HANDHELD COMPUTER

DH8

USER'S GUIDE

Revision History

Revision	Date	Changes	Author
1.0.0	2022/03/XX	Initial Release	Patricia Huang

Notice

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Radiation Exposure Statement

RF exposure warming

This device meets the government's requirements for exposure to radio waves. This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government.

The exposure standard for wireless devices employing a unit of measurement is known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6W/kg

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.

FCC (Federal Communications Commission) regulatory compliance

EE

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 to assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example - use only shielded interface cables when connecting to computer or peripheral devices).

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

EE

CE

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 50566
EN 62209-2:2010

3. Radio Frequency Spectrum Usage

Applied Standard(s):
EN 300 328 V2.1.1 (2016-11)
EN 301 893 V2.1.1 (2017-05)
EN 303 413 V1.1.1 (2017-06)

4. Electromagnetic Compatibility Directive

Applied Standard(s):
EN 55032: 2015+AC : 2016 , Class B
EN 61000-3-2: 2014
EN 61000-3-3: 2013
EN 61000-4-2: 2008
EN 61000-4-3: 2010
EN 61000-4-4: 2012
EN 61000-4-5: 2014+A1: 2017
EN 61000-4-6: 2013
EN 61000-4-8: 2009
EN 61000-4-11: 2004+A1: 2017
EN 55024: 2010+ A1: 2015
EN 55035: 2017
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)

UKCA

Power Conservation

This handheld 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 handheld computer:

- Only use an approved AC adapter designed for this handheld 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 handheld 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 (including telephone lines). Also, it is advisable to remove your battery to prevent your handheld computer from accidentally turning on.

Battery Precautions

- Only use batteries designed for this handheld 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 service a battery by yourself. For battery service or replacement, please contact your service representatives.
- Please dispose of damaged battery promptly and carefully. Explosion or leakage may occur, if the battery is exposed to fire, improperly handled or discarded.

Notice: EE

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.

Water Resistance

ME DH8 has a rating of IP67 under IEC standard 60529 (maximum depth of 1 meters up to 30 minutes) and was tested under controlled laboratory conditions. Although it has excellent protection, please do not use it as a diving equipment. Splash, water, and dust resistance are not permanent conditions when using the product continuously in extreme environments and resistance might decrease as a result of normal wear. Also, please do not disassemble any part of your device because it might damage the resistance of your device.

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 the product’s service 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

Item	Description	Remarks
Platform	Intel Elkhart Lake Platform	
BIOS	AMI	
OS	Windows 10/ Windows 11*	* Intel IOTG doesn't yet announce to support Windows 11 LTSC, and we test it and it passes.
CPU	Intel Atom® x6211E Processor 1.5M Cache, up to 3GHz	
Graphic	Intel® UHD Graphics	
Memory	– DDR4 SO-DIMM x 1 – 8GB/16GB/32GB DDR4	
Touch Screen	– 5.7" LCD* – Resolution: 1280 x 720 – Optical Bonding – Resistive multi touch screen** – Brightness (min.~typ.): 640 ~ 720 nits – Optional invisible mode on/off – Optional protection film	*MIPI interface, brightness (min.~typ.) 800~900 nits ** USB Interface – Night Vision (NV): Trade-off with optional invisible mode on/off, by CDP.
Storage	– m.2 2242 SATAIII SSD – 128GB/256GB/512GB/1TB	
Integrated Options	– Optional WiFi 6/ Bluetooth 5.2 – Optional GPS Module	– WiFi/BT: Intel AX210 – GPS: uBlox M9N – Front Camera/Rear Camera: By CDP
Audio	– HD audio codec and amplifier. – Stereo Speaker – Optional Embedded Digital MIC	– Adjust volume by Key.
Security	– Optional TPM2.0	
Keypad (Front Side)	– 1st Layer: Fn Lock, A1, A2, Windows, Rotation, Input Lock, Power – 2nd Layer: Esc, F2, Enter, →, ↓ – Backlight	*Same as DE13.
LED Indicator (Front Side)	– Power/S3 (Green/Flashing Green) – Charge/Battery Low (Orange/Flashing Orange)	

Item	Description	Remarks
External I/O	**Right Side:** – USB 3.1 Gen. 2 Type C x 1	– Type C supports data transfer, DP and PD (Power Delivery, 20V). – Ext. I/O expansion: By CDP.
	Bottom Side: – POGO Conn. (16 pin) x 1	– Signals: USB3.1 x1, USB2.0 x 1, 5V, GND
	Left Side: Optional Fischer I/O: Each function can only be chosen once. Choose 3 out of 4 options listed as below*: – Audio – RS232 – GLAN – USB2.0	Please refer to PIC I. *L3: Trade-off with Invisible mode SW/NV SW (CDP)
Internal I/O	– Mini PCIe full-size card x 1 – m.2 E key (for AX210) x 1 – USB2.0 x 10 – USB3.1 x 3	
Power Supply	– Battery: – Li-ion battery pack 7.2V/2500mAh x 2 – Hot Swappable. – Battery Life: 8hrs – Rugged 60W USB-C Power Adapter*: – AC input: 100V-240V 50/60Hz – Output voltages: 20V/3A	*Support G.A.
Case	CNC milled Aluminum	Color: Nato Green
Environmental Specifications	– Operating Temperature: – Std.: -20 °C ~ +60 °C* – Storage Temperature: -40 °C ~ +70 °C	– Optional: -30 °C ~ +60 °C (Study)
Dimensions (L x W x H)	201 x 99 x 44.5mm	
Weight	888 g (without options)	

Item	Description	Remarks
Certifications	– CE/FCC/UKCA – WEEE – REACH – RoHS2.0 – IP65 – Optional IP67 – MIL-STD-810H (1.5M drop test) – MIL-STD-461G – Optional GA	– Energy Star: Internal Test – WHLK (Windows Hardware Lab Kit): Internal Test

Items	Description	Remarks
WLAN/BT	– Intel® Wi-Fi 6E AX210 – Wi-Fi 4, 5, 6 – BT5.2	– Interface: PCIe (Wi-Fi/USB (BT) – Form Factor: M.2 2230
GPS	– USB interface – Ublox Neo-M9N – Support GPS/ GLONASS/ Galileo	– Beidou: TBD.
Memory	– DDR4 SO-DIMM x 1 – 8GB/16GB/32GB DDR4	
Embedded Digital Mic	– Available	
Invisible mode on/off	– Available	
Mil. Fischer Conn. Audio	– Available	
Mil. Fischer Conn. GLAN	– Available	
Mil. Fischer Conn. USB2.0	– Available	
Mil. Fischer Conn. RS232	– Available	
Protection Film	– Available	
G.A.	– Available	

Chapter 1 – Getting Started

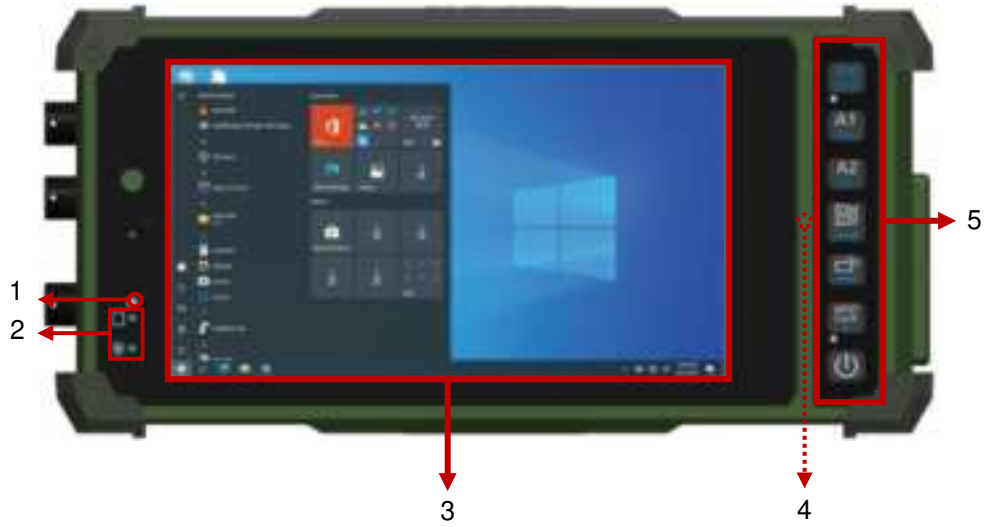
Unpacking

The following components come with your computer. If anything is missing or damaged, please notify the dealer immediately.

- Handheld Computer
- USB-C Adapter
- AC Power Cord
- Utility DVD
- Quick Guide

Appearance Overview

Front



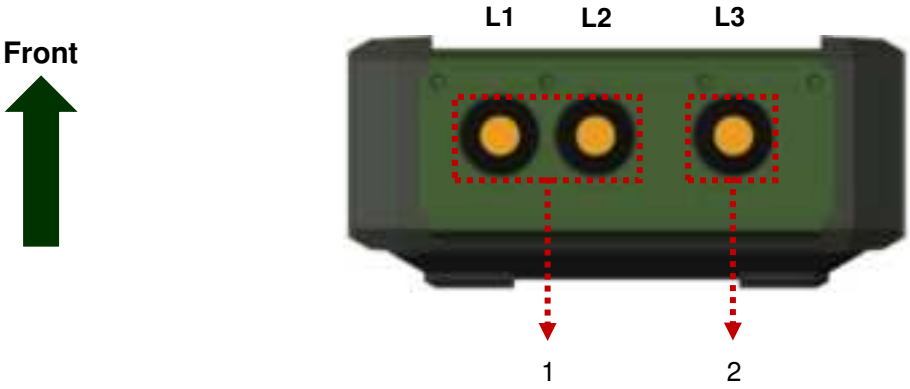
1. Light Sensor
2. LED Indicators
3. Display
4. Optional Embedded Digital Mic
5. Keypads

Rear

1. Primary Battery x 1
2. Secondary Battery x 1

* Optional IP65 device has thumb screws on the battery slot cover

Left



1. Optional Fischer I/O x 2
2. Optional Fischer I/O x 1

   Optional Invisible Mode Switch

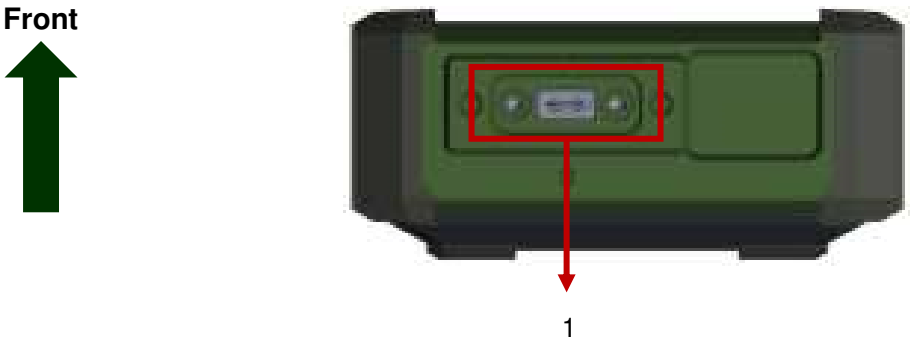
   (4 signals for 3 Fischer Connectors; non-repeatable)

   - USB 2.0
   - Audio
   - GLAN
   - RS232

Note

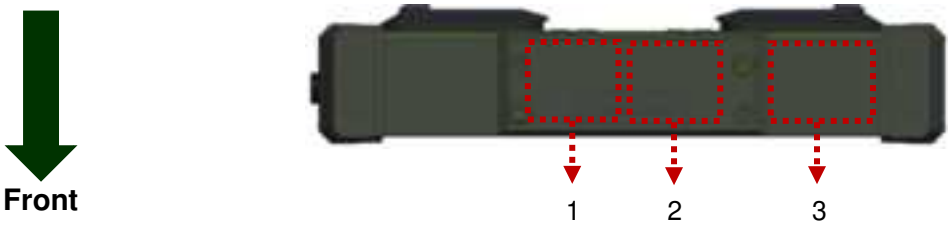
➢ *Fischer Options from L1 to L3: USB 2.0→Audio→GLAN→RS232.*

Right



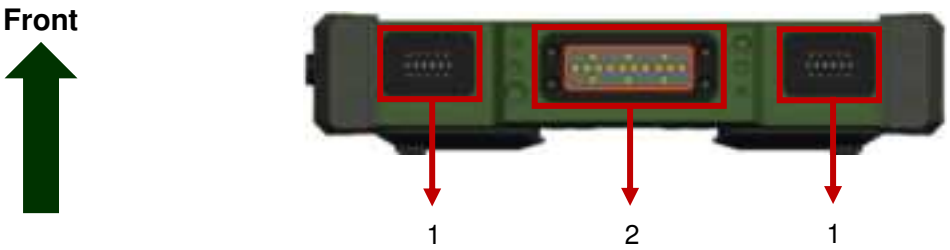
1. USB 3.1 Gen.2 Type C x 1

Top



1. Optional WLAN/BT Main ANT
2. Optional GPS ANT
3. Optional WLAN Aux. ANT

Bottom



1. Speaker
2. Docklite Connector (16 pin POGO)

Chapter 2 – 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 workstation by cleaning dust, water, etc. to keep it in an optimal condition.

Ruggedness

This handheld 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 handheld is also designed to withstand rainfall from top with mild wind blowing only. Please keep the handheld 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.

All connectors could 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.

Installing Operating System

SW

Your computer is designed to operate with Microsoft Windows 10 / 64-bit Operating System. Please connect your handheld computer with an external USB-interface drive to start the OS installation.

Note:

- *A USB hub may be required during installation to connect with an external USB-interface ODD, as the System USB port may not supply enough power. Please connect your USB hub with extra power supply to complete the installation.*

Boot Up & POST

SW

The standard operating procedure to turn on your handheld computer is by using the power button. Press the power button and the handheld will boot up, and it will start with the Operating System (OS) installed.

Boot Up

By pressing the power button for approximately 2 seconds, your handheld computer will turn on and load the Operating System (OS) into the system memory. This start-up procedure is called “boot up”.

Power On Self-Test (POST)

Each time your handheld computer is turned on, the BIOS will automatically perform a self-test of its memory and hardware devices.

Shut Down & Force Shut Down

Shut down

Directly click (Shut down) from your OS to turn OFF the power of your computer. Before shutting down, please remember to save any unfinished works and close the applications to prevent your SSD from suffering possible data loss or damage. Shut down will turn OFF power of your workstation. If you want to start your handheld again, you need to turn it ON again by pressing the power button.

SW

Force Shut Down

In the event that your handheld computer hangs or stops responding, you can perform a force shut down by pressing and holding the power button for 4~5 seconds. Please note that any unsaved work or data will be lost this way.

Sleep & Hibernate

Sleep

Under mode, the system will temporarily save your work into the computer's RAM. If you want to start your computer again, please press the power button to resume. Under Windows 10, please enter this mode directly by

Click (Start) → Click (Power) → Click (Sleep)

Move the cursor to the lower left or lower-left corner of the screen Click "Settings" → Click "Power" → Click "Sleep".

Hibernate

Under mode, the system will save your work into SSD. If you want to start your computer again, you need to press and hold the power button (approximately 2 seconds) until the SSD indicator lights on. Under Windows 10, please enter this mode directly by

Click (Start) → Click (Power) → Click (Hibernate)

Move the cursor to the lower left or lower-left corner of the screen → Click "Settings" → Click "Power" → Click "Hibernate".

Using Indicators & Keypad

Your handheld computer is designed with LED indicators and backlight keypads for easy and quick operations. The description of each LED indicator and keypad functions are provided for your operational reference.

LED Indicators

LED Indicator	Description
	**Power*/ S3 Indicator** Green/ Flashing Green
	**Charge/ Battery Low Indicator** Orange/ Flashing Orange

*Power indicator pulsates on and off slowly during S3.

Keypads

Icons	1st Layer (White Legend)	2nd Layer (Blue Legend)
	FN Lock	
A1 Esc	A1	Esc
A2 F2	A2	F2
	Windows	Enter
	Rotation	→
	Input Lock	↓
	Power Button	


Fn Lock Key is used to switch other keypads into 2nd layer functions.

To enable 2nd those functions, please

1. Press the Input Lock Key.
2. Fn Lock Indicator will light green.
3. Press the Fn Lock Key again to cancel the function.


Input Lock Key is used to avoid unexpected inputs from keypads and touchscreen. When this function is on, all inputs from devices will be locked.

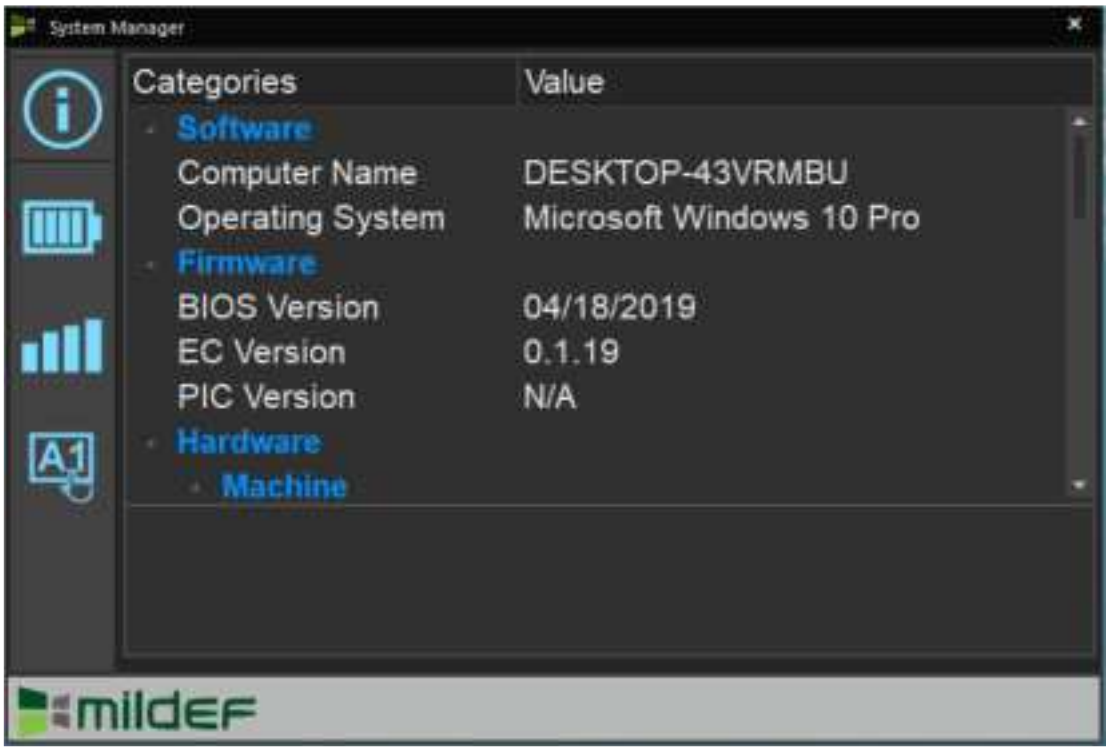
To enable Input Lock Key, please

1. Press the Input Lock Key.
2. Input Lock Indicator will light green.
3. Press the Input Lock Key again to cancel the function.

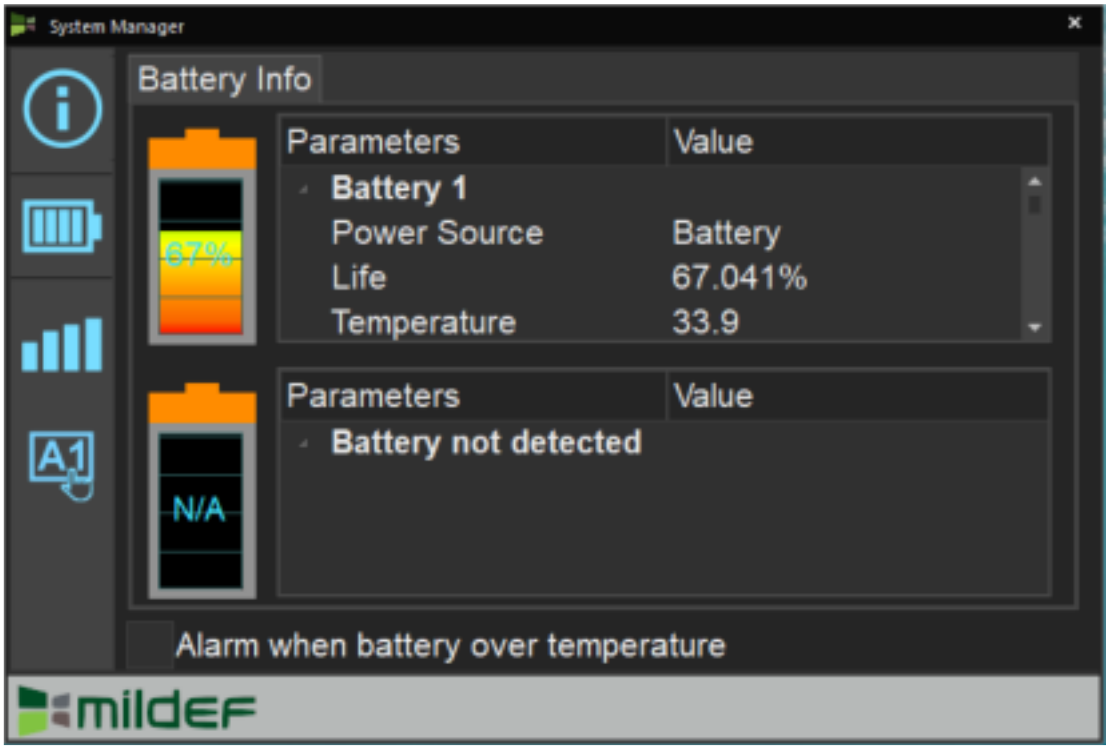
System Manager

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

1. System Information



2. Battery Information



3. RF Device Control Panel

4. Function Key Control Panel


System Manager
A1
Key
Volume up
A2
Key
Volume down
Apply
mildef

Available Function 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

Note:

- *"System manager" is a universal app so some pages may be different according to your system. For example, function key setting page will be unavailable for those devices without user settable function key.*

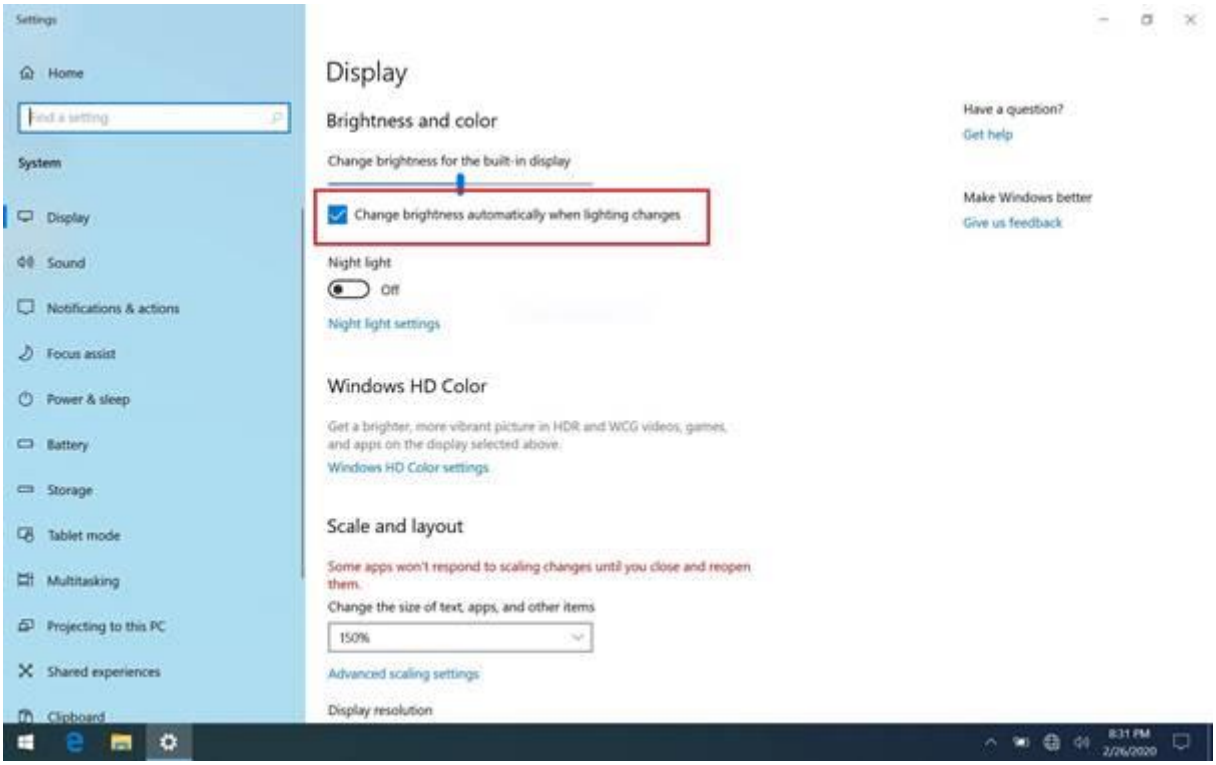
Setting Light Sensor

Light sensor mainly is to modify the LCD backlight by dynamically monitoring the brightness of the environment. Under Windows 10, you can enable/disable light sersor by directly clicking:

Click (Start) → Click (Settings) → Click (System) → Click (Display) → Click "Change brightness automatically when light changes"

SW

Move the cursor to the upper-left or lower-left corner of the screen → 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 3 – Managing Power

AC Adapter

The USC-C 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 (110V or 220V) and adjusts accordingly.

EE

The following are recommended when using the USB-C 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.
- Use a power strip with built-in surge protection.

Connecting the AC adapter

- Plug the AC cord to the Adapter.
- Plug the other end of the AC cord into the wall outlet and ensure the LED on the Adapter lights green.
- Attach the DC plug into the power jack of the handheld computer; and turn the lock ring clockwise to secure it.

EE

Note:

- *To ensure system stability, please connect your workstation to an external power source when operating at -20℃ ambient temperature.*

AC Adapter Indicator

The LED lighting green indicates that AC power is ready.

Battery

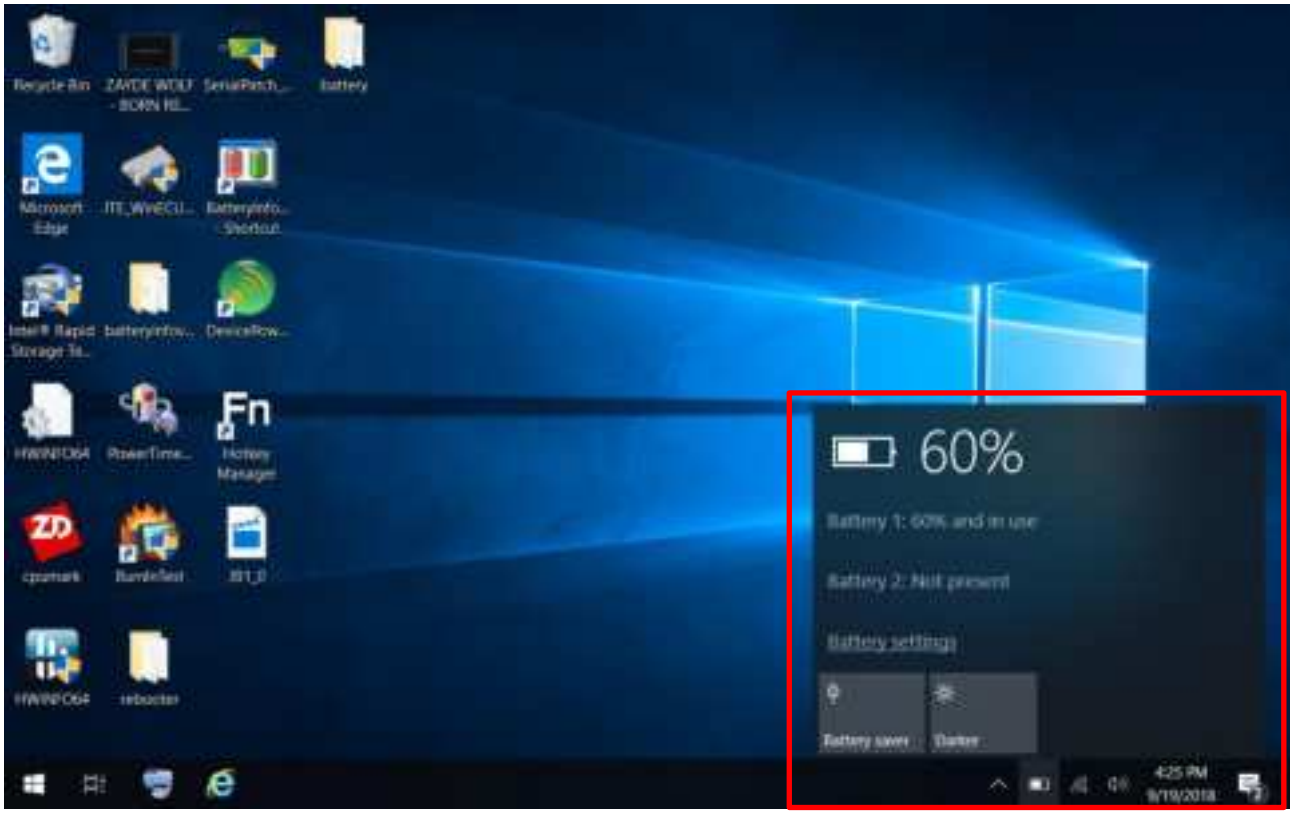
The computer will automatically switch to battery mode when the external power source (AC Adapter or optional Vehicle Adapter) is disconnected.

Battery Operating Time (Battery Life)

Two 100% batteries serve approximately 6 hours of use (data of Getac). The operating time of batteries depends on how and where the device is applied. Functions such as playing multimedia and utilizing the device in a low temperature environment may be considerably power-consuming.

Battery Level

You may check battery status from Operating System. In Windows, you can click the power/ battery icon to reveal the battery gauge window. The following is the illustration of Battery Gauge in Windows OS.



Note:

- *EE If there are two batteries to be inserted, it is recommended to install the second battery after the status reading of the first battery is completed in OS, which will ensure the stability of battery status.*
- *Reading time may differ depending on models.*
- *The battery gauge should only be used as a reference. Please do not expect it to show the exact amount of the power remaining. There is no memory effect on Lithium Ion battery cells. However, discharge the battery to nearly empty every month will help calibrating the internal gauge.*

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.
- Turn the computer into standby (by Sleep or Power button) when it is temporarily not in use.
- Shut down the computer when it will not be in use for longer period of time.

Battery Low

When the battery is nearly exhausted, the computer gives the following “Battery Low” warnings:

- Windows battery low warning.
- The power LED flashes.

Once the “Battery Low” warning occurs, please

- Save and close the files you are currently working on then shut down the computer.
- Plug in AC or vehicle adapter to recharge the battery.

Charging the Battery EE

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

Charge indicator turns ON when the battery is charging and turns OFF when the battery charging is completed.

There are two battery packs in the handheld computer; on the left side is the primary battery, and on the rear side is the second.

When the handheld computer is connected to AC adapter, the primary battery will be charged first, and then the second battery.

When the handheld computer 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	First priority	Second priority
Secondary Battery	Second priority	First priority

Battery Charging Time

Charging Time		**DH8**
USB-C adapter	**System ON**	3 hours
	System OFF	3 hours
Vehicle adapter	**System ON**	3 hours
	System OFF	3 hours

Battery Maintenance & Storage Recommendations EE

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 decrease the capacity. The following are guidelines for battery maintenance:

- The battery life with system off is approximately 60 days, so it is suggested that the battery be charged every two months so to avoid over discharging.
- The battery should be removed if it will not be used for a long period of time (approximately one month).
- The battery should have 50% charge remaining before it is removed and be stored in the temperature range of -20°C to 20°C.
- The battery without using for more than 2 years may result in battery aging and it is not recommended to use.
- Self-discharge rate is related to storage temperature. The following recommendations may show how often a battery removed from the device needs to be charged in different storage temperatures.
  - In -20°C ~ 20°C environment, it is recommended to charge the battery every year;
  - In -20°C ~ 45°C environment, it is recommended to charge the battery every three months;
  - In -20°C ~ 60°C environment, it is recommended to charge the battery every month.

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.
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”.
4. When the “Start Battery Recalibration” pop-up appears, press “Yes” to continue. (Before you run the battery calibration, please make sure that the battery level must be LOWER than 95% ; otherwise, the calibration cannot work.)
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.*

Shutdown & Shipping Mode

EE

ACPI Support

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

Sleep

AC adapter LED is ON (while connecting with power)
Power LED indicator is flashing Green; other LED indicators are OFF

Hibernate

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

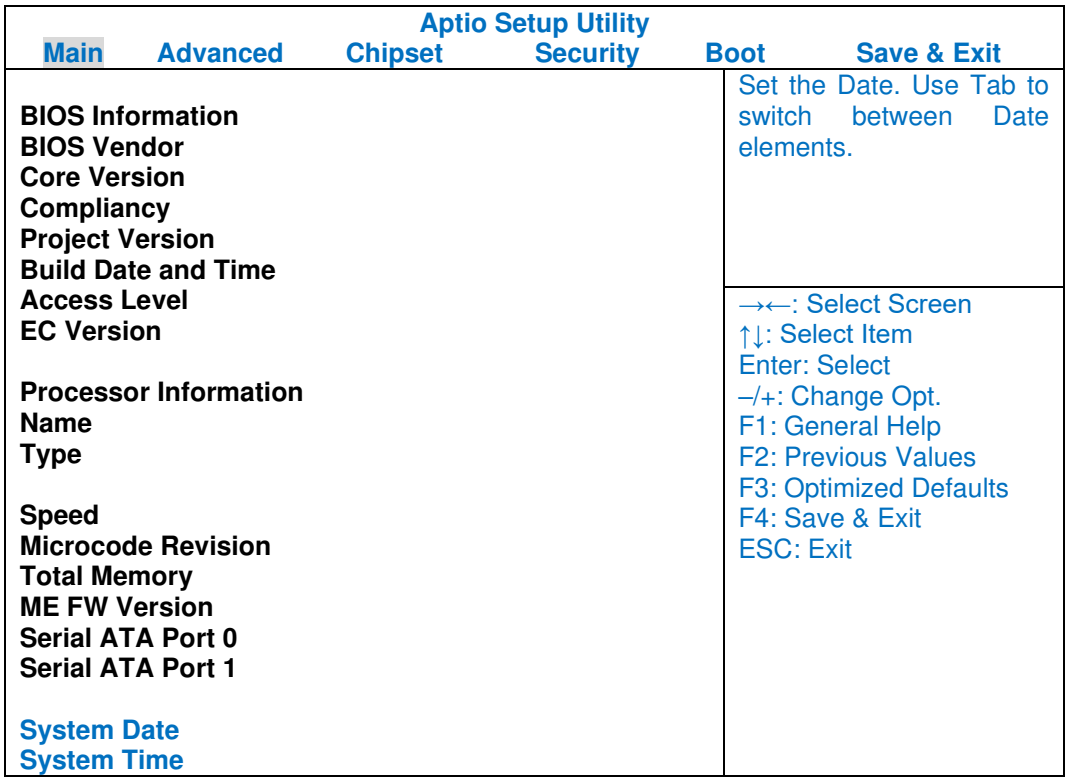
Shut Down

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

Chapter 4 – 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]**.

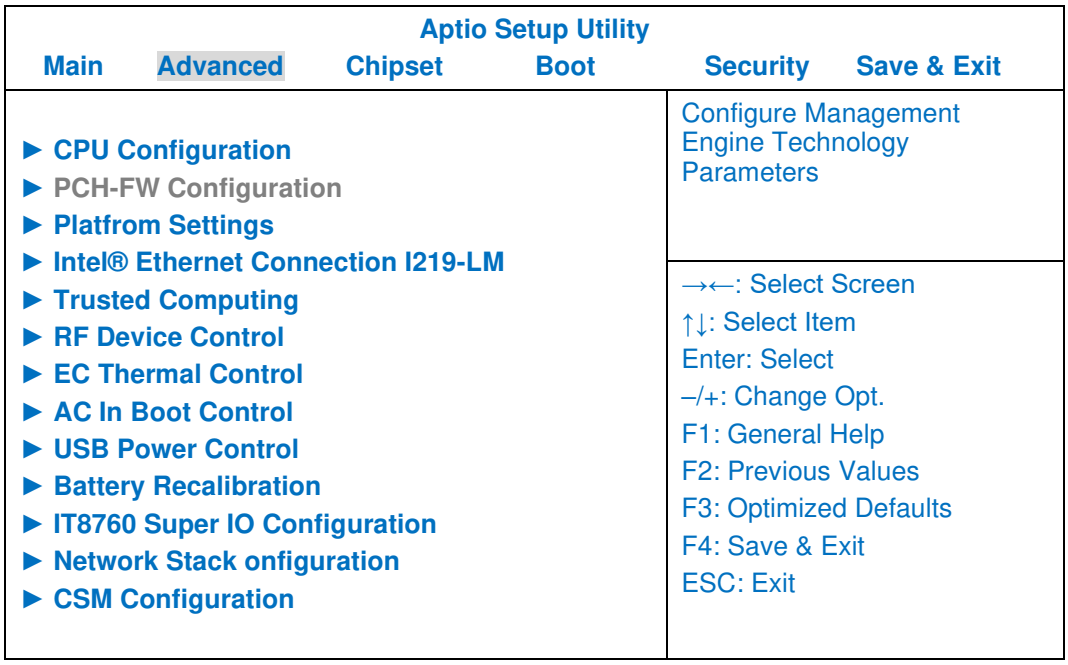
Main Menu



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



Advanced Menu Selections

You can make the following selections on the Advanced Menu.

Feature	Options	Description
CPU Configuration	Disabled Enabled	CPU Configuration Parameters
PCH-FW Configuration	Firmware update Configuration	Configure Management Engine Technology Parameter
Platform Settings	EU USA	Platform related settings
Intel® Ethernet Connection I219-LM	Link Speed	Auto Negotiated 10 Mbps Half 10 Mbps Full 100 Mbps Half 100 Mbps Full
	Wake On LAN	Disabled Enabled
Trusted Computing	Security Device Support	Disabled Enabled
	Pending operation	None TPM Clear
	PH Randomization	Disabled Enabled
RF Device Control	Disabled Enabled	GSM, GPS, BT, WLAN
EC Thermal Control	60 C 65C 70C 75C 80C 85C	EC Thermal Control Setting
AC In Boot	Disabled Enabled	AC In Boot Setting
USB Power Control	Disabled Enabled	USB Power Mode Setting: For AC Mode Only; Setting for S5 Enable/S5 Disable
Battery Recalibration	Yes No	Start Battery recalibration function
IT8760 Super IO Configuration	Serial Port 1 Configuration	Enable / Disable Serial Port (COM)
	Serial Port 2 Configuration	Enable / Disable Serial Port (COM)
Intel ® Bios Guard Technology	Disabled Enabled	Enable/ Disable Intel Bios Guard Support
Network Stack Configuration	Disabled Enabled	Enable / Disable UEFI Network Stack
CSM Configuration	Disabled Enabled	Enable / Disable CSM support

CPU Configuration Sub-Menu

Aptio Setup Utility Advanced		
Intel (VMX) Virtualization Technology	[Enabled]	VT-d capability
VT-d	[Enabled]	
Intel Trusted Execution Technology	[Enabled]	
Turbo Mode	[Enabled] [Enabled]	→←: 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 SKU		Configure Management Engine Technology Parameters
AMT BIOS Features [Disabled]	[Disabled]	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
► AMT Configuration		
► Firmware Update Congiguration		

Platform Settings Sub-Menu

Aptio Setup Utility Advanced	
Wireless Regulatory Domain Setting SAR [EU]	Set related parameter based on area.
	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Intel ® Ethernet Connection I219-LM Sub-Menu

Aptio Setup Utility Advanced	
PORT CONFIGURATION MENU ► NIC Configuration Blink LEDs **PORT CONFIGURATION INFORMATION** **UEFI Driver :** **Adapter PBA :** **Chip Type** **PCI Device ID** **PCI Address** **Link Status** **MAC Address**	Click to configure the network device port.
	→←: 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		
TPM20 Device Found **Vendor: IFX** **Firmware Version:** Security Device Support **Pending operation** **PH Randomiation**	 [Enabled] **[None]** **[Disabled]**	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 **GSM STATUS** **GPS STATUS** GPS **BT STATUS** BT **WLAN STATUS** WLAN	 **Not Present** **Present** [Enabled] **Present** [Enabled] **Present** [Enabled]	RF Device Control Setting →←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

EC Thermal Control Sub-Menu

Aptio Setup Utility Advanced	
EC Thermal Control Thermal cooling trip point [75 C]	EC Thermal Control Setting
	→←: 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 Power Control Sub-Menu

Aptio Setup Utility Advanced	
USB Power Mode USB Power Control [Disabled]	USB Power Mode Setting: For AC Mode Only; Setting for S5 Enable/S5 Disable
	→←: 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 **Calibration Frequency** **Battery Capacity** **Battery Charge Mode** **Battery Learning Mode** **Note: While the Utility is executing, please don't close the LCD and don't disconnect the AC adapter. The battery is first fully charged, fully discharged, and then it will be fully charged again to complete the battery recalibration process. About 8hrs is needed for the battery to completely the process.**	Start Battery recalibration function
	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

IT8760 Super IO Configuration Sub-Menu

Aptio Setup Utility Advanced	
IT8760 Super IO Configuration **Super IO Chip** **IT8760** Serial Port 1 Configuration Serial Port 2 Configuration	Set Parameters of Serial Port 1 (COMA)
	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Intel ® Bios Guard Technology 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

Network Stack Configuration Sub-Menu

Aptio Setup Utility Advanced		
Network Stack	[Enabled]	Enable/Disable UEFI Network Stack
Ipv4 PXE Support	[Enabled]	
Ipv4 HTTP Support	[Disabled]	
Ipv6 PXE Support	[Disabled]	
Ipv6 HTTP Support	[Disabled]	
IP6 Configuration Policy	[Automatic]	→←: Select Screen
PXE boot wait time	0	↑↓: Select Item
Media detect count	1	Enter: Select
		–/+: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

CSM Configuration Sub-Menu

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

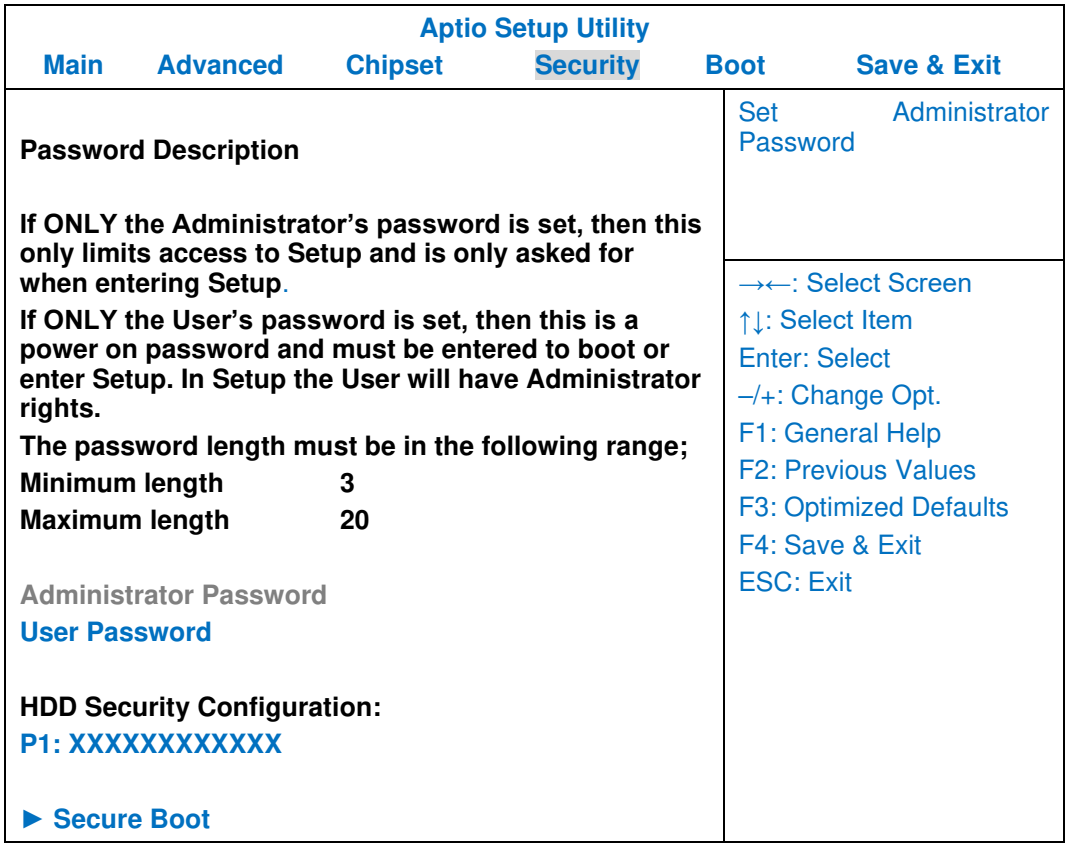
Chipset Menu

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	
PCH-IO Configuration ► PCI Express Configuration ► HD Audio Configuration PCH LAN Controller [Enabled] Wake on LAN Enable [Disabled] SLP_LAN Low on DC Power [Enabled]	PCI Express Configuration settings
	→←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Security Menu



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.** **If the 'Set HDD Password' option is grayed out, do power cycle to enable the option again.** **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***. Discard or Save changes option in setup does not have any impact on HDD when password is set or removed. If the'Set HDD User Password' option is grayed out, do power cycle to enable the option again. →←: 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.

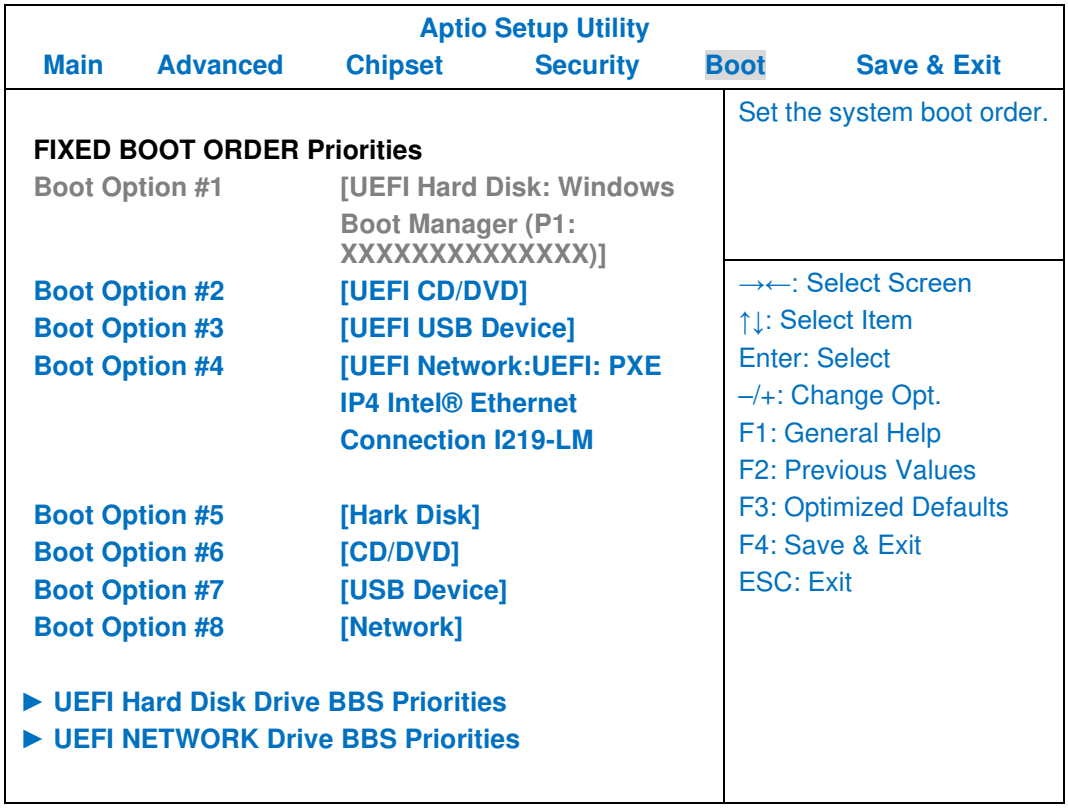
Note:

- *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



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	
Save Options Save Changes and Reset Discard Changes and Reset **Default Options** Restore Defaults **Boot Override** Windows Boot Manager (P1: XXXXXXXX) UEFI: PXE IP4 Intekr® Ethernet Connection I219-LM Launch EFI Shell from filesystem device	Reset the system after saving the changes →←: Select Screen ↑↓: Select Item Enter: Select –/+: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Chapter 5 – Drivers and Applications

The Utility DVD includes all the drivers for the devices installed in your handheld computer. Please consult your dealer if there are any driver missing. Also, you could update the driver or check if there any driver need to be installed by "Windows device manager". Please check the ”readme.txt” file on Utility DVD to get the information for driver installation.

The Utility DVD includes all the drivers for the installed devices in your workstation. 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 workstation first before installing other drivers.*

Chapter 6 – Specifications

Platform

Intel® Elkhart Lake Platform

Processor

Intel Atom® x6211E Processor (1.5 MB L2 Cache, up to 3 GHz)
Limitation???

Memory

Max. 32GB

- DDR4 SO-DIMM x 1, 3200 MHz
- Industrial Grade

Graphics

Intel® UHD Graphics

Display

Standard

- 5.7”
- Optical Bonding
- Resistive Multi-Touch Screen
- Resolution: 720 x 1280 pixels
- Brightness (Min. ~ Typ.): 640~720 nits

Optional

- Invisible mode On/Off

Note:

- *Invisible Mode On/Off controls all light sources on/off, including LCD backlight, LED Indicators, and Keypad Backlight.*

Storage

- M.2 2242 SATAIII SSD
- MLC: 128GB/256GB/512GB
- 3D TLC: 128GB/256GB/512GB/1TB
- Industrial Grade

Keypad

- Power button (front side)
- Membrane Function Keys with LED Backlight ME

Audio

- HD audio codec and amplifier
- Stereo Speaker
- Optional Embedded Digital Mic

I/O Ports

Right

- Amphenol USB3.1 Gen.2 Type C x 1

Left

- Optional Fischer I/O x 3: Each function can only be chosen once.
  Choose 3 out of 4 options listed as below:
  - USB 2.0
  - GLAN
  - Audio
  - RS232

ME

Bottom

- Docklite Connector:16 pin POGO (Hot Swappable)

Case

- CNC milled Aluminum
- Color: NATO Green

Dimensions and Weight

- ME
- Dimensions (mm): 250 (L) x 144 (W) x 30.5 (H)
- Weight: 1.2 kg

Note:

- *Weight includes WLAN/BT Module, GPS, battery x 1, Fischer Audio, Fischer USB 2.0.*
- *Weight varies depending on system configurations.*

Power

EE

Battery Pack (BDH82A)

- Type: Prismatic Lithium Ion Cell
- Capacity: 7.2V/2500MAH (2S2P)
- Operating Temperature: Charge: 0 ~ 40ºC
  Discharge: -20 ~ 60ºC
- Dimensions: 105 mm (W) x 79 mm (D) x 13 mm (H)
- Weight: Approx. 195 gram

AC Adapter

- Input Voltage: AC 100 - 240V
- Frequency: 50/60 Hz
- Output Voltage: DC 19V
- Maximum Power: 60 Watts
- Dimensions: 133 mm (W) x 58mm (D) x 30mm (H)
- Weight: Approx. 400 g (0.88 lb.)

DC-In

- 12~32V with BVA & Surge Protector
- Fischer 3 pin Connector

Certification

CE, UKCA, FCC, WEEE, REACH, RoHS2.0, IP67, MIL-STD-810H, MIL-STD-461G, Optional G.A.

Operating & Storage Temperature

- HW EE
- Operating Temperature:
  - Standard: -20°C ~ +60°C

  *Battery Mode at least -10°C
- Storage Temperature: -40°C ~ +70°C

Materials and Recycling

ME

Materials of the computer are as follows:

Magnesium case:	AL6061T6
PCB:	FR-4, UL 94V0
Battery:	Rechargeable Lithium Ion cells
Packing:	Carton: Unbleached paper
	Cushion: Recyclable PE
	Carrying bag: Recyclable PE Fiber
	Quick Guide: Paper

Please recycle the parts according to local regulations.

Chapter 7 – Optional Devices

Communication

- **WLAN / BT**
  - Intel® AX210
  - Board Form Factor: M.2 2230 E-key Card
  - WLAN Certified: 802.11 a/b/g/n/ac/ax
  - BT: Supports BT 5.2
  - Interface: PCIe (WLAN)/USB (BT)

- **GPS**
  - U-blox M8N
  - Interface: USB

Security

BIOS password and Kensington cable lock slot are available to safely secure your computer. Optional TPM (Trusted Platform Module) version 2.0 is also supported, preventing unauthorized access to your computer.

Military Fischer Connector

Optional Fischer connectors provide solutions for users to operate the device in harsh environments. Signals designed for usage include USB2.0, RS232, GLAN, and Audio.

Chapter 8 – 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.

Troubleshooting

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

- Power Problems:

When I turn on the Handheld computer, it does not respond.

- If you are using battery power, check if the battery is charged
- If you are using AC power, ensure that the connection of AC adapter is correct.

I cannot return from Hibernation while on battery power

- The battery might be drained. Please plug the handheld into AC power.
- Hard reset the device by pressing the power button for 4 seconds

Unexpected or improper shutdown causes BIOS to reset to Optimized Default

- This could be a power problem. Please connect the AC power adapter to fix the abnormal shutdown problem.

- Minimize the configuration, i.e. remove extra peripherals and devices.
- Remove the modules one by one (SSD, Battery, etc.).
- Remove the software suspected.
- Set BIOS fail-safe default.
- Re-install operating system and application software.

RMA Service & E-RMA

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

Shipping instructions

1. Remove any personal add-on devices 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 including: The operating system, the add-on device installed (if any), the application software, the failure phenomenon, etc.
   - A list of the hardware/software configuration, if applicable.
5. Clearly mark the outside of the shipping box with the RMA #. If an 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.

Status descriptions/

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.