iNAT & iMAG & iMADC

Avionics Suite with AHRS, Magnetometer and Air Data Computer for UAV, OPV and Small Aircraft

For navigation and control of unmanned air vehicles (UAV), optional piloted vehicles (OPV) or general small aircraft (CS23, CS25) and helicopters an Attitude Heading Reference System (AHRS), a Magnetometer (MAG) and an air data computer (ADS) are required.

iMAR provides the full range of these components as a plug&play solution, where no formal certicication is demanded:

- iNAT-CFM-5 / iNAT-M200: FOG or MEMS based AHRS or INS/GNSS solution
- iMAG / iTAHS: 3D magnetometer
- iMADC-01:   Micro Air Data Computer
- Interfaces: CANaerospace (ARINC825), UART RS422 and Ethernet
- Wide range supply voltage 9…36 V DC, full EMI/EMC protection for aviation applications

The components are available both as stand-alone devices or as Avionic Suite. They are designed for UAV applications with the potential to be EASA certified.

Technical Data of the Avionics Suite:

iMADC-01:	**Air Data Computer (details can be found on specific datasheet)**
Data Output:	Indicated and True Airspeed, Vertical Airspeed, Pressure Altitude, Static and Total Pressure, Outside Air Temperature (OAT)
Digital Interface:	CANaerospace rev. 2.0 (according to ISO 11898), electrically insulated, configurable 125 kBd … 1 Mbit/s, transceiver with dominant timeout protection.
Operating Range:	-600 to +10'000 m altitude, +/- 50 m/s altitude rate, 100 m/s indicated true airspeed (values are subject on customization),

iMAG-DMC-LS / iTAHS:	**Magnetometer (details can be found on specific datasheet)**
Heading Accuracy:	0.5 deg (2σ), depends on environment
Digital Interface:	RS232 or RS422 (factory set)
Sensor Range:	± 100 µTesla [1 Gauss = 100 µTesla, earth magnetic field is
Resolution:	< 0.01 µTesla between 30 µTesla (equator) and 60 µTesla (poles)]
Roll/Pitch Range:	< +/- 45 ° within specification (0.5 deg heading)
	+/- 80 ° operational (iTAHS: up to +/- 180 deg roll and +/- 90 deg pitch)

iNAT-M200 /-CFM:	**INS/GNSS (details can be found on specific datasheet)**
Attitude Accuracy:	< 1 deg rms dynamic flight, < 0.2 deg static flight with proper velocity aiding (GNSS)
Heading Accuracy:	0.1 deg GNSS aided, typically 0.5 deg magnetic aided;
	drift without aiding: iNAT-CFM-5+: < 5 deg/h day-to-day (complies to ETSO DG Mode)
	< 1 deg/h during short GNSS outages
	iNAT-M200/MLD: < 5 deg/hr, but only during short GNSS outages
Position / Velocity:	see datasheets; for higher performance see also all other iNAT systems from MEMS to RLG
Aiding:	integrated L1 GPS/GLO receiver (all frequ./all constell. on request – see iNAT-M200/SLD), connected iMADC (air data) and iMAG/iTAHS (magnetic)
Data Rate:	up to 400 Hz
Data Output:	Angular rates, accelerations, velocity, position, time (GNSS based), True Air Speed and baro altitude (if iMADC connected), heading (GNSS / magnetic), BIT
Output Interfaces:	UART RS422 / RS232, CAN / CANaero, Ethernet (TCP/IP and UDP); iXCOM protocol & HMI/GUI
Power Supply:	10…34 V DC; hold-over protection for at least 50 ms according to DO160G (other tbd)
Qualification:	MIL-STD-810G, MIL-STD-461G, MIL-STD-704F

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