



**L3HARRIS™**  
FAST. FORWARD.

# AUTONOMOUS FLIGHT TERMINATION UNIT (AFTU)

## AFTU

### Inputs

- (3) RS-422 inputs for sensor data (GPS, IMU)
- (2) MSTR ARM/SAFE CMD (A & B)
- (1) INT PWR CMD
- (1) EXT PWR CMD
- (2) Discrete liftoff indicators (A & B)
- (2) Ethernet IP address selects
- (1) 10 W, 28 VDC output enable
- (1) Battery voltage and temperature monitor
- (2) GPS RF

### Outputs

- (2) Destruct warning TLM outputs
- (4) Destruct 5.25 A min outputs (current limited)
- (1) RS-422 output for AFTU TLM PCM data
- (1) Resistor shunt current monitor
- (1) GPS output (for cross-strap to second AFTU)
- (1) +5 V, 1 A current limited output for ext. GPS power
- (1) +15 V, -15 V, 0.15 A current limited output
- (2) 10 W, 28 VDC outputs

### I/O

- (1) Full-duplex RS-422 interface for AFTU cross strap
- (2) Ethernet interfaces for command and status
- (2) RS-422 interfaces for command and status

### Power Supply

Supply Voltage	+28 V primary power, +/-15 V, +5 V power outputs
Power Consumption	< 25 W (including GPS)

### Embedded GPS Receiver

Supported Signals	M-Code, SAASM P(Y), C/A
Data Output Rate	10 Hz
Position Accuracy	22 m 3 $\sigma$
Velocity Accuracy	.9 m/s 3 $\sigma$
Acceleration Max	196 m/s <sup>2</sup>
Jerk	108 m/s <sup>3</sup>



The L3Harris Autonomous Flight Termination Unit (AFTU) is a configurable, fault-tolerant autonomous flight termination unit and the core of L3Harris' autonomous flight safety system. The only RCC-319-certified flight termination unit with M-code GPS compatibility, the AFTU is poised to support present and future launch requirements into 2030 and beyond.

The AFTU integrates multiple functions into a single unit to keep the system affordable, compact and reliable:

- > CASS processor
- > Power changeover switch
- > Redundant initiation circuits
- > RCC-324-compliant M-code GPS receiver (option)

Built on a 50-year history of flight termination experience, the AFTU leverages heritage circuit designs on all functions listed above, with proven performance on Atlas V, Delta IV, Space Launch System, Space Shuttle, ISS and many other missions.

The AFTU is single-fault tolerant, with redundancy in the master safe/arm, local arm, liftoff indicators, initiation circuits and all flight-critical FPGAs. Local and remote cross-strap heartbeat monitors ensure safe utilization of redundant hardware configurations. The embedded power changeover switch can disable the AFTU once out of the range-safety boundary for further fault protection.

L3Harris has been providing rock-solid flight termination hardware for over 50 years with zero operational failures across all product lines. The AFTU can be trusted to perform flawlessly on every mission.

PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS	
<b>Physical</b>	
Volume	122.5 in <sup>3</sup>
Dimensions	2.5" H x 7" W x 7" D
Weight	4.5 lb
<b>Reliability</b>	
Operating Life	10,000 hours
Storage	15 years
Reliability	> 0.9999 at 95% confidence
<b>Environments (Qual)</b>	
Thermal environment (TBD)	-37 °C to +71 °C
Pyro Shock	> 5600 G @ 10,000 Hz
Acceleration	20 g 30 sec ea ± axis (180 sec total)
Random Vibration	36 Grms, 300 sec/axis (test 1) 58 Grms, 60 sec/axis (test 2)

### BUILT-IN M-CODE GPS RECEIVER

The AFTU includes an optional embedded GPS receiver based on the L3Harris IEC M2 GRAM Type II, the only M-code GPS receiver qualified for use by the GPS Directorate. In addition to cost, weight and space savings, the embedded GPS provides built-in compliance to the congressional M-code mandate, saving future time and expense.

### EXPERT SUPPORT

The AFTU is designed, built, assembled and tested all within one facility and is serviced and supported by engineering professionals with decades of spaceflight design experience. Every AFTU delivered is accompanied by domain expertise in parts, materials, radiation analysis, mechanical engineering, power supply design, digital signal processing, radio frequency design and manufacturing engineering. For most applications, existing data items can be provided for review, reducing the analysis and testing required.

#### Autonomous Flight Termination Unit (AFTU)

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L3Harris Technologies is an agile global aerospace and defense technology innovator, delivering end-to-end solutions that meet customers' mission-critical needs. The company provides advanced defense and commercial technologies across air, land, sea, space and cyber domains.



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