

U-PALS FLIGHT CONTROL TECHNOLOGIES

WHEN THE MISSION MATTERS



The Universal Precision Auto-Landing System (*U-PALS*) is a software and sensor package used in conjunction with L-3 Geneva's *flightTEK*[®] flight control unit and *missionTEK*[™] control station to enable the autonomous launch and recovery of unmanned aircraft at fixed and moving recovery sites. The system increases the operational flexibility of UASs and reduces the operations and support costs.

U-PALS employs relative navigation techniques to precisely recover UASs onto stationary and moving platforms. The system is comprised of two subsystems: an air vehicle sensor and receiver subsystem and a sensor and transmitter subsystem located near the recovery site. The system requires geodetic landing site parameters that are entered into the *missionTEK* airfield database. Once configured and installed in the host aircraft the system gives the operator push button launch and recovery capability.

KEY FEATURES

- Recovery on either stationary or moving platforms
- Day and night operations
- Ground and ship board landings up to 30kts and sea-state 4
- Crab nulling at touchdown



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U-PALS FEATURES

Air Vehicle Kit includes:

- Relative Nav GPS sensor
- Communication radio
- GPS antenna
- Communication antenna
- *flightTEK* and *missionTEK* software keys

Ground Unit includes:

- 19 in. rack mount Ground Transmitter Assembly with embedded sensors
- Communication antenna (other frequencies available)
- GPS antenna
- Two 20 ft retractable antenna masts and wheel stands

Specifications:

Overview	Relative Nav GPS sensor	900 MHz Radio	GPS Antenna	Relative Nav Grd Trans. Assembly
Size	2.8"H x 6.3"W x 7.28"L	6.5"L x 2.93"W x 2.22"H	.57"H x 3.5"W (Diameter)	4.88"H x 22" L x 17.2"W (excl. rack-mounting brackets)
Weight	2.2lbs.	.97 lbs	.31lbs	15lbs.
Power	2.5W (typical) at 9 to 18V	5W (typical) at 6 to 30V	1W at 4 to 24V	216W
Input Voltage Range				85-265VAC (47-63Hz)
Input Current				1.8A (typical)
Enclosure	Aluminum			19" Rack-Mount 3U
Serial Comm	Up to 115200 baud rate	Up to 115200 baud rate		Up to 115200 baud rate
Frequency Range		902 to 928 MHz	1575.42 MHz	902 to 928 MHz
Receiver Sensitivity		-108 dBm for 10-6 BER		
		-110 dBm for 10-6 BER		
System Gain		140dB		
Error Detection		32 bit CRC, Retransmit on error		
			VSWR	2.0:1
			Polarization	RHCP
			Impedance	50 ohms
			Antenna Gain	3dB
			Gain (preamp)	26.0 dB
			Noise Figure	2.8 dB
Environmental:				
Temperature (Opr.)	-40deg C to +75deg C		-55deg C to +85deg C	-10deg C to +70deg C
Temperature (Non-Opr.)	-45deg C to +95deg C			
Humidity (Opr.)	0 to 95% non-condensing			0 to 95% non-condensing
Waterproof	IEC 60529 IPX7			
Vibration (Operating)			10G's	
Random	MIL-STD-202G 214A			
Sinusoidal	SAE J1211 4.7			
Shock (Non-Opr.)	IEC 68-2-27 Ea			
Altitude	0 to 35,000ft.			0 to 55,000 ft.

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