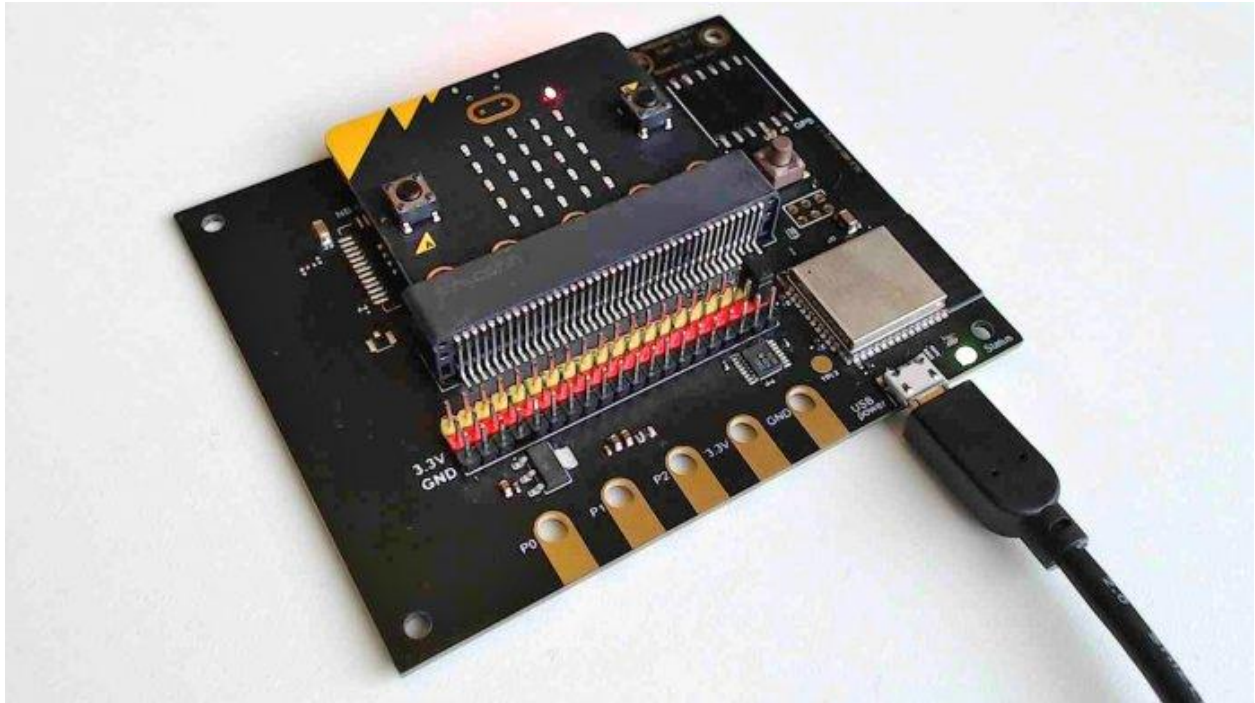


# Tested: Wappsto:bit - Expansion Board for the BBC micro: bit

The Wappsto: bit brings the British school microcontroller to Wi-Fi and mobile network, displays sensor data on smart dashboards, and has optional GPS.



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Make

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The Wappsto: Bit from the Danish manufacturer Seluxit is an expansion board for the British learning microcontroller BBC Micro: Bit. The expansion takes place on different levels: On the one hand (and obvious at first glance) the Wappsto:bit leads the GPIO connections of the Micro: Bit, which consist of bare contact surfaces of different widths, as normal pin strips with a grid dimension of 2, 54 mm out, as usual from Arduino, Pico & Co. Practical: For each signal pin there is also one for 3.3V and one for GND - these connections often quickly become in short supply if you connect a lot of peripherals to a board.

On the other hand, there is an ESP32 on the 100 mm × 82 mm measuring Wappsto:bit, with which the inserted Micro:bit exchanges data in the form of numbers and character strings via a defined interface. And the ESP in turn establishes the connection to the Wappsto cloud from the

manufacturer Seluxit via WLAN or an optional cellular module for NB-IoT. Free apps for Android and iOS are available as a front end, as is the wappsto.com website. You can use the app or the browser to view the data transferred from the Micro: Bit to the Wappsto: Bit or, conversely, send data to the Micro:bit via this route.



Dashboards made up of line charts and pointer instruments can also be clicked together in the browser. For contact with other cloud and web services, some additional software modules are available on wappsto.com, because this platform is a web app store, hence the name. There you can get the data forwarder free of charge, which forwards data to an MQTT broker or to Azure. You can also use the Wapp Creator to program your own Wapps, i.e. web apps, and place them in the store. Incidentally, the aforementioned dashboard is also such a Wapp.



Here the dashboard in the browser shows the volume, brightness and temperature measured by the Micro: Bit. The Micro: Bit was in the Wappsto: Bit and that in turn was on the window sill of the study - the change in ventilation can be seen in all three curves (apparently it was quieter outside than inside).

## Tested

For our test, we received the basic version of the Wappsto:bit from the manufacturer Seluxit, which costs just under 52 euros in their webshop. The variant with NB-IoT costs just under 87 euros and the one with NB-IoT and GPS module 104 euros. However, the circuit board is the same in all cases; in the basic version, the soldering positions for GPS and cellular module simply remain empty. A micro:bit is not included in the price, but versions 1 and 2 are compatible.

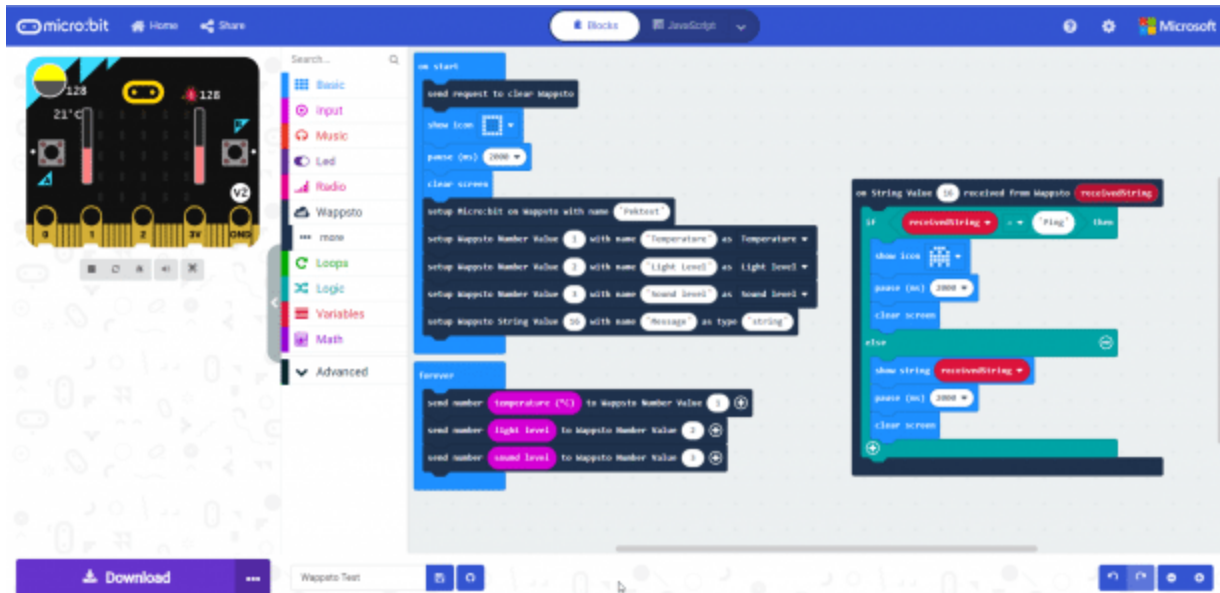


With our basic board, the unequipped soldering places for the SD card, the GPS and the IoT-NB module for the other Wappsto: Bit variants are visible.

For the very first start, you need the app on your mobile device, because you can use it to create your free user account and then link the Wappsto:bit board to this account via Bluetooth. You can make it known to the local (2.4GHz) WLAN if you want it to be at home there; alternatively, you can set up the WLAN later using a special code block of the Micro: Bit

## Programming as usual

Speaking of code block: The Micro:bit can be programmed as usual either graphically, in Python or JavaScript in the online editor [makecode.org](https://makecode.org). For the tailor-made code blocks for communication with the expansion board, click on the gear symbol in the menu bar, then on Extensions and search for Wappsto. This extension fits seamlessly into the familiar graphic programming environment of the Micro: Bit and primarily brings with it new blocks for two special variable types: Wappsto Number Value and Wappsto String Value can be initialized, named, set and read out.



A simple example program in visual code mode on makecode.org. Here, the measured values are still transmitted as often as possible, which leads to wild fidgeting of the pointers in the dashboard due to its noise, especially with the volume sensor, and also exhausts the free data limit in continuous operation.

A total of 15 number values and 5 string values can be defined. With the latter, text messages can be sent from the browser or the app to the Micro: Bit and displayed on its small LED matrix display. When initializing, the number values can also be linked directly to the onboard sensors of the Micro: Bit via a drop-down list so that their measurements are visible in the app or in the browser. Incidentally, the Micro: Bit and Wappsto: Bit do not have to be in the same WLAN, as communication takes place via the manufacturer's cloud.

The program clicked or written in the browser is sent as usual via the USB cable to the Micro: Bit. Then you unplug it, plug it into the Wappsto: Bit and then supply it with power via its micro-USB socket - either via a power supply unit, via the USB port of a computer or via a power bank. The Micro: Bit gets enough juice for operation. However, it cannot be programmed in piggyback mode; to do this, the USB connection to the Micro: Bit must already be established.