LION GNSS Series

The new-generation of GNSS receivers with exceptional performance thanks to its multi-constellation and multi-frequency features. Exploiting the best of MosaicGNSS heritage, with more than 40 units flying including GEO satellite

Based on Airbus Defence and Space Products' heritage in the development of HiRel space GNSS receivers, the LION 1000 new-generation navigation receiver series delivers high performance supporting both multiple frequency reception and multiple navigation constellation operation. The cutting-edge new series takes benefit from advances in navigation processing technology, as well as from upgrades of the GPS constellation - now providing more civil signals - and from Galileo entering its operational phase. Therefore, the new LION 1300, the first member of the new Product family, is designed to make use of the GPS signals L1, L2C, and L5 and of the Galileo signals E1, E5a and E5b, as well as Glonass and Compass open signals*.

* on request for Glonass and Compass

36 channels in parallel are available to track all satellites in view. LION 1000 Series is designed to demodulate the navigation data messages of the GNSS constellations navigation signals and to use this information for PVT determination through an instant point-solution as well as through a dynamic Kalman-filtered solution.

The LION 1000 Series reaches a very high level of integration and performance thanks to the use of an ASIC as the core of the receiver. This ASIC (AGGA-4), developed by Airbus Defence and Space under ESA contract, gathers in a single chip a modern GNSS baseband processor, a LEON-FT as a fault-tolerant microprocessor with FPU, a FFT module and digital interfaces (1553, UART, SpW).

KEY FEATURES	
Multi-Constellation Receiver	Galileo / GPS / Glonass / Compass etc.
Multi Use	Platform / Payload (scientific receiver)
High precision	- Real-time performance using up to 36 Channels - Centimeter post processing capability on ground
Interfaces	- Communication through MIL STD 1553 Bus, SpaceWire, UART - Up to 4 antennas capability - 18-50V power supply
Environment	- Same footprint, same electrical interface, same SW for all LION series Products - Operating : [-25°C ; +55°C]
Life time	15 years
Reliability	< 1500 fits
Application fields	LEO, MEO and GEO satellites

SPECIFICITIES					
			LION 1300	LION 1100	LION 1100Neo
Budget	**Mass**		6kg (without LNA, harness, Antenna)		6.8kg (with LNA, without harness and Antenna)
	Volume		226 x 184 x 205mm³		226 x 229 x 205mm³
	Power		20W		18W
Configuration			Full redundancy in one box LNA / Antenna external		Full redundancy in one box including LNA
Performances	**Frequency**		Tri	Mono	
			E1, L1, E5a, E5b, L2, E2		
	Position accuracy (3D-RMS)		1m (LEO) 30m (GEO)	6 m (LEO) 75 m (GEO)	6m (LEO)
	Velocity accuracy		0.001m/s (LEO) 0.01m/s (GEO)	0.01m/s (LEO) 0.02m/s (GEO)	
	Time		50ns (LEO) 750ns (GEO		

FLIGHT-PROVEN

AIRBUS

LION 1000 assembly

The typical complete redundant LION 1000 assembly is composed of:
• Two LION 1000 units
• Two LNAunits
• Two GNSS Antennas
• Associated RF cables between above components

Up to four GNSS Antennas can be connected to each nonredundant LION 1000 Receiver Unit, e.g. for scientific applications.

The communication options for the fully redundant connection with the onboard computers are:
• MIL STD 1553 Bus
• Cross-strapped SpaceWire
• Cross-strapped UART

* For LION 1100neo the LNA is integrated in the receiver
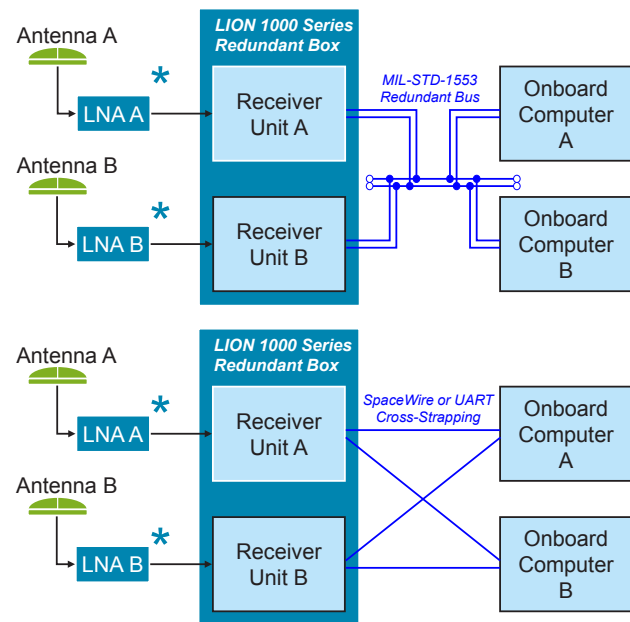
*LION Navigator Assembly with cross-strapped SpaceWire or UART*

LION 1000 architecture

The LION 1000 is based on the AGGA-4, which comprises a complete GNSS core with 36 baseband channels, the LEON-FT as a fault-tolerant micro-processor together with a FPU, a FFT module and digital communication interfaces (MIL STD 1553 Bus, UART, SpaceWire). On its digital board it is complemented with RAM, Boot Loader PROM, and an EEPROM to store the GNSS Application.
The modular design of the RF frame provides for each GNSS frequency a narrow-band RF front-end.
A central OCXO provides the highly precise reference clock to all modules.

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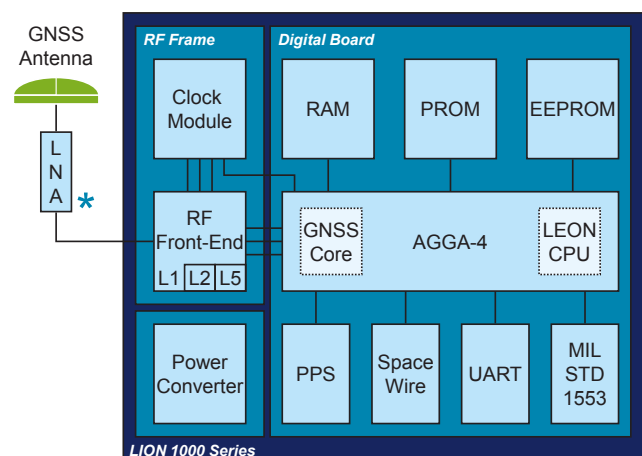
LION Navigator Receiver Unit

LION 1100Neo

The LION 1100Neo is a complete redundant single-frequency, multi-constellation GNSS receiver. The main features are:
• Integrated LNA and cavity filters mounted to the receiver housing
• Same HW and SW interface as LION 1000 Series
• Architecture based on LION 1000 Series
• State-of-the-art design with AGGA-4 for GNSS signal processing
• Attractive price / performance relation

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