Horizon XC

Miniature FLARM + FANET module for free flight applications

Product Highlights

- Combined FANET and FLARM radio modem
- Miniature module, fully integrated
- Tiny footprint: 8.5 x 9.3 mm
- FANET transmit and receive
- FLARM transmit and limited receive
- 4D obstacle warning engine
- Simple UART interface
- RF test modes for product testing
- Operates on EU and US frequency bands
- CE RED and FCC part 15 certified

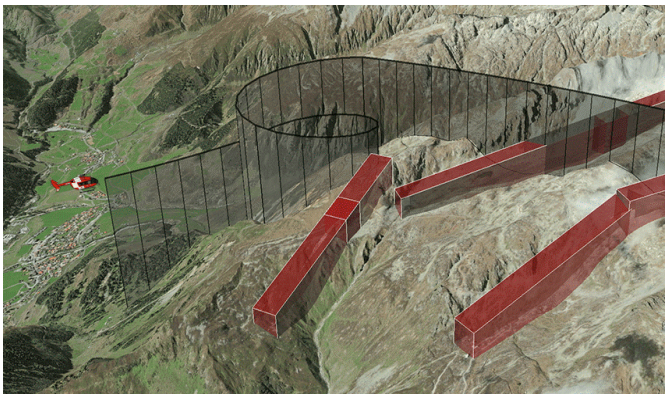
Description

Horizon XC is a miniature radio modem with FANET and FLARM connectivity for integration in instruments for hang- and paragliding. By combining the two protocols, Horizon XC combines the best of both worlds: Very long radio range for tracking and buddy flying through FANET's LoRa technology; visibility and safety through FLARM's huge installation base in General Aviation.

It works in the 868 MHz and the 915 MHz frequency bands, suitable for the European or North American markets.

FANET and FLARM are continuously transmitted at nominal rates with the aid of a single antenna. For reception, FANET is prioritized in normal operation to maximize connectivity. The reception priority of FLARM is reduced, resulting in a higher latency and an update rate comparable to FANET traffic data.

Horizon XC includes the FLARM 4D obstacle warning engine. Databases can be purchased on our website and installed on the device for in-flight warnings. This requires an external Flash memory chip.



Host Integration

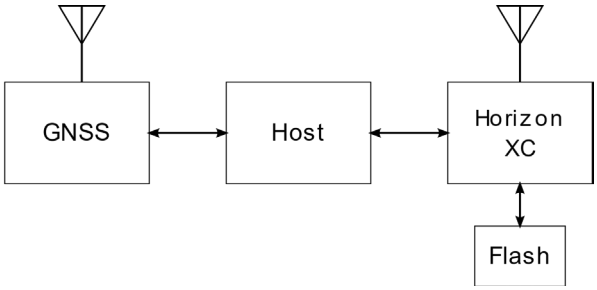
Horizon XC communicates to the host controller using UART (3.3V tolerant) and two digital control signals: time pulse and reset. The UART is running on 115200 bps (no parity, 1 stop bit, 8 data bits). A text-based, line-delimited communication protocol is used for easy implementation.

The host uses the UART interface to send commands to the module for setting or querying configuration items or operating the modem. Traffic data or other received FLARM/FANET payloads are sent unsolicited to the host. The reset line is used to trigger the bootloader for firmware upgrades. An adapter kit for an existing FANET+ footprint is available as design data.

The host system requires its own high quality GNSS receiver for its navigation source which provides a precise time pulse signal. A u-blox Gen 8 receiver or newer is recommended Configuration parameters for these receivers are provided in the integration manual.

Horizon XC does not require a direct connection to the GNSS receiver: The host is in full control of the receiver; the navigation solution is sent by the host over the UART interface. The time pulse line needs to be operated by the host at a high accuracy (<1 ms error, no drift) for correct synchronization with other FANET and FLARM nodes in the area. The time pulse must occur once per second, at the full second. This line can usually be directly connected to the GNSS.

An additional NOR serial Flash can be connected to Horizon XC as an option. This enables the use of the FALRM 4D obstacle warning engine (not yet available). Diagnostics information will also be stored on Flash which can be used for troubleshooting customer issues.



The correct timing is critical for operating the FLARM radio. Incorrect timing may lead to a complete loss of connectivity. A compliance test suite is thus available for verifying the timing and other aspects of the implementation. The suite comprises a USB dongle with an RF receiver and test software for running the tests and producing the report.

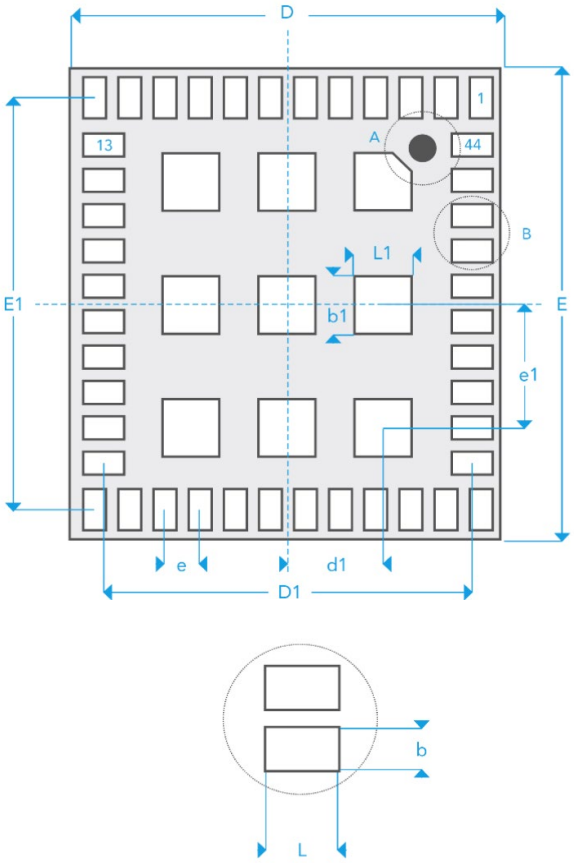
Operating Range

Operating Voltage	1.8 V nominal
Current consumption	15 mA typical 35 mA max
RF output power	13.5 dBm nominal
Temperature	-40..85 °C
Humidity	0..95% RH, non-condensing
Frequency bands	Europe: 868 MHz US: 915 MHz
FLARM receive rate	Reduced, 5 seconds

Certification

CE	RED 2914/53/EU
FCC	Part 15, 2AUQEF64CH

Mechanical



Weight	1.3 g
Thickness	1.8 mm
D	8.5 mm
E	9.3 mm
e	0.7 mm
L	0.7 mm
b	0.4 mm

Order Information

Use the order code *FLAHORXCW* to place order. Minimum order quantity is 50 pcs (samples for engineering are available).