

### CubeSat-class Spacecraft Bus

#### Applications

- JPL ISARA mission

#### Features

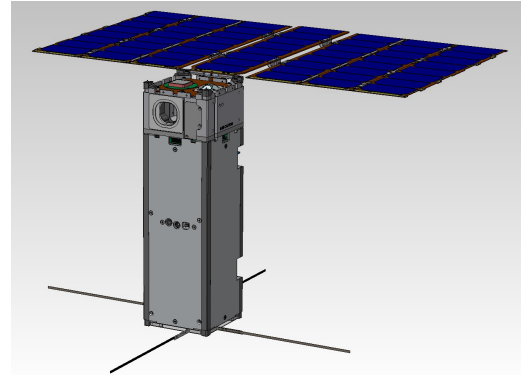
- 3U-size CubeSat
- Modular, customizable architecture
- >1300cc payload volume
- Multiple solar array configurations possible (e.g. "Propeller", "Turkey Tail", "Space Dart")
- Optional GPS
- Supports a minimum of 3 Separation Switches

#### Incorporated Subsystems

- Pumpkin CubeSat Kit<sup>TM</sup> Pro chassis
- Pumpkin 5<sup>th</sup>-generation PMDSAS fixed and/or deployable solar panels with up to 46 triple-junction solar cells (1W BOL each)
- Pumpkin fixed side panels with integrated Pumpkin Panel Release Mechanisms (PRMs)
- BCT xACT<sup>TM</sup> ADCS with star camera for precise attitude knowledge and control
- Pumpkin Solar Interface Module (SIM)
- Pumpkin ADCS Interface Module, with:
  - AstroDev<sup>TM</sup> Lithium-2<sup>TM</sup> UHF transceiver
  - AstroDev<sup>TM</sup> UHF splitter/phaser
- Pumpkin Battery Module 1 (BM 1), with:
  - 40Wh energy storage
  - 2S2P cell configuration
- Pumpkin EPS 1, with:
  - Unregulated VBATT output
  - Regulated +5V\_SYS and VCC\_SYS outputs
- Pumpkin Motherboard (MB), with choice of Pumpkin Pluggable Processor Module (PPM)
- ISIS AntS<sup>TM</sup> deployable antenna module

#### Also Includes

- Test & validation software
- Up to 40hrs of engineering support
- Up to three on-site source inspections of less than four hrs each



Turkey Tail configuration shown

#### ORDERING INFORMATION

Pumpkin P/N 715-00930

Option Code	Configuration
/00 (standard)	standard
per factory	consult factory

Contact factory for availability of optional configurations.  
Option code /00 shown.



#### CAUTION

Electrostatic  
Sensitive  
Devices

Handle with  
Care



**CHANGELOG**

Rev.	Date	Author	Comments
A	20140107	AEK	Initial version

## OPERATIONAL DESCRIPTION

Pumpkin's MISC 3 bus is a complete hardware solution for 3U-size CubeSat nanosatellites.

MISC 3 P/N 715-00930 utilizes the BCT xACT™ ADCS to achieve sub-degree attitude knowledge and control. The remaining Pumpkin bus components (SIM, ADCS I/F Module with transceiver and splitter/phaser, optional GPS, BATT, EPS, C&DH, PRMs and antennas) form an integrated, wiring-free solution with a standardized 104-pin connector interface to the end-user's payload.

An optional GPS receiver – Pumpkin's GPSRM 2 – can be fitted in-between the ADCS I/F Module and the BM 1 Battery Module. The GPS antenna is located on top of the ADCS, on the nominal anti-nadir end of the satellite.

**ABSOLUTE MAXIMUM RATINGS**

Parameter	Symbol	Value	Units
Operating temperature <sup>1</sup>	$T_A$	-40 to +85	°C

**PHYSICAL CHARACTERISTICS**

Parameter	Conditions / Notes	Symbol	Min	Typ	Max	Units
Mass	Estimated, when outfitted in "propeller" configuration with four fixed and eight deployable solar panels.			2800		g
Overall length (Z)	Conforms to CubeSat specification			340.5		mm
Overall width (X)				100.0		
Overall depth (Y)				100.0		

<sup>1</sup> For most components. A few notable components are not specified for operation over the entire industrial temperature range; these may include the ADCS and individual batteries. Please consult the manufacturer's datasheets for more information.

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744 Naples Street  
San Francisco, CA 94112 USA  
tel: (415) 584-6360  
fax: (415) 585-7948

web: <http://www.pumpkininc.com/>  
email: [info@pumpkininc.com](mailto:info@pumpkininc.com)

web: <http://www.cubesatkit.com/>  
email: [info@cubesatkit.com](mailto:info@cubesatkit.com)