

Self-Unwinding Solar Array

MODEL GSS-07

TRL 4–5

PATENT-PENDING · MOTORLESS DEPLOYMENT

OVERVIEW

SUSA extends our motorless roll-out architecture from reflector arrays to photovoltaic wings. The mechanism family shares qualification heritage with SURA, targeting extreme stowage compaction, mass efficiency, and deployment reliability without motorized drives.



Shared IP heritage

- Same motorless architecture as SURA
- Strain-energy composite boom drive
- Shared qualification heritage

Scalable power

- 4 – 10 kg per wing
- Scalable by cell area / mission power need
- Industry-comparable stowed power density target

No motors, no complexity

- No motorized drives
- Fewer failure modes
- Extreme stowage compaction

TECHNICAL SPECIFICATIONS

ENGINEERING SPECIFICATIONS	
Deployment method	Motorless, strain-energy composite boom (SURA-shared IP)
Mass	4 – 10 kg per wing (scalable)
Stowed power density target	Comparable to industry roll-out class (order of 10s kW/m³ at scale)
Deployment	No motors, no complex mechanisms

MECHANISM	
Structure	Photovoltaic wing on composite boom spool
Actuation	Stored strain energy — self-extending
IP status	Patent-pending (SURA-shared IP)
Scalability	Scalable by panel/cell count

HOW IT WORKS

The photovoltaic wing is wound onto a spool around a central strain-energy composite boom. On deployment command, the boom unwinds and self-extends, drawing the wing out to full length and tensioning it into a flat, deployed configuration — sharing the same motorless mechanism family as SURA.

Application examples: small-to-medium satellite power generation, compact-stow solar wings for constrained launch volumes, power-scalable smallsat and cubesat platforms

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Specifications are representative target values for the current development configuration, pending formal qualification test data. Customizable to application power and mass requirements.