PowerFLARM Integration Modules for OEMs

See & be seen collision avoidance for manned and unmanned aircraft

Every year, around 40 aircraft are involved in mid-air collisions. Half of these are fatal. Most of these accidents happen in good visibility and daylight. FLARM brings affordable, active, and cooperative traffic information and collision warnings to manned and unmanned aviation. Over 40,000 manned aircraft and many UAVs are already equipped with FLARM and the number is rapidly increasing.

Powerful PowerFLARM Integration Modules

To fulfill all needs of avionics customers is not an easy task. This is especially true when it comes to integrated avionics, where customers expect a one-box solution for all their needs. The new PowerFLARM OEM modules make it easy to rapidly integrate full FLARM functionality into your product at a small form-factor, low weight and power (SWAP). To avoid duplication of key components, GNSS and time pulse data, power, and UI have to be provided externally.

The modules are PCB-based LCC (Leadless Chip Carrier) packages with shielded RF circuit. They are easily reflow-soldered onto any PCB, making design, integration, and mass-production very flexible. Development kits are also available.

The Application Module (AM) implements full FLARM functionality. The Diversity Module (DM) optionally adds a second antenna and can be added to designs with enhanced requirements on radio range and coverage. A complementary ADS-B and transponder receiver module for 1090 MHz data fusion is also available (see separate datasheet).

Product Integration Use Cases

- Forward-fit or retro-fit installation in aircraft
- Portable solutions in airplanes and rotorcraft
- Dedicated and integrated displays (MFD/CDTI)
- Handheld solutions for air sports
- Lightweight UAV installation, independent of or coupled with autopilot or telemetry
- Airborne tracking and remote identification applications
- Ground receiver stations for ATC and fleet management

PowerFLARM has many benefits over Classic FLARM introduced over a decade ago, including superior range on all frequencies globally, higher sensitivity, improved out-of-band filtering, and optional antenna diversity. PowerFLARM has full interoperability with all FLARM systems at an affordable price.

Integration Design Requirements

- 64 x 28 x 4 mm footprint on PCB (AM)
- 36 x 28 x 4 mm footprint on PCB (DM)
- GNSS data feed via UART, SBAS optional
- 1 Hz time pulse < 5 ms jitter
- Radio antenna U.FL 868 - 928 MHz, depending on region
- Power 3.3 VDC
- NMEA and binary communication for UI and configuration
- Annual firmware updates

Application Module Features

Application Module

- FLARM transmit and receive
- Proximate traffic information and team flying
- Collision warnings
- Alert zones
- Fixed obstacles warnings (if database is loaded)
- Data for navigation, situational awareness, and geofencing
- Configuration, status, and error messages
- CE & ETSI compliant

Diversity Module

Diversity Module Features

- RF diversity with second antenna
- RF self test for both modules
- CE & ETSI compliant

FLARM

www.flarm.com

Features

Module Type	PCB-based LCC
Interoperability	All FLARM devices
Frequency Range	868 - 928 MHz (license-free) automatically selected
Geographic area	Worldwide
Max Transmit Power	40 mW regionally limited (automatic)
Max Range TX+RX	Typically > 10 km depending on antenna and installation
FLARM Functions	Collision warnings Proximate traffic information Obstacle warnings Alert Zone warnings Remote identification Tracking Navigation data Status and error conditions Configuration Annual firmware updates

Interfaces

Serial data	2 UART
UART Protocols	NMEA, FLARM binary, MAVLink
GNSS	Dedicated or Host controlled
GNSS Time Pulse	1 Hz, < 5 ms jitter
Antenna connectors	U.FL
Antenna	50 Ω, omnidirectional, dipole, vertically polarized

Optional Add-on Interfaces

Mass Storage	1 USB or 1 MCI (SD Card)
Barometric Sensor	I²C
Microphone	Analog

Electrical Data

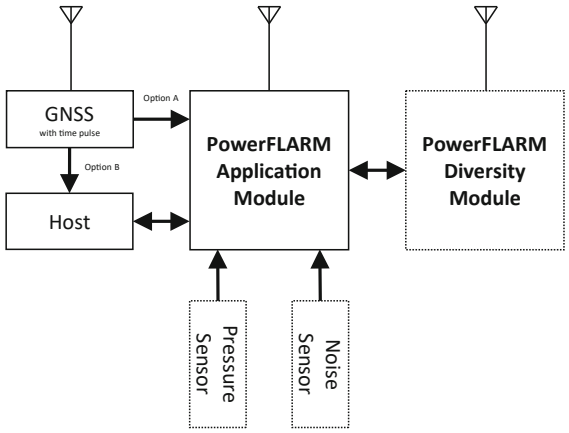
Power Supply	3.3 VDC Regulated
Power Consumption AM	100 mA @ 3.3 V (Typical) 150 mA @ 3.3 V (Max)
Power Consumption DM	20 mA @ 3.3 V (Typical) 30 mA @ 3.3 V (Max)

Environmental Data and Approvals

Operating Temperature	-15 to 70 °C (non-condensing)
Compliance	Europe (ETSI RED) US (FCC/CFR 47 part 15)* Canada (IC RSS)*
Environmental	RoHS compliant (lead-free)
Aircraft Certification	FLARM is EASA approved

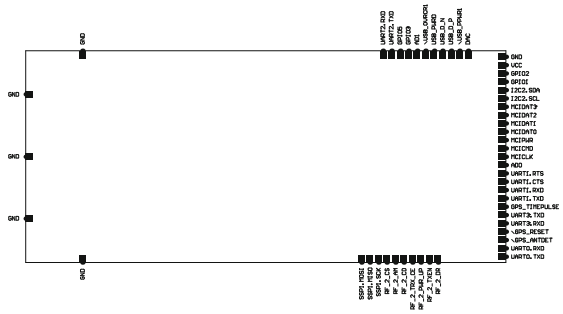
* Pending

Block Diagram

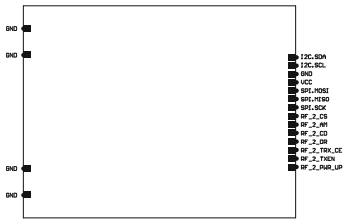


Dimensions

Application Module (AM) 64 x 28 x 4 mm, 9 g



Diversity Module (DM) 36 x 28 x 4 mm, 6 g



Development Kits

GA Dev Kit	GA base board (GNSS, USB, 2x serial) incl. AM+DM, 1090 MHz module, antennas

Further Information

Standard order quantity is 100 pcs per module, 2 pcs per dev kit.

Full documentation and support package for integration subject to signed OEM agreement.

For more information and quotes, contact info@flarm.com

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