving user experience and power savings. Please enable the function from the setting below:

Windows 7
Control Panel => Hardware and Sound => Location and Other Sensors => "Enable" the Light Sensor

Windows 8
Control Panel => Hardware and Sound => Power Options => Change Plan Settings => Change Advanced Power Settings => Display => Enable adaptive brightness (Please refer to the sample image below) => Choose "On" for "On battery" and "Plugged in"
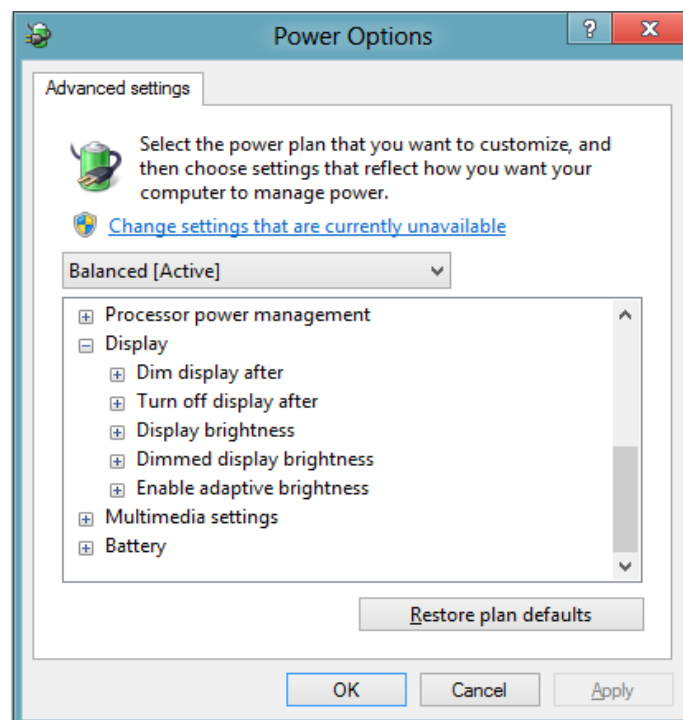
Windows 10

Move the cursor to the upper-right or lower-right corner of the screen, and then click "Settings" => Click "Display" => Click "Change brightness automatically when light changes"
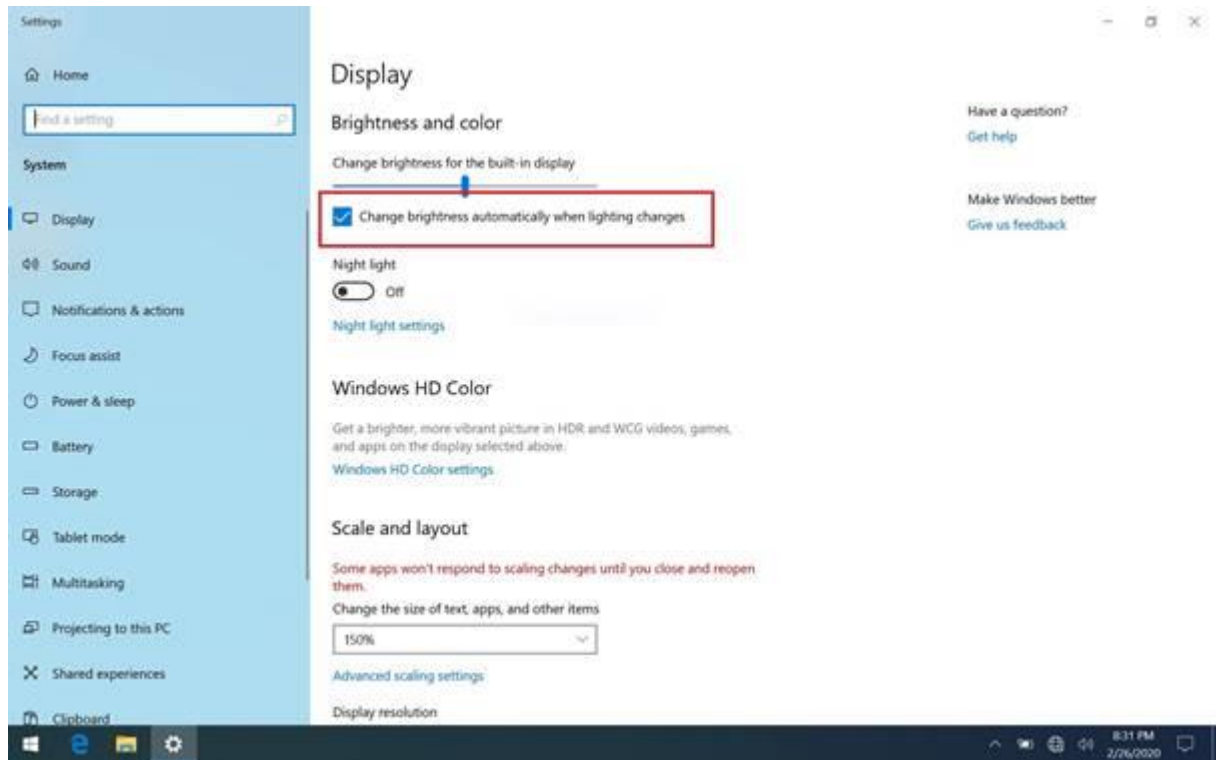
Using Kensington Lock Slot

Loop the lock cable around a stationary object such as a table and plug the Kensington Lock into the Kensington Lock Slot to lock it.

Note:

➢ *Kensington Lock is a widely available 3ʳᵈ party product.*

Chapter Three - Managing Power

AC Adapter

The AC adapter performs two functions:

- It powers the computer from an external AC source.
- It charges the computer battery.

The adapter automatically detects the AC line voltage (100V or 240V) and adjusts accordingly.

The following are recommended when using the AC adapter:

- Use a properly grounded AC outlet.
- Use one AC outlet exclusively for the computer. Having other appliances on the same line may cause interference.

Connecting the AC adapter:

- Plug the AC cord to the adapter.
- Plug the other end of the AC cord into the wall outlet. Make sure the green LED on the adapter turns on.
- Attach the DC plug into the power jack of the computer; and turn the lock ring clockwise to secure it.

AC Adapter Indicator:

The green LED indicates that AC power is ready.

> *Note:*
> ➢ *To ensure system stability, please connect your computer to an external power source when operating at -20 ° C ambient temperature.*

Battery

The power source will automatically switch to battery when the external power source (AC adapter or optional vehicle adapter) is disconnected.

Battery Low

When the battery is nearly exhausted, the computer gives the following "Battery Low" warnings:
● Windows battery low warning (when operating system is Windows).
● The power LED flashes.

Once the Battery Low warning occurs, please:
● Save and close the files you are currently working on.
● Plug in the AC adapter to recharge the battery.

Charging the Battery

Plug in the AC adapter (or optional vehicle adapter) to start the battery charging. If the battery is already full, the sense circuitry will stop high current charge within several minutes.

There are two LED indicators next to the power indicator for the Primary and Secondary battery respectively. Indicator turns ON when the battery is charging and turns OFF when the battery charging is completed.

There are two battery packs in the rugged laptop; on the left side is the primary battery, and on the right side is the second. When the rugged laptop is connected to AC adapter, the primary battery will be charged first, and then the second battery. When the rugged laptop is powered by the battery, secondary will be discharged first, and then the primary one. Attach the AC adapter or vehicle adapter to charge battery, when the battery is full, battery will automatically stop charging. You could check if the battery is being charged by "battery indicator LED", the LED is off when charging is finished.

	Charging (with power adapter attached)	Discharging (without power adapter attached)
Primary Battery (Left)	First priority	Second priority
Second Battery (Right)	Second priority	First priority

Battery Charging Time

Charging Time		Primary	Primary + Secondary
AC adapter	System ON	3~5 hours	7~10 hours
	System OFF		
Vehicle adapter	System ON	4~6 hours	
	System OFF	3~5 hours	

Battery Characteristics

Battery power will decrease gradually in storage. The rate depends on "self-discharge rate" and the storage environment. Self-discharge rate of rechargeable batteries is approximately 1% per day. High humidity and high temperature accelerate discharge. Very low temperature may "freeze" the battery chemicals thus decreases the capacity. The following shows some guidelines for users to maintain the battery.

1. If the battery will not be used for a long period of time, it is suggested to do the procedure every six months: discharge the battery to 0%, charge to 100%, and then discharge to 50% to store the battery. For the battery without using for more than 2 years, it may result in battery aging and is not recommended to use it.

2. About self-discharge rate, it is related to storage temperature. When store the battery in -20℃~20℃ environment, the battery may self-discharge to 0% less than one year; when in -20℃~45℃, it may self-discharge to 0% less than three month; when in -20℃~60℃, it may self-discharge to 0% less than one month.

Battery Gauge

You may check battery status from battery gauge in Windows. Click the power/battery icon to reveal the battery gauge window.

Battery Power Saving Tips

The computer comes with an intelligent power-saving feature. You may extend the battery life by:
- Setup power saving functions in Operating System Power Management options (e.g. Windows Power Options).
- Lower the intensity of the display by brightness control.
- Use standby option when computer is temporarily not in use.
- Shut down the computer when it will not be for a long-time use.

Replacing Battery

When the battery is nearly exhausted, there are two ways to keep your notebook computer working. Connecting the AC adapter and the power cord designed for this notebook computer to start charging is one method; directly replacing a charged battery designed for this notebook computer may be the other one.

> *Note:*
> ➢ *Always remember to turn OFF the power before replacing the battery.*

Battery Recalibration

Battery recalibration allows a user to calibrate the GAUGE IC parameter of the battery pack. When the battery stays fully charged or in a low charge state for a long period of time, it causes the battery gauge to have some minor discrepancies. Therefore, users are recommended to carry out battery recalibration to correctly calibrate the battery GAUGE IC. To perform battery recalibration, please follow the steps as below:

1. Update BIOS & EC to the latest version xxx.xxx or later.
2. Insert the battery to the computer, and connect it to AC adapter.
3. Enter the BIOS => Choose "Advanced menu" => Choose "Battery Recalibration" => Press "Enter".
   (See Chapter4: BIOS Setup - Advanced - Battery Recalibration Sub-Menu)
4. When "Start Battery Recalibration" pop-up appears, press "Yes" to continue.
5. The recalibration is now processing. You can see the following recalibration status on the screen:
   – Calibration Frequency: How many times the calibration is processed
   – Battery Capacity: Current battery capacity
   – Battery Charge Mode: Charge/Discharge
   – Battery Learning Mode: Normal (charge)/Learn (discharge)
6. A pop-up appears when the calibration is completed. Then click "OK".
7. Press "Yes" to reboot the computer when "Reset Without Saving" pop-up appears.

> *Note:*
> ➢ *Do not turn off the LCD and do not remove AC adapter during the calibration.*
> ➢ *One cycle of recalibration process indicates "Charge to Full => Start Learn Mode => Discharge => Complete Learn Mode => Charge to Full". It will take approx. eight hours for a cycle.*
> ➢ *It requires five cycles to complete the battery recalibration. Then the recalibration will stop automatically.*
> ➢ *If you want to terminate the calibrating, simply shut down the computer by pressing Power Button or just press "CTRL+ALT+DEL" to restart.*

Power Conservation

This computer consumes much less power than conventional computers. However, power consumption may be reduced by configuring the Power Management Setup properly.

It is recommended the power saving functions to be enabled even when not running on battery power. Power Management will not degrade performance while saving power.

Supporting ACPI

Your notebook computer supports ACPI (Advanced Configuration and Power Interface) for power management. With ACPI and an ACPI-compliant operating system such as Windows, the feature will allow you to reduce the power consumption for energy saving. By supporting ACPI, the AC adapter LED and the Power indicator LED will show in different ways. The followings are the detailed description.

Sleep:
AC adapter LED is ON (while connecting with power)
Power LED indicator is ON; Other LED indicators are OFF

Under Hibernation:
AC adapter LED is ON (while connecting with power)
Power LED indicator is OFF; Other LED indicators are OFF

Shutdown:
AC adapter LED is ON (while connecting with power)
Power LED indicator is OFF; Other LED indicators are OFF

Chapter Four - BIOS Setup

Press **[F2]** at boot up to enter BIOS setup. Use arrow keys to select options and **[+/-]** to modify them. When finished, move to "**Exit**" and press **[Enter]** then confirm save by pressing **[Y]**.

Main Menu

Aptio Setup Utility					
Main	**Advanced**	**Chipset**	**Security**	**Boot**	**Save & Exit**

BIOS Information
BIOS Vendor
Core Version
Compliancy
Project Version
Build Date and Time
Access Level
EC Version

Processor Information
Name
Brand String

Frequency
Microcode Revision
Total Memory
ME FW Version

Serial ATA Port 0
Serial ATA Port 1
Serial ATA Port 2

System Date
System Time

Set the Date. Use Tab to switch between Date elements.

→←: Select Screen
↑↓: Select Item
Enter: Select
–/+: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

Note:

➢ *The contents may vary depending on computer configurations.*

➢ *Incorrect settings may cause system malfunction. To correct it, restore the Optimized Defaults with F3.*

Advanced Menu

Aptio Setup Utility				
Main	**Advanced**	**Chipset**	**Security**	**Boot**	**Save & Exit**

► **Intel® Ethernet Connection (H) I219-LM**	Configure Gigabit Ethernet device parameters
► **Trusted Computing**	
► **RF Device Control**	
► **EC Thermal Control**	
► **AC In Boot Control**	→←: Select Screen
► **USB Charge Control**	↑↓: Select Item
► **Battery Recalibration**	Enter: Select
► **AMT Configuration**	–/+: Change Opt.
► **PCH-FW Configuration**	F1: General Help
► **IT8783 Super IO Configuration**	F2: Previous Values
► **Intel® Bios Guard Technology**	F3: Optimized Defaults
► **CPU Configuration**	F4: Save & Exit
► **SATA Configuration**	ESC: Exit
► **Network Stack Configuration**	
► **CSM Configuration**	

Advanced Menu Selections

You can make the following selections on the Advanced Menu.

Feature	Options	Description
Intel®Ethernet Connection (H) I219-LM	Link Speed	Auto Negotiated 10 Mbps Half 10 Mbps Full 100 Mbps Half 100 Mbps Full
Trusted Computing	Disabled Enabled	Trusted Computing Settings
RF Device Control	Not Present	RF Device Control Setting
EC Thermal Control	55C 63C 71C 79C 87C	EC Thermal Control Setting
AC In Boot Control	Disabled Enabled	AC In Boot Setting
USB Charge Control	Disabled Enabled	USB Charge Setting
Battery Recalibration	Yes No	Start Battery recalibration function
AMT Configuration	Disabled Enabled	Configure Active Management Technology Parameters
PCH-FW Configuration	Firmware update Configuration	Configure Management Engine Technology Parameter
IT8783 Super IO Configuration	Serial Port 1 Configuration	Enable / Disable Serial Port (COM)
	Serial Port 2 Configuration	Enable / Disable Serial Port (COM)
	Serial Port 3 Configuration	Enable / Disable Serial Port (COM)
	Serial Port 4 Configuration	Enable / Disable Serial Port (COM)
Intel® Bios Guard Technology	Disabled Enabled	Enable / Disable Intel Bios Guard Support
CPU Configuration	Disabled Enabled	CPU Configuration Parameters
SATA Configuration	SATA Mode Selection	Determines how SATA controllers operate. (AHCI/ RAID)
Network Stack Configuration	Disabled Enabled	Enable / Disable UEFI Network Stack
CSM Configuration	Disabled Enabled	Enable / Disable CSM Support

Intel®Ethernet Connection (H) I219-LM Sub-Menu

Aptio Setup Utility **Advanced**	
PORT CONFIGURATION MENU ► **NIC Configuration** **Blinks LEDs**	Click to configure the network device port.
PORT CONFIGURATION INFORMATION **UEFI Driver:** **Adapter PBA:** **Chip Type** **PCI Device ID** **PCI Address** **Link Status** **[Disconnected]** **Mac Address**	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Trusted Computing Sub-Menu

Aptio Setup Utility **Advanced**	

Configuration
   Security Device Support   **[Enable]**
   No Sercurity Device Found
	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

RF Device Control Configuration Sub-Menu

Aptio Setup Utility	
Advanced	
	RF Device Control Setting
RF Device Control	
GSM STATUS **Not resent**	
GPS STATUS **Present**	
GPS [Enabled]	→←: Select Screen
BT STATUS **Present**	↑↓: Select Item
BLUETOOTH [Enabled]	Enter: Select
WLAN STATUS **Present**	–/+: Change Opt.
WLAN [Enabled]	F1: General Help
	F2: Previous Values
	F3: Optimized Defaults
	F4: Save & Exit
	ESC: Exit

EC Thermal Control

Aptio Setup Utility	
Advanced	
	EC Thermal Control Setting
EC Thermal Control	
Thermal cooling trip point [87 C]	
	→←: Select Screen
	↑↓: Select Item
	Enter: Select
	–/+: Change Opt.
	F1: General Help
	F2: Previous Values
	F3: Optimized Defaults
	F4: Save & Exit
	ESC: Exit

AC In Boot Control Sub-Menu

Aptio Setup Utility	
Advanced	
AC In Boot **AC In Boot Control**　　　　　　**[Disabled]**	AC In Boot Setting
	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

USB Charge Control Sub-Menu

Aptio Setup Utility	
Advanced	
	USB Charge Setting
USB Charge **USB Charge Control**　　　　　　**[Disabled]**	
	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Battery Recalibration Sub-Menu

Aptio Setup Utility	
Advanced	
Battery Recalibration Utility	Start Battery recalibration function
Calibration Frequency	
Battery Capacity	
Battery Charge Mode	
Battery Learning Mode	
	→←: Select Screen
Note: Only support single battery recalibration in the same time, while the Utility is executing, please remove secondary battery (right hand side) and don't close the LCD and don't disconnect the AC adapter. The battery recalibration will follow the steps and takes about 12hrs (by battery capacity) to complete the recalibration process.	↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

AMT Configuration Sub-Menu

Aptio Setup Utility		
Advanced		
Intel AMT	**[Enabled]**	Enable/Disable of AMT USB Provisioning.
USB Provisioning of AMT	[Disabled]	
		→←: Select Screen
		↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

PCH-FW Configuration Sub-Menu

Aptio Setup Utility	
Advanced	
ME FW Version **ME Firmware Mode** **ME Firmware Type** **ME Firmware SKU** ► **Firmware Update Configuration**	Configure Management Engine Technology Parameters
	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

IT8783 Super IO Configuration Sub-Menu

Aptio Setup Utility		
Advanced		
IT8783 Super IO Configuration **Super IO Chip**	**IT8783**	Set Parameters of Serial Port (COMA)
►Serial Port 1 Configuration ►**Serial Port 2 Configuration** ►**Serial Port 3 Configuration** ►**Serial Port 4 Configuration** ►**Parallel Port Configuration**		→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Intel® Bios GuardTechnology Sub-Menu

Aptio Setup Utility	
Advanced	
Intel Bios Guard Support [Disabled]	Enable/Disable Intel Bios Guard Support
	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

CPU Configuration Sub-Menu

Aptio Setup Utility	
Advanced	
CPU Configuration **Turbo Mode** [Enabled] **Intel TXT(LT Support)** [Enabled]	Turbo Mode.
	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

SATA Configuration Sub-Menu

Aptio Setup Utility	
Advanced	
SATA Mode Selection [AHCI]	Determine how SATA controller(s) operate.
	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Network Stack Configuration Sub-Menu

Aptio Setup Utility	
Advanced	
Network Stack [Disabled]	Enable/Disable UEFI Network Stack
	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

CSM Configuration Sub-Menu

		Enable/Disable CSM Support.
Compatibility Support Module Configuration		
CSM Support	[Disabled]	
Option ROM execution		
Netwrok	[Do not launch]	→←: Select Screen
Storage	[Legacy]	↑↓: Select Item
Video	[Legacy]	Enter: Select
		–/+: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

Chipset Menu

Aptio Setup Utility					
Main	**Advanced**	**Chipset**	**Security**	**Boot**	**Save & Exit**

► **PCH-IO Configuration**

PCH Parameters

→←: Select Screen
↑↓: Select Item
Enter: Select
–/+: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

PCH-IO Configuration Sub-Menu

Aptio Setup Utility	
Chipset	

Enable or disable onboard NIC.

Intel PCH RC Version	**2.1.0.1**
Intel PCH SKU Name	**PCH-H Mobile**
Intel PCH Rev ID	**31/D1**

►**HD Audio Configuration**

PCH LAN Controller	**[Enabled]**
Wake on LAN	**[Enabled]**
SLP_LAN# Low on DC Power	**[Enabled]**

→←: Select Screen
↑↓: Select Item
Enter: Select
–/+: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

Security Menu

Aptio Setup Utility					
Main	**Advanced**	**Chipset**	**Boot**	**Security**	**Save & Exit**

Password Description

If 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 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

Administrator Password
User Password

HDD Security Configuration:
HDD 0: XXXXXX

Secure Boot menu

Set   Administrator Password

→←: Select Screen
↑↓: Select Item
Enter: Select
–/+: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

HDD Security Configuration Sub-Menu

Aptio Setup Utility	
	Security

HDD Password Description:

Allows Access to Set, Modify and Clear Hard Disk User and Master Password. User Password need to be installed for Enabling Security. Master password can be Modified only when successfully unlocked with Master Password in POST.

HDD PASSWORD CONFIGRATION:

Security Supported :	Yes
Security Enabled :	No
Security Locked :	No
Security Frozen :	No
HDD User Pwd Status：	NOT INSTALLED
HDD Master Pwd Status：	INSTALLED

Set User Password
Set Master Password

Set   HDD   User Password.

Advisable to Power Cycle System after setting Hard Disk Passwords

→←: Select Screen
↑↓: Select Item
Enter: Select
–/+: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

Setting Password

1. Once you set HDD passwords successfully, you must enter user password to boot in the future. The master password provides an alternative entry in case the user password is lost.
2. Clearing the master password in BIOS setup will also clear the current user password. Master password is used as a backup key, it's better not to be changed frequently.
3. You can set your master password and user password with a length between 1 and 32 characters. If you want to clear current password, type nothing when creating a new password.
4. After you set a password, "Pwd Status" will change from "NOT INSTALLED" to "INSTALLED" and the "security enabled" status will change to "YES".
5. Your setting will take effect after reboot.

> *Note:*
> ➢ *If the master password is lost or it is not set earlier than the user password, losing the user password would make accessing impossible. So please set the master password at first and keep it carefully.*

Resetting Password

1. After typing an invalid user password three times, a message will show "HDD is locked". Pressing "Enter" will leave the screen message.
2. Press "F2" immediately to enter the BIOS setup where the lost users password could be cleared with the master password.
3. Once the HDD is locked, users have no right to access. You can only enter again by the correct user password or clear it by the master password.
4. A warm boot will cause HDD Security Frozen in the selection. Only a cold boot can lift the HDD Security frozen and allow further operations in the BIOS setup. (After a cold boot, users can try to enter again with the correct user password or just reset it with the master password)

Boot Menu

```
                         Aptio Setup Utility
     Main      Advanced      Chipset      Security      Boot       Save & Exit
                                                        Set the system boot
                                                        order.
  FIXED BOOT ORDER Priorities
  Boot Option #1            [UEFI Hard Disk]
  Boot Option #2            [UEFI CD/DVD]
  Boot Option #3            [UEFI USB Device]
  Boot Option #4            [UEFI Network]           →←: Select Screen
  Boot Option #5            [Hard Disk]              ↑↓: Select Item
  Boot Option #6            [CD/DVD]                 Enter: Select
  Boot Option #7            [USB Device]             –/+: Change Opt.
  Boot Option #8            [Network]                F1: General Help
                                                     F2: Previous Values
  ►CDROM/DVD Drive BBS Priorities                    F3: Optimized Defaults
                                                     F4: Save & Exit
                                                     ESC: Exit
```

The system will try to boot from device on top then the 2nd and so on. If there is more than one device in each category, only the device on top of sub-menu can boot up.

Save & Exit Menu

```
                         Aptio Setup Utility
     Main      Advanced      Chipset      Security      Boot       Save & Exit
                                                        Reset the system after
                                                        saving the changes
  Save Options
  Save Changes and Reset
  Discard Changes and Reset

  Default Options
  Restore Defaults                                   →←: Select Screen
                                                     ↑↓: Select Item
  Boot Override                                      Enter: Select
  P1:                                                –/+: Change Opt.
  Launch EFI Shell from filesystem device            F1: General Help
                                                     F2: Previous Values
                                                     F3: Optimized Defaults
                                                     F4: Save & Exit
                                                     ESC: Exit
```

Chapter Five - Drivers and Applications

The Utility DVD includes all the drivers for the installed devices in your notebook computer. Please consult the dealer if there is any driver missing. Also, through Device Manager in Windows, you are able to perform "Driver Update" or check if there are still drivers for the devices needed to be installed. Please check the readme file on Utility DVD to get the latest information before installing device drivers.

> *Note:*
> ➢ *Please install the chipset driver first.*
> ➢ *If the system requests for reboot after installing drivers, please reboot your notebook computer first before installing other drivers.*

Chapter Six - Specifications

Platform

Intel® Skylake-H Platform

Processor

Intel® i7-6822EQ (4 MB Intel Smart Cache Memory)

Chipset

Intel® QM170

Memory

Max. 32GB

- Industrial grade
- DDR4 SO-DIMM x 2, 2133MHz

Display

● Standard:
   – 15" XGA LCD
   – Optical Bonding
   – Resolution: 1024 x 768 pixels
   – Brightness (Min. ~ Typ.):   360~450 nits

● Optional:
   – Resistive Single-Touch Screen
   – Brightness (Min. ~ Typ.):   720~900 nits

Keyboard

● Number of keys: 83 Keys
● Key Travel: 1.5+/-0.2 mm

Touchpad

- Type: PS/2 Resistive Touchpad
- Life time: Over 5,000,000 strokes lifetime

Hard Disk Drive (HDD) / Optional Solid State Drive (SSD)

- Type: 2.5" (Removable)
- Height: 9.5mm / 7mm
- Interface: SATAIII

Optical Disk Drive (ODD)

- Type: 5.25" (Removable)
- Height: 12.7mm
- Interface: SATAIII

I/O Ports

- PS/2 x1 (KB + mouse)
- USB 3.0 x 2
- USB 2.0 x 1 (USB Battery Charging)
- USB 2.0 x 1
- IEEE1394a (Fire Wire) x 1
- GLAN RJ45 x 1
- Audio Jack x 3 (Line-in, Microphone, Headphone)
- Express Card (PCI-e) x 1
- Serial Port DB9 x 2 (COM1/2)
- Serial Port DB9 x 2 (Optional: COM3/4)
- DC Jack x 1
  Optional: Military DC Jack
- Printer Port x 1
- VGA Port x 1
- DVI Port x 1
- Docking Port x 1
- Optional: Military Connector Port x 2

> *Note:*
> ➤ *The max. baud rate for COM port supports to 115,200 bps.*

AC Adapter

- AC Input: 100 - 240 V
- Frequency: 50/60 Hz
- DC Output: 19V
- Maximum Power: 90 Watts Max. Output
- Dimension: 130mm (W) x 60mm (D) x 34mm (H)
- Weight: 430 g (0.9 lb.)

Battery

Primary Battery:
- Type: 9 x 18650 cells Lithium Ion
- Capacity: 10.8V 8700mAh
- Operating Temperature   Charge: 0 ~ 45ºC
                              Discharge: -20 ~ 60ºC
- Dimension: 103.3 mm (W) x 72.5 mm (D) x 38.8 mm (H)
- Weight: 500 g

2nd Battery (Optional):
- Type: 9 x 18650 cells Lithium Ion
- Capacity: 10.8V 8700mAh
- Operating Temperature   Charge: -10 ~ 55ºC
                              Discharge: -10 ~ 55ºC
- Dimension: 148.8 mm (W) x 88.96 mm (D) x 11.9 mm (H)
- Weight: 460 g

Low Temp. Battery (Optional):
- Type: 9 x 18650 cells Lithium Ion
- Capacity: 10.8V 7500mAh
- Operating Temperature   Charge: 0 ~ 45ºC
                              Discharge: -30 ~ 55ºC
- Dimension: 103.3 mm (W) x 72.5 mm (D) x 38.8 mm (H)
- Weight: 460 g

> *Note:*
> ➢ *2nd battery is trade-off with ODD.*

System Unit Dimensions and Weight

- Dimensions (mm): 353.8 (L) x 301 (W) x 78.7 (H)
- Weight: 6.08 kg

> *Note:*
> - *Weight includes DRAM x 2, WiFi/BT Module, GPS, Express Card x 1, BVA, battery x 1, ODD Assy (321g), HDD Assy (189g).*
> - *Weight varies depending on system configurations.*

Materials and Recycling

Materials of the computer are as follows:
- Cabinet: Aluminum Alloy ADC-12
  Magnesium Alloy AZ91D
  UL grade PC+ABS GE C6200 or TN-3813BW
- Bracket: Aluminum 5052
  Steel with Nickel Plating or Stainless Steel S304
- Cushion pad: Silicon Rubber
  TPE
- PCB: FR-4
  UL 94V0
- Battery: Rechargeable Lithium Ion, 9 Cells per Pack
- Packing: Carton - Unbleached Paper
  Cushion - Recyclable EPE
  Carrying bag - Recyclable PE Fiber
  Quick Guide - Recycled/Recyclable Paper

Please recycle the parts according to the local regulations.

Environmental

- Temperature: Operating: -20 ~ +55ºC (-4 ~ +131ºF)
  Optional Operation: -30 ~ +55ºC (-22 ~ +131ºF)
  Storage: -40 ~ +70ºC (-40 ~ +158ºF)
- Humidity: 5~95% Non-condensing   operating
  95% maximum   storage
- Altitude: 0 ~ 4,572 meters (0 ~ 15,000 feet)   operating

Certifications

CE, FCC, WEEE, REACH, IP65, MIL-STD-810G, Optional MIL-STD-461G, RoHS2.0

Chapter Seven - Optional Devices

Communication

- WiFi/Bluetooth:

    - Intel Dual Band wireless- AC 8265

    - Board Form Factor: M.2 2230 E-key Card

    - Wi-Fi Certified: 802.11 a/b/g/n/ac

    - Bluetooth: Supports BT 4.2 (Backward compatible)

    - Interface: PCIe (WiFi)/USB (BT)

- GPS:

    - U-blox M8N (USB interface)

Memory Card

The memory card will expand your memory to facilitate better system performance. Industrial grade DDR4 SO-DIMM x 2 is available, supporting 4/8/16GB DDR4 2133 memory cards. The maximum capacity is 32GB.

Touch Screen

The touch screen supports single touch function, featuring in normal or sunlight readable.

Surge Protector/ BVA Module

BVA & Surge Protector Module is designed for all equipment to directly connect with the vehicle power system. Containing the reverse polarity protection and the breaking of high voltage input, the module is able to be against high 100V at 50ms surge.

> *Note:*
> ➢ *If you'd like to use DC-in 12V, please make sure the DC-in conn. is more than 12V, and the DC cable should withstand more than 17A.*

Vehicle Adapter

● **EVA1275 External Vehicle Adaptor**

- DC Input Range: 12 ~ 32 V

- DC Output Voltage: 19 V

- Output Current: 5 A (at 28 V Input Voltage)

- Ripple Voltage: 200 mA

- Input Reverse Voltage Protection

- Output Overvoltage Protection

- Short-Circuit Protection and Current Limit

- Complying with MIL-461F

- Complying with MIL-1275D

● **EVA19040 External Vehicle Adaptor**

- DC Input Range: 12 ~ 32 V

- DC Output Voltage: 19 V

- Output Current: 4 A (at 28 V Input Voltage)

- Ripple Voltage: 200 mA

- Output Overvoltage Protection

- Short-Circuit Protection and Current Limit

- Complying with MIL-461F

2nd Battery

Trade-off with ODD, a Lithium Ion rechargeable 2nd battery may install into the ODD-compartment. It shares the same capacity of primary battery and smart battery compliance.

The computer's internal charger can detect 2nd battery and perform charging accordingly.

2nd HDD

- set as SATA primary slave drive.

ODD

- Removable ODD for disks playing
- Compatible with VCD-ROM, DVD-ROM, and etc.

KB Cover

- KB Dust Cover is available for standard Keyboard

Multi-Battery Charger MCRK

As an upgrade model of RT202D, MCRK also provides two slots, which work independently. Besides, performance of MCRK is improved and a battery could be fully charged within 5 hours while the operating temperature ranges from 0 to 45℃. The color of charge indicators is changed to orange.

COM 3/4 Additional Serial Ports

- Supporting RS232, RS422, and RS485 signal

Trust Platform Module (TPM)

There is an optional Trust Platform Module (TPM) equipped with this notebook computer for users to strengthen the security. The TPM module can support to -20ºC environment of operating temperature.

With TPM, users are able to encrypt the folders and files directly and make the important file be more secure and be with an additional protection. In other words, your TPM-encrypted files are basically protected with two layers. Even if your TPM-encrypted files are hacked, the files can not to be read without passwords and TPM chipset.

Chapter Eight - Maintenance and Service

Cleaning

ALWAYS turn OFF the power, unplug the power cord and remove the battery before cleaning.

The exterior of the system and display may be wiped with a clean, soft, and lint-free cloth. If there is difficulty removing dirt, apply non-ammonia, non-alcohol based glass cleaner to the cloth and wipe.

An air gun is recommended for cleaning water and dust. For salty water please clean with fresh water then blow-dry with an air gun. Be sure not to turn the computer upside down while there is water being applied.

Troubleshooting

Should the computer fail to function properly, the troubleshooting steps below may be followed.

- Check AC/vehicle adapter, battery, and the power source.
- Minimize the configuration, i.e. remove extra peripherals and devices.
- Remove the modules one by one (HDD, ODD, Battery, etc.).
- Remove the software suspected.
- Set BIOS fail-safe default.
- Re-install operating system and application software.

RMA & E-RMA Service

If troubleshooting steps are unsuccessful, consult your dealer for RMA.

Shipping instructions:

1. Remove any personal disks or other media.

2. Use the original shipping container and packing materials, if possible.

3. If the original packing materials are not available, wrap the equipment with soft material (e.g. PU/PE form) then put the wrapped equipment into a hard cardboard shipping box.

4. Include a sheet with the following information: (Note: Please keep a copy of this sheet for your records)

   - Name
   - Address
   - Unit serial number
   - Place and date of purchase or the original invoice number
   - Date of failure
   - A DETAILED Description of the problems you have encountered
   - A list of the hardware/software configuration, if applicable.

5. Clearly mark the outside of the shipping box with the RMA #. If RMA # is not present on the shipping box, receiving will be unable to identify it and it might be returned.

6. Unless prior arrangements have been made, the customer is responsible for all shipping costs. Unauthorized use of the company's shipping accounts is not permitted.

E-RMA

Instructions:

1. Contact your dealer and provide users' names and passwords for authorization to E-RMA service.

2. Login E-RMA service platform

    Instructions : **Crete's website www.mildef.com.tw => SERVICE/SUPPORT menu => E-RMA**
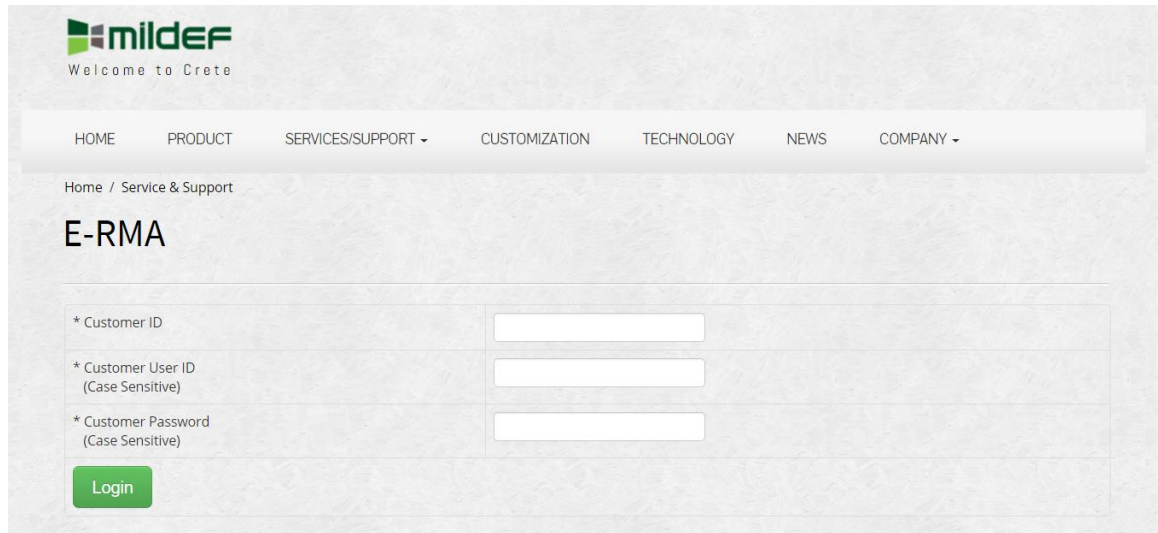
3. Fill out the RMA Request Form to apply for an RMA number.

    *Please follow the instruction below for RMA Form Example:

    SERVICE/SUPPORT menu => E-RMA => Category => RMA Form Example

4. Check the status on the website after you receive the issued number.

Statuses are listed as below:

Status	Description
Approved	RMA number has been issued.
RCV	The device is received.
CHK	The device is in check.
REP	The device is in repair.
RPD	The device has been repaired.
FQC	The device is in function testing.
SHP	The device has been shipped.