USB Machine Learning datasheet

Version 1.0

Features

- Ego One Edge MOPS* ML accelerator
  - 480 MOPS* total peak performance
  - 480 MOPS* using 0.26 watt
- USB Support 1.1 and 2.0 / Type A socket and Type C with adapter.
- Supports Linux, Mac, Windows and Android on host CPU
- Supports AppInventor serial extension with direct connection to your smartphone.
- Includes USB A to USB C cable.
- Includes adapted mini USB A to USB C.

* MOPS = Million Operations Per Second.

Description

The Ego One USB Machine Learning (ML) with Accelerator Cryptographic adds an Edge MPOS* Microprocessor to your smartphone Android. It includes a USB-A socket and you can connect to a host computer or smartphone Android with mini adapter to perform accelerated ML inferencing.

The on-board Ego One the case and the software technological extensions (Sciblock) that will be used together with the device were designed by OpenQbit that accelerates basic operations models ML in a power efficient manner: it's capable of performing 480 Million operations per second (480 MOPS*), using 0.26 watts of power take care of the world. For example, one Ego One Edge MPOS* can execute state-of-the-art regression, classification, operations matrix and neural networks basic models and Ego One can execute models basic that the users create. This on-device ML processing reduces latency, increases data privacy, and removes the need for a constant internet connection.

Ordering information

Part number	Description
EGO-FIRST-00001	Ego One Edge Machine Learning & AI basic. • Includes USB A to USB C cable. • Includes adapted mini USB A to USB C.

See https://www.ooego.com

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1 System requirements

- A computer with one of the following operating systems:
  - ✓ Linux, Mac, Windows (The OS version must support or have installed the CH343 driver).
  - ✓ **Android (No driver is needed, it is supported using the AppInventor*** serial extension, direct connection to Smartphone - Does not include smartphone).**
- One available USB port (for the best performance, use a USB 3.0 port)
- Arduino IDE**** (If you want to develop your own models) and support MicroPython.

2 Component overview

Table 1. USB Machine Learning and Accelerator Cryptographic components and features

Feature	Details
ML accelerator	
Ego One - Edge MPOS	Microprocessor designed by Cadence Design Systems that provides in models TinyML: ● 480 Million operations per second (MOPS) using dual-core. ● 0.26 watt.
Connections	
USB	● USB Support 1.1 and 2.0 port and cable. ● Included cable is USB Type-C to Type-A, and (6 in) in length ● Included adapter is USB Type-C to Type-A.
WiFi	● Complies with 802.11b/g/n • 1T1R mode with data rate up to 150 Mbps ● TX/RX A-MPDU and RX A-MSDU aggregation ● 0.4 µs guard interval support ● Center frequency range of operating channel: 2412 ~ 2484 MHz
Bluetooth	● Compliant with Bluetooth v4.2 BR/EDR and Bluetooth LE specifications ● Class-1, class-2 and class-3 transmitter ● Adaptive Frequency Hopping (AFH) ● CVSD and SBC for audio codec

3 Product dimensions

✓ Length: 6 cm
✓ Width: 2 cm
✓ Depth: 1 cm

✓ Maximum approximate measurements.

cm = Centimeters.

Supports AppInventor* serial extension with direct connection to your smartphone.**

Figure 1. Ego One USB Machine Learning dimensions and details

4 Software and operation

No software is required to install it, in the case of direct connection to an Android Smartphone you only have to use the AppInventor*** Serial extension, the Ego One device already contains the integrated driver for direct activation and recognition when using AppInventor*** Serial extension.

If the user wants to make their own training models and/or some specific algorithm, they will need to use the Arduino IDE software.

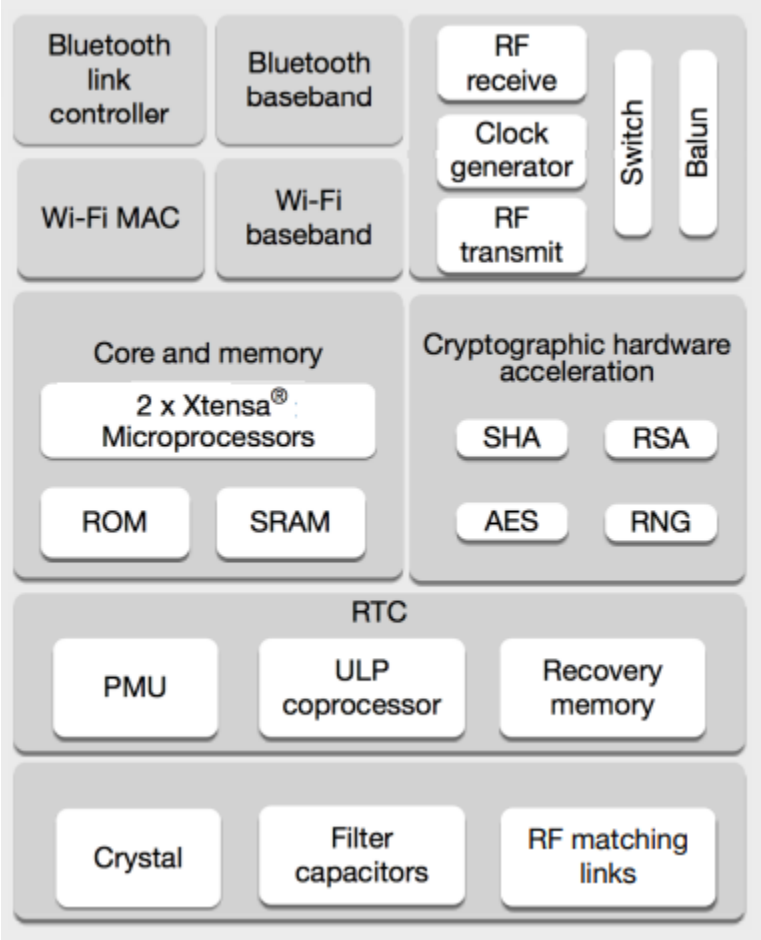
In this case, you need to install the library on Arduino IDE check the documentation in EgoDoc.

It is recommended to use the www.SciBlock.net artificial intelligence development suite as a complement.

4.1 Performance settings

The performance of the Ego One device will depend on the clock crystal speed established.

4.2 CPU Diagram Outline**



5 Power specifications

The USB Ego One is powered from 3.0 to 3.6 V with 80 mA.
Maximum values do not exceed these or the device may be damaged.

The device should be connected to a host computer or Smartphone Android with a USB cable that provides at least 80mA at 3 to 3.6 V.

6 Recommended operating conditions

Depending on the computation workloads and operating frequency, the USB Accelerator may heat up during normal operation. Contact with the metal or plastic part of the device may lead to discomfort and/or skin burns if the device has been operating for an extended period. We recommend the following operating temperature ranges, depending on the operating frequency you have selected.

Table 3. USB Ego One Machine Learning and Accelerator Cryptographic operating conditions

Operating frequency	Maximum ambient temperature
Maximum	25 - 35 °C

ooEGO.com or OpenQbit does not accept any responsibility for loss or damage if the device is handled unsafely or operated outside of the recommended ambient temperature range.

NOTE: This device is for use in basic project prototypes only and learning curve. Under no circumstances should it be used in a production environment project. If you have any questions, it is recommended to read the terms and conditions in www.ooego.com

Any questions or doubts can be directed to the email: info@ooego.com