Lite-Rugged Laptop

ML15

User's Guide

BC

Revision History

Revision	Date	Changes	Author
1.0.0	2025/01/XX	Initial Release	Annabelle Wu

DRAFT

Trademark

- The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by MilDef Crete Inc. is under license.

- Thunderbolt and the Thunderbolt logo are trademarks of Intel Corporation in the U.S. and/or other countries.

- The terms HDMI, HDMI High-Definition Multimedia Interface, HDMI trade dress and the HDMI Logos are trademarks or registered trademarks of HDMI Licensing Administrator, Inc.

- Other trademarks and trade names are those of their respective owners.All other brand and product names are trademarks or registered trademarks of their respective companies.

FCC (Federal Communication Commission Interference Statement)

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
FCC§2.1093 (SAR)

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 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.

FCC Caution:

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 workstation or peripheral devices).

FCC Radiation Exposure Statement

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

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

Transmitters in the 5.925-7.125 GHz band are prohibited from operating to control or communicate with unmanned aircraft systems.

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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 the 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: 2020+A11:2020

2. **Health**

    Applied Standard(s):

    EN 62311 : 2020
    EN 50332-2: 2013

3. **Radio Frequency Spectrum Usage**

    Applied Standard(s):

    EN 300 328 V2.2.2 (2019-07)

    EN 301 893 V2.1.1 (2017-05)

    EN 303 413 V1.2.1 (2021-04)

4. **Electromagnetic Compatibility Directive**

    Applied Standard(s):

    EN 55032: 2015+A11:2020 Class B

    EN 61000-3-2: 2018+A1:2020

    EN 61000-3-3: 2013+A1:2017

    EN 55035: 2017+A11:2020

    ETSI EN 301 489-1 V2.2.3 (2019-11)

    ETSI EN 301 489-17 V3.2.4 (2020-09)

    ETSI EN 301 489-19 V2.2.1 (2022-09)

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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 2016, Radio Equipment Directive 2017, and UKCA-Electrical Equipment (Safety) Regulation 2016, if used for its intended use and that the following standards have been applied:

1. **Safety**

    Applied Standard(s):

    BS EN 62368-1: 2020+A11:2020

2. **Health**

    Applied Standard(s):

    BS EN 62311 : 2020

3. **Radio Frequency Spectrum Usage**

    Applied Standard(s):

    ETSI EN 300 328 V2.2.2 (2019-07)

    ESTI EN 301 893 V2.1.1 (2017-05)

    ESTI EN 300 413 V1.2.1 (2021-04)

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    BS EN 61000-3-3: 2013+A1:2017

    BS EN 55035: 2017+A11:2020

    ETSI EN 301 489-1 V2.2.3 (2019-11)

    ETSI EN 301 489-17 V3.2.4 (2020-09)

    ETSI EN 301 489-19 V2.2.1 (2022-09)

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 2015, Radio Equipment Directive 2017, and RCM(C-tick)-Electrical Equipment (Safety) Regulation 2018, if used for its intended use and that the following standards have been applied:

1. **Safety**

   Applied Standard(s):

   AS/NZS 62368-1:2022

2. **Health**

   Applied Standard(s):

   AS/NZS 2772.2: 2016+A1:2018 (SAR)

3. **Radio Frequency Spectrum Usage**

   Applied Standard(s):

   AS/NZS 4268: 2017+A1:2021

4. **Electromagnetic Compatibility Directive**

   Applied Standard(s):

   AS/NZS CISPR 32: 2015+A1:2020

Power Conservation

This laptop 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

> ⚠️ *Warning:*
>
> ➢ *To avoid injury, read Power Safety and Battery Precautions before using the device.*
> ➢ *Before any upgrade procedures, make sure to turn off the power and disconnect all cables (including telephone lines). Also, it is recommended that you remove the battery to prevent accidentally turning on the device.*

There are specific power requirements for your device:

● Only use an approved AC Adapter designed for this device.

● 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 electrical outlet, please hire a qualified electrician for the outlet installation.

● When unplugging the AC power cord, please make sure to disconnect the cord by pulling from the plug head instead of pulling the cable 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 device, please make sure it is disconnected from any external power source.

Battery Precautions

- Only use batteries designed for this device. Using incompatible battery types may cause explosion, leakage, or damage to the device.
- Do not remove the battery while the device 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 device is able to continuously work with a damaged battery, the circuit damage may occur and possibly cause a fire.
- Always use the charger designed for this device to recharge the battery. Incorrect recharging may cause the battery to explode.
- Do not attempt to service a battery by yourself. For battery service or replacement, please contact your service representatives.
- Please dispose of the damaged battery promptly and carefully. Explosion or leakage may occur, if the battery is exposed to fire, improperly handled, or discarded.

Note:

➢ *For safety purpose, charging will stop if the internal temperature of the battery is out of range (<10°C; >45°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.*

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 an insignificant amount of hazardous substances to health and the environment below the control level.

● To avoid releasing such substances into the ecosystem and to minimize the pressure on the natural environment, reuse or recycle most of the materials in a safe way after the product's service life is encouraged.

● For more information on the collection, reuse and recycle of materials, please consult local or regional waste administrations. You can also contact your dealer for more information on the environmental details of the equipment.

● The crossed-out wheeled bin symbol indicates that the product (electrical and electronic equipment) should not be treated as a municipal waste. Please refer to local regulations for the disposal instructions.

> *Note:*
> ➢ *This product contains battery. At the end of the product's service life, the device and battery should be disposed separately from household waste. The disposal should be in accordance with the local environmental laws and guidelines.*
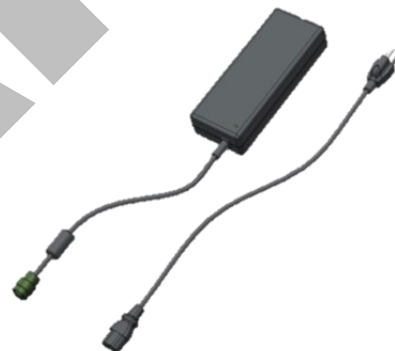
Chapter One – Getting Started

> ⚠️ *Caution:*
>
> ➢ *Fully charge the battery before using it for the first time.*

The following components come with your workstation. If there is any missing or damaged, please notify the dealer immediately.

- Laptop Unit
- AC Adapter
- AC Power Cord
- Quick Guide

Specifications

Items	Descriptions
Platform	– Intel® Tigerlake-H Platform
Operation System	– Windows 11 IoT
Processor	– Intel® Core™ i5-11500H Processor – 6 Cores, 12MB Cache, up to 4.6GHz – Support vPro®
Graphic	– Intel® UHD Graphics – Intel® Iris® Xe Graphics **Optional:** – NVIDIA® RTX A1000
Display	– 15.6" (1920 x 1080) LCD – Optical Bonding – Brightness: 1000 nits **Optional:** – Capacitive Multi-Touch Screen
Memory	– 8GB DDR4-3200 **Optional:** – 16GB/32GB DDR4-3200, up to 64GB
Storage	– **1st:** Sealed 256GB M.2 2280 PCIe 3.0 SSD **Optional:** – **1st:** Sealed 512GB/1TB M.2 2280 PCIe 3.0 SSD – **2nd:** 256GB/512GB/1TB M.2 2242 PCIe 4.0 SSD – **3rd:** 256GB/512GB/1TB 2.5" SATAIII SSD (Flex Bay)
Audio	– HD Audio and Stereo Speakers
Camera	– 5MP Webcam
Sensor	– Ambient Light Sensor
Keyboard	– 86-key with Backlight
Touchpad	– Capacitive Touchpad with Left/Right Clicks
Buttons	– Power Button
LED Indicators	– Power: System ON/ S3 (Green/ Breathing Green) – SSD in Use (Flashing Green) – Battery: Charging/ Low (Orange/ Flashing Orange)
Security	– TPM 2.0
Case	– Engineering Plastic/ Aluminum Alloy
Color	– Black
Environmental Specifications	– Operating Temperature: -10°C ~ +60°C – Storage Temperature: -40°C ~ +70°C
Dimensions	– 392 x 282 x 43mm (with bumpers)
Weight	– Approximately 3.3 kg

Power	
Primary Battery	– Standard Battery Pack BMLF3A: Li-Ion 10.905V/6000mAh

Input Power	– PD Charging via Type-C
	  – 60W~100W, 100~240VAC, 50/60Hz
	– DC-in
	  – 60W~160W, 100~240VAC, 50/60Hz

Wireless & Communications	
LAN	– 2.5G base-T Ethernet
Wi-Fi/ Bluetooth® 4	– Intel® Wi-Fi 6E AX210 (802.11ax) – Bluetooth® 5.3
GNSS	**Optional:** – GPS/GLONASS/Galileo/Beidou

I/O Interfaces	
Left	– Audio In/Out Combo x 1 – Thunderbolt™ Type-C x 1 (Full function, support for PD charging) – USB 3.2 Gen.2 Type-A x 2 – 1st LAN RJ45 x 1 – SD Card Reader x 1 – SIM Card Slot

Right	– DC-in x 1
	Optional:
	– Flex Bay (Choose 1 out of 3)
	  – Express Card 34/54
	  – SATAIII ODD
	  – 3rd Storage 2.5" SATAIII SSD
	– MXM Discrete Graphic Card

Front	**Optional:** – Smart Card Reader

Rear	– Display Port++ x 1
	– HDMI® Connector x 1
	Optional:
	– I/O Kit Set (USB 2.0 Type-A x 1 + 2nd LAN RJ45 x 1 + Serial Port x 2 + VGA x 1)
	– Configurable Fischer I/O Kit Set
	  – A: USB 2.0 x 1 + 2nd LAN x 1
	  – B: Serial Port x 2
	  – C: VGA x 1

Bottom4	–1st Storage: M.2 2280 PCIe 3.0 SSD x 1 –1st DDR4-3200 SO-DIMM x 1 **Optional:** –2nd DDR4-3200 SO-DIMM x 1 –GNSS and Smart Card Reader Module Slot –2nd Storage M.2 2242 PCIe 4.0 SSD and WWAN Module Slot

Accessories	
2nd Battery Pack[4,]	– Standard Battery Pack BMLF3A Li-Ion 10.905V/6000mAh
AC Adapter	– DC-in Jack – 160W 100-240VAC, 50/60Hz
Battery Charger	– Multi Battery Charger MCRW
Keyboard Dust Cover	– Available

Certifications	
Certifications	– CE/FCC/UKCA/RCM – WEEE – REACH – POPs – RoHS – IP53 – MIL-STD-810H – MIL-STD-461G (Ground Navy)

Chapter Eight – Maintenance and Service

Cleaning

> ⚠️ *Caution:*
>
> ➢ *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, or 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 device fail to function properly, follow the troubleshooting steps below.

- 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 (SSD, Battery, etc.).
- Remove the software suspected.
- Set BIOS fail-safe default.
- Re-install operating system and application software.

RMA & E-RMA Service

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.mildefcrete.com → 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.