RailSentinel-24

Control-power monitor for DC fast-charger cabinets

- In development. Pilot units from Q2 2027 under a test agreement. No CE marking yet; not commercially available.

When a DC fast charger goes down and the control supply is the cause, you need the dip itself: its curve, its time, and a record that survives the reboot. RailSentinel-24 (RS-24) clips onto the DIN rail beside the 12 V or 24 V control supply and records what it does: dips timestamped and kept on the module. So the technician knows before driving out whether it was the supply, and what to bring. It only watches: it never switches the charger's power.

12 / 24 V	9–32 V	35 mm	Modbus TCP · MQTT
DC control supply	operating input, from the monitored supply	DIN rail, beside the supply	over the site Wi-Fi

FROM DOWN TO BACK ONLINE

Charger down	alert when the supply dips	in your own system (Modbus, MQTT) or on the technician's phone
Why	what the supply did	each dip with its time, depth and waveform
Fix	rule the supply in or out	supply: check it and its wiring, bring a spare · not the supply: go straight to the charger
Back online	where it repeats	supply voltage trended per site and fleet

POWER INPUT

Supply	from the monitored control supply no separate supply
Control supply	12 V or 24 V DC nominal on the per-unit label
Operating input	9–32 V
Protection	TVS clamp, reverse polarity

SUPPLY MEASUREMENT

Supply voltage	continuous trended per site and fleet

EVENT RECORD

Trigger	hardware comparator starts the record within microseconds
Alert threshold	adjustable per site
Per event	time, depth and a 50 ms waveform at 10 µs every event gets a summary; in event bursts, waveforms are rate-limited
Timing	time-stamped with 1 µs resolution, in exact order every record carries a time-quality flag
Line-up	reference point at fitting against the charger's clock, so the record lines up with the charger controller's log
Clock	battery-backed, ±2 ppm (0 … +40 °C) keeps time without power
Storage	on the module kept through a power loss

ISOLATION AND FUNCTION

Barrier	designed for reinforced insulation	between the sensing side and the Wi-Fi, network and service-laptop side
Function	monitoring only	never switches the charger's power; the charger's wiring and software stay as they are
Safety	not a certified safety component	

J3 alarm contact. The one output: a potential-free, normally-open photoMOS contact, wired in only if you choose. Rating 24 V DC, 2–30 mA, enough for a PLC input, an LED lamp or a small relay coil (≤ 30 mA at 24 V, coil ≥ 800 Ω); for a larger coil or any other load use an interposing relay. A diagnostic contact, not a safety-chain input. Closed while the unit is monitoring. Opens when the supply falls below two thirds of nominal (16 V on a 24 V supply), on a reset and while the communication side has no power; closes again within about 2 s after recovery. PLC input debounce: ≥ 3 s for an alarm, none for logging.

CONNECTIVITY

Wi-Fi	2.4 GHz, via the site network all variants
Site integration	Modbus TCP · MQTT to a local broker Modbus TCP read-only: live values and the last event · into your EMS, PLC or SCADA
Alerts	your own system or the technician's phone
Raw data	all events and waveforms live over MQTT
Updates	signed OTA firmware (communication controller)

ENVIRONMENT

Mounting	35 mm DIN rail inside the charger cabinet
Operating temperature	published after the thermal test
Humidity	5–95 % RH non-condensing

VARIANTS AND MOUNTING

Same board. Pick the enclosure. For 12 V and 24 V DC control supplies.

RS-24-S · SLIM
Slim
Narrow DIN module. Wi-Fi. Fit and forget.
`Wi-Fi · for small CPOs`

RS-24-S · COUPLER
Standard
DIN coupler with expansion slots.
`Wi-Fi · Modbus TCP · MQTT`
`CPO fleets · service · OEM evaluation`

RS-24-M
OEM module
Bare PCB for factory integration.
`99 × 69 mm`
`Modbus TCP · MQTT`
`signed OTA updates (communication controller)`

UPCOMING

- Control Pilot (CP) signal monitoring · plug-in module
  Shows when a charging session stopped, and whether the car was ready to charge.
- Modbus RTU (RS-485) · plug-in module
  Wired link to your EMS, PLC or SCADA.
- Ethernet · plug-in module
- Clamp module for control-supply current
  The supply current next to its voltage, so you see whether a dip came with a load step.
- Two controllers that watch each other
- NFC tap-to-read at the cabinet
- Cellular field variant

PILOTS AND CONTACT

Was it the power? Rule it in or out.
Limited pilot slots from Q2 2027 · test units on loan under a test agreement · no lock-in. Until CE marking, pilots run free of charge on test chargers or in test bays. Send your fleet size and the chargers that keep failing.

Request a pilot
hello@morgen-tech.com

Charger OEMs
OEM integration brief: RS-24-M · 12 / 24 V · Modbus TCP · MQTT · sales@morgen-tech.com

Engineers
Design, analysis, calibration, on request: info@morgen-tech.com

Pilot partners
Design documents under NDA: info@morgen-tech.com

RailSentinel-24 and RS-24 are product names of Morgen Technologie UG (haftungsbeschränkt). Specifications may change without notice.