

ENGINEERING DOCUMENTATION

LED Architect Pro User Guide

From panel selection to load-in: how the Workspace, the Intelligent Signal Routing Engine, the Visual Wall Builder and the Resource Planner fit together, and how to catch problems before the truck rolls.

APP 0.9.0

ISRE V5

DOC 1.2.0

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1. Getting started & navigation

This guide assumes no prior experience with the tool. Every section explains what a field or panel does and why it matters before it explains how to use it – if you've built LED walls by hand before but never in LED Architect Pro, start at the top and work through in order.

The header exposes five menus. Everything in this guide lives behind one of them.

MENU	CONTAINS
Workspace	Engineering Workspace, Visual Wall Builder, Validation Center, Resource Planning (if enabled), Architect AI, Quickstart video/tutorial, User Manual
Projects	New/Open/Save/Save As Copy, Rename, Archive, Dashboard, Teams
Data	Products, Clients, Suppliers, Kits, Manufacturers, Brands, Compatibility, Constants
Export	Generate Spec Book, Export Resource Plan (CSV), and the Wall Images group (signal, power, wall, pixel canvas, test pattern PNGs)
Admin	Admin console, diagnostics, users, product import (admin accounts only)

INPUT • START HERE

Start a project from **Projects** → **New Project**, then work top to bottom in the Workspace's input pane: Screen, Processor, Power, Weight, Wind, Cable, Source. Every calculated panel on the right recomputes live as you fill in fields on the left.

Keyboard shortcuts are chorded with ⌘⇧ (or Ctrl⇧ on Windows) and are listed next to every menu item – ⌘⇧B jumps to the Wall Builder, ⌘⇧V to the Validation Center, ⌘⇧G generates the Spec Book.

LIVE CALCULATIONS			
DISPLAY INFO		PROCESSOR UTI	
DERIVED		DERIVED	
Display Dimensions	5.00 × 3.00 m 16' 4 1/4" × 9' 10 1/4"	Quantity Processors in fleet	1
Screen Resolution	1,920 × 1,152 px	Per-unit capacity	10,400,000 px
Total Pixels	2,211,840 px	Fleet capacity	10,400,000 px
Aspect Ratio 1.667	5:3	Pixels used	2,211,840 px
Pixel Density	147,929 px/m²	Remaining	8,188,160 px
Display Area 161.5 ft²	15.00 m²	Utilization	21.3%
Total Number of Cabinets	60	Units required	1
Optimal viewing dist. Retina (2 arcmin)	8.94 m	With N+1 Redundant	2
Min. viewing dist. Pitch rule of thumb	2.60 m		

Live Calculations

WHAT YOU'RE LOOKING AT

- Display Info, Processor and Ports panels update the instant you change a screen or panel field on the left – nothing here is typed in directly.
- Resolution, total pixels and pixel density come straight from cabinet grid × pixel pitch.
- Processor utilization and unit counts already assume the panel and processor you've picked upstream.

Weight, wind & cable

Weight Calculations splits cabinet weight from rigging, ground support and additional-gear weight, and gives distributed load per square meter for rigging plans. Wind Impact is indoor/outdoor-aware – indoor projects skip it – and reports wall surface area, effective wind speed with exposure multiplier, wind pressure, lateral force and a recommended ballast safety factor, with a traffic-light risk badge. Cable reference resolves your source-to-processor media (HDMI/DisplayPort/SDI/fibre/etc.), its distance ceiling, and flags when your planned run exceeds it.

CALCULATED • DERIVED

Everything under a **CALCULATED** header is read-only – it recomputes from your inputs and nothing here is directly editable. If a number looks wrong, the fix is always upstream, in an INPUT card.

WIND & MOUNTING

COMPLETE

MOUNT

ENVIRONMENT

EXPOSURE

SPEED UNIT

WIND SPEED

Ground-supporter

Indoor

Urban

mph

0mph

Wind & Mounting

WHAT YOU'RE LOOKING AT

- The risk badge (green/amber/red) is the fastest read – check it before the numbers below it.
- Lateral force and ballast safety factor feed straight into your rigging or ground-support plan.
- Indoor projects won't see this card populated – wind is skipped entirely.

Source equipment & content canvas

Selecting a presentation switcher and media player populates the Source Equipment card; build-to-order switchers show a configurable I/O range instead of a fixed count. The Content Canvas models your working pixel space against the wall's true resolution and, from the same model, derives EDID/video timing (Part 7) and the Required Outputs count your switcher needs to feed every screen.

SOURCE CONFIGURATION

COMPLETE

SIGNAL FRAME RATE *

59.94 Hz

Assuming 59.94 Hz – confirm the rate you will actually run.

PRESENTATION SWITCHER

Barco – E2 Gen 2

MEDIA PLAYER

Disguise – gx 2c

Barco – E2 Gen 2

Inputs: 40 • Outputs: 18

Max resolution: 4096x2400@60 (12-bit 4:4:4)

Canvas: 20MP PVW/PGM, 40MP PGM-only, 80MP@30p PGM-only; up to 16 mixable / 32 single PIP layers

Disguise – gx 2c

CABLE TYPE *

HDMI 1.4

RUN DISTANCE

5 m

EXTENSION / TRANSPORT METHOD

None (direct run)

Source Configuration

WHAT YOU'RE LOOKING AT

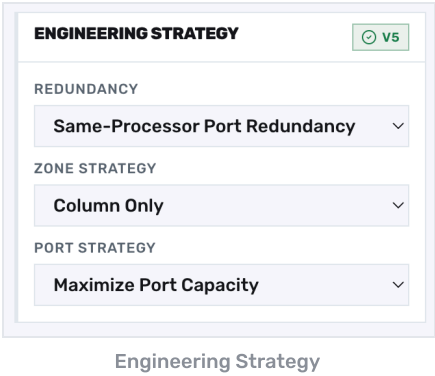
- Switcher and media player selection populate this card's specs automatically from the Product Database.
- A build-to-order switcher shows a configurable I/O range instead of a fixed input/output count.
- This is also where the source frame rate feeds into the EDID/video timing math in Part 7.

3. Engineering strategy & the ISRE

The **Intelligent Signal Routing Engine (ISRE)** is the single source of truth for how signal is assigned across the wall – which cabinets belong to which zone, which processor port or distribution-unit trunk owns which zone, and where the redundant path runs. The Wall Builder's auto-assign, the Spec Book's Signal Routing figure, and every routing number in the Results pane all read from the one `RoutingModel` the engine builds. Nothing downstream computes its own routing.

Three terms come up constantly here, so plainly: a **zone** is a rectangular group of cabinets that all get their signal from the same place; a **port** is one physical output on a processor; a **trunk** is the same idea for a distribution-unit chain (Part 4) – one processor output feeding a whole daisy-chain of DUs. The ISRE's job is deciding which cabinets fall in which zone, and which port or trunk feeds each zone.

The engine stays dormant on legacy projects until you deliberately turn it on. The **Engineering Strategy** section in the Workspace has three dropdowns – Redundancy, Zone Strategy, Port Strategy – and picking *any* value in any one of them flips the project to **authoritative**: the v5 engine takes over routing for the whole wall. Until you touch one, existing projects behave exactly as before.



Zone strategy

Zone strategy decides how the wall is cut into ownership rectangles before ports are assigned:

STRATEGY	BEHAVIOR
Vertical	Splits the wall into vertical bands (column groups)
Horizontal	Splits the wall into horizontal bands (row groups)
Row only	One zone per row of cabinets
Column only	One zone per column of cabinets
User defined	You draw zones by hand in the Wall Builder (select cabinets → Mapping → Create Zone from Selection). A warning banner reminds you the wall isn't finished until you do.

Port strategy

STRATEGY	BEHAVIOR
Maximize port capacity	Packs each port as full as its capacity allows before opening the next one – fewest ports used
Balanced	Spreads pixel load evenly across all available ports – more headroom per port
User defined	You assign ports manually in the Wall Builder

Redundancy strategy

STRATEGY	BEHAVIOR
None	No redundant path is routed
Same-processor port redundancy	A second port on the SAME processor mirrors each primary port – protects against a port or cable failure, not a processor failure
Closed loop (trunk pair) – same processor	Pairs whole trunks (A↔B, C↔D) on one chassis so each mirrors the other – see Part 4
Dedicated backup processor	A full spare processor chassis mirrors the primary – protects against a processor failure

REPORT

All three dropdowns compose into one RoutingModel: zone strategy decides ownership rectangles, port strategy decides how each zone's pixels are packed onto ports/trunks, and redundancy strategy decides whether – and how – a second path is drawn for each. That model feeds the Wall Builder overlays, the Results pane's port/routing numbers, and the Spec Book's Signal Routing figure identically.

4. Setting up Tessera XD distribution units

The Brompton Tessera XD is a data distribution unit (DU), not a processor – it fans a processor's signal out to more receiving cards than the processor's own ports could reach directly. Select it as a distribution unit under the processor's output chain once your processor and port strategy are set.

Hardware you're routing against

Inputs	2 × 10G Tessera Protocol (copper/fibre auto-switching), one is a thru port
Outputs	10 × 1G Tessera Protocol (Neutrik etherCON)
Per-output capacity	525,000 px at 8bpc / 60Hz baseline
Daisy chain	Up to 5 additional XDs downstream, sharing the trunk's upstream bandwidth
Power	PowerCON TRUE1, daisy-chainable at up to 16A through the thru port

Because the pixel figure lives on the DU's *output* side, not the processor, port math for an XD chain is quoted in trunks and downstream ports, not raw processor ports – the Results pane switches its "Est. primary ports" label to "Minimum Required Trunks" the moment a DU chain is present.

PROCESSOR & PORTS

⚠ 3 REQUIRED

BIT DEPTH *

8-bit

▼

FRAME RATE (INHERITED)

59.94 Hz (default)

⚙ DERIVED

Set in Source Configuration

2

▶ ADVANCED – OVERRIDE FOR PROCESSOR

PROC CAPACITY *

0 px

AVAILABLE PORTS *

0

8-BIT PORT CAP

0 px

10-BIT PORT CAP

0 px

12-BIT PORT CAP

0 px

☐ MANUAL CAPACITY OVERRIDE

MANUAL PX / PORT *

0 px

PROC QUANTITY *

1

Recommended: 0

AUTO

Processor & Ports

WHAT YOU'RE LOOKING AT

- Once a distribution-unit chain is present, "Est. primary ports" relabels to "Minimum Required Trunks."
- Bit-depth capacity per port is read from the processor's published spec – it won't guess a number that isn't published.
- Utilization tone turns amber at 85% and red at 100% of fleet capacity.

Without redundancy

Set Redundancy Strategy to **None**. Each processor trunk feeds one XD's input; daisy-chain up to five more XDs off its thru port if the zone needs more than ten outputs. All ten outputs on every unit in the chain are available for fixture ports – there is no held-back backup capacity, so plan zone sizes against the full 525,000 px/output figure.

With redundancy

Two of the three redundancy strategies apply to an XD deployment, and they protect against different failures:

CLOSED LOOP (TRUNK PAIR) – SAME PROCESSOR

Pairs two trunks on the **same** processor chassis (A↔B, C↔D) so each mirrors the other's XD chain – the pattern documented in Brompton's Tessera manual as the standard XD backup-mirror. Pick this when you have one processor and want the wall to survive a single XD or cable failure without buying a second chassis. This is the correct choice for "a second or fourth XD on the same processor for redundancy."

DEDICATED BACKUP PROCESSOR

A second, spare processor chassis carries a full mirrored XD chain. Pick this when the failure you're protecting against is the processor itself, not just a distribution unit – cross-processor redundancy that closed loop cannot provide on a single chassis.

Whichever you choose, the redundant path only appears in the Wall Builder once you turn on its overlay – see Part 6.

Powering the wall: voltage, phase & circuits

Once the signal side is planned, the Power Requirement card figures out how much electricity the wall needs and how to divide it into circuits. If you've never sized power for an LED wall before, the two fields that confuse people first are **Service Voltage** and **Phase** – get those two right and everything downstream (current draw, circuit count, generator size) follows correctly.

120V VS 240V – WHICH TO CHOOSE, AND WHY

120V (single-phase, one hot + one neutral) is the standard North American wall-outlet voltage. Choose it when your only available power is ordinary building or venue outlets – small displays, retail installs, or quick temporary setups with no dedicated distro. Its downside is current: at 120V, every kilowatt of LED load draws roughly twice the amps it would at 240V, so a big wall needs a lot more circuits and heavier cable to carry the same power.

240V (still single-phase, but using two opposite hots instead of one hot + neutral) is standard on production power distros – Cam-Lok, stage pin, PowerCON true1 feeder systems. Choose it whenever you have a dedicated distro available and the wall is large enough that circuit count matters: at double the voltage, the same load draws half the current, so you need roughly half as many circuits and can run lighter cable over longer distances with less voltage drop. Most touring and rental LED walls run 240V for exactly this reason.

WHY 208V FOR THREE-PHASE, AND "110V" FOR SINGLE-PHASE

Set **Phase** to match how your distro is actually wired, then set **Service Voltage** to match that phase – the two fields have to agree, because the app's current calculation multiplies watts by a different factor depending on phase. Entering the wrong pairing (say, 240V with three-phase selected) silently produces the wrong current draw and the wrong circuit count.

Three-phase power in North America is almost always distributed as a **208Y/120** system: three hots, each 120V to neutral, but 208V measured hot-to-hot ($120 \times \sqrt{3} \approx 208$). Because LED processing and distro gear on a three-phase feed is wired hot-to-hot, that's the number you enter – **208V**, not 240V. (240V three-phase "delta" services exist in some older commercial buildings, but 208Y/120 is the standard you'll meet on touring and venue power.)

On a single-phase feed, "110V" and "120V" are the same voltage – 120V is the true nominal value, but "110" (and "115") are common shorthand left over from decades-old wiring standards and still used constantly on site. Enter **120V** for a standard single-phase wall outlet feed; don't second-guess it because someone on the crew calls it 110.

ADVANCED • BRANCH CIRCUIT VOLTAGE

The Power Requirement card has an **Advanced** disclosure that hides a second, separate voltage field: **Branch Circuit Voltage**. It's tucked away because in the large majority of setups it's identical to your Service Voltage, and most engineers never need to touch it – showing it up front would just be one more number to fill in for no benefit.

Open it and change it only when the voltage feeding the whole system is different from the voltage of the individual branch circuits you're pulling off it – the most common real case is a 208Y/120 three-phase service where the panel/distro itself is fed at 208V, but the actual whips running out to cabinets or racks are wired phase-to-neutral at 120V. Service Voltage describes what's coming into the system; Branch Circuit Voltage describes what each individual circuit is actually delivering. If your branch circuits are the same voltage as your incoming service – the normal case – leave Advanced closed.

Connector types you'll see on site

None of these are inputs in the app, but knowing them makes the Power Requirement numbers concrete – this is the hardware your branch circuit count and current figures turn into.



Socapex



PowerCON TRUE1



Cam-Lok feeder



PowerCON fanout



TRUE1 fanout

5. Reviewing results before load-in

Three surfaces exist specifically to catch a problem on the bench instead of on site.

Results pane

Every calculated card carries a tone: green when a number is healthy, amber approaching its limit, red over it. Processor utilization turns amber at 85% and red at 100%; port/trunk utilization turns amber at 90% and red the moment the chain is short of the ports it needs. Read these tones before reading the numbers – they're the fastest way to scan a dense wall for trouble.

Routing Feasibility Summary

Sits directly under Processor in the Results pane and shows the ISRE's governing reason whenever a routing plan can't be satisfied as configured – a feasibility cascade that names the specific constraint (port budget, zone geometry, chain capacity) that's blocking the wall, not just a generic failure.

ROUTING FEASIBILITY			DERIVED
WALL CABINET COUNT	60 ACTIVE PIXELS	2,211,840 px	
PANEL RESOLUTION	192 x PIXELS PER 192 CABINET	36,864 px	
SELECTED PROCESSOR	NovaPro BIT DEPTH UHD Jr	8-bit	
FRAME RATE	59.94 Hz PROCESSOR (assumed) UTILIZATION	21.3%	
CANVAS CAPACITY / PORT	650,000 ESTIMATED MIN px PRIMARY PORTS	4	
CURRENT PRIMARY ZONES	5 AVAILABLE PRIMARY PORTS	21	
PRIMARY PORTS USED	5 AVAILABLE REDUNDANT PORTS	21	
REDUNDANT PORTS USED	5 PROCESSOR CANVAS CAPACITY	10,400,000 px (EKB)	
PROCESSOR MAX CANVAS W	16,384 px	PROCESSOR MAX CANVAS H 8,192 px	
LARGEST OWNERSHIP RECTANGLE	2 x LARGEST ZONE 6 CANVAS LOAD	442,368 px	
DESIGN VALID	Yes		

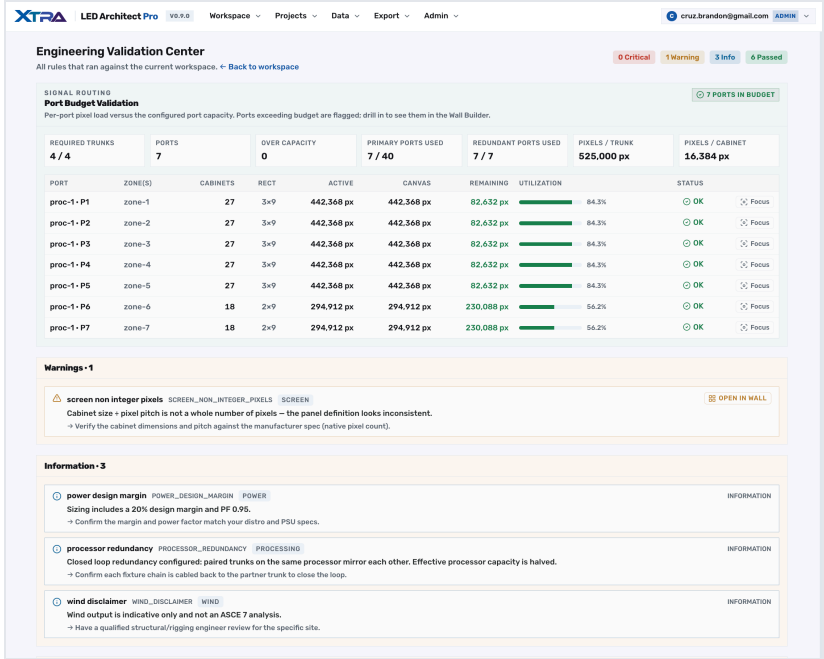
Routing Feasibility Summary

WHAT YOU'RE LOOKING AT

- Appears the moment a routing plan can't be satisfied as configured – port budget, zone geometry, or chain capacity.
- Names the single governing reason, not just a generic "routing failed."
- Fixing the named constraint (not a symptom of it) is the fastest way to clear this banner.

Validation Center & Findings

Open with ⌘⇧V. It groups every finding across every screen in the project by severity – critical, warning, information – so a multi-screen show doesn't hide one screen's blocking issue behind another's clean bill of health. ⌘⇧F jumps straight to the Findings list. A finding always names the measured value, the threshold it crossed, and its basis (which spec or rule triggered it) – enough to fix the actual cause, not just acknowledge a warning. Work every critical finding down to zero before generating the Spec Book; treat warnings as a pre-load-in checklist.



Engineering Validation Center

WHAT YOU'RE LOOKING AT

- The counter strip (Critical/Warning/Info/Passed) is the fastest health check – this project has zero critical findings.
- Port Budget Validation breaks out every port's load, remaining headroom, and utilization – 84.3% here, still healthy.
- Each finding names its rule code and links "Open in Wall" to jump straight to the cabinets or zones it's about.



Engineering readiness score

WHAT YOU'RE LOOKING AT

- One number that summarizes the whole Validation Center – Design Safety and Data Completeness roll up into it.
- "Excellent" doesn't mean zero findings – check Findings directly for anything still open.
- Treat this as your last check before Generate Spec Book, not a substitute for reading the findings list.

Sample Spec Book pages

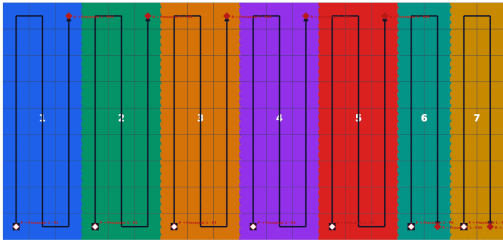
⌘⇧G – Generate Spec Book – renders the whole engineering picture as a vector PDF: cover, per-section calculations, the Signal Routing figure, and a legal disclaimer on every page. It reads the same RoutingModel and calculated values shown throughout this guide, so nothing in the PDF can drift from what you saw on screen.

PROJECT

Untitled project

REVISION
1
PREPARED
2026-08-20

PREPARED BY
cruz.brandon@gmail.com
BRAND
XTRA



LEGEND
Zone 1 — Processor 1 · P1
Zone 2 — Processor 1 · P2
Zone 3 — Processor 1 · P3
Zone 4 — Processor 1 · P4
Zone 5 — Processor 1 · P5
Zone 6 — Processor 1 · P6
Zone 7 — Processor 1 · P7
Primary route
Redundant endpoint

App v0.9.0 · Engine v1.1.0 · EKB v0.6.0 · Doc v1.2.0
Model snapshot 0731b07d (v1)

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LED Architect Pro™

NOTICE: Planning aid — verify independently. Final engineering, safety & code compliance rest with the user.

Untitled project · Rev 1

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Cover page

Signal Routing & Distribution Strategy

XTRA

REDUNDANCY
Closed Loop (Trunk Pair)

PATH PATTERN
Snake

ZONES
7

TOTAL CABLE (M)
82.00

ZONE STRATEGY
Column Only

FIRST RUN
Bottom → Top

PRIMARY PORTS USED
7

PORT STRATEGY
Balanced

PROGRESSION
Right

REDUNDANT PORTS RESERVED
7

Per-Zone Summary

ZONE	PRIMARY	REDUNDANT	FIRST CAB	FINAL CAB	COLS×ROWS	CANVAS PX	ACTIVE PX	ZONE FILL	PORT LOAD (PX)	PORT UTIL
Zone 1	Processor 1 · P1	Processor 1 · P41	Cabinet I1	Cabinet A3	3×9	442,368	442,368	100.0%	442,368	84.3%
Zone 2	Processor 1 · P2	Processor 1 · P42	Cabinet I4	Cabinet A6	3×9	442,368	442,368	100.0%	442,368	84.3%
Zone 3	Processor 1 · P3	Processor 1 · P43	Cabinet I7	Cabinet A9	3×9	442,368	442,368	100.0%	442,368	84.3%
Zone 4	Processor 1 · P4	Processor 1 · P44	Cabinet I10	Cabinet A12	3×9	442,368	442,368	100.0%	442,368	84.3%
Zone 5	Processor 1 · P5	Processor 1 · P45	Cabinet I13	Cabinet A15	3×9	442,368	442,368	100.0%	442,368	84.3%
Zone 6	Processor 1 · P6	Processor 1 · P46	Cabinet I16	Cabinet I17	2×9	294,912	294,912	100.0%	294,912	56.2%
Zone 7	Processor 1 · P7	Processor 1 · P47	Cabinet I18	Cabinet I19	2×9	294,912	294,912	100.0%	294,912	56.2%

Cable Schedule

Orthogonal legs sum Manhattan distance; diagonal-transition segments are Euclidean center-to-center. Recommended = Total + service-loop allowance.

ZONE	ORTHOGONAL (M)	DIAGONAL (M)	TOTAL (M)	SERVICE LOOP (M)	RECOMMENDED (M)
Zone 1	13.00	0.00	13.00	0.00	13.00
Zone 2	13.00	0.00	13.00	0.00	13.00
Zone 3	13.00	0.00	13.00	0.00	13.00
Zone 4	13.00	0.00	13.00	0.00	13.00
Zone 5	13.00	0.00	13.00	0.00	13.00
Zone 6	8.50	0.00	8.50	0.00	8.50
Zone 7	8.50	0.00	8.50	0.00	8.50

Redundancy Summary

Redundant routing is represented by endpoint markers on the wall overlay — no redundant polylines are drawn. This table is the authoritative record of redundant processor/port pairing per zone.

ZONE	PRIMARY	REDUNDANT	MODE
Zone 1	Processor 1 · P1	Processor 1 · P41	Closed Loop (Trunk Pair)
Zone 2	Processor 1 · P2	Processor 1 · P42	Closed Loop (Trunk Pair)
Zone 3	Processor 1 · P3	Processor 1 · P43	Closed Loop (Trunk Pair)
Zone 4	Processor 1 · P4	Processor 1 · P44	Closed Loop (Trunk Pair)
Zone 5	Processor 1 · P5	Processor 1 · P45	Closed Loop (Trunk Pair)
Zone 6	Processor 1 · P6	Processor 1 · P46	Closed Loop (Trunk Pair)
Zone 7	Processor 1 · P7	Processor 1 · P47	Closed Loop (Trunk Pair)

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Signal Routing & Distribution Strategy

The cover names the project, revision, preparer and the engine/doc versions the numbers were generated with — useful for proving which build a discrepancy came from. The Signal Routing page prints every zone's primary/redundant port pairing, cable schedule (orthogonal + diagonal runs, plus service-loop allowance) and a full Redundancy Summary table — the same closed-loop trunk pairing from Part 4, now as a paper record a crew can cable from without opening the app.

6. Visual Wall Builder – multi-screen & overlays

The Wall Builder is a canvas of your cabinets with a menu bar of its own: Signal, Power, Display, View, Mapping, Test Pattern.



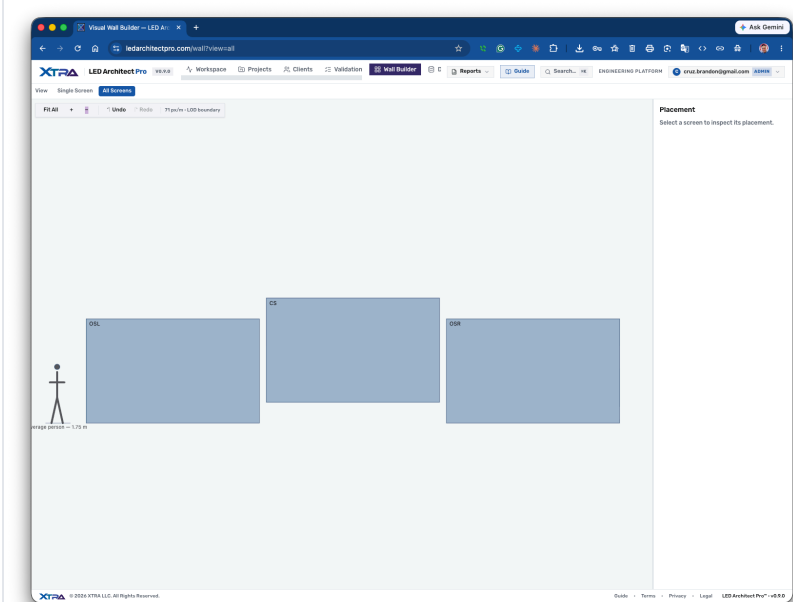
Exported Signal Routing PNG

WHAT YOU'RE LOOKING AT

- Zone bounds separate the wall into the strip owned by each processor port/trunk, labeled by processor, trunk and port.
- P and R dots mark the primary and redundant port entry point for each zone; the colored line traces its primary path.
- The footer tallies primary ports routed, redundant ports, and total zones – a quick numeric check against your Engineering Strategy.

Multi-screen mode

On a project with more than one screen, the **View** menu gains a Single Screen / All Screens toggle. Single Screen is the default working view – one screen's cabinets, zones and routes at a time. All Screens lays every screen out together on one canvas at its placed position and rotation, so you can sanity-check the whole show – screen-to-screen spacing, orientation, aggregate footprint – in one view. Switching screens in the rail always returns you to that screen's Single view.



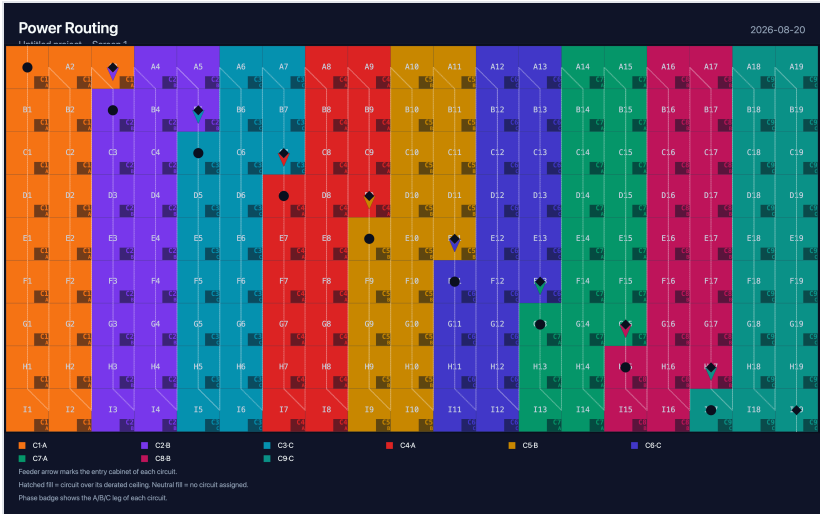
All Screens view

WHAT YOU'RE LOOKING AT

- Every screen in the project laid out at its placed position and rotation – real spacing, real footprint.
- Only appears when canUseMultiScreen is enabled and the project has more than one screen.
- Switching to a screen in the rail always drops you back into that screen's Single view.

How the overlays work

MENU	TOGGLES
Signal	Zone Bounds, Zone Ownership, Primary Paths, Primary/Redundant Port Markers (⚡S = all on/off). A small warning dot appears on the menu itself if redundancy is on but the redundant marker is hidden.
Power	Circuit Fill, Circuit Labels, Power Paths, Feeders, Phase Badges (three-phase only) – all disabled with a tooltip until you generate a power map (⚡P = all on/off).
Display	Cabinet Numbers, Pixel Grid, Power Heat, Wind Badge, Findings (⚡D = all on/off). Power Heat needs a power model; Wind Badge is hidden indoors.
View	Single Screen / All Screens, Fit All, Zoom, cabinet label format (A1 vs Row•Col, cycle with N).
Mapping	Auto-Assign Zones, Create Zone from Selection, Adopt Auto Zones, Clear Mapping (routes/ports only – zones and layout survive), Reset Wall (deletes layout, zones and routing; panels/processors/other inputs survive).



Exported Power Routing PNG

WHAT YOU'RE LOOKING AT

- Each color is one circuit; the phase badge under every cabinet shows which A/B/C leg it's on.
- The diamond feeder arrow marks the entry cabinet where each circuit's power actually connects.
- Hatched fill flags a circuit over its derated ceiling – a load problem to fix before load-in, not after.

Signal & power routing panels

These two panels live in the Wall Builder's side inspector, not the Workspace – they control the spatial shape of routing, while Redundancy, Zone Strategy and Port Strategy (Part 3) stay in Engineering Strategy. Think of it as a split: Engineering Strategy decides *what* gets redundancy and how zones/ports are assigned; these panels decide *which direction* the resulting runs sweep across the wall.

▼ SIGNAL ROUTING

V5 ACTIVE

PATH STRATEGY

PATTERN

Snake

Zig Zag

FIRST RUN

Left → Right

Right → Left

Top → Bottom

Bottom → Top

PROGRESSION

Left

Right

Redundancy, zone and port strategy stay in Engineering Strategy; these controls decide where the signal runs actually go.

PROCESSOR INSTANCES

These are display labels only. Renaming an instance does not change the selected hardware, its ports, capacity or any routing math – the engine keeps using the identity shown on the left.

proc-1

Processor 1

40

Labels appear on the wall, in the inspector and in generated documents. Leave blank for the default "Processor N". Max 40 characters.

EDIT ZONES

Edit Zones

Signal Routing panel

▼ POWER ROUTING

MAPPED

DISTRIBUTION STRATEGY

STRATEGY

Row-based

Column-based

Load balanced

Circuit optimised

Manual

ROUTING DIRECTION

Left → Right

Right → Left

Top → Bottom

Bottom → Top

Snake

Power is assumed to enter and exit each cabinet at its centre, so routing direction alone sets the sweep. Voltage, phase, amperage and derate stay in Power Distribution.

POWER MAP

⚡ Regenerate

Clear

Power Routing panel

Signal Routing → Path Strategy: Pattern (Snake alternates direction each row/column; Zig Zag doesn't), First Run (which corner the very first run starts from) and Progression (which way subsequent runs advance) together fix the exact cable path the ISRE draws – useful for matching a rigger's preferred cabling order without touching zone or port assignment. **Processor Instances** below it is cosmetic only: renaming proc-1 to a friendly label changes what prints on the wall, in the inspector and in generated documents, but never touches which hardware, ports or capacity that instance actually has.

Power Routing → Distribution Strategy: Row-based, Column-based, Load balanced, Circuit optimised or Manual decides how cabinets group into circuits; Routing Direction (including its own Snake option) decides which way each circuit's feed sweeps. Voltage, phase, amperage and derate stay back in Power Requirement (Part 4) – this panel is purely spatial, same as its Signal counterpart. Once set, **Regenerate** rebuilds the power map from current strategy and inputs; **Clear** wipes it so you can rebuild from scratch.

7. Custom EDID & video timing

The Canvas card's "EDID / video timing" block generates a VESA CVT (Coordinated Video Timings) or CVT-RB (Reduced Blanking) signal for your content canvas – the pixel clock, front/back porch, sync width and blanking your source needs to output the canvas at its target refresh rate. It is a calculator, not a lookup table: nothing is fabricated when a governing input (canvas size or source frame rate) is missing, so the block simply shows nothing until both are set.

This is what a **custom EDID** is for: most fixed-rate sources (23.976–120Hz standard broadcast/IT rates) negotiate the generated timing automatically. A non-standard refresh rate still produces a valid CVT/CVT-RB timing, but the tool flags it as an information-level finding – the sink may not accept it without you writing that exact timing into a custom EDID and loading it onto the display/processor input. In other words: standard rate → plug and play; non-standard rate → export the generated timing values and program a custom EDID so the source and processor agree on the same signal before anything ships.

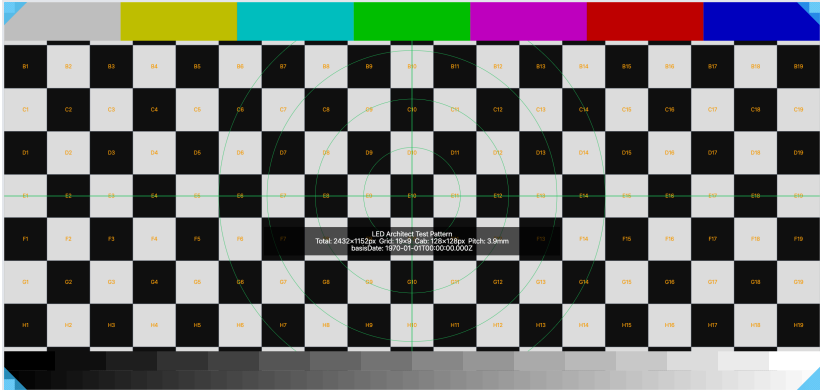
WARNING • PIXEL CLOCK OVER CABLE

The same block also checks the timing's payload rate (pixel clock × 24bpp) against your selected cable's ceiling. If the canvas at your target rate needs more bandwidth than the cable carries, this is flagged with both numbers named – the fix is reduced blanking, a higher-bandwidth cable/format, a lower rate, or splitting the canvas.

8. Test patterns & image exports

Test Pattern menu

In the Wall Builder, the Test Pattern menu has three display modes: **Off**, **Generated** (the built-in native-pixel pattern), and **Custom** – grayed out until you've uploaded one. Regenerate refreshes the generated pattern's basis-date stamp if your wall geometry changed.



Generated test pattern

WHAT YOU'RE LOOKING AT

- Color bars, checkerboard and concentric focus rings at every cabinet boundary make convergence and dead pixels easy to spot from a distance.
- Cabinet labels (A1, B2...) match the Wall Builder's own labeling, so an on-site issue maps straight back to a cabinet in the app.
- The footer burns in total resolution, grid, cabinet size and pixel pitch – useful proof-of-config on site.

Uploading a custom test pattern

Test Pattern → Upload Custom.... Accepts PNG or JPG up to 20MB, stored to a private per-project bucket. You must be signed in and the project must be saved first – both are enforced with a toast if you jump ahead. Once uploaded, switch the display mode to Custom to preview it mapped onto the wall.

Downloading signal & power distro images

Two places reach the same exports:

EXPORT	WHAT IT CAPTURES
Signal Routing (PNG)	Zones, primary paths and port markers – Signal menu → Export Signal Routing, or header Export → Signal Routing
Power Routing (PNG)	Circuits, feeders and phase legend – Power menu → Export Power Routing, or header Export → Power Routing
Wall Image (PNG)	Clean documentation image with no overlays – Display menu → Export Wall Image
Pixel Canvas Map (PNG)	Canvas, mapped wall rectangle and output slices – header Export menu only
Test Pattern (PNG or JPG)	Native-pixel test pattern – Test Pattern menu → Export Test Pattern → PNG/JPG, or ⌘⇧9

Every export button in the global header is present on every route but disabled with a tooltip until you're on a project with a wall – the affordance stays discoverable even before you've built one.

9. Dashboard & Resource Planner

Dashboard

Projects → Dashboard is your personal home: pending team invitations at the top (Accept/Decline), a five-tile stat row (my projects, team projects, teams, clients, projects created in the last 30 days), your six most recent projects, your teams, and – on Pro accounts – a resource-plan summary card.

Resource Planner

Workspace menu → Resource Planning (Pro accounts). It turns your engineering model into a procurement list: panels, processors, distribution units and cable, each line tagged with where it came from – auto-generated from the engine, pulled from Wall Builder, or added manually. Editing a line only ever changes that line:

- Bulk-editing a selection's category changes category on those lines only – quantities, pricing and source tagging are untouched.
- Removing lines is source-aware: an engine-calculated line is marked removed (so it comes back if the model changes again), a manually-added line is deleted permanently. The confirmation dialog tells you which kind of removal each selected line will get before you commit.
- The plan re-syncs against the engineering model automatically – if you change panel count or add a redundancy strategy, the auto-generated lines update; anything you added by hand stays exactly as you left it.

Export → Export Resource Plan gives the same data as a CSV of panels, processors, distribution units and cable for a supplier quote or a warehouse pull sheet.

LED Architect Pro

Workspace

Projects

Data

Export

Admin

crucibrandon@gmail.com

ADMIN

Resource Planning

Resource plan revision 2

Rev 2 – draft (current)

draft

USD

Regenerate

New revision

Engineering

Pricing

Operations

+ Add Item

Add kit

% Pricing

Export

Validate

Search lines...

All categories

Filters

Columns

CATEGORY

DISTRIBUTION_UNIT

LED_PANEL

PROCESSOR

PRODUCT

Brompton Technology XD

INFILED DB 2.3

Brompton Technology SX40

DESCRIPTION

Brompton Technology XD

INFILED DB 2.3

Brompton Technology SX40

QTY REQUIRED

4

120

2

SPARE

0

0

0

MALL(S)

-

-

-

SOURCE

Manual

Manual

Manual

STATUS

active

active

active

VALIDATION

OK

1

1

NOTES

-

-

-

Event dates & billing

Delivery

Load-in

Show start

Show end

Load-out

Return

Billing days – override

08/21/2026

08/21/2026

08/24/2026

08/26/2026

08/26/2026

08/31/2026

2

Billing days

2 days

Override

Override in effect – computed load-in → load-out days are ignored. Override to match your rental house's convention.

Validation

WARNINGS (2)

INFILED DB 2.3: allocation to Matrix Visuals has no net cost.

Brompton Technology SX40: allocation to Matrix Visuals has no net cost.

Show line

Show line

Cost summary

DERIVED

LINES

3

NET COST

\$4,000.00

SELL

\$5,200.00

GROSS PROFIT

\$1,200.00

MARGIN

23.1%

FINDINGS

2

BY CATEGORY

NAME

NET

SELL

GP

MARGIN

NAME

NET

SELL

GP

MARGIN

distribution_unit

\$4,000.00

\$5,200.00

\$1,200.00

23.1%

05d8e5f1-0b44-4998-9fa3-d04c7c8b98d7

\$4,000.00

\$5,200.00

\$1,200.00

23.1%

led_panel

\$0.00

\$0.00

\$0.00

0.0%

processor

\$0.00

\$0.00

\$0.00

0.0%

Internal – never shown on client documents. Billing basis: 2 days.

Resource Planning – filled in

WHAT YOU'RE LOOKING AT

- One line per panel, processor, distribution unit and cable run, grouped by category with a source tag (here, "Manual").
- Validation flags lines with a problem – here, two allocations with no net cost – without blocking the plan.
- Cost Summary rolls lines up by category and by supplier; it's internal only and never appears on a client document.

Adding a supplier

Data → Suppliers (Pro) → New Supplier opens a form for name/DBA, contact details, service area, city/state/country, website, and an RFQ email – the address an RFQ PDF's cover sheet points a vendor to reply to. Set the supplier's categories (which product types they carry) and its visibility: **Private** keeps

it visible only to you or your team, **Global** shares it across the platform. A **Verified** badge on a supplier row means LED Architect Pro has vetted that contact – it doesn't change any pricing math, it's just a trust signal when you're picking who to send an RFQ to.

Once a supplier exists, add their product offerings and book rates from the supplier's own page – that's what lets the Resource Planner attach a real cost to a line instead of leaving it blank.

STATUS

☐ Verified only ☒ Active only

CATEGORIES

☐ LED Panels☐ Ground Support☐ Cables☐ Video Equipment☐ Power Distribution☐ Service & Repair☐ Other

☐ Processors☐ Rigging☐ Fiber☐ Media Servers☐ Power Cable☐ Transportation

☐ Distribution Units☐ Structural Systems☐ Networking☐ Computers☐ Tools☐ Labor

SUPPLIER	PHONE	WEBSITE	SERVICE AREA	CITY	STATE	VERIFIED
 Global Trend Productions	(818) 768-4950	https://globaltrendspro.com	–	San Fernando	CA	–
 Matrix Visuals	(888) 862-8749	https://www.matrixvisual.com	Nationwide	Antioch	TN	–
 Metro Multimedia	(201) 340-2290	https://www.metrommedia.com	–	Paramus	NJ	–
 Nationwide Video	–	https://nationwidevideo.com/	Nationwide	–	–	–
 Peak Technologies	800 929-7089	https://www.peakt.com	Nationwide	Toronto	ON	–
 Rentex	(800) 574-1702	https://www.rentex.com/	Nationwide	Canton	MA	–

Supplier directory

WHAT YOU'RE LOOKING AT

- Filter by category, country, verified status and visibility to find the right vendor fast.
- A Verified badge is a trust signal only – it never changes pricing math.
- Global suppliers are shared platform-wide; Private suppliers are visible only to you or your team.

Generating a Supplier RFQ

A Request For Quote is a PDF that hands one supplier exactly their share of the Resource Plan – nothing more. In Resource Planning, open the Export menu and choose **Supplier RFQ**. Two things happen before the PDF renders:

- You allocate lines to suppliers first – a line with no supplier allocation is excluded from every RFQ, so nothing goes out unassigned by accident. If a single line is split across two suppliers (say, half your panel count from each of two rental houses), each supplier's RFQ shows only their allocated quantity.
- A toggle, **Show my current rate on the RFQ**, decides whether your own cost/rate numbers print on that supplier's copy. Leave it off to send a clean quantities-and-specs request; turn it on only if you deliberately want that supplier to see the rate you're comparing them against.

Each supplier gets their own numbered RFQ (RFQ–<revision>–<n>) addressed to their RFQ email. Regenerating an RFQ for the same supplier replaces that supplier's still-open draft rather than creating a duplicate – once a supplier has actually quoted or you've sent it, that record is kept as history and won't be silently overwritten. Sending is manual: the app produces the PDF, you email it yourself.

10. Teams, clients & product records

Teams

Projects → Teams manages shared workspaces: invite members, assign roles, and see each team's member and project counts. A project owned by a team is visible to every member with access — it's how a crew shares one engineering model instead of passing files around.

Clients

Data → Clients holds client records you attach to projects — name, venue, contact details. Attaching a client to a project only labels that project; it never changes any engineering value.

Brands, Manufacturers & Compatibility

Data → Manufacturers / Brands / Compatibility hold the catalog's reference structure: which company makes a product, which product family it belongs to, and which processors, distribution units and fixtures are validated to work together. Editing a manufacturer or brand record changes its label everywhere it's referenced; it never edits the specs of the products under it. Editing a compatibility row changes only that one pairing (e.g. "XD-S ↔ SX40 — usable ports 10 of 12") — every other pairing for either product is untouched.

Products

Video Processor

Manufacturer (A-Z)

Export page CSV

New

Search model, family, manufacture

All manufacturers

All rows

Flagged for review only

All suppliers

Showing 1–50 of 68 products

☐	MANUFACTURER	FAMILY	MODEL	I/O	FORM FACTOR	CANVAS (EKS)	OUTPUT PORTS	CONFIDENCE	SUPPLIER	SOURCE	QUALITY	
☐	Barco	Infinipix	Infinipix IND-100	—	—	—	—	—	—	MANUFACTURER	UNVERIFIED	☐ ☐ ☐
☐	Barco	Infinipix	Infinipix INP-100	—	Yes - 8x modular SFP+ output cages	—	8 (8 physical)	—	—	MANUFACTURER	UNVERIFIED	☐ ☐ ☐
☐	Brompton Technology	M Series	M2	—	All-in-one	2,100,000 px	4 (4 physical)	HIGH	—	MANUFACTURER	—	☐ ☐ ☐
☐	Brompton Technology	S Series	S4	—	All-in-one	2,100,000 px	4 (4 physical)	HIGH	1	MANUFACTURER	—	☐ ☐ ☐
☐	Brompton Technology	S Series	S8	—	All-in-one	4,500,000 px	8 (8 physical)	HIGH	2	MANUFACTURER	—	☐ ☐ ☐
☐	Brompton Technology	SQ Series	SQ200	—	All-in-one	36,000,000 px	0 (6 physical)	HIGH	1	MANUFACTURER	—	☐ ☐ ☐
☐	Brompton Technology	SX Series	SX40	—	IndoorAll-in-one	9,000,000 px	4 (4 physical)	HIGH	3	MANUFACTURER	—	☐ ☐ ☐
☐	Brompton Technology	T Series	T1	—	All-in-one	525,000 px	1 (1 physical)	HIGH	—	MANUFACTURER	—	☐ ☐ ☐
☐	Colorlight	Rhino Series	DS20	—	All-in-one	—	—	—	—	MANUFACTURER	—	☐ ☐ ☐
☐	Colorlight	Rhino Series	DS40	—	All-in-one	—	—	—	—	MANUFACTURER	—	☐ ☐ ☐
☐	Colorlight	Rhino Series	DS410	—	All-in-one	6,500,000 px	—	HIGH	—	MANUFACTURER	—	☐ ☐ ☐
☐	Colorlight	Rhino Series	DS420	—	All-in-one	8,800,000 px	—	HIGH	—	MANUFACTURER	—	☐ ☐ ☐
☐	Colorlight	VX Series	VX10	—	All-in-one	6,500,000 px	—	HIGH	—	MANUFACTURER	—	☐ ☐ ☐
☐	Colorlight	VX Series	VX12F	—	All-in-one	7,860,000 px	—	HIGH	—	MANUFACTURER	—	☐ ☐ ☐
☐	Colorlight	VX Series	VX20	—	All-in-one	13,100,000 px	—	HIGH	—	MANUFACTURER	—	☐ ☐ ☐
☐	Colorlight	VX Series	VX6	—	All-in-one	3,900,000 px	—	HIGH	—	MANUFACTURER	—	☐ ☐ ☐

Product Database — Video Processors

WHAT YOU'RE LOOKING AT

- Every panel, processor and distribution unit selectable in the Workspace lives here first.
- Preliminary or unverified specs are flagged on the product page, not silently treated as final.
- Compatibility rows here are what gate which distribution units a given processor or fixture can pair with.

Constants

Data → Constants exposes the engineering constants pool — the NEC safety margin, exposure multipliers, viewing-distance rules and similar shared figures every calculation reads from. These are global: changing a constant here changes the math for every project going forward, not just the one you're viewing. Treat this page as an occasional calibration tool, not a per-project setting.

Engineering Knowledge Base

IMPORT CATALOG →

ManufacturersFamiliesProductsCompatibility**Constants**

cable					DERIVED
KEY	VALUE			UNIT	DESCRIPTION
cableMaxDistanceM	("sd":100,"cat6":100,"hdmi":15,"cat5e":100,"cat6a":100,"displayport":3,"fiberMultimode":300,"fiberSinglemode":10000)	m			Max passive run distance per media

ekb_1001					DERIVED
KEY	VALUE	UNIT			DESCRIPTION
signalPortBalanceTolerancePct	20	%			ISRE: max acceptable pixel-load imbalance between ports within a processor.
signalMaxProcessorUtilizationPct	85	%			ISRE: maximum recommended processor utilization before warning.
signalBalanceTolerancePct	15	%			ISRE: max acceptable pixel-load imbalance between processors (percent).
signalRectangleRequired	true	–			ISRE: processor/port ownership must be rectangular.

power					DERIVED
KEY	VALUE	UNIT			DESCRIPTION
powerSafetyMargin	0.2				Design safety margin above peak
generatorPowerFactor	0.8				Generator nameplate power factor
generatorMaxLoadFraction	0.8				Max generator load fraction
powerFactor	0.95				Real PF for LED PSUs with active PFC
continuousLoadDerate	0.8				NEC 80% continuous-load derate
branchCircuitVoltage	120	V			Branch circuit line-to-neutral voltage
defaultBranchAmp	20	A			Default branch circuit amperage
upsPowerFactor	0.9				UPS nameplate PF
upsMaxLoadFraction	0.8				Max UPS load fraction

processor					DERIVED
KEY	VALUE	UNIT			DESCRIPTION
portWarnUtilization	0.9				Port utilisation warning threshold
processorWarnUtilization	0.85				Warn threshold for processor utilisation
processorCriticalUtilization	1				Critical threshold for processor utilisation

Engineering constants

WHAT YOU'RE LOOKING AT

- NEC safety margin, exposure multipliers and viewing-distance rules live here, not in any one project.
- A change here recalculates every project going forward – treat it as a calibration tool, not a per-project setting.
- Only touch this page when you have a specific, deliberate reason to shift a shared constant.

Kits & Suppliers

Data → Kits (Pro) defines reusable product bundles – components, nested kits, quantities and a revision number – for estimates and pull sheets. Data → Suppliers (Pro) is the supplier directory and their product offerings/pricing, which feeds the Resource Planner's cost figures. Editing a kit's revision doesn't retroactively change a project that already expanded an earlier revision into its Resource Plan; the project keeps the components it was built with until you re-expand the kit.

This guide reflects app 0.9.0 / ISRE v5 (v0.3.0-phaseC) / doc 1.2.0. Vendor routing strategies for Brompton, NovaStar, Helios and Colorlight are all wired into the engine; treat vendor-specific results as advisory until your own field verification confirms them for a given build.

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