

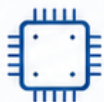


Joulepoint DC Fast Charging Controller

Industrial Linux controller for modular DC chargers

The supervisory brain for modern DC fast chargers — built for operations, reliability, and fast OEM deployment.

- Manages DC Power Modules
- Manages DC Meters
- OCPP 1.6J & 2.0.1
- Smart Power Planner
- White-label HMI
- Logs & Diagnostics
- Remote Support Tunnel
- Hot-reloadable Configuration
- RFID & Authorization
- CAN / RS485 / Ethernet / Wi-Fi / USB / HDMI



Quad-core Linux



Industrial I/O



Signed boot



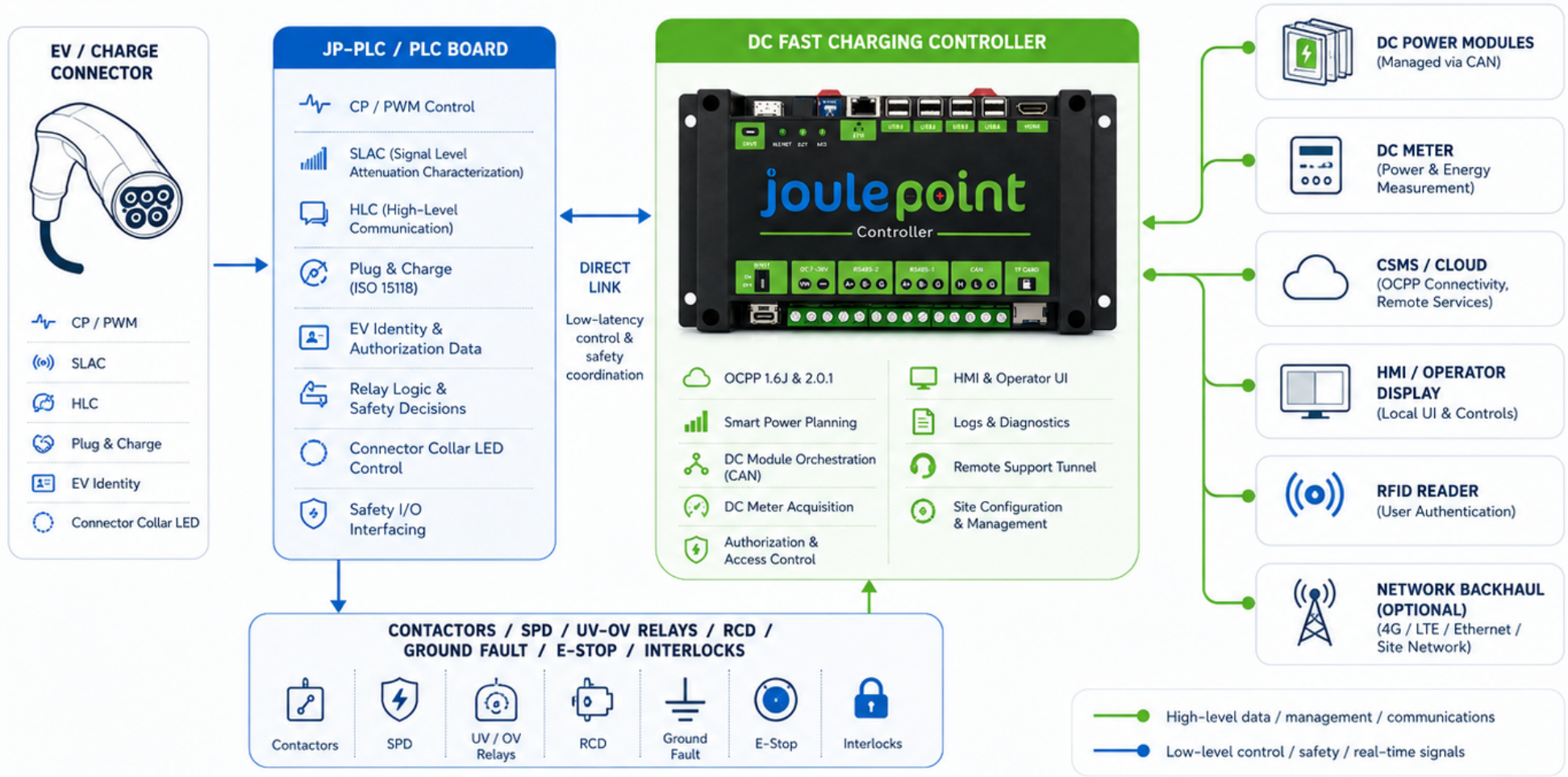
OTA + rollback



OEM-ready

Controller + PLC Split-Brain Architecture

Intelligent Distribution of Intelligence for Reliable, Scalable DC Fast Charging



Controller manages DC modules and DC meters

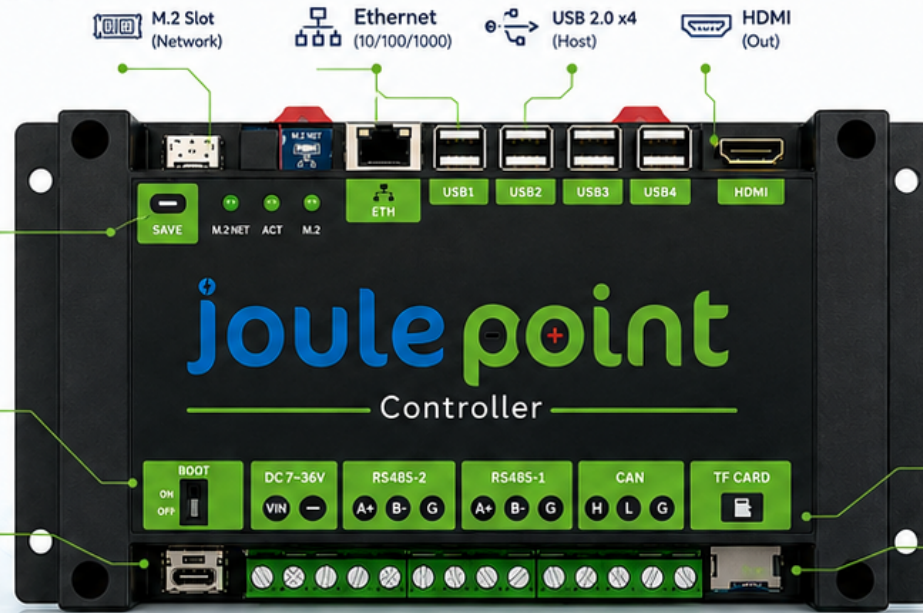
PLC interfaces with contactors, SPD, UV/OV relays, RCD, ground fault, interlocks, and safety signals

- Safety First**
Deterministic control for protection and safety functions
- Real-Time Performance**
PLC handles sub-100ms control and safety requirements
- Scalable & Future-Ready**
Controller enables advanced services and site-wide optimization
- Clear Separation of Concerns**
Simplifies development, testing, and certification
- Reliability at Scale**
Robust architecture for mission-critical DC fast charging operations

Controller Hardware & Supervisory Functions

The intelligent core for modern DC fast charging

Joulepoint DC Controller is a rugged, Linux-based supervisory controller purpose-built for modular DC fast chargers. It orchestrates power modules, manages interfaces, and delivers secure, reliable operations at scale.



COMPUTE & PLATFORM

- Quad-core Linux**
High-performance, energy-efficient industrial compute.
- Industrial-grade**
Built for reliability in harsh environments.
- Signed Boot**
Secure, verified boot chain for system integrity.
- OTA + Rollback**
Remote updates with safe rollback for peace of mind.

Status LEDs
Power, Network, Activity, M.2

Boot Switch
Safe recovery & maintenance

USB-C
(OTG / Console)

INTERFACES

- CAN / CAN-FD**
Module & system control
- RS485**
Control & meter comms
- Ethernet**
High-speed connectivity
- Wi-Fi**
2.4/5 GHz dual-band
- USB**
Host connectivity
- HDMI**
Display / HMI output
- Optional BLE / LTE**
Wireless expandability

TF Card Slot
(Storage)

Industrial I/O
Screw Terminal
Power, RS485,
CAN, I/O

CONTROL FUNCTIONS

- Module CAN Control Plane**
Real-time control of power modules
- DC Meter Management**
Comprehensive meter handling
- OCPP 1.6J & 2.0.1**
Full protocol support and compliance
- Power Planner**
Intelligent load & power planning
- RFID & Authorization**
Secure access management
- HMI & Kiosk**
Local UI and user interface
- Logs & Diagnostics**
Complete visibility and diagnostics

OPERATIONAL FEATURES

- Hot-reload Config**
Apply changes without reboot
- White-label Branding**
Custom UI/UX & branding
- Per-device Licensing**
Flexible licensing options
- Remote Support Tunnel**
Secure remote access
- OEM-ready Deployment**
Built for rapid OEM integration

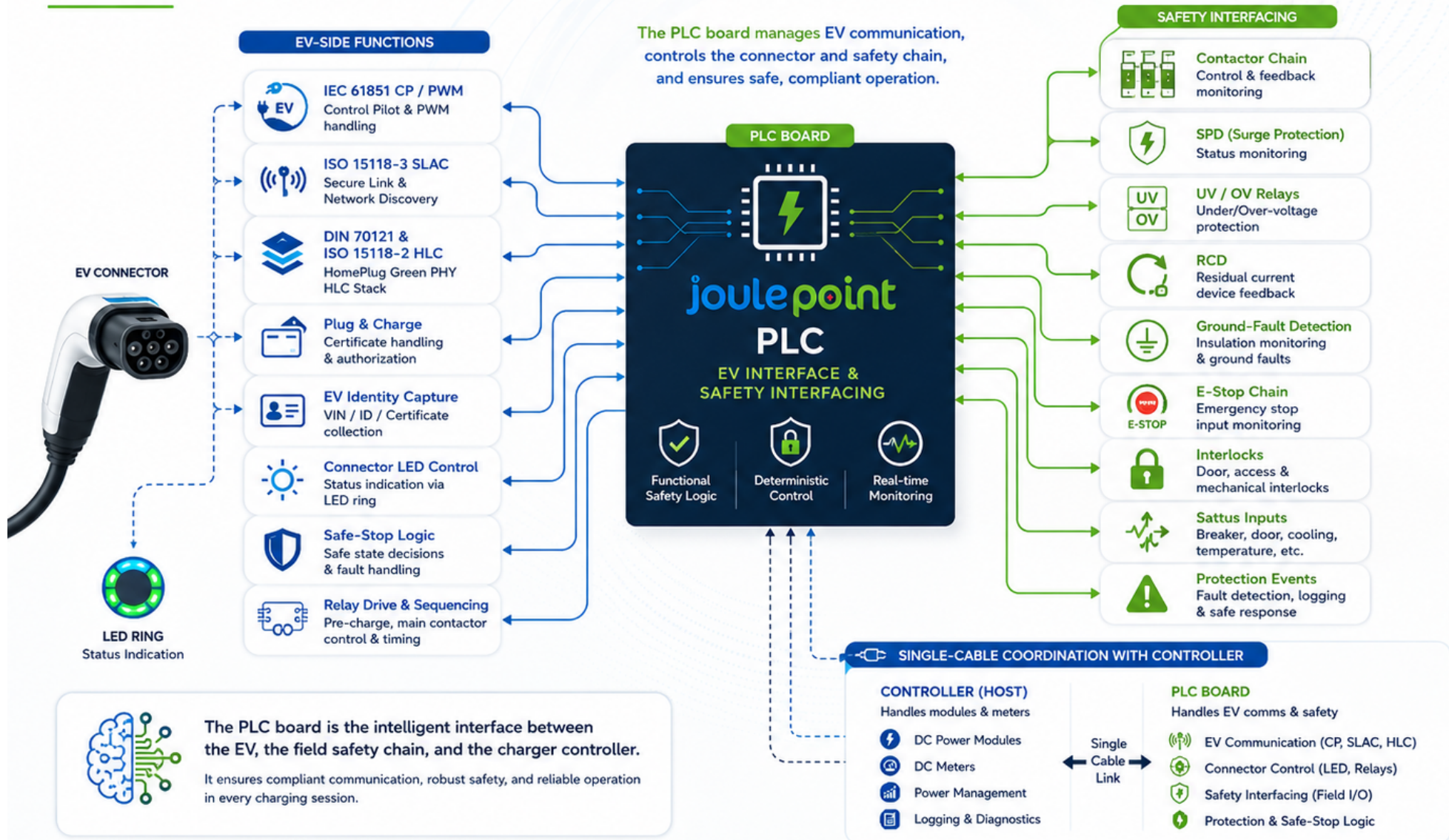
BUILT FOR EVERY DEPLOYMENT

- | | | | | | | | | | | | | | | |
|--|----------------|---------------|---------|---------------|---|----------------|--------------------|--------------|------------------|--|----------------|-------------------------|------------------|--------------------------|
| STD
Standard
Reliable. Essential. Built to perform. | 2GB RAM (eMMC) | Essential I/O | CAN 2.0 | -10°C to 55°C | PRO
Professional
More capability. More connectivity. | 4GB RAM (eMMC) | Extra I/O RS485 x2 | CAN-FD Ready | PoE-in (802.3af) | XTREME
Extreme
Maximum performance. Extreme conditions. | 8GB RAM (eMMC) | Industrial I/O Isolated | TPM 2.0 Security | -40°C to 70°C Wide Temp. |
|--|----------------|---------------|---------|---------------|---|----------------|--------------------|--------------|------------------|--|----------------|-------------------------|------------------|--------------------------|



PLC Board – EV Interface & Safety Interfacing

The EV-side brain and safety-interfacing layer in Joulepoint DC chargers



Advanced Charger Software – Built In

Production-grade admin console and kiosk HMI – no separate portal required.

Everything you need to operate, configure, and support your DC fast chargers – from a single, secure, on-device platform designed for uptime, serviceability, and scale.

- White-label HMI & branding
- Hot-reload configuration
- Real-time analytics & insights
- Deep diagnostics & logs
- Secure remote support
- PLC operations & control
- Operator-friendly workflows

1 Operator overview

Charging 2 of 4 connectors	Connected 2 plugged or charging	Requested 60.0 kW power total
----------------------------------	---------------------------------------	-------------------------------------

- Real-time system health & status
- Power, utilization & connector snapshot
- At-a-glance operations health

2 Connector workspace

Connector 1	CHARGING
Power	20.5 kW
Current	48 A
Connector 2	AVAILABLE
Power	0.0 kW
Current	0 A

- Live connector status & controls
- Power, current, voltage telemetry
- Open connectors & session actions

3 Session analytics

- Live & historical session data
- Energy, power, duration insights
- Exportable reports & trends

4 Planner analytics

Site power headroom
19.7 kW

Utilization
50%

- Site power & load planning
- Headroom & demand forecasting
- Capacity & growth modeling

5 Fault center

Active faults	2
Connector faults	1
Recent faults	6

- Active, acknowledged, cleared
- Fault context & recommendations
- Built-in troubleshooting guidance

6 Live configuration editor

```

1 {
2   "controller": {
3     "maxPowerPerGunKM": 60,
4     "modulesPerGun": 1,
5     "maxCurrentA": 100,
6     "ocpp": {
7       "enabled": true,
8       "chargePointId": "jc01"
9     }
10  }
11 }
```

VALID HOT-RELOAD APPLY

- OCPP, hardware, PLC & runtime config
- Hot-reload with zero downtime
- Validate, preview & apply safely

7 Branding & settings

- White-label HMI & kiosk experience
- Themes, logos & color customization
- Users, roles & access control

8 Network workspace

- Network status & topology
- Ethernet, Wi-Fi & gateway settings
- DNS, NTP & remote connectivity

9 Remote support tunnel

- Secure, outbound remote access
- No inbound ports or VPN required
- Fast issue resolution & live assistance

10 PLC operations

PLC 1	HEALTHY	Relay 1	Open
Mode	Run	Relay 2	Open
CPU Load	15%	Relay 3	Closed
Last Scan	10 ms	Relay 4	Open
Uptime	12d 4h		

- PLC status, health & I/O monitoring
- Relay & control actions
- CAN / Modbus / Ethernet support

11 Logs & diagnostics

- Service Journal
- Audit Log
- Controller Logs
- mDNS / TLS / System
- Export Bundle (.tar.gz)

- Unified logs & event streams
- One-click diagnostic bundles
- Easy export & offline analysis

12 Maintenance tools

- Firmware update
- Backup / Restore
- Factory reset
- File manager
- Support package

- Updates, backups & restores
- Support package for escalation
- Keep systems healthy & current

13 License activation

License status ACTIVE	Valid until May 04, 2027
---------------------------------	------------------------------------

Licensed features

- OCPP
- Remote Support
- PLC
- Advanced Analytics

- Activate & manage features
- Online or offline activation
- Clear entitlement visibility

Secure by design
On-device platform with role-based access, encrypted communications & audit trails.

Built for uptime
Hot-reload config, health monitoring, and fast remote support minimize downtime.

Everything in one
Console & kiosk HMI in one – no external portal, no context switching.

Scales with you
From single sites to fleets – strong tools for operations teams and service providers.

Operator friendly
Intuitive workflows and clear insights so your team can act with confidence.

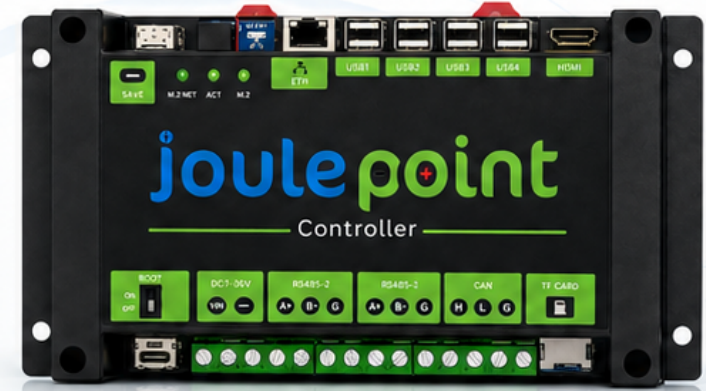
Power. Managed.



Connector Operations & Session Intelligence

See every connector. Understand every session.

The Joulepoint DC Fast Charging Controller delivers powerful real-time visibility and analytics for every connector—so you can operate with confidence and act with precision.



Per-connector workspace

Inspect and manage each connector independently with deep operational visibility.



Active + historical session analytics

View live sessions and explore historical data with exportable detail and metrics.



Live electrical values

Monitor voltage, current, power, energy, and more in real time.



Built-in operations visibility

Faults, stop reasons, authorizations, RFID events, and meter activity—all in one place.



DEEP-LINK ADMIN DETAIL

Jump to the full admin view for Connector 2 to configure, inspect, or troubleshoot.

[Open admin detail](#)

LIVE CONNECTOR STATE

Connector 2 CONNECTED

Connector ID: 2
 Session State: Active
 Plug Status: Plugged
 Authorization: Authorized
 Vehicle Status: Charging

[Open admin detail](#)

PLUG STATUS

Plugged

Latch Engaged ✓

AUTHORIZATION STATUS

Authorized

RFID / App: Valid ✓

ENERGY

84.92 kWh
Total Delivered

CURRENT

210 A
Live Current

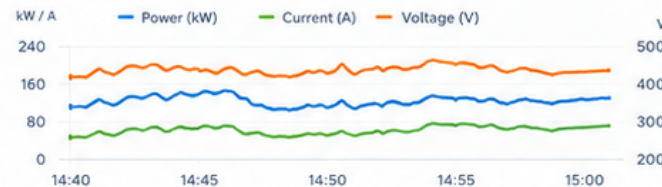
POWER

84.42 kW
Live Power

VOLTAGE

404 V
Live Voltage

LIVE ELECTRICAL VALUES



VEHICLE / SESSION STATUS

Vehicle Connected	Yes
SoC	14%
Est. Range Added	---
Session Start	14:48:19
Duration	01m 34s

ACTIVE SESSION

Connector 2 ACTIVE

Start Time: 14:48:19
 Duration: 01m 34s
 Energy Delivered: 84.92 kWh
 Power: 84.42 kW

[Open admin detail](#)

ACTIVE SESSIONS

CONNECTOR	STATE	DURATION	POWER	ENERGY
1	Charging	02m 12s	72.31 kW	91.21 kWh
2	Charging	01m 34s	84.42 kW	84.92 kWh

[View all active sessions](#)

COMPLETED SESSIONS

CONNECTOR	STARTED	ENDED	ENERGY	DURATION
2	14:18:29	14:20:03	82.40 kWh	01m 34s
1	13:52:11	14:05:44	66.11 kWh	13m 33s
3	13:21:05	13:38:42	58.77 kWh	17m 37s

[View all completed sessions](#)

SESSION HISTORY

TIME	EVENT	DETAIL
14:49:54	Session Started	Connector 2
14:49:54	RFID Authorized	88C9B3793F68
14:49:52	Plug Connected	CCS1
14:48:19	Vehicle Connected	EVMAC

[View full history](#)



METER START / STOP

Meter Start	14:48:19
Meter Stop	14:50:53
Duration	02m 34s



RFID / SOURCE

RFID Tag	88C9B3793F68
Source	RFID
Type	ISO 14443A



STOP REASON

Reason	Stop Complete
Code	S2
Detail	Remote Stop



FAULT SUMMARY

Active Faults	0
Warnings	0
PLC Issues	0

✓ Real-time connector visibility

✓ Data-driven operations

✓ Faster issue resolution

✓ Higher uptime

✓ Built for scale

Smart Power Planning & Module Orchestration

Intelligent power management for reliable, scalable DC charging

Joulepoint Controller continuously monitors site conditions, calculates allowances, and dynamically orchestrates DC power modules and connectors to maximize uptime and throughput.

PLANNER OVERVIEW

SITE LIMIT 300.0 kW <small>configurable limit</small>	REQUESTED POWER 262.5 kW <small>total requested</small>	ALLOWED POWER 240.0 kW <small>planner allowance</small>	ASSIGNED POWER 232.0 kW <small>total assigned</small>	SHARED CHAINS 2 <small>active shared chains</small>
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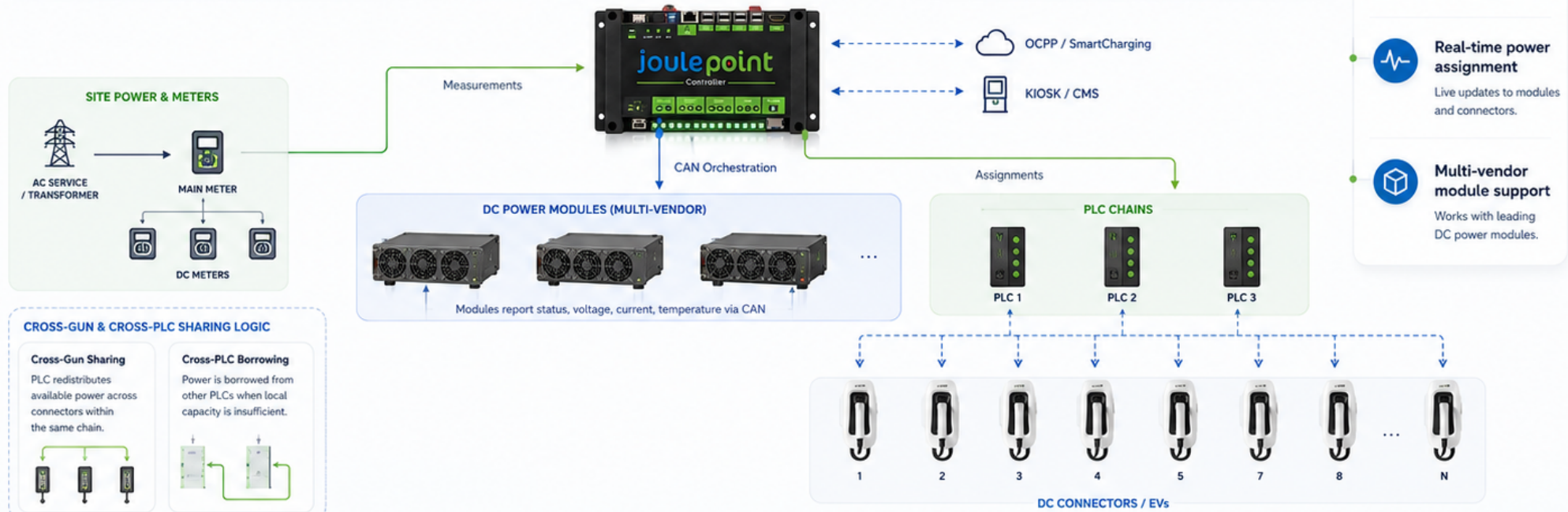
CONNECTOR PLAN

CONNECTOR	REQUESTED	ALLOWED	ASSIGNED	CHAIN	BMS STALE
1	60.0 kW	56.0 kW	56.0 kW	1	No
2	90.0 kW	80.0 kW	76.0 kW	1	No
3	120.0 kW	120.0 kW	100.0 kW	2	Yes

PLC ASSIGNMENTS

PLC	ASSIGNED	CONTRIBUTION	MODULES
1	100.0 kW	100.0 kW	2
2	76.0 kW	76.0 kW	2
3	56.0 kW	56.0 kW	1

HOW THE CONTROLLER MANAGES POWER



CROSS-GUN & CROSS-PLC SHARING LOGIC



- Hot-reloadable site limit**
Change limits on the fly without downtime.
- OCPP SmartCharging integration**
Seamless policy and setpoint exchange.
- Cross-PLC borrowing**
Unused capacity is shared where needed.
- Planner recompute**
Policy-driven rebalancing in milliseconds.
- Real-time power assignment**
Live updates to modules and connectors.
- Multi-vendor module support**
Works with leading DC power modules.

Dynamic module orchestration

Maximize uptime and throughput

Protect site within limits

Closed-loop control

Cloud-integrated & future-ready

Diagnostics, Network & Remote Support

Field service without SSH. Evidence-rich diagnostics built into the charger.



1 NETWORK WORKSPACE

Wi-Fi Scan & Connect

EVSE_SVC_24A1 WPA2

SCAN

CONNECT

Primary Network Visibility

Primary Device **eth0**
 Status connected
 Connection **Ethernet**
 IP Address **192.168.1.67/24**

Gateway & Address Visibility

Gateway **192.168.1.1**
 DNS **192.168.1.1**
 Addresses **192.168.1.67/24**

Quickly connect, see the network, and confirm IP & gateway at a glance.

2 REMOTE SUPPORT TUNNEL



Capture Diagnostic

Capture live system state and network snapshot.

CAPTURE DIAGNOSTIC

CONNECTED

Encrypted, peer-to-peer tunnel for vendor support and remote diagnostics. No inbound access required.

Hostname **JP Controller Board**
 Tailnet IPv4 **100.112.116.33**
 Tailnet IPv6 **fd7a:115c:a1e0::9232:7421**
 Daemon **1.96.4**
 Visible peers **3**



Visible Peers (3)

Other devices on this tailnet. Inbound connections from peers are blocked by default.

VIEW PEERS

Secure, encrypted tunnel for fast, safe remote support without SSH or port forwarding.

3 LOGS & DIAGNOSTICS



PLC USB Discovery

Detected (USB) **2 devices**
 Configured paths **2 paths**
 Match in sync

REFRESH



Health Status

Service State active
 Validation **OK**
 Control Sockets **OK**
 File Systems **OK**

REFRESH HEALTH



Runtime Logs

Recent Logs **50 lines**
 Sources **16 selected**

VIEW LOGS



Evidence Bundles

Download All **.tar.gz bundle**
 Contents **Logs, configs, metrics, system & audit data**

DOWNLOAD BUNDLE



Maintenance Actions

Recompute Planner **Rebuild runtime plan & assignments**
 Restart Controller **Safe controller restart**
 Refresh Health **Re-run health checks & validation**

RECOMPUTE

RESTART

REFRESH



Quad-core Linux



Industrial I/O



Signed boot



OTA + rollback

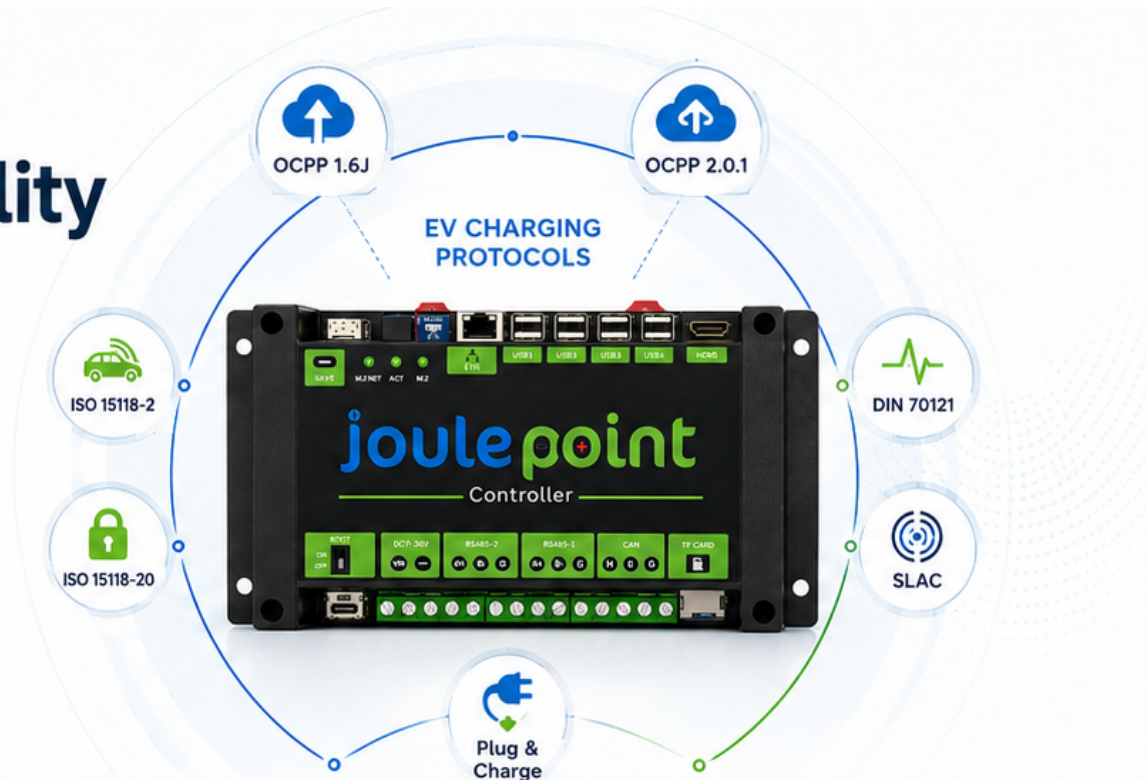


OEM-ready

Protocols, Compatibility & Connectivity

Built for today. Ready for tomorrow.

Joulepoint DC Fast Charging Controller is engineered to integrate seamlessly across protocols, connectors, and platforms — delivering interoperability, reliability, and scalability.



CONNECTOR SUPPORT

PRIMARY	AC / DC	AC / DC	AC / DC
CCS2 DC Fast Charging	Type 2 AC Charging	GB/T DC Fast Charging	CHAdeMO DC Fast Charging

Multiple connector pathways for global & regional compatibility.

CONTROLLER CONNECTIVITY

						OPTIONAL
CAN / CAN-FD	RS485	Ethernet	Wi-Fi	USB	HDMI	LTE / 5G

Robust, secure, and flexible connectivity for every deployment.

SMART OEM CAPABILITIES

 White-label HMI Your brand. Your experience.	 Per-device Licensing Secure. Scalable. Flexible.	 Multi-vendor Power Module Support Freedom of choice. Easier integration.	 OTA + Rollback Update smart. Stay in control.
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Built for OEMs. Designed for scale.

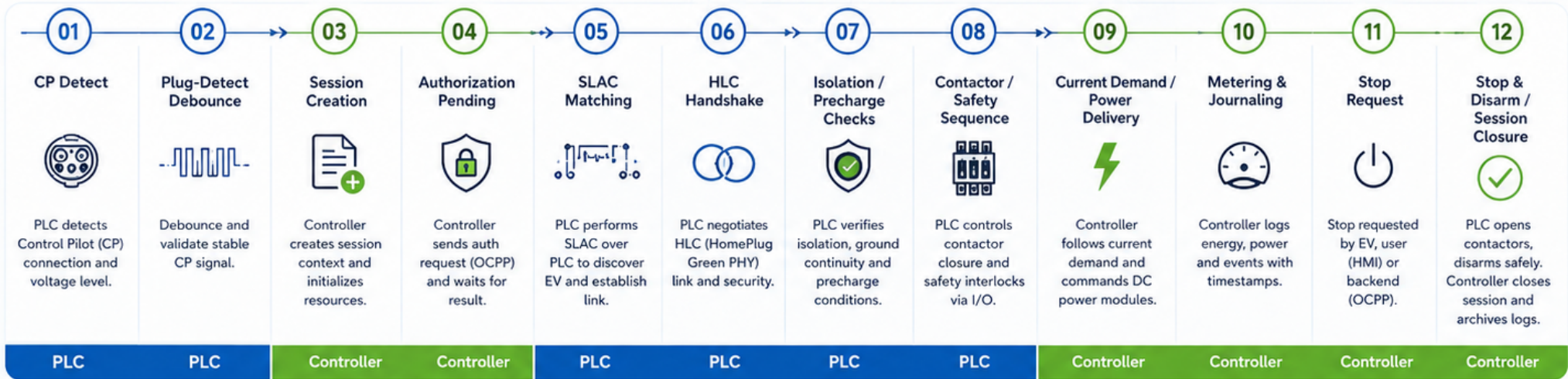
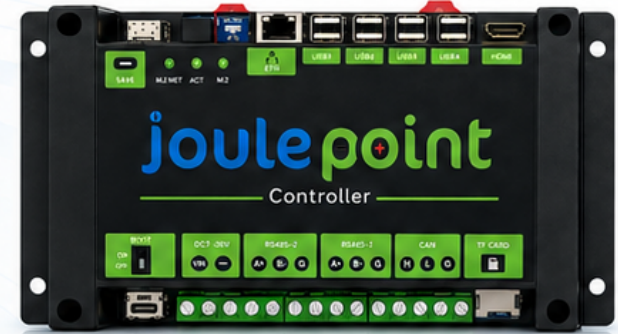
VALIDATED. TRUSTED. DEPLOYED.

 HANDSHAKE VALIDATED Across Indian-road EVs	 FLEET USE CASES • Buses • Trucks • Commercial Fleets	 PASSENGER USE CASES • SUVs • Sedans • Premium EVs
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Real-world validated for reliability, safety & interoperability.

From Plug-In to Power Delivery **Stop**

End-to-end DC charging flow —
 PLC handles the EV-side and safety, Controller handles power, policy and platform.



Timestamped Journaling. Replayable Diagnostics.
 Every event is timestamped and written to non-volatile storage for full traceability. Reconstruct any charging session with precision.

- Event Timeline
- Signal Replay
- Log Export (CSV/JSON)
- Tamper-evident Integrity