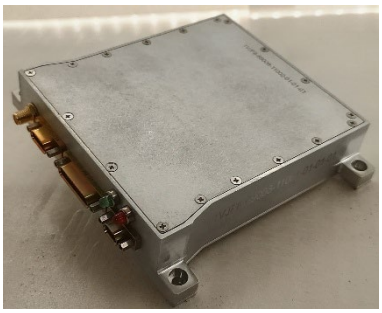
MINIATURE INTEGRATED AUTONOMOUS FLIGHT TERMINATION UNIT (MIAFTU)

Reduced-size IAFTU for use on small launch platforms



The Sagrad Miniature Integrated Autonomous Flight Termination Unit (MIAFTU) is a compact derivative of the field-proven IAFTU, engineered for weapons, hypersonic vehicles, and small-lift launch platforms. The reduced footprint of the MIAFTU enables integration on airbreathing platforms where performance is critical and minimum size, weight, and power are mandatory.

The MIAFTU is a configurable, fault-tolerant unit equipped with a robust dual-core processor running the Core Autonomous Safety Software (CASS) Operational Release 3 (OR3) developed by the U.S. Space Force and NASA — the same flight-proven software core used in Sagrad's IAFTU. The unit is RCC319-25 certified and its embedded M-Code GPS receiver is RCC324 compliant, supporting present and future mission requirements beyond 2030.

The MIAFTU supports RCC319-25 redundant requirements with cross-strap capabilities. Its configurable architecture provides a non-intrusive path for dual-use applications (military and commercial), and its multi-sensor support enables seamless integration into weapons, targets, and vertical launch platforms. The MIAFTU is part of a family of systems originally created in 2016 with NASA and now supporting Military branches and Agencies — all designed, manufactured, and tested at Sagrad's ITAR-controlled facility in Melbourne, FL.

MIAFTU Specifications

Electrical	Min	Typ	Max	Units	Notes
Input Voltage	22	28	36	VDC	Constant
			45	VDC	Transient
			-45	VDC	Reverse
Input Current	0.19	0.25	0.33	A	Does not include termination output
Termination Output Current		0.1		A	Continuous. Individual Outputs
nTermination Output Current		0.1		A	Continuous. Individual Outputs
GPS Antenna Input		50		Ω	Embedded M-Code receiver (RCC324)
GPS Antenna Voltage		5		V	
GPS Antenna Current		100		mA	
Liftoff Detection	2	28	36	V	Discrete input
Master ARM/SAFE Inputs					2 redundant discretes (A & B)
DS101 Keying Interface					M-Code key fill
EMI Filtering		40		dB	3dB corner frequency of 500 kHz
Communication					
RS-422					Console / Telemetry / Navigation / Voting
Ethernet					Command / Status to Ground / Vehicle / Telemetry
GPS Cross-Strap					Cross-strap to redundant MIAFTU
MIAFTU Cross-Strap					Redundant unit health & voting

MIAFTU Mechanical and Environmental Specification

Mechanical	Min	Typ	Max	Units	Notes
Dimensions					
Length		3.0		Inches	
Width		2.0		Inches	
Height (with embedded GPS)		1.5		Inches	
Height (without embedded GPS)		0.75		Inches	
Volume		10.89		in^3	
Weight		1.2		lbs	
Reliability					
Operating Life		10,000		hours	
Storage Life		10		years	
Environmental					
Operating Temperature	-40		+80	°C	Qualification
Shock			>4,900	G	@ 10,000 Hz
Acceleration		100		G	300 sec ea. axis
Random Vibration (non-buffet)		42		Grms	23 min/axis
Random Vibration (buffet)		26		Grms	4 min/axis
Random Vibration (free flight)		46		Grms	30 min/axis
Compliance & Certification					
Flight Termination					RCC319-25 certified
GPS Receiver (M-Code)					RCC324 compliant
Software					CASS/OR3 (USSF/NASA) + Sagrad v.3 wrapper

MIAFTU Interfaces

Interface Group	Description
Inputs	4 sensor inputs (RS-422, Ethernet, 1× GPS); 2 Master ARM/SAFE CMD (A & B) discretes; 1 GPS RF antenna input; 1 DS101 keying interface.
Outputs	1 Terminate interface (100 mA continuous); 1 nTerminate (100 mA continuous); 1 RS-422; 1 GPS cross-strap (to redundant M-IAFTU).
Bi-Directional I/O	1 Ethernet command/status interface for ground/vehicle/telemetry; 1 M-IAFTU cross-strap for redundancy.

Key Features

- Embedded M-Code GPS receiver; supports external GPS (Tru-Track II M, Navstrike-M, Novatel, JAVAD).
- RCC319-25 certified; RCC324-compliant GPS receiver.
- Dual use for navigation and range safety tracking.
- GPS Directorate approved.
- 10 Hz update rate.
- Mission programming via Mission Data Load (MDL) upload.
- Supports missile, hypersonic, VLP, captive-carried, rail, and small-lift platforms.
- Supports ESAD and control-surface destruct outputs.
- Reduced overall size with no degradation of performance.
- Runs CASS/OR3 plus Sagrad's v.3 software wrapper.

Sagrad Inc. is an ITAR-controlled facility. We look forward to supporting your Flight Termination System requirements.

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