



Product Brief: DERSync IEEE 2030.5 CSIP Gateway

High-Performance Edge Intelligence for DER & Microgrid Assets

Executive Summary

The CSIP-Certified DERSync IEEE 2030.5 CSIP Gateway is a production-grade, highly extensible edge computing platform. It is designed to provide IEEE 2030.5 connectivity for Distributed Energy Resources (DERs) at the local site level. Acting as a bridge between utility grid operators and field assets, the Gateway can operate in CSIP Client Mode to manage a single DER or CSIP Aggregator Mode to coordinate a suite of site/microgrid assets. By implementing the full IEEE 2030.5 Common Smart Inverter Profile (CSIP) and CSIP-AUS, our gateway ensures the security, protocol compliance, and real-time control necessary for modern grid-support requirements.

Key Capabilities

1. Full IEEE 2030.5 Protocol Compliance for CSIP and CSIP-AUS

The DERSync Gateway provides a complete client-side implementation of the IEEE 2030.5 standard, enabling seamless interoperability with utility DERMS for time synchronization, telemetry posting, and event-based control. It is designed to meet strict regulatory standards for both single-device and aggregated site deployments.

2. Multi-Protocol Architecture

Equipped with a modular driver system, the Gateway communicates with diverse site hardware via high-performance southbound interfaces:

- **DER & Storage:** Native SunSpec Modbus and legacy DER support for inverters and batteries.
- **Site Controllers:** Industrial-grade support for DNP3, OPC UA, and IEC 61850.
- **EVSE & Infrastructure:** Built-in OCPP and MQTT connectors for charging infrastructure.
- **Smart Loads:** Integration for BACnet-enabled building systems and loads.

3. Advanced Local Aggregation & Routing

In site-aggregator mode, the Gateway treats heterogeneous local devices as a single virtual resource. It handles the complex routing of grid-support commands—such as Power Limits, Volt-Var, Volt-Watt, and Power Factor—directly to the specific end-devices at the edge.

4. Production-Ready Intelligence

Built for reliable field operation, the Gateway software includes:

- **Robust Threading:** High-concurrency polling and posting for low-latency response.
- **State Checkpointing:** Automatic serialization and crash recovery to ensure zero data loss.
- **Management API:** A RESTful API with Swagger UI for real-time monitoring and fleet diagnostics.
- **Web Management:** Detailed dashboard for device status, telemetry, and logging configuration.

Technical Highlights

- **Utility-Ready:** Ready for direct integration with utility DERMS via CSIP-certified logic.
- **Cybersecurity:** PKI certificate management, TLS encryption, and cyber-physical intrusion detection.
- **Data Integrity:** Built-in XSD schema validation for all protocol payloads.
- **Advanced Control:** All IEEE 1547-2018 functions including frequency-droop and active power limits.

Flexible Deployment & Specs

Option Type	Available Formats	Description
Hardware	DERSec Hardware	Pre-configured, ruggedized industrial Gateway provided by DERSec.
	Customer Hardware	Deployable on any Linux-based edge device meeting minimum specs.
Software	Linux Binary	Native execution for high-performance, low-overhead environments.
	Containerized Image	Docker-ready image for modern DevOps and fleet management.

Recommended Minimum Hardware Requirements

- **CPU:** 1.4GHz Quad Core (ARM or x86)
- **RAM:** 4GB
- **Storage:** 32GB
- **Connectivity:** Wi-Fi or Ethernet port

The screenshot displays the DERSync CSIP Gateway Web Interface. The interface is dark-themed and includes a sidebar with navigation options: FEATURES, Devices & Groups, Device Connectors, Device Limits, Pricing Info, Server Interaction, CSIP Certification, Internal Debugging, Cybersecurity, API Documentation, and API Tester. The main content area is titled 'CSIP Device and Grouping State' and shows real-time operational data. It is divided into two main sections: 'Devices' and 'Groups'. The 'Devices' section shows a list of devices with columns for device ID, DER Status, and DER Settings. The 'Groups' section shows a list of groups with columns for group ID, DER Controls, and DER Settings. A large blue overlay with the text 'DERSync CSIP Gateway Web Interface' is centered over the main content area. At the bottom of the interface, there is a status bar with various metrics: Messages (Total: 2,038), PUTs/POSTs (70), GETs (1,282), Invalid XML (0), Errors (1), Warnings (1), Faults (1), and Info (4).

Why DERSec?

In a rapidly evolving regulatory landscape, the DERSync CSIP Gateway ensures your DER systems remain compliant and market-ready. DER Security (DERSec) was founded in 2022 as a spin-off of the SunSpec Alliance. With leadership from the SunSpec Alliance, U.S. National Laboratories, and the power systems industry, the DERSec team delivers the world's most capable DER tools.

Contact DERSec today to schedule a technical demo.