

## Class II UAV – Meteorological Measurement System



### BFS-MMS: Meteorological Measurement and Weather Mapping System (Class II UAV)

Brican's TD100-MMS aircraft is now equipped with Aventech's ARIM320-UAV Digital Air Probe sensor suite. The ARIM320-UAV is a small integrated Air-Data Inertial Reference Unit (ADIRU) for obtaining highly accurate air and meteorological data that also supports the analysis and interpretation of other remote-sensing data. Operators are able to monitor and interact with the aircraft in-situ using the real-time data relayed to the Ground Station via AvSTAR (Aventech Satellite Tracking and Reporting) over the Iridium satellite network. The ARIM320-UAV system also delivers crucial airborne operational and application-specific geo-referenced data to ground management personnel who are then able to modify waypoints and other flight characteristics accordingly.

#### Air-data measurements:

- Pitot Pressure
- Static Pressure
- Angle-of-attack
- Angle-of-sideslip
- Temperature
- Humidity

#### Basic navigation measurements:

- GPS Position (Latitude, Longitude, Altitude, Velocity)
- Three-axis Accelerations (X, Y, Z)
- Three-axis Rates (Roll, Pitch, Yaw)
- Three-axis Magnetic Field (X, Y, Z)

The ARIM320 uses an integrated DSP to compress sensor data in real-time. Data processing utilizes a proprietary Kalman Filter for GPS-inertial sensor integration and an aerodynamic correction model for air-data. MEMS-based air-data and inertial sensors, GPS hardware, and all analog and digital processing electronics are fully integrated into the aircraft's wing. Measured data is broadcast via a CAN Aerospace Serial Communications Interface.

#### Processed output includes:

- Static Pressure – corrected for position error
- Total Pressure
- Indicated Air Speed/Altitude
- Calibrated Air Speed – corrected for Position Error/Altitude
- True Air Speed – corrected for Position Error/Altitude
- Equivalent Air Speed/Altitude
- Angle of Attack – corrected for Position Error
- Angle of Sideslip – corrected for Position Error
- Total Air Temperature
- Outside Air Temperature – corrected for Dynamic Heating
- Impact Pressure
- Aircraft Attitude (Roll, Pitch, Yaw)
- Aircraft Inertial Velocity
- True Heading
- Coarse Heading
- Rate of Climb
- Flight Path Angle
- Three-Dimensional Winds (vector components, horizontal Speed/Direction)

## Brican Flight Systems Inc. - MMS

The BFS-MMS is a fully integrated package with all components engineered and integrated directly into the TD100 Series UAV providing a RPAS weather sampling and airborne meteorological observation solution. The TD100 series design is focussed on the current MTOW with Transport Canada (Small UAV Category). The TD100 can be equipped with either an Electric motor or a Multi Fuel engine capable of operating on Bio-fuel, Diesel and a variety of other fuels.

The entire MMS sensor package is built into Brican's high performance UAV aerial systems platform and delivers affordable and accurate atmospheric data in even the most remote and harsh environments.

Launch and recovery is managed by a custom pneumatic launcher and inflatable landing strip, both lightweight and portable and therefore provides unrestricted operations on land, sea (Heli Pad) or snow.

Multiple system configurations available upon request.

## TD100 SPECIFICATIONS

### Weight:

Electric 15.87 Kg/ 35lb  
Multi Fuel 15.87 Kg/ 35lb

**Max take-off:** 25 kg/55 lb

**Useful Payload:** 9.1 kg / 20 Lbs

**Wingspan:** 5.0 m/ 16'

**Length:** 2.0 m/ 6' 6"

**Air frame:** Composite Carbon Fibre

**Autopilot Options:** Cloud Cap Piccolo  
Rockwell Collins Athena 111m

**Ground Control:** MaxVision Portable Computers



## SPECIFICATIONS AND PERFORMANCE CRITERIA:

	Electric	Multi Fuel
• <b>Cruise Speed</b>	83 kph (55 knots)	83 kph (45 knots)
• <b>Max Speed</b>	185 kph (100 knots)	185 kph (100 knots)
• <b>Ceiling</b>	7600 m	7600 m
• <b>Endurance</b>	Up to 2.5 hrs	Up to 23 hrs
• <b>Range</b>	Up to 200 km (108 nm)	Up to 1945 km (1050 nm)
• <b>Operating Temperature</b>	-20 <sup>0</sup> C to 45 <sup>0</sup> C (-4 <sup>0</sup> F to 113 <sup>0</sup> F)	

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### Designed and built to be RPAS compliant that meets Canadian Best Practice Standards and Certifications

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