

AeCU - Inertial Control Unit

The Aerolaser Control Unit, AeCU (2.3) INERTIAL CONTROL UNIT.

AeCU, is responsible for the synchronization of inertial data in mobile environments, as well as registering the events from external sensors. It obtains the position and orientation to georeference remote sensors.

It is the Aerolaser's Flight Management System (FMS), working together with AeMission.

It synchronizes the data obtained by the system.

It georeferences the system's sensors.

Lemo connectors for a secure connection.

Internal clock with nanoseconds accuracy.

It distributes the energy to the rest of the equipment.



AeCU



AeCU provides the following functionalities and features:

- It constitutes the Flight Management System (FMS) from Aerolaser along with AeMission.
- GNSS JAVAD TR-G3T receiver with PPS output to a signal duplicator.
- Internal clock with nanoseconds accuracy.
- AeCU controls two brands of IMU, iMAR and KVH. The iMAR IMU models that could be integrated are: FSAS-NG, FSAS-HP; and from KVH are: 1725, 1750, 1775 and CG-5100. AeCU receives the IMU data and adds the reading timestamp. Data is stored in the AePC's solid state drive.
- AeCU controls up to 6 Phase One and Hasselblad aerial cameras. Through a Lemo connector, it supplies power to the cameras, sends the trigger signal according to the preset time interval and receives the mid-exposure signal, which is assigned with the reception timestamp.
- It is monitored by the AeMission software.
- All sensors are directly connected to the unit, the cameras use peripherals specifically designed or selected for this system and Lemo connectors are used in the connections.
- AeCU distributes the power to each one of the sensors connected to the system.



MAIN FEATURES

Accuracy	Nanoseconds
Connectors	Lemo
Port I/O	Laser scanner, GPS sensor, cameras (up to 6) and IMU
Dimensions	165 x 165 mm
Weight	1,4 Kg
Input voltage	5 DC Voltage (internal logic) 12 DC Voltage (cameras, AeHub, switch) 24 DC Voltage (Javad GPS, IMU, laser, thermal camera)
Power	4,35 W



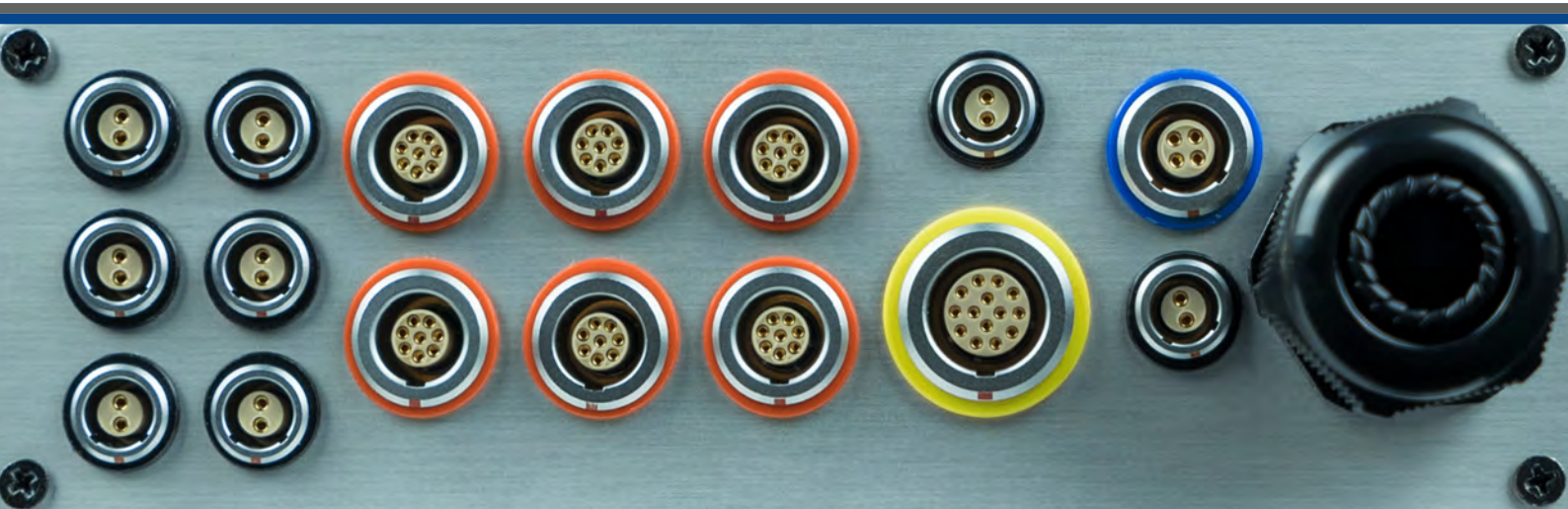
INPUT / OUTPUT

LAN	
Parameters.....	raw laser data, thermal camera, video RGB camera
Control port.....	TCP/IP
USB 2.0.....	raw IMU data, Trigger camera, Control IMU, System commands AeCU
USB 3.0.....	raw camera data, camera parameters
RS232.....	GPS input, Control system comamands GPS, Position, Heading, Track and Speed, Statistics, Attitude, Time and Date, Events
RS232 NMEA	
Input camera-laser (1-5Hz)	
Parameters.....	Position, Time and Date
Other Input/Output	
1 pulse-per-second.....	1 Time Sync output
Event market Input 1	
Power system management.....	12 VDC / 24 VDC



STANDARD DEVIATIONS

	iMAR iMU FSAS HP	iMAR iMU FSAS NG
Position (m)		
Horizontal	0.05	0.05
Vertical	0.02	0.02
Roll & Pitch (deg)	0.0025	0.0025
True Heading (deg)	0.005	0.007





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