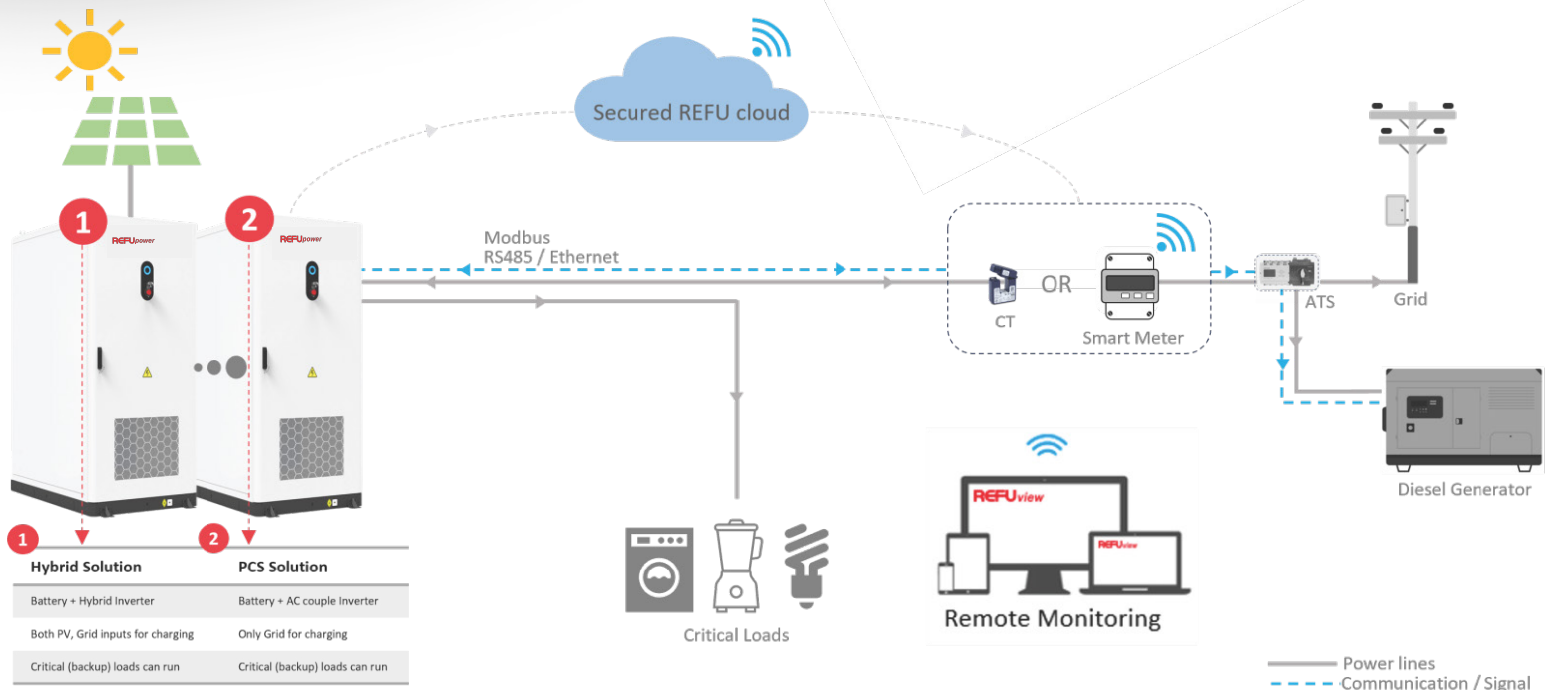




*Smart Energy.
Scaled for Industry.*

REFUpower is an all-in-one solution which provides backup power and peak-shaving for C&I applications. Additionally it can be used for sector coupling applications with the help of EMS.



Profitability

- Better profits - dynamic tariff / arbitrage.
- Investment deferral (peak shaving and grid stability).

Availability

- Can be used for micro grid / standalone systems.
- Easily replace DG systems for C&I applications.
- Ensures higher availability - where grids are unreliable.

Installation & Service

- One stop solution
- Minimal civil and wiring work saves time
- Easy service with remote update option

Reliability

- Active cooling for safety against thermal runaway.
- Design with high data security at each level. 5/10+ years warranty.

Technical Data

Art. No.

REFUpower 120-50H
490P120

DC DATA - PV SIDE

Max. recommended PV power (kWp)	50
Max. / Rated input Voltage (V)	1000 / 600
MPPT voltage range (V)	135 – 900
Number of MPPTs (DC inputs per MPPT)	4 (2)
I _{max.} / I _{sc.} Current per MPPT (A)	40 / 50
DC connector type	MC4

DC DATA - BATTERY SIDE

Cell parameters	314Ah – 3.2V (LiFePO ₄)
Battery pack configuration	2X 60kWh (1P-60S)
Max. DC current (A)	150
Battery voltage range (V)	324 – 438
Recommended charge / discharge rate	0.5C
Cycle index (at 25°C, 0.5C, 70% SOH)	≥8000

AC DATA – GRID / INVERTER SIDE

Rated / Max. AC output power (kW)	50 / 55
Nominal standalone AC output voltage (V)	3L/N/PE, 230/400
Grid voltage range (V)	323 ~ 418
Grid frequency range (Hz)	45 – 55 / 55 – 65
AC charger ripple (%)	<0.5 (of rate power)
Total harmonic distortion (THDi) (%)	< 3
Active power adjustable range (%)	0.....100%
Adjustable power factor range	1[-1 inductive +1 capacitive]
AC connections	AC terminal block
Changeover time (grid – backup – grid) (ms)	< 10

PERFORMANCE

Max. / EU / MPPT Efficiency (%)	97.6 / 97 / 99.9
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COMMUNICATION*

RS485 / Ethernet / CAN	yes / yes / yes
Communication protocol	IEC61850 / Modbus

PROTECTION

PV input DC switch	Integrated
Electrical safety protections	DC reverse polarity (PV, Battery), insulation resistor detection, leakage current monitoring, short circuit, output over current, grid monitoring, anti-islanding, residual current monitoring
Fire safety protections	Smoke sensing, temperature sensing, combustible gas detector, sound & light alarm, space grade fire protection, submerged water fire protection
Battery thermal management	Intelligent liquid cooling
Over voltage category / SPD(DC/AC)	3 / DC: Type II / AC: Type II

GENERAL DATA

Environmental operating conditions	Temp(°C): -30 ... +55 (> 45 derating) ; Humidity (%): 0...100 ; Latitude: 4000 m (>2000 m derating)
Enclosure size(mm) / weight(kg)	Dimensions (WxHxD): 1050X2000X1600 / Weight: <2000
Enclosure mechanical properties	Ingress protection: IP55 / Cooling: Active
Self consumption at night (W)	≤80
Display – Indications / Noise level (dB)	LED / ≤70
Anti corrosion level	C3 (standard), C5 (optional)
Auxiliary power supply	Self powered and external power supply
Warranty	10 Years

COMPLIANCE & STANDARDS

Safety regulations	IEC 62109-1/2, IEC 62619, GB/T 36276
Grid code compliance	NB/T 32004, GB/T 34120/34133, EN 50549-1, CEI 0-21, VDE-AR-N 4105, NTS Type A&B, RD1699/661/413/647/244/2019, UNE 206006/206007/217001/217002
Others	EN 61000-6-1/2/3/4

*Inverter can communicate with REFUview monitoring portal.

Technical Data
Art. No.

REFUpower 257-125P
490P120

DC DATA - BATTERY MODULE

Cell parameters	314Ah – 3.2V (LiFePO ₄)
Battery pack configuration	257kWh (1P-256S)
Battery voltage range [V]	691.2 – 934.4
Recommended charge / discharge rate	0.5C
Cycle index (at 25°C, 0.5C, 70% SOH)	≥8000

AC DATA – PCS MODULE

Rated AC output power [kW]	125
Nominal standalone AC output voltage [V]	3L/N/PE, 230/400
Grid voltage range [V]	340 ~ 440
Grid frequency range [Hz]	45 – 55 / 55 – 65
AC charger ripple [%]	<0.5 (of rate power)
Total harmonic distortion [THDi] [%]	< 3

COMMUNICATION*

RS485 / Ethernet / CAN	yes / yes / yes
Communication protocol	IEC61850 / Modbus

PROTECTION

PV input DC switch	Integrated
Electrical safety protections	DC reverse polarity (PV, Battery), insulation resistor detection, leakage current monitoring, short circuit, output over current, grid monitoring, anti-islanding, residual current monitoring
Fire safety protections	Smoke sensing, temperature sensing, combustible gas detector, sound & light alarm, space grade fire protection, submerged water fire protection
Battery thermal management	Intelligent liquid cooling
Over voltage category / SPD(DC/AC)	3 / DC: Type II / AC: Type II

GENERAL DATA

Environmental operating conditions	Temp[°C]: -20 ... +60 (> 45 derating) ; Humidity [%]: 0...100 ; Latitude: 4000 m (>2000 m derating)
Enclosure size(mm) / weight(kg)	Dimensions (WxHxD): 1050X2350X1600 / Weight: <2800
Enclosure mechanical properties	Ingress protection: IP55 / Cooling: Active
Noise level [dB]	≤ 70
Display – Indications	LED
Anti corrosion level	C3 (standard), C5 (optional)
Auxiliary power supply	Self powered and external power supply
Warranty	10 Years

COMPLIANCE & STANDARDS

Safety regulations	IEC 62109-1/2, IEC 62619, GB/T 36276
Grid code compliance	NB/T 32004, GB/T 34120/34133, EN 50549-1, CEI 0-21, VDE-AR-N 4105, NTS Type A&B, RD1699/661/413/647/244/2019, UNE 206006/206007/217001/217002
Others	EN 61000-6-1/2/3/4

*Inverter can communicate with REFUview monitoring portal.