Small Satellite Data **Compiled by Selim Solmaz**

1) Surrey Modular Micro Satellite (Surrey Space Technology LTD.-Univ. of Surrey)
(Example missions: UoSAT-3, -4, -5, KITSAT-1, S80/T, HealthSat, POSat, FASAT-Alfa, CERISE, FASAT-Bravo, TMSAT, CLEMENTINE)
http://www.sstl.co.uk/services/subpage_services.html

2) Surrey Modular Mini Satellite (Surrey Space Technology LTD.- Univ. of Surrey)
(Example mission: UoSAT-12)
http://www.sstl.co.uk/services/subpage_services.html

3) Surrey Modular Enhanced Micro Satellite (Surrey Space Technology LTD.-Univ. of Surrey)
http://www.sstl.co.uk/services/subpage_services.html

4) Surrey 'Constella' Small Satellite (Surrey Space Technology LTD.-Univ. of Surrey)
(Example mission: GANDER)
http://www.sstl.co.uk/services/subpage_services.html

***Launch Mass*:**

1) 50-70 kg total,
   15-35 kg payload mass
2) <400 kg total,
   <200 kg payload mass
3) 90-140 kg total,
   15-45 kg payload mass
4) 70-140 kg total,
   10-60 kg payload mass

***Primary/Secondary Missions*:**

1) - Earth Observation-Meteorology, Environmental
   - Store & Forward Communications
   - Science & Technology
   - Civil & Defense
2) - Earth Observation-Meteorology, Environmental
   - Store & Forward Communications
   - Science & Technology
   - Constellations
   - Civil & Defense
3) - Earth Observation-Meteorology, Environmental
   - Store & Forward Communications
   - Technology demonstration
   - Constellation Use – EO, Comms
   - Civil & Defense

4) - Earth Observation-Multi Spectral, Meteorology, Environmental monitoring
   - Remote terminal data collection, Remote control operation.
   - High speed Ku and Ka band communications
   - Geolocation and Navigation

Orbit Properties:

1) 400-1400 km orbit altitude
2) Any low Earth orbit (LEO)
3) 400-1400 km orbit altitude
4) 400-1400 km orbit altitude

Launch Vehicle:

1) Compatible with Delta, Ariane, Cyclone, Athena, Taurus and Zenit rockets
2) Compatible with Delta, Ariane-4, Dnepr, Tsyklon and Zenit rockets
3) Compatible with Ariane-V ASAP, Dnepr, ROKOT, COSMOS and OSC Pegasus.
4) Compatible with Delta, Ariane-4, Dnepr, Tsyklon, Zenit and COSMOS rockets

Attitude Control Strategy:

1) - Sensors : Sun sensors, and magnetometers in 3 axes (×2)
   - Actuators : Gravity gradient boom, magnetorquer in 3 axes (×2)
   - Attitude : Nadir pointing, yaw control: or 3-axis 0M bias option
2) - Sensors : 2-axis sun sensors (×2), Earth sensors (×2),magnetometers (×2), Star Camera (×2), Quartz gyro (×4)
   - Actuators : Reaction Wheels (×4), torque Coils (×13)
   - Attitude : 3-axis stabilized 0M bias-inertial, star or Nadir pointing
3) - Sensors : 2-axis Sun sensors(×2), magnetometers in 3 axes (×2), Star Camera (×2), Quartz gyro (×2)
   - Actuators : Reaction Wheels (×4), torque Coils (×13)
   - Attitude : 3-axis stabilized 0M bias-inertial, star or Nadir pointing
4) - Sensors : Earth Horizon sensors (×3), 3-axis magnetometers (×2), Optional Star Camera ,gyros or sun sensors
   - Actuators : Momentum Wheels (×2), torque Coils (×6), Optional reaction wheels
   - Attitude : 3-axis stabilized 0M bias-inertial, nadir pointing, 3-axis 0M option

Power Generation / Storage:

1) - Solar Panels : Four body mounted GaAs cell panels @ 36W each
   - Peak power : 50W
   - Battery : 10cell 7 Ah NiCd battery
   - Dual redundancy : BCR, Power conditioning & distribution modules

2) - Solar Panels : Nine body mounted GaAs cell panels @ ~60W each
- Peak power : 250W arrays & battery, 175W arrays only
- Battery : 22cell 7 Ah NiCd battery (×3): 21 Ah total capacity @ 14V
- Redundancy : Failure tolerant via 3 separate power systems.

3) - Solar Panels : Four body mounted GaAs cell panels @ 80W each for 700mm height S/C
- Peak power : >110W for 700mm height S/C
- Battery : Variable e.g. NiCd battery 200Wh @ 14V/28V
- Dual redundancy : BCR, Power conditioning & distribution modules

4) - Solar Panels : Four body mounted (Si 70W or GaAs 100W)
- Peak power : 100W (Si), 140W(GaAs)
- Battery : NiCd battery 200Wh @ 14V/28V
- Dual redundancy : BCR(×4), Power conditioning & distribution modules(×2)

On-board Processing:

1) - Processor : Dual redundant, 80386EX, 25MHz with coprocessor
- Memory : Expandable:32 to 128MB per processor
- Operating system: In-orbit programmable

2) - Processor : Triple redundant (one cold), 80386EX, 25MHz with…… coprocessor
- Memory : Expandable:32 to 128MB per processor
- Operating system: In-house design OS. In-orbit programmable

3) - Processor : Dual redundant, 80386EX, 25MHz with coprocessor
- Memory : Expandable:32 to 128MB per processor
- Operating system: Propriety software. In-orbit programmable

4) - Processor : Dual redundant, 80386EX, 25MHz with numeric processor
- Memory : Expandable:32 to 128MB per processor
- Operating system: SSTL SCOS. In-orbit programmable

Primary Structural Concept:

1) Has a modular design. It has no 'skeleton' but rather a series of identical outline machined module boxes stacked one on top of the other to form a body onto which solar panels and instruments may be mounted. The structure is qualified to carry up to 35 kg payloads. The mass of the satellite is normally from 35 kg to 70 kg. Each module box houses the various microsatellite subsystems, e.g. batteries, power conditioning, onboard data handling, communications and attitude control. Payloads are housed either in similar modules or on top of the platform alongside antennas and attitude sensors as appropriate.

2) The structure is 9-sided prism measuring 940mm in height and up to 1100 mm in diameter. The platform is designed to support 200 kg of payload distributed in the various accommodation volumes to form a 400kg class satellite. The external frame offers access to space for telescopes, antennas, sensors, radiators and other payloads. The payload bay

offers payload volume underneath the external frame, and above the main spacecraft avionics bay. Has a modular design.

3) The flight-proven modular microsatellite (1) core is embedded in a superstructure specifically designed to increase payload fraction and power generation.

4) No extensive information available.