



TEP Module

The TEP module is a very light and miniaturized computing system, which sends terrain elevation information to an autopilot for terrain following flight. It consists of an embedded Linux-based computer with external memories, a wireless access and electrical interfaces. Typical usage is with a wePilot autopilot. The autopilot is connected via a RS-232 serial interface to the TEP. The autopilot periodically requests the TEP to provide terrain elevation data ahead of the aircraft. This allows the autopilot to adapt altitude and forward speed of the aircraft.

The wireless connection allows to store standard digital terrain elevation data files (DTED) for the flight area.

The TEP module comes either as OEM version with 4 holes on the main PCB and a single 4-pin connector or packaged in an aluminium housing with a single connector. A WiFi antenna is delivered with the TEP module. For the OEM version it is connected directly to the PCB stack. The enclosed version provides a SMA connector. Wireless connection (WiFi) is disabled during flight to avoid HF interferences.



Specification

CPU

- i.MX6 (Quad core, Cortex-A9) clocked at 800MHz
- Embedded SDRAM memory 1GB
- Embedded eMMC flash memory 8GB
- SD card flash memory 8GB

Physical – OEM version

- Size (L x W x H)60 x 22 x 10mm
- Weight 20g

Physical – Box version

- Size (L x W x H)80 x 34 x 16.4mm
- Weight 70g

Interfaces

- Wireless interface 802.11 a/b/g/n
- Serial interface to autopilot RS232

Data

- Supported DTED level0/1/2
- Number of DETD files (max.) Limited by RAM

Connectors

- For WiFi antenna SMA female
- Power & com. NorComp 851-004-103R004
- Reverse NorComp 850-004-203RSS4

Environment

- Operating temperature -20 to +85°C

Electrical

- Input voltage 8-36VDC
- Supply current (@12VDC):
 - In flight 400mA
 - Ground with wireless 800mA

Protocol

The autopilot sends the following information to the TEP module:

- Current latitude of the UAV
- Current longitude of the UAV
- Current altitude MSL (Mean Sea Level) of the UAV
- Course of the UAV
- Target height above ground of the UAV
- Horizontal look-forward distance

The TEP module replies to the autopilot with:

- Terrain elevation MSL at UAV position
- Terrain elevation MSL at "highest slope position" between UAV position and look-forward position
- Horizontal distance between UAV position and "highest slope" position

Delivery

The TEP module is delivered with a removable WiFi antenna (2 dB).

For usage with a wePilot, the autopilot firmware needs to be upgraded with the terrain following feature. Optionally a laser range finder can be interfaced to the autopilot for redundancy purposes and increased height precision.

Ordering information

- TEP : TEP module with enclosure
- TEP-OEM : TEP module OEM version