Item	SWAS	FAST	SAMPEX	WIRE	TRACE
Launch Vehicle	Pegasus XL	Pegasus XL	Scout	Pegasus XL	Pegasus XL
Mission Life	up to 2 years	1 year	3 years	4 months	1 year
Nominal Orbit	600 km circular 65°	350 x 4,200 km 83°	550 x 675 km 82°	400 km circular 97.2° sun sync	700 km circular 98.2° sun sync
Redundancy	single string	single string	single string	single string	single string
Mass (kg)	252	180	157	294	224
Instrument	71	51	40	88	50
Spacecraft	181	129	117	206	174
Power Allocation - orbit avg (W)					
Instrument	59	15	22	45	35 + 30 heaters
Spacecraft	133	33	60	170	170
C&DH					
Spacecraft Processor	dual 32-bit, 386/387	dual 8-bit 80C85	32-bit, 386/387	32-bit, 386/387	32-bit, 386/387
Data Bus	1553	1553/RS-422	1773	1553/RS-422	1553/RS-422
Science Data Rate (kbps)	12 (avg)	science data processed on board[1]	3 (avg)	8 (avg)	50 (avg)
Instrument Mass Storage	70 Megabytes	1 gigabit (on instr)	26 Megabytes	80 Megabytes	80 Megabytes
Command Uploads	1/day, 17 kbytes (avg)	1/day, 11 kbytes (avg)	1/day, 2 kbytes (avg)	1/day, 35 kbytes (avg)	1/day, 1 kbyte (avg)
RF Communications					
Telemetry (Mbps)	1.8	0.9/1.5/2.25	0.9	1.8	1.8
Command (kbps)	2	2	2	2	2
Antennas	1 directional (micropatch)	1 high gain directional (micropatch)	2 omnis	2 omnis	2 omnis
Transponder	Std NASA S-band	Std NASA S-band	Std NASA S-band	Std NASA S-band	Std NASA S-band

1 Solid state recorder part of the instrument data processing unit

Item	SWAS	FAST	SAMPEX	WIRE	TRACE
Attitude Control					
Type	3 axis stabilized	spin stabilized	momentum biased	3 axis stabilized	3 axis stabilized
Pointing Accuracy	38 arc-sec[2]	1 deg (knowledge)[3]	2 deg	60 arc-sec(1σ)	20 arc-sec[4]
Pointing Stability	19 arc-sec	N/A	N/A	12 arc-sec (2σ)	0.1 arc-sec[5]
ACS Components	3 torquer rods 1 DSS 5 CSS 3 reaction wheels 1 magnetometer 3 gyros 1 high accuracy CCD star tracker	2 torquer rods 1 spinning sun sensor 1 horizon crossing indicator 1 magnetometer	3 torquer rods 1 2-axis DSS 5 CSS 1 reaction wheel 1 3-axis magnetometer	3 torquer rods 1 DSS 5 CSS 3 reaction wheels 1 magnetometer 3 gyros 1 high accuracy CCD star tracker	3 torquer rods 1 DSS 6 CSS 3 reaction wheels 1 magnetometer 2 gyros
Power					
EOL capability - orbit avg (W)	230	50	100	210	230
Voltage	28 V unregulated	28 V unregulated	28 V unregulated	28 V unregulated	28 V unregulated
Battery	21 A-hr NiCd	9 A-hr NiCd	9 A-hr NiCd	9 A-hr NiCd	9 A-hr NiCd
Solar Arrays	4 deployable fixed & 1 body mounted	body mounted	2 deployable fixed	2 deployable fixed	4 deployable fixed
Cells	GaAs	GaAs	GaAs	GaAs	GaAs
Size (m^2)	3.4	5.6	1.7	2.5	2.5
Thermal	-15 to +50 C passive w/heaters	-15 to +50 C passive w/heaters	-10 to +50 C passive w/heaters	-20 to +50 C passive w/heaters	-20 to +50 C passive w/heaters
Mechanical/Structure	Aluminum	Aluminum	Aluminum	Aluminum/Comp.	Aluminum
Reaction Control Subsystem	N/A	N/A	N/A	N/A	N/A
Ground Station					
Quantity	1	varies	1	2	2
Location	WFF	WFF, DSN, Poker Flats	WFF	WFF & Poker Flats	WFF & Poker Flats
Contacts	2-3 ground contacts/day	varies	two 10-minute ground contacts/day	2 contacts/day	up to 6 ground contacts/day

2 With instrument provided star tracker
3 After ground processing
4 From instrument provided guide telescope
5 Using telescope image motion compensation mechanism

Item	**SWAS**	**FAST**	**SAMPEX**	**WIRE**	**TRACE**
Mission Operations Center	Mission scheduling, health and safety, analysis, level 0 processing. Located at GSFC Shared Operations	Mission scheduling, health and safety, analysis, level 0 processing. Located at GSFC Shared Operations	Mission scheduling, health and safety, analysis. Located at GSFC Shared Operations	Mission scheduling, health and safety, analysis, level 0 processing. Located at GSFC Shared Operations	Mission scheduling, health and safety, analysis, level 0 processing. Located at GSFC Shared Operations
Science Activities Science Operations Center Location Science Data Volume	 SAO 120 Mbytes/day	 UCB varies	 U. of Md 20 Mbytes/day	 CIT/IPAS 95 Mbytes/day	 GSFC 320-480 MBytes/day
Observation Strategies	Radiometer and acousto-optical spectrometer measurements of interstellar clouds. 3-5 targets per orbit	High time and spatial resolution plasma measurements at apogee	Particle detection	Accumulate 6 million seconds w/in 50° of North/South galactic poles and outside of ±20° of ecliptic	Accumulate nine 27-day periods of uninterrupted sun-viewing.