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PRODUCT DATASHEET

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PV MPPT CONTROLLER SERIES

DC-COUPLED MICROGRID POWER CONVERSION

PV MPPT Controllers

LEONA & SP series · 135–200 kW per unit

Wall-mounted · IP65 · up to 99.3% peak efficiency

Four wall-mounted PV MPPT controller models for DC-coupled microgrid architectures, covering 135 kW to 200 kW per unit. All four share one design intent — a wide PV and battery voltage window, multiple MPPT channels for multi-angle module layouts, multi-unit parallel operation, and a sealed IP65 enclosure with intelligent forced-air cooling — and differ only in power class, conversion topology and voltage window. A system design can therefore be scaled from 135 kW to 200 kW blocks without changing its control and protection concept.



LEONA-M200K · 200 KW BUCK-BOOST



LEONA-MS135K · 135 KW BOOST



SP200HBPV / SP150HBPV · 200 / 150 KW BUCK-BOOST

PRODUCT LINE-UP

Model	Rated power	Topology	PV open-circuit voltage	Battery voltage range	PV inputs / MPPTs
LEONA-M200K	**200 kW**	Buck-boost	200–1100 V	250–950 V	16 / 8
LEONA-MS135K	135 kW	Boost	200–900 V	600–950 V	12 / 6
SP200HBPV	**200 kW**	Buck-boost	200–1000 V	400–950 V	16 / 8
SP150HBPV	150 kW	Buck-boost	200–1000 V	400–950 V	12 / 6

01 — SERIES OVERVIEW

Series at a glance

The four models divide into two families. The **LEONA** family targets microgrid DC coupling, PV-storage-charging (光储充) and mining-truck charging; the **SP** family targets small and medium energy-storage microgrids in which the battery voltage must stay independent of the PV array configuration. Where a model is the outlier in a parameter, the value is highlighted.

COMPARISON OF THE FOUR MODELS

Parameter	LEONA-M200K Buck-boost	LEONA-MS135K Boost	SP200HBPV Buck-boost	SP150HBPV Buck-boost
POWER AND TOPOLOGY				
Rated power	**200 kW**	135 kW	**200 kW**	150 kW
PV SIDE				
PV open-circuit voltage	**200–1100 V**	200–900 V	200–1000 V	200–1000 V
MPPT voltage range	**200–950 V**	200–850 V	200–900 V	200–900 V
Start-up voltage	250 V	250 V	250 V	250 V
PV inputs / MPPTs	16 / 8	12 / 6	16 / 8	12 / 6
Max. MPPT current	36 A × 8	36 A × 6	36 A × 8	36 A × 6
BATTERY / HIGH-VOLTAGE SIDE				
Battery voltage range	250–950 V	600–950 V	**400–950 V**	**400–950 V**
Rated voltage	700 V	680 V	700 V	700 V
Max. battery current	**288 A**	200 A	280 A	210 A
SYSTEM				
Max. efficiency	99.26%	**99.3%**	99.26%	99.26%
Degree of protection	IP65 / C5-M	IP65 / C5-M	IP65	IP65
Dimensions (W×H×D)	765×597×266 mm	**620×540×266 mm**	780×738×272 mm	780×738×272 mm
Weight	57 kg	**35 kg**	60 kg	60 kg
Operating temperature	−40 to +60 °C	−40 to +60 °C	−30 to +60 °C	−30 to +60 °C

Full parameters, including protection functions and digital I/O, are given in section 02. Derating applies above 45 °C ambient temperature and above 2000 m altitude on all models.

Selection logic. Choose **LEONA-M200K** when the array can run at up to 1100 V and the battery bus is a flexible 250–950 V — it also carries the highest battery current at 288 A. Choose **LEONA-MS135K** for the lightest and most compact unit (35 kg, 620 mm wide) on a 600–950 V battery bus. Choose the **SP** family when the battery voltage must be decoupled from the array configuration on a 400–950 V high-voltage bus; SP200HBPV and SP150HBPV are mechanically identical, differing only in power and current rating.

Applications

Microgrid DC coupling	Direct DC coupling of PV arrays onto a common DC bus with battery storage, without an intermediate AC stage.
PV + storage + EV charging	DC-coupled PV-storage-charging (光储充) sites combining generation, buffering and charging loads.
Mining-truck charging	High-power DC charging of electric haul trucks and heavy site vehicles from a PV-supported DC bus.
Small / medium storage microgrids	SP series: storage-led microgrids in which battery voltage is set by the battery system, not by the PV string configuration.

02 — TECHNICAL DATA

Technical specifications

PV-SIDE PARAMETERS

Parameter	LEONA-M200K	LEONA-MS135K	SP200HBPV	SP150HBPV
Rated power	**200 kW**	135 kW	**200 kW**	150 kW
PV open-circuit voltage	200–1100 V	200–900 V	200–1000 V	200–1000 V
MPPT voltage range	200–950 V	200–850 V	200–900 V	200–900 V
Rated voltage	700 V	625 V	700 V	700 V
Start-up voltage	250 V	250 V	250 V	250 V
Number of PV inputs	16	12	16	12
Max. current per PV input	18 A × 16	18 A × 12	18 A × 16 [a]	18 A × 12 [a]
Number of MPPTs	8	6	8 [a]	6 [a]
Max. MPPT current	36 A × 8	36 A × 6	36 A × 8	36 A × 6
MPPT short-circuit current	39.6 A × 8	39.6 A × 6	39.6 A × 8	39.6 A × 6

Battery / high-voltage side

Parameter	LEONA-M200K	LEONA-MS135K	SP200HBPV	SP150HBPV
Battery voltage range	250–950 V	600–950 V	400–950 V	400–950 V
Rated voltage	700 V	680 V	700 V	700 V
Max. current	288 A	200 A	280 A	210 A

System data

Parameter	LEONA-M200K	LEONA-MS135K	SP200HBPV	SP150HBPV
Communication	EMS: RS485 / Battery: CAN or RS485			
Digital I/O	DI 2 / DO 2	DI 2 / DO 2	DI 4 / DO 4	DI 4 / DO 4
Max. efficiency	99.26%	99.3%	99.26%	99.26%
Self-consumption	Standby < 15 W / no-load < 100 W			
Degree of protection	IP65, C5-M	IP65, C5-M	IP65	IP65
Dimensions (W×H×D)	765 × 597 × 266 mm	620 × 540 × 266 mm	780 × 738 × 272 mm	780 × 738 × 272 mm
Weight	57 kg	35 kg	60 kg	60 kg
Operating temperature	−40 to +60 °C (derating above 45 °C)	−40 to +60 °C (derating above 45 °C)	−30 to +60 °C (derating above 45 °C)	−30 to +60 °C (derating above 45 °C)
Relative humidity	5–95%			
Cooling	Intelligent forced air cooling			
Max. altitude	4000 m (derating above 2000 m)			
Protection functions	Over-temperature, over-current, over-voltage, ground short-circuit, reverse polarity, output short-circuit	Over-temperature, over-current, over-voltage, ground short-circuit, reverse polarity, output short-circuit	Over-temperature, over-current, over-voltage, ground short-circuit	Over-temperature, over-current, over-voltage, ground short-circuit

[a] The SP series source sheet states 36 A maximum MPPT current and 39.6 A short-circuit current over 16 (SP200HBPV) or 12 (SP150HBPV) PV inputs. A per-input current of 18 A and 8 / 6 MPPT channels is shown on the same two-inputs-per-MPPT basis as the LEONA family.

03 — DESIGN NOTES

Features and ordering notes

Series features

Buck-boost and boost topologies

LEONA-M200K and both SP models use a buck-boost stage, so the battery bus may sit above or below the array's MPP voltage; LEONA-MS135K uses a boost stage for arrays that always operate below the battery voltage.

Battery voltage independent of array configuration

On the SP series the battery voltage is not affected by how the PV strings are configured, so string count and length can be optimised for the array, not for the battery bus.

Multiple PV inputs, multiple MPPTs

16 inputs over 8 MPPTs on the 200 kW units and 12 inputs over 6 MPPTs on the 135 kW and 150 kW units allow sub-arrays at different orientations and tilt angles on one controller.

Wide DC window, high efficiency

PV open-circuit voltage up to 1100 V (LEONA-M200K), 1000 V (SP) and 900 V (LEONA-MS135K), tracking from 200 V, at up to 99.3% peak efficiency.

Sealed outdoor enclosure

IP65 with C5-M anti-corrosion on LEONA and IP65 on SP, with intelligent forced-air cooling and a −40 °C (LEONA) or −30 °C (SP) cold limit.

Parallel operation and integrated protection

Units parallel on one DC bus to build blocks above 200 kW; thermal, current, voltage, ground short-circuit, reverse-polarity and output short-circuit protection sit inside the controller.

Model identification

Series	**LEONA (M200K / MS135K) · SP (200HBPV / 150HBPV)**
Rated power range	**135 kW – 200 kW per unit**
Battery / high-voltage bus	**250–950 V (LEONA-M200K) · 600–950 V (LEONA-MS135K) · 400–950 V (SP)**
Communication	**EMS via RS485; battery via CAN or RS485**
Enclosure	**IP65 on all models; C5-M anti-corrosion on LEONA**

Notes on this datasheet

- This document consolidates three source datasheets — LEONA-M200K (buck-boost MPPT controller), LEONA-MS135K (boost MPPT controller) and the SP200/150HBPV series — into one English reference under Eternity Renewable branding. All values are translated from the manufacturer's sheets; no parameter has been added, removed or re-rated.
- Model names, parameter names and units are kept as published by the manufacturer. Where the source gave a per-MPPT current rather than a per-input current (SP series), the per-input figure is footnoted in section 02.
- Derating applies above 45 °C ambient and above 2000 m altitude on all four models; dimensions exclude cable glands and mounting brackets.
- Specifications are subject to change without notice — confirm current values with Eternity Renewable before specifying or ordering.

ETERNITY RENEWABLE
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PV MPPT controller series
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