

# Airtop3

by Compulab

## Owner's Manual



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For more information please visit: [www.fit-iot.com](http://www.fit-iot.com)

For technical support and product related questions, please email: [support@fit-iot.com](mailto:support@fit-iot.com)

For the latest version of this document:

[www.fit-iot.com/files/airtop3/docs/airtop3-owners-manual.pdf](http://www.fit-iot.com/files/airtop3/docs/airtop3-owners-manual.pdf)

## Introduction

### Package contents

1. Built-to-order Airtop3 computer
2. Power supply: input AC 100-240V 50/60Hz, 250W output DC 19.5V 16.9A
3. AC Cord (North American)
4. HDMI to DVI adapter
5. Mini-serial to DB9-male adapter cable
6. 16x M3 screws for HDD

To use Airtop3 you will need:

- A monitor with DisplayPort or HDMI/DVI input + DVI/HDMI cable adapter if needed
- USB keyboard and mouse
- For Barebone models:
  - compatible RAM modules and a storage device
  - Operating system

## Quick Start Guide

Several Airtop3 models are sold “Barebone” – without RAM and storage. To install RAM and storage please consult “Installation and Service” below.

### Choosing placement for Airtop3

Please consider the following when placing Airtop3

- Do not place Airtop3 in a small closed space having no airflow
- Allow at least 10 cm of clearance on left, right and top for effective airflow
- Position it standing-up and not in another orientation. This is important for the efficiency of the Natural Airflow cooling



**WARNING:** Airtop3 is designed to be positioned vertically.  
Operating Airtop3 in horizontal position will reduce its cooling efficiency.

### Connecting Airtop3

- Connect monitor to Airtop3 DisplayPort or HDMI connector (use the HDMI to DVI adapter if needed)
- Connect the USB keyboard and mouse to USB2.0 connectors
- Plug the Ethernet cable into the Ethernet connector
- For models with WiFi/cellular: Mount WiFi antennas on the SMA connector by turning it clockwise repeatedly until the antenna holds firm
- Insert the DC plug into Airtop3 main DC-in jack
- Connect the power supply to the AC cord and plug the cord into AC outlet

### Airtop3 with Windows pre-installed

Upon first power-up, you will be guided through the Windows Welcome procedure which is self-explanatory. The Windows serial number is printed on the Windows label.

### Airtop3 with Linux pre-installed

Linux loads automatically on power up. Upon boot you will be guided through the Linux Mint first-boot setup procedure.

### Installing an operating system on Airtop3

Please consult [www.fit-pc.com/wiki/index.php/Airtop3\\_Software](http://www.fit-pc.com/wiki/index.php/Airtop3_Software)

## Airtop3 hardware specifications

<b>CPU</b>	Intel Core i9-9900K	Or another pin-compatible 8 <sup>th</sup> gen/9 <sup>th</sup> gen CPU
<b>Chipset</b>	Intel C246 Chipset	
<b>RAM</b>	Up to 128 GB DDR4 ECC   non-ECC	4x UDIMM DDR4-2666 ECC   Non-ECC <b>Note:</b> Buffered / registered RAM is <b>not supported</b>
<b>Storage</b>	2x NVMe	M.2 key M 2280   2260   2242 PCIe x4
	4x 2.5" HDD / SSD	4x disks up to 9.5mm   2x 15mm disks
	Optional NVM3 card with 3x NVMe	3x NVME M.2 key M 2260   2280   22110 / NF1 301100
<b>Graphics &amp; display</b>	Integrated Intel HD Graphics 630	2x DisplayPort 1.2 – 4K @ 60 Hz HDMI 1.4 – 4K @ 24 Hz
	Optional graphics card NVIDIA GTX 1660 6 GB   Quadro RTX 4000 8 GB	Note: integrated graphics can work in conjunction with discrete graphics for a total of 7 simultaneous displays.
<b>Networking</b>	LAN	On-board: dual Gbit Ethernet (Intel I219 + Intel I210) Optional dual 10 GbE card in PEG slot Optional FACE Module: 4x GbE   4x GbE + PoE   2x optical LAN
	Wireless LAN* 802.11ac dual antenna + BT 4.2	Add-on M.2 key E 2230 + 2x RP-SMA antennas. User can install another Wireless LAN adapter. * Optional
	4G/LTE modem	Add-on M.2 key B 3042 + 2x RP-SMA antennas On-board micro-SIM socket. * Optional
<b>I/O</b>	USB	6x USB 3.1 gen 1 type-A on-board Optional 3 to 4 USB ports on FACE Module
	Audio	On-board Realtek ALC1150 audio codec with line-out   mic   optical S/PDIF FM-AT3 FACE Module with front line-out   mic Audio over HDMI   DP
	3x RS232 serial port	3x full-UART Extra 6 serial ports available with optional FM-SER FACE Module
<b>Extensions</b>	FACE Module (Function and Connectivity Extension Module)	FACE Module    Features
		<b>FM-AT3</b> Built-in-self-test LED indicators   3x USB   audio   micro-SD   mini-PCIe
		<b>FM-POE</b> 4x Gbit Ethernet with PoE (PSE)   2x USB 2.0
		<b>FM-LANE4U4</b> 4x Gbit Ethernet   4x USB 2.0
		<b>FM-OPLN</b> 2x Optical Gbit Ethernet (SFP+)   2x USB 2.0
		<b>FM-SER</b> 6x RS232 / RS485
		<b>FM-XTDM2</b> 2x mini-PCIe
	PCIe x16 standard-height single-slot	Used for discrete graphics card (GeForce or Quadro) / NVM3 card / 10 GbE / another full-height PCIe card
	M.2 key E M.2 key B + micro-SIM socket	Normally used for optional WiFi and 4G card

<b>Extra features</b>	Natural airflow (NAF) cooling	Fanless* natural convection cooling with no moving parts. * CPU, graphics card and PSU are all passively cooled. No case-fan or any other active cooling is required.
	Redundant power	2x DC inputs with automatic failover and load sharing
	Trusted platform module 2.0	Firmware TPM + discrete TPM
	I3M (integrated interactive information monitor)	An integrated OLED display with navigation keypad for displaying real time power consumption, temperatures and system information.
	Digital power & reset management using FPGA	Provides precise power-sequencing timing and system voltage monitoring.
	Clamshell opening   tool-free service	Case opens by pressing the top-bar. RAM modules and HDD-cartridge require no tools for installation*. * Other devices may require a Phillips screwdriver
	System diagnostics LEDs	Discrete LED indicators of RAM detection, BIOS post HDMI and DisplayPort detection for quick field diagnostics in case of booting issues.
	Configurable Auto-on	System can be configured to boot automatically when power is resumed, stay off or resume last state
<b>BIOS</b>	AMI Aptio V	
<b>OS</b>	Windows 10 Professional	Compatible with other Windows 10 variants.
	Linux Mint	Compatible with other Linux variants. Compatible with other hypervisors and operating systems (e.g. ESXi, FreeBSD)

## Operating conditions

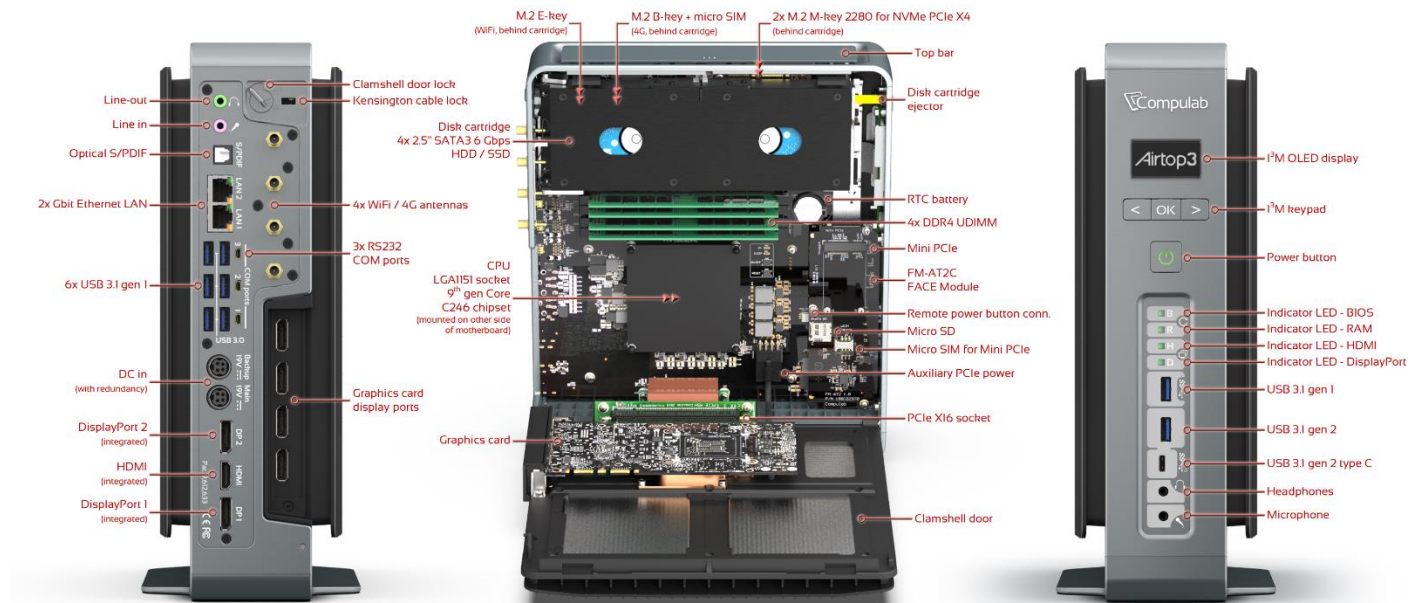
<b>Power</b>	Input voltage range <b>17V</b> – 24V Power consumption 8W – 300W	Power consumption depends on – CPU and graphics card – System load – Installed devices – Connected peripherals  * When using Quadro RTX 4000 please connect two power supplies
<b>Temperature &amp; humidity</b>	<b>Operating temperature range</b> 0°C - 40°C <b>Relative humidity</b> 5% – 95% non-condensing	

## Mechanical specifications

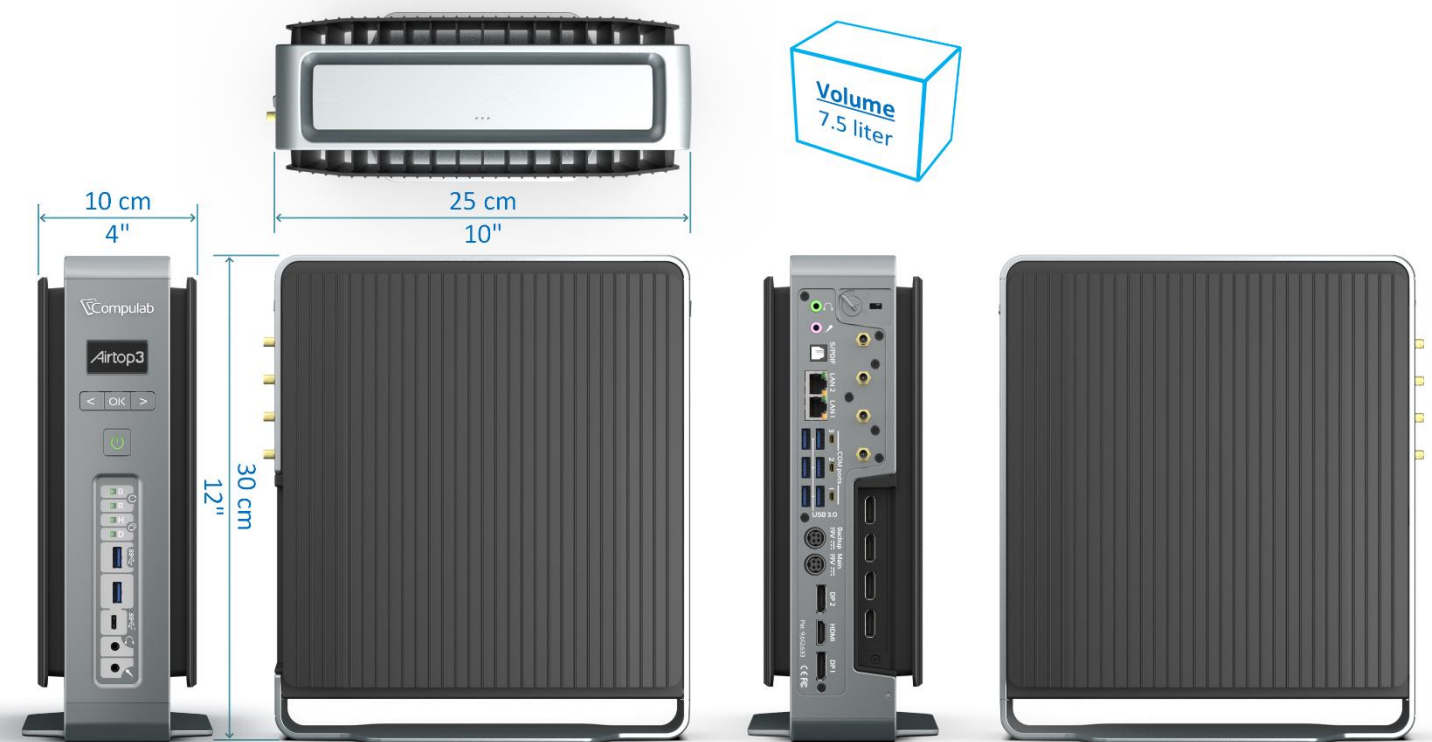
<b>Dimensions &amp; weight</b>	Dimensions 10 cm (W) x 30 cm (H) x 25.5 cm (D) Weight 6 Kg to 9 Kg*	* Weight depends on configuration
<b>Housing &amp; cooling</b>	All aluminum housing Natural airflow cooling (fanless)	
<b>Mounting</b>	Wall mounting bracket* DIN-rail mounting bracket*	* Sold separately

## Airtop3 features

### I/O and internal devices

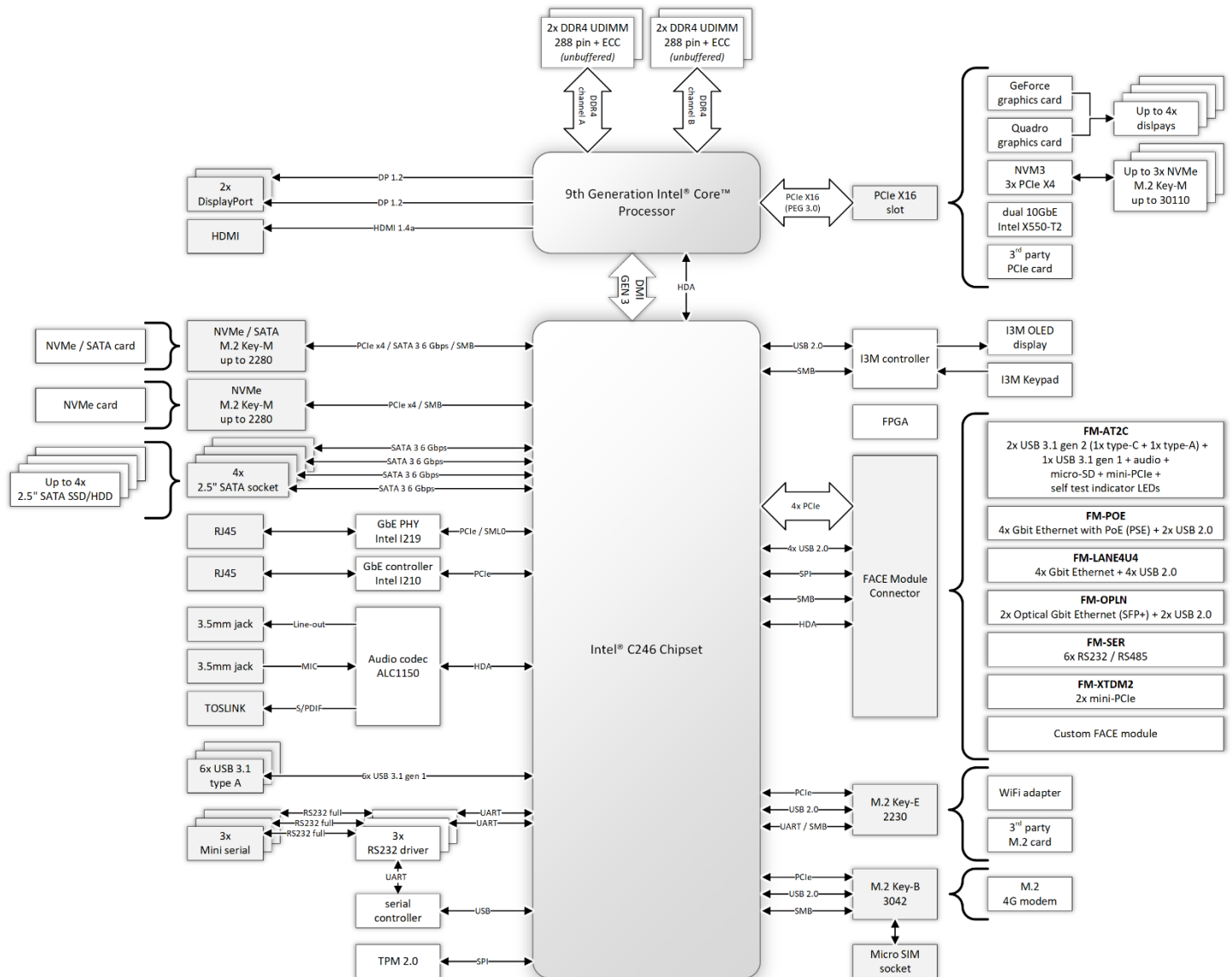


### Dimensions





## Block diagram



## Airtop3 devices and installation

### Open Airtop3 for service

To access Airtop3 internal devices follow the steps below:

1. Shut down the computer and disconnect PSU
2. Move locking knob on the rear panel to open position
3. Press the top-bar
4. Open the clamshell door



Figure 1 – Move locking knob to open position



Figure 2 – Press the top-bar



**WARNING:** Only technically skilled person should open and service the Airtop3.

### RTC Battery

The RTC battery of Airtop3 is intended to maintain power to the internal Real Time Clock circuitry.

Airtop3 can work without a battery, or when the battery is dead. At these situations, the internal clock won't be kept on main power loss, and the boot after power loss may take a few second longer.

In order to replace a depleted RTC battery, while the service door is open and power from PSU is disconnected, press the notch of the battery holder (BT1, near the RAM slots) and let the battery fall out. Install a new Lithium CR2032, 3V battery, with '+' side facing out, by pushing it to place.



**WARNING:** Risk of explosion if the battery is replaced by incorrect type.

### RAM

Airtop3 motherboard features four UDIMM DDR4 slots supporting DDR4-2666.

Airtop3 supports up to 128 GB in 4x 32 GB configuration.

Both ECC and Non-ECC RAM is supported (ECC requires a Xeon CPU).

**Important note:** Buffered (registered) RAM is **not** supported in Airtop3.

The standard FACE Module of Airtop3 (FM-AT3) has a LED marked "R" for RAM. After RAM initialization the "R" LED changes color from amber to green. If Airtop3 does not boot, check "R" LED color. If color is not green there is a problem with RAM detection.

## Storage

Airtop3 supports 6 independent storage devices: 2x NVMe / SATA SSDs and 4x 2.5" SATA HDD / SSD.

All storage devices support RAID.

All storage devices are passively cooled by a dedicated large heatsink.



## NVMe / SSD

Airtop3 supports 2x NVMe with a form factor of M.2 M-Key 2280 | 2260 | 2242  
The NVMe devices each has PCIe x4 interface.

The SSDs are installed by fastening each to the SSD cooling plate using the red spacer and a pan-head screw.

Please note the position and direction of the red spacer:

- Position is according to the length of the SSD – 2280 being the largest.
- The spacer has a step that fits the edge of the SSD.

After one or two SSDs are mounted to the SSD cooling plate please proceed as follows:

- Insert the edges of the SSDs into their slots.
- Push down the SSD cooling plate and tighten both flat-head screws to keep the SSDs and SSD cooling plate in place.



## Disks Cartridge

The disk cartridge allows installing up to four 2.5" SATA HDD / SSD devices at the following configurations:

- Up to 4 devices up to 9.5mm thick
- Up to 2 devices up to 15mm thick

### Removing the cartridge

The cartridge can be removed and re-installed without tools.

To remove the disk cartridge: pull the yellow lever of the disk cartridge ejector on the top right.

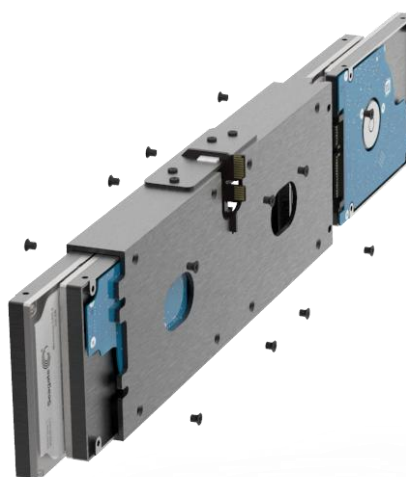
The HDD cartridge will be released and can be taken out.



### To remove and install disks

To remove an HDD remove the 4 HDD screws at the bottom. Then push out the disk using the oval opening.

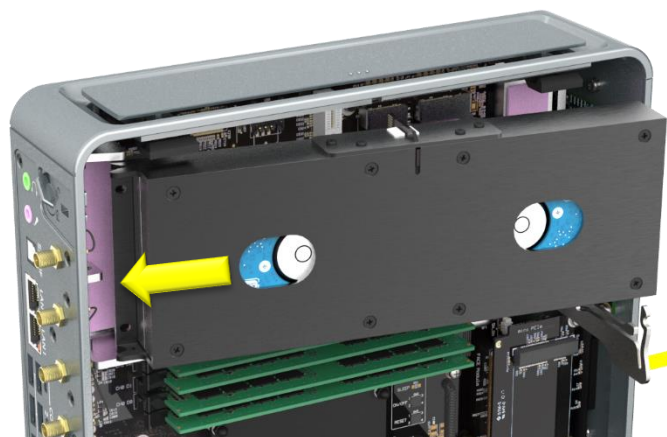
To install an HDD push the HDD into its position where the bottom of the disk is facing the oval opening. When the HDD screw holes are aligned with the holes in the cartridge the SATA connector is connected.



### Re-installing the cartridge

To re-install the disk cartridge:

- Ensure the disk cartridge ejector (yellow lever) is open (down)
- Push the cartridge onto the left bracket and hang it on the right bracket
- Close the cartridge ejector (lift yellow lever) and press until it clicks into place.



## I<sup>3</sup>M – Integrated Interactive Information Monitor

The Integrated Interactive Information Monitor (I<sup>3</sup>M) is a display and navigation keypad on the front panel which provides real-time system information such as power consumption, temperature and frequency.

I<sup>3</sup>M requires a firmware (pre-installed) and Windows or Linux software running on Airtop3 for full functionality.

To install I<sup>3</sup>M please visit:

[www.fit-pc.com/wiki/index.php/Airtop3\\_Software#I3M](http://www.fit-pc.com/wiki/index.php/Airtop3_Software#I3M)

## BIOS

For BIOS documentation see [www.fit-pc.com/wiki/index.php/Airtop3\\_Software](http://www.fit-pc.com/wiki/index.php/Airtop3_Software)

### Entering BIOS Setup Utility

Turn off Airtop3.

Turn on while holding down the DEL key.

## Troubleshooting

### Airtop3 does not boot

#### Power problem

Check that the LED on the PSU is lit green. If not, check that it is connected to a functional AC outlet.

Check that the power button on the front panel is lit. If not, check that the DC plug is inserted correctly into the jack at the rear panel of Airtop3. You may try to plug it at the backup DC jack.

#### RAM problem

The most common reason is RAM that is not installed or incompatible.

Airtop3 supports DDR4 DIMM.

Note that registered (buffered) DIMM is not supported.

Note that only Xeon supports ECC (Core supports non-ECC only. It will still function with ECC memory).

By default Airtop3 ships with the FM-AT3 FACE Module that has 4 LEDs marked B, R, H, D

Turn on Airtop3 and observe the R LED. Normally it would turn amber for a short period (during RAM detection) and upon successful detection it will turn green.

If it turns green then RAM is fine.

If it does not turn green, disconnect power and open the clamshell door. Check that RAM is compatible and installed correctly.

If you have multiple DIMM modules you may leave only one and change its slot.

Try powering up again until RAM is detected properly.

#### Storage or missing operating system

Ensure a storage device is installed and detected in BIOS settings.

Check boot order in BIOS settings.

Ensure that an operating system is installed on the selected storage device.

### I<sup>3</sup>M does not show temperatures and other data

This information is obtained from a service running in the operating system.

Please Install. Consult:

[www.fit-pc.com/wiki/index.php/Airtop3\\_Software#I3M](http://www.fit-pc.com/wiki/index.php/Airtop3_Software#I3M)


## Technical support


For any issue please email [support@fit-iot.com](mailto:support@fit-iot.com) or call +972-4-8290134

## Safety instructions

Use the following safety guidelines to help protect your computer from potential damage and to help to ensure your personal safety. Unless otherwise noted, each procedure included in this document assumes that the following conditions exist:

- You have read the safety information that shipped with your computer.
- A component can be replaced or, if purchased separately, installed by performing the removal procedure in reverse order.


 **WARNING:** Disconnect all power sources before opening the computer cover or panels. After you finish working inside the computer, replace all covers, panels, and screws before connecting to the power source.

 **CAUTION:** Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a processor by its edges, not by its pins.

## Before servicing Airtop3


To avoid damaging Airtop3, perform the following steps before you begin working inside the computer.

1. Ensure that you follow the Safety instructions.
2. Turn off your computer, see Turning off Airtop3.
3. Open Airtop3's Clamshell door.

 **CAUTION:** Before touching anything inside your computer, ground yourself by touching an unpainted metal surface of the computer. While you work, periodically touch an unpainted metal surface to dissipate static electricity, which could harm internal components.

## Turning off Airtop3

Ensure that the computer and all attached devices are turned off. If your computer and attached devices did not automatically turn off when you shut down your operating system, press and hold the power button for about 6 seconds to turn them off.

 **CAUTION:** To avoid losing data, save and close all open files and exit all open programs before you turn off your computer.

## Warranty and RMA

### Warranty

- Compulab guarantees products against defects in workmanship and material for a period of 60 months from the date of shipment
- Warranty on the storage device is 24 months only
- Warranty on the replaceable battery is 24 months only
- Your sole remedy and Compulab's sole liability shall be for Compulab, at its sole discretion, to either repair or replace the defective product at no charge
- This warranty is void if the product has been altered or damaged by accident, misuse or abuse

### RMA

Keep the original package for shipping in case of hardware failure.

In case of HW failure of an Airtop3 under warranty, please consult:

[www.fit-iot.com/web/technical-support/rma/](http://www.fit-iot.com/web/technical-support/rma/)

# Regulatory Information



## Airtop3

**Manufacturer: Compulab Ltd.**

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.

## Statement

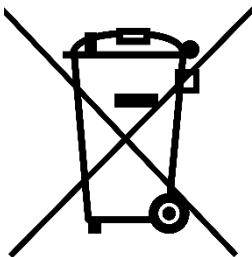
Changes or modifications to this equipment not expressly approved by the party responsible for compliance (Compulab Ltd.) could void the user's authority to operate the equipment.

## Statement

**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.

## WEEE



You must dispose this electrical item separately from general household waste when it reaches the end of its useful life. Take your PC to your local waste collection point or center. This applies to all countries of the European Union, and to other European countries with a separate waste collection system.