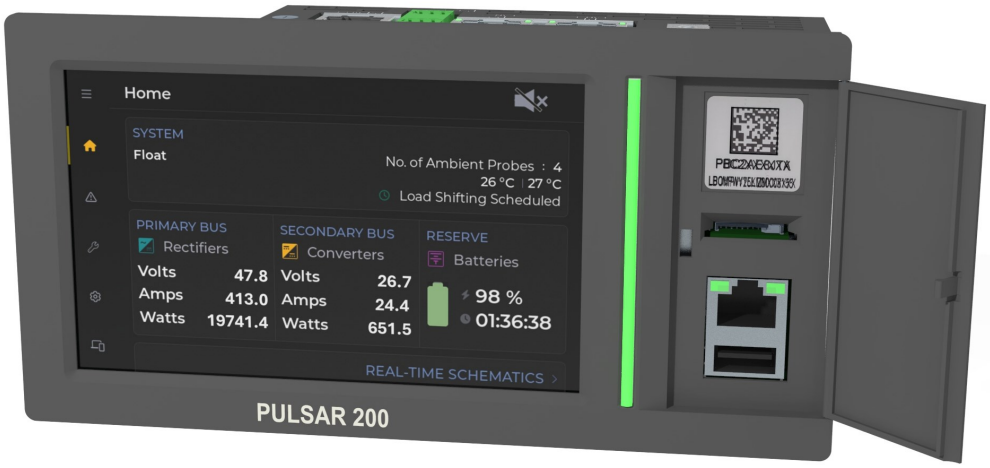
Pulsar 200: Next-Generation Site-Level DC System Controller

Modular by Design. Smarter by Function. Trusted Cybersecurity. Future-Ready Architecture.



Product Description

OmniOn Power's Pulsar 200 advances intelligent DC power system control with a next-generation architecture, while preserving the proven operational model customers already trust.

Building on years of field-proven Pulsar deployments, Pulsar 200 delivers enhanced cybersecurity, modular scalability, and modern interfaces for telecom, data center edge, utility, and energy storage applications. It provides reliable monitoring, control, and optimization of rectifiers, batteries, and DC loads through a flexible, controller-centric platform.

Optimized for site-level and distributed deployments, Pulsar 200 delivers local intelligence, secure operation, and predictable scalability, with northbound integration for centralized monitoring and visibility. For compliance-driven, multi-bay, and fleet-scale infrastructures, OmniOn's Millennium X platform addresses enterprise requirements.

Core Benefits

- Lower operating cost through intelligent rectifier control and optional load shifting
- Improved uptime with real-time alarms, automation, and secure remote access
- Extended battery life via precise charge and discharge management
- Strong, modern cybersecurity aligned with site-level critical infrastructure requirements
- Simple expansion using modular I/O and monitoring modules
- Fast deployment with guided setup and auto-discovery

Key Features

Modular & Scalable Architecture

- Hot-swappable I/O modules for flexible site expansion
- Supports up to 40 connected devices
- Multiple expansion options (1-slot, 4-slot, and 7-slot holders)
- Field-upgradeable firmware, configuration, and feature licenses
- Automatic device discovery for rectifiers, batteries, sensors, and intelligent modules

Communication & Network Interfaces

- Dual Gigabit Ethernet for redundancy and segmentation
- Dedicated local console Ethernet port for commissioning and service.
- IPv4/IPv6 dual-stack networking
- Secure remote management via:
  - HTTPS
  - SSHv2
  - SNMPv1/v2/v3
  - REST APIs
  - MQTT
- Optional 4G/5G cellular modem for out-of-band access
- ANSI T1.317 CLI support for legacy operational workflows

Advanced Cybersecurity

- Architecture aligned with IEC 62443 principles
- Secure Boot with hardware root of trust
- Trusted Execution Environment (ARM TrustZone)
- Role-based access control (User / Administrator)
- Certificate-based authentication
- Encrypted configuration backup and restore
- Optional external authentication modules (RADIUS, TACACS+, SAML)

Integrated Power System Monitoring & Control

- Real-time monitoring of rectifiers, batteries, DC bus, alarms, and loads
- Configurable alarm thresholds with multi-level severity
- Continuous aggregation of events and operating data
- Tracking of voltage, current, temperature, capacity, cycle count, and discharge events
- Real-time plant schematics on the local display
- Local and remote control of rectifier operating modes and load functions
- Seamless integration with NOC platforms using standard protocols

Key Features (Continued)

Power, Battery & Energy Management

- Support for Float, Boost, and Equalize charging modes
- Manual, automatic, or scheduled Boost operation (local or remote)
- Automatic or user-initiated battery discharge testing
- Optional lithium BMS integration via CAN / Modbus
- Intelligent LVD / LVLD for battery protection and load prioritization
- Programmable logic for managing non-critical loads during low SOC or high demand conditions

Energy Optimization Features

- Rectifier efficiency optimization (ARM)
- Automatic standby of unused rectifiers during low-load conditions
- Rectifier rotation to balance thermal and electrical wear
- Configurable thresholds, delays, and transition behavior
- Optional demand-based load shifting:
  - Reduces peak demand charges
  - Supports time-based battery utilization
  - Manages discharge and recharge cycles to support battery health

Intelligent Generator Management

- Automatic generator start/stop based on voltage, SOC, or load conditions
- Trend logging for run hours, starts, and operating conditions
- Support for observable, controllable, and hybrid generator configurations
- Manual run modes with automatic safety overrun protection

High Visibility Local Interface

- 5-inch color touchscreen for for setup, monitoring, and diagnostics.
- High-visibility status light bar
- Guided setup and real-time schematics
- USB and microSD for configuration and logs
- Audible alarms with configurable patterns

Multi-Vendor Interoperability

- Backward compatible with legacy Pulsar devices
- REST APIs for external applications and orchestration systems.
- Optional monitoring modules provide integration with HVAC systems, generators, fuel tanks, ATS, smart meters, surveillance systems, environmental sensors, and other auxiliary devices.

Key Features (Continued)

Future-Ready by Design

- Core components are socketed to support future technology updates.
- Built on open standards to ensure compatibility with evolving systems and technologies.
- Support for a range of communication protocols so the controller can easily interface with future devices and networks.

Installation & Commissioning Simplicity

- Guided touchscreen setup for rapid onsite commissioning.
- Auto-discovery of rectifiers, batteries, sensors, and I/O modules.
- DHCP-enabled plug-and-play networking
- Streamlined device replacement with automatic configuration reloading.
- USB and microSD support for fast setup, backups, and cloning.
- Safe firmware upgrade workflow with rollback protection

Reliability & Environmental Resilence

- Industrial-grade components for long operational life
- Wide operating temperature range
- Conformal coating where applicable for moisture and dust resistance
- Hardened against electrical noise and power transients
- Event and alarm persistence during power loss via non-volatile storage

Data & History

- Up to 13 months of local event and alarm history
- Exportable logs for maintenance and audits
- SNMP and REST access for centralized monitoring and reporting.

Pulsar 200 Technical Specifications

Input	
Operating Voltage	18 - 60 V_{DC}
Protection	Low voltage, over-current, input transients (±15%), reverse polarity protections.

General	
Operating temperature	-40 to +75°C[1]
Storage temperature	-40 to +85°C
Relative humidity	5 to 95%
Altitude	0 to 4000m

Standards	
Safety	UL 62368, UL 1801 Issue 3
EMC	EN 55032, EN 55035, relevant clauses
Environment	RoHS 10 Compliant
MTBF	> 1 million hours at 25°C per Telcordia SR232 Issue 4

Controller Base
– 5” LCD touch screen with highly visible light bar for system and alarm status indication.
– iMX Dual-Core, 1GB RAM, 8GB Storage.
– Dual Gig WAN: High-Speed, Redundancy, Network Segmentation.
– Dedicated Rectifier Communication Port.
– Dual RS-485 (Modbus) ports: variable baud rates, master/slave configurable.
– Dual CAN bus ports.
– Console: 100Mbps Ethernet, USB (Upgrade/Setup/ Data). MicroSD slot: 128GB (Logs, Alarms, Config, Raw Data).
– Built-in buzzer with different cycles/intensity for alarm and event notifications

Notes

- [1]Temperature will be degraded based on optional monitoring and remote monitoring load.

IO Module	P1A	P1B	P2A
Voltage Inputs	2	2	4
Current	2	2	4
Alarm Inputs	6	6	12
Relay Outputs	6	6	12
1-wire Temp. Input	25	25	25
1-wire Humidity Input	2	2	2
Integrated LVD	No	Yes	No

Remote Monitoring Modules (Optional)	M500	M1000
R485 – 3pin (Modbus)	2	-
1 Giga Ethernet Ports	-	4
SFP Copper/Fiber	-	1
Power-over-Ethernet Ports, PoE+ or 30W each	-	-
Alarm Inputs	24	-
USB Port	1	1
Analog/Digital Inputs		
• 0 - 10V	2	-
• 4 – 20mA	2	-
DC Power Outputs		
• 0 - 5V (max. 50mA)	2	-
• 0 - 12V / 24V (max. 100mA)	2	-

Remote monitoring modules support data aggregation from -

DC Power Systems	Grid – AC power
Diesel Generator / Fuel Tank	PoE Cameras
Automatic Transfer Switch (ATS)	Environment
Energy Storage Systems	Power IoT sensors
Heat Exchanger	Cooling
Analog/Digital sensor inputs	Cellular connectivity

Pulsar 200 Ordering Information

Part Number	Description
1600481722A	Controller Base Unit: Door-mounted controller with 5-inch LCD touchscreen.
1600481724A	P1A Standard I/O Module: 2x voltage inputs, 2x current inputs, 6x NO/NC alarm inputs, 6x Form C relays, CAN interface, 1-wire temp/humidity inputs.
1600483525A	P1B Standard I/O Module: Same as P1A, plus integrated Low Voltage Disconnect (LVD)
1600481725A	P2A Extended I/O Module: 4x voltage inputs, 4x current inputs, 12x NO/NC alarm inputs, Form C relays, CAN interface, 1-wire temp/humidity inputs.
Options	
1600485010A	2-LVD Module: Dual Low-Voltage Disconnect module (CAN bus). Requires EMH01.
1600485011A	M500 – Monitoring Module: Extends site visibility by integrating diverse alarms, sensors, and control points into a single platform.
1600481726A	M1000 – Ethernet Module: Expands networking flexibility with additional high-speed Ethernet and fiber options.
1600482560A	EMH01 Module Holder: 1-slot holder for door mounting.
1600485015A	EMH04 Expansion Backpack: 4-slot expansion, mounts to controller rear or other locations (e.g., GPS door).
1600482561A	EHM07 Expansion Module: 7-slot unit, fits 19" or 23" rack; 23" ears pre-installed, 19" ears ship loose
1600485012A	Voltage Monitoring Module: 6x voltage measuring channels, 0-60 Vdc.
1600485013A	Shunt Monitoring Module: 6x shunt voltage measuring channels, -200mV to +200mV.
1600487637A	Binary Input Module: 6x measuring channels, polarity sensitive dry contact inputs.
1600487638A	Temperature Monitoring Module: 6x measuring channels, -40°C to +125°C, Input types: Thermocouple, RTD (Pt100, Pt1000)
1600483530A	USB Dongle Support Bracket with integrated electronics – Wi-Fi/Bluetooth Ready (Dongle not included)
Software Options	
1600487608A	Software for advanced control and optimization of power consumption through load shifting, based on demand.
1600487609A	Provides communication capabilities with several Lithium Battery Management Systems.
1600487672A	Radius Module - Integrates Radius authentication for secure network access.
1600487673A	TACAS+ Module - Integrates TACACS+ authentication for enhanced network device management.
1600487674A	SAML Module - Enables SAML-based Single Sign-On (SSO) for streamlined user authentication.
1600487675A	KAFKA Telemetry - Facilitates real-time data streaming and telemetry through Kafka integration.

OmniOn Power Inc.
601 Shiloh Rd.
Plano, TX USA

omnionpower.com

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