

Readiness report — EVerest EV Charging Stack (BelayBox)

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Readiness: EVerest EV Charging Stack (BelayBox)

Verdict: Ready with caveats · 2026-09-03 · est. parts cost EUR 2.500,00 for the complete BelayBox Assembly Kit (plus EUR 40–280 shipping); a component-level rebuild is not fully priced **Cybersecurity — software & network: Review before networking**

You can buy everything this lab needs today, but only just. Pionix sells the complete [BelayBox Assembly Kit at EUR 2.500,00](#) and its product page reads "Low stock: 2 left". The [YAK board on its own is "Out of stock"](#), the YETI + YAK + CABLE bundle is unavailable, and the [YETI Kit is also down to "Low stock: 2 left"](#) — so a second station, or a replacement board, cannot be had from stock right now. At component level the picture is good: the boards' KiCad 6 sources and a BOM export are public under CERN-OHL-P-2.0, and of the parts identified from them every one is orderable from an authorized distributor except the RTC backup cell, which is obsolete and out of stock everywhere but has a verified direct substitute. This is the cold check — it establishes the baseline, so every part below carries its current price, stock and lifecycle for the next comparison.

One thing worth knowing before you read on: the snapshot was written from the upload, which contained no schematics and no BOM, so most components were recorded as specifications only. The project's [reference-hardware repository](#) is public and does carry a [KiCad BOM export](#) and the schematic sheets. Those supplied the real part numbers used throughout this report, and several correct a guess in the snapshot.

Action required

Part	Problem	Recommended action
Yak High-Level Controller Board	"Out of stock" as a standalone YAK Kit (EUR 1.000,00), and the YETI + YAK + CABLE bundle is unavailable	Buy the complete BelayBox Assembly Kit (EUR 2.500,00, 2 left), which includes the YAK board; or ask support.pionix.com for a restock date
Coin cell, Yak RTC backup (ML-621S/DN)	Obsolete; zero stock at DigiKey, Mouser and Newark (DigiKey quotes a 22-week factory lead time); ECIA lifecycle risk High	Order ML621-TZ1 instead (\$2.49, stock 10836) — DigiKey's Direct substitute, same 3 V and same 6.8 mm × 2.2 mm cell. Do not fit a CR2032/CR1220: wrong size and wrong chemistry (see Substitutes)

Part	Problem	Recommended action
Isolated metering ADC (ADE7932ARIZ)	The exact tube part has 3 in stock at DigiKey and 2 at Mouser — five pieces across the only two authorized distributors, against 4 needed per board	Order the reel part ADE7932ARIZ-RL (\$17.87, stock 838); check the minimum order quantity before committing
AC mains terminal block (WAGO 2606-1105)	DigiKey lists no stock quantity and ECIA reports no authorized distributor carrying it; rated 31 A against the snapshot's ≥ 32 A requirement	Order direct from WAGO. Confirm the 31 A terminal rating is acceptable before running the board at its 32 A jumper setting
CAN transceiver (SN65HVD230, no suffix in the design)	The plain SN65HVD230D is Obsolete ; ECIA lifecycle risk High	Order SN65HVD230DR (\$2.83). DigiKey shows 0 with a 12-week lead time, but Mouser holds 3684 at \$3.08
Motor lock driver (BD6221F-E2)	Lifecycle "Not For New Designs"	No action for a standard build — the whole circuit is marked DNP (do not populate) on the Yeti board. Only relevant if you populate the inlet-lock option
GFCI residual current sensor (T60404-N4641-X920)	Only one of two authorized distributors holds stock, at \$49.95	No action today (DigiKey stock 493). Buy a spare with the board — this is the board's most concentrated single-source risk

Cybersecurity — software & network

Review before networking — Nothing checked came back with a known vulnerability, but almost nothing could be checked: the OS image and 27 libraries have no version pinned, the 22 that are pinned are source builds no advisory database covers, and the device's admin and SSH surfaces are undocumented.

Component	Version	How known	Support status
Pionix BelayBox OS image (Raspbian/Debian for CM4)	not determined	not determined (The snapshot records the image only as 'Raspbian-based Pionix BelayBox OS'; it is supplied by Pionix on request and no version, release or codename is stated anywhere in the lab's materials.)	—

Component	Version	How known	Support status
Yeti STM32 firmware (yeti-firmware)	not determined	not determined (belaybox_README.md gives only the repository URL; no tag, release or commit is recorded.)	—
LF Energy EVerest core stack	not determined	not determined (The lab's materials name the repository but not which EVerest release is installed on the BelayBox.)	—
sigslot	v1.2.3	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml))	—
pugixml	v1.15	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml))	—
libwebsockets	v4.5.2	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml))	—
json-rpc-cxx	v0.3.2	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml))	—
libcurl	curl-8_18_0	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml))	—
Josev (ext-switchdev-iso15118)	26f79889e0472805422edb9799a8396d89437d63	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml))	—

Component	Version	How known	Support status
libnfc-nci (linux_libnfc-nci)	2024.11.0	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml))	—
ftxui	v6.1.9	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml))	—
sdbus-cpp	v2.2.1	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml))	—
gtest (googletest)	release-1.12.1	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml))	—
catch2	v3.10.0	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml))	—
mosquitto	v2.0.22	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml))	—
ryml (rapidyaml)	v0.10.0	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml))	—
grpc	v1.71.0	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml))	—

Component	Version	How known	Support status
eebus-grpc	v0.2.0	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml))	—
grpc-extended-cpp-plugin	v0.2.0	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml))	—
nlohmann_json	v3.12.0	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml))	—
nlohmann_json_schema_validator	2.4.0	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml))	—
date	v3.0.4	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml))	—
libfmt	12.1.0	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml))	—
pybind11	v3.0.2	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml)); the same version was additionally checked against OSV via PyPI 3.0.2 (0 advisories).	—

Component	Version	How known	Support status
pybind11_json	0.2.15	read from project (pinned as a git tag in dependencies.yaml (fetched fetched/01-dependencies.yaml))	—
EVERest Python packages (jinja2, pyyaml, requests, jsonschema, stringcase, pytest, pytest-asyncio, python-dateutil, paho-mqtt, pyftplib, ocpp, websockets, pyOpenSSL)	not determined	unpinned (Listed in everest-metadata.yaml (fetched fetched/02-everest-metadata.yaml) with a licence but no version constraint; the build installs whatever is current.)	—
EVERest C/C++ system and protocol libraries (ext-mbedtls, boost, sqlite_cpp/sqlite3, libcbv2g, libpcap, libevent, openssl, mqttc, libcap, nodejs/node-addon-api, nanopb, websocketpp, libmodbus, libbacktrace)	not determined	unpinned (Listed in everest-metadata.yaml (fetched fetched/02-everest-metadata.yaml) with a licence but no version constraint; supplied by the OS image or built from source at build time.)	—
EVERest internal components (libocpp, libevse-security, libslac, libfsm, liblog, libtimer, everest-framework, everest-admin-panel, everest-cmake, edm, everest-testing, everest-utils, hash-library, metamacros, cpm, code-coverage, ev-dev-tools)	not determined	not determined (Enumerated in everest-metadata.yaml without versions; they are first-party EVERest code built from the same tree.)	—

Component	Finding	Severity	Fix available?
EVERest Python packages and C/C++ system libraries	The 27 Python and C/C++ packages EVERest lists in everest-metadata.yaml carry a licence but no version constraint, so the charger builds against whatever version is current on the day it is built and there is no fixed version to check for vulnerabilities.	posture	Mitigation only - pin versions / use the lockfile

Component	Finding	Severity	Fix available?
everest-admin-panel (web UI and admin backend)	A web admin backend that graphically edits the charger's configuration runs on the device, and the lab's materials state neither its listening port nor whether it requires a login, so its exposure cannot be established from the sources.	posture	Mitigation only - confirm the admin panel's port and authentication before enabling it, and keep it off any routable network
Pionix BelayBox OS image	The charger runs a vendor-supplied Raspbian image whose version is not stated and which exposes an SSH daemon on port 22, with the login credentials not documented in the lab's materials.	posture	Mitigation only - change any vendor default login before the unit is networked, and keep the charger on its own isolated network segment
pyftplib test harness	The automated test harness starts an FTP server on ports 20/21 plus a passive range while tests run, which is an open file-transfer service on whatever network the bench is plugged into.	posture	Mitigation only - run the test harness only on an isolated bench network

What this means for your lab

This charger is a networked Linux computer that also switches mains power, so treat it like a server rather than an appliance. It reaches the outside world in several ways at once: an SSH login on the usual port, a web admin page that can rewrite the charger's own configuration, an outbound WebSocket link to a charging-station management system, an MQTT channel between its internal parts, a gRPC service when the EEBUS feature is on, and a link to the car itself over the charging cable. The lab's materials do not say what the SSH password is, nor whether the admin page asks for a login at all - so we cannot tell you it is safe, only that it is unknown. Someone else on the same network who reached that admin page could change how the charger behaves. Two further gaps matter: the operating system image comes from the vendor with no version on it, and 27 of the software libraries EVerest builds on have no version pinned, so neither can be checked against the public vulnerability databases. The 22 libraries that are pinned are compiled from source, which no vulnerability database indexes either. Practical advice: put the BelayBox on its own isolated network segment or a lab VLAN with no route to the campus network or the internet, change any vendor default login before you plug in a network cable, leave the admin panel off until you have confirmed it requires a password, and talk to campus IT before connecting it to anything shared. Running it on an isolated bench network is the single most effective thing you can do, and it costs nothing.

Not checked

- The 22 third-party libraries pinned in dependencies.yaml (libwebsockets v4.5.2, libcurl curl-8_18_0, mosquitto v2.0.22, grpc v1.71.0 and 18 others): EVerest builds them from source at pinned git tags. OSV.dev indexes package registries, not source checkouts, so no

advisory database covers them - the lookups returned 'not an OSV ecosystem', which is not the same as 'no vulnerabilities'. The one exception was pybind11, whose git tag v3.0.2 is also published to PyPI as 3.0.2: that version was checked and has no known advisories.

- Pionix BelayBox OS image (Debian/Raspbian): No version, release or codename is stated in the lab's materials and the image is distributed by Pionix on request, so it could not be bound to a Debian support cycle - its end-of-life status is unknown.
- Yeti STM32 firmware: Vendor firmware for a microcontroller; there is no advisory database for it and no version is recorded.
- LF Energy EVERest core stack: The installed release is not stated in the lab's materials, so there is no version to check.
- EVERest Python packages (13, incl. requests, websockets, paho-mqtt, pyOpenSSL, ocpp): Unpinned in everest-metadata.yaml - there is no version to look up. A guessed version would produce a meaningless result.
- EVERest C/C++ system and protocol libraries (14, incl. openssl, ext-mbedtls, sqlite3, libmodbus, websocketpp): Unpinned in everest-metadata.yaml, and supplied by the OS image or built from source, so no registry version exists to check.
- EVERest internal components (libocpp, libevse-security, libslac, everest-framework and others): First-party EVERest code with no external advisory database and no versions recorded.

Parts

Primary boards and enclosure sub-assemblies

Part	Spec/Package	Status	Stock	Price	Source
Pionix BelayBox Enclosure	Custom chassis; 3D-printable or CNC from project CAD	Readily available (in kit only)	Kit: 2 left	included in kit , EUR 2.500,00	Pionix shop, "BelayBox Housing Parts [PN: 1004]"
Yeti 22 kW AC three-phase power board	Custom PCBA, 4 kV reinforced isolation barrier	Available, thin stock	"Low stock: 2 left"	EUR 700,00	Pionix shop, YETI Kit [PN: 1001]
Yak high-level Linux controller board	Custom CM4 carrier PCBA	Hard to obtain standalone	"Out of stock"	EUR 1.000,00	Pionix shop, YAK Kit [PN: 1002]; also inside the BelayBox kit
Raspberry Pi Compute Module 4	CM4, Wi-Fi/BLE, 2-8 GB RAM, eMMC	Readily available	Multiple sellers	\$45.00-\$190.00 (e.g. 2GB/32GB Wi-Fi at \$87.50)	Retail shopping; also included in the YAK Kit

Yeti board embedded active components and sub-circuits

Part	Spec/Package	Status	Stock	Price	Source
Microcontroller U16 — STM32G483RET6	64-LQFP (10×10), 1.71– 3.6 V supply	Active	885 (DigiKey), 550 Mouser, 132 Newark	\$10.02	DigiKey. Identified from the Yeti BOM — the snapshot did not name the family
Power relays K1, K2 — AHES4291	Through hole, 12 VDC coil, 3PST-2NO/1NC, 35 A, 277 VAC nom.	Active	122 (DigiKey), 1025 Mouser, 1000 Sager	\$23.21	DigiKey; 7 distributors in stock. See Watch list on the voltage rating
GFCI/RCM sensor U29 — T60404- N4641-X920	Flux-gate module, 32 A/ 40 A, DC–2 kHz, 4.9–5.1 V, through hole	Active	493 (DigiKey); Mouser out of stock	\$49.95	DigiKey. Snapshot guessed a 12 V or 3.3 V supply; it is a 5 V part
Isolated metering ADCs U11–U14 (×4) — ADE7932ARIZ	20-SOIC (7.50 mm), 3.3 V	Active, but hard to obtain in the tube part	3 (DigiKey) + 2 (Mouser)	\$17.87	DigiKey. Use the reel part — see Substitutes
FRAM U3 — CY15B256Q (no suffix in design)	8-SOIC (3.90 mm), 2–3.6 V, SPI	Active (-SXAT, -SXE); -SXA is Last Time Buy	15000 (-SXAT), 169 (-SXE)	\$4.54 (-SXAT) · \$13.42 (-SXE)	DigiKey. The bare CY15B256Q is a family root, not orderable
AC/DC converter PS3 — MPM-20-12	4-DIP module, 80–264 VAC in, 12 V 1.8 A, 22 W	Active	70 (DigiKey), 225 Onlinecomponents, 186 Mouser	\$14.30	DigiKey; 5 distributors in stock
Motor lock driver U25 — BD6221F-E2	8-SOIC (4.40 mm), 6–15 V, 1 A	Not For New Designs (circuit is DNP)	1878 (DigiKey), 2500 TTI	\$2.94	DigiKey. Sheet note: "12V/1A driver for Motor Lock - not populated"
Zero-crossing detector circuit (L1 sync)	Discrete circuit across the 4 kV barrier	not checked	—	—	No single part number identifies it; ships populated on the YETI board

Yak board embedded active components and communication interfaces

Part	Spec/Package	Status	Stock	Price	Source
HomePlug GreenPHY PLC modem — I2PLCAMN-ISE-004-T (I2SE PLC Stamp)	SMT module, QCA7005/QCA7006, 3.3 V	Hard to obtain (not a catalog part); available from the vendor	Not stocked by any authorized distributor	"Sample-Price at 15,90 EUR"	0 results at DigiKey; no ECIA distributor. Sold by chargebyte (formerly I2SE). Already fitted on the YAK board
CAN transceiver U22 — SN65HVD230 (no suffix in design)	8-SOIC (3.90 mm), 3–3.6 V	Plain -D Obsolete; -DR Active	-DR: 0 DigiKey (12-wk lead), 3684 Mouser	\$2.83 (-DR)	DigiKey/Mouser. See Substitutes
CAN controller U17 — "MCP2515-xSO"	8-SOIC	not checked	—	—	The schematic value leaves the temperature-grade character unresolved; no lookup was made rather than invent a suffix
RS-485 transceiver, Yeti U20 — THVD1450DR	8-SOIC	Active	17422	\$2.04	DigiKey. The part actually on the Yeti board
RS-485 transceiver, Yak U21 — ISL83485	8-SOIC (3.90 mm), 3–3.6 V	-IBZ-T7A Active; -IB and -IP Obsolete	463 (-IBZ-T7A)	\$2.92	DigiKey. Snapshot's representative MAX3485EESA+ is also Active, \$11.44 , stock 965
RTC U5 — PCF85063ATL (orderable PCF85063ATL/1,118)	10-XFDFN (2.6×2.6), 0.9–5.5 V, I2C	Active	35809	\$0.85	DigiKey. Snapshot guessed DS3231/PCF8523/PCF8563 in SOIC-8 — all would be footprint mismatches
Coin cell BT1 — ML-621S/DN	3 V rechargeable ML cell, 6.8 mm × 2.2 mm	Obsolete, unobtainable	0 at DigiKey, Mouser and Newark	\$1.16 listed	DigiKey; 22-week factory lead time. See Substitutes
Ethernet RJ45 jack — J0011D21BNL	Shielded RJ45 with magnetics	Active	1933	\$9.55	DigiKey (snapshot's representative; the jack fitted to YAK was not separately identified)

Part	Spec/Package	Status	Stock	Price	Source
USB connectors — 67068-8000 (Molex 0670688000)	USB 2.0 Type-B receptacle, through hole right-angle	Active	27704 (DigiKey), 35835 Mouser	\$1.61	DigiKey; 9 distributors in stock, cheapest authorized \$0.7326 (Avnet)

User interface, controls, and programming hardware

Part	Spec/Package	Status	Stock	Price	Source
Pionix 1000-nit touchscreen display (optional)	5" IPS, capacitive touch, custom stacking header	Available in kit only	Kit: 2 left	included in kit , EUR 2.500,00	"BelayBox Display [PN: 1005]"; not sold standalone on the Pionix shop
NXP PN532 RFID module	13.56 MHz reader, UART harness	Readily available	Many sellers	\$11.99–\$39.95 (Adafruit breakout \$39.95)	Retail shopping; also included in the YAK Kit. UART-mode configuration not verified per listing
TagConnect TC2030-IDC programming cable	6-pin spring-pin, proprietary footprint	Active, single-sourced	1549	\$44.58	DigiKey — the only authorized distributor with stock. One cable serves any number of boards
32 A / 16 A selection jumper — 382811-6	2.54 mm header with shunt	Active	131410	\$0.165	DigiKey; a jumper also ships with the YAK Kit

Interconnects, power terminals, and wiring

Part	Spec/Package	Status	Stock	Price	Source
Yeti-to-Yak 10-pin umbilical pair — "WR-MPC3-Male-THT-10"	Würth WR-MPC3 series, 10-pin, through hole	not checked	—	—	The BOM gives a series/configuration string, not an orderable number. Supplied as "Cable Set [PN: 1003]" in the BelayBox kit
12 V DC barrel jack — PJ-002A	Through-hole PCB barrel connector	Active	88782	\$0.62	DigiKey

Part	Spec/ Package	Status	Stock	Price	Source
AC mains terminal blocks — WAGO 2606-1105 (J1, J3) and 2604-1102 (J2)	7.50 mm pitch, 5-pole lever/push-in, 31 A, 600 V	Active, but no distributor stock for 2606-1105	2606-1105: none listed · 2604-1102: 9362	\$16.04 (2606-1105/010-000) · \$4.18 (2604-1102)	DigiKey; no ECIA distributor lists 2606-1105. Snapshot's representative 1988972 is Active, \$1.03 , stock 8848
Vehicle charging cable / inlet (IEC 62196 Type 2)	230/400 V AC, 32 A, CP + PP	Readily available	Multiple sellers	\$156.10–\$346.42 (open-end Type 2 32 A from \$199.00)	Retail shopping. The BelayBox kit already ships with a Type 2 connector and cable set
External temperature sensor (10 kΩ NTC probe)	2-wire probe to Yeti analog GPIO	Readily available	Many sellers	\$7.66 (TDK B57500K0103A001, 3988 K) to \$1.00	Retail shopping. Beta match to the firmware table not verified
External SPI LCD header — 68000-108HLF	0.1" (2.54 mm) pin header	Active	3443	\$2.76	DigiKey

Optional external hardware for DC charging mode

Part	Spec/Package	Status	Stock	Price	Source
External HV DC contactors (×2)	Chassis-mount, ≥ 1000 V DC, 12/24 V coil	not checked	—	—	No part number in the sources (brand examples only); quote-only industrial equipment
External DC fast-charging power module	19" rack, 150–1000 V DC out, CAN control	not checked	—	—	No part number in the sources; quote-only industrial equipment
External insulation monitoring device	DIN-rail, RS-485/Modbus RTU	not checked	—	—	No part number pinned beyond the "Bender iso165C" example; quote-only instrument

Substitutes

For part	Substitute	Differences	Verified	Judgment
ADE7932ARIZ (metering ADC, 4 needed, 5 pieces available)	ADE7932ARIZ-RL — \$17.87, stock 838	Same manufacturer, same base part number, same DigiKey description; identical package 20-SOIC (0.295", 7.50 mm) on both; the -RL entry's 3.3–10 V supply range contains the plain part's 3.3 V, so the board's 3.3 V secondary rail is covered	Verified: package/case identical and supply range covers 3.3 V (DigiKey parametrics on both parts). Not verified: that "-RL" denotes reel packaging only — that reading is assumed, and reel packaging may carry a minimum order quantity	Acceptable
ML-621S/DN (RTC backup cell, Obsolete, 0 stock)	ML621-TZ1 — \$2.49, stock 10836	Same 3 V rating, same 6.8 mm × 2.2 mm cell size, same ML rechargeable family; DigiKey classifies it a Direct substitute	Verified: rated voltage and size/dimension (DigiKey parametrics on both parts) plus DigiKey's Direct- substitute classification. Not verified: retainer/ terminal style — the parametrics do not state it, and "-TZ1" is assumed to be a termination code	Acceptable — this is the one to order
ML-621S/DN	MS621FE-FL11E — \$2.51, stock 29188	Same 3 V rating, same 6.8 mm diameter, 2.1 mm high against 2.2 mm (0.1 mm shorter); also a rechargeable cell	Verified: rated voltage and diameter (DigiKey parametrics on both parts); height difference stated. Not verified: terminal style, and whether the Yak charge circuit suits this cell's charging profile — no datasheet was fetched	Acceptable as a second source

For part	Substitute	Differences	Verified	Judgment
ML-621S/DN	CR2032 / CR1220 (as named in the snapshot)	CR2032 measures 20.0 mm × 3.2 mm against the original's 6.8 mm × 2.2 mm, and it is primary (non-rechargeable) chemistry where the design uses a rechargeable ML cell	Verified: both cells' size and rated voltage from DigiKey parametrics this run	Rejected — hard stop. Wrong size for the retainer and wrong chemistry; do not fit a primary cell where a rechargeable one is expected
SN65HVD230D (CAN transceiver, Obsolete)	SN65HVD230DR — \$2.83, Mouser stock 3684	Same family, same package 8-SOIC (0.154", 3.90 mm), same 3–3.6 V supply; Active where the plain -D is Obsolete	Verified: package/case and supply range identical (DigiKey parametrics on both). Not verified: that the suffix difference is packaging only	Acceptable
TC2030-IDC (single-sourced programming cable)	Segger 8.06.16 J-Link 6-pin needle adapter — \$138.52, stock 237	DigiKey's own suggestion, but three times the price and classified only "Similar", not equivalent	Not verified: that the adapter mates with the TC2030 footprint — no datasheet or drawing was fetched	Plausible, unverified — do not treat as a drop-in. No action needed while TC2030-IDC is in stock

Verify any substitute against its datasheet before ordering — the checks above are made from distributor parametrics, not from the boards themselves.

Other dependencies

- **Reference hardware repository** — github.com/PionixPublic/reference-hardware: live, fetched this run. KiCad 6 sources for both boards plus the Yeti BOM export, under CERN-OHL-P-2.0. This is the fallback if Pionix stock runs out.
- **Pionix commercial shop** — shop.pionix.com: live, fetched this run; the product list and three product pages were captured.
- **PCB fabrication** — 2 boards, KiCad 6. The Yeti stackup needs reinforced isolation construction with a 4 kV creepage barrier; board dimensions are not stated in the sources. No fabrication quote was sought — not checked. This is not a routine 2-layer order, and the isolation stackup narrows the field of fabricators considerably.
- **Enclosure CAD (Autodesk Fusion 360)** — a360.co/45erK90: not checked (not fetched this run).
- **Everest hardware assembly guide** — everest.github.io/nightly/hardware/pionix_belay_box.html: the fetch failed this run ("page could not be downloaded —

blocked, timeout, or gone"). Worth a manual check, since it is the assembly instruction source the lab relies on.

- **Pionix BelayBox user manual** — pionix.com/user-manual-belaybox: not checked.
- **Pionix hardware support, LF Energy Zulip chat, LF Energy mailing list** — not checked.

Watch list

- **Pionix kit stock.** Two BelayBox Assembly Kits and two YETI Kits left, YAK sold out. This is the whole lab in one line: if those sell before the next check, the only routes are a Pionix restock or fabricating the boards yourself. Re-check the shop first.
- **ML-621S/DN backup cell.** Already obsolete with zero authorized stock and a 22-week factory lead time. Expect the listing to disappear entirely; ML621-TZ1 is the standing answer.
- **ADE7932ARIZ tube packaging.** Five pieces across two distributors will not survive another buyer. The reel part is the practical route, and its stock is worth watching too.
- **WAGO 2606-1105.** No authorized distributor holds it and DigiKey publishes no quantity — a part that is catalogued but not stocked can quietly become a lead-time problem. Its 31 A rating against the snapshot's ≥ 32 A requirement is also unresolved.
- **AHES4291 relay voltage rating.** DigiKey's parametrics say 277 VAC nominal against the snapshot's stated ≥ 400 V AC requirement. The 40 A / 480 VAC sibling AHES4291Q exists but was not stocked at lookup time. Worth settling against the Yeti design before anyone substitutes a relay.
- **Obsolete siblings hiding behind unsuffixed design values.** The design names SN65HVD230, ISL83485 and CY15B256Q without package suffixes, and in each family at least one variant is Obsolete or Last Time Buy. Order the exact suffixes named in this report.
- **The T60404-N4641-X920 GFCI sensor.** One distributor with stock, \$49.95, and no substitute suggested by DigiKey. A safety-critical part with a single supply line is worth a spare on the shelf.