Portenta H7 module

Family Overview
Arduino's series of high-performance industry-rated boards

Overview

Portenta H7 simultaneously runs high level code along with real time tasks

Program it with high-level languages and AI while performing low-latency operations on its customizable hardware

Its two asymmetric cores can simultaneously run high level code such as protocol stacks, machine learning or even interpreted languages like MicroPython or Javascript along with low-level real time tasks.

PH7's main processor is a "dual core unit" made of a Cortex® M7 running at 480 MHz and a Cortex® M4 running at 240 MHz. The two cores communicate via a "Remote Procedure Call" mechanism that allows calling functions on the other processor seamlessly.

Both processors share all the in-chip peripherals and can run:
- Arduino sketches on top of the mbedOS
- Native mbed applications
- Micropython / Javascript via an interpreter
- TensorFlow Lite

The onboard wireless module allows to simultaneously manage WiFi and Bluetooth connectivity. The WiFi interface can be operated as an Access Point, as a Station or as a dual mode simultaneous AP/STA and can handle up to 65 Mbps transfer rate. Bluetooth interface supports Bluetooth Classic and BLE.

The Portenta H7 has follows the Arduino MKR form factor, but is enhanced with the Portenta family 80 pin high-density connector. Learn more about the board's pinout by reading the board's pinout.

Applications

Use Portenta when performance is key
- High-end industrial machinery
- Laboratory equipment
- Computer vision
- PLCs
- Industry-ready user interfaces

- Robotics controller
- Mission-critical devices
- Dedicated stationary computer
- High-speed booting computation (ms)

A NEW STANDARD FOR PINOUTS

The Portenta family adds two 80 pin high density connectors at the bottom of the board. This ensures scalability for a wide range of applications by simply upgrading your Portenta board to the one suiting your needs.

Main Features

DUAL CORE - The PH7 has two processors in one, run parallel tasks in different languages

SELECT ENCRYPTION - Choose between two vendors for the crypto-chip that better suits your case

USB-C - Power your board, connect it to a display, or get it to work in OTG mode

MEMORY RANGE - Select the right amount and type of memory for your application

MULTIPLE OPTIONS ON ONE BOARD

Order the default Portenta H7 using the codename 'Arduino Portenta H7-15EUNWAD'. The board comes with:

- STM32H747 dual-core processor with graphics engine
- 8MB SDRAM
- 16MB NOR Flash
- 10/100 Ethernet Phy
- USB HS
- NXP SE050C2 Crypto
- WiFi/BT Module
- Ceramic Antenna
- DisplayPort over USB-C

Tailor the hardware to your solution

If you need more memory, Portenta H7 can host up to 64 MByte of SDRAM, and 128 MByte of QSPI Flash. Order it with an external UFL connector for adding a higher-gain antenna to the board. Decide between crypto-chips from Microchip® and NXP - the ATECC608A or the SE050C2 crypto chips.