

THE CLAIM

A case, skiff, or rack-mount frame claims *enclosure*, with or without a built-in supply and bus board; the claim covers what is built in.

EIS draft, enclosure

WHAT IT PUBLISHES

FIGURE	ID
<i>Each row's width in HP and the depth clear behind the panel's back face</i>	ENC-001
<i>The mounting-screw length; supplies the screws or names them</i>	RAIL-011
<i>A built-in supply's rail ratings and ripple and noise</i>	SUP-001
<i>A built-in bus board's totals and per-header limit</i>	PWR-002 BUS-012
<i>Where its 0 V meets protective earth</i>	GND-003

- ☐ Keep the claim line and these figures in one claim file, `eis-claim.yaml`; `eis claim` checks it.

READ

5.1 rack, 5.3 rails, 5.4 enclosures, 6.1 power, 6.2 supplies, 6.3 0 V, 6.5 bus boards, 8 assembly. Annexes A–D (rail and insert catalogs), F (case survey), L (row budget), O (heat), Q.2 (a worked case).

READING THIS SHEET

- shall ☐ recommended ○ may

IDs omit the EIS- prefix. Italic lines are informative notes. This reference is informative: the clauses and the register govern.

RACK · IEC 60297

- One HP is 5.08 mm; one rack unit is 44.45 mm. RACK-001 RACK-002
- A rack-mount frame meets IEC 60297-3-101 and -3-100 for flanges, holes, tab, aperture, and the 84 HP row; the figures are on the rack card. RACK-003

HP and U bind every frame; a desktop or portable frame keeps the rows and hole span without the IEC flange figures.

ROWS

- Publish each row's width in HP and its clear depth behind the panel's back face. ENC-001
- Insert holes 122.5 mm apart at 3U, 33.65 mm at 1U: the panels' hole span. PANEL-009
- A rail covers no more than 9.25 mm of the panel face. PANEL-012
- ☐ Keep at least 50 mm clear behind the panel's back face, over the whole row.

A row is 1U or 3U and a whole number of HP; 84 HP fits a 19-inch rack. 20 of 25 surveyed cases give 50 mm somewhere in the row and 17 over all of it; the shallow part is over the supply or the bus board.

RAILS AND INSERTS

- Insert holes 5.08 mm apart. RAIL-001
- A rail for an N HP row gives at least N × 5.08 mm of mounting length. RAIL-002
- An insert is threaded M3 and at least 1.5 mm thick, three pitches. RAIL-003 RAIL-004

Recommended section (Annex A): 7.0–10.0 mm across, 25.0–28.5 mm front to back, lip ≤ 1.5 mm across and ≤ 3.1 mm into the case; a 5.0 × 2.0 mm M3 strip. M2.5 and #4–40 subrack hardware is not EIS.

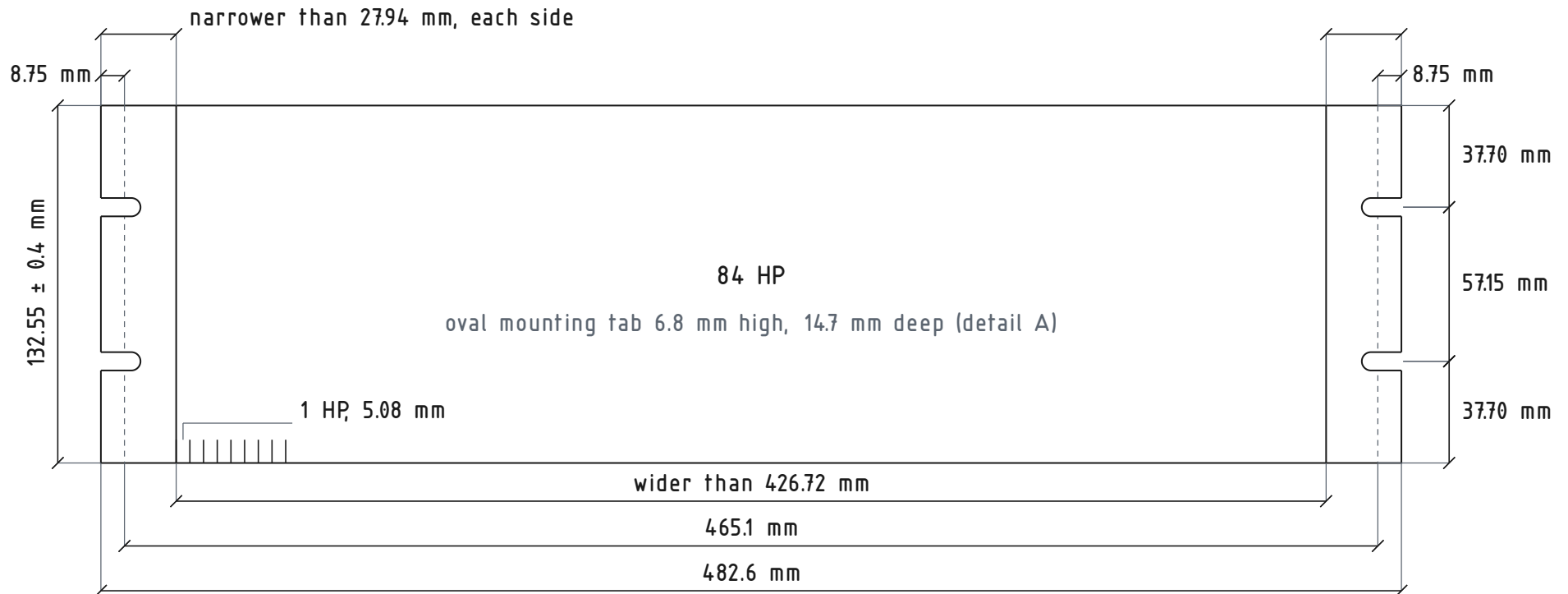
MOUNTING SCREWS

The screw stack, lengths, and the length window are on the screw card.

- The screw is M3: pitch 0.5 mm, major diameter 3.0 mm (ISO 261). RAIL-005 RAIL-006 RAIL-007
- Three full threads engaged through a 2.0 mm panel. RAIL-008
- Length L inside the window; the throat clears 3.0 mm. RAIL-009
- The head at most 7.0 mm across. RAIL-010
- State the screw length, and supply the screws or name them. RAIL-011
- ☐ Tighten to no more than 0.5 N·m.

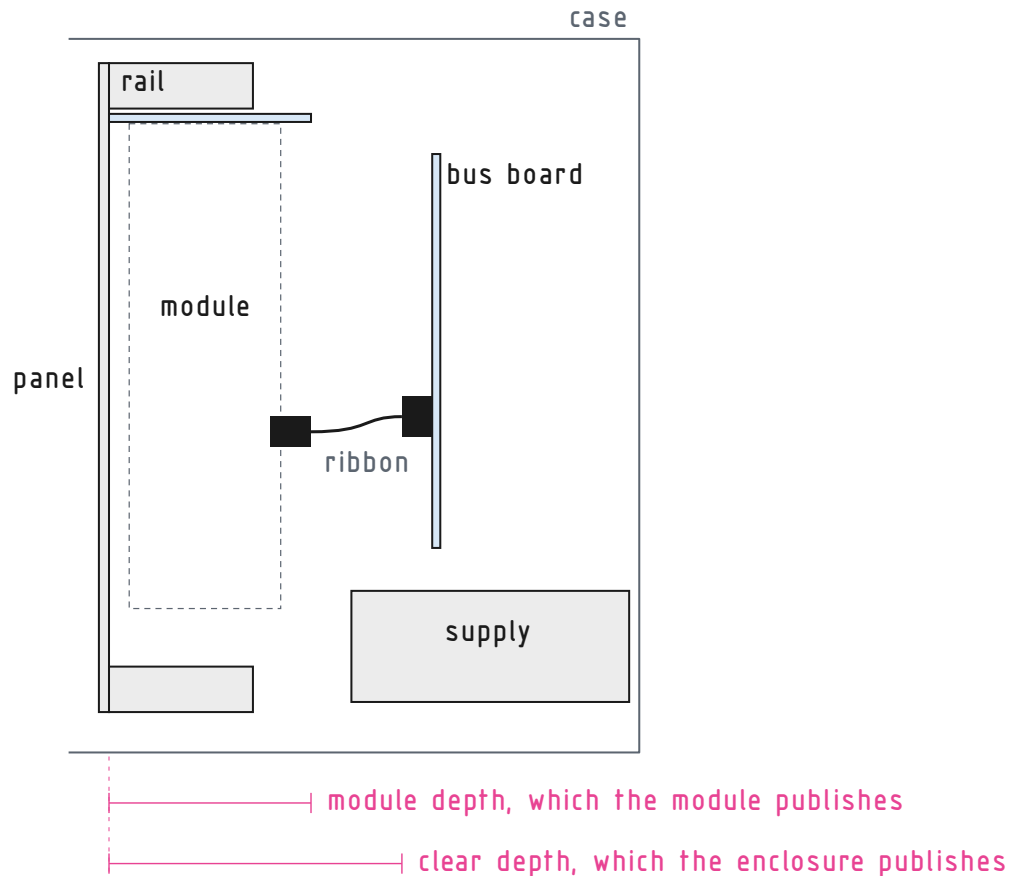
A module need not ship with screws: the enclosure's length fits its own rails.

EIS · IEC 60297-3-101



IEC 60297-3-101 rack (5.1).

EIS · A 3U row cut from front to back



Both depths are measured from the panel's back face.

The enclosure publishes each row's width in HP and the depth it keeps clear behind the panels (ENG-001).

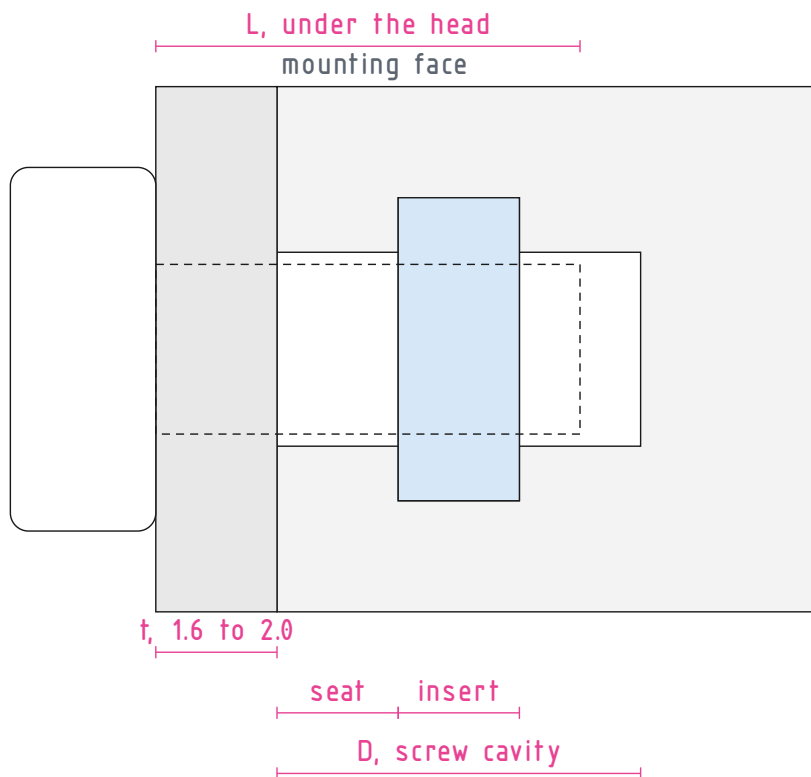
The module publishes its width and how far it reaches behind the panel (PANEL-003).

A module fits a row when its depth is no more than the row's clear depth. The clear depth is the least depth over the whole row, often set by the supply or the bus board.

EIS recommends a row with at least 50 mm clear, and modules no deeper than 50 mm.

A 3U row cut from front to back: module depth and clear depth (5.4).

EIS · Mounting screws



Thread	Lengths under the head
M3	6 mm, 8 mm, 10 mm
M2.5	6 mm, 8 mm, 10 mm
#4-40 UNC	1/4 in, 5/16 in, 3/8 in

Pan head, at most 7.0 mm across

$$t_{\max} + \text{seat} + 3 \times \text{pitch} \leq L \leq t_{\min} + D$$

The throat clears the major diameter

Mounting screw stack (5.3).

BUILT-IN SUPPLY

- Publish its rail ratings and its ripple and noise, as a power supply does. SUP-001
- A plug-and-socket output does not mate with reversed polarity. SUP-002
- An output on quick-connect tabs or screw terminals marks each terminal with its rail. SUP-003
- Each rail survives an indefinite short to 0 V. SUP-004
- At power-up, power-down, or a fault, no rail swings more than one diode drop toward the opposite polarity. SUP-005
- At start-up, no rail overshoots its nominal voltage by more than 10 %. SUP-006
- Ripple and noise below the domain's limit: 150 mV peak-to-peak on the bus, 20 mV on PWR-A6. SUP-007
- Constant-current or hiccup limiting, not foldback: a row is a large capacitive load.
- Bring the rails up in an order that avoids reverse stress on modules.
- Setpoint within ± 1 %; load regulation within ± 1 % from 10 % to 100 % load.

Most open-frame switching supplies meet 150 mV. A linear or post-regulated supply, typically under 10 mV, suits MOD-VIDEO rows.

Ripple and noise: peak-to-peak at the output terminals or published test points, each rail at the maker's stated test current, 20 MHz bandwidth, 0.1 μ F in parallel with 47 μ F across the point, a 300 mm twisted pair to the probe [6.2].

BUILT-IN BUS BOARD

- Publish its max current on +12 V, -12 V, +5 V, in total and per header. PWR-002
- The per-header limit is at most 2 A per rail. BUS-012
- 6.3 mm quick-connect tabs between the supply and the bus boards.
- Row wiring: 6.3 mm tabs, ring studs, or a clamp block, published; stranded 105 °C 16 AWG (14 above 5 A, 12 above 8 A), crimped; 0 V at least the rail gauge; 14 AWG earth ring on bare metal. PWR-005 PWR-006 PWR-007 PWR-008

Its headers meet 6.4 (pinout, marking, keying); its 0 V runs to the supply's 0 V (GND-002).

0 V AND PROTECTIVE EARTH

- Publish whether 0 V is bonded to protective earth, and where. GND-003
- One bond between 0 V and earth in a system, at the supply.
- The cases of one system: supplies all earthed at the same outlet strip, or all floating; their 0 V joined by one short, heavy conductor.

Mains inlet, fusing, earthing of the metalwork, and supply safety follow the safety standard the product meets, not EIS. The grounding card follows this page.

INSTALLER · 9.1, 9.2

- Row wiring the installer adds meets the conductor rules and lands on the published terminal type. ASM-009
- At most one transmitter on each CV line and each gate line, across linked bus boards up to a region split. ASM-002
- A module that publishes no -12 V figure: plan -12 V at 50 % of +12 V.
- No CV transmitter on a line: leave the oscillators' listen jumpers off.

FITTING A MODULE · 9.1

- 1 Budget: current left on every rail and header.
- 2 Power off.
- 3 Ribbon square at both ends, marked conductor to -12 V.
- 4 Screw the panel to the rails; refit any blanks.

Annex L is the row-budget worksheet (data/row_budget.schema.json); Annex Q.2 works one case through.

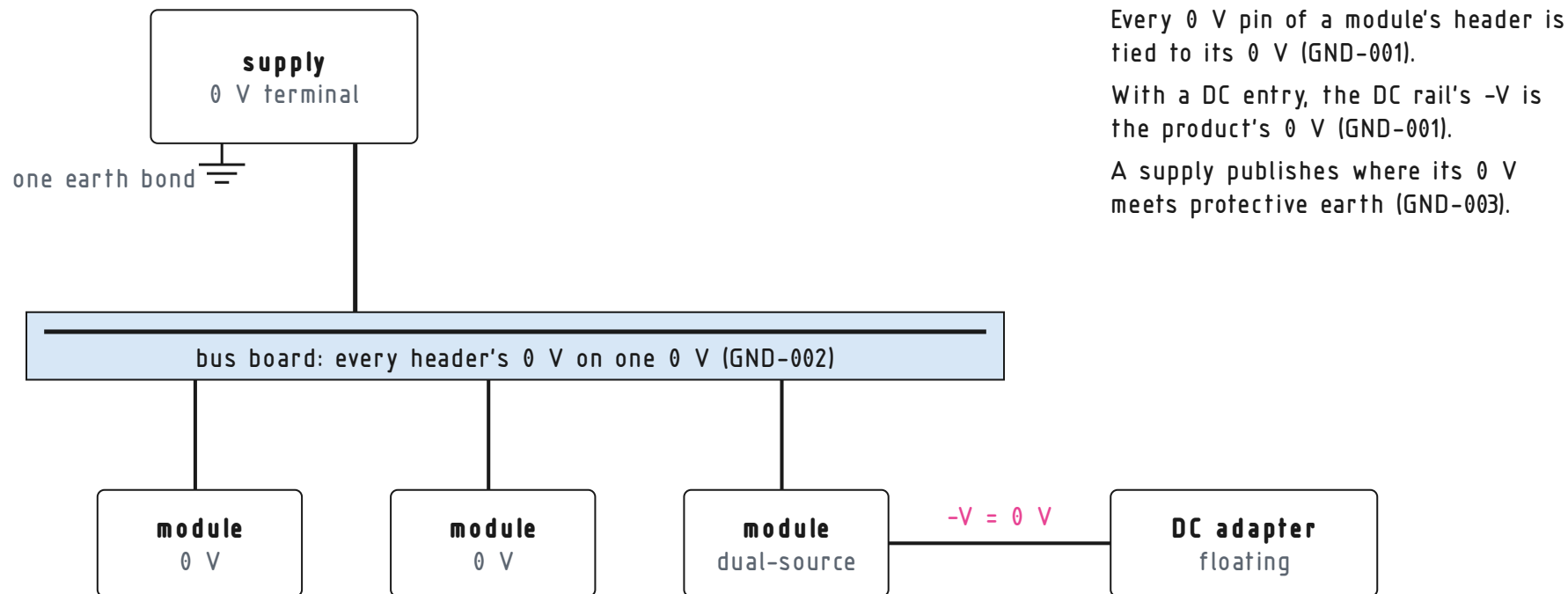
HEAT · ANNEX O

- Publish, for each row, the dissipation it carries for a 10 °C rise.

$\Delta T \approx P / (h \times A)$; $h \approx 5$ W per square meter and kelvin

23 W in a closed 3U 84 HP case, about 0.33 square meters of surface, is about 14 °C. A vented case runs much cooler.

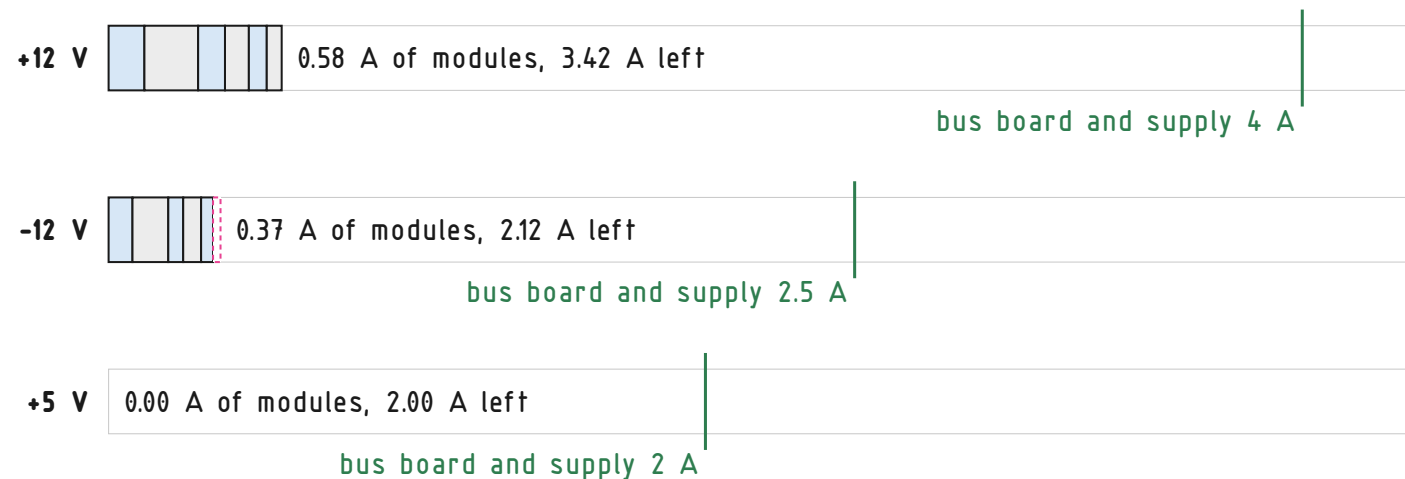
EIS · Grounding: one 0 V for the bus, the DC rail, and the jacks; one bond to earth



Patch sleeves and coax shells join the 0 V of the products they connect. A second earth bond makes a loop: hum on audio, slow bars on a picture.

The 0 V of a row: one bond to earth, one reference for the bus, the DC rail, and the jacks (6.3).

EIS · A row's current budget on the bus: the example row 'performance'



A module goes into a row only while each rail's sum stays within the bus board's totals, its per-header limit, and the supply's rating (ASM-001). The dashed segment plans a module that publishes no -12 V figure at 50 % of its +12 V draw, as EIS recommends.

The example row's module currents against its bus board and supply (9).