

RS-50 RADIO CONTROL SYSTEM FOR DRONES

Rapid development of UAVs and digital systems dictate ceaseless review of the characteristics of the UAV-Operator communications channel. This requires development of a responsive architecture paving the way for implementation of various technologies based on the original structure, so called Software Defined Radios (SDRs).

Having considered all these, AGAT – Control Systems (Managing Company of the Geoinformation Control Systems Holding) came up with its RS-50 design for drones boasting a range of 50km.

Capable of providing simultaneous operation in two bands, L- and S-band for control/telemetry



Terminal RF modem

The UAV channels face very strict requirements in terms of jamming immunity, protection of data from unauthorized access, and redundancy. Beside these, the UAV radio equipment has to meet the ever-growing weight and power consumption standards.

and high-speed data transmission respectively, cascaded coding and direct sequence spread spectrum (DSSS), the radio system has outstanding immunity to jamming. The DSSS solution also reduced the radiated power dramatically, thus cutting the emission signature of the carrier.



Onboard RF modem

The RS-50 owes its encryption data protection in both channels to the open encryption algorithm.

Its RF modem provides manual (prompted by commands from the UAV ground control station) and automatic tracking of the drone. The automatic tracking mode relies on the special antenna design (digital antenna array) of the ground RF modem rather than satellite systems for the drone position fixing.



Ground RF modem

Its operating algorithms and RF data exchange protocols are instrumental in finding range and bearing to the drone with the ground RF modem.

The automatic tracking and ranging mode provides the UAV coordinates even with no satellite positioning data available (including in situations when the UAV is forced to operate in conditions of jamming), flight correction and approach for landing with acceptable accuracy.

Its modern hardware coupled with unique design solutions resulted in a weight of just 650g. The data rate reached 400kbps in the command and telemetry channel and 5Mbps in the high-speed data channel.

Equipped with a special terminal module, the RS50 can share data coming from the UAV with unlimited number of users.



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