

DVTI+EXTA¹ V1.0 – Getting Started

Putting into operation

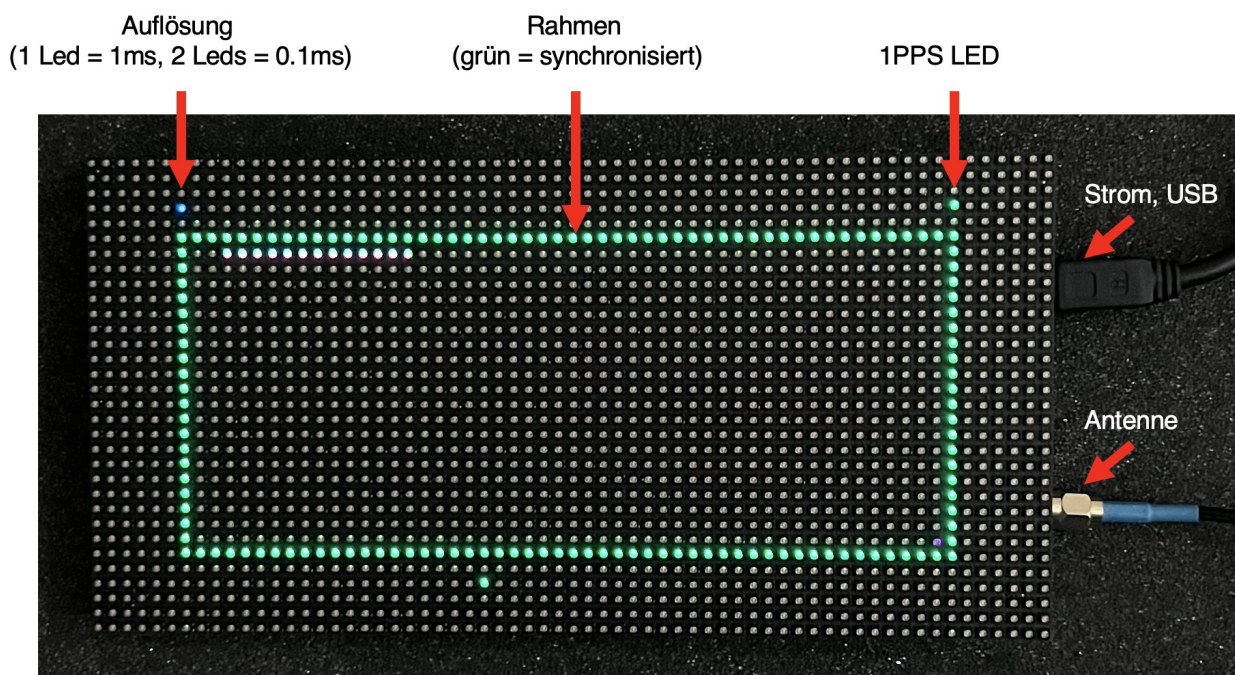
The DVTI+EXTA enables the precise measurement of the start and end of the exposure time of a single frame when recording with video or digital cameras.

The time data of the frame can be compared with the high-precision GNSS time signal of the DVTI+EXTA and the delay and the “jitter” can be determined. The device can also be used as a stand-alone GNSS receiver for the GPS, Galileo, GLONASS and Baidu systems.

Before using the DVTI+EXTA, the active GNSS antenna and the power supply need to be connected on the right-hand side of the device. Power is supplied via a mini USB cable, which is either connected to a plug-in charger or to the USB socket of a computer.

Important: The device should be used in a darkened room, otherwise the display will be obscured by the ambient light. Ideally, the antenna should be positioned with a clear view of the sky or at least near a window to ensure good reception of the satellite signals.

When starting up, the logo and the firmware version number appear briefly on the display. The device then switches to the EXTA function. For this purpose, 1,000 LEDs in a framed, rectangular area of 20x50 are switched on briefly in sequence from left to right and from top to bottom.



The color of the frame indicates whether the time of the device is synchronized with the GNSS satellites and a 1PPS signal is available. As soon as the time is available, the color of the frame changes from red to green and the green 1PPS display starts flashing every second. The green dot below the frame advances one position every 100ms.

The button on the back can be used to switch between normal mode (1ms per LED) and fast mode (0.1ms per LED). Depending on the setting, one or two blue LEDs light up for the speed display.

In normal mode, the white LEDs within the frame each correspond to one millisecond. The first LED at the top left lights up in the first millisecond after the whole second (1,000 to 1,001), the second in the second millisecond (1,001-1,002) and so on until the last one at the bottom right (1,999-2,000).

¹ DVTI ist die Abkürzung für Digital Video Time Inserter (Einfügen eines Zeitsignals in eine digitale Video-Aufnahme), [siehe https://dvticam.com/](https://dvticam.com/);

EXTA ist die Abkürzung für EXposure Time Analyzer (Belichtungszeit-Analysiergerät). Der Begriff und die Idee stammen von Gerhard Dangl; mehr dazu auf seiner Webseite: http://www.dangl.at/exta/exta_e.htm

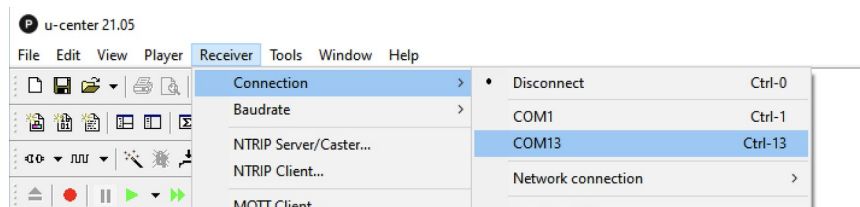
Each line corresponds to 50 milliseconds. In fast mode, the LEDs each correspond to a tenth of a millisecond (100 microseconds), with the LED at the top left indicating the first 100 microseconds after each tenth of a millisecond and the LED at the bottom right indicating the last 100 microseconds.

In the image above, the exposure begins during the third millisecond after the start of the second (0.002-0.003s) and ends in the 15th millisecond (0.014-0.015s). The exposure time is therefore 13ms $\pm$ 1ms.

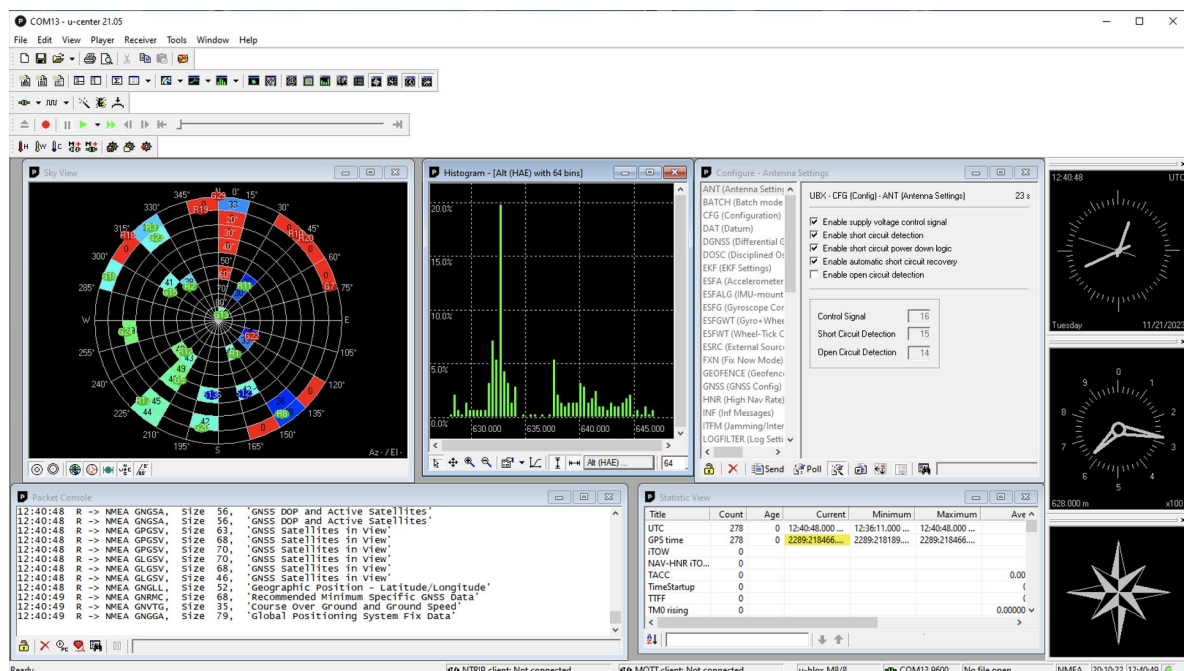
Use as a navigation receiver

The DVTI+EXTA contains a MAX M8C satellite module from u-blox and can be used as a stand-alone, fully-fledged navigation receiver. The “u-center” software, which can be downloaded from the u-blox website, is installed on a PC for this purpose (<https://www.u-blox.com/en/product/u-center>).

The DVTI+EXTA is connected to the PC via USB and selected in u-center via “Receiver” --> “Connection”.



Various views can then be activated in the “View” menu, for example.



Support and further information

The DVTI+EXTA was developed as part of the DVTI+CAM project. For support, please use e-mail (info@dvticam.com) or the DVTI+CAM forum (<https://groups.io/g/d-vti-cam/messages>). It is currently not possible to update the device's firmware at a later date.