MASTER ASSEMBLY DEFINITION AND PRODUCT STRUCTURE

Rev D controlled preliminary engineering; nominal study geometry, not production release

OC-D-0000 / FOUR-SPACECRAFT FLIGHT SEGMENT

4 x OC-D-1000 autonomous 62.5 kW IT spacecraft; no rigid inter-spacecraft assembly.

Each has its own power, control, optical ground service, propulsion and disposal interfaces.

OC-D-1100 / ACTIVE PLANE

110 PV;46 compute RAD;4 service RAD

12 x14 bays,2,000 pitch

7 empty reserved bays;1 service aperture

OC-D-1200 / SERVICE POD

1,800 x1,800 x800 envelope

Battery,PMAD,avionics,fluid loop

Z=-1,100..-300;centre(-1,000,-1,000)

OC-D-1300 / STRUCTURE

Perimeter400-deep truss

25,000 x29,000 exterior

Local seam rails and hardpoints

OC-D-1400 / LAUNCH SUPPORT

4 unconnected panel stacks

Carrier restraints and service packs

Provider interface not selected

Series	Discipline	Defined content
200-209	System / assembly	Global coordinates, all principal projections, cuts, launch gauge
210-219	Local parts	Radiator/PV skins,rails,housings,inserts,brackets,inspection
220-229	Structure / motion	Member paths,hinges,latches,swept pairs,carrier and sequence
230-239	Service systems	Equipment packaging, fluid / power / data, battery
240-242	Engineering controls	Mass ownership, controlled interfaces, verification gates
250-257	Part-level details	Fastener stacks, machining, joint fits, pressure cuts, thermal paths

DESIGN / INTERFACE NOTES

01. The product tree defines four independent spacecraft. Repeated drawings describe M01; prefix actual equipment and interface identifiers with M01 through M04.

02. Dimension status: [P] proposed geometry; [A] allocated equipment or performance envelope; [D] derived quantity; [S] unselected supplier interface. A dimensional allocation is not qualification evidence.

03. Dimensions are millimetres. Named DXF physical-view blocks preserve true coordinates. Their atlas translations separate views; they do not assemble a three-dimensional spacecraft.

04. The active grid remains 24 x 28 m. The proposed 400 mm peripheral structure increases the external footprint to 25 x 29 m. Thickness and packaging are counted explicitly.

05. Four of the 50 radiator bays cool service equipment. The other 46 carry compute. Fleet IT remains 250 kW, so individual compute-tile loading rises relative to Rev C.

06. Local fold verification concerns a finite-thickness pair. It does not establish complete deployment of the mixed grid, service pod, hoses and perimeter structure.

07. Production release requires controlled supplier interfaces, material allowables, stress and thermal analyses, process specifications and acceptance tests.

08. Read the part ledger and interface register with these drawings. Each mass is owned once; historical areal-mass allowances are comparison targets only.

OC-250 / ORBITAL COMPUTE PLATFORM

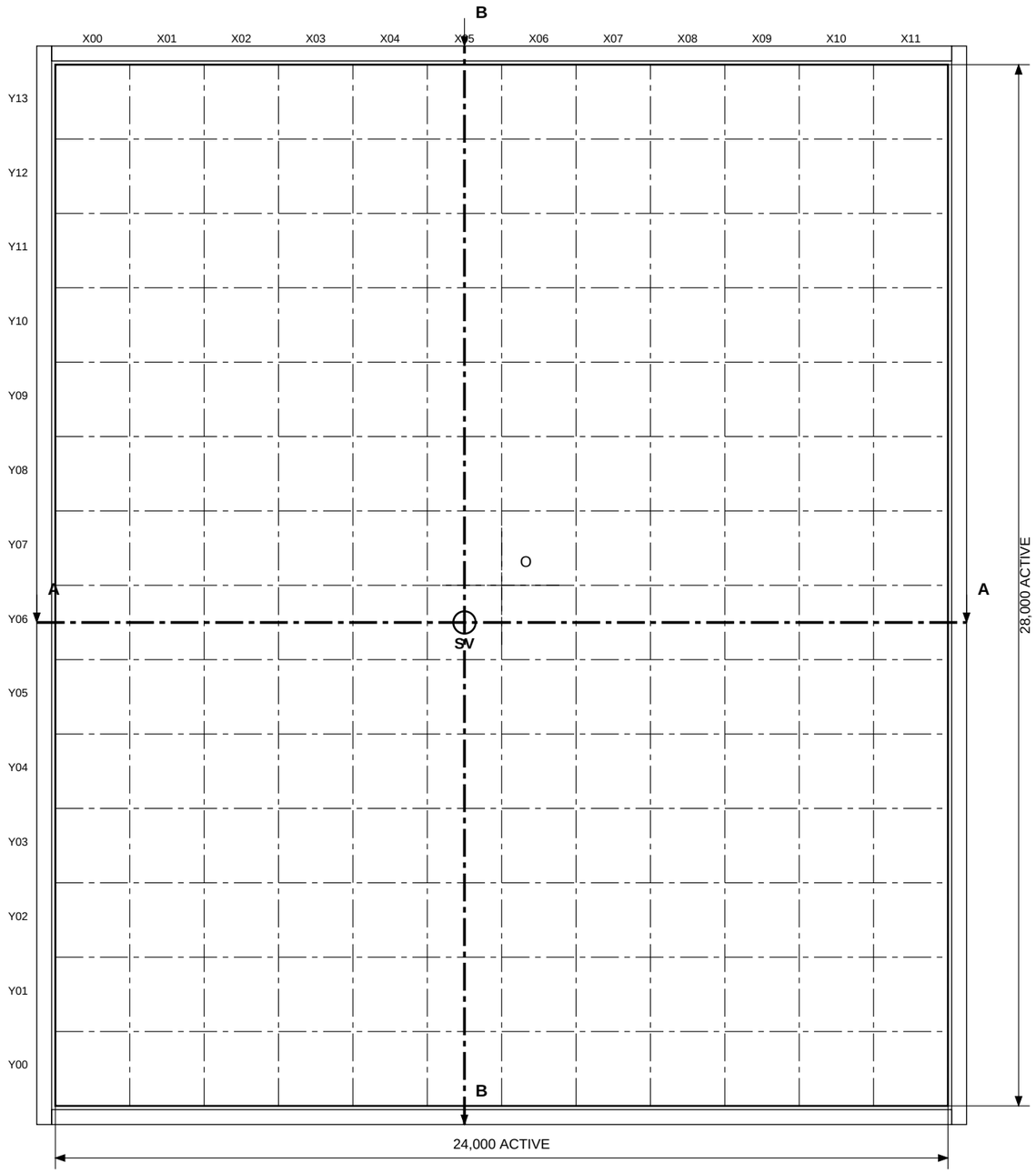
DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-200	**NTS**	**D / mm**	**200**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

GLOBAL COORDINATES, GRID STATIONS AND SECTION REFERENCES

Global A: Z=0 front plane; B: X=0 symmetry reference; C: Y=0 symmetry reference



DESIGN / INTERFACE NOTES

01. Global O is the geometric centre of the active grid. The service bay is centred at (-1000,-1000,0). Do not silently shift the pod to O.

02. Bay lower-left coordinates are (2000*ix-12000,2000*iy-14000). Physical panel edges are inset 10 mm from each bay boundary.

03. A tile uses its lower-left front corner as local origin. Local +u,+v,+w align with global +X,+Y,+Z. A 1980 mm panel leaves a 20 mm nominal adjacent seam.

04. Global A-A on 204 cuts Y=-1000 through the pod and east/west service radiators. B-B on 205 cuts X=-1000 through the north/south pair.

05. Component-level section references on 210-239 belong to their identified local parts. They do not replace the global A-A and B-B cuts.

06. Positive Z points toward the nominal Sun. Radiator front/rear faces are Z=0/-28; compute assemblies extend to Z=-98. PV rear face is Z=-20.

07. Peripheral side-truss centres lie at X=+/-12300 and Y=+/-14300. Their 400 mm sections give external bounds X=+/-12500,Y=+/-14500.

08. The pod top-centre datum is global (-1000,-1000,-300). Its 1800 x 1800 x 800 mm envelope extends downward to Z=-1100.

OC-250 / ORBITAL COMPUTE PLATFORM

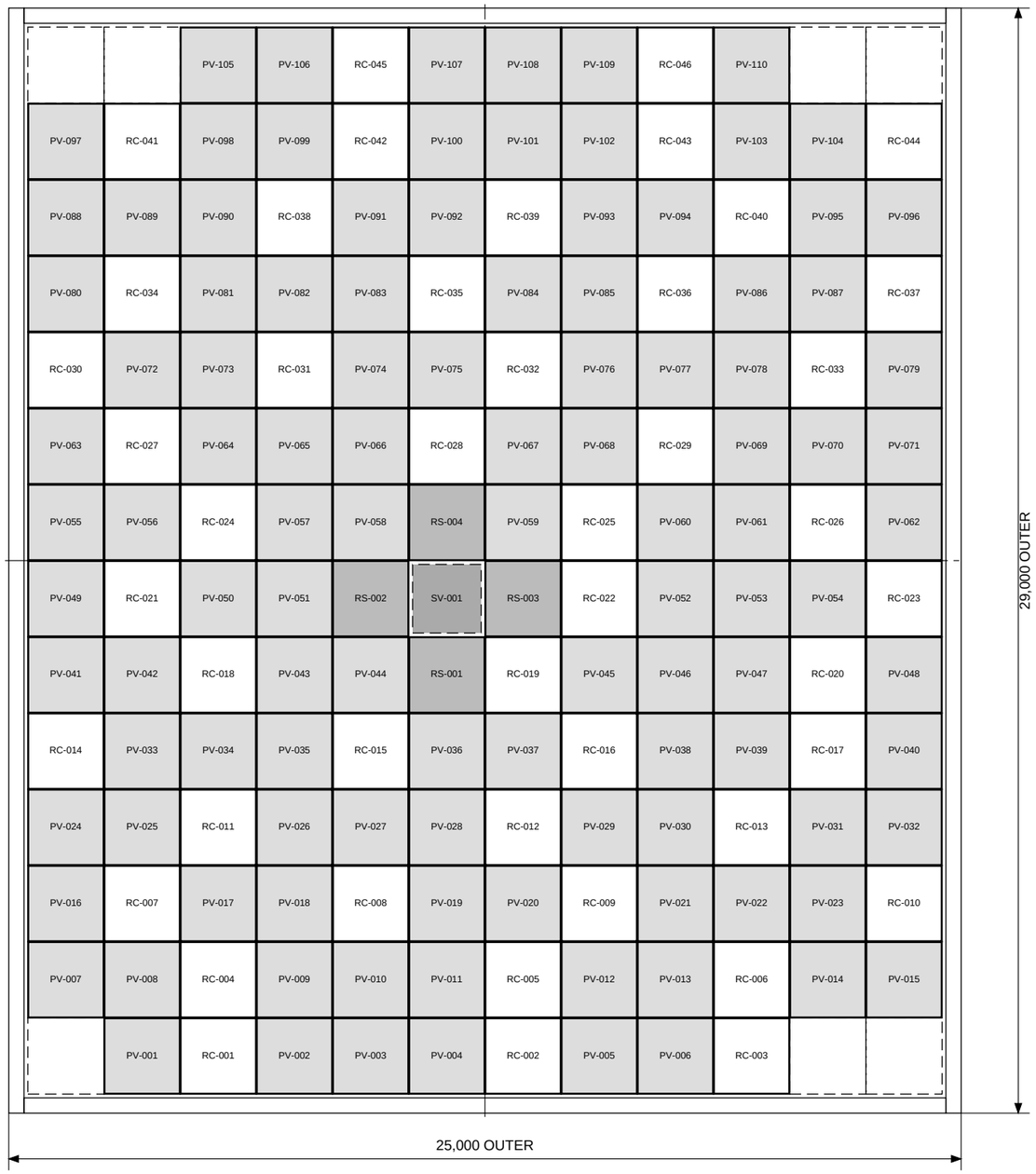
DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-201	**1:150**	**D / mm**	**201**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

DEPLOYED GENERAL ARRANGEMENT, SUN-FACING PLAN

One62.5kW spacecraft M01; M02-M04 repeat as independent vehicles



DESIGN / INTERFACE NOTES

01. PV: 110 photovoltaic tiles. RC: 46 compute/radiator tiles. RS: four service radiators. SV: one service aperture. OP: seven empty reserved bays.

02. Per spacecraft, gross productive bay area is 440 m2 PV and 200 m2 radiator. Each 1980 mm panel has 3.9204 m2 physical planform; trim is included in the gross-area factors.

03. Both radiator faces receive environmental loads. Useful emission requires spectral properties and actual view factors; no deep-space-only heat flux is assumed.

04. Reserved apertures contain no hidden panels. Their boundary load paths and braces still require definition and contribute mass.

05. The four RS bays contain no compute housings. Their dedicated service-loop connections are defined in the thermal-system drawings.

06. The peripheral structure is outside the active grid. Antennas, thruster fields and temporary deployment sweeps may require additional exclusion volume.

07. This tile pattern is controlled for Rev D. Repositioning tiles changes harness routing, mass properties, service connections and folding sequences.

08. Panel edge, hinge, latch and connector dimensions must remain consistent with the local part drawings and the interface-control register.

OC-250 / ORBITAL COMPUTE PLATFORM

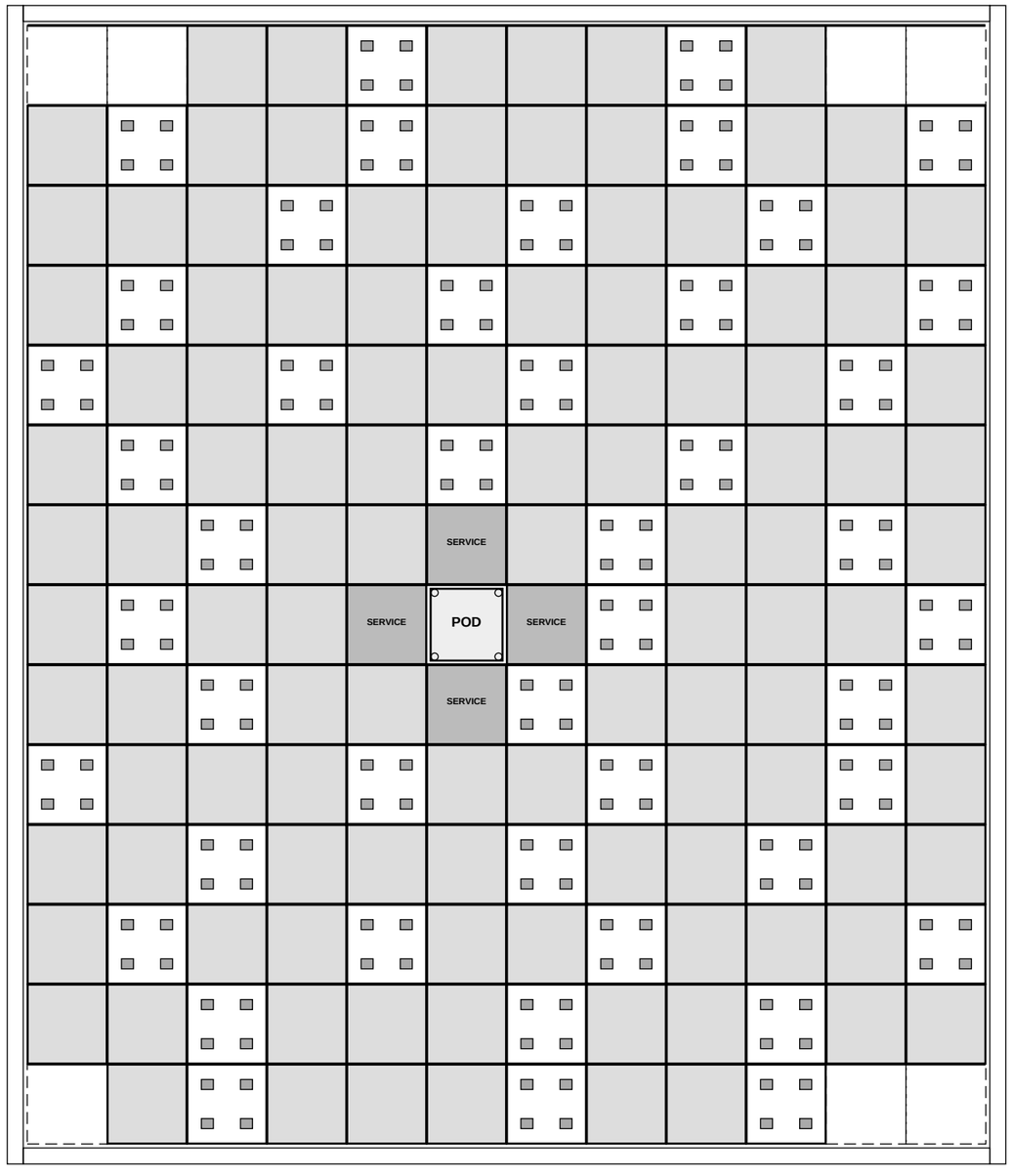
DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-202	**1:150**	**D / mm**	**202**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

REAR EQUIPMENT PLAN AND ROUTE RESERVATIONS

Rear-facing hardware projected in globalX-Y; viewing direction+Z, coordinates not mirrored



DESIGN / INTERFACE NOTES

01. Each spacecraft contains 184 compute housings: 46 RC tiles with four housings each. The fleet contains 736. These are packaging envelopes, not selected accelerator products.

02. Heavy horizontal lines reserve power paths; vertical dashed lines reserve data paths. Detailed branches, shielding and flexible service loops must fit these routes.

03. Harnesses cross mechanical interfaces. Bend radius, strain relief, insulation and connector backshells are physical geometry, not zero-thickness connections.

04. The structure is not automatically a power-return conductor. Power return, bonding, grounding and charging-control functions need separate interface definitions.

05. Pod and suspension locations are projected through the array. Radiation from obstructed or covered surfaces is uncredited unless explicitly modelled.

06. At the worst gross emitting fraction of 0.85, panel trim consumes 1.99% and four compute footprints consume 3.75%. Other exclusions must fit the remaining 9.26%.

07. Optical terminal viewing fields must agree with the service-pod layout and attitude law. A line drawn through a panel is not a usable optical path.

08. This is a rear equipment projection in unmirrored global coordinates, viewed toward +Z. It supports direct comparison with the front-view routing table.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

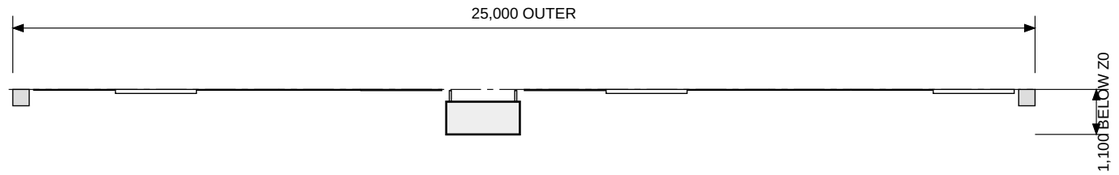
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-203	**1:150**	**D / mm**	**203**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

GLOBAL SECTION A-A AND SERVICE SUSPENSION

Cut through Y=-1,000; true-scale overall and enlarged central section

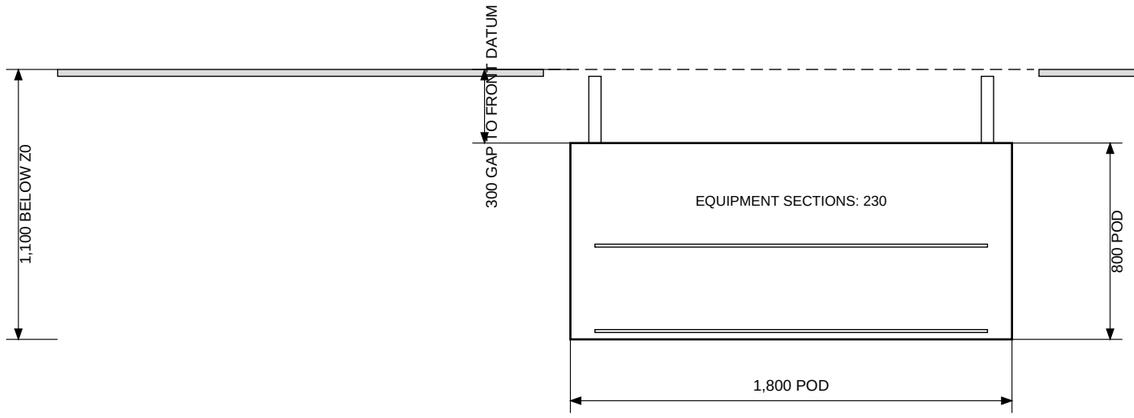
A-A / OVERALL

SCALE 1:150 | DIMENSIONS mm



A-A / POD ENVELOPE

SCALE 1:25 | DIMENSIONS mm



DESIGN / INTERFACE NOTES

01. The global section and enlarged central section use true equal-axis scales. No vertical exaggeration is applied to make the plane appear thicker.

02. Pod deck planes match the equipment definition on 230. Detailed equipment sections are controlled by 230-239; this global cut does not introduce a second arrangement.

03. Four suspension points use proposed brackets and struts. Joint loads, thermal isolation, insert pull-out, stiffness and deployment clearance require verification.

04. Only the four RS radiator interfaces carry service-loop hoses. The eight moving supply/return connections are an explicit exception to dry compute-panel hinges.

05. Each RC tile rejects its own compute heat. Localized service heat is carried through the specified loop rather than averaged over inaccessible remote surfaces.

06. The service pod fits part of the launch end-volume allocation. Moving or attaching it at the deployed location requires a defined installation operation.

07. Projection overlap is not clearance evidence. Include fasteners, tools, insulation, harness backshells, support joints and hoses in the complete accommodation model.

08. A/B/C references establish geometry only. Neither a drawn section nor a nominal dimension constitutes structural or thermal qualification.

Reference	Z mm	Interface
Panel front / rear	0 / -28	Radiator assembly;210
Compute rear	-98	RC only; no boxes onRS
Pod upper / lower	-300 / -1100	Equipment internals controlled by230
PV rear	-20	PV sheet215
Perimeter truss	Z-400..0	Candidate bay;220-222

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

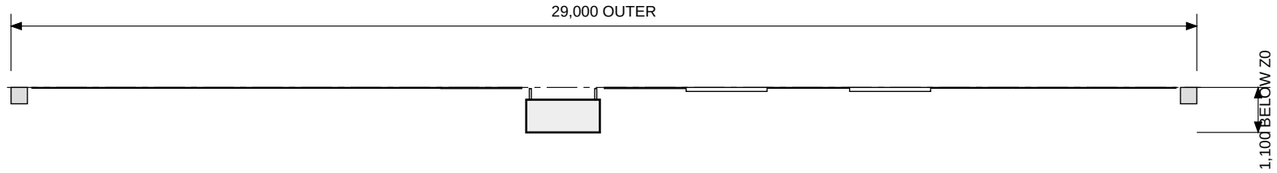
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-204	**1:150 / 1:25**	**D / mm**	**204**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

GLOBAL SECTION B-B AND SERVICE SUSPENSION

Cut through X=-1,000; true-scale overall and enlarged central section

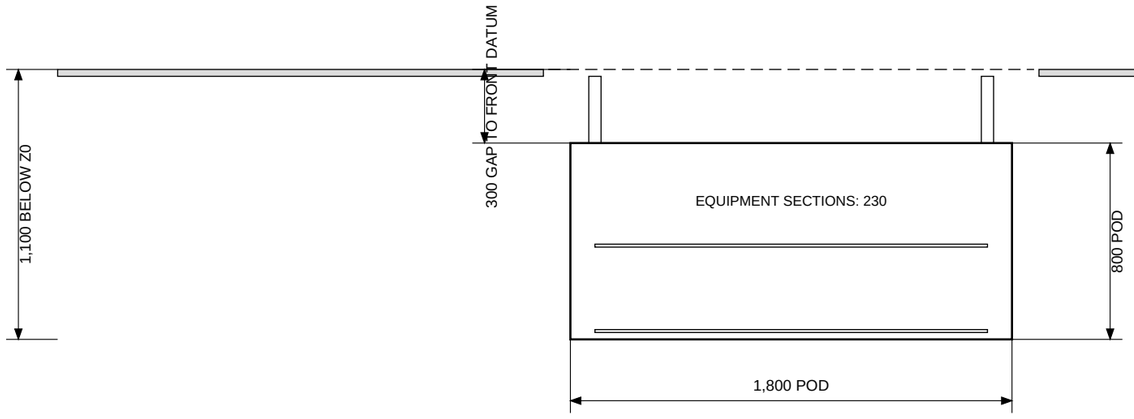
B-B / OVERALL

SCALE 1:150 | DIMENSIONS mm



B-B / POD ENVELOPE

SCALE 1:25 | DIMENSIONS mm



DESIGN / INTERFACE NOTES

01. The global section and enlarged central section use true equal-axis scales. No vertical exaggeration is applied to make the plane appear thicker.

02. Pod deck planes match the equipment definition on 230. Detailed equipment sections are controlled by 230-239; this global cut does not introduce a second arrangement.

03. Four suspension points use proposed brackets and struts. Joint loads, thermal isolation, insert pull-out, stiffness and deployment clearance require verification.

04. Only the four RS radiator interfaces carry service-loop hoses. The eight moving supply/return connections are an explicit exception to dry compute-panel hinges.

05. Each RC tile rejects its own compute heat. Localized service heat is carried through the specified loop rather than averaged over inaccessible remote surfaces.

06. The service pod fits part of the launch end-volume allocation. Moving or attaching it at the deployed location requires a defined installation operation.

07. Projection overlap is not clearance evidence. Include fasteners, tools, insulation, harness backshells, support joints and hoses in the complete accommodation model.

08. A/B/C references establish geometry only. Neither a drawn section nor a nominal dimension constitutes structural or thermal qualification.

Reference	Z mm	Interface
Panel front / rear	0 / -28	Radiator assembly;210
Compute rear	-98	RC only; no boxes onRS
Pod upper / lower	-300 / -1100	Equipment internals controlled by230
PV rear	-20	PV sheet215
Perimeter truss	Z-400..0	Candidate bay;220-222

OC-250 / ORBITAL COMPUTE PLATFORM

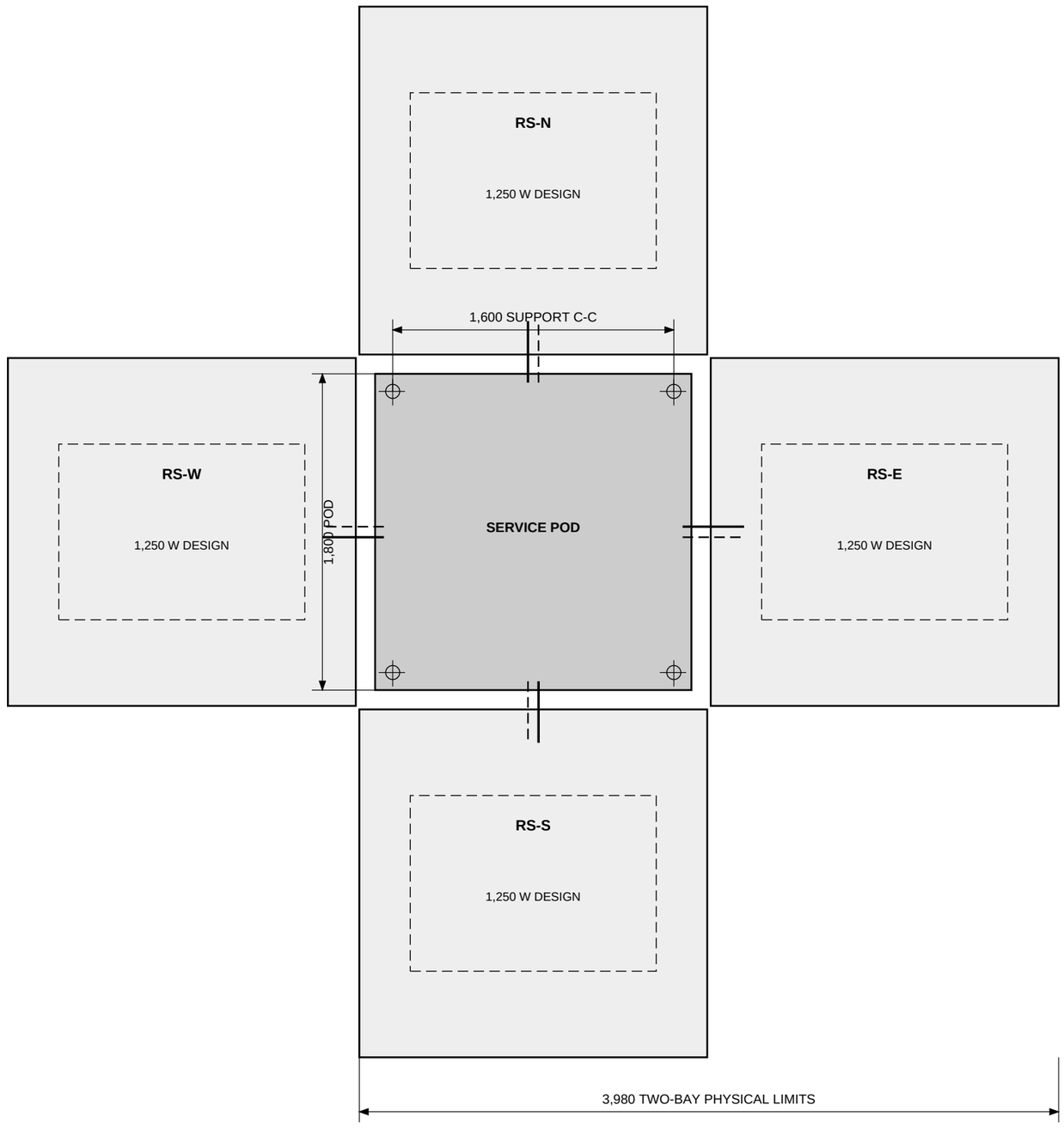
DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-205	**1:150 / 1:25**	**D / mm**	**205**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

CENTRAL SERVICE CLUSTER AND LOCAL INTERFACE COORDINATES

Five-bay service cross; four service radiators and independentcompute neighbours



DESIGN / INTERFACE NOTES

01. This view uses service-local XY. Convert to global coordinates with X=x-1000,Y=y-1000. The nominal seams between physical tiles are 20 mm.

02. The four service cells are W=(4,6),E=(6,6),S=(5,5),N=(5,7). Their area is already included in the 50 radiator bays per spacecraft.

03. The proposed suspension pattern has four centres at local (+/-800,+/-800). Brackets and struts must deliver loads to reinforced structural hardpoints.

04. The short line pairs identify eight wet interfaces. Pipe diameter, true centreline length, flexible bend shape and port locations are controlled by 232-233.

05. The 5000 W service design load includes regulated services and an allowance for upstream battery losses. Each RS receives a 1250 W design allocation.

06. No compute package is installed on RS cells. The remaining 46 RC tiles carry 62500 W of IT, or 1358.696 W per tile.

07. Coolant-to-skin approach temperature and overall conductance must close independently of the available radiating area.

08. The five-bay cross constrains connected deployment. Its central pod, moving hoses and different panel thicknesses must all enter the motion model.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

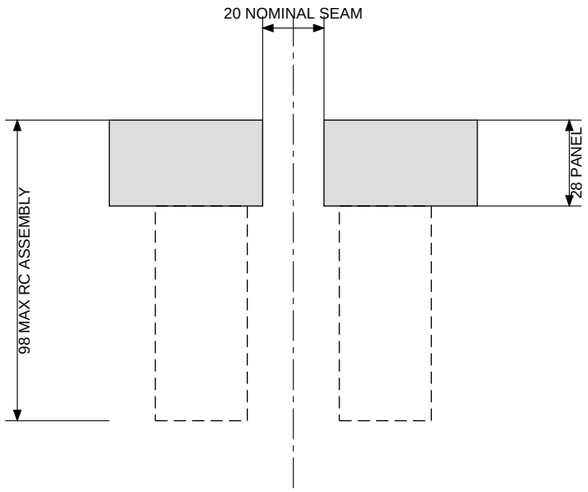
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-206	**1:30**	**D / mm**	**206**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

BAY BOUNDARY, PHYSICAL CLEARANCES AND SECTION ENVELOPE

Dimension chain from grid pitch to physical panel, rear hardware and neighbouring tile

SEAM NORMAL SECTION / RC-RC

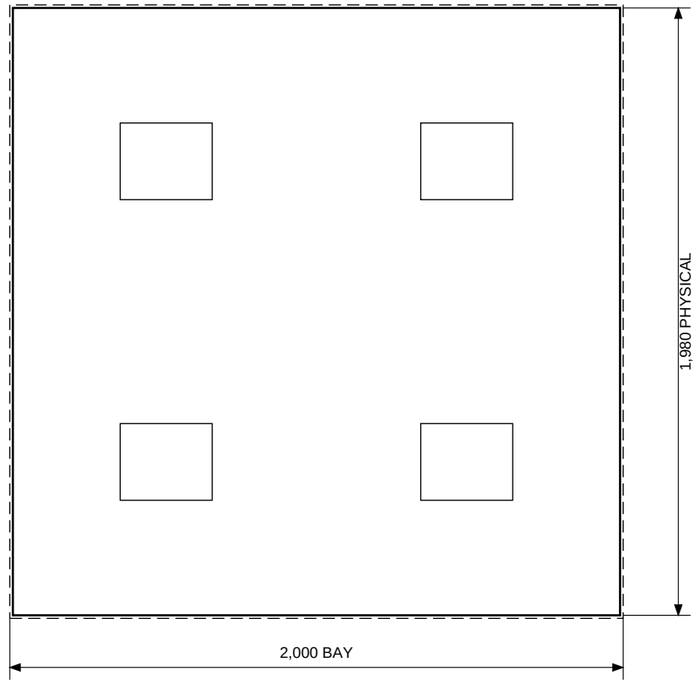
SCALE 1:2 | DIMENSIONS mm



Parameter	mm unless %
Bay pitch	2,000
Physical panel	1,980
Single edge inset	10
Adjacent gap	20
Compute footprint	300 x250
Gross trim loss	1.99%

TILE / BAY RELATION

SCALE 1:20 | DIMENSIONS mm



DESIGN / INTERFACE NOTES

01. The 2000 mm bay pitch and 1980 mm physical panel provide 10 mm edge inset and 20 mm nominal separation between adjacent panels.

02. A nominal gap is not a tolerance allowance. Manufacturing variation, thermal expansion, joint play and assembly alignment must fit the clearance budget.

03. Radiator structural depth is 28 mm. The rear compute envelope adds 70 mm, including its coldplate, for a total nominal depth of 98 mm.

04. A 120 mm radiator stack pitch leaves 22 mm beyond the assembly depth. Hinges, protective covers and harness loops must demonstrably fit that difference.

05. A 20 mm PV assembly and 25 mm stack pitch leave only 5 mm. Recessed interfaces are necessary where opposing faces approach.

06. Physical panel trim is 1-(1.98/2)^2=1.99% of gross bay area. It is already included in the gross usable-emission factor and must not be subtracted twice.

07. Hinge and latch details are in 223-225. Inserts and inspection datums are in 216 and 218. Rails or hoses in a seam require a separate interference check.

08. These are nominal proposed control dimensions. Supplier interfaces and verified motion precede production tolerance approval.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

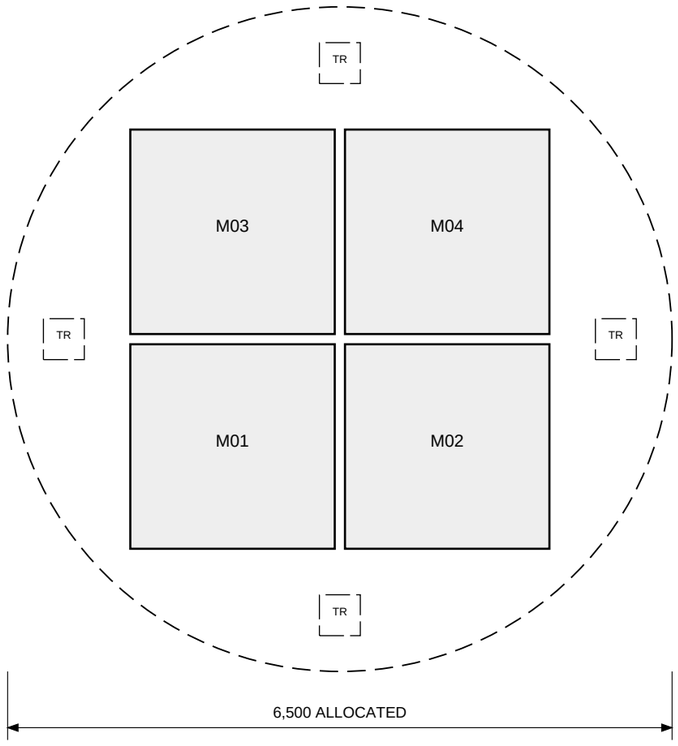
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-207	**1:2 / 1:20**	**D / mm**	**207**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

INTEGRATED LAUNCH GAUGE AND RESERVED SERVICE VOLUMES

Four independent panel stacks and separate structure stock; static allocation only

FOUR-STACK PLAN

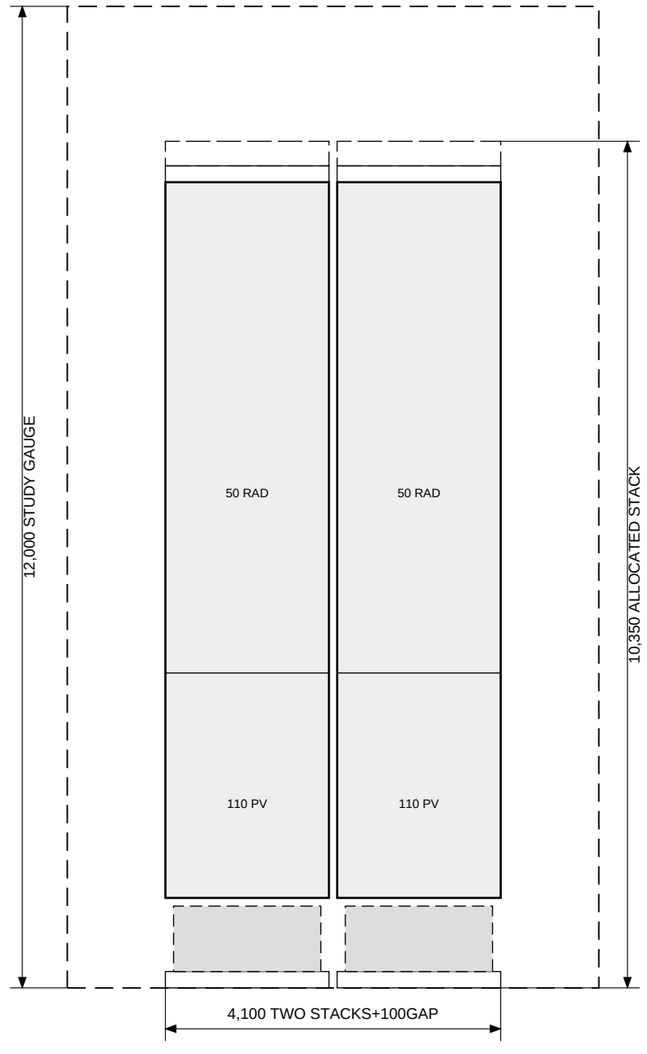
SCALE 1:60 | DIMENSIONS mm



Item	Basis	mm
PVstack	110x25	2,750
RADstack	50x120	6,000
Pod/endrestraints	Allocated	1,600
Total	Derived	10,350
Axialbalance	12,000-total	1,650

STACK ELEVATION

SCALE 1:75 | DIMENSIONS mm



DESIGN / INTERFACE NOTES

01. Four 2000 mm square stack gauges are centred at (+/-1050,+/-1050). Their farthest corner radius is 2899.14 mm, leaving 350.86 mm to the nominal cylinder.

02. A physical 1980 mm panel fits inside its 2000 mm launch gauge. This gauge allowance is separate from the deployed bay definition.

03. Stack Z: base 0-200; pod 200-1000; gap 1000-1100; panels 1100-9850; cap 9850-10050; reserve 10050-10350. See carrier detail 227.

04. Four auxiliary 400 x 400 mm stock packs lie on the coordinate axes at radius 2700 mm. They cannot contain assembled 400 mm square truss bays.

05. An unconnected stack is a volume bound. It cannot replace a permanently wired grid in a claim of verified deployment.

06. The cylinder omits provider-specific taper, dynamic envelope, acoustic covers and payload-adapter constraints. It is not a launcher acceptance interface.

07. Compression and launch inertia must pass through restraints and structural hardpoints, never through solar-cell faces or computer boards.

08. Assembly from separate truss stock requires additional machinery and operations. A complete preconnected launch/deployment configuration remains to be demonstrated.

OC-250 / ORBITAL COMPUTE PLATFORM

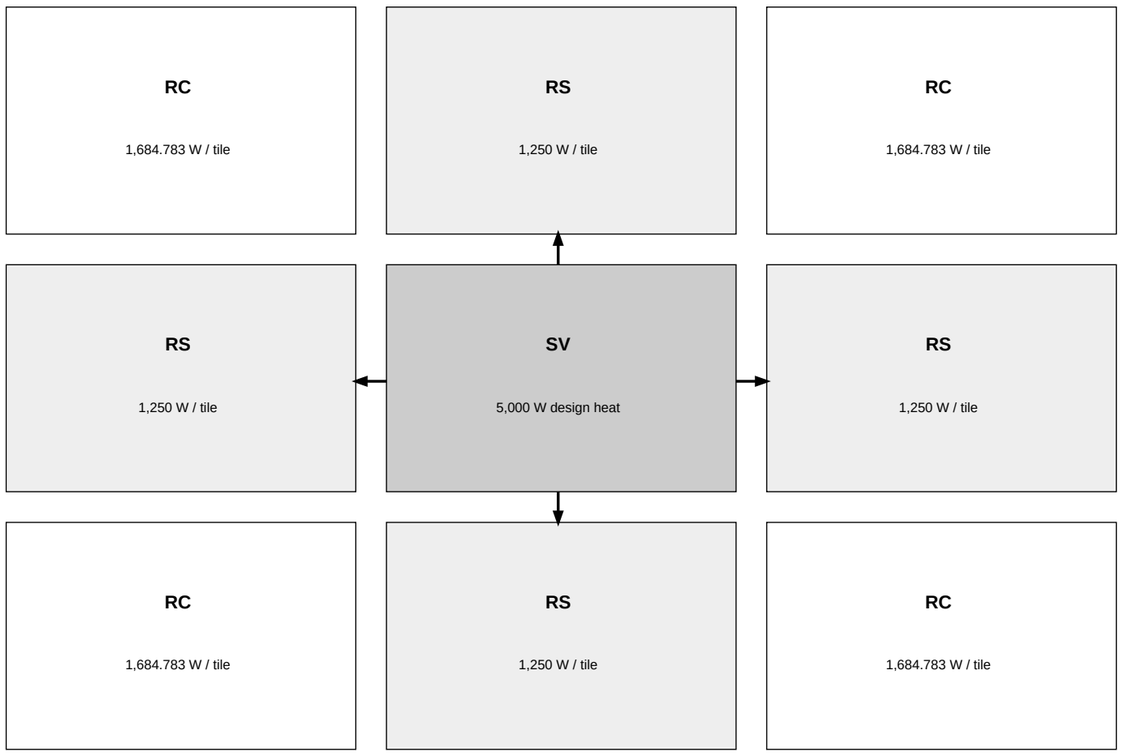
DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-208	**1:60 / 1:75**	**D / mm**	**208**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

SECTION INDEX AND DISTRIBUTED THERMAL/POWER ALLOCATION

Source-to-surface accounting; each service radiator is counted once



DESIGN / INTERFACE NOTES

01. RS cells accept service heat and are counted once. Their surface is not simultaneously credited to compute heat rejection.

02. At 97% cell-to-bus efficiency, a 75 kW delivered bus requires 77.3196 kW upstream. Regulated services consume 2 kW; upstream loss adds 2.3196 kW of service heat.

03. Distributed electrical loads are 62.5 kW IT plus 10.5 kW other loads. The allocated RC thermal design load is 77.5 kW, including reserve.

04. Four RS cells receive 5 kW design heat. The historical worst uniform-skin capacity at 320 K is 85.4488 kW per spacecraft; local temperature gradients still govern hardware.

05. An RC allocation of 1684.783 W leaves about 24 W below the worst uniform-flux capacity per gross bay. Local spreading and surface exclusions are therefore critical.

06. Gross usable emission of 0.85 includes panel trim and compute footprints. Remaining frame, harness and view losses must fit the residual obstruction budget.

07. Global cuts: 204/205. Radiator assembly: 210/211. Compute housing: 213. PV assembly: 215. Hinge sections: 223. Pod cuts: 230.

08. Thermal and electrical schematics govern physical interfaces. This allocation diagram links their budgets; it does not replace either circuit definition.

Allocation / one spacecraft	Value	Check
IT on 46 RC	62,500 W	1,358.696 W/tile
Distributed non-IT	10,500 W	228.261 W/tile
RC design heat	77,500 W	1,684.783 W/tile
Service regulated load	2,000 W	Within75kWmainbus
Cell-to-busloss at97%	2,319.588 W	Addedheat;notusefulbusload
Service designheat	5,000 W	4x1,250WRS
Total design heat	82,500 W	330kW fleet

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

DRAWING
OC250-209
ISSUED 2026-09-25

SCALE / FORMAT
NTS
A3 420 x 297

REVISION / UNITS
D / mm
3RD ANGLE *

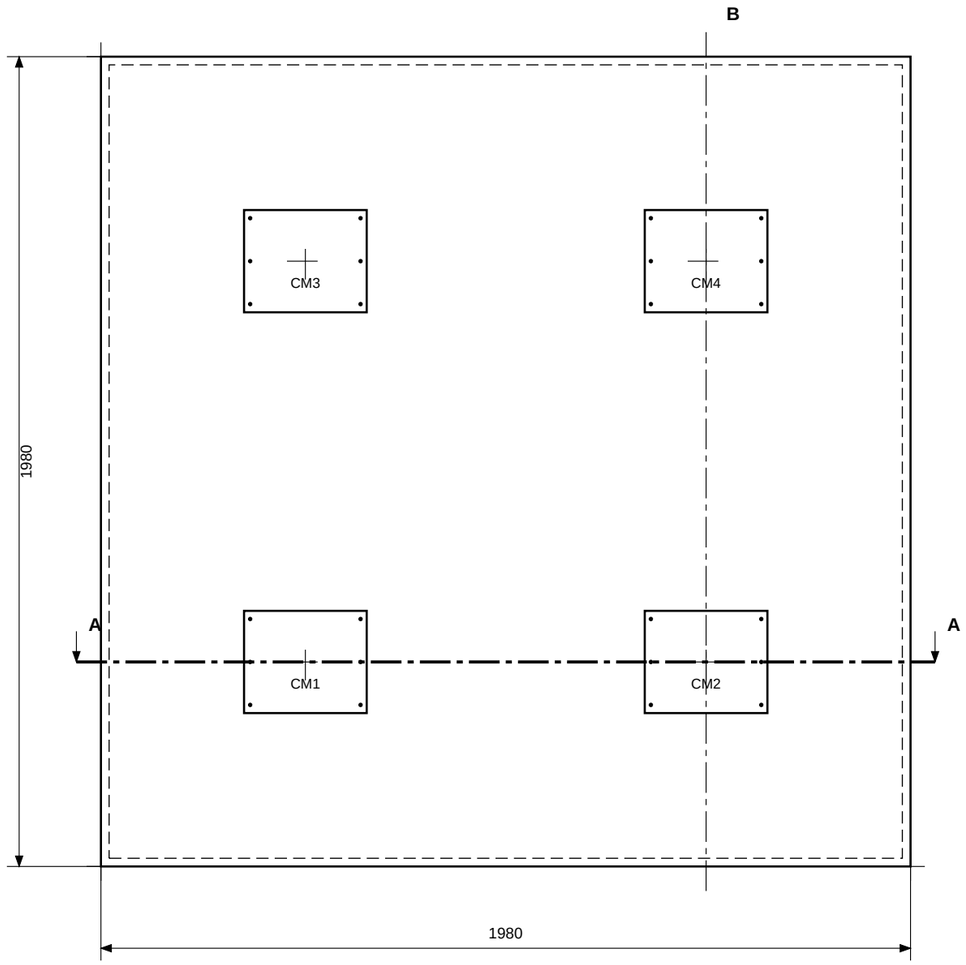
DRAWING SERIES
209
* axes on views

COMPUTE-RADIATOR TILE ASSEMBLY

OC-D-2100 | Rear orthographic view, located sections and package envelope

REAR VIEW X-Y / looking +Z

SCALE 1:15 | DIMENSIONS mm



SIDE Y-Z

SCALE 1:15 | DIMENSIONS mm



MODULE	X	Y
CM1	500	500
CM2	1480	500
CM3	500	1480
CM4	1480	1480

DESIGN / INTERFACE NOTES

01. Part OC-D-2100. Tile coordinates: X,Y = 0..1980; front radiating face Z=0; rear skin Z=-28. Rear view uses +X right, +Y up.

02. Four compute packages per IT tile: 339.674 W IT and 421.196 W design heat each. 46 IT tiles plus 4 service radiators per spacecraft.

03. Each housing is 300 x250 x70 inclusive of its coldplate and 0.20 mm interface layer. Assembly rear limit is Z=-98.

04. Six proposed M5 attachment sites per package. Pattern, insert and coldplate definitions: sheets213,214,216. No selected processor is implied.

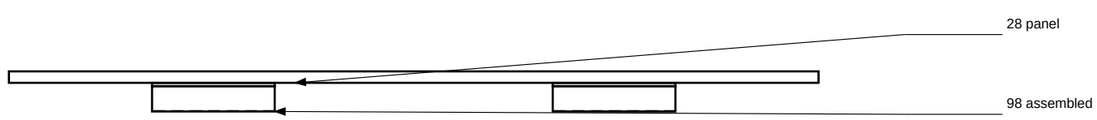
05. 120 mm folded pitch =98 assembly +10 guard allocation +12 clearance. Guard geometry, wiring protrusions and launch deflections must fit this allocation.

06. Section A-A crosses CM1 and CM2 centres. B-B uses X=1480. Rear electronics obstruct radiation; thermal model must use actual projected footprints.

07. Hinge root reinforcements and loads are defined by the deployment subsystem. Edge closure holes on212 are not qualified hinge attachment points.

SECTION A-A X-Z

SCALE 1:15 | DIMENSIONS mm



OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

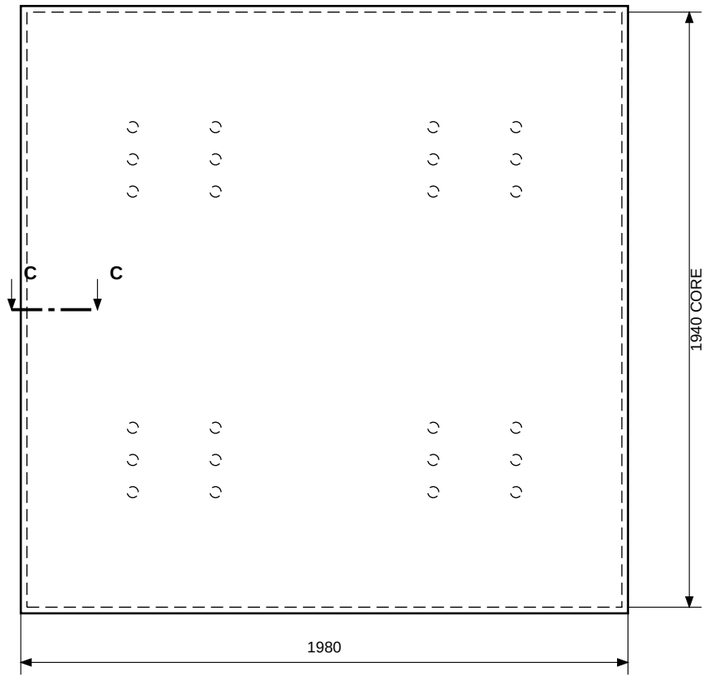
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-210	**1:15**	**D / mm**	**210**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

RADIATOR SANDWICH AND EDGE CLOSURE

OC-D-2111 /2112 /2113 | Skins, honeycomb core and section C-C

CORE / SKIN PLAN

SCALE 1:20 | DIMENSIONS mm



LAYER	PLAN mm	DEPTH
Front skin	1980 x1980	0.50
Bond /core /bond	1940 core	0.20 /26.60 /0.20
Rear skin	1980 x1980	0.50
Closed panel	1980 x1980	28.00

DESIGN / INTERFACE NOTES

01. Closed stack:0.50 skin +0.20 bond +26.60 core/rail +0.20 bond +0.50 skin =28.00 mm. Bond thicknesses are proposed process targets, included within the envelope.

02. Core blank ends20 mm from each physical edge. U-rails occupy that20 mm band. Corner joints are butt joints; long rails run full1980 mm, short rails1940 mm.

03. Core density48 kg/m3 and metal density2700 kg/m3 are screening assumptions. Alloy, temper, cell size and anisotropy require supplier selection and allowables.

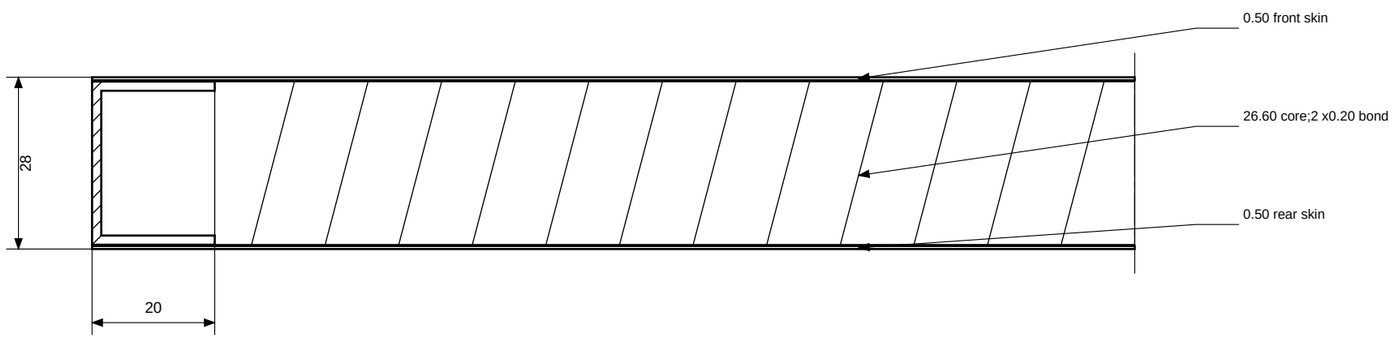
04. 24 circular potting exclusions are located from compute patterns. Sheet216 defines nominal36 mm pot diameter. Embedded thermal-device channels remove additional core volume.

05. Gross skins 10.585 kg +core 4.805 kg +rails 2.019 kg +bonds 1.882 kg = 19.292 kg. Bond density1200 kg/m3 assumed.

06. The section shows layer envelopes. Adhesive and thermal-device locations require a controlled process drawing before manufacture. Do not treat hatching as a solid-metal section.

SECTION C-C first 170 mm from X=0

SCALE 1:1 | DIMENSIONS mm



Z(front)=0 | detail vertical coordinate = Z+28

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

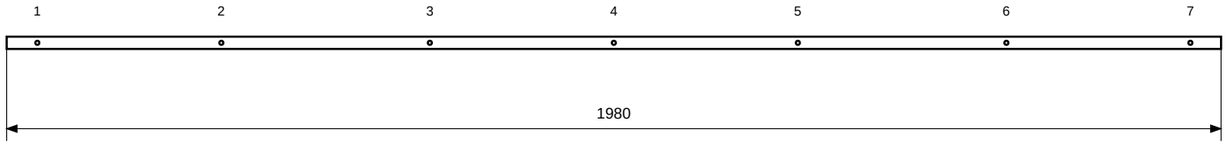
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-211	**1:20 / 1:1**	**D / mm**	**211**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

PERIMETER RAIL CUT AND DRILLING DEFINITION

OC-D-2121 /2122 | U-section closure rails; local fastening only

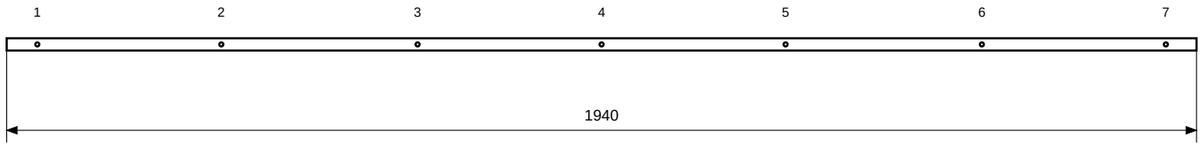
LONG RAIL OC-D-2121 QTY2

SCALE 1:10 | DIMENSIONS mm



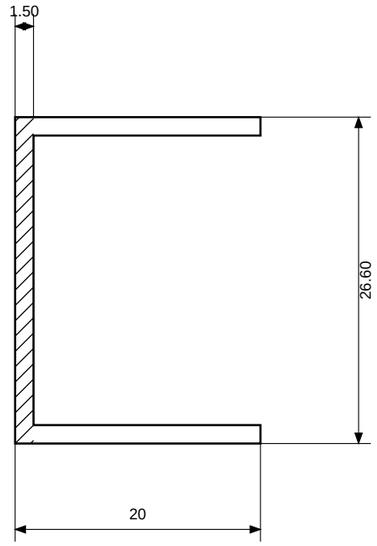
SHORT RAIL OC-D-2122 QTY2

SCALE 1:10 | DIMENSIONS mm



END SECTION D-D

SCALE 2:1 | DIMENSIONS mm



HOLE	LONG X	SHORT X
1	50	50
2	350	350
3	690	670
4	990	970
5	1290	1270
6	1630	1590
7	1930	1890

DESIGN / INTERFACE NOTES

01. Long rail local axis runs along X; short rail local axis is its own length coordinate, mapped along global tileY. All hole centres are10 mm from the exterior side of the rail.

02. Proposed7 holes per rail,6.6 mm diameter, axis normal to rear flange. Holes pass through rear skin and rear flange only. Drill depth shall not damage the front skin.

03. Rail section26.60 high x20 wide; wall and flanges1.50. Two0.20 skin bondlines complete the internal27.00 mm allowance. Corner radii and process remain unselected.

04. Long rails are1980 mm; short rails fit between long exterior webs with1940 mm cut length. Corner fixture and adhesive gap require tolerance allocation.

05. The skin-to-rail bond transfers distributed shear. Fasteners shown establish assembly interfaces only; sizing for launch and deployment loads remains open.

06. Hole coordinates are proposed, not qualified or supplier-derived. Do not infer M6 preload, torque, thread engagement or safety factors from a clearance diameter.

07. Thermal-interface or deployment hardware that occupies a rail hole requires explicit reallocation. No blind reuse of a skin attachment as a hinge root.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

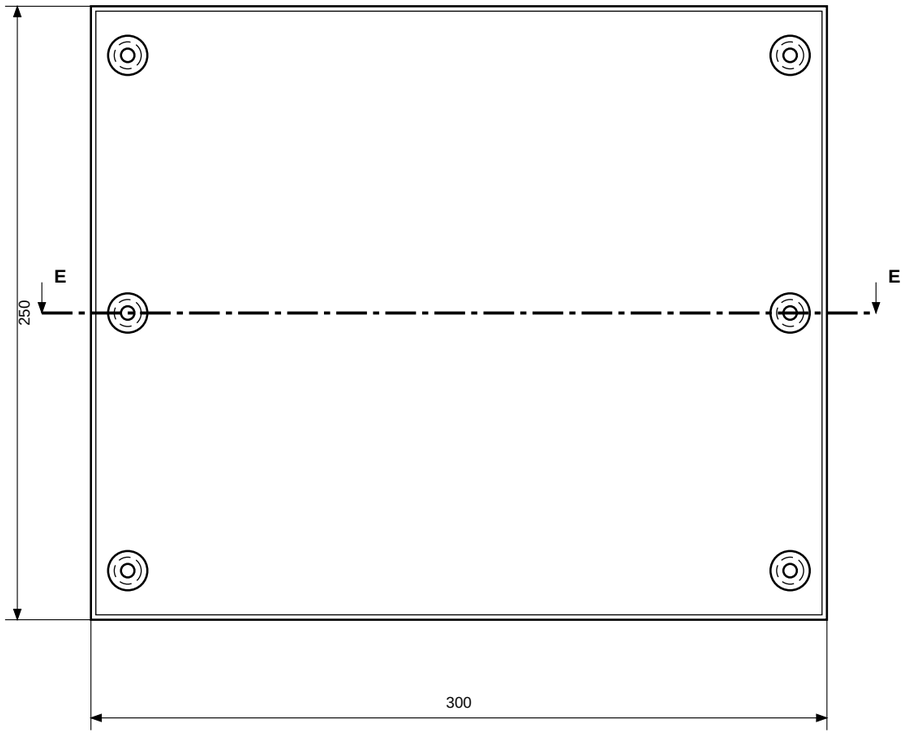
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-212	**1:10 / 2:1**	**D / mm**	**212**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

COMPUTE PACKAGE HOUSING

OC-D-2131 | 300 x250 envelope, six attachment posts and section E-E

HOUSING PLAN local centre (0,0)

SCALE 1:2.5 | DIMENSIONS mm

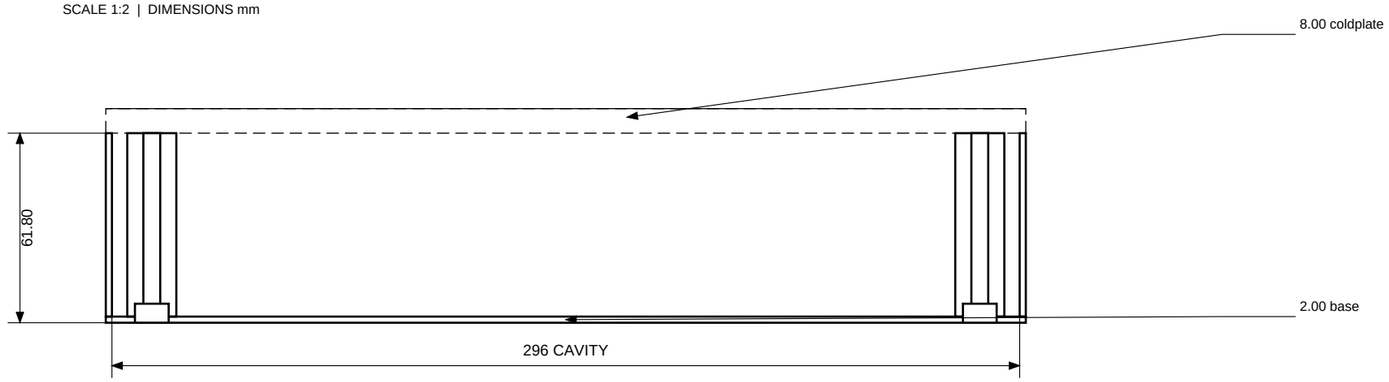


ID	X	Y	DIA
H1	-135	-105	5.5
H2	-135	0	5.5
H3	-135	105	5.5
H4	135	-105	5.5
H5	135	0	5.5
H6	135	105	5.5

All6 bores parallel to Z

SECTION E-E X-Z

SCALE 1:2 | DIMENSIONS mm



DESIGN / INTERFACE NOTES

01. Housing outer dimensions300 x250 x61.80. Base2.00; sidewalls2.00; cavity296 x246 x59.80 before attachment posts. Total package70.00 includes coldplate and interface layer.

02. Z ranges: rear enclosure-98.00 to-36.20; coldplate-36.20 to-28.20; interface layer-28.20 to-28.00. The rear tile skin is at-28.00.

03. Six16 mm OD posts surround5.5 mm bores. Rear counterbores11.00 diameter x6.20 deep recess M5 x75 cap screws and1 mm washers. Detailed joint stack and tolerances are on250.

04. Geometric aluminium shell, base and posts: 0.921 kg after mounting bores/counterbores, before ports/fillets. Four shells per tile. Electronics, shields and fasteners excluded.

05. 300 x250 is the complete mechanical footprint. A board, memory modules and radiation mitigation must fit within the cavity and thermal/contact keep-outs.

06. No ambient-air cooling is credited. Vents, trapped-volume escape paths and contamination control remain unassigned; this is not a hermetic vessel.

07. Thermal allocation421.196 W per package. Sheet251 supplies prototype machining details; sheet252 defines the local fastener kit. Thermal performance requires measured full-chain resistance.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

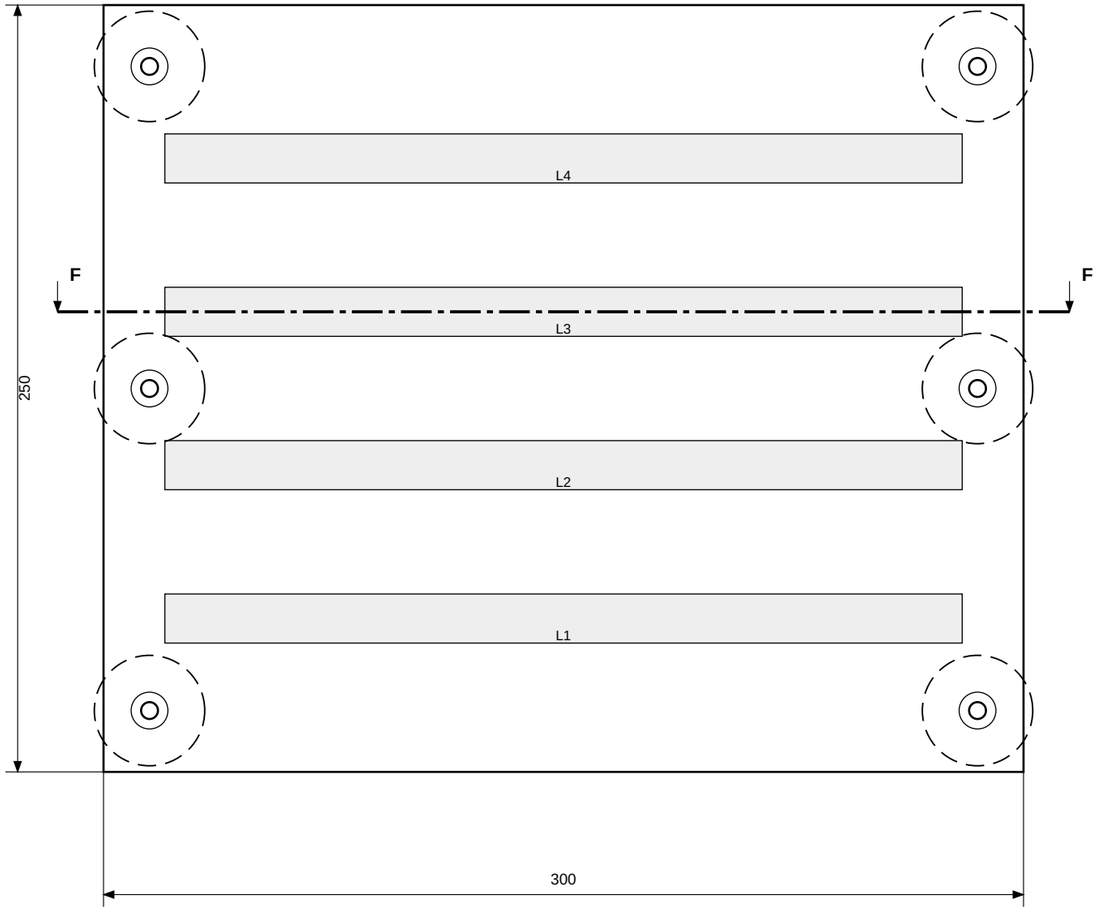
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-213	**1:2.5 / 1:2**	**D / mm**	**213**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

PASSIVE COMPUTE COLDPLATE INTERFACE

OC-D-2141 | Six holes, four contact lands and interface stack F-F

CONTACT-FACE PLAN looking -Z

SCALE 1:2 | DIMENSIONS mm



LAND	Y CTR
L1	-75.0
L2	-25.0
L3	25.0
L4	75.0

Each land260 x16

Total16,640 mm2

Holes: pattern213

DESIGN / INTERFACE NOTES

01. Four contact lands260 x16 at localY=-75,-25,25,75. They are controlled contact areas on a flat plate, not raised ribs. Front coldplate surfaceZ=-28.20.

02. Plate is300 x250 x8.00 with six5.5 mm holes. No coolant ports or internal channels are assigned. Embedded tile heat transport aligns under the four lands.

03. Keep all embedded thermal-device paths outside18 mm radius circles around attachment sites. This is a proposed mechanical/thermal routing exclusion.

04. Net plate mass after six clearance holes is 1.617 kg; unrecessed blank1.620 kg. No pocketing mass credit is taken.

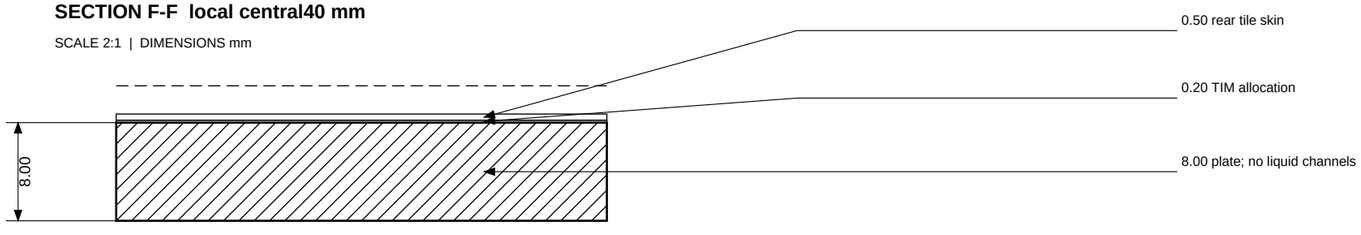
05. At421.196 W and8 K plate-to-skin allocation, full path resistance shall not exceed0.0190 K/W. Four0.20 mm interface layers at assumed3 W/(m K) alone consume1.69 K.

06. Remaining spreading, pipe coupling and contact performance must fit6.31 K. TIM conductivity, compression, outgassing and life are unqualified assumptions.

07. Land flatness target0.05 over260 mm. Six0.20 hard-stop shims at bolt sites prevent gap closure; fourTIM lands start0.25 free and finish0.20. Pressure depends on TIM and stop compliance.

SECTION F-F local central40 mm

SCALE 2:1 | DIMENSIONS mm



OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

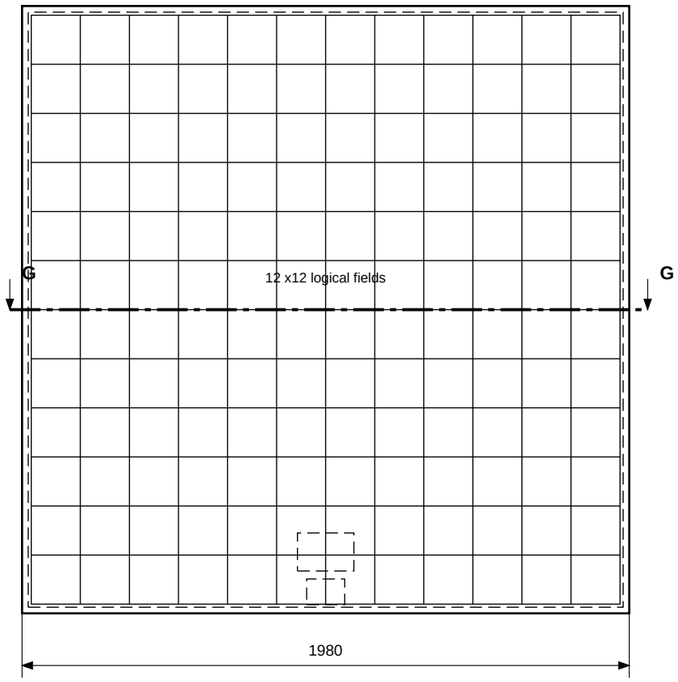
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-214	**1:2 / 2:1**	**D / mm**	**214**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

PHOTOVOLTAIC TILE MECHANICAL ASSEMBLY

OC-D-2150 | Active-field allocation, rear junction box and section G-G

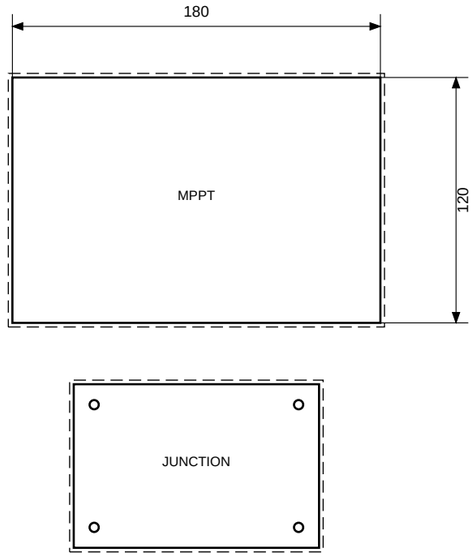
SUN-FACING PLAN

SCALE 1:20 | DIMENSIONS mm

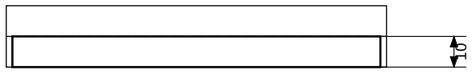


REAR ELECTRONICS RECESSES

SCALE 1:3 | DIMENSIONS mm



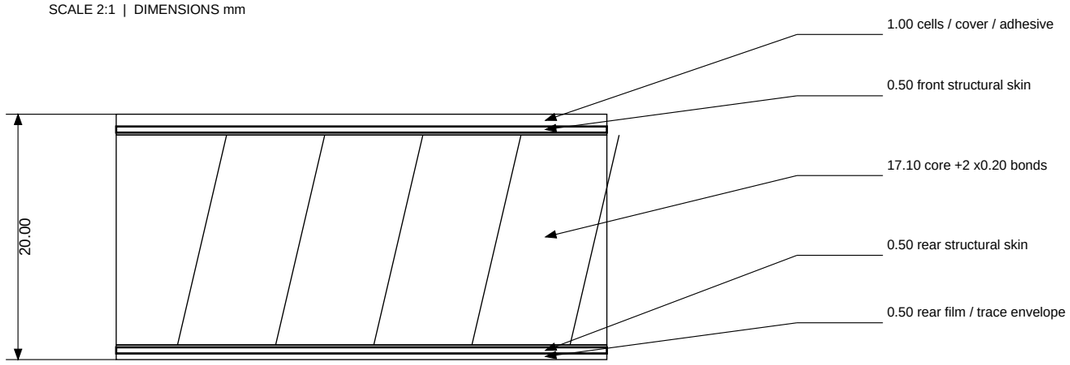
Pocket centres: J(990,70), M(990,200)



Pocket124 x84 x10; retain10 front stack

SECTION G-G cropped40 mm

SCALE 2:1 | DIMENSIONS mm



DESIGN / INTERFACE NOTES

01. Physical tile1980 x1980 sits within a2000 mm bay. Physical plan area3.9204 m2; gross cell allocation4 m2. Do not multiply thermal or solar flux by4 without accounting for seams.

02. The1920 x1920 inset is a proposed cell-field layout envelope, subdivided into144 logical fields at160 mm pitch. It is not a selected cell size or electrical string diagram.

03. A20.00 mm assembled base stack is allocated, including all listed layers. 25 mm launch pitch leaves5 mm for protection and clearance before local hardware.

04. Junction envelope120 x80 x10 is recessed in a124 x84 x10 rear pocket at centre(990,70). Rear face flushZ=-20; box frontZ=-10. Retain the10 mm front stack and add local reinforcement.

05. Skins/core/rails/two0.20 bonds screen 17.274 kg before cells, coverglass, wiring and equipment. This exceeds9.8 kg from2.45 kg/m2 x4; the prior PV mass coefficient is unclosed.

06. MPPT cassette180 x120 x14 is reserved at(990,200) in184 x124 x14 rear pocket, leaving6 mm front stack. Neither board is selected; reinforcement, insulation, exits and local converter heat require closure.

07. Power model shall distinguish physical-tile fill from active-cell fill. The displayed inset area is3.6864 m2,92.16% of a4 m2 bay, before gaps inside the field.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

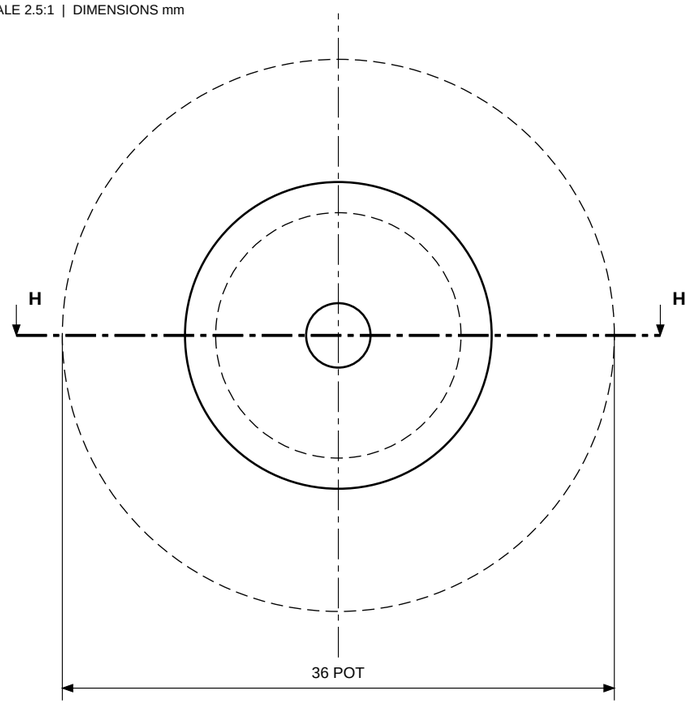
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-215	**1:20 / 2:1**	**D / mm**	**215**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

POTTED COMPUTE ATTACHMENT INSERT

OC-D-2161 | Flush M5 interface, core replacement and section H-H

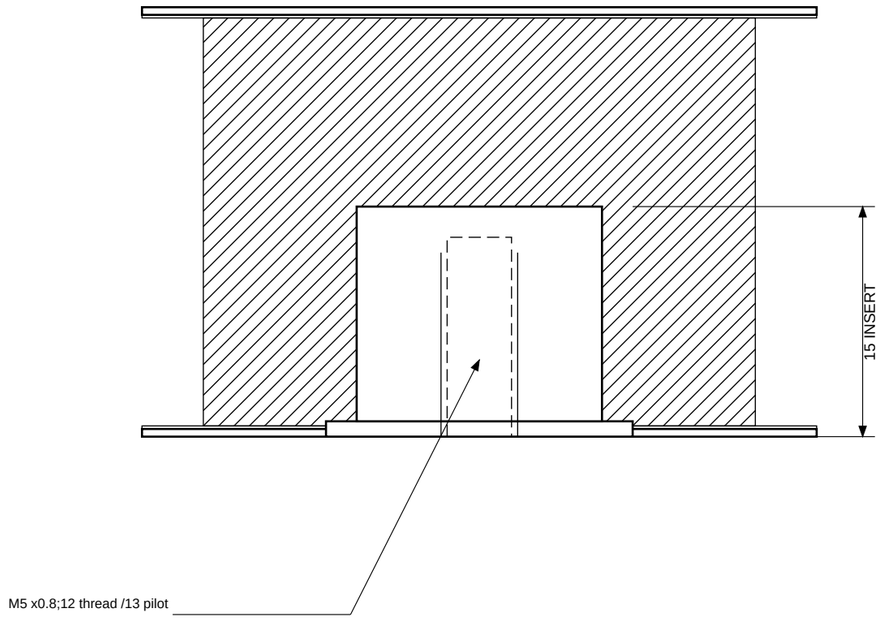
INSERT / POTTING PLAN

SCALE 2.5:1 | DIMENSIONS mm



SECTION H-H

SCALE 2.5:1 | DIMENSIONS mm



DESIGN / INTERFACE NOTES

01. 24 inserts per compute tile, six per package. Centres equal the sheet213 pattern translated to each sheet210 package centre. These are compute mounts, not edge hinge roots.

02. Insert rear face flushZ=-28. Flange1 mm plus14 mm body gives15 mm total, endingZ=-13. M5 thread reachesZ=-16; flat-bottom pilot reachesZ=-15; solid floor2 mm.

03. Prototype interface is M5 x0.8-6H, thread-milled to12.00 depth;4.20 flat-bottom pilot13.00. Entry chamfer0.30 x45 deg. Joint engagement and bottom clearance are controlled on250.

04. Potting cylinder replaces26.60 mm core, between0.20 mm bonds. Preserve front skin; relieve rear skin and rear bond for the flush flange. Fillets, vents and drilling damage need process definition.

05. Proposed Al insert mass 7.96 g each, before actual thread. Potting at assumed1100 kg/m3 is 26.58 g per site; deduct replaced core from gross core mass.

06. Required validation: pull-out, shear, combined load, thermal cycling, creep and local skin buckling. No allowable load is assigned by this geometry.

07. Minimum routing exclusion is18 mm from each centre for embedded thermal devices. Inspect bonded insert position and flushness before coldplate integration.

FEATURE	PROPOSED
Thread	M5 x0.8 /12 deep
Flat-bottom pilot	4.2 dia /13 deep
Flange	20 dia x1
Body	16 dia x14
Potting	36 dia x26.60

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

DRAWING
OC250-216
ISSUED 2026-09-25

SCALE / FORMAT
2.5:1
A3 420 x 297

REVISION / UNITS
D / mm
3RD ANGLE *

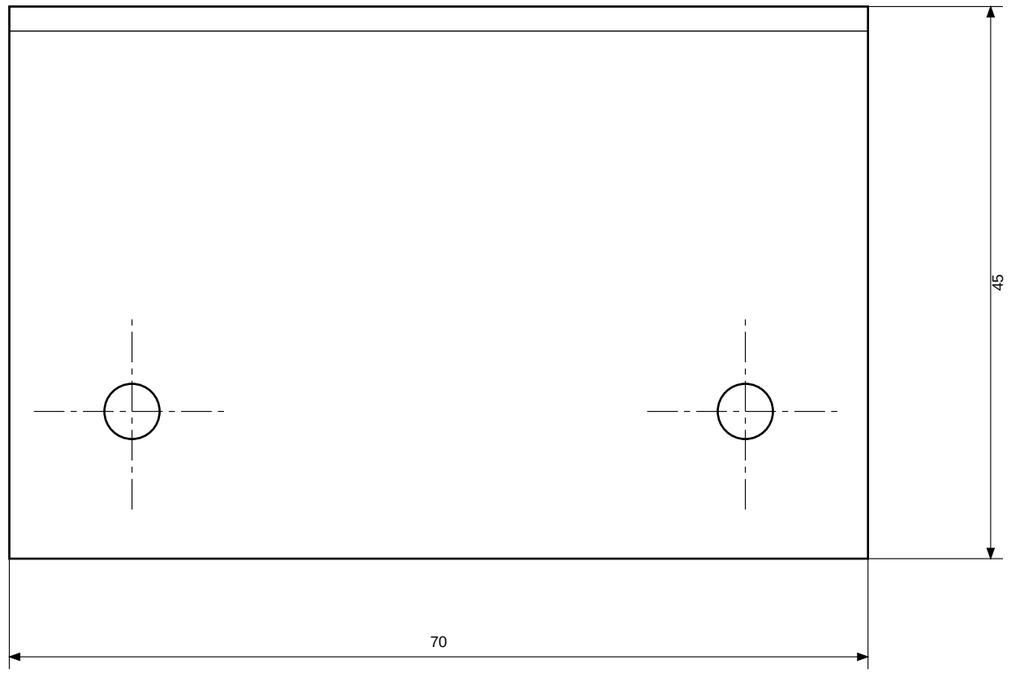
DRAWING SERIES
216
* axes on views

HARNESS CONNECTOR SUPPORT BRACKET

OC-D-2171 | Generic interface cut-out, mounting holes and orthogonal sections

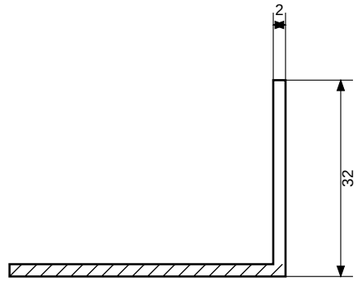
FOOT PLAN X-Y

SCALE 2:1 | DIMENSIONS mm



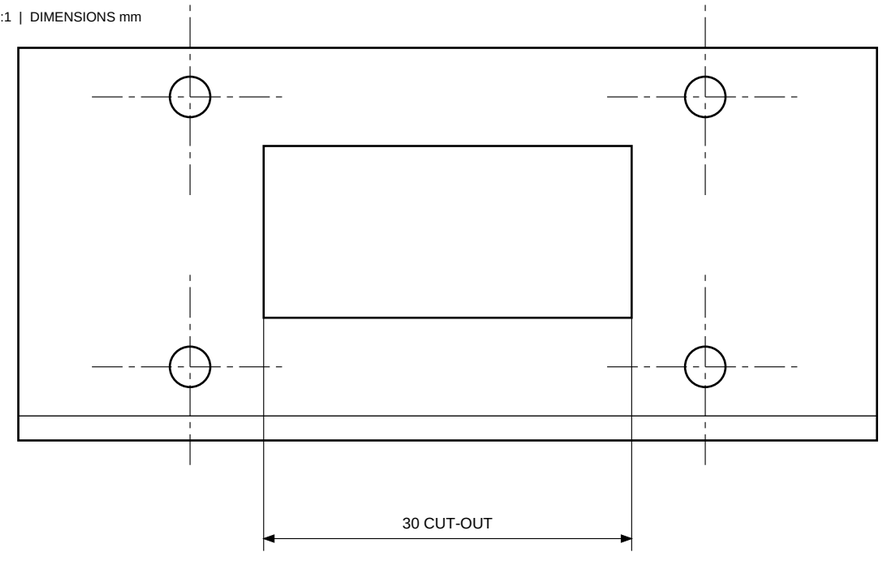
SIDE Y-Z

SCALE 1:1 | DIMENSIONS mm



CONNECTOR FACE X-Z

SCALE 2:1 | DIMENSIONS mm



DESIGN / INTERFACE NOTES

01. Generic70 x45 x32 bracket with2 mm section. A machined/extruded angle is assumed for this sharp-corner envelope. A bent part requires bend radius and developed-blank revision.

02. Foot holes centre(10,12),(60,12), diameter4.5. Connector-face holes X=14,56 andZ=6,28, diameter3.3. Face cut-out X=20..50,Z=10..24.

03. Connector pattern is an allocated mounting interface, not a claim of compatibility with a purchased power or optical connector. Replace with selected product drawing before procurement.

04. Mount bracket on an allocated edge equipment zone. Keep it outside radiator contact lands and compute footprints. Local mount position and cable exit require harness drawing approval.

05. Nominal conductor/optical bend radii, backshell depth, strain relief and latch travel must remain inside the launch clearance allocation. Do not count bracket outline as complete connector envelope.

06. Bracket2 mm wall, hole edge distances and foot fasteners require load sizing for harness reaction and launch acceleration. Electrical bonding and dissimilar-metal treatment remain open.

FEATURE	SIZE
Foot holes	4.5 dia
Face holes	3.3 dia
Face pattern	42 x22
Cut-out	30 x14

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

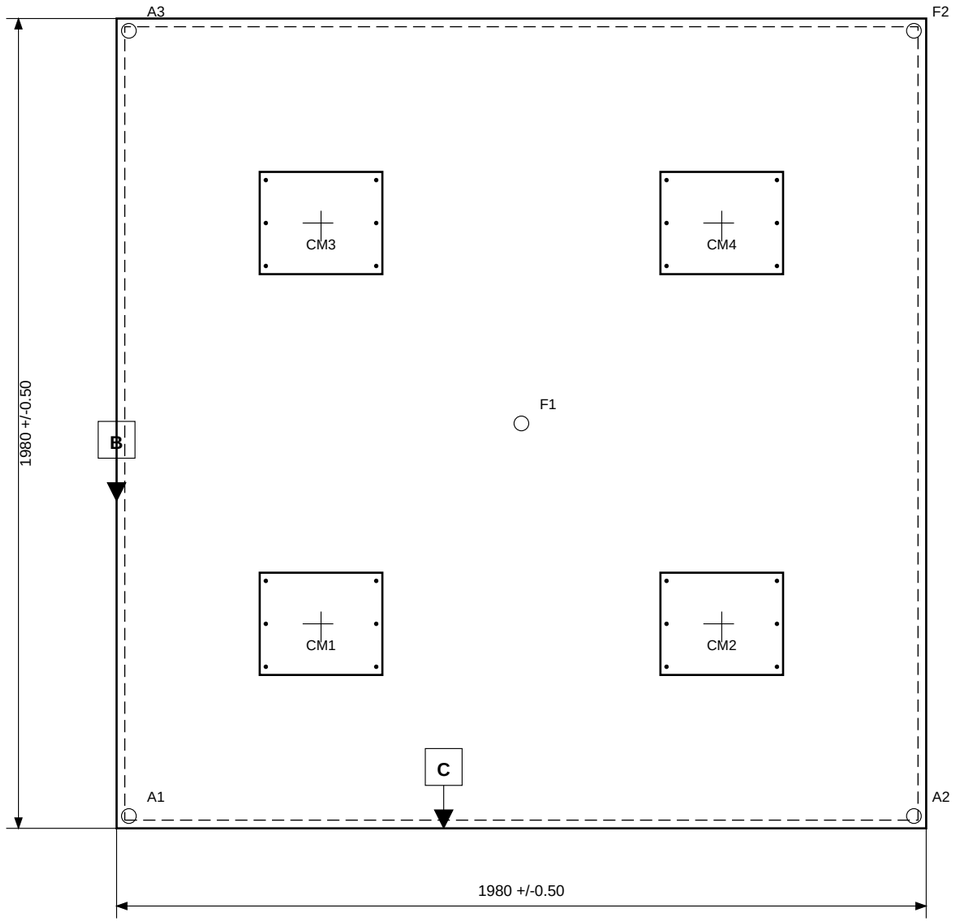
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-217	**2:1**	**D / mm**	**217**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

TILE DATUM AND DIMENSIONAL INSPECTION SCHEME

OC-D-2180 | Proposed inspection requirements; no qualification implied

DATUM / CHECK-POINT MAP

SCALE 1:15 | DIMENSIONS mm



A = three front support sites

B = X=0 physical edge

C = Y=0 physical edge

POINT	X	Y
A1	30	30
A2	1950	30
A3	30	1950
F1	990	990
F2	1950	1950

CHARACTERISTIC	PROPOSED LIMIT	INSPECTION BASIS
Panel length /width	1980 +/-0.50	At specified metrology temperature
Package centre X,Y	500 or1480 +/-0.10	From B,C; holes add local pattern
Local hole centres	+/-0.05 each axis	Relative package centre
Coldplate contact lands	0.05 flatness /260	Unloaded plate; loaded contact still tested

DESIGN / INTERFACE NOTES

01. This is a proposed dimensional-inspection scheme, not an adopted external tolerance standard. Coordinate dimensions are nominal and shall not be silently converted into a certified GD&T frame.

02. Primary referenceA is established at three designated front perimeter support sites. B isX=0 physical edge; C isY=0 edge. Measure the as-built relation to the rear contact surface.

03. Targets: overall length/width+/-0.50; package centres+/-0.10; local hole centres+/-0.05 per axis. Absolute coordinate sum is+/-0.15 before datum error. These are not interchangeable position tolerances.

04. Free-state panel warp target2.0 mm peak-to-valley requires support method and temperature to be stated. Do not apply a coldplate flatness target to a freely supported2 m sandwich.

05. Measure skin profile atA1,A2,A3,F1,F2 and all16 thermal contact lands. Add dense scans where heat pipes or inserts locally deform skins.

06. Record front/rear orientation, part and lot traceability, instrument uncertainty, support condition, temperature, measured values and disposition. Qualify acceptance limits through structural and thermal tests.

07. M5 in5.5 clearance gives0.25 mm nominal radial room. Verify full mating-pattern fit, thread axes, datum error and thermal motion; coordinate limits alone do not guarantee fit. Bay gap remains20 mm nominal.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

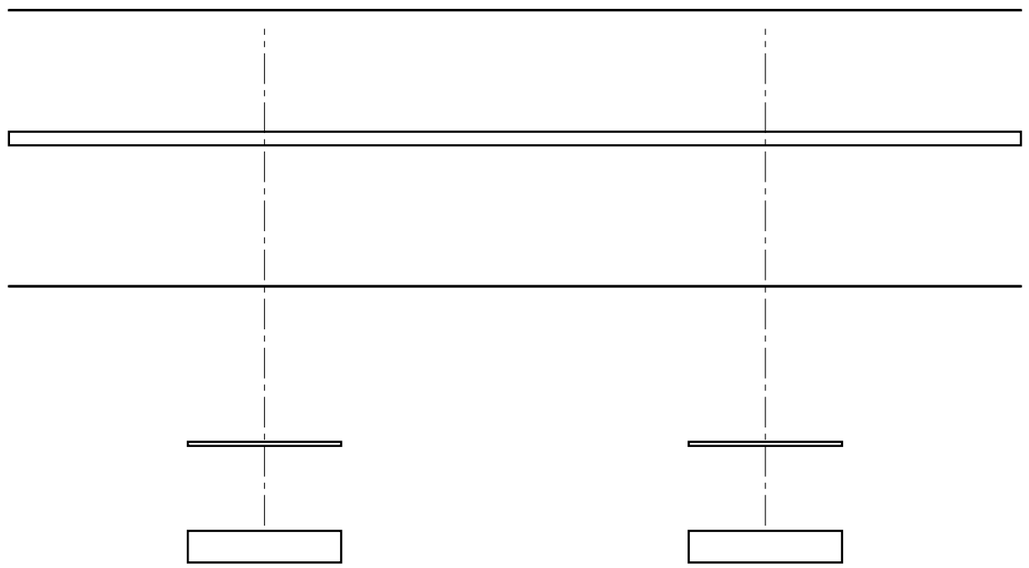
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-218	**1:15 / 1:2**	**D / mm**	**218**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

EXPLODED TILE BUILD-UP AND MASS REGISTER

OC-D-2190 | Geometric part accounting; allocations are not a qualified mass budget

EXPLODED X-Z ELEVATION

SCALE 1:12 | DIMENSIONS mm



Display separations are exploded offsets; each CAD view retains true component dimensions.

GEOMETRIC SCREEN	kg /TILE	ACCOUNTING BOUNDARY
Sandwich /rails /bonds	19.292	Gross core; local voids not all removed
Four drilled coldplates	6.468	Compute-interface hardware; counted once
Subtotal above	25.759	Exceeds24 kg legacy surface allowance
Four enclosure shells	3.686	Compute package ownership
PV structural screen	17.274	Includes two bonds; excludes PV functional layers

PART / QUANTITY REGISTER

PART	QTY	DEPTH /L
OC-D-2111 skins	2	0.50
OC-D-2112 core	1	26.60
Skin bondlines	2	0.20
OC-D-2121 rail	2	1980
OC-D-2122 rail	2	1940
OC-D-2131 housing	4	61.80
OC-D-2141 plate	4	8.00
OC-D-2161 insert	24	15.00
TIM lands	16	0.20
Fastener kit252	4	SEE252
Embedded transport	TBD	OPEN

Mass ownership: coldplates belong to compute-interface hardware in this revision; count them once. The6 kg/m2 radiator coefficient remains unclosed until heat transport and coating are itemized.

Subtract displaced core before adding potting and embedded devices. Housing walls, skins and rails have separate volumes; do not count a solid28 mm aluminium tile.

OPEN items: electronics, shielding, heat pipes, bond process excess, coating, harness, hinges, restraints, guards, service radiation interfaces and qualification growth.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

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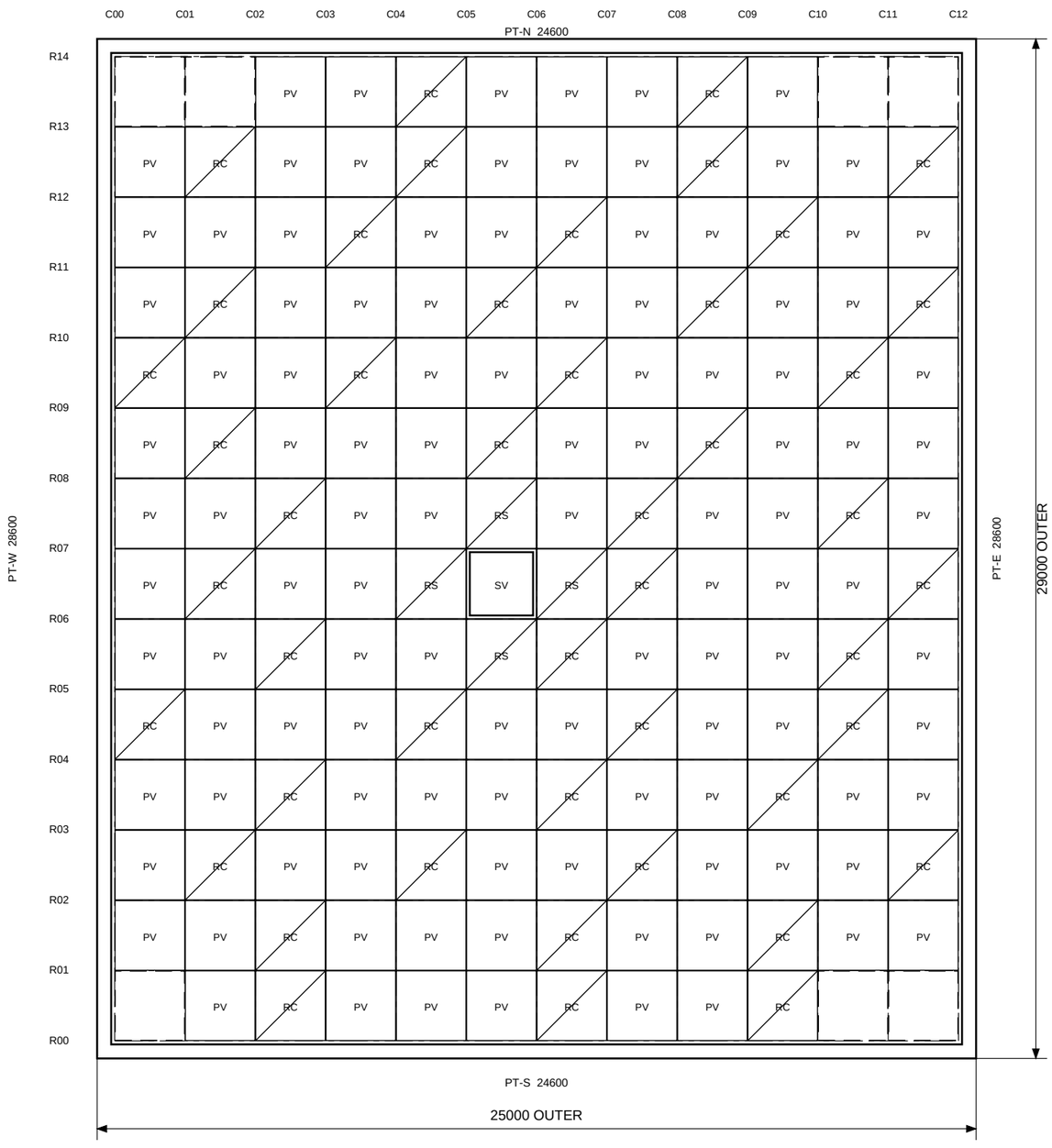
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-219	**1:12**	**D / mm**	**219**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

PRIMARY STRUCTURAL ROUTING AND MEMBER SCHEDULE

24 x 28 m active grid; 25 x 29 m external truss envelope. One spacecraft shown.

A SUN-FACING STRUCTURE PLAN

SCALE 1:160 | DIMENSIONS mm



ID	ROUTING
R00-14	X rails
C00-12	Y rails
PT-N/S	13 bays/side
PT-E/W	15 bays/side
SV-001	Pod cradle
OP	Open bay

Seam rails:18 x 20 x 1.5; hinge pockets interrupt rails. Tile edges bypass local gaps. Stiffness of assembled lattice remains unverified.

Truss centres: X=+/-12300; Y=+/-14300. Gross active-grid boundary is not the external spacecraft outline.

DESIGN / INTERFACE NOTES

01. All member dimensions are proposed. The 400 x 400 perimeter truss sits beyond active panels, from Z=-400 to 0. Inner plan face is 110 from the nearest physical tile edge.

02. Truss segments:52 x 2000 plus 4 x 600 centreline bays/module. Four 40 x 40 x 2 chords; four-face 20 x 20 x 1.5 diagonals; square cross-ties at 60 end frames.

03. Per spacecraft raw truss 508.7 kg; sleeves 38.6; node blanks 31.1; hardware/corners 85 allowance. Total 663.4 kg.

04. Shallow rail gross 724m; net pocket-adjusted 629.88m, 178.6 kg +35 kg joint allowance/module. Reconcile against existing tile rail mass; do not double count.

05. Out-of-plane and in-plane loads transfer through tile edge frames, locked joints, perimeter and pod cradle. The pod is not at the geometric origin.

06. A geometric connection graph is not a stiffness model. Closed-loop latch preload, torsion, thermal expansion, modal response and damping are unresolved.

07. Outside the panel outline does not mean zero radiative view obstruction. Include the full truss depth in 3D thermal rays.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

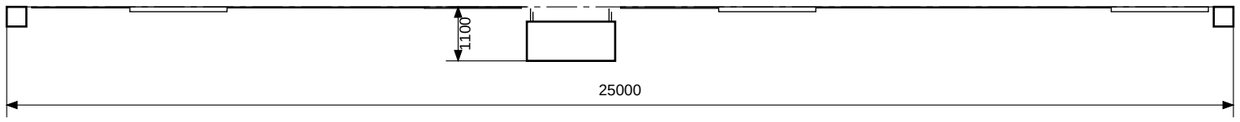
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC 250-220	**1:160**	**D / mm**	**220**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

ORTHOGONAL SECTIONS AND STRUCTURAL LOAD PATHS

Defined member placement and pod offsets; loading arrows are conceptual, not a finite-element result.

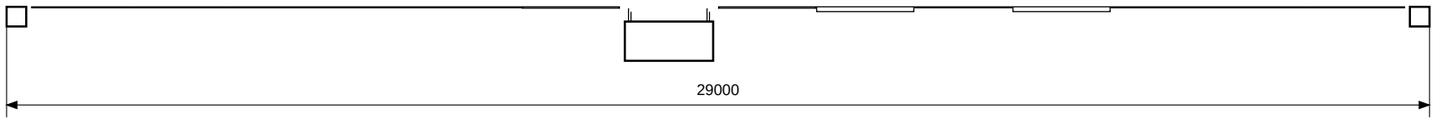
A-A X-Z SECTION THROUGH SERVICE CENTRE Y=-1000

SCALE 1:125 | DIMENSIONS mm



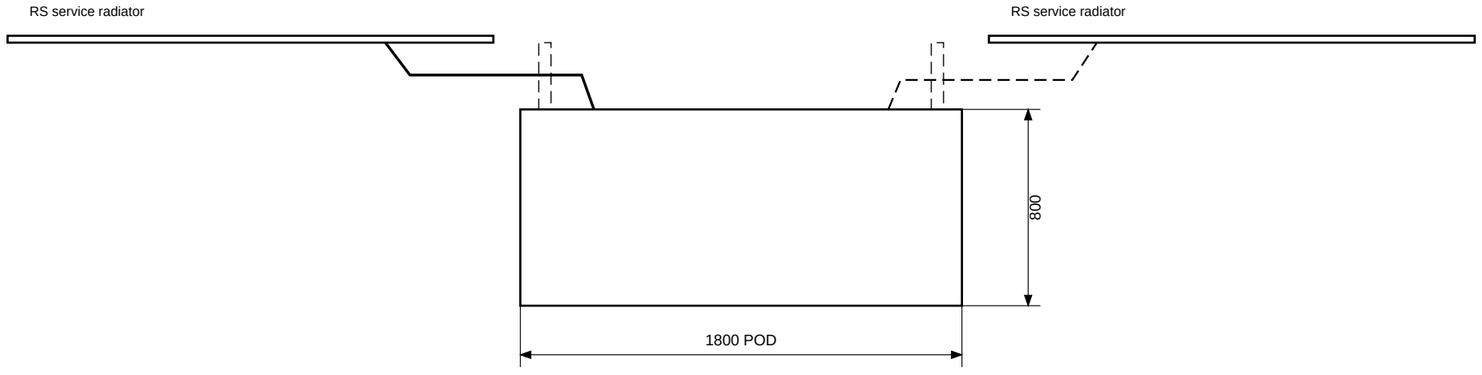
B-B Y-Z SECTION THROUGH SERVICE CENTRE X=-1000

SCALE 1:125 | DIMENSIONS mm



C SERVICE CRADLE AND NEIGHBOURING RADIATORS

SCALE 1:25; LOCAL X = GLOBAL X +1000 | DIMENSIONS mm



DESIGN / INTERFACE NOTES

01. Z=0 is the sun-facing tile plane. PV occupies Z=-20..0; RC tile/compute envelope -98..0; RS panel -28..0 before unselected liquid fittings.

02. Pod centre =(-1000,-1000), envelope 1800 x 1800 x 800 at Z=-1100..-300. Adjacent service radiator bays are(4,6),(6,6),(5,5),(5,7).

03. Cradle struts and heat-loop jumpers cannot pass through emitting surfaces. Four 50 mm strut envelopes lie at pod-local(+/-800,+/-800),Z=-300..-28. They are projected into these sections; aperture-frame attachments remain unresolved.

04. Short service hoses are routing allocations. No hose cross-section, bend radius, pressure qualification, freeze protection or moving sweep has been closed.

05. Perimeter truss depth 400 is wholly on the rear side, Z=-400..0. Side-edge separation 110 in plan does not eliminate rear-face IR obstruction.

06. Panel thickness alone does not define a beam. Local hinge, latch and skin-joint compliance must enter the deployed structural model.

07. Ground 1g support and orbit deployment are different load cases. An unloaded 24m simply supported 18 x 20 rail is not accepted as a global backbone.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

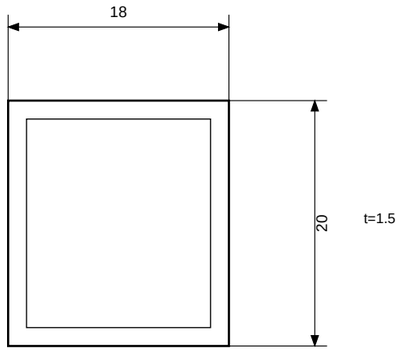
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC 250-221	**AS SHOWN**	**D / mm**	**221**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

SEAM RAIL, TRUSS BAY AND SPLICE COMPONENTS

Dimensional concepts with explicit interrupted load paths and separate stock packing.

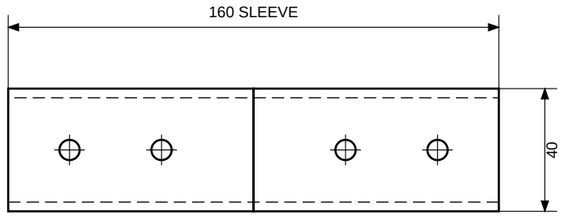
A SEAM RAIL SECTION

SCALE 2:1 | DIMENSIONS mm



B STRAIGHT CHORD SPLICE

SCALE 1:2 | DIMENSIONS mm

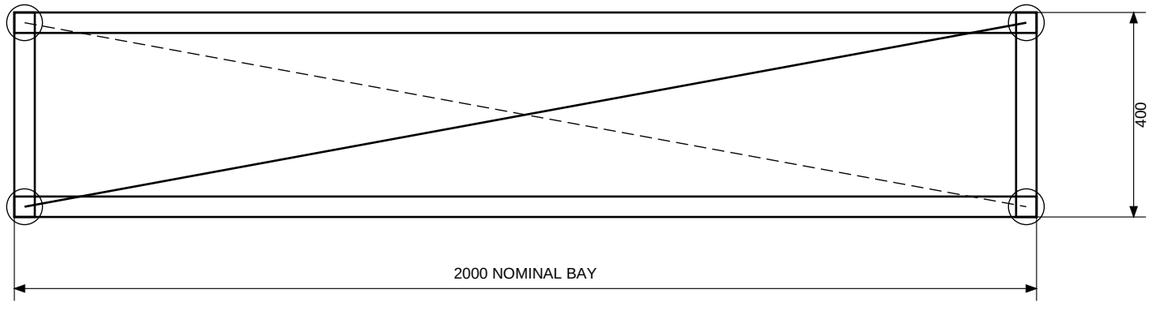


4 x DIA 6.6 THRU / M6

Sleeve 34 sq x3 wall;160 long

C PERIMETER TRUSS BAY, ONE SIDE ELEVATION

SCALE 1:12 | DIMENSIONS mm



D NODE BLANK

SCALE 1:2 | DIMENSIONS mm

t=8 /4 x DIA 6.6

DESIGN / INTERFACE NOTES

01. Material calculation assumption: Al 6061-T6, E=69 GPa, rho 2700 kg/m3. Values are screening inputs, not temperature-dependent design allowables.

02. Seam rail lies in 20 mm tile gap, Z=-20..0. Remove 130 mm length around each hinge station u=500 and 1480 to clear PV barrels. No load is credited across an unbridged cutout.

03. Seam rails are loose stock during launch to preserve 2000 mm pack width. A tile-carried rail creates 2018 mm lateral envelope and breaks the nominal 100 mm corridor. Reinforced tile edges bypass each pocket. Latch preload and tile skin/core shear stiffness govern continuity; adhesive peel and insert pull-out require analysis/tests.

04. Chord sleeve 34 x 34 x 3 inside 36 mm clear tube has 1 mm nominal radial clearance. A bonded/shimmed fit and actual bolt bearing/edge distances remain to be engineered.

05. One external truss bay is 400 x 400 x 2000. The four 400 sq stock packs hold disassembled rods, not connected rigid bays. Reconnection of hundreds of stock parts in orbit is unsolved.

06. Foldable alternative: replace diagonal with lockable two-link knee and pin each corner chord. This adds an unwanted mechanism until fully latched; the sketch does not establish a folding truss.

07. Ideal EI sums four chord areas at 180 mm from neutral axis, neglecting shear, node flexibility and discontinuities. Euler chord force is not a truss flight load rating.

MEMBER	ASSUMPTION	DERIVED SCREEN
18 x 20 x 1.5	A=105 mm 2	EI=404.3 N m2
40 x 40 x 2	4 chords at +/-180	EI ideal=2.74e+06 N m2
40 sq chord; L=2m	Pinned Euler screen	Pcr=12.49 kN

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

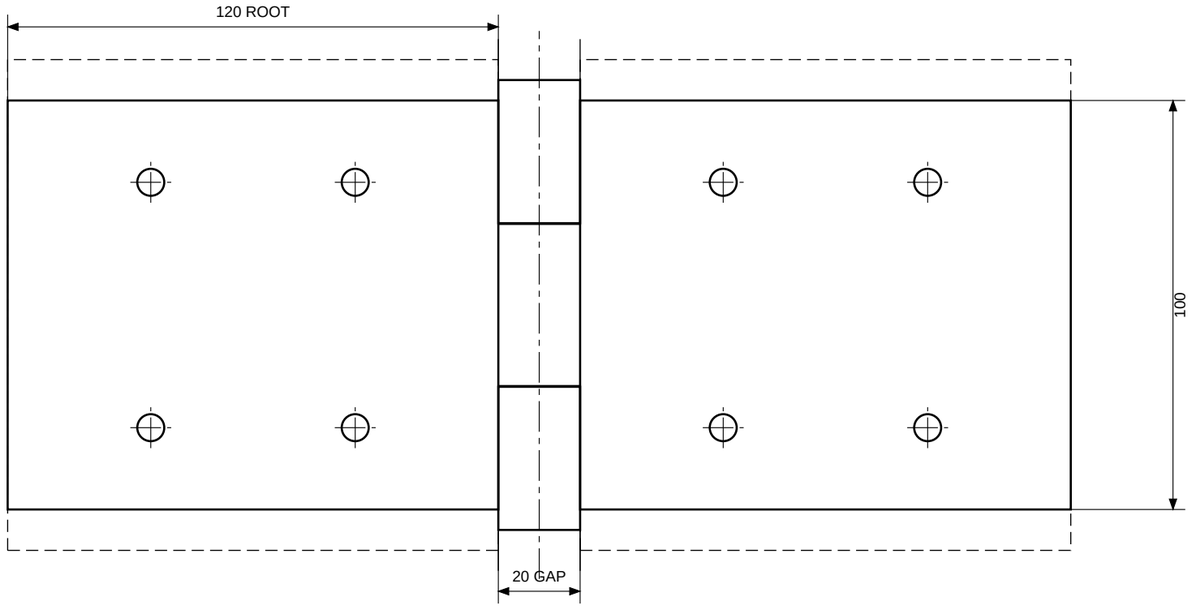
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC 250-222	**AS SHOWN**	**D / mm**	**222**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

TILE HINGE ASSEMBLY AND REINFORCED ROOT PARTS

Two independent hinge stations per selected edge; RAD and PV offsets and pins are distinct.

A HINGE ROOT PLAN, ONE STATION; LOCAL u=0 AT STATION

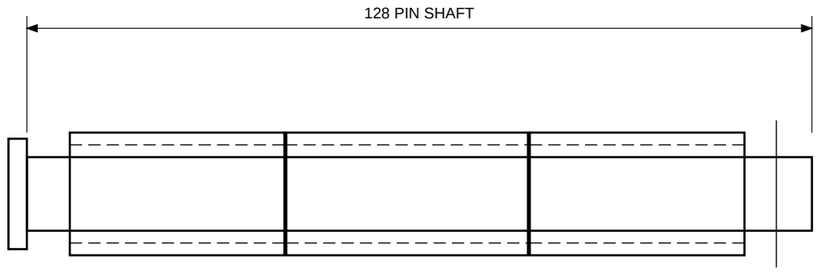
SCALE 1:1.5 | DIMENSIONS mm



4 x DIA 6.6 each root; 50 x 60 hole pitch

B RAD PIN / BUSH / KNUCKLES

SCALE 1:1 | DIMENSIONS mm

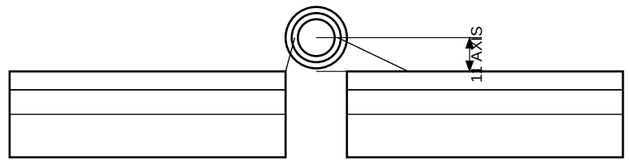


DIA 12 pin / ID 12 xOD 16 bush

Outer knuckles 35; centre 39.4; gaps 0.3

C RAD OFFSET SECTION

SCALE 1:2 | DIMENSIONS mm



6 mm leaf +8 mm backing =14

DESIGN / INTERFACE NOTES

01. Stations u=500 and 1480 from the physical 1980 mm tile edge datum. Left root hole centres are 35/85 inboard and u=station+/-30; mirror on opposite tile.

02. Root stack:6 mm flush leaf over 120 x 100 x 8 backing,Z=-14..0. Core cutout and recessed sun-facing surface required. Holes in thin skin closure rails are not deployment attachments.

03. RAD H-R: axis in mid-gap (10,+11) relative to left edge/Z0; pin DIA 12, bush OD 16, knuckle OD 20. PV H-P: axis(10,+2.5); pin DIA 8, bush OD 12, knuckle OD 16.

04. Steel pins and replaceable dry-lubricated bushings are material families only. Fit, coating, lubricant, vacuum wear, CTE mismatch and galvanic isolation are unspecified.

05. Fixed fork knuckles occupy u=-55..-20 and 20..55. Moving knuckle -19.7..19.7. Centred gap 0.3 per side includes 0.2 thrust washer; pin retainer outside the 110 mm knuckle span.

06. At an assumed 1 kN joint shear, ideal double-shear stress is 4.42 MPa for 12 mm pin or 9.95 MPa for 8 mm pin. No load requirement or allowable is inferred from this screen.

07. 225 verifies panel envelopes;253-254 extend the geometric check to bounded ears, roots and barrels. Thermal distortion, real fillets, retention, friction, harness and actuation remain open.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

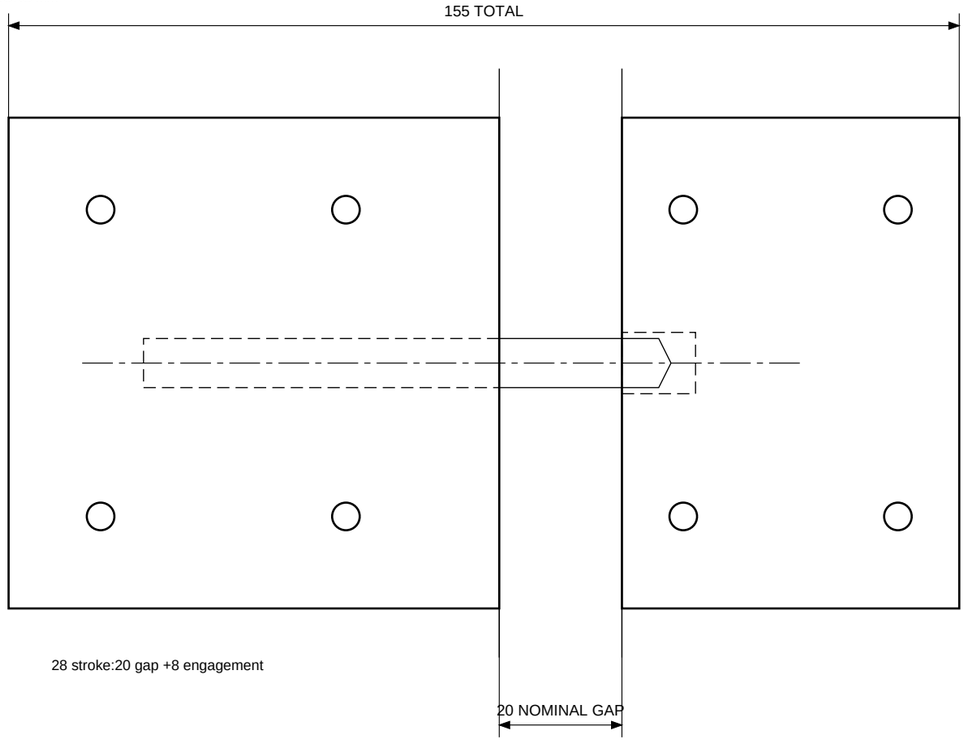
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC 250-223	**AS SHOWN**	**D / mm**	**223**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

DEPLOYED ALIGNMENT, HARD STOPS AND LATCH ALLOCATION

Retractable in-plane shear lock; proposed hardware envelope, no selected flight mechanism.

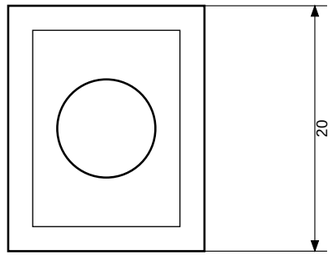
A RETRACTABLE LATCH PLAN, u=990 ON PHYSICAL EDGE

SCALE 1:1 | DIMENSIONS mm



B SECTION

SCALE 2:1 | DIMENSIONS mm



Flush PV envelope

DESIGN / INTERFACE NOTES

01. Latch station u=990 is separated from hinge stations 500/1480. Each latch root must connect to a reinforced edge insert; housing shown 80 x 80 x 16 on actuator side.

02. All latch features must retract into their own tile envelope before folding. Current drawing allocates a 28 mm stroke; drive screw, preload spring and release redundancy are unselected.

03. Receiver mounting holes at local x=30/65,u=+/-25; actuator x=-65/-25,u=+/-25. All 4.5 clearance holes. The asymmetric receiver pattern is intentional.

04. Hard stops carry deployed compressive closure; shear pin locates transverse motion. Do not use hinge-bushing clearance as the optical pointing or structural alignment datum.

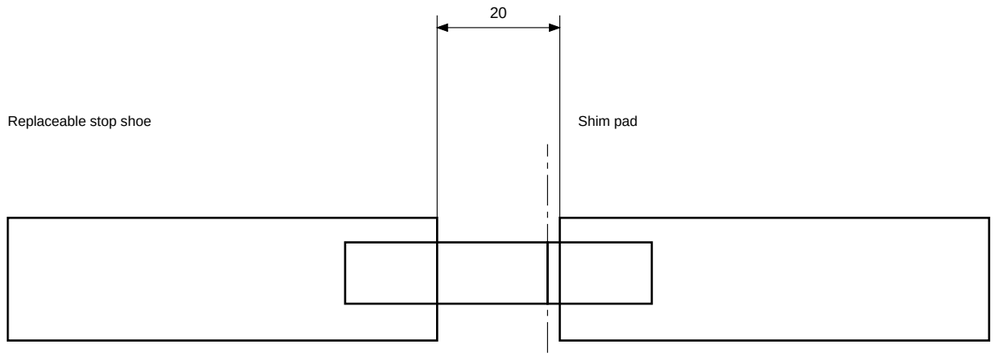
05. 0.2 mm is a study alignment target only. At 1.98m that is 0.101 mrad; accumulation across 12 tiles requires kinematic datums and compliance control.

06. A200K differential temperature gives 0.452 mm free thermal growth per 100 mm of Al at 22.6 ppm/K. A rigidly overconstrained grid can exceed the alignment target without flexures.

07. Hard-stop swept geometry and retracted actuator envelope are not part of the panel-only proof 225. Latch force, spring energy, shock, repeatability and fail-safe release need tests.

C HARD STOP AND ALIGNMENT CONCEPT

SCALE 1:1 | DIMENSIONS mm



Pads engage only after hinge reaches 0 deg

PARAMETER	mm
Nominal stroke	28
PV body depth	16
Pin diameter	8
Nominal engagement	8
Alignment target	0.2 study

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

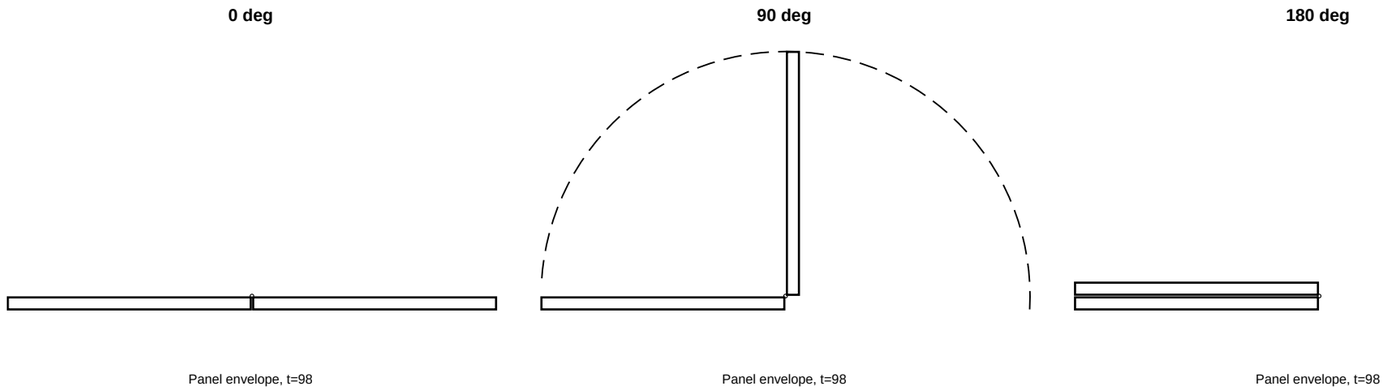
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC 250-224	**AS SHOWN**	**D / mm**	**224**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

FINITE-THICKNESS TWO-TILE FOLDING VERIFICATION

Continuous separating-coordinate proof for panel envelopes plus 0.1 deg clearance sampling. Hardware excluded.

A RAD/RAD FOLD IN X-Z; HINGE AXIS Y

SCALE 1:50 | DIMENSIONS mm



PAIR	tA /tB	AXIS h	FINAL GAP	MIN SAMPLED
RAD/RAD	98 /98	11	22	20.000
PV/PV	20 /20	2.5	5	5.000
RAD/PV	98 /20	11	22	20.000

B ROTATION AND CONTINUOUS NONINTERSECTION TEST

SCALE EXACT mm / radians | DIMENSIONS mm

x' =10 +(x-10)cos(theta) -(z-h)sin(theta)
z' =h +(x-10)sin(theta) +(z-h)cos(theta)
For 0..90 deg: min moving x =10 +10cos(theta) +h sin(theta)>0.
For 90..180 deg: min moving z =h(1-cos(theta)) +10sin(theta)>0.
Fixed envelope has x<=0 and z<=0. Thus the rectangles never intersect for h>0.

DESIGN / INTERFACE NOTES

01. Fixed panel A: x=-1980..0,z=-tA..0. Moving B at 0 deg: x=20..2000,z=-tB..0. PivotH=(10,h). Fold is counter-clockwise 0..180 deg.

02. The positive separating-coordinate proof is continuous in angle. Distances are additionally sampled at 0.1 deg; their quoted minima are sampled bounds, not tolerance-qualified clearances.

03. RAD sweep radius to far rear corner=1992.983. maxX=2002.983; maxZ=2003.983 at 93.135 deg.

04. RAD pair at 180 deg spans Z=-98..120:218 mm overall. A repeating 120 pitch leaves 22 mm face gap. PV pair spans Z=-20..25:45 mm overall,5 mm face gap.

05. Mixed RAD/PV with h=11 is panel-envelope safe:Z=-98..42,140 mm pair depth. This does not establish a repeated heterogeneous stack or the order of alternating hinges.

06. The 98 mm rear envelope conservatively fills space between compute boxes. No credit is taken for box interdigitation.

07. Excluded: root leaves, knuckles, pins, latches, wiring, hoses, seam rails and neighbouring rows. Each requires 3D swept-volume checks before a complete fold can be declared verified.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

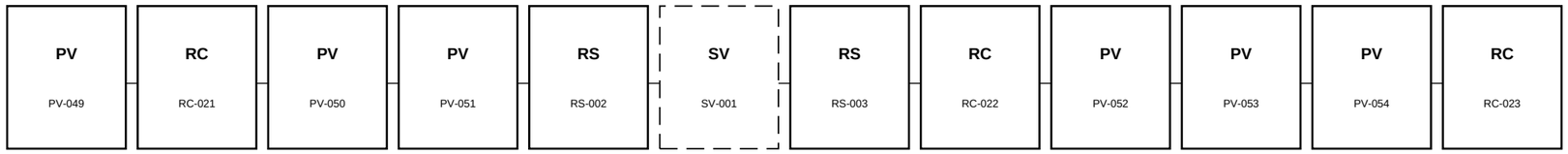
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC 250-225	**AS SHOWN**	**D / mm**	**225**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

ROW FOLDING AND GLOBAL PACKAGE CONNECTIVITY

Mixed thicknesses, missing corner apertures and a service pod prevent a uniform accordion assumption.

A ACTUAL CONTROLLED ROW iy=6, INCREASING X

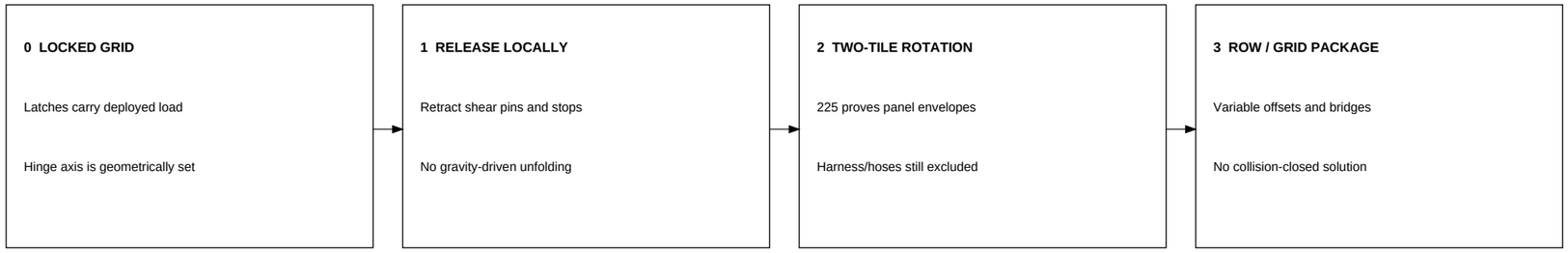
SCALE NTS; TILE IDs FROM CONTROL MODEL | DIMENSIONS mm



The centre service bay is a separate 1800 x 1800 x 800 pod, not a 20 mm folding panel.

B LOCAL STATES THAT ARE ACTUALLY DEFINED

SCALE NTS | DIMENSIONS mm



C STACK HEIGHT IS AN INVENTORY SUM, NOT A FOLD SOLUTION

SCALE CALCULATED BOUND | DIMENSIONS mm

ARTICLE /MODULE	COUNT	PITCH mm	HEIGHT mm
PV panels	110	25	2750
RC +RS panels	50	120	6000
Pod /restraint zones	1	1600	1600
Total allocation			10350

DESIGN / INTERFACE NOTES

01. Grid contains 161 connected occupied/service bays and 7 empty apertures. A breadth-first spanning tree needs 160 edges; this is a graph count, not a 160-hinge physical design.

02. One mechanical edge normally needs two hinge stations, but service-pod links, row hinges, bridge fittings and closure latches differ. Do not convert tree edges directly to flight hardware count.

03. A20 mm panel and a 98 mm envelope cannot share one universal hinge offset if 25 and 120 mm pitches are retained. Alternating fold signs and mixed interfaces require a sequence-specific synthesis.

04. RS liquid interfaces are only near the service pod. Their minimum bend radius, torsion limit and disconnect strategy must be solved before row fold or service-pod translation.

05. 8750 mm active stack is 110 x 25 +50 x 120. It treats panels as inventory with assigned pitches; it does not prove that a permanently connected array reaches the stack.

06. A serial hinge chain can rotate previously folded sub-stacks into other rows. Local two-panel clearance does not bound the whole-array sweep.

07. Hard gates: service-pod extraction, variable-axis hinge synthesis, row-to-row bridges, actuator placement, harness slack, all 3D collisions and deployment failure recovery.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

DRAWING
OC 250-226
ISSUED 2026-09-25

SCALE / FORMAT
AS SHOWN
A3 420 x 297

REVISION / UNITS
D / mm
3RD ANGLE *

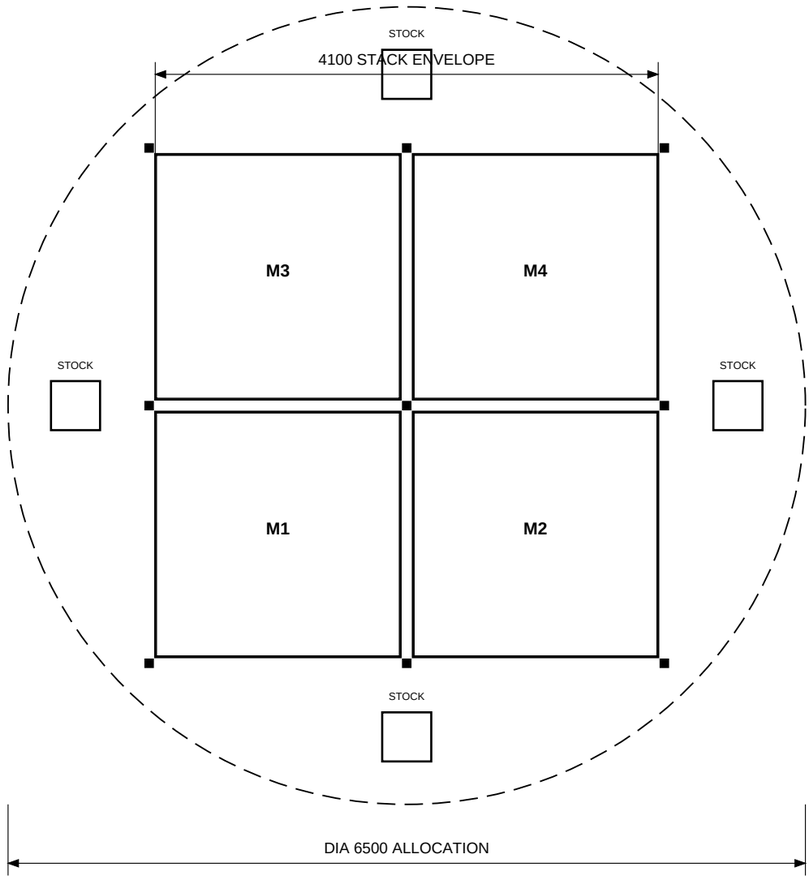
DRAWING SERIES
226
* axes on views

FOUR-STACK CARRIER AND PERIMETER STOCK ALLOCATIONS

Physical common-frame corridors, separate rod inventory and axial height bounds. Allocated launch gauge only.

A SHARED CARRIER CROSS SECTION

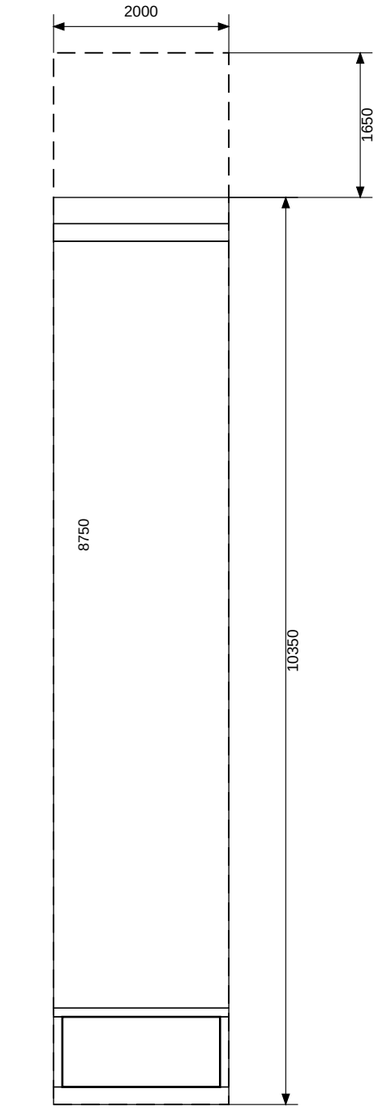
SCALE 1:50 | DIMENSIONS mm



LOCATION	CENTRES mm	ENVELOPE
Stacks	(+/-1050,+/-1050)	2000 sq
Posts	X,Y=-2100,0,2100	60 sq
Stock	(+/-2700,0),(0,+/-2700)	400 sq
Stock rods +fittings	DISASSEMBLED	11270 high

B PACK AXIAL ZONING

SCALE 1:70 | DIMENSIONS mm



Base 200 +pod 800 +gap 100

Panels 8750 +cap 200 +reserve 300

DESIGN / INTERFACE NOTES

01. Stack centres remain(+/-1050,+/-1050). A2000 sq allocation surrounds each 1980 sq panel. Clear space between allocations 100;60 mm shared posts leave 20 mm each side.

02. Nine posts 60 x 60 x 4, with 8 braced levels at 200/1700/3200/4700/6200/7700/9200/10050. Raw tubes +webs 766.0 kg/fleet;25% joints/restraints allowance gives 957.5 kg.

03. Post outercorner radial margin 237.7 mm; stockpack margin 343.1 mm. These are static nominal gaps, not launcher sway clearances.

04. Each stockpack:224 chord pieces(208 x 2000,16 x 600);224 diagonals(208 x 2039.61,16 x 721.11);240 x 400 cross-ties. Fourpacks totalone per spacecraft.

05. Packing 11270 mm:3 x 2050 chord bins +2090 web bin +2050 seam-rail bin +360 sleeves +120 nodes +300 hardware +200 ends. This is loose stock only.

06. Chord bins 224/243 slots; web bin 272/324. Rail bin:362 groups(435/850/455);360 slots 1740 high, two groups split/nested in spare 36 mm chord bores.240 sleeves/240 node blanks per pack. Assembly OPEN.

07. Assembled 400 sq truss envelopes occupy 68.10m3/fleet. Four 400 sq channels would need 106.4m axial each. Assembled rigid-bay packing FAILS.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

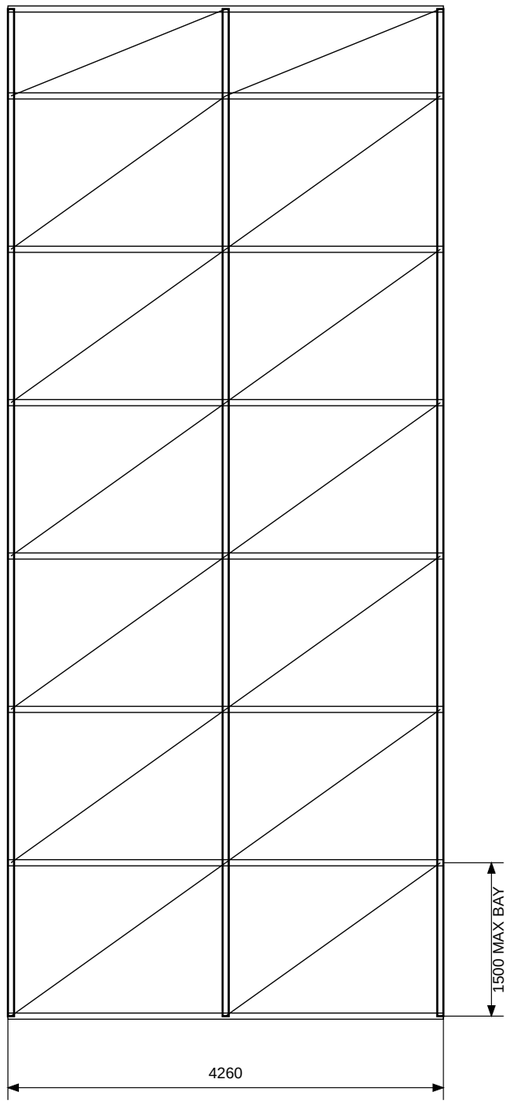
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC 250-227	**AS SHOWN**	**D / mm**	**227**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

RESTRAINT SHOES AND DISPENSER LOAD INTERFACES

Proposed stack load path; launcher ring and flight release devices have not been selected.

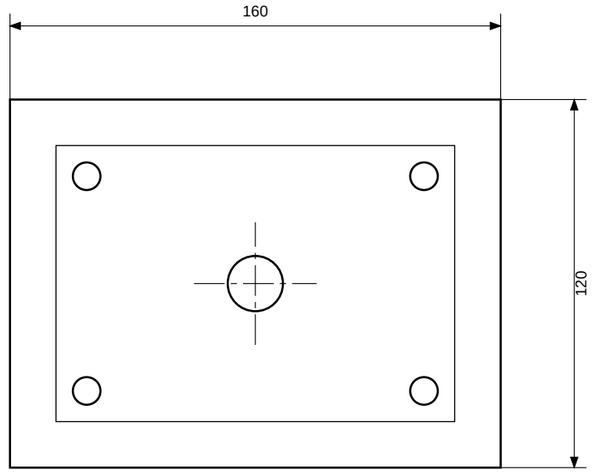
A SHARED FRAME ELEVATION IN A STACK CORRIDOR

SCALE 1:60 | DIMENSIONS mm



B STACK SHOE / RELEASE BOLT ALLOCATION

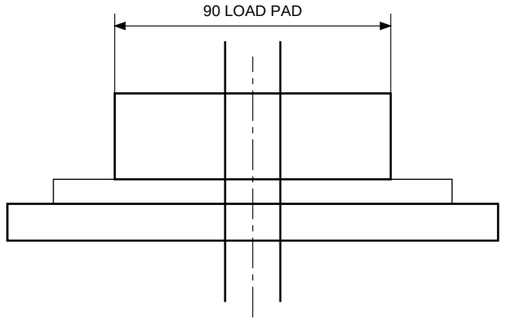
SCALE 1:2 | DIMENSIONS mm



4 x DIA 9; centralDIA 18 pass-through

C SHOE SECTION / CONSTRAINED EDGE CONTACT

SCALE 1:2 | DIMENSIONS mm



Contact reinforcededge; no compute/PV loading

LOAD SCREEN	BASIS
Screen launch acceleration	6g assumed
Example spacecraft mass	3500 kg assumed
4 restraint load shares	51.5 kN /shoe
Pin /bolt /adapter capacity	NOT established

DESIGN / INTERFACE NOTES

01. Each stack requires dedicated reinforced load pads and compression spacers. Stack clamping must bypass optical cells, radiator coatings, heatpipes and compute boxes. Layer-by-layer contacts remain unclosed.

02. A160 x 120 x 12 shoe with 8 mm compliant contact layer is a dimensional allocation. FourDIA 9 holes and centralDIA 18 clearance locate a future release tension member, not a selected release bolt.

03. For 60 x 60 x 4 Al post, pinnedEulerPcr at 1.5m =142.5 kN; unbraced 9.85m only 3.30 kN. Hence full-height unbraced columns are unacceptable.

04. At an assumed 14000 kg fleet and 6g, ideal equal axial share across 9 posts is 91.6 kN/post. Static Euler ratio is only a screen; combined bending, crookedness, joint fixity, random vibration and margins are absent.

05. The base interfaces with an unselected launcher adapter. Do not transfer the study 6500 mm cylinder,6g assumption or bolt pattern to a launch-provider ICD.

06. Lateral launch reactions require braced frame planes at all threeX and threeY corridors. Corners, fastener slip and local tube crippling need finite-element and test closure.

07. Release sequence must prevent preload redistribution, snags, shock damage and recontact. One failed shoe or stuck rod pack is an unresolved deployment contingency.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC 250-228	**AS SHOWN**	**D / mm**	**228**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

DEPLOYMENT STATE AND CONSTRAINT VERIFICATION MATRIX

Evidence hierarchy: exact local geometry, inventory bounds, proposed parts, unresolved whole-system mechanism.

STATE	REQUIRED EVENT	EVIDENCE / BLOCKER	STATUS
D0	Launch restraint engaged	Tile-stack geometry fits; common-frame nominal clearance 20 mm. No provider load envelope.	OPEN
D1	Release all stack contacts	Shoes proposed 228. Preload, actuation, shock and redundant release missing.	OPEN
D2	Separate four spacecraft	No dispenser trajectory/ADCS proof; avoid 4packs and shared frame.	OPEN
D3	Extract service pod	800 mm pod inventory fits base; connection to panel grid and hose motion unsolved.	OPEN
D4	Rotate two isolated tiles	225 continuous nonintersection for rectangular 98/20 mm envelopes.	VERIFIED*
D5	Fold/unfold a full row	Mixed h=2.5/11 axes and inherited sub-stack sweeps not closed.	OPEN
D6	Connect row-to-row grid	161-node graph connected.160edges do not prove fold kinematics.	OPEN
D7	Build perimeter truss	Stock fits 11270 mm; disassembled rods cannot self-assemble.	OPEN
D8	Latch and align 25 x 29m	Stops/latches 224 dimensional; no full-array stiffness/thermal alignment result.	OPEN
D9	Commission thermal/IT	Hose bends, view factors, modal ADCS and real mass must all pass.	OPEN

DESIGN / INTERFACE NOTES

01. No drawing in 220-229 represents a completed autonomous deployment system. The stock packing construction is an explicit alternative inventory state that would require orbitalassembly.

02. Freeze criteria: specify deployment graph and actuators; solve every finite-thickness axis; run 3D continuous collision checking; close mass, stiffness and launch loads; demonstrate gravity-offloaded deployment.

03. A preconnected 400 mm truss needs a separate folding mechanism. Rigid-bay volume fails the four 400 sq channels; disassembled stock fitting does not remove this failure.

04. Per module perimeter structure screen 663.4 kg + seamrails 213.6 kg. Fleetcarrier screen 957.5 kg. Hinge/latch roots and deployment drives still require a complete BOM.

05. Material and mechanism primaryreferences: NASA 20150001345 (material table),20180003006 (solar-array qualification lessons),20000048380 (hinge/latch dynamics). They support methods, not this unflown design.

06. The engineering decision is conditional: continue local breadboards and connected packaging proof before procurement or a 2029-2030 launch commitment.

* VERIFIED = panel-envelope kinematics only for one isolated hinge pair. It excludes hinge body, latch, harness, fluid lines and all other panels. This is a meaningful local result, not a deployable spacecraft qualification.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

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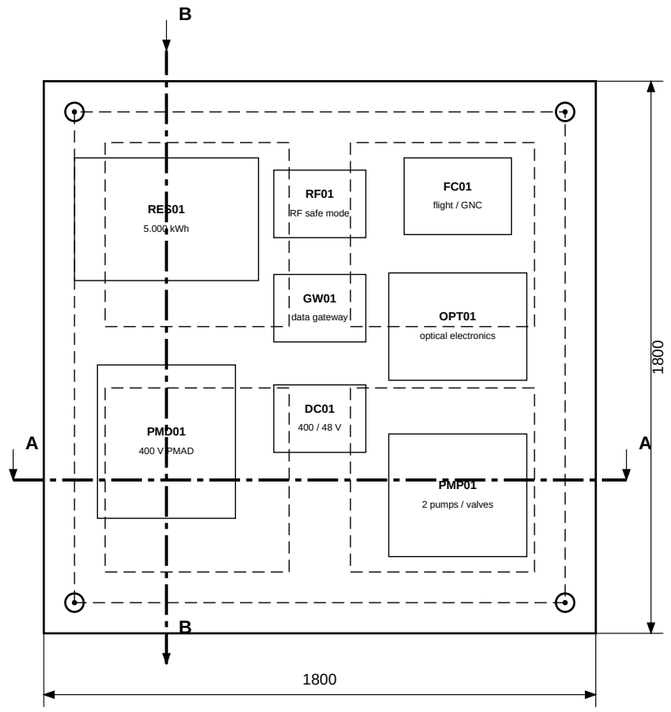
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC 250-229	**AS SHOWN**	**D / mm**	**229**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

SERVICE POD ARRANGEMENT AND LOCATED SECTIONS

Pod-local X/Y; module Z is common to radiator datum. All component envelopes are proposed.

PLAN, TOP COVER REMOVED

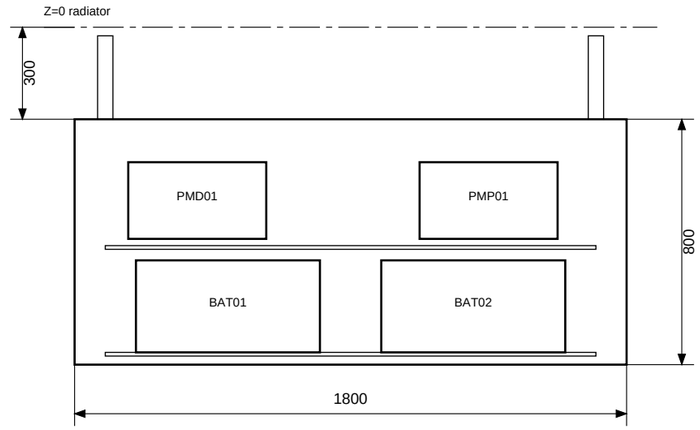
SCALE 1:20 | DIMENSIONS mm



Dashed: lower battery deck. A-A at Y=-400; B-B at X=-500.

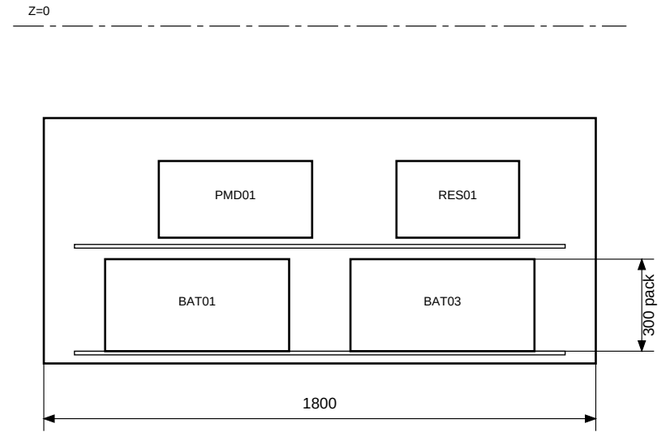
SECTION A-A, LOOK +Y

SCALE 1:20 | DIMENSIONS mm



SECTION B-B, LOOK +X

SCALE 1:20 | DIMENSIONS mm



DESIGN / INTERFACE NOTES

01. Pod external envelope1800 x1800 x800; centre(-1000,-1000,-700) in module coordinates. Local dimensions on this sheet add(-1000,-1000) for global X/Y.

02. Upper equipment is on ACP01 at Z=-724..-712. Thermal feet/straps bridge22 mm to boxes whose base is-690. Lower packs sit on BCP01-04 at Z=-1072..-1060.

03. 4 main packs each14.68515 kWh. Main total58.74060 kWh plus one separately protected5.000 kWh reserve.

04. Four struts attach pod upper corners to service-bay frame. Loads, inserts, grounding and launch restraint sizing remain structural ICD tasks.

05. 2 kW regulated service loads plus upstream battery/converter losses <=3 kW define5 kW thermal cap. The97% cell-to-bus implementation target gives4.320 kW local eclipse heat.

06. Optical heads are external on underside and shown on238. Covers, harness clearances and service access need a tolerance/assembly review. Study geometry only.

ITEM	ENVELOPE mm	Z centre
BAT01-04	600x600x300	-910
RES01	600x400x250	-565
ACP01	1600x1600x12	-718
BCP01-04	600x600x12	-1066
Pod origin	X=-1000,Y=-1000	module

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

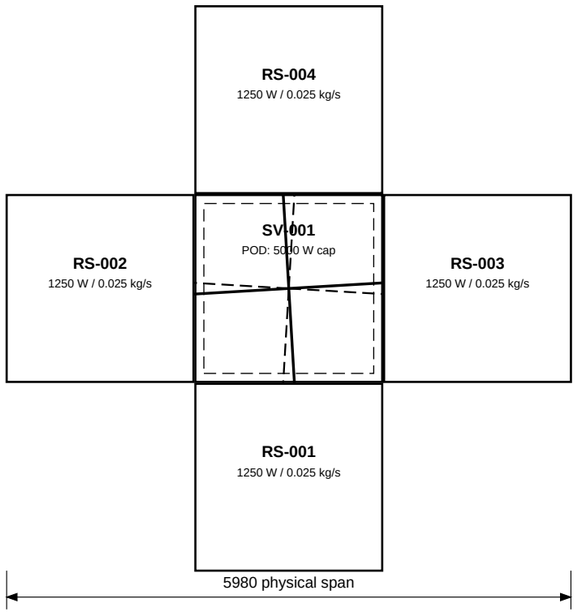
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-230	**AS SHOWN**	**D / mm**	**230**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

LOCALIZED HEAT ALLOCATION AND RADIATOR PATHS

Four service radiator tiles isolate pod heat; 46 compute radiator tiles carry local dry heat.

LOCAL FOUR-PETAL THERMAL TOPOLOGY

SCALE 1:65 | DIMENSIONS mm



DESIGN HEAT / MODULE

PATH	LOAD
46 x RC IT	62.500 kW
Distributed non-IT	10.500 kW
Distributed design margin	4.500 kW
4 x RS service cap	5.000 kW
TOTAL DESIGN	82.500 kW

Each RC: 1684.783 W design

Each package: 421.196 W design

Each RC: 1358.696 W IT

Each RS: 1250 W design; no IT

DESIGN / INTERFACE NOTES

01. All thermal quantities here are per autonomous module. Fleet multiplication is4. Service heat is physically collected in the pod and rejected by four adjacent RS petals.

02. Pod regulated loads sum2 kW. Cell+upstream PMAD dissipation must remain <=3 kW in every operating mode. Actual efficiency target97%; minimum75/78=96.154%.

03. Stored-energy sizing uses0.95 conservatively; it is not the implementation loss asserted by the heat balance. PV MPPT losses stay on PV tiles.

04. RS fluid-to-skin conductance target50 W/m2K is integrated with nonuniform temperature: q=2 f epsilon sigma(Tfluid-q/h)^4-qenv. qenv=431.927 W/m2; f=epsilon=.85.

05. At305..330 K fluid, required gross planform15.444 m2. The four4 m2 gross bays provide16 m2. This modest3.5% area reserve requires test and obstruction verification.

06. Gross usable fraction .85 includes1.99% trim,3.75% compute-box projection and9.26% other loss. Do not deduct trim twice. RS pod view blockage still needs ray tracing.

07. Cold survival, thermal cycling and cold restart are unresolved. Bypass protects pod temperature but cannot prevent isolated external fluid from freezing.

CASE	INPUT	RESULT	BASIS / LIMIT
Nominal eclipse	2.000 + 2.320	4.320 kW pod	0.680 kW cap margin
Recharge @97%	2.000 + 0.859	2.859 kW pod	charging efficiency target
Stress RS loop	305 ->330 K	0.100 kg/s	5000 W / (2000 x25)
Area / conductance	16 m2 gross	UA >=800 W/K	required area15.444 m2
Local skin range	300.31..321.20 K	h=50 W/m2K	not uniform temperature
RC surface screen	320 K / f=.85	1708.976 W/tile	24.194 W tile margin

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

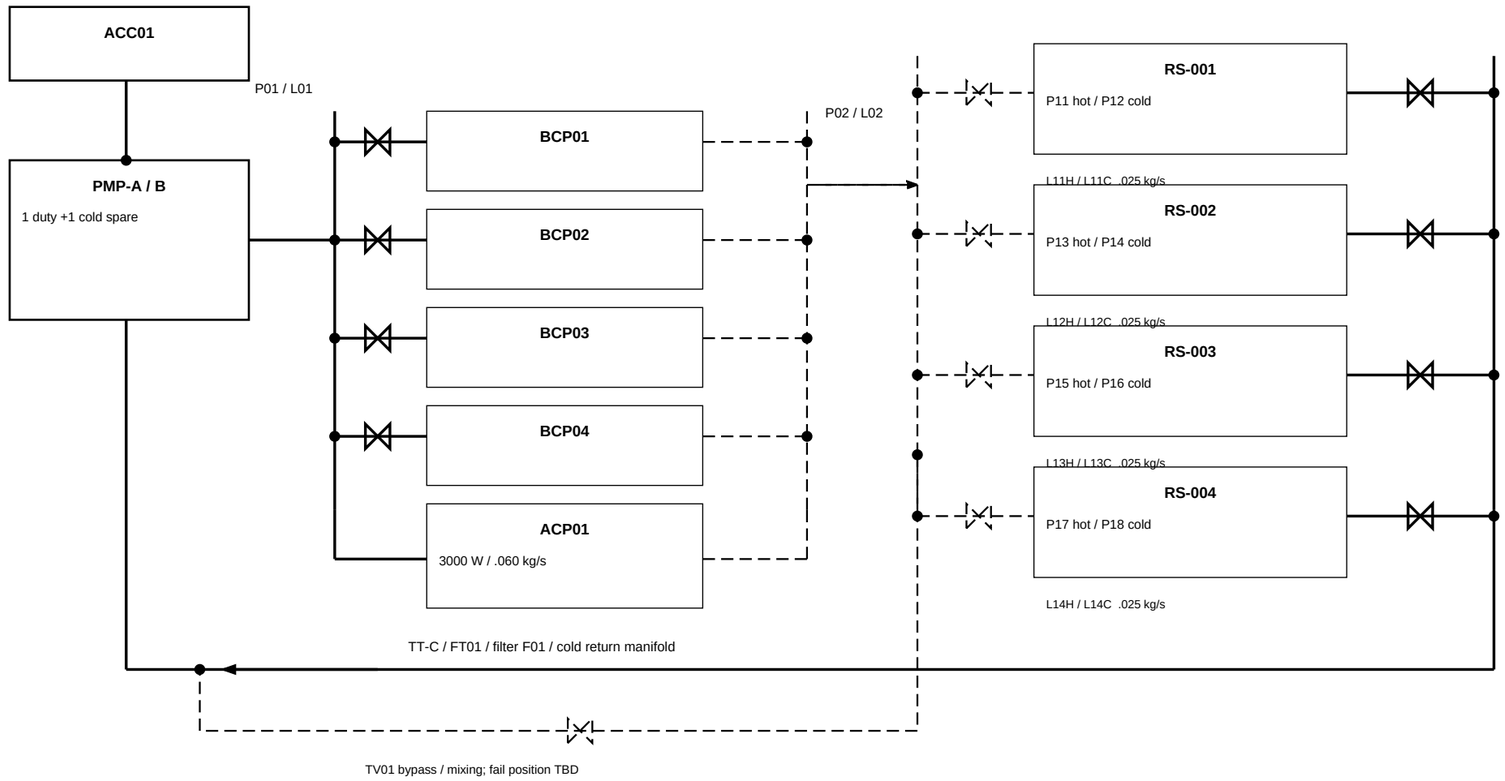
All dimensions nominal unless stated. No approval or qualification is implied.

DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-231	AS SHOWN	D / mm	231
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

SERVICE THERMAL P&ID AND INTERFACE LINE SCHEDULE

Supply=solid cold; return=dashed hot. Short IDs acquire module prefix M01..M04. Schematic NTS.

POD LOADS: COLD 305 K -> HOT 330 K



LINE / ITEM	ID / OD	FLOW	LENGTH / BASIS	RESULT / TARGET
L01/L02	14 /16 mm	0.100 kg/s	4 m combined rigid	2.65 kPa; Re1819
L11..14 H/C	6 /8 mm	0.025 each	11 m paired / RS	54.03 kPa paired
RS channels	24 x10 x1	0.025 /24	1700 active each	14.18 kPa screen
Loop target	150 kPa	0.100 total	46.875 W pump	eta=.40 assumption
Hinge interface	8 flex runs	6 mm ID	1.2 m / run in11 m	R >=80 allocated

DESIGN / INTERFACE NOTES

01. Flow orientation: pump supplies cold load manifolds. BCP01-04 take .010 kg/s each; ACP01 takes .060. Mixed hot return feeds four RS branches, .025 each, then cold manifold returns to pump.

02. BCP each500 W is a thermal allocation. Battery cells <=2 kW total; PMAD losses <=1 kW plus regulated2 kW enter ACP01. Loss allocation must be checked against selected cells/converters.

03. Cold-redundant full-capacity pumps each need check valve and isolation. Filter, pressure/temperature sensors, flow meter and gas-separated accumulator are mandatory functional items inside PMP01.

04. Four service petals require eight flexible fluid runs. This is the explicit Rev D exception to the previous no-fluid-across-hinge ambition. No RC coolant crosses a hinge.

05. PAO assumed rho800, cp2000, viscosity .005 SI, k=.13. Formulation, freezing, compatibility, gas release, cleanliness and seal life are not selected or qualified.

06. 150 kPa budget: RS route54.0 + channel14.2 + trunk2.65 + coldplates30 + fittings/filter25 + reserve24.1 kPa. Maximum operating pressure/proof pressure remain pressure-system design outputs.

07. Each RS has separately isolatable hot/cold branches. Losing one RS forces service heat derating; N+1 heat rejection is not claimed. Restart and pressure-control logic need tests.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

DRAWING **OC250-232** ISSUED 2026-09-25

SCALE / FORMAT **AS SHOWN** A3 420 x 297

REVISION / UNITS **D / mm** 3RD ANGLE *

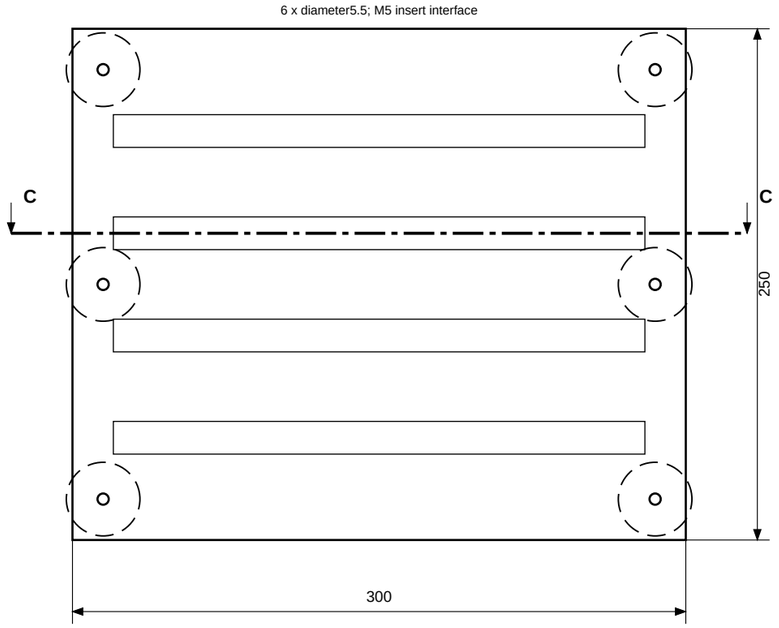
DRAWING SERIES **232** * axes on views

COMPUTE COLDPLATE AND SERVICE RADIATOR CHANNEL DETAIL

Dry RC heat path, separate pumped RS heat path. No common fluid network between compute tiles.

RC PLATE / FOUR THERMAL LANDS

SCALE 1:3 | DIMENSIONS mm

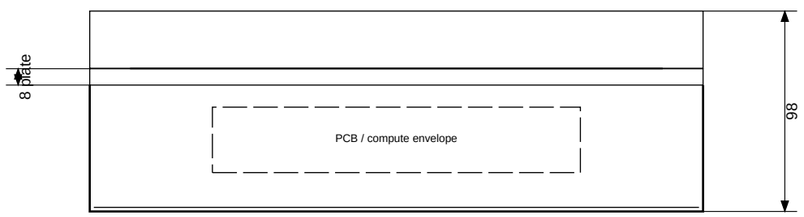


R18 around every hole: no pipe / no channel / no contact land.

Land positions: Y=-75,-25,+25,+75; size260 x16 each.

SECTION C-C, COMMON Z DATUM

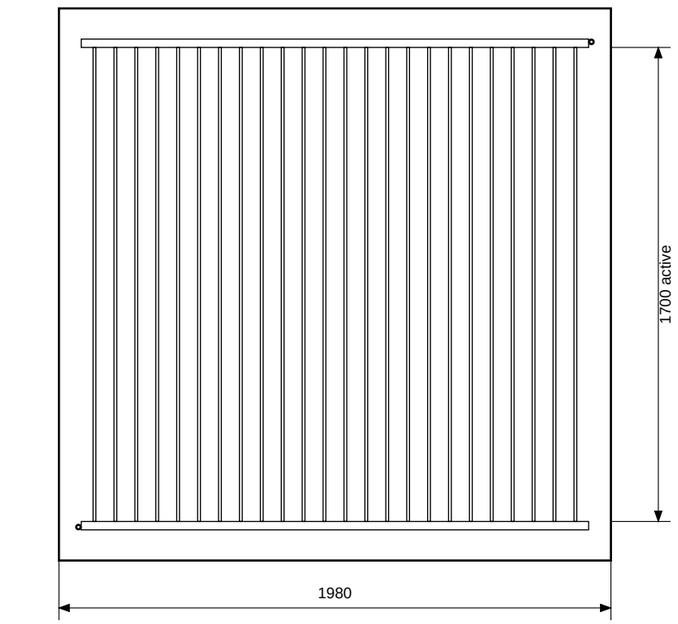
SCALE 1:3 | DIMENSIONS mm



TIM0.20 mm; plate1.62 kg; housing rearZ=-98.00.

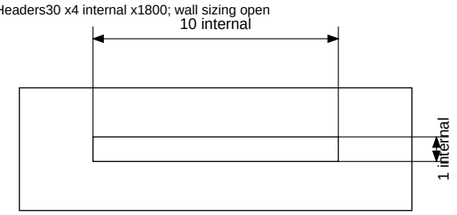
RS LIQUID CHANNEL ALLOCATION

SCALE 1:22 | DIMENSIONS mm



24 channels,10 x1 mm internal,75 mm pitch

Headers30 x4 internal x1800; wall sizing open



SECTION D, TYPICAL CHANNEL, SCALE4:1

Outer wall shown as allocation; pressure proof not sized.

RS panel rearZ=-28; channel carrier within envelope.

DESIGN / INTERFACE NOTES

01. RC coldplate solid Al volume300 x250 x8 mm gives1.620 kg at2700 kg/m3, four per RC=6.480 kg. This is an actual parts contribution, not hidden inside the old6 kg/m2 target.

02. RC interface Z: radiator rear-28.00; TIM-28.20..-28.00; plate-36.20..-28.20; housing rear-98.00. Four housings per tile at(500,500),(1480,500),(500,1480),(1480,1480).

03. 421.196 W per housing design heat. Plate-to-radiator rise<=8 K requiresR<=.01899 K/W. TIM assumedk=3 W/mK and4 x260 x16 mm contact givesR=.00401 K/W; remaining spreading/contact allowance.01499.

04. Passive local heat pipes/vapor spreading are proposed, unqualified. Four105.3 W contact lines do not demonstrate capillary/boiling/startup capacity. No liquid ports on RC.

05. RS24 parallel10 x1 mm channels: velocity.130 m/s, Re37.9; screeningNu=4 implies filmUA~257 W/K per RS. Required overallUA>=200 W/K leaves<.00111 K/W for walls, spreading and contacts.

06. At h=50 W/m2K and305..330 K fluid, modeled RS skin300.3..321.2 K. Proposed RS local skin limit325 K; RC comparison screen320 K is a different requirement.

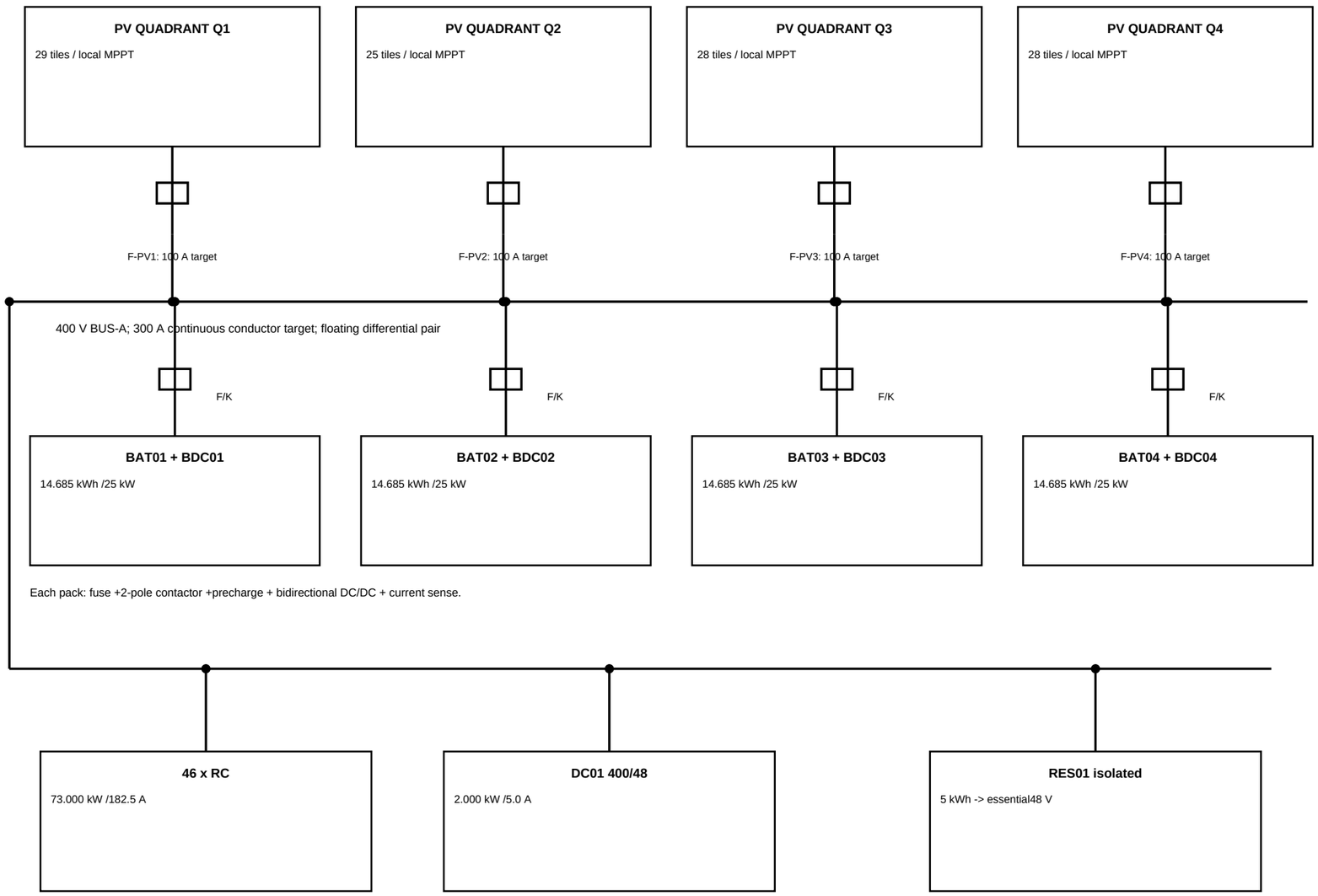
07. Minimum channel wall, braze/bond choice, corrosion, headers, pressure fatigue, cleanliness and no-leak proof remain open. Channel drawing is a flow allocation, not released manufacture.

OC-250 / ORBITAL COMPUTE PLATFORM **DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS** All dimensions nominal unless stated. No approval or qualification is implied.	DRAWING **OC250-233** ISSUED 2026-09-25	SCALE / FORMAT **AS SHOWN** A3 420 x 297	REVISION / UNITS **D / mm** 3RD ANGLE *	DRAWING SERIES **233** * axes on views

400 V POWER SINGLE-LINE AND PROTECTION CONCEPT

All currents are derived load or allocated ampacity targets. DC fault interruption and LEO plasma tests unresolved.

DISTRIBUTED GENERATION



RC load shedding precedes essential bus loss. PV and battery backfeed blocked per branch.

BUS CASE	CURRENT	CONSTRAINT	VALUE
75 kW load	187.5 A	108.828 kW capacity	272.1 A generation
28.645 kW recharge	71.614 A	cell-to-bus eta>=.96154	target.97000

DESIGN / INTERFACE NOTES

01. One electrically autonomous75 kW module is shown. Four modules do not share a compulsory HV tie. Cross-module power interchange is excluded from current reliability claim.

02. Local PV MPPTs produce400 V. Reverse blocking, 2-pole branch isolation, insulation monitoring and segment arc shutdown are allocated functional requirements.

03. Bus-A conductor target300 A; quadrant source interrupter100 A study class. These are design targets, not fuse ratings. Available fault current, arc energy, interruption voltage and selective timing require hardware models/tests.

04. Compute tile normal current3.967 A;6 A branch protection starting allocation. Four packages per RC each .992 A normal. Inrush/precharge/turn-on sequencing are mandatory.

05. Battery four25 kW converter channels provide100 kW installed. At75 kW discharge, upstream combined battery+converter heat must <=3 kW, with97% implementation target giving2.320 kW.

06. Recharge bus demand28.645 kW is below four-channel capacity. At97% charge efficiency, charge losses.859 kW; add2 kW regulated service for2.859 kW pod heat.

07. 400 V exposed hardware in LEO has plasma/charging arcing hazards; NASA NTRS20070002147 provides the primary context. No automatic voltage-safe spacing or flight qualification is implied.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

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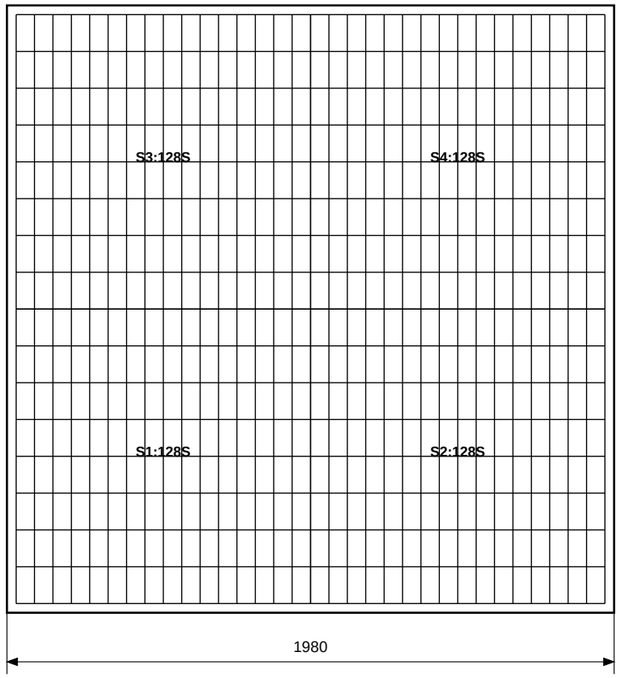
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-234	**AS SHOWN**	**D / mm**	**234**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

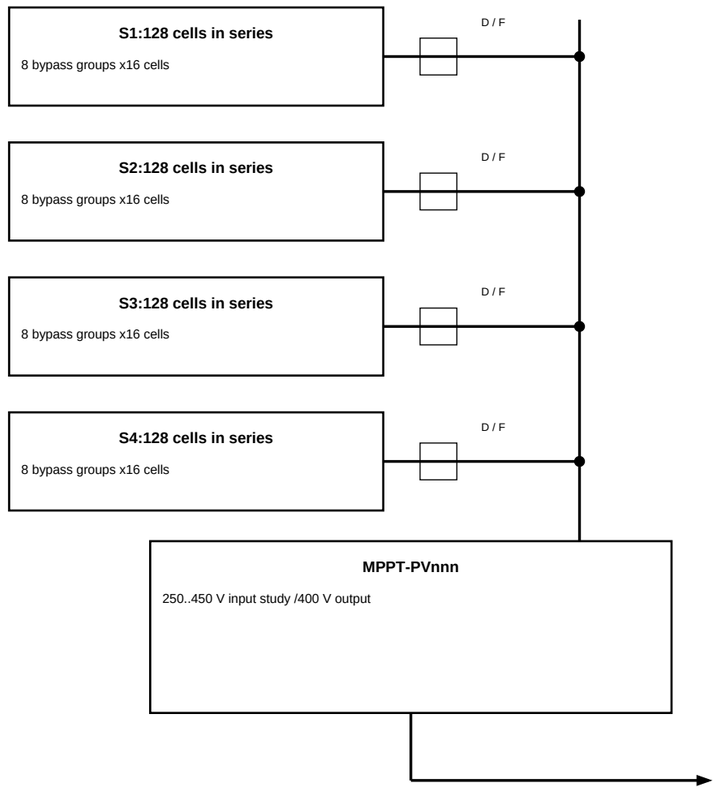
PV TILE STRING AND LOCAL CONVERSION DEFINITION

Candidate128S4P electrical topology. Cell dimensions/voltages are compatibility assumptions, not product ratings.

SUN FACE: FOUR STRING BLOCKS

SCALE 1:20 | DIMENSIONS mm





DESIGN / INTERFACE NOTES

01. Each tile has four128-cell strings in parallel. Cell envelope58 x118 mm sits on60 x120 mm pitch, leaving2 mm total gap per pitch. Candidate packing matches roughly90% of physical tile area.

02. The electrical candidate must be reconciled with measured space-cell I-V, interconnect resistance, spectral/EOL degradation and reverse-bias bypass design. No particular cell is selected.

03. Local MPPT candidate180 x120 x14 mm at(990,200), recessed in184 x124 x14 mm core pocket. Junction120 x80 x10 at(990,70). Both rearflushZ=-20, as mechanical sheet defines.

04. MPPT1500 W is a thermal/electrical requirement, not a proven board rating in this thin cassette. Input capacitor, magnetic component, clearance and radiation design are critical feasibility gates.

05. At96% delivery conversion,1.5 kW input implies60 W local heat. That heat belongs to PV tile balance; do not add it again to the central5 kW pod budget.

06. Nominal cell Vmp2.2..2.6 V, cold Voc<=3.3 V are study bounds only. A measured higher Voc forces topology or input insulation redesign.

07. Insulated string edges, plasma-resistant covers, segmentation, local arc isolation and shadow/bypass verification are needed at400 V. Four-module fleet has440 PV tiles.

INTERFACE	ALLOCATION	CONTROL / CONDITION
Cells / pitch	512 x58 x118 mm	60 x120 pitch; active89.37%
String Vmp	128 x2.2..2.6 V	281.6..332.8 V study
Cold open circuit	128 x3.3 V	422.4 V upper study bound
Local MPPT target	1500 W /400 V	180 x120 x14 mm candidate
Junction cassette	120 x80 x10 mm	centre(990,70),rearflushZ=-20
MPPT cassette	centre(990,200)	rearflushZ=-20; core pocket

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

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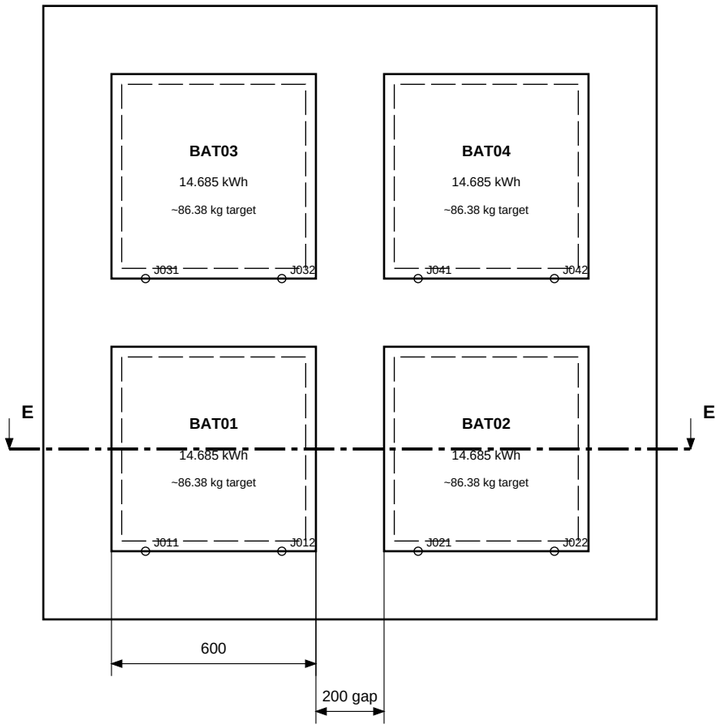
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-235	**AS SHOWN**	**D / mm**	**235**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

BATTERY PACK PACKAGING AND PROTECTED CIRCUIT

Four main cassettes plus isolated reserve; electrochemistry and cell-format selection remain open.

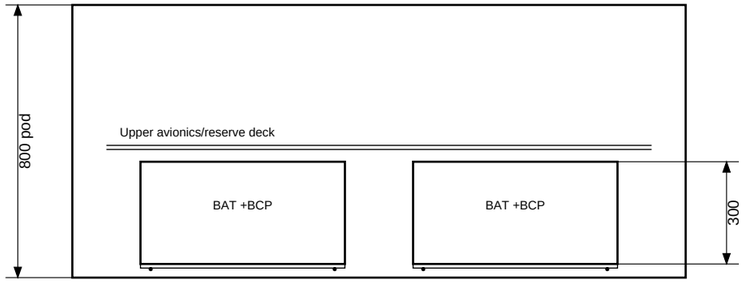
LOWER MAIN BATTERY DECK

SCALE 1:18 | DIMENSIONS mm

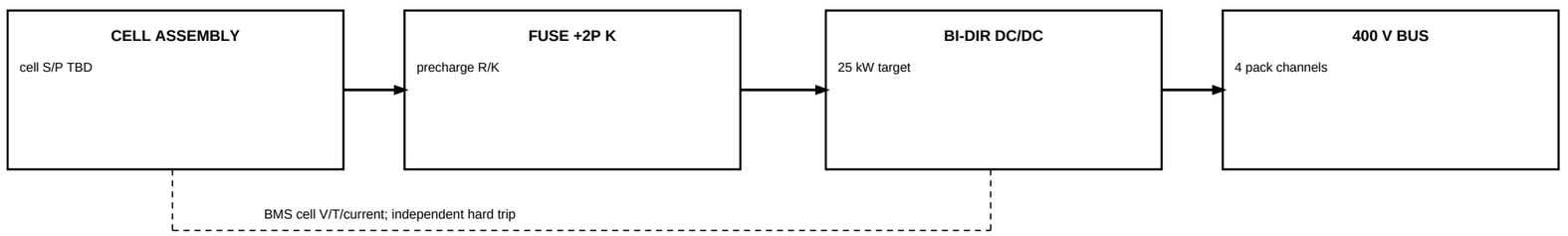


SECTION E-E / Y=-400

SCALE 1:18 | DIMENSIONS mm



Each main coldplate500 W cap / .010 kg/s.



ITEM	VALUE	BASIS
Cycle capacity/module	58.74060 kWh	75 kW x25/60 /(.70 x.80 x.95)
Main cassette /reserve	14.68515 /5.000 kWh	4 main +1 isolated reserve
Reserve usable / target	2.660 kWh /1 kW	2.66 h essential, excludes cold-survival proof

DESIGN / INTERFACE NOTES

01. Main cassettes600 x600 x300 mm each. Gross energy density136.0 Wh/L and pack-level specific energy170 Wh/kg are study allocations; containment, BMS and thermal paths must fit them.

02. Each main cassette centre is(+/-400,+/-400,-910) in pod-local X/Y and module Z. Envelope Z=-1060..-760. Main service connectors face local -Y; access gap200 mm between pack pairs.

03. Reserve600 x400 x250 at(-500,+450,-565). Its5 kWh adds29.41 kg at170 Wh/kg and is physically/electrically distinct. Converter reserve output feeds essential48 V only.

04. 0.70 depth-of-discharge,0.80 end-of-life capacity and0.95 conservative availability factor size58.74060 kWh. They do not define battery heat.

05. Thermal requirement: combined cell+converter dissipation<=3 kW at75 kW delivered.97% target gives2.320 kW. Battery-cell portion<=2 kW and electronics portion<=1 kW are provisional thermal splits.

06. Four protected bidirectional channels need chemistry-dependent cell monitoring, contactor weld detection, vent/containment path and propagation assessment. No individual cell dimensions or series count are falsely asserted.

07. Cold reserve heater demand, eclipse beyond25 min, radiation ageing, cycle life and thermal runaway containment remain major verification gates.1 kW essential mode is a dispatch limit, not mission endurance proof.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

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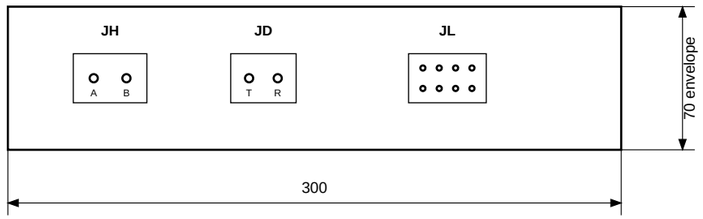
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-236	**AS SHOWN**	**D / mm**	**236**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

COMPUTE AND SERVICE CONNECTOR INTERFACE ALLOCATION

Pin/function assignments are logical ICD proposals. No commercial connector or contact rating is selected.

COMPUTE HOUSING SERVICE FACE

SCALE 1:3 | DIMENSIONS mm



PER PACKAGE LOAD

IT:339.674 W

Electrical:396.739 W

Design heat:421.196 W

400 V input:.99185 A

JH target: >=2 A continuous

500 V working envelope study

LOGICAL CONTACT / FIBER SCHEDULE

INTERFACE	CONTACTS	FUNCTION	CONDITION
CPnnn-JH	A /B	+400 V /400 V return	2-pole floating; shield shell
CPnnn-JD	F1 /F2	optical TX /RX to tile switch	rate/optic type unresolved
CPnnn-JL	1 /2	+48 V aux /aux return	power sequencing
CPnnn-JL	3 /4	CAN-H /CAN-L health bus	isolated transceiver
CPnnn-JL	5 /6	discrete enable /fault return	safe low state
CPnnn-JL	7 /8	chassis continuity sense pair	not a power return
POD-J01	A /B	main400 V feed pair	300 A bus bar /HV interlock
POD-J02	1..4	48 V essential A+/A-,B+/B-	independent protected feeds
POD-J03	F1..F8	4 duplex module optical fibers	connectivity, not bandwidth proof
POD-J04	1..8	CAN-A H/L; CAN-B H/L; enable; fault; ref; spare	exact isolation ICD pending

DESIGN / INTERFACE NOTES

01. RC1..46 each has four compute housings. CP001..CP184 correspond ordered RC IDs then physical pickup order(500,500),(1480,500),(500,1480),(1480,1480). Prefix every ID with M01..M04.

02. Three logical connector families keep400 V, optical data and48 V/control separate. Pin labels define functions, not mating geometry or a supplier-approved insulation design.

03. Connector face is outward-facing housing edge. JH centreX=-100,JD=-25,JL=+65 relative to housing centre; all at mid-height. Mating/cable-bend envelope100 mm beyond face is reserved.

04. TargetJH2 A continuous at500 V working envelope, unqualified. Creepage, clearance, potting, shielding and vacuum/plasma suitability must come from selected device ICD and tests.

05. Main400 V line uses physically separated positive/return conductors, a bonded enclosure and insulation monitoring. Chassis is not used as a normal load-current return.

06. F1/F2 map duplex fiber directions; data rate is intentionally unclaimed until workload, optical terminals and switch fabric budgets close. Ground-user delivery is not implied by internal wiring.

07. Harness strain relief, radiated/conducted EMC, shield termination, redundant control independence and cold/deployment bend life require dedicated validation.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

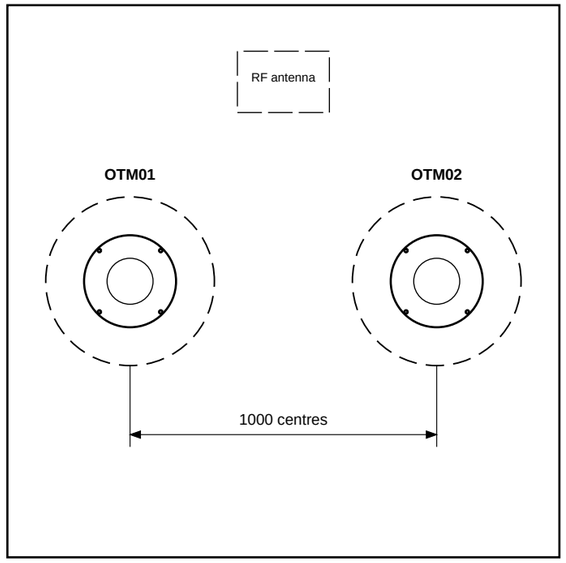
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-237	**AS SHOWN**	**D / mm**	**237**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

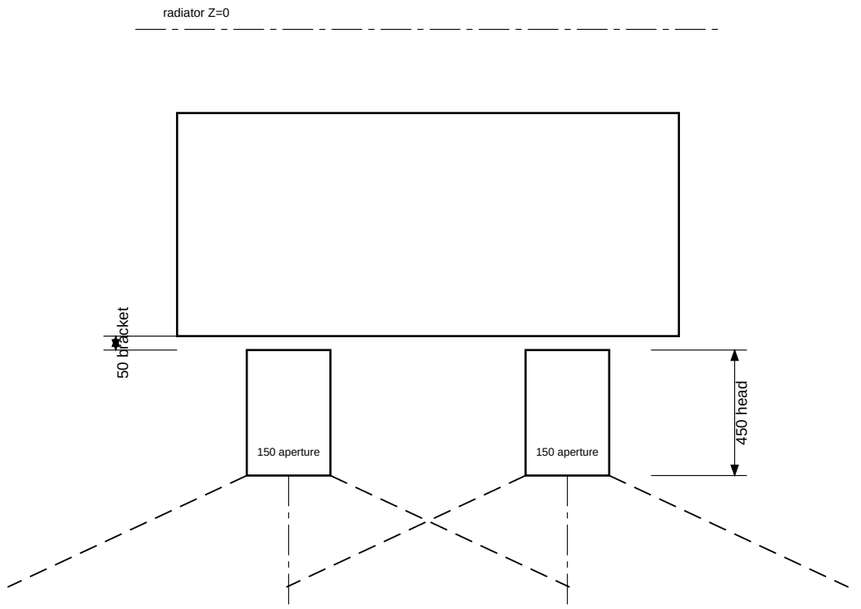
AVIONICS AND OPTICAL TERMINAL PHYSICAL KEEP-OUTS

Local pod X/Y with module Z. Boresight is -Z. Keep-out cones are allocated pointing geometry, not link qualification.

UNDERSIDE: -Z VIEW

SCALE 1:20 | DIMENSIONS mm





DESIGN / INTERFACE NOTES

01. Two independent optical heads are candidate envelopes at pod-local(-500,0) and(+500,0), each300 mm diameter x450 mm axial. Gimbal swept-cylinder diameter550 mm is reserved.

02. Both look into the negative-Z half-space. The module panel lies atZ=0 and pod above heads; actual gimbal brackets, sun avoidance and flexible harnesses require a3D visibility model.

03. Allocated pointing cone +/-65 degrees from-Z is not a link acquisition/performance claim. Mutual optical exclusion, Earth limb, sunlight and inter-module obstruction must be checked over attitude/orbit.

04. 150 mm aperture is geometry only. Pointing jitter, vibration, detector sensitivity, FSO link margin, ground diversity and throughput remain independent gates.

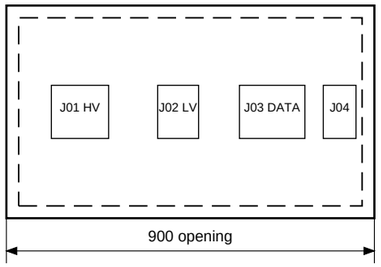
05. OPT01 total1000 W splits provisionally700 W pod electronics and150 W/head. Each head needs two passive10 mm x800 mm heat pipes at75 W each to ACP01; thermal resistance<=.10 K/W/head is unverified. Four pipes add.8 kg/module.

06. RF safe-mode antenna is separate from optical links. Flight/GNC350 W, RF70 W and reserve dispatch define a1 kW essential-power cap with other retained loads.

07. 900 x520 mm pod -Y service opening and connector keep-out are access allocations. Deploy/launch cable restraint and radome/window protection remain packaging design tasks.

SERVICE PANEL, POD -Y SIDE

SCALE 1:15 | DIMENSIONS mm



POINTING CONES IN X-Z

SCALE 1:22 | DIMENSIONS mm
Dashed cone: +/-65 deg around -Z, allocated only.

ITEM	mm / AXIS
Head physical envelope	300 dia x450
Aperture study	150 diameter
Gimbal swept cylinder	550 diameter
Head Z extent	-1600..-1150
Pod shell underside	-1100
Nominal boresight	-Z

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-238	**AS SHOWN**	**D / mm**	**238**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

RESOURCE CLOSURE AND SERVICE RADIATOR ICD SCHEDULE

Derived service-system quantities with explicit mass basis and interface verification gates.

PER MODULE RESOURCE	VALUE	STATUS / DERIVATION
4 main battery packs	345.533 kg	58.7406 kWh /170 Wh/kg
Reserve battery	29.412 kg	5 kWh /170 Wh/kg
Service electronics /pump	59.000 kg	PMD18,PMP12,OPT12,FC4,RF3,GW4,DC6=59
Battery coldplates	15.600 kg	4 x3.9 allocated
Avionics carrier skins	20.736 kg	2 x1.5 mm Al x1.6 x1.6; webs excluded
Fluid inventory	5.776 kg	44 m branch +4 m trunk +RS channels/headers
Other service dry items	169.940 kg	pipe8+pod45+struts10+heads24+RS82.140+head pipes.8
Main battery capacity	58.74060 kWh	25 min @75 kW;.70 DoD,.80 EOL,.95 factor
Eclipse local heat	4.31959 kW	2 kW service +75/.97 -75
Thermal design cap	5.00000 kW	four1250 W RS; local skin target<=325 K

DESIGN / INTERFACE NOTES

01. All entries are per module unless stated. Multiply quantities by4 for fleet. Cavity voids, harness mass and structural strengthening are not demonstrated by envelope volume.

02. Masses here are service subsystem line items, not complete spacecraft dry mass. Main packs and reserve derive from170 Wh/kg allocation; enclosure, containment and thermal hardware must be included within that pack target.

03. Solid RC coldplates1.62 kg each,736 across fleet, belong to mechanical BOM. Do not double count. Service fluid-channel additions are incremental to the passive panel geometry.

04. Thermal ports list hot inlet and cold outlet at local inner edge of each RS. Mainline pod ports and hinge topology are functional allocation; connector pressure and swept-volume CAD must close.

05. Schematic line lengths include11 m paired route per RS, of which2 x1.2 m is flexible hinge allowance. Every actual routed centreline must be <=budget or recalculate fluid/pump mass.

06. Pressure screen150 kPa is pump differential, not maximum allowable operating pressure. Accumulator gas precharge, fill fraction, relief setpoint and proof/burst factors require pressure-system analysis.

07. Open acceptance gates: radiator UA; cold restart; thermal obstructions;400 V plasma/EMC; cell containment; optical pointing; launch loads; deployment hoses; measured mass. No gate is silently treated as closed.

RADIATOR ROOT PORT COORDINATES, GLOBAL MODULE mm

RS TILE	HOT /COLD	HOT XYZ	COLD XYZ	LINES
RS-001	P11 /P12	-1060,-2010,-42	-940,-2010,-42	L11H/L11C
RS-002	P13 /P14	-2010,-940,-42	-2010,-1060,-42	L12H/L12C
RS-003	P15 /P16	10,-1060,-42	10,-940,-42	L13H/L13C
RS-004	P17 /P18	-940,10,-42	-1060,10,-42	L14H/L14C

INTERFACE	REQUIREMENT	OWNERSHIP / STATUS
Service fluid cross-hinge	4 roots /8 runs	6 mm ID; >=80 mm bend allocation
Service root pair pitch	120 mm	P11..P18,physical mating type TBD
Mass ledger boundary	RC coldplates excluded here	Mechanical owns184 plates/module

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

DRAWING
OC250-239
ISSUED 2026-09-25

SCALE / FORMAT
AS SHOWN
A3 420 x 297

REVISION / UNITS
D / mm
3RD ANGLE *

DRAWING SERIES
239
* axes on views

CROSS-DISCIPLINE MASS OWNERSHIP AND HARDWARE COVERAGE

Mass follows the defined geometry. These partial entries are not an all-in spacecraft mass.

ID	OWNED HARDWARE	QTY	kg /ITEM	kg /FLEET	MASS BASIS
M-RAD	Radiator gross sandwich structure	200	19.292	3858.3	Geometric gross; transport cavities must be subtracted
M-PV	PV gross sandwich structure	440	17.274	7600.5	Geometric gross; excludes cells, converters and pocket removals
M-CP	RC coldplate	736	1.617	1190.1	Geometric Al volume, clearance holes removed
M-HSG	RC housing	736	0.921	678.2	Gross shell/posts; excludes boards, shielding and small machining cuts
M-BOLT	RC screw / washer / stop kits	4416	0.013	57.8	Catalogue screw +geometric washer/stop
M-INS	RC inserts	4416	0.008	35.2	Geometric candidate inserts
M-POT	RC insert potting	4416	0.027	117.4	Geometric fill density assumption
M-CORE	RC core removed for pots	184	-0.031	-5.7	Removal against gross structure, negative mass
M-TRUSS	Perimeter truss incl. allowances	4	663.379	2653.5	Geometry + explicit hardware/corner allowances
M-SEAM	Seam rail net plus joints	4	213.571	854.3	Net member length +35 kg/module joints
M-SVC	Service package ledger	1	2583.985	2584.0	Mixture of geometry and unverified allocations; see service_systems.json
M-CARRIER	Shared four-stack carrier	1	957.510	957.5	Launch-only geometry +25% allowance

RECONCILIATION RULES

1. Gross sandwich masses include the core before local transport cavities. Insert-pot removal is explicit; every additional channel, vapor-chamber pocket and bridge needs the same subtraction. Optional heat transport is not silently counted as zero.

2. The candidate segmented RC transport insert on257 adds substantial mass. Its wet mass and structural replacement credit require a final solid model. RC boards, shielding, PV cells/MPPT, full harnesses, deployment actuators, propulsion and assembly machinery are not closed here.

3. Carrier mass is launch support shared by all four spacecraft. Do not add it once per spacecraft. Unverified supplier mass allocations remain visible in the machine-readable ledger and must not be relabelled as weighed or qualified hardware.

CONTROLLED MECHANICAL, THERMAL AND ELECTRICAL INTERFACES

Every interface connects an owning part to a receiving part and carries its present evidence level.

ID	MATING SYSTEMS	CONTROLLED GEOMETRY / REQUIREMENT	DRAWINGS	REMAINING INTERFACE WORK
IF-01	Active plane / tile	2000 pitch; 1980 physical; Z0 front	201 / 207	Panel +/-0.5 proposed; no array distortion credit
IF-02	RC housing / coldplate	300 x250; six DIA5.5 at X+/-135, Y-105/0/+105	213 / 214 / 250	Fastener thread and grip controlled by250
IF-03	Coldplate / panel	Four TIM lands; 0.20 assembled; six hard stops	214 / 216 / 252	Contact conductance and force curve unverified
IF-04	PV / converter pocket	180 x120 x14 candidate MPPT	215 / 235	Thermal, EMI and vendor pinout remain open
IF-05	Adjacent panel / hinge	20 gap; RAD axisZ+11; PV axisZ+2.5	223 / 224 / 253	Local swept envelope only; full grid open
IF-06	Latch / panel root	Recessed root; 28 nominal travel	224 / 254	Actuator, preload and hard-stop mechanism open
IF-07	Perimeter / active grid	X+/-12300, Y+/-14300; Z-400..0	220 / 222	Separate truss stock; attachment sequence open
IF-08	Pod / aperture support	Four centres local(+/-800,+/-800)	206 / 230	Reserved support envelope; load frame not closed
IF-09	Service fluid / RS	Four branches0.025 kg/s; H/C per panel	231 / 232 / 256	Eight moving hoses; fitting release open
IF-10	RS channels / panel	24 paths10 x1 x1700 per panel	233 / 255	Film UA screen; joints and leak tests required
IF-11	RC thermal transport	421.196 W per pickup; Rmax0.0190 K/W	233 / 257	Segmented vapor-chamber candidate; not qualified
IF-12	400 V bus / PV	128-series x4-parallel; MPPT regulated400 V	234 / 235	Actual I-V, plasma arcing, fault isolation open
IF-13	Main battery / bus	4 x14.685 kWh; target97% discharge	234 / 236	Pack170 Wh/kg is a mass allocation
IF-14	Optical head / pod	2 x300 x300 x450 reserved envelopes	238 / 239	Boresight, jitter, thermal and supplier ICD open
IF-15	Payload / launch carrier	D6500 xH12000 study cylinder	208 / 227 / 228	No launch provider envelope or load approval

Module prefix M01..M04 is mandatory in fabrication and integration records. A nominal envelope is not a selected supplier pinout. Changes to any interface require coordinated updates to both owning drawings and the dimensional model.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

DRAWING
OC250-241
ISSUED 2026-09-25

SCALE / FORMAT
TABULATED
A3 420 x 297

REVISION / UNITS
D / mm
3RD ANGLE *

DRAWING SERIES
241
* axes on views

VERIFICATION COVERAGE AND ENGINEERING RELEASE GATES

Computed checks validate the stated model only. Open items are retained as engineering work packages.

GATE	ENGINEERING QUESTION	ACCEPTANCE BASIS / REQUIRED MODEL	CURRENT EVIDENCE	NEXT REQUIRED EVIDENCE
G01	Dimensions and topology	184 RC +16 RS +440 PV; exact coordinates	Computed	250 kW IT fleet allocation is consistent
G02	M5 mounting stack	Worst positive engagement / bottom clearance	Computed	Selected prototype stack only; see250
G03	Hinge local motion	Continuous separating geometry + sampled gap	Computed subset	Whole connected spacecraft not demonstrated
G04	Panel thermal transport	421.196 W/pickup; thermal impedance vsT	OPEN	Thermal-vacuum test with representative panel
G05	Radiative view and heat balance	Temperature map + true obstruction rays	OPEN	Current0.85 usable fraction is an assumption
G06	RS hydraulic circuit	5 kW;0.100 kg/s; UA>=800 W/K total	Screened	Flow distribution, leak and freeze-start test
G07	PV converter feasibility	1.5 kW in180 x120 x14 envelope	OPEN	Supplier thermal/efficiency/insulation evidence
G08	Battery heat / lifetime	>=96.154% to hold5 kW pod allocation	Requirement	Charge, cold restart, EOL and containment tests
G09	Structural static strength	Launch/assembly/on-orbit load combinations	OPEN	Provider loads, correlated FE and material allowables
G10	Stability and optical jitter	Modes, damping, actuator-control coupling	OPEN	Flexible-body model plus test correlation
G11	Launch dynamic clearance	Provider dynamic envelope vs packed hardware	OPEN	Current cylinder is a geometric study gauge
G12	Full deployment / assembly	Cables, hoses, roots, truss, latches, robot	OPEN	End-to-end kinematic model and representative test
G13	Radiation / shielding	Orbit-specific TID/SEE and shielding mass	OPEN	Selected orbit, devices, mission duration required
G14	High-voltage operation	Plasma arcs, EMI, isolation and fault energy	OPEN	Representative vacuum/plasma fault testing
G15	Materials and bonding	Allowables, outgassing, AO and joint durability	OPEN	Qualified processes and test coupons
G16	Propulsion / disposal	Orbit-raising, drag, collision and disposal budget	OPEN	Mission and propulsion system not frozen
G17	Maintainability / reliability	Failure containment and degraded operation	OPEN	FMEA, reliability model and service strategy
G18	Manufacturing release	All interfaces signed, parts inspectable	NOT RELEASED	Prototype sheets need independent engineering review

Method references: NASA-STD-5002B for load-analysis process; ECSS-E-ST-33-01C Rev.2 for mechanism engineering; ECSS-E-ST-10-24C Rev.1 for interface management. References guide the work: no standard compliance is claimed.

OC-250 / ORBITAL COMPUTE PLATFORM

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OC250-242
ISSUED 2026-09-25

SCALE / FORMAT
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REVISION / UNITS
D / mm
3RD ANGLE *

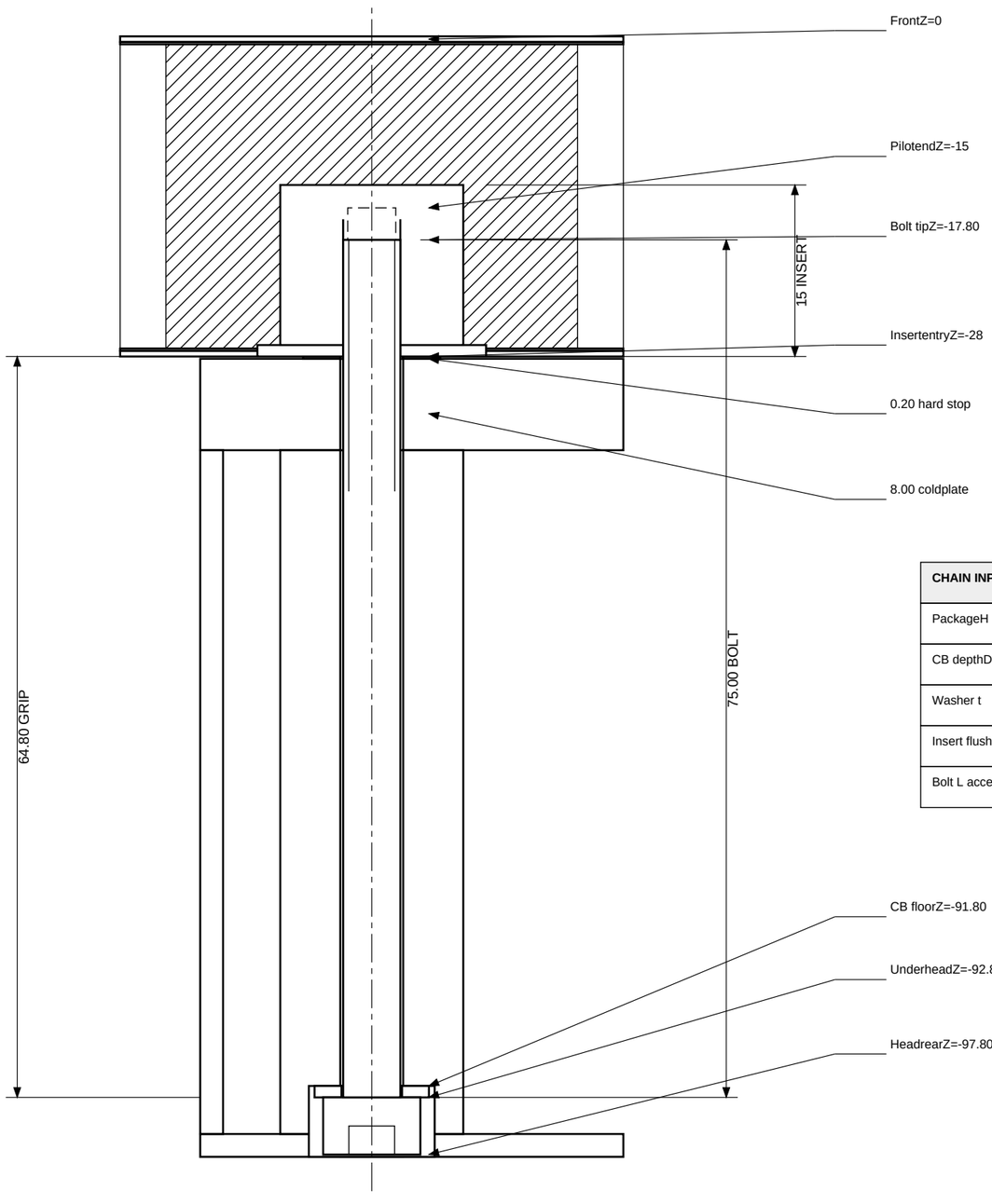
DRAWING SERIES
242
* axes on views

RECESSED M5 COMPUTE JOINT AND TOLERANCE CHAIN

OC-D-2500 | Complete fastener stack, controlled grip and blind-end clearance

SECTION J-J THROUGH ONE MOUNT

SCALE 2:1 | DIMENSIONS mm



CHAIN INPUT	mm
PackageH	70.00 +/-0.10
CB depthD	6.20 +/-0.05
Washer t	1.00 +/-0.05
Insert flush	+/-0.03
Bolt L accepted	75.00 +/-0.20

DESIGN / INTERFACE NOTES

01. Prototype screw: M5 x75,0.8 pitch,8.5 maximum head diameter,5.0 maximum head height,4 mm socket, minimum22 thread. Geometry source: Accu SSC-M5-75-A2; a procurement candidate, not space-qualified hardware.

02. Counterbore11.00 +0.10/0 diameter,6.20 +/-0.05 deep from rear datum. Washer10.00 +/-0.05 OD,5.30 +0.10/0 ID,1.00 +/-0.05 thick. Head remains at least0.10 below theZ=-98 envelope.

03. Six custom hard stops:12 OD,5.5 ID,0.20 +/-0.02 thickness atZ=-28.20..-28.00. TIM lands0.25 free,0.20 assembled. Bolt load is partly carried by stops; do not infer uniform TIM pressure.

04. Accepted grip G=H-D+t+flush=64.80 +/-0.23. Bolt length acceptance75.00 +/-0.20 gives engagement10.20 +/-0.43. Standard catalogue length alone does not establish this tighter incoming limit.

05. Thread depth12.00 +/-0.10 gives minimum thread-bottom clearance1.27;13.00 +/-0.10 pilot gives2.27. Deduct0.30 entry and0.80 tip allowances: full-form overlap is at least8.67.

06. Head height4.82..5.00, washer0.95..1.05 and counterbore6.15..6.25 give head recess0.10..0.48. Minimum post wall around the counterbore is(15.95-11.10)/2=2.425.

07. Instrumented bench target600 N per bolt, six per package; calibrate tightening against measured tension. Thread stripping, insert pull-out, skin loads, thermal cycling and locking method must pass before flight release.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

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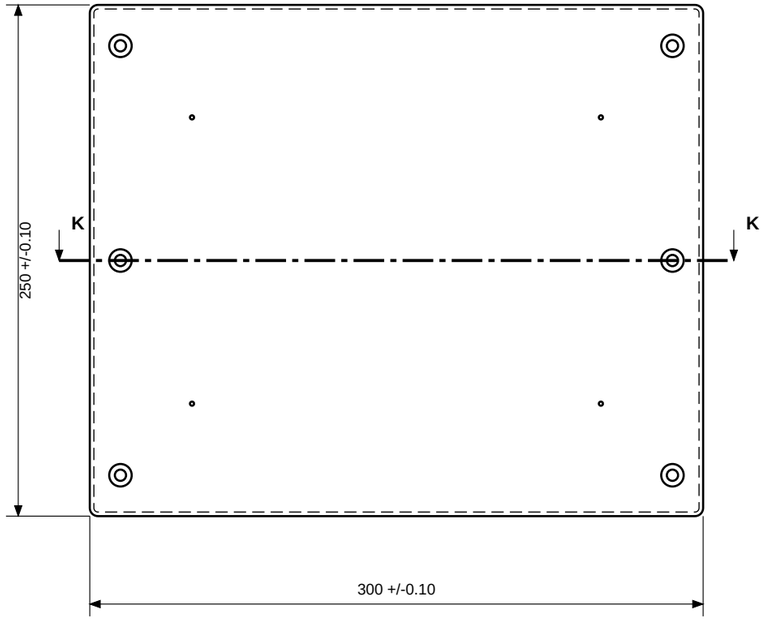
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-250	**2:1**	**D / mm**	**250**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

COMPUTE HOUSING MACHINING DEFINITION

OC-D-2131-P1 | Three orthographic views, recesses, vents and dimensional controls

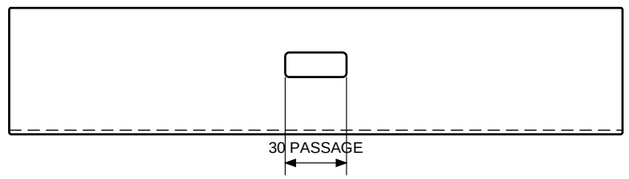
REAR PLAN X-Y

SCALE 1:3 | DIMENSIONS mm



FRONT WALL X-Z

SCALE 1:3 | DIMENSIONS mm

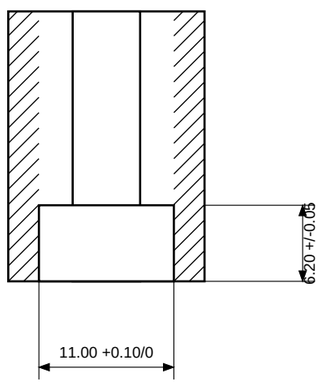


SIDE WALL Y-Z

SCALE 1:3 | DIMENSIONS mm

SECTION K-K REAR POST RECESS

SCALE 2:1 | DIMENSIONS mm



FEATURE	PROTOTYPE REQUIREMENT
All6 mountbores	5.50 +0.05/0;251plan
Counterbores	11.00 +0.10/0 x6.20
Cavity corner	R2.00; outerR4.00
Cavityfloor blend	R1.00 max to posts/walls
Rear vent holes	4 x2.00 through2.00 base

DESIGN / INTERFACE NOTES

01. Prototype housing material6061-T6 aluminium, machined from certified stock. Outer300 x250 x61.80; base2.00; sidewalls2.00; six integral16.00 +/-0.05 posts. Parent envelope dimensions control.

02. DatumA is the coldplate mating rim and post ends atZ=-36.20; datumB is theX=-150 exterior plane; datumC isY=-125. Machine A and all six bore axes in one setup where practicable.

03. Mating face flatness0.05 over300; post-end coplanarity0.03 toA; bores normal toA within0.05 over61.8. Surface finish targetRa1.6 micrometre onA and washer seats, Ra3.2 elsewhere.

04. Drill six5.50 bores; rear counterbore11.00 to6.20 depth. At minimum post OD and maximum counterbore, radial ligament2.425. Mill cavity withR2 corners andR1 floor blends; do not undercut post roots.

05. Frontwall harness passage30 x12,R2 corners, centre(X=0,Z=-64), through the2 mm wall atY=-125. Four base vent holes2.00 atX=+/-100,Y=+/-70. Add deburr0.20 maximum; protect thermal faces.

06. The enclosure cavity is296 x246 x59.80 before posts. Board supports are separate parts; their design must preserve connector access, vent paths and electrical clearances.

07. Machining dimensions are a concrete prototype choice. Raw-volume mass excludes final fillets, passage and vents; weigh the finished part. Verify distortion after pocketing and thermal cycling before setting production limits.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

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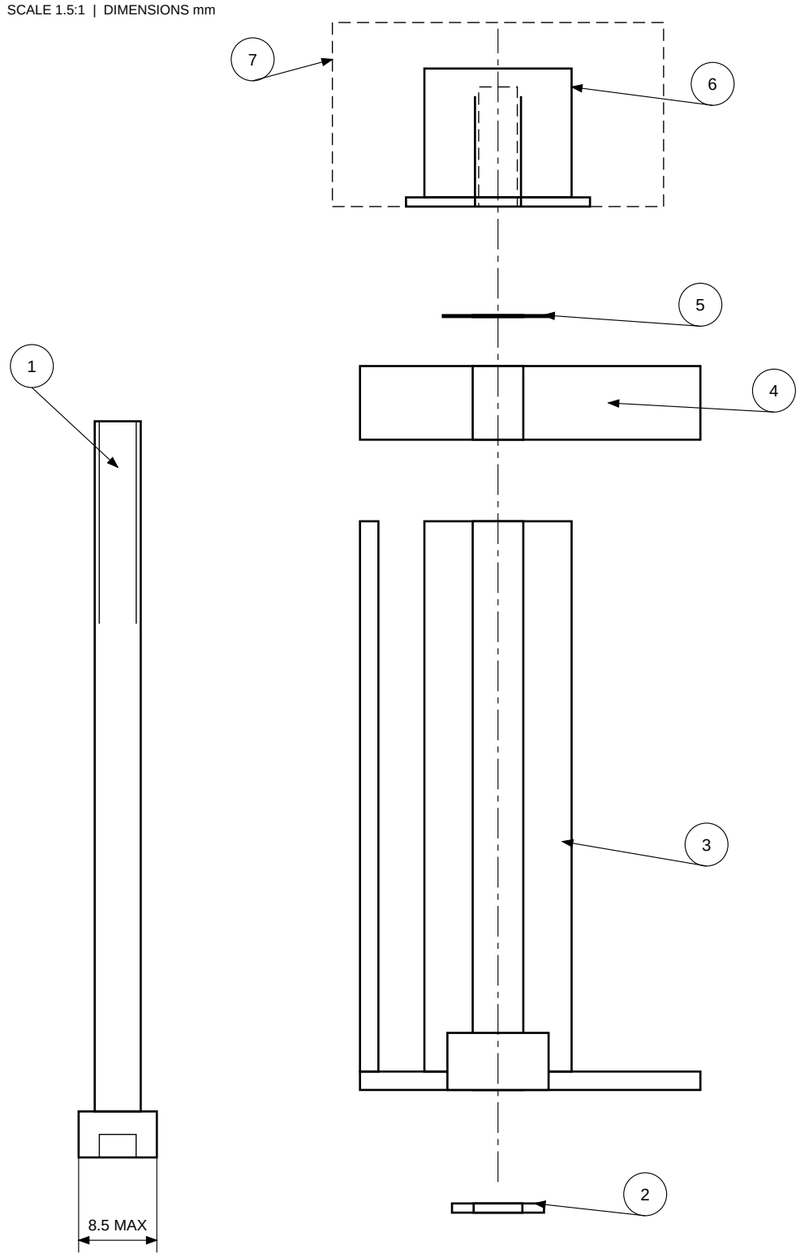
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-251	**1:3 / 2:1**	**D / mm**	**251**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

COMPUTE JOINT EXPLODED CUTAWAY AND FASTENER KIT

OC-D-2520 | Individual parts, installation order and hardware counted once

EXPLODED LOCAL JOINT

SCALE 1.5:1 | DIMENSIONS mm



Exploded translations are display offsets. Long screw shifted left for visibility.

ITEM	ONE PACKAGE KIT	QTY
1	M5 x75 cap screw	6
2	D10/5.3 x1 washer	6
3	OC-D-2131 housing	1
4	OC-D-2141 plate	1
5	D12/5.5 x0.20 stop	6
6	OC-D-2161 insert	6
7	OC-D-2162 potting	6
8	260 x16 TIM land	4

4 kits per RC tile;184 RC tiles fleet.

4,416 screw/washer/stop/insert sets.

LOCAL HARDWARE	MASS /KIT
6 screws;catalogue mass	75.000 g
6 washers;geometry	2.711 g
6 hard stops;geometry	0.858 g
6 inserts;geometry	47.772 g

DESIGN / INTERFACE NOTES

01. Fit and inspect potted inserts first; verify15 mm overall insert,12 mm thread,13 mm flat pilot and flushness+/-0.03. Clean threads and inspect with suitable gauges before attaching electronics.

02. Apply fourTIM lands at specified locations. Fit six0.20 hard stops, coldplate and housing. Insert the six washers and75 mm screws from the rear counterbores. Seat stops without trapping harness or debris.

03. Use measured screw lengths74.80..75.20 for the stated tolerance chain. Verify that thread starts no later than53 mm from underhead and that effective tip allowance stays within0.80.

04. Tighten incrementally in an alternating diagonal sequence using instrumented preload control.600 N perbolt is the proposed bench target, not a released flight torque. Measure thermal resistance and inspect insert motion.

05. Production locking, captive retention and dissimilar-metal treatment require a validated process. The selected A2 screw is a prototype geometry reference; no space-environment qualification is implied.

06. Part mass ownership: housing, plate, bolts, washers, stops and inserts are compute-interface hardware. The shared radiator sandwich is accounted separately. Avoid adding an all-in panel coefficient over this same BOM.

07. Primary catalogue: accu.co.uk/metric-cap-head-screws/2858-SSC-M5-75-A2. Dimensions and12.5 g/screw read2026-09-25. Local washer and shim geometry is a proposed custom design.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

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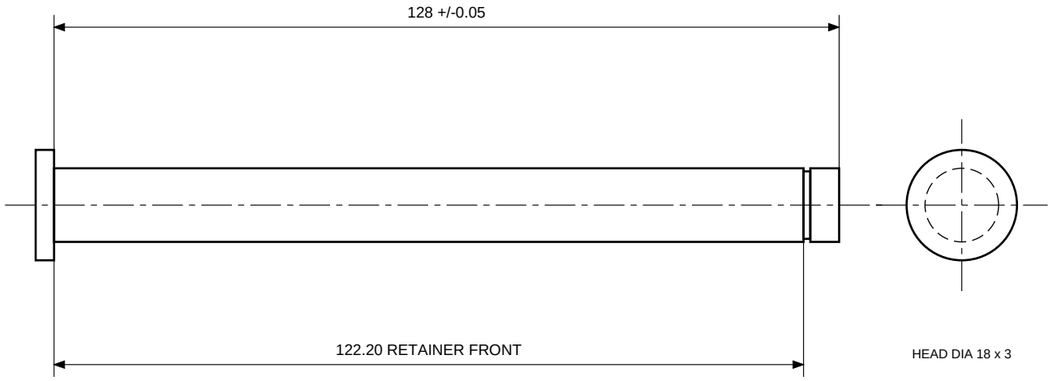
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-252	**1.5:1**	**D / mm**	**252**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

MACHINED HINGE COMPONENTS AND ASSEMBLY FIT STACK

Proposed bilateral tolerances in mm. Pin, bush and root dimensions are design candidates, not released tooling data.

A RAD PIN: 17-4PH FAMILY, HEAT TREATMENT OPEN

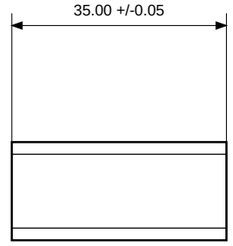
SCALE 1:1 | DIMENSIONS mm



Pin DIA 12.000 /11.992; grooveDIA 11.0 x 1.10

B REPLACEABLE BUSH

SCALE 1:1 | DIMENSIONS mm

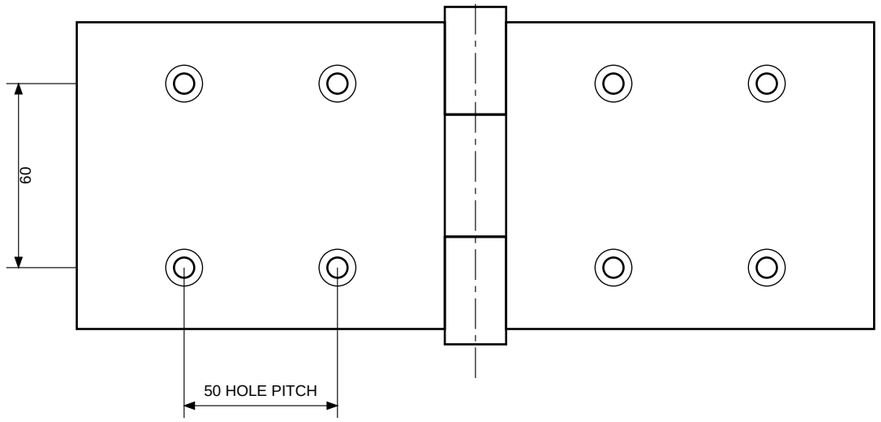


OD 16.010..16.020

ID 12.020..12.035

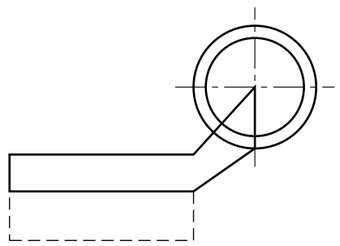
C ROOT / FORK PLAN: TWO 120 x 100 LEAVES

SCALE 1:2 | DIMENSIONS mm



D EAR PROFILE

SCALE 1:1 | DIMENSIONS mm



6 leaf +8 backing

DESIGN / INTERFACE NOTES

01. RAD pin DIA 12.000/11.992; PV pin DIA 8.000/7.994. PV bush ID 8.018..8.030,OD 12.010..12.020; PV headDIA 14 x 3. Lug bores:RAD 16.000..16.006; PV 12.000..12.006. Diameter interference 0.004..0.020.

02. Pin candidate 17-4PH steel; bush CuSn8 with vacuum dry-film lubricant candidate; lug/root Al 6061-T6. Strength at temperature, plating, outgassing, wear and galvanic isolation require selection/testing.

03. The barrel OD is 20.000..20.050 RAD or 16.000..16.050 PV. Proof uses gap 20+/-0.2, axis X error+/-0.05 and h error+/-0.10. Nominal corner distance is sqrt(10^2+h^2)-r.

04. Fixed ear zones u=-55..-20,+20..55; moving ear -19.7..19.7. Fork slot 40.00+/-0.05; rotor 39.40+/-0.05; two 0.20+/-0.01 thrust washers give total rotor free endplay 0.08..0.32. Minimum metal-ear spacing 0.19 before temperature/distortion.

05. Pin assembly from underside head:7.00+/-0.01 spacer +110.00+/-0.05 finished fork +5.00+/-0.01 shim; ring near face 122.20+/-0.01. Pin retention endplay 0.12..0.28. Retainers/spacers fitOD 20 RAD orOD 16 PV. Groove/ring strength remains open.

06. Root minimum edge ligaments:14 mm beyondDIA 12 countersink at u=+/-30 within 100 mm leaf;16.7 mm beyondDIA 6.6 hole. Backing through-threadM 6 length 8; see 254 grip.

07. Panel rectangles already contain recessed root volumes. Barrels rotate about their own axis and retain constant radial distance to moving tile. Ear half-plane proof plus axial separation is described in 254; real fillets/retainers/harness are not included.

JOINT	DIAMETRAL RUNNING GAP	BARREL /TILE NOMINAL	WORST GEOMETRIC GAP
RAD	0.020..0.043	4.866	4.666
PV	0.018..0.036	2.308	2.113

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

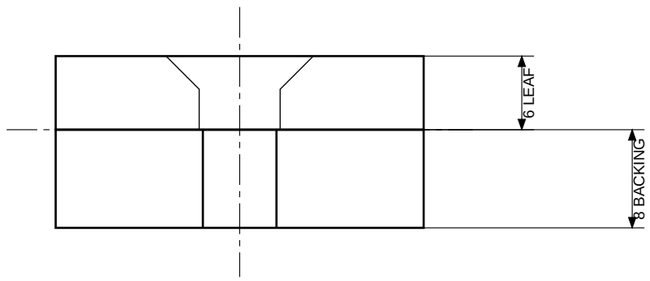
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC 250-253	**AS SHOWN**	**D / mm**	**253**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

JOINT CONTACT, FASTENER GRIP AND CLEARANCE VERIFICATION

Root and barrel subsets are explicitly modeled; bounded clearances do not replace thermal-vacuum and deployment testing.

A COUNTERSUNK ROOT FASTENER GRIP

SCALE 2:1 | DIMENSIONS mm



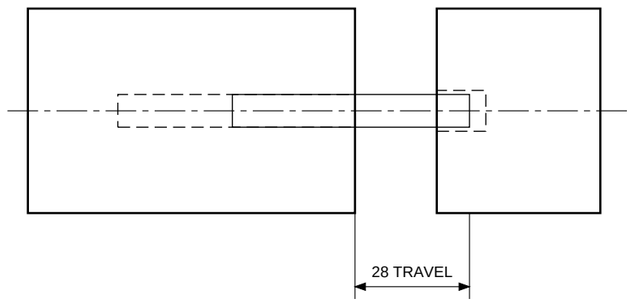
M6 x 14 nominal flush head

Thread engagement 8; no nut

B LATCH PIN TRAVEL AND STOP CONTACT

SCALE 1:1.5 | DIMENSIONS mm

Retracted tipX=0; deployedX=28



Receiver holeDIA 8.020..8.035

DESIGN / INTERFACE NOTES

01. For 0..90 deg moving tile minX>10 while fixed ear maxX=10. For 90..180 deg moving tile minZ>=min(h+10,2h)>h for h>0. Thus fixed ear clears moving tile continuously.

02. For the rotating moving ear, initialx>=10,z<=h. Its X stays>=10 in 0..90 deg and its Z stays>=h in 90..180 deg, so it cannot reach fixed panelx<=0,z<=0. Two 0.20+/-0.01 thrust washers separate outer/central metal ears in Y;0.08..0.32 total free endplay permits intentional dry thrust contact.

03. The ear proofs require the exact polygon on 253, without added fillets outside its bounds. Barrel-panel worst gaps are 4.666 mm RAD and 2.113 mm PV under the stated geometric tolerance case. Thermal growth and deformation are not included.

04. At 1 kN the pin bending screen uses support-centre span 75 mm and a centre point load: M=P L/4; sigma=32M/(pi d^3). Neither this load nor the material allowable is established. PV bending cannot be ignored.

05. FourM 6 roots sharing 1 kN:250N each; hole bearing 250/(6 x 6)=6.94 MPa in leaf; nominalthread bearing is not thread pull-out capacity. Root blank 6+8 mm is 0.454 kg per side beforeholes/pockets.

06. If 320hinges were used,640 such root pairsides alone would be 290.3 kg/module. Actual edge/hingecount, local root optimization and full hardware BOM must be reconciled. This mass is not zero.

07. Latch body and retracted pin fit the 20 mm tile depth only if all stops, heads and drives remain recessed. The actuator and retractable stop mechanism remain unselected; latch sweep is still OPEN.

C PANEL + ROOT + BARREL NONINTERFERENCE BASIS

SCALE EXACT SUBSET / CONSERVATIVE SCREEN | DIMENSIONS mm

Roots stay inside their respective 20 mm/PV or 98 mm/RAD envelope. Fixed ear lies at x<=10,z<=h; moving ear is its mirror in the gap. Ear solids exist only in axially separated fork/central intervals. Barrels are circular about H. Pin/bush running contact and bush/lug press fits are intentional mating interfaces.

DECLARED GEOMETRIC LOAD SCREEN	RAD	PV
1 kN ideal double shear	4.42 MPa (D12)	9.95 MPa (D8)
1 kN /75 mm pin span, point load	110.5 MPa bend	373.0 MPa bend
1 kN central-bush bearing	2.12 MPa	3.17 MPa
1 kN stop over 10 x 10 patch	10 MPa nominal	Edge contact OPEN

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

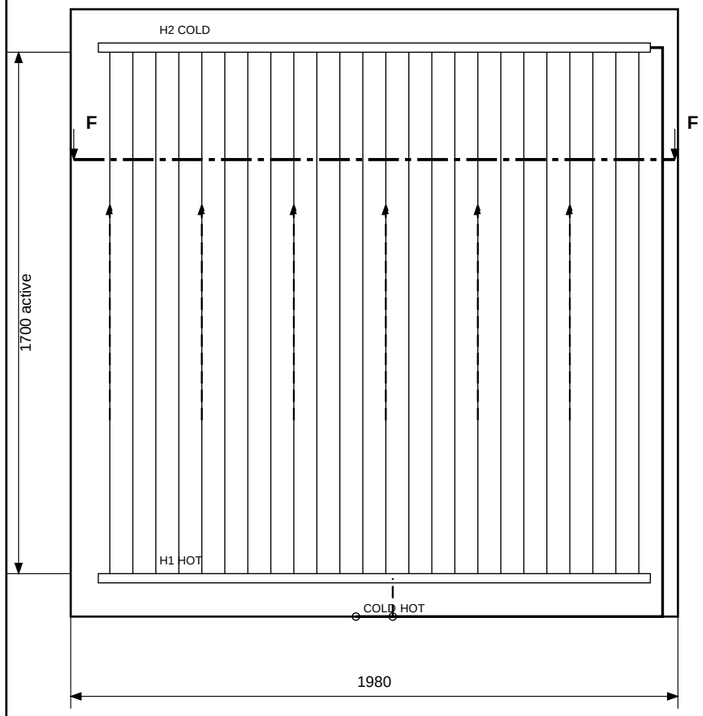
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC 250-254	**AS SHOWN**	**D / mm**	**254**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

SERVICE RADIATOR HEADER, CHANNEL AND PRESSURE CUTS

RS-001..004 rotated from generic root=-Y tile. Proposed brazed Al carrier; pressure inputs are not qualification.

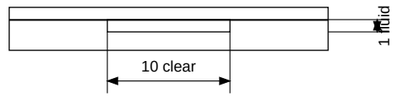
GENERIC RS FLOW / ROOT STUBS

SCALE 1:20 | DIMENSIONS mm



F-F, TYPICAL CHANNEL

SCALE 2:1 | DIMENSIONS mm

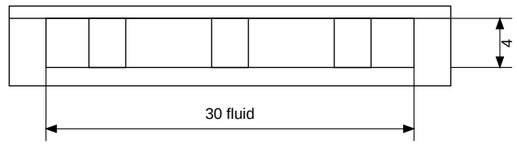


Lid1.00 / channel1.00 / base1.50 mm

Clad-braze seam0.05 process target

H-H, HEADER WITH ROOF STAYS

SCALE 2:1 | DIMENSIONS mm



D3 stays on10 pitch; cross-flow around posts

DESIGN / INTERFACE NOTES

01. Generic panel centre is(0,0), root is-Y. Root hot(+60,-990,-42), cold(-60,-990,-42). Rotate this tile-local topology to each cardinal service bay. Header centres Y=+/-865.

02. H1 internal30 x4 x1800 mm receives hot flow atX=+60. H2 returns cold through portX=900 to an edge collector atX=940. Twenty-four10 x1 channels connect Y=-850..850.

03. Carrier floor is continuous1940 x1940 x1.50 mm Al, with24 channel strips:26 mm wide roof1 mm thick and8 mm sidewalls flanking10 x1 mm flow. Gross carrier20.535 kg/RS replaces the earlier unachievable4 kg allowance.

04. Header roof spans are limited by3 mm stays on10 mm grid. Without stays,30 mm flat roof gives nine times the10 mm strip stress. Header branches must preserve flow around stays.

05. Working pressure envelope0.60 MPa differential to vacuum, proof input0.90 MPa; proposed relief<=.55 MPa. Material/process allowable>=60 MPa at operating temperature is a requirement, not measured strength.

06. Compatible Al braze cladding/seam .05 mm is a process target. Continuous floor assists spreading; front-skin transport and overall200 W/K per RS remain unverified. About.40 kg core replacement needs exact union.

07. Proposed assembled helium leak target<=1e-7 Pa m3/s, verified before/after thermal/deploy/pressure cycles. Cycle counts, proof duration, burst sampling and accept criteria require approved pressure verification plan.

FEATURE	CONTROLLED VALUE	DERIVATION / LIMIT
Hot tile stub	153 mm	125 planar +28 Z transition
Cold edge return	2923 mm	1000+1855+40+28 centreline
Pod paired rigid route	5524 mm allowance	incl rise/manifold offsets; route-to-fit
Hinge pair	2 x1200 mm	length constant, radius allocation>=80
RS paired6 mm lines	11000 mm total	does not include parallel channel length
Pressure / proof	0.60 /0.90 MPa	difference to vacuum; input, not rating
Roof strip stress	30 /45 MPa	ideal clamped strip:0.5 p(b/t)^2

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

DRAWING **OC250-255**

ISSUED 2026-09-25

SCALE / FORMAT **AS SHOWN**

A3 420 x 297

REVISION / UNITS **D / mm**

3RD ANGLE *

DRAWING SERIES **255**

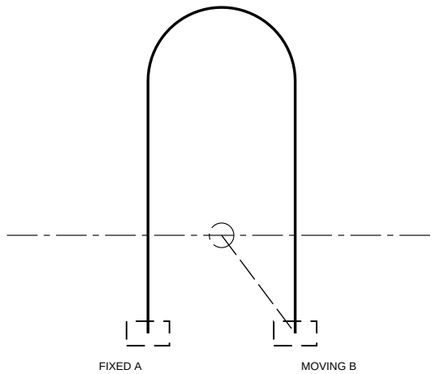
* axes on views

SERVICE HINGE FLEXIBLE-LINE SWEEP DIAGNOSTICS

Constant-length geometric family at0 /90 /180 deg. End tangencies and three-dimensional fixture sweep remain open.

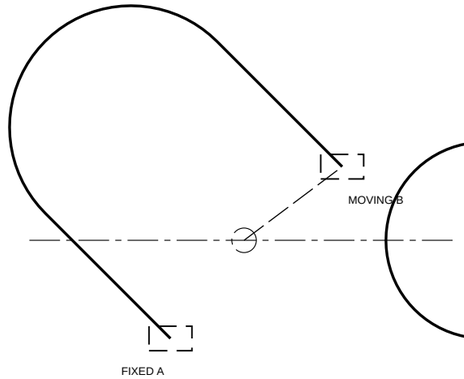
ONE OF EIGHT HOSES:1200 mm CENTRELINE LENGTH

0 deg DEPLOY ANGLE /1:10



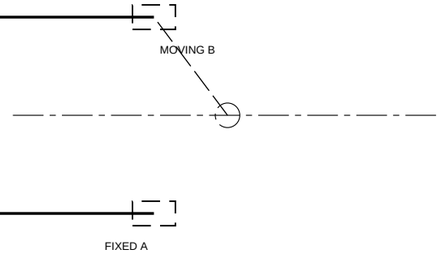
R=120.0; straight=411.5 each

90 deg DEPLOY ANGLE /1:10



R=198.0; straight=289.0 each

180 deg DEPLOY ANGLE /1:10

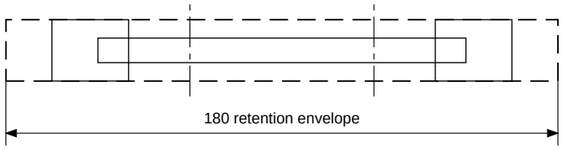


R=160.0; straight=348.7 each

ANGLE deg	BEND R mm	TWO STRAIGHTS mm	TOTAL mm
0	120.000	411.504	1200.0
90	197.990	288.998	1200.0
180	160.000	348.673	1200.0

STRAIGHT FITTING / STRAIN RELIEF

SCALE 1:2 | DIMENSIONS mm



FEATURE	REQUIREMENT
Hose ID / OD study	6 /8 mm
Minimum bend allocation	80 mm
Fitting exclusion	180 x20 x20
Moving endpoints	tangent control unresolved

DESIGN / INTERFACE NOTES

01. Only four RS roots need fluid motion, each with hot and cold hose. Eight1200 mm runs per module are included in line mass and pressure budget. RC tiles remain fluid-free across their hinges.

02. The shown planar family has invariant1200 mm length. Endpoint A=(-120,-160), B=rotation(theta)*(120,-160), relative to hinge axis. Minimum computed radius120 mm exceeds allocated80 mm.

03. This is a diagnostic, not a complete manufacturable hose route: end tangents rotate between views. Fixed fitting tangencies, 3D twist, neighboring hinges and allowable braid bend strain must be solved with supplier hose geometry.

04. 70 x40 fitting boxes indicate moving swept bodies;180 x20 x20 straight retention exclusion includes strain relief. Drawing does not authorize clamp or connector rotation.

05. 6 mm ID/8 mm OD is the hydraulic study envelope. A selected pressure hose may have larger outside diameter or bend radius; update stow and deployment geometry accordingly.

06. Preliminary working/proof inputs.60/.90 MPa, leak target1e-7 Pa m3/s. Verify the complete eight-line assembly at hot/cold deployment extremes and mission vibration conditions.

07. Release gates: full3D swept volume, minimum radius at all angles, no rubbing, no torsion growth, retained fittings, leak/pressure cycles and independent failed-hinge safe state. A planar drawing alone closes none of these.

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

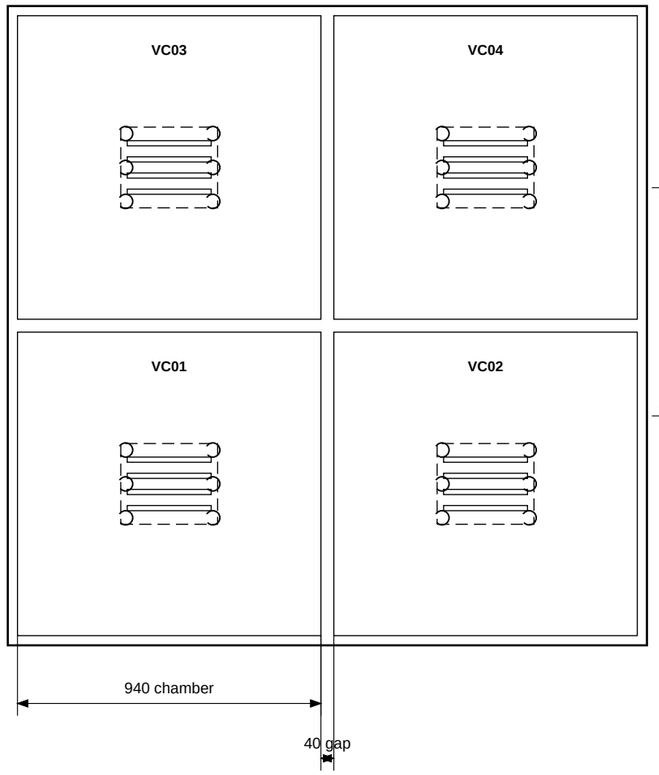
DRAWING	SCALE / FORMAT	REVISION / UNITS	DRAWING SERIES
OC250-256	**AS SHOWN**	**D / mm**	**256**
ISSUED 2026-09-25	A3 420 x 297	3RD ANGLE *	* axes on views

OPTIONAL RC TRANSPORT INSERT AND CONDUCTION CHAIN

Four segmented vapor chambers with front-skin bridges; explicit unqualified mass and pressure consequences.

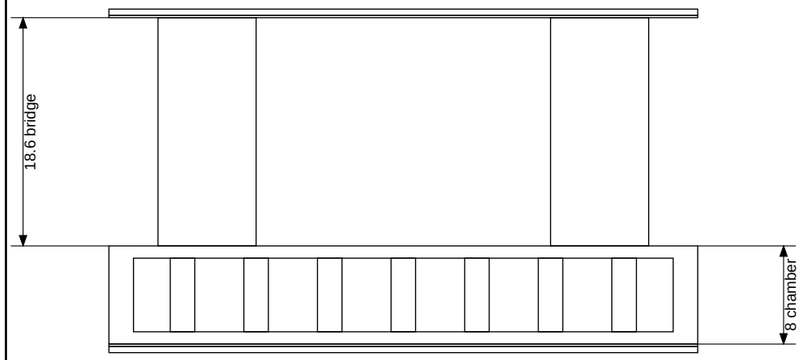
REAR PLAN / FOUR SEALED CELLS

SCALE 1:19 | DIMENSIONS mm



LOCAL SECTION, WIDTH BROKEN

SCALE 2:1 | DIMENSIONS mm



28 mm closed panel retained; core cavity explicitly replaced.

DESIGN / INTERFACE NOTES

01. Each RC receives four940 x940 x8 mm candidate chambers centred on its four compute pickup locations. Core cavityZ=-27.30..-19.30; original26.60 mm core and overall28 mm panel thickness remain controlled.

02. Six sealedR22 islands per chamber surround the existingR18 attachment keep-outs. No vapor cavity crosses a mounting bore. Cavity sealing around islands, fill tube and wick manufacture remain detailed design gates.

03. Candidate1 mm Al face walls,6 mm fluid cavity,2 mm support posts on6 mm grid. Working/proof pressure inputs3.0/4.5 MPa produce ideal clamped-strip54/81 MPa and post tension34.4/51.6 MPa. Process allowables are unverified.

04. Eight x8 mm Al front bridges on50 mm pitch,18.6 mm long. Al k167 and bondk5 are assumptions. Partial chain7.141 K omits skin spreading; optimistic1D front fin adds.89 K, exceeding8 K target before other contacts.

05. Gross chamber faces19.09 kg +posts5.00 +bridges4.54 per RC. Gross removed core1.44 kg is deducted once. Wicks, fluid, seals and exact clipping remain uncounted.

06. The insert is an optional heavy candidate, not a thermally qualified baseline or a closed spacecraft mass. Lower-mass heat-pipe alternatives need validated transport/fin performance before substitution.

07. Fluid is unselected. Saturation pressure must fit3 MPa envelope; freezing, cold startup, capillary limit, dry-out, acceleration and long-life compatibility remain acceptance gates. No freeze-proof or all-temperature performance is claimed.

SERIES PATH	R K/W	BASIS / CONDITION
Rear TIM, .2 mm /k3	0.00401	1.69 K at421.196 W
8 mm plate +rear.5 skin	0.00306	through-thickness only
Rear bond.2 mm /k5	0.00240	thermal adhesive requirement
VC spreading requirement	<=0.00500	<=2.106 K; not measured
Front bridges +bond	0.00249 effective	half heat routed to front
Partial chain /target	7.141 K /8.0 K	front fin adds~.89 K: not closed

OC-250 / ORBITAL COMPUTE PLATFORM

DETAILED PRELIMINARY DESIGN - CONTROLLED STUDY DIMENSIONS

All dimensions nominal unless stated. No approval or qualification is implied.

DRAWING
OC250-257
ISSUED 2026-09-25

SCALE / FORMAT
AS SHOWN
A3 420 x 297

REVISION / UNITS
D / mm
3RD ANGLE *

DRAWING SERIES
257
* axes on views