PulsarWatt

智能移动微网

Skid-Mounted Solar and Energy Storage Microgrid

整装而至，展开即用。

Delivered as one. Unfold for power.



60 kWp

光伏装机容量

PV array capacity

261 kWh

储能标称容量

Nominal battery energy

125 kW

储能 PCS 额定功率

Rated storage PCS power

PulsarWatt 将展开式光伏、MPPT、液冷储能、STS、EMS 与配电集成为移动微网。通过光伏优先和多电源调度，为弱电网、离网及临时用电场景供能。

PulsarWatt integrates deployable PV, MPPT, liquid-cooled storage, STS, EMS and power distribution into a mobile microgrid. PV-first dispatch coordinates available sources for weak-grid, off-grid and temporary power applications.

20 ms 离并网切换 · 柴发接入标配 · 风机接入选配

20 ms grid transfer / Genset connection as standard / Optional wind input

现场完成展开固定、接线、接地及联调后运行。

Site deployment requires securing the array, wiring, earthing and commissioning.

运行与能源管理

Operation and Energy Management

以光伏优先供能，以储能平衡供需，并根据电网状态和电池 SOC 管理补充电源。

PV supplies demand first, storage balances power, and supplementary sources are managed according to grid availability and battery SOC.

光伏直流耦合 DC-Coupled Solar

1 台 MPPT 提供 4 路光伏输入，每路 15 kW，总接入功率 60 kW。光伏经 DC/DC 接入电池直流侧，再通过 PCS 为交流负载供电；余电用于储能充电。

One MPPT unit provides four PV inputs at 15 kW each, totaling 60 kW. PV connects to the battery DC side through DC/DC conversion; the PCS supplies AC loads, while surplus energy charges the battery.

自动离并网与黑启动 Grid Transfer and Black Start

STS 与 PCS 协同实现 20 ms 离并网切换。电网恢复后，经检测及同步按策略恢复并网。无外部交流电源时，满足电池电量、电压、BMS 保护条件，可黑启动并分级恢复负载。

STS and PCS coordinate 20 ms grid transfer. Reconnection follows grid checks and synchronization. Without an external AC source, black start and staged load restoration are supported when battery energy, voltage, BMS discharge permission and protection conditions are satisfied.

柴发管理与补能 Genset Control and Recharge

柴发接入为标配，支持启停控制、按 SOC 自动启停及发电功率调度。光储不足时优先利用可用市电；无市电且 SOC 不足时启动柴发，按机组与电池能力分配供电和充电功率。

Genset connection is standard, with start/stop control, SOC-based automatic operation and power dispatch. Available grid power supplements PV and storage first; without grid power, low SOC triggers the genset. Power allocation respects genset and battery limits.

EMS 与远程运维 EMS and Remote Monitoring

EMS 与 BMS 协同监测电池、电源及负载，执行本地策略，记录告警、运行日志和电量。配置通信链路及访问权限后，支持远程查看与授权管理。

EMS and BMS monitor battery, source and load status, execute local strategies, and record alarms, operating logs and energy data. Remote monitoring and authorized management require a communication link and access permissions.

参数 Parameter	规格 Specification
并网及离网运行 On-grid / off-grid	标配 / Standard
光储柴网协同 PV / storage / genset / grid	标配 / Standard
黑启动 Black start	支持，需满足启动条件 Supported subject to starting conditions
风机接入 Wind turbine connection	选配 / Optional

20 ms 为切换指标，测试边界以技术协议为准；柴发启动及带载、系统黑启动分别遵循独立时序。

The 20 ms transfer rating is subject to agreed test conditions. Genset starting, load acceptance and system black start follow separate sequences.

光伏与储能电气参数

PV and Energy Storage Electrical Specifications

光伏接入 PV Input

参数 Parameter	规格 Specification
光伏装机容量 PV array capacity	60 kWp / 套 per system
MPPT 数量 MPPT unit quantity	1 台 unit
光伏输入路数 Number of PV inputs	4 路 inputs
单路额定功率 Rated power per input	15 kW
MPPT 额定总功率 Total rated MPPT power	60 kW
耦合方式 Coupling	DC/DC 直流耦合 / DC coupling
输入电压及电流范围 Input voltage / current limits	45A Max per string @ 150V-1000V

电池系统 Battery System

参数 Parameter	规格 Specification
储能柜机型 Storage cabinet model	CFGE 125K/261-PT/GL
标称容量 Nominal energy	261 kWh
电芯类型与容量 Cell chemistry / capacity	LFP / 3.2 V / 314 Ah
电池配置 Battery configuration	1P260S（1P52S × 5）
电池电压范围 Battery voltage range	702–936 V DC
循环寿命 Cycle life	≥ 6,000 次 cycles 90% DOD / 70% SOH

储能柜交流侧 Storage Cabinet AC Side

参数 Parameter	规格 Specification
PCS 额定输出功率 Rated PCS output power	125 kW
额定交流电压及接线 Rated AC voltage / wiring	400 V AC / 3L + N + PE
额定频率 Rated frequency	50 Hz
额定电流 / 最大电流 Rated / maximum current	180 A / 200 A
输出谐波 Output THD	≤ 3%（满载 / full load）
功率因数调节范围 Adjustable power factor	−1 to +1
配电隔离变压器 Distribution isolation transformer	标配，内置于配电箱 Standard, integrated in distribution enclosure

以上交流额定值为储能柜参数。整机连续输出能力由 PCS、隔离变、STS 及配电容量共同确定。
AC ratings above apply to the storage cabinet. Continuous microgrid output is governed by PCS, transformer, STS and distribution ratings.

结构与系统配置

Mechanical Design and System Configuration

集成与部署 Integration and Deployment

参数 Parameter	规格 Specification
箱体形式 Enclosure format	20 英尺集装箱 / 20 ft container
光伏展开方式 PV deployment	长侧抽拉展开 / Long-side pull-out array
集成设备 Integrated equipment	光伏、MPPT、储能、PCS、STS、EMS、配电 PV, MPPT, storage, PCS, STS, EMS, distribution
控制柜 Distribution & Control Cabinet	内置隔离变压器 / Built-in isolation transformer
柴发 / 风机接口 Genset / wind connection	柴发标配，风机选配 Genset standard; wind optional
运输重量与展开尺寸 Transport weight / deployed size	≤17t / 28.5m

储能柜环境与防护 Storage Cabinet Environment and Protection

参数 Parameter	规格 Specification
柜体尺寸 宽 × 深 × 高 Cabinet W × D × H	980 × 1,350 × 2,300 mm
储能柜重量 Storage cabinet weight	2.7 t
冷却方式 Cooling	液冷 / Liquid cooling
柜体防护 / 防腐等级 Cabinet IP / corrosion class	IP55 / C4
工作温度 Operating temperature	−20 to +60 °C；> 45 °C 降额 / derating
相对湿度 Relative humidity	0–95% RH，无凝露 / non-condensing
工作海拔 Operating altitude	≤ 3,000 m；> 2,000 m 降额 / derating
通信接口 Communication interfaces	LAN / 4G / RS485 / CAN
消防系统 Fire protection	PACK 级消防 + 全舱淹没式灭火 Pack protection + total flooding suppression

本节环境、防护、尺寸及重量为储能柜指标；整套微网适用边界按箱体、光伏机构及电气配置核定。

Environmental, protection, dimensional and weight figures in this section apply to the storage cabinet. Microgrid limits depend on the enclosure, PV structure and electrical configuration.

项目接口与认证 Project Interfaces and Certifications

系统认证（System Certifications）：IEC 61000-6-2, IEC 61000-6-4, IEC 62477, IEC 62619, IEC 63056, UN 38.3

并网认证（Grid side Certifications）：VDE 4105, AS 4777.2, G99 Type A, EN 50549-1/2/10, IEC 61727, IEC 62116, NA/EEA-NE7-CH:2020. NC RfG, PSE, PTPiREE

产品配置与规格以最终技术协议为准。

Product configuration and specifications are subject to the final technical agreement.