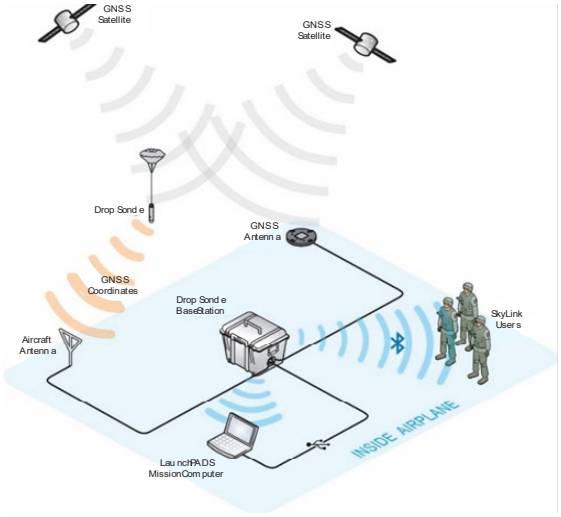
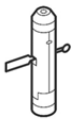
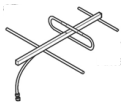
Drop Sonde System is a roll-on/roll-off system that lets aircrews generate a measured atmospheric profile along the sonde's trajectory once released from an aircraft for a specific location and time (horizontal and vertical winds, pressure, temperature, relative humidity). The system operates as a fully self-contained unit, requiring no modifications to the aircraft and no need to connect to aircraft electrical power or data. Alternatively, the system can be configured to leverage antennas mounted to the aircraft to simplify operations. Each single-use Sonde is manually released from the aircraft and descends at an average of approximately 25 m/s. Each Sonde streams GNSS-derived position and atmospheric data to a Base Station, which can be onboard an aircraft or ground-based. The communication range is 50 km from the Yagi Antenna connected to the Base Station. The radio frequency operates within the ITU (International Telecommunications Union) Radio Service of Meteorological Aids (MetAids). The frequency is approximately 403 MHz with an output power of 1 mW while in the aircraft and increasing to 100 mW once deployed.

The Base Station system receives, displays, stores, and distributes Sonde data to other MMIST products. The Base Station can be configured to track up to six Sondes at the same time, which is an essential ability in operations that are carried out with high-speed, high-altitude aircraft when dense horizontal resolution of data is required.



Drop Sonde systems offer seamless integration with MMIST's LaunchPADS mission planner. Once data is transmitted to the Base Station, it can be imported into LaunchPADS' Wind Sonde Module. Updating local wind layers allows the system to dynamically adjust the Calculated Air Release Point (CARP), which can significantly increase mission success probability compared to forecasted to wind data. Please note that LaunchPADS is not included with the standard Drop Sonde System package and must be purchased independently.

Drop Sonde System Components and Ancillary

	Component	Description
	Base Station P/N 064603	An integrated receiver, auxiliary component storage of six individual drop sonde tubes with charging cables. ▪ Thermal Operating Range: -20°C to +40°C ▪ Operating Duration: 6 hours ▪ Dimensions & Mass : L 520 mm x W 518 mm x H 489 mm, M 27 kg ▪ USB (serial) and BLE communications/ Wi-Fi 802.11 b/g
	Drop Sonde P/N 062302	A consumable instrument that receives signals from GNSS satellites and transmits telemetry to the Base Station. ▪ Thermal Operating Range: -20°C to +40°C (supporting colder transient through atmosphere on release) ▪ Operating Duration: 6 hours idle/ 3 hours active ▪ Dimensions & Mass: L 300 mm x D 55 mm, M 1 kg
	Yagi Antenna Kit P/N 065779	A line-of-sight antenna that can be temporarily mounted on the aircraft or handheld by the user. • Dimension: L 380 mm x W 370 mm x H 80 mm • Coaxial cable provides a signal connection between the antenna and Base Station
	Fin Antenna (sold separately) P/N 065213	An aircraft that has permanent, exterior mounted downward-facing antennas can be linked to the Drop Sonde system. • Dimension: L 000 mm x W 000 mm x H 000 mm • MMIST is also capable of providing and installing a fin antenna for this purpose.

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Drop Sonde Key Vitals

Operational Aspect	Performance or Limit
Maximum Deployment Altitude	29,000 ft MSL
Communication Range	50 km
Maximum Deployment Airspeed	150 KIAS
Vertical Airspeed (Indicated)	25 m/s
Delete Logs	Yes, option to zeroize on landing

Operational Performance and Limits

Pressure Sensor	
Type	Barometric pressure
Operating Range	30 – 110 kPa
Time Constant	1 s
Measurement Noise	0.2 Pa RMS
Accuracy	±100 Pa

Humidity Sensor	
Type	Digital humidity
Operating Range	0 – 100 % RH
Time Constant	1 s
Measurement Noise	0.02 % RH
Accuracy	±3 %
Hysteresis	±1 %

Outside Temperature Sensor	
Type	NTC Thermistor
Operating Range	-40°C to 100°C
Time Constant	≤3.2 seconds
Accuracy	±1 °C

GNSS Sensor	
Type	Multi Constellation GNSS Sensor
Operational Limits	Dynamics ≤ 4 g/ Altitude 80,000 m/ Velocity 500 m/s
Position Accuracy	2.0 m CEP
Velocity Accuracy	0.05 m/s

Qualifications

Qualification Aspect	Base Station	Drop Sonde
Exposure to Pressure	N/A	MIL-STD-810.H 500.6 Procedure II & III
Exposure to Temperature	MIL-STD-810.H 501.7/ 502.7 Procedure I & II	MIL-STD-810.H 501.7/ 502.7 Procedure I & II
Exposure to Thermal Shock	N/A	MIL-STD-810.H 503.7 Procedure IA
General Vibration	MIL-STD-810.H Method 514.8 Procedure I	MIL-STD-810.H Method 514.8 Procedure I
Exposure to Rain	MIL-STD-810.H Rain Method 506.6 Procedure I	Suitable for light rain
Radio Frequency Susceptibility	DO-160.G Category Q	DO-160.G Category Q
Radio Frequency Emissions	DO-160 Category M	N/A

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