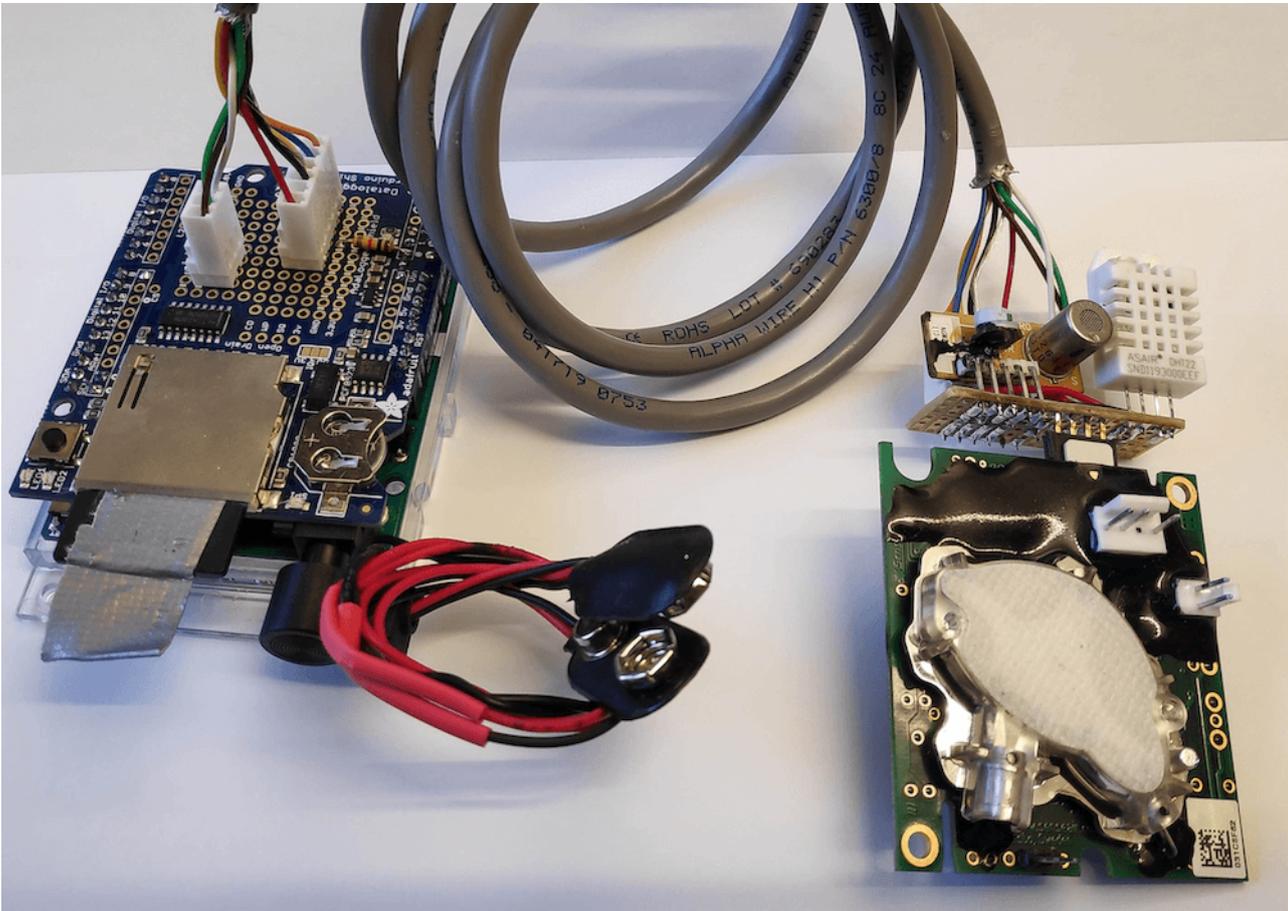# Open Hardware and Development Boards: Arduino, Adafruit and More

By *Rianne Schestowitz*
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Submitted by Rianne Schestowitz on Tuesday 28th of July 2020 08:58:56 PM Filed under Development [1] Gadgets [2]

- **[Researchers develop a simple logger for greenhouse gas flows](#)** [3]

  Researchers at Linköping University in Sweden have developed an Arduino-based logger to measure levels of methane and carbon dioxide in greenhouse environments. The device also implements a DHT22 temperature and humidity sensor, data from which can be correlated with gas readings. Figures are stored on an SD card using an Adafruit data logging shield.

  Importantly, the team?s study outlines a procedure for calibrating the methane sensor module at atmospheric concentrations, much lower than its normal use. The entire unit can be made for around €200, or about $235 USD. While an inexpensive method for monitoring CO2 has been available for some time, this fills in the need for a low-cost methane sensor that could be used for distributed measurements.

- **[5 Great IoT starter kits](#)** [4]

  The Internet of Things sounded stupid at first, but as you get to know more about it, the more fascinating it is to figure out how it can be used in your toaster. The idea is that you create a small device that collects a small amount of data that it sends to a service that can draw conclusions from it. You can use the same technology for devices at home. Most kits contain a single board computer with sensors and a manual to help you get started. Distributors use a range of devices in these packages; the Raspberry Pi is the most common example.

- **[M.2 and Half-size mPCIe Cards Support Real-Time Ethernet and FieldBus Networks](#)** [5]

  Hilscher cifX M.2 and half-size mini PCIe cards powered by the company?s NETX 90 network-on-chip multi-protocol Cortex-M4 SoC bring real-time Ethernet and FieldBus to compatible systems. The tiny cards are designed for PC-based devices such as IPC?s, HMI?s and robots, and support various firmware for PROFINET IO-Device, EtherNet/IP Adapter, EtherCAT Slave, or OpenModbus/TCP. The company claims its cifX M.2 (A+E key) and half-size mini PCIe cards are the smallest multiprotocol PC cards on the automation market with a size of 22×30 mm and 30×26.8 mm respectively. The cards also support extended temperature from -20°C to 70°C and offer one hardware platform for all real-time Ethernet slave protocols. Besides PROFINET IO-Device, EtherNet/IP Adapter, EtherCAT Slave, and OpenModbus/TCP, Hilscher will provide support for CC-Link IE Field Basic and Ethernet POWERLINK Slave in new firmware available in Q4 2020, and OPC UA and MQTT functionalities are planned for future releases.

- **[EMIT ESP32 IoT Development Board Comes with Temperature & Humidity Sensor, 5A SPST Relay (Crowdfunding)](#)** [6]

ControlBits EMIT (Environmental Monitoring for the Internet of Things) is a baseboard compatible with DOIT ESP32 DevKit V1 development board and equipped with a temperature and humidity sensor, a relay, a 12-pinGPIO connector, and a MicroSD card.

[Development](#) [Gadgets](#)

Links:
[1] http://www.tuxmachines.org/taxonomy/term/145
[2] http://www.tuxmachines.org/taxonomy/term/139
[3] https://blog.arduino.cc/2020/07/28/researchers-develop-a-simple-logger-for-greenhouse-gas-flows/
[4] https://linuxhint.com/best_iot_starter_kits/
[5] https://www.cnx-software.com/2020/07/28/m-2-and-half-size-mpcie-cards-support-real-time-ethernet-and-fieldbus-networks/
[6] https://www.cnx-software.com/2020/07/28/emit-esp32-iot-development-board-comes-with-temperature-humidity-sensor-5a-relay/