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## *EIS/Solar-B: EIS information that was sent to System Side*

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The following revised information was sent to the system side on June 18.

EIS subsystems: EIS consists of three EIS subsystems.

(a) STR: Structure, (b) HAR: Harness, (c) ICU: Instrument Control Unit

EIS-STR:

CLM: CLaMshell DOR: DORr ENC: structure ENClosure

FFA : Front Filter assembly FPA: Focal Plane Assembly

GRA: GRating Assembly LOK: launch LOcK

MHC: Mechanism/Heater Controller

MIR: MIRror assembly MLI: Multilayer Insulation

QCM: Quartz Contamination Monitor

RAD: RADiator SHT: SHuTter assembly

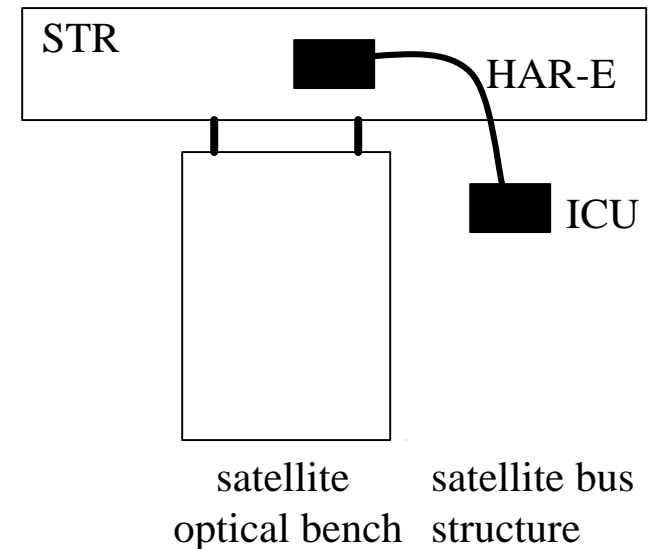
SLA : SLit Assembly

EIS-HAR

HAR-E: Electrical HARness

HAR-P: Purge HARness

HAR-V: Vacuum HARness



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### Shape & Size

EIS-STR: Rectangular solid

Length(z-direction): 3200 mm

Height( y-direction): 250 mm

Width (x-direction): 550 mm

EIS-ICU: Rectangular solid

Length: 220 mm (in mounting plane)

Width : 150 mm (in mounting plane)

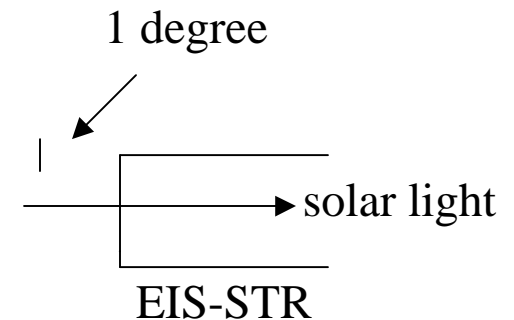
Height: 150 mm (normal to mounting plane)

Field of View: 1 degree at the edge of EIS aperture.

Eigen Frequency:

EIS-STR: first resonance frequency 70.4 Hz

EIS-ICU: > 100 Hz



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## *EIS/Solar-B: 2. EIS information that was sent to System Side*

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### Weight:

EIS-STR: 50.3 kg

ENC: 25kg, LOK: 1 kg, RAD: 0.3 kg, DOR: 1.4 kg

FFA: 0.2 kg CLM(evacuated cavity): 2.5 kg

MIR: 5.1 kg (primary mirror: 2.6 kg, mirror mount: 0.5 kg  
scan mechanism: 2 kg )

SLA: 1.0 kg (slit/slot mechanism: 0.3 kg, focus mechanism: 0.7 kg)

SHT: 0.3 kg

GRA: 1.6 kg (grating: 0.5 kg, mount: 0.5 kg, focus mechanism: 0.6 kg)

FPA: 3.0 kg (camera: 1.0 kg, mount: 0.5 kg, pre-amplifier: 1.5 kg)

QCM: 0.4 kg, MHC: 2.5 kg

Mounting legs (from system side): 2kg, MLI: 4 kg

EIS-HAR: 4 kg

EIS-ICU : 6 kg

subtotal: 60.3 kg

margin : 9 kg

total : 69.3 kg

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### Property of Moving components

component	frequency	purpose	direction	angle of motion or shift	weight
DOR	1 /year	protect inside from dirty environment	around Y-axis	180 deg /8 sec	0.4 kg
CLM	once after launch	aperture of vacuum enclosure	around Y-axis	90 deg	1 kg
MIR	1 step/ 2 sec	scan for raster observation	around Y-axis	1 arcsec / 1 step	3 kg
	once per 5 min	reset scan mirror to start position	around Y-axis	8 arcmin / 10 sec	3 kg
	once per day	change of field of view	$\pm$ X-axis	5 mm / 30 sec	4 kg
SHT	once per 1 sec	adjust exposure duration	around Z-axis	$\sim$ 60 deg/0.1 sec	0.2 kg
SLA	once per an hour	change slit/slot	around X-axis	$\sim$ 90 deg / 10 sec	0.4 kg
	once per month ?	focus adjustment	$\pm$ Z-axis	$\pm$ 0.5 mm/ 10 sec	1 kg
GRA	once per year	focus adjustment	$\pm$ Z-axis	$\pm$ 0.5 mm/ 10 sec	0.8 kg
LOK	once after launch	increase stiffness	around X-axis	$\sim$ 30 deg	0.5 kg

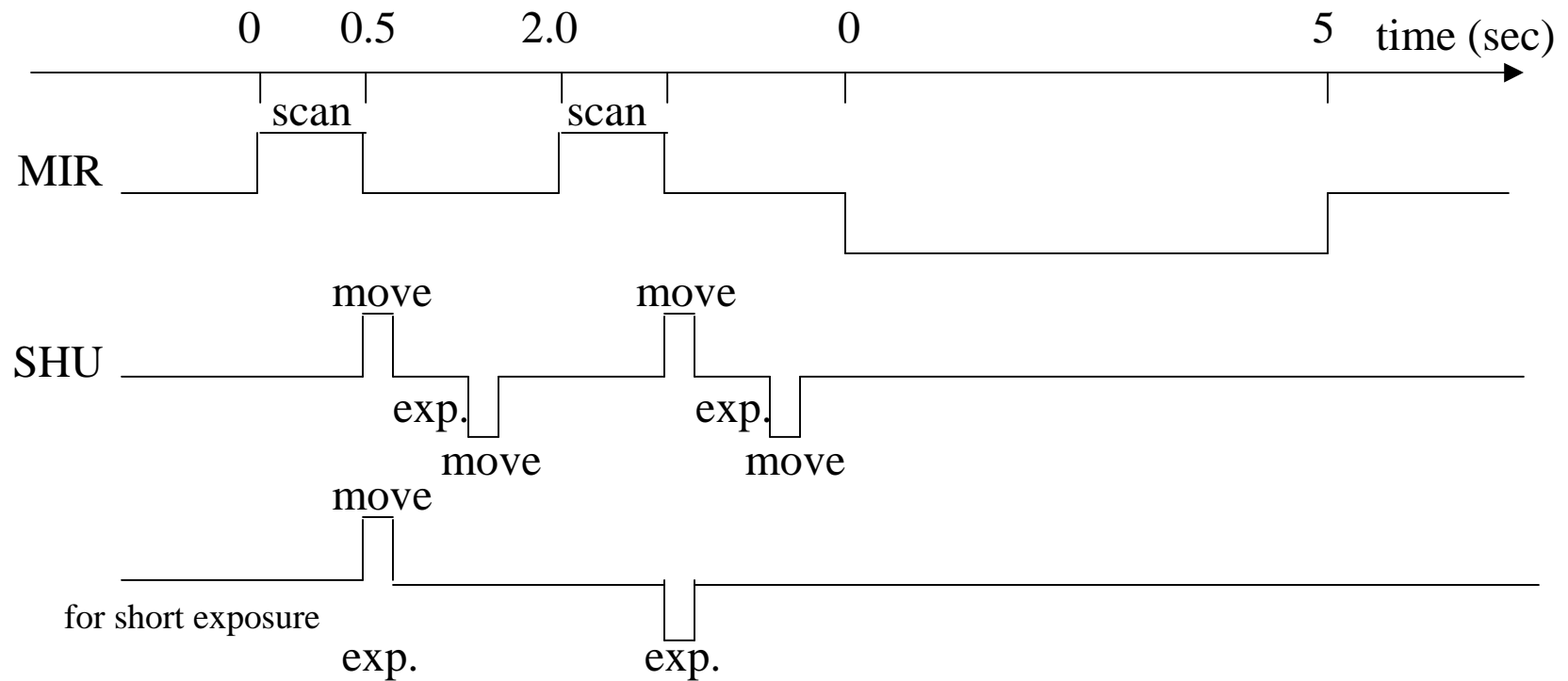
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MIR and SHU only move during EIS observations.



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- Power consumption: off mode:  $0.5 \pm 0.5$  W
  - standby mode:  $15 \pm 10$  W
  - operational average:  $37 \pm 7$  W
  - operational peak:  $55 \pm 5$  W
- Heater Power: not known because thermal analysis has not been done yet.
- Amount of heat produced: Majority of electric power is dissipated as heat.  
About 32 W solar light is introduced at the pre-filter location.  
CCD: 0.6 W, CCD electronics:  $8 \pm 2$  W
- Area attached to satellite: EIS-STR: 48 cm<sup>2</sup> in total, EIS-ICU: 5 cm<sup>2</sup> in total
- Temperature range: non-operational/transportation at ground: - 20-+ 40 ?  
operational: EIS-STR: 20-25 ?, EIS-ICU: 10-30 ?  
others: : 0-30 ?
- Temperature range of actively controlled components: TBD
- Alignment requirement: Angle of optical axes between EIS and others should be within 1 arcmin.
- House keeping telemetry:
  1. ICU 28 V voltage and current, 2. two points of ICU temperature
  3. seven points of STR temperature, 4. status of DOR(open/close)
  5. status of LOK(lock/release), 6. status of FIL(open/close, internal pressure)

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- Use of pyrotechnic devices: None.
- Necessity of N<sub>2</sub> purge during integration and launch preparation.
- Necessity of vacuum pump for FIL evacuation. The pump will be prepared by EIS team.
- TBD side is responsible for harness for purge and vacuum evacuation.
- Thermal property  
STR: graphite epoxy (black color) **a**: 0.95, **e**: 0.85, TCE =  $0.23 \times 10^{-6}$  /K  
thermal conduction coeff.: TBD, specific heat: TBD
- Radiator Area: 625 cm<sup>2</sup> at TBD location, Temperature range: -95 - -65 ?
- Temperature range of mechanical interface points: TBD