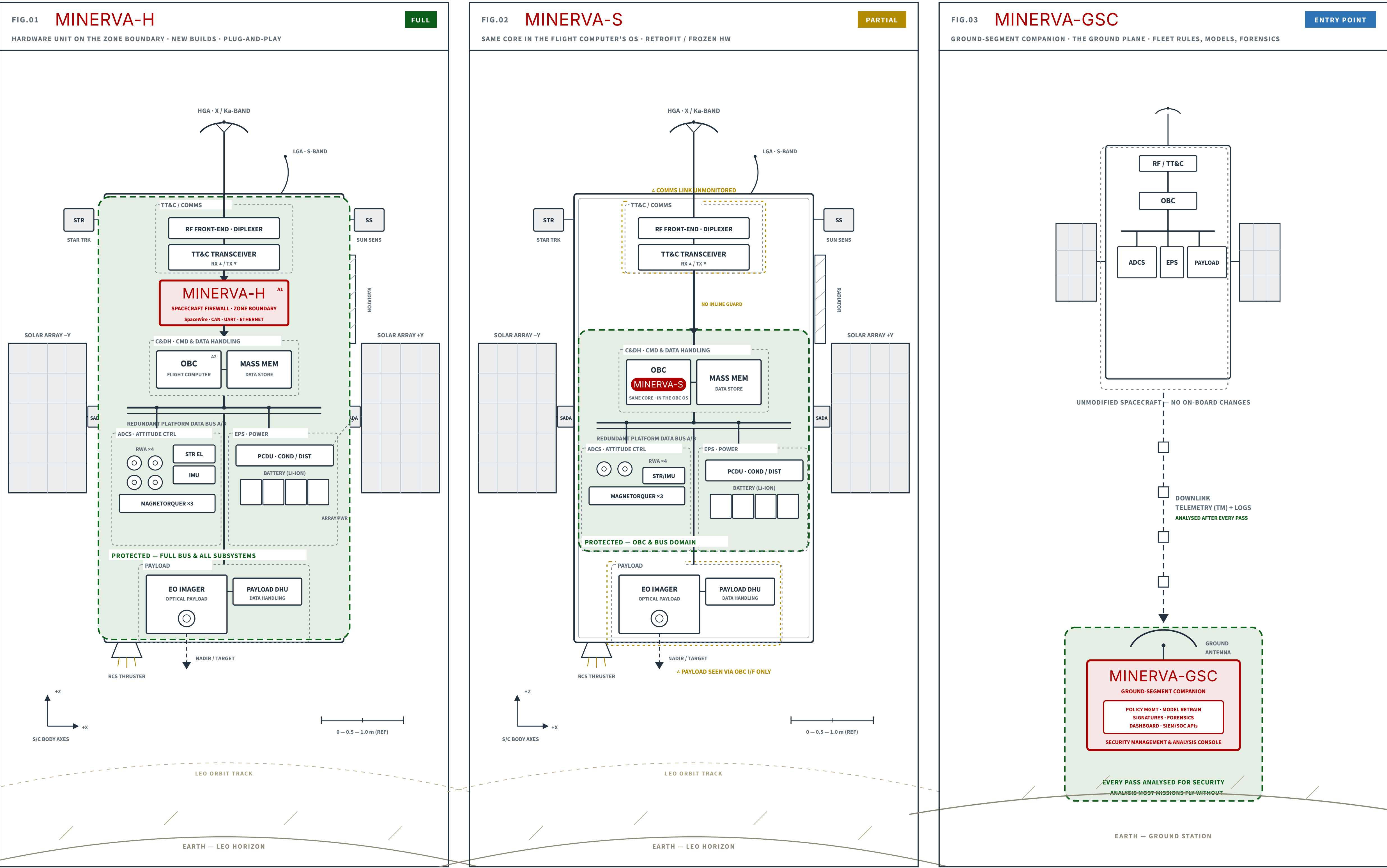


MINERVA

SPACECRAFT FIREWALL — ON-BOARD & GROUND · VARIANT PLACEMENT & COVERAGE MAP



PROTECTION COVERAGE — WHERE EACH VARIANT ACTS

FIG.04

	RF / COMMS LINK	OBC / C&DH	PLATFORM BUS	PAYLOAD	GROUND SEGMENT	NOTES
H MINERVA-H Hardware module · inline between TM/TC and OBC	INSPECTED INLINE	PROTECTED	PROTECTED	PROTECTED / ZONED	PAIR WITH GSC	Every packet crossing into the bus is inspected and filtered before it reaches the flight computer; added modules can zone the payload.
S MINERVA-S Same core in the OBC operating system · retrofit, no added hardware	UPSTREAM · NOT SEEN	PROTECTED	PROTECTED	VIA OBC I/F	PAIR WITH GSC	Same detection functions running on the OBC — traffic is analysed as it reaches the OBC; no independent physical boundary upstream of it.
GSC MINERVA-GSC Ground plane · the entry point · pairs with H or S, or stand-alone	POST-PASS · TM/LOGS	POST-PASS · VIA TM	POST-PASS · VIA TM	POST-PASS · VIA TM	MGMT + FORENSICS	Post-pass behavioural and signature analysis of every downlink — security review most missions fly without today; fleet rules, models, forensics; SIEM / SOC APIs.

Inline protection / enforcement

Visibility only — no inline boundary

No role for this variant alone