Fusionsolar

Soluzione Residenziale 2026



Mario Sala
Solution Manager PV + BESS

Soluzione FV digitale per migliorare sicurezza e rendimento

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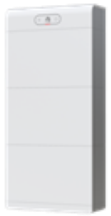

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Building a fully connected, intelligent world
EOM e GTM
Prodotti Huawei

GTM – Prodotti Huawei



MC0 & SL serie 5000

Febbraio 2026



LUNA2000 7 kWh S1

Nuovo codice compatibile con SL

Luglio 2026



LUTERRA S2

Da confermare GTM



SUN2000-1600W-PB1

Da confermare GTM



LUNA2000 5 kWh S1

SUN2000-600W-PA0

Gennaio 2026



LUNA2000 241 kWh

Febbraio 2026



SUN2000-506KTL-H1

Da confermare GTM



Nuovi codici Wallbox

Da confermare GTM

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Building a fully connected, intelligent world

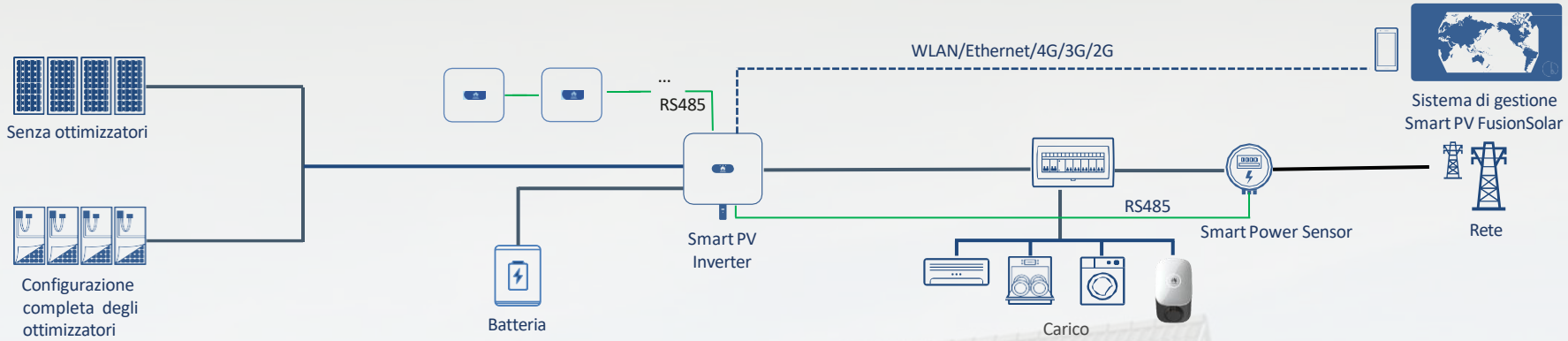


Soluzioni Residenziali e Small C&I

Soluzione Smart PV Residenziale

Fusionsolar

Residenziale





Smart PV Inverter
SUN2000-3/3.68/4/4.6/5/6K-LB0
Monofase



Smart String ESS
LUNA2000-5/10/15-S0



Smart Charger
SCharger-7KS-S0
SCharger-22KT-T0



Smart Power Sensor
SmartPS-100A-S0
SmartPS-80A-T0



Smart String ESS
LUNA2000-5/21-S1
Moduli da 5 e 7 kWh



Smart PV Optimizer
SUN2000-450W-P2
SUN2000-600W-P
SUN2000-600-PA0



Smart Dongle
Smart Dongle-WLAN-FE
Smart Dongle-4G



EMMA
EMMA-A01/02



Smart PV Inverter
SUN2000-3/4/5/6/8/10KTL-M1
SUN2000-12/15/17/20/25K-MB0
Trifase



Smart PV Inverter
SUN2000-5/6/8/10/12K-MAP0
Trifase



Sistema di Gestione
Smart PV
Fusionsolar



Home Backup
SmartGuard-63A-S0
SmartGuard-63A-T0

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Newly upgraded single-phase inverter



New

SUN2000-3/3.68/4/4.6/5/6K-LB0

Current boost, safety upgrade

12A	→	2 MPPT 16A
100V	→	Startup 50V
80M	→	AFCI detection distance 200M
9.6 kb/s	→	RS485 rate 115.2 kb/s

Battery Ready



Adapts to all Huawei energy storage products.

Power backup throughout the house, worry-free power consumption



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New Capabilities



Features	L1	LB0
AFCI 2.0	No	Yes
RSD	Yes	Yes
Optimizer	Yes	Yes
2*S1	No	Yes
>13A current Module	No	Yes
Config 1 Module	No	Yes



*with SmartDongle

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Smart PV Controller NEW

Three-phase Hybrid Asymmetric Inverter



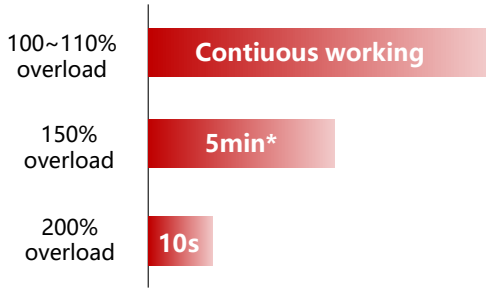
SUN2000-5/6/8/10/12K-MAP0 New

Higher MPPT Capability

2 MPPT,1 string x MPPT
Max input current x MPPT: **16A**
Max sc current x MPPT: **22 A**

Asymmetric Output	ESS Awake By Grid
Supported	Supported

Superb Off-grid Adaptability



Note: 5min for 150% overload only apply for single-phase, 1min for 3-phase

Battery Ready, Scale Smoothly



max. 2 BMS with LUNA S0

30 kWh For S0

OR



max. 2 BMS with LUNA S1

41.4 kWh For S1

Fino a 3 MAP0*

*Con 3 fasi + neutro 3 inverter in cascata solo con EMMA
Non compatibile con M1 e MB0

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Technical Specifications

PV and Battery Input:

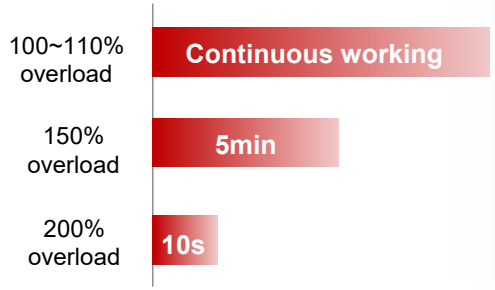
- Supports up to **16A** MPPT current
- 2 MPPT, each 1 PV
- Support LUNA S0 and LUNA S1
- Max. 6 packs (30kWh or 41.4kWh)



SUN2000-5-12K-MAP0

AC Output:

- Support **asymmetric** output
- Support **100%** asymmetric load
- Support 200% short-time overload
- Supports half-wave loads
- THDU(Total Harmonic Voltage distortion)=1.5% （Traditional solution THDU=3%）



Safety Features:

- Support AFCI
- Support RSD
- Support DC-to-ground Protection

Solution Features:

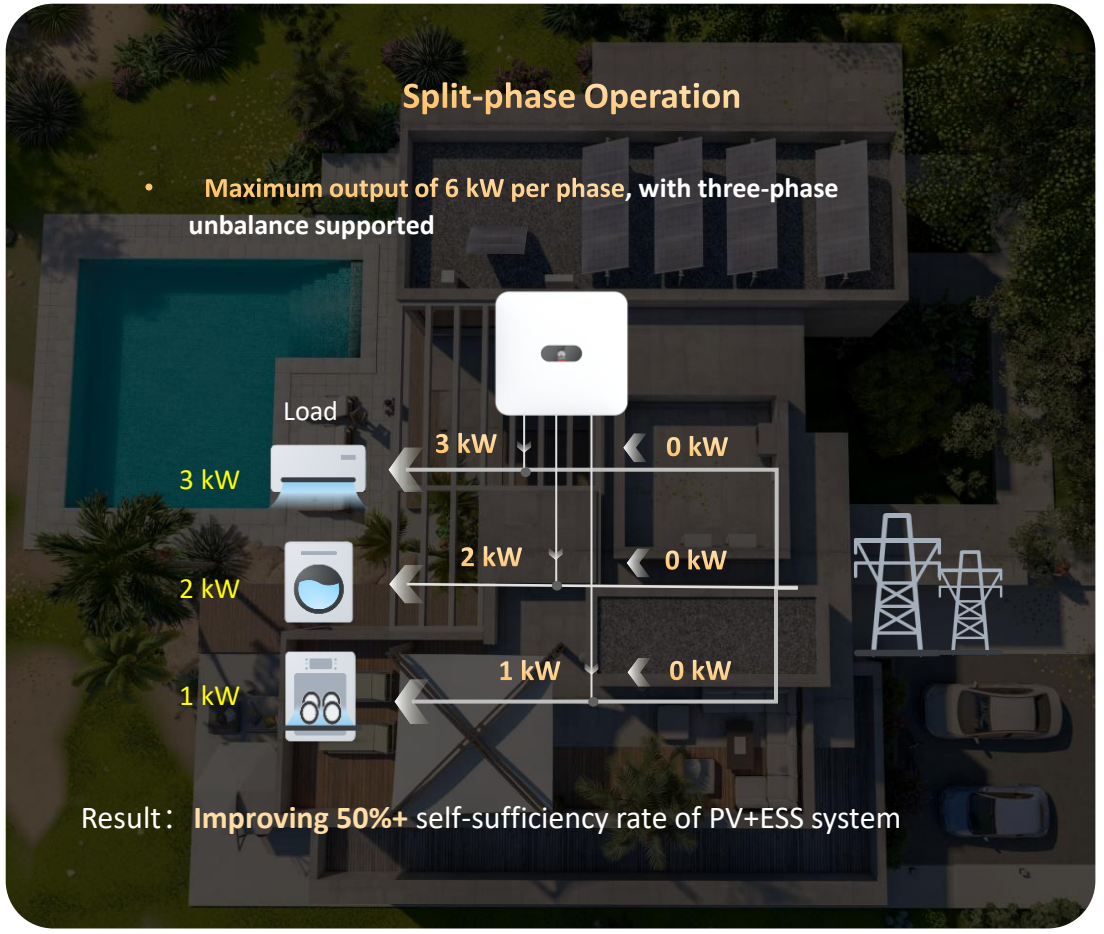
- Support three-phase whole home backup
- Support ESS awake by grid
- Support true 100% DOD of ESS
- Support a maximum of 3 inverters （MAP0）

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Three-phase Asymmetric Output

100% asymmetric, power control of each phase, higher self-consumption rate





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Smart PV Controller

NEW



SUN2000-12/15/17/20/25K-MB0

High Efficiency
Max. Efficiency 98.4%

High Current
Max. Current 30 A / MPPT for 2 strings
Max. Current 20 A/ MPPT for 1 string
Max. short-circuit current 40 A

Optimizer Ready
both SUN2000 and MERC

Battery Ready
Up to 4 BMS
- LUNA2000-5-15-S0
- LUNA2000-7-21-S1

Multi-MPPT
2 MPPTs, 4 Inputs

MPPT Voltage Range
200 ~ 1,000 V

Compact Design
21kg, Lighter & Smaller

Protection Degree
IP66

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Scenario on-grid (solo FV/FV+sistema di accumulo energia)

Modalità di collegamento in rete	Sistema	Numero di inverter	Inverter		
			Inverter 1	Inverter 2	Inverter 3
SmartAssistant (WLAN/FE)	Sistema monofase	1	L1		
			LB0		
			LC0		
		2	L1/LB0/LC0	L1/LB0/LC0	
		3	L1/LB0/LC0	L1/LB0/LC0	L1/LB0/LC0
	Sistema trifase a tre fili	1	M1		
			M2		
			M5		
			MB0		
		2	M1/M2/M5/MB0	M1/M2/M5/MB0	
		3	M1/M2/M5/MB0	M1/M2/M5/MB0	M1/M2/M5/MB0
	Sistema trifase a quattro fili	1	MAP0		
		2	MAP0	MAP0	
		3	MAP0	MAP0	MAP0
SDongle (WLAN/FE/4G)	Sistema monofase	1	L1		
			LB0		
			LC0		
		2	L1/LB0/LC0	L1/LB0/LC0	
		3	L1/LB0/LC0	L1/LB0/LC0	L1/LB0/LC0
	Sistema trifase a tre fili	1	M1		
			M2		
			M5		
			MB0		
		2	M1/M2/M5/MB0	M1/M2/M5/MB0	
		3	M1/M2/M5/MB0	M1/M2/M5/MB0	M1/M2/M5/MB0
	Sistema trifase a quattro fili	1	MAP0		
		2	MAP0	MAP0	
		3	MAP0	MAP0	MAP0
Inverter (WLAN)	Monofase	1	L1		
			LB0		
			LC0		

Nota:
1. M2 e M5 non supportano un sistema di accumulo energia.

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Scenario on-grid/off-grid

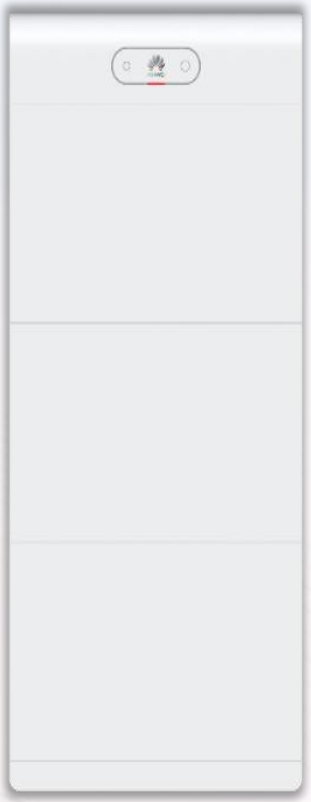
Modalità di collegamento in rete	Sistema	Numero di inverter	Inverter		
			Inverter 1	Inverter 2	Inverter 3
SmartGuard	On-grid/off-grid monofase	1	L1		
			LB0		
			LC0		
	On-grid trifase, off-grid monofase **(1. La porta del carico secondario può essere collegata solo a carichi monofase 2. Il sistema non può essere collegato a un generatore diesel)**	1	M1		
			MB0		
	Sistema on-grid/off-grid trifase	1	MAP0		
		2	MAP0	MAP0	
		3	MAP0	MAP0	MAP0
	Collegamento parallelo ibrido di inverter **(Il sistema non può essere collegato a un generatore diesel)**	2	M1	MAP0	
			M5	MAP0	
			MB0	MAP0	
		3	M1	MAP0	MAP0
			M5	MAP0	MAP0
			MB0	MAP0	MAP0

1. Quando M1, M5 o MB0 è collegato a MAP0 in parallelo, è necessario collegare i fili L1, L2, L3 e N di M1, M5 o MB0.
2. Nello stato off-grid, solo MAP0 funziona in modalità off-grid, mentre M1, M5 o MB0 non eroga alimentazione CA. Se sono disponibili un sistema di accumulo energia e un impianto FV, M1 oMB0 possono caricare il sistema di accumulo energia.
3. Quando MAP0 è collegato a M1, M5 o MB0 in parallelo, MAP0 non supporta il controllo dello squilibrio trifase e la modalità off-grid di M1, M5 o MB0 non ha effetto.
4. I generatori diesel non sono supportati quando M1, M5 o MB0 è collegato a MAP0 in parallelo.
5. Quando M1, M5 o MB0 è collegato a MAP0 in parallelo, è possibile utilizzare solo MAP0 per la distribuzione off-grid.

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Luna 2000-5/7-S1 Caratteristiche Tecniche

Smart String ESS



Subito compatibile con L1, M1, LB0, MAP0, MB0

Potenza di carica modulare da 3.5 a 10.5 kW

Certificata RoHS, WEEE, REACH

1 modulo può resistire sommerso fino a 72h

Installazione plug&play

No cavi tra i moduli

Più silenziosa

Nuovo Software

Una nuova generazione

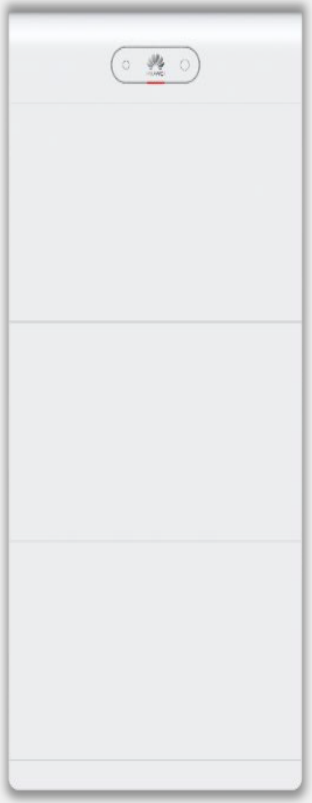
15 kWh	→	21 kWh
5 kW	→	10.5 kW
10 anni	→	15* anni

*se connesso in modo costante a Fusion Solar

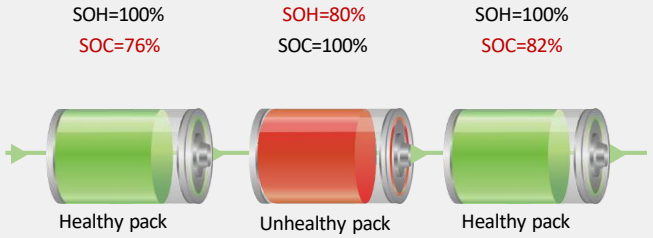
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Ottimizzazione Modulare+

Più energia utilizzabile

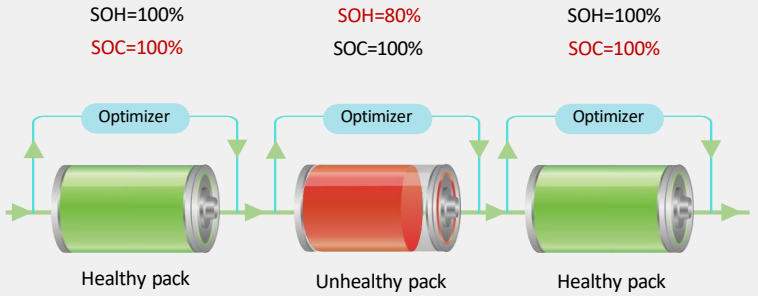


Soluzione Convenzionale



Architettura in serie: non viene utilizzato alcun ottimizzatore di energia e una singola cella della batteria limita la capacità dell'intero sistema.

Smart String ESS LUNA2000-S1



Architettura parallela: l'ottimizzatore di energia incorporato consente un'espansione flessibile della capacità e una gestione indipendente della carica e della scarica.

Huawei Proprietary - Restricted Distribution

5-layer enhanced safety, safeguarding every family, every day

Cell-level protection



- LFP cells from top suppliers
- Subjected to rigorous tests, such as cycle tests (up to 1/8 of cycle life) and puncture tests

Electrical protection



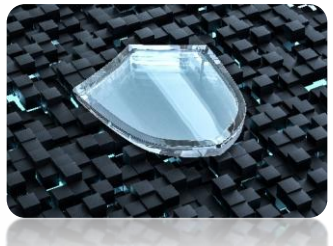
- Multiple protection measures, such as overcharge, overvoltage, overcurrent, and over temperature
- External short circuit protection

Structural protection



- **Industry-leading IP66** protection, **40 cm** water immersion protection
- High-strength chassis, **5T** heavy pressure resistance, 20% hydrogen explosion test

Active protection



- Real-time **cell-level** temperature and voltage detection
- Intelligent ports detection
- SOH calibration for full-lifecycle health protection

Emergency protection



- **Industry-only** emergency fire suppression module
- **Industry-leading** active pressure release technology

Passed safety certification tests, such as VDE 2510-50, IEC 62169, ISO 13849, IEC 63056, IEC 62040-1, IEC 62477 and UN 38.3.

Connessione senza cavi, per un risparmio del **50%** sui tempi di installazione.

Risparmio di tempo: Nessun cavo di comunicazione o di alimentazione

Tra power module e moduli batteria

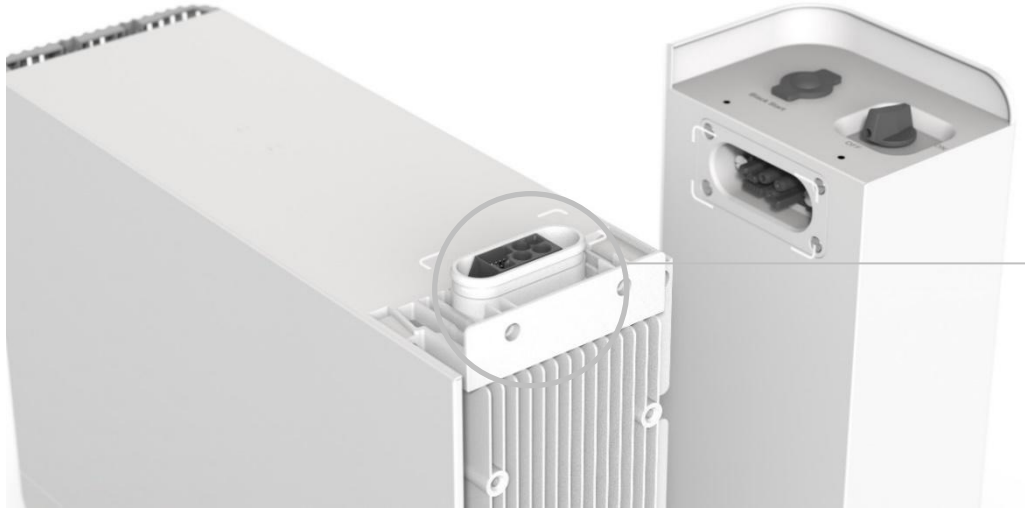
Tra moduli batteria

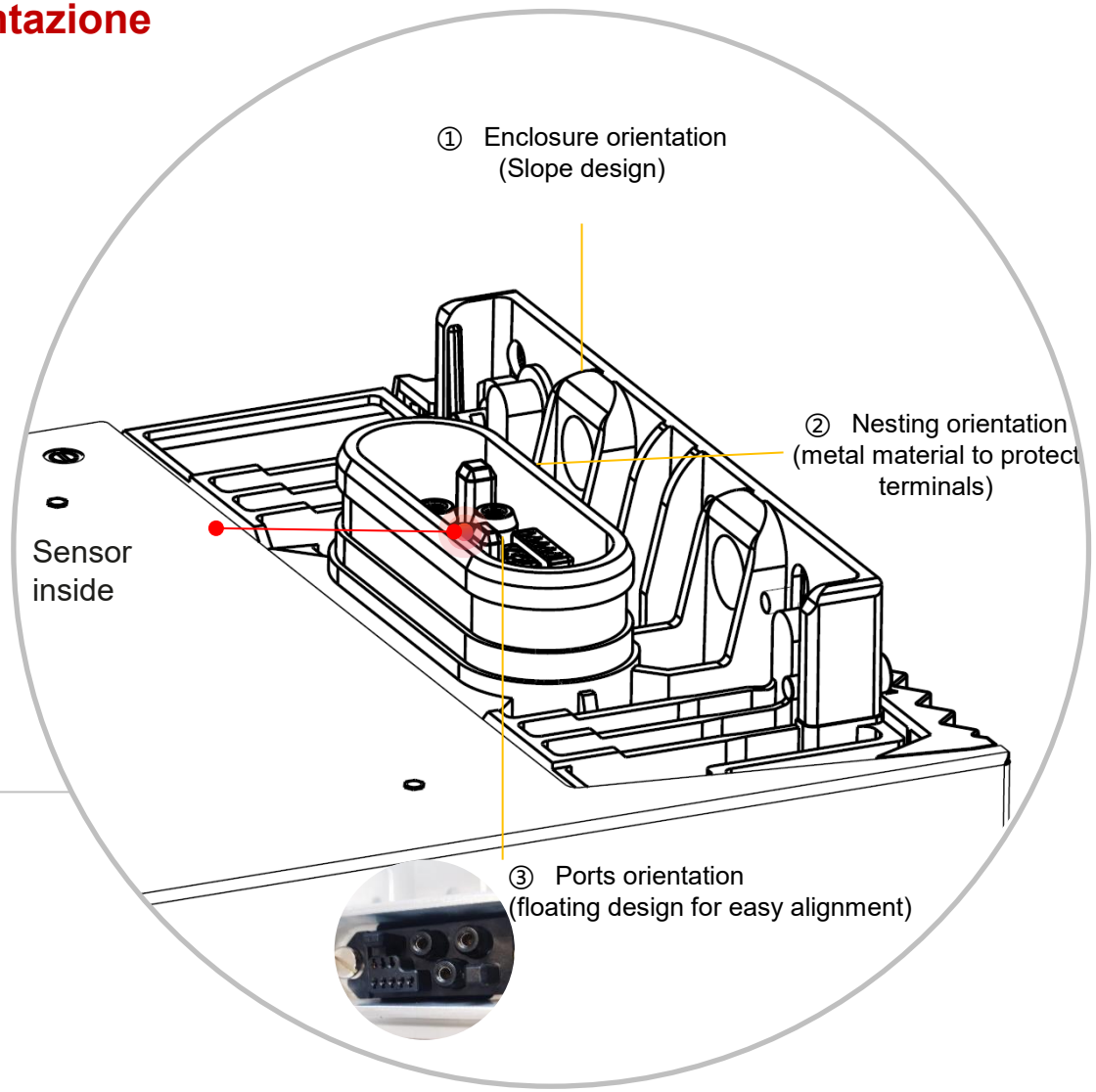
Risparmio di lavoro: Pratico aggancio

Design con orientamento a 3 strati per un facile aggancio

Senza preoccupazioni: rilevamento intelligente

Sensore interno, identifica i guasti attraverso il rilevamento della temperatura in modo intelligente



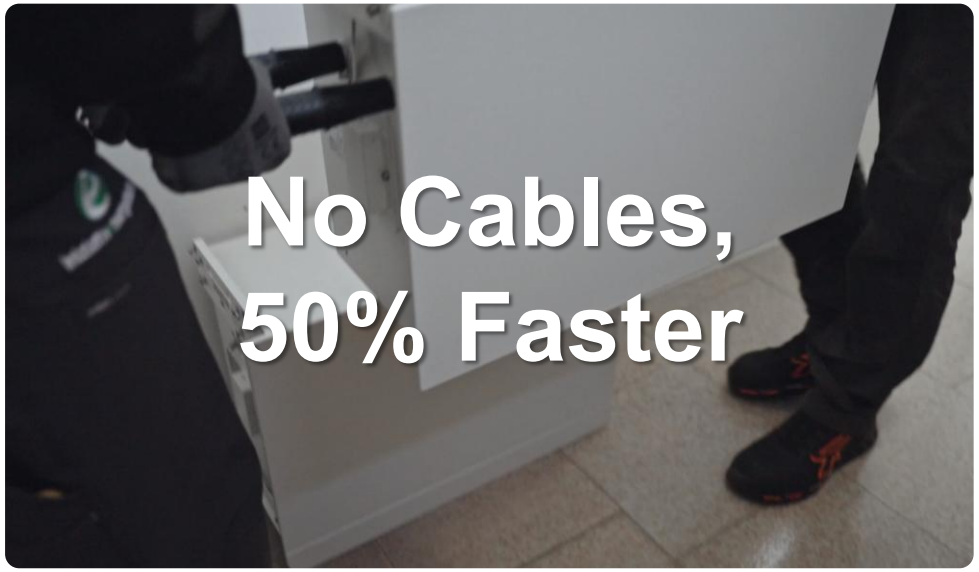


Espansione flessibile, installazione più rapida



On-demand expansion

5/7/10/12/14/15/17/19/21kWh



Smart Assistant

Energy Management Assistant



EMMA-A02

Gestione unificata per Fotovoltaico, ESS, Charger ed Utenze

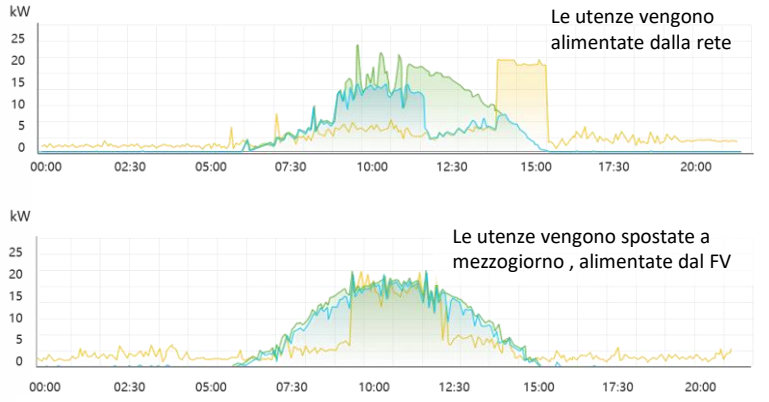


Utenze controllate tramite interruttori o prese intelligenti

Controllo intelligente della pompa di calore Smart Grid Ready

Intelligent PV + ESS Synergy

Previsione accurata della generazione e del consumo di energia



- Correnti fino a 63 A
- Supporto per TA* esterni per > 63A
- Fino a 2 EV chargers
- 1 PDC tramite contatto pulito; altre gestite tramite prese shelly
- 3 inverter ibridi, 12 BMS

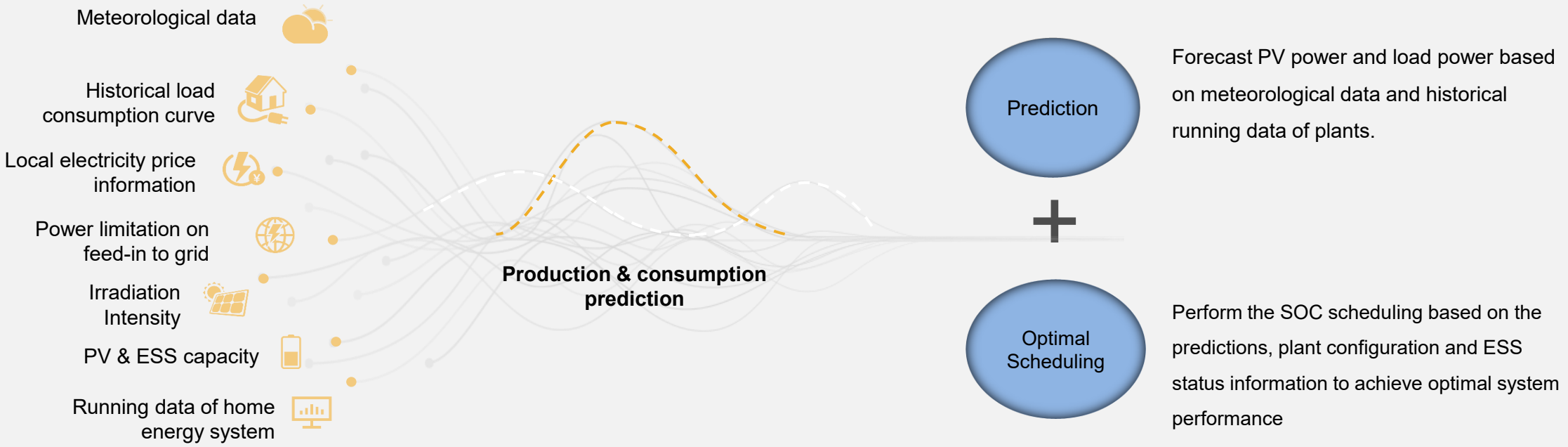
Include le funzioni di Dongle e di Smart Power Sensor e gestione dei carichi intelligenti

* Secondario 50 mA, precisione classe 0.2

What is EMMA

EMMA means **Energy Management Assistant**. It is the general name of Huawei smart PV energy management service for residential. It provides the services such as PV&ESS&EV-Charge collaboration, Smart PV&ESS collaboration and intelligent power consumption for residential owners.

Improve the comprehensive benefit by average 5%+ based on big data and AI technologies



Forecast PV power and load power based on meteorological data and historical running data of plants.

Perform the SOC scheduling based on the predictions, plant configuration and ESS status information to achieve optimal system performance

Smart Guard

Whole Home Backup



SmartGuard-63A-S0
SmartGuard-63A–T0

Partial
power backup

Whole home
power backup

Facile da installare,
Senza modifiche sull’impianto elettrico

Integra le seguenti funzioni:

- **BackupBox**
- **Gestione dei carichi con EMMA**
- **Smart Dongle**
- **Smart Power Sensor**

Continuità

< 20 ms

Switching ultra-rapito alla modalità di alimentazione in backup

Affidabile

Bypass Mode

Quando avviene un guasto, viene supportato anche il Bypass Manuale

Capacità di Backup Potente

con arresto gerarchico per tempi di backup più lunghi

On-grid



Off-grid



SOC<50%





More Reliable Backup, More Power Choices

Whole Home Backup

New



SmartGuard-63A-S0



SmartGuard-63A-T0

Reliable Backup Power

max.**36kW**



Three-phase off-grid backup power for MAP0

Bypass Mode

When a fault occurs, manual bypass is supported

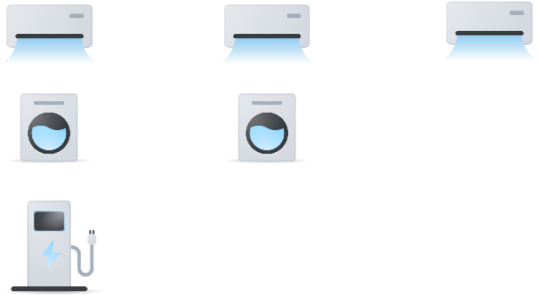
Seamless Switchover

Continuously working as if no power outage

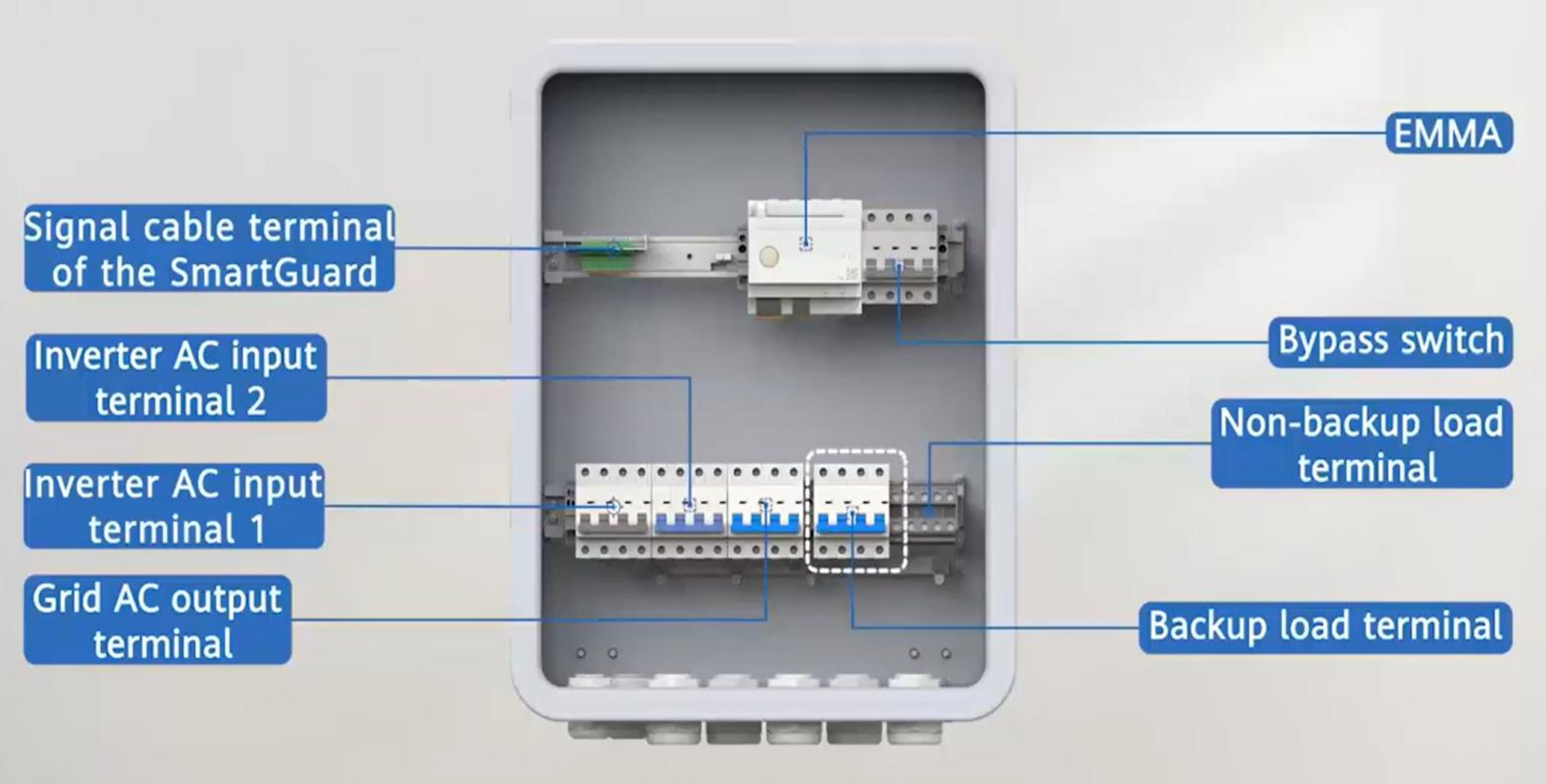
More Loads Backup Supported

Hierarchical shutdown for longer backup time

On-grid | **Off-grid** | **SOC<50%**



- **MAP0 supports three-phase loads backup**
- M1/MB0 only support single-phase loads backup

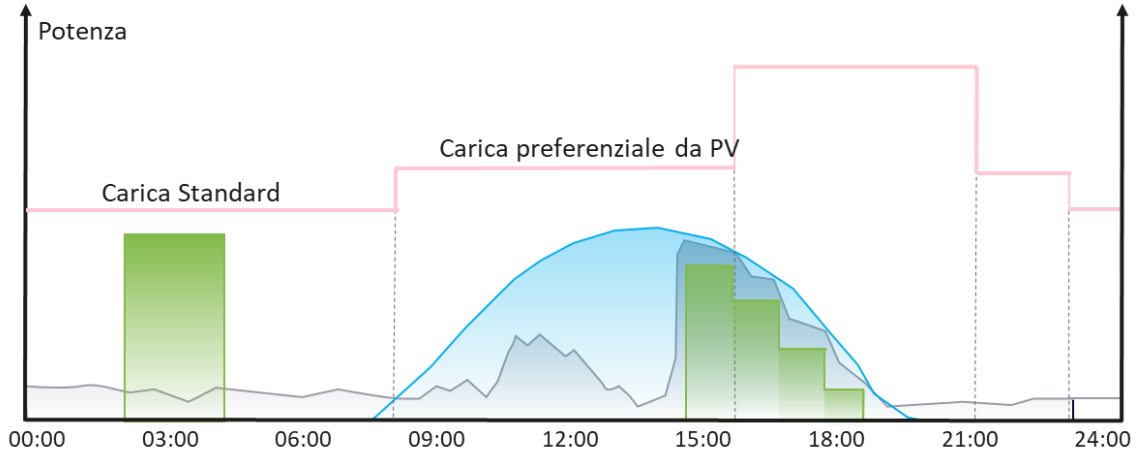

EMMA
Signal cable terminal of the SmartGuard
Bypass switch
Inverter AC input terminal 2
Non-backup load terminal
Inverter AC input terminal 1
Grid AC output terminal
Backup load terminal

Smart Charger AC



SCharger-7KS/22KT-S0

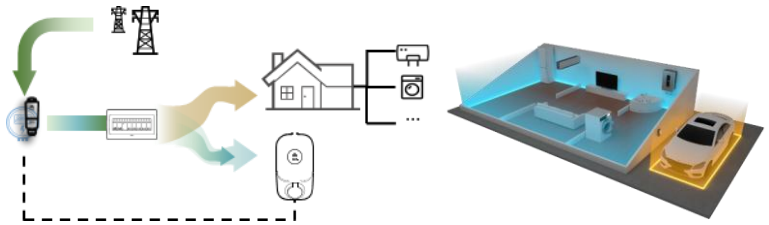
- **3 Modalita’ di ricarica per adattarsi ad ogni necessita’**



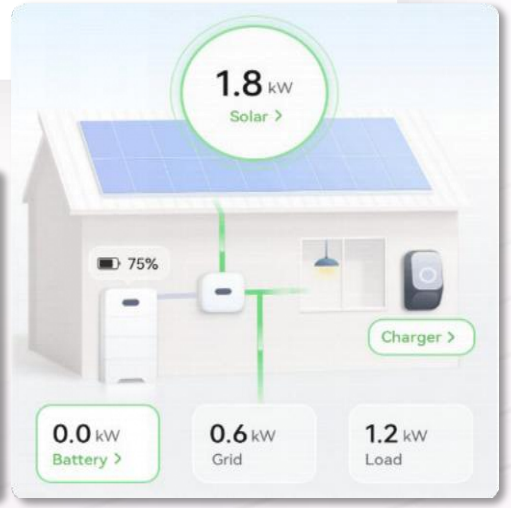
- **3 Modalita’ di Autenticazione**

RFID APP Bluetooth

- **Ricarica Dinamica**



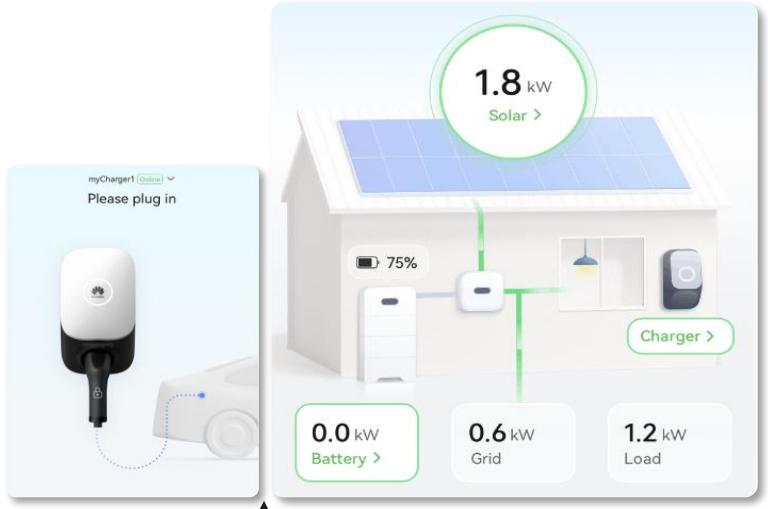


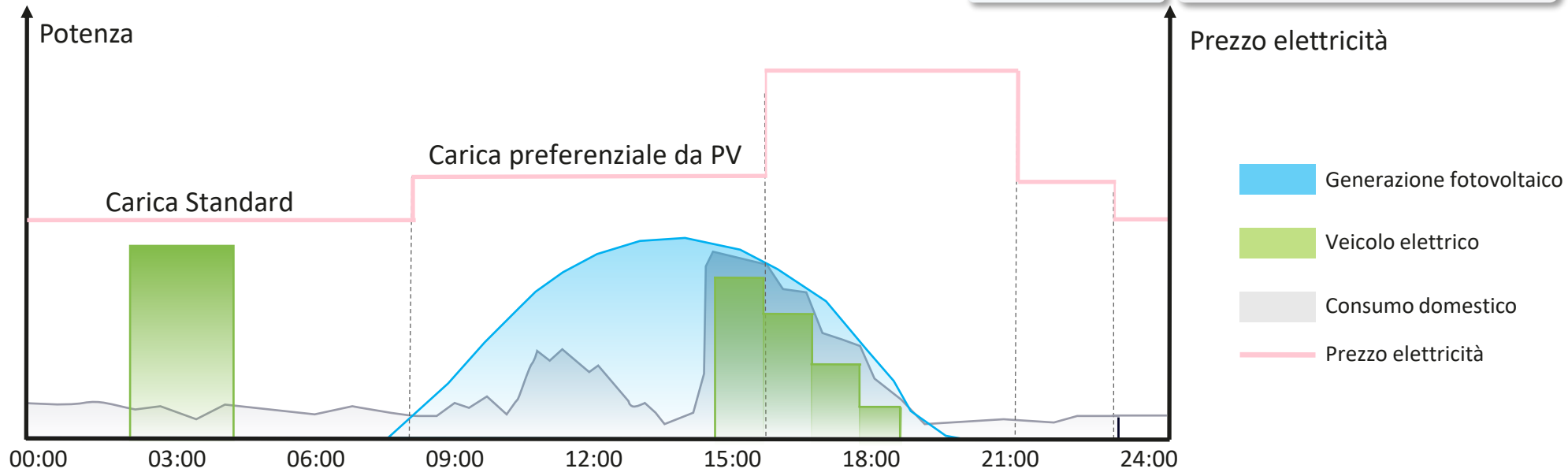


One-fits-all per PV+ESS+Charger



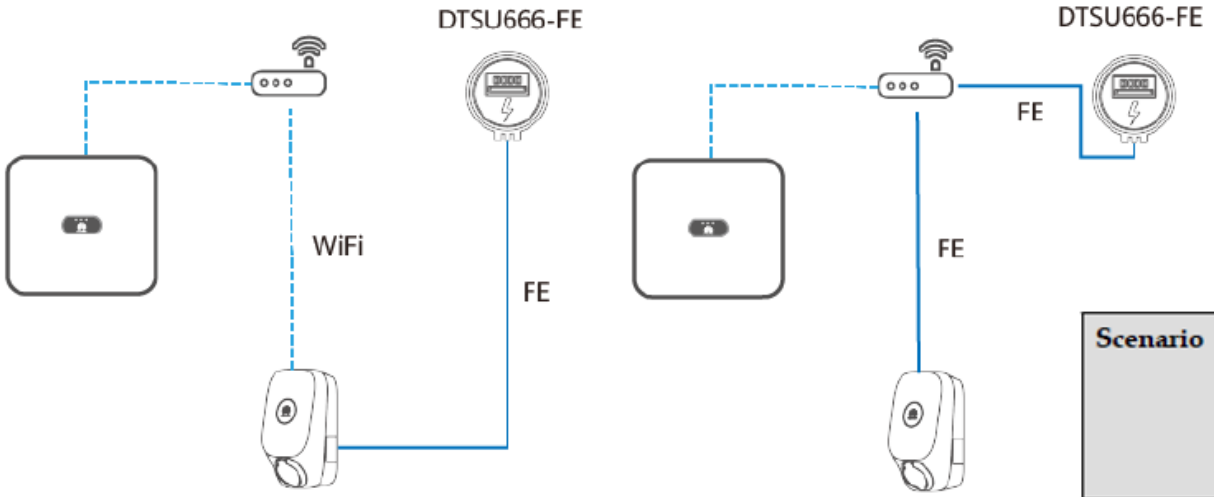
Colonnina di ricarica intelligente
SCharger-7KS/22KT-S0
Ricarica delle auto con energia fotovoltaica
Migliorare il tasso di autoconsumo



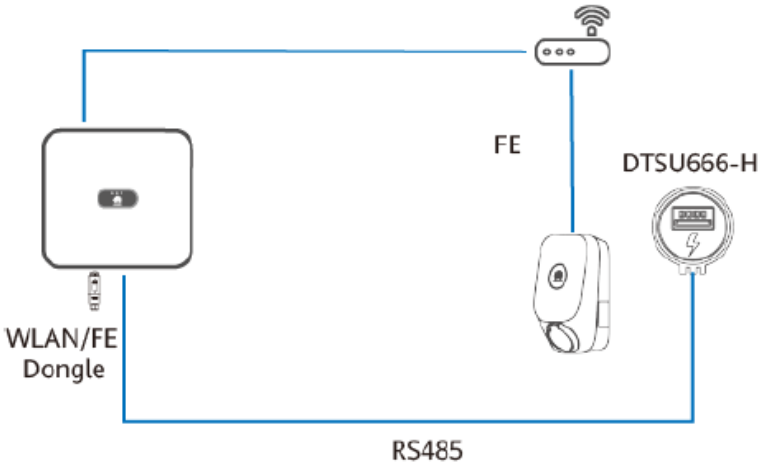


Riservato Huawei

Metodo 1: Contatore FE



Metodo 2: Contatore virtuale



Scenario	Limite di potenza del punto di connessione alla rete	Dispositivo FV	Modalità di collegamento contatore	Energia FV preferita	Potenza di carica dinamica
Solo caricatore	×	×	Contatore FE	×	√
FV+Caricatore (contatore FE)	×	√	Contatore FE	√	√
FV+Caricatore/FV+ESS +Caricatore (contatore RS485 e Smart Dongle WLAN/FE)	√	√	Contatore virtuale	√	√
FV+Caricatore/FV+ESS +Caricatore (contatore RS485, contatore FE e Smart Dongle non WLAN/FE)	√	√	Contatore FE	√	√

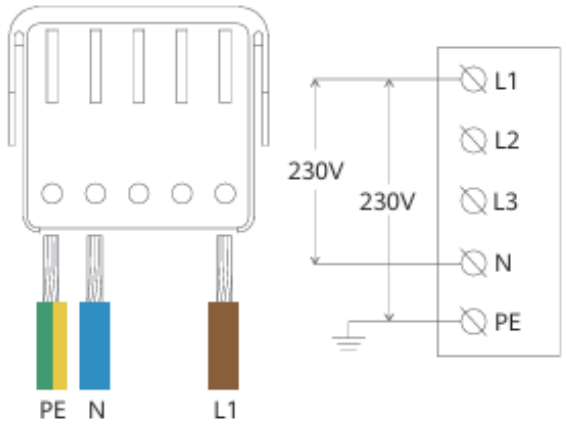
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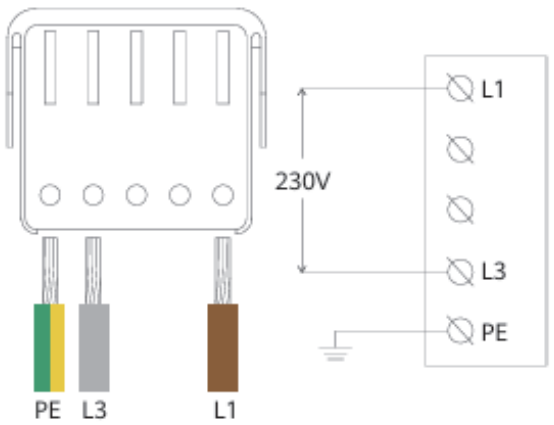
Wallbox trifase per Impianti monofase

- The following cables comply with the IEC 60446 standard. Cable colours may vary according to different regions. Connect power cables based on the actual phase condition.
- TN and TT systems are configured with neutral conductors. IT systems do not have neutral conductors.
- The SmartCharger-7KS-S0 supports TN&TT 1-phase and IT 1-phase.
- The SmartCharger-22KT-S0 supports TN&TT 3-phase, TN&TT 1-phase, and IT 1-phase.

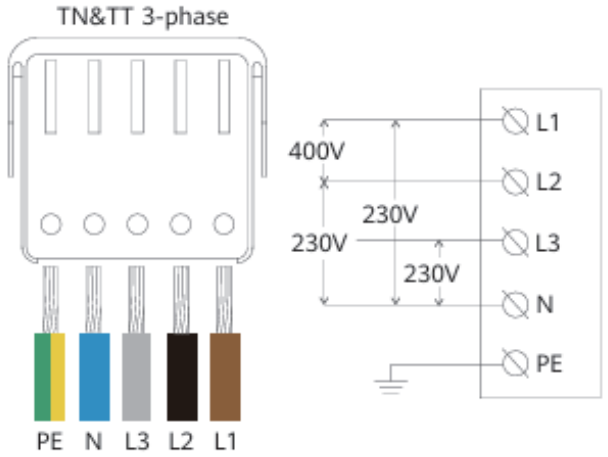
TN&TT 1-phase



IT 1-phase



TN&TT 3-phase



Riservato Huawei

Smart Optimizers



SUN2000-450W-P2
SUN2000-600W-P

- Comunica tramite **DC MBUS**
- Corrente di corto circuito **14.5 A**
- Max tensione in ingresso **80 V**
- Ogni pannello PV lavora al suo punto di massima potenza
- Monitoraggio a livello di pannello
- Resistenza a circuito aperto di **1 kΩ**, utilizzata per la verifica di installazione
- Ad inverter non rilevato, la tensione di sistema viene portata a **0 V**



NEW **SUN2000-600W-PA0**

- Comunica tramite **DC MBUS**
- Corrente di corto circuito **24 A**
- Max tensione in ingresso **80 V**
- Ogni pannello PV lavora al suo punto di massima potenza
- Monitoraggio a livello di pannello
- Tensione di Test: **1V**, utilizzata per verificare l'installazione dei collegamenti
- Ad inverter non rilevato, la tensione di sistema viene portata a un livello di sicurezza con tensione di safe exit pari **a 1 V**



MERC-1100W/1300W-P

- Comunica tramite **DC MBUS**
- Corrente di corto circuito **20 A**
- Max tensione in ingresso **125 V**
- Ogni pannello PV lavora al suo punto di massima potenza
- Monitoraggio a livello di pannello
- Tensione di Test: **1V**, utilizzata per verificare l'installazione dei collegamenti
- Ad inverter non rilevato, la tensione di sistema viene portata a un livello di sicurezza con tensione di safe exit pari **a 1 V**

Agiscono sulle curve I-V dei moduli facendoli lavorare nel loro punto di massima potenza

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Tabella di compatibilità Ottimizzatori / Inverter

	SUN2000 L1/LB0 SUN2000 M1/MAP0	SUN2000-12/25K-MB0	SUN2000-30/40KTL-M3	SUN2000-50KTL-M3	SUN2000-100/115KTL-M2 SUN2000-150K-MG0	SUN5000-150K-MG0
SUN2000-450W-P2	🟢	🟢	🟢	🔴	🔴	🔴
SUN2000-600W-P	🟢	🟢	🟢	🔴	🔴	🔴
SUN2000-600W-PA(	🟢	🟢	🔴	🔴	🔴	🔴
MERC-1100W-P*	🔴	🟢	🟢	🟢	🔴	🟢
MERC-1300W-P*	🔴	🟢	🟢	🟢	🔴	🟢

Le tipologie di applicazioni ammesse sono:

- Ottimizzazione completa di impianto
- Ottimizzazione completa di inverter
- Nessuna ottimizzazione

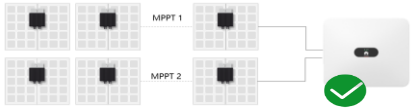
Non è ammessa la configurazione parziale di stringa/inverter con nessun modello di ottimizzatore, AD ECCEZIONE del SUN2000-600-PA0. Le stringhe collegate allo stesso MPPT devono essere gemelle!

**Può essere collegato solo un ingresso per MPPT ad eccezione del SUN5000-MG0*

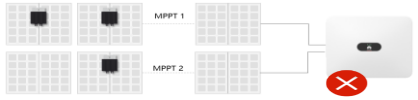
Combinazioni di ottimizzatori

- Sullo stesso impianto possono essere combinati i SUN2000 450W-P2 e 600W-P
- Sullo stesso impianto possono essere combinati i 1100W-P con i 1300W-P
- Non possono essere combinati tra loro i modelli di ottimizzatori SUN2000 con i modelli MERC
- MERC-600W-PA0 e MERC-1000/1300W-P non possono essere combinati tra loro.

SUN2000 optimizer + SUN2000 inverter

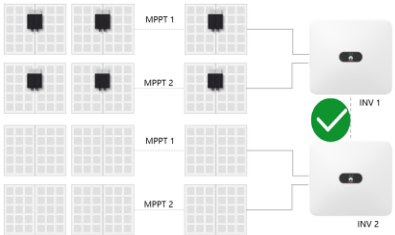


Full optimizers



Partial optimizers

Inverter shutdown alarm!



Inverter1: full optimizers

+

Inverter2: no optimizer

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Principi di configurazione con ottimizzatori (SUN2000-600-PA0)

- Principio di configurazione per lo scenario 1: gli ottimizzatori devono essere configurati per tutti i moduli FV collegati a un inverter.
- Principio di configurazione per lo scenario 2:
  - gli ottimizzatori devono essere configurati per tutti i moduli FV collegati ad alcuni MPPT di un inverter.
  - Il numero massimo di moduli FV collegati in serie in una stringa FV deve essere calcolato in base ai requisiti delle normative pertinenti. La tensione a circuito aperto alla temperatura locale minima stimata deve soddisfare i seguenti requisiti: la tensione a circuito aperto non deve superare la tensione massima di ingresso dell'inverter; la tensione a circuito aperto non deve superare 600 V per un inverter monofase o 1.000 V per un inverter trifase.
- Il sistema configurato con ottimizzatori non supporta moduli FV a film sottile o moduli FV leggeri.



1. Se due stringhe sono collegate in parallelo allo stesso MPPT, i vincoli per la configurazione degli ottimizzatori sono i seguenti:
   - Le stringhe FV collegate allo stesso MPPT devono utilizzare lo stesso numero di moduli FV dello stesso modello e lo stesso numero di ottimizzatori.
   - Tutti i moduli FV nella stessa stringa FV devono avere lo stesso orientamento e angolo di inclinazione. Gli orientamenti e gli angoli di inclinazione di due stringhe FV possono essere diversi.
2. Se a un MPPT è collegata solo una stringa FV e sono stati configurati degli ottimizzatori, è possibile utilizzare moduli FV di modelli diversi nella stringa FV e gli orientamenti e gli angoli di inclinazione dei moduli FV possono essere diversi.
3. Si consiglia di utilizzare il design a stringhe lunghe invece di connettori con diramazioni a Y.

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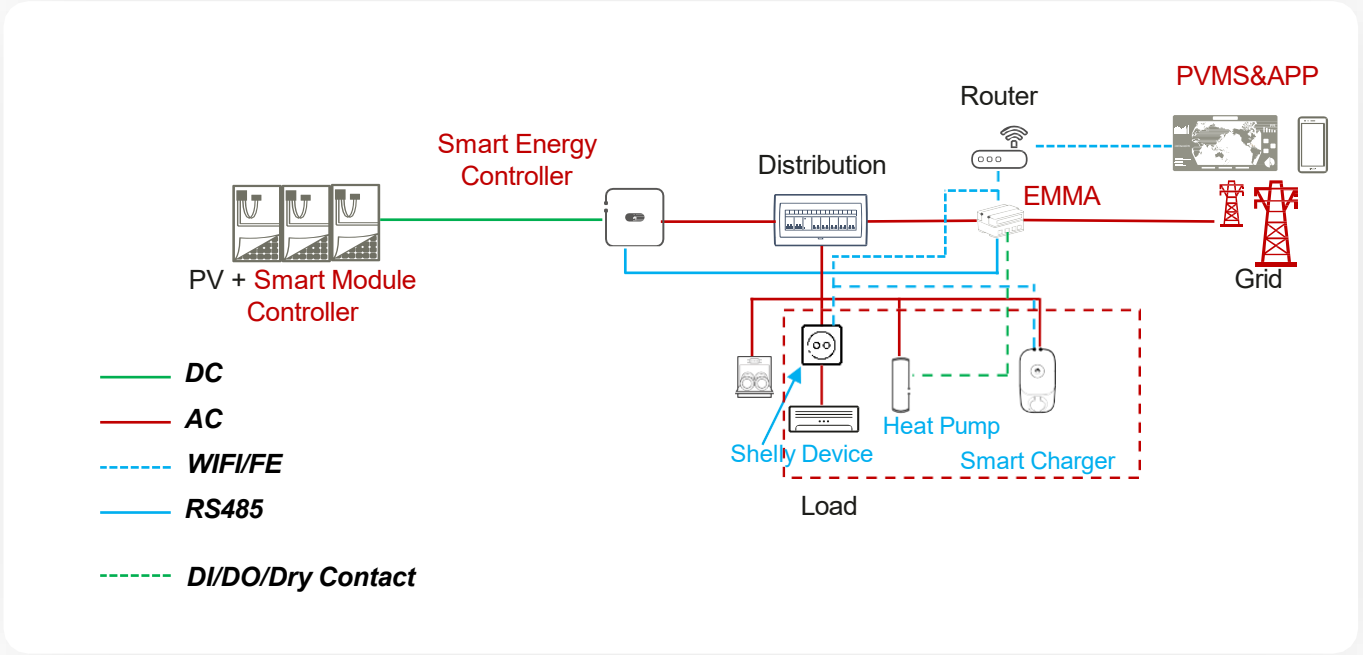


Configurazioni
PV + Ottimizzatori – On grid

PV + Optimizer Scenarios(Single Inverter)

Solution Description

- It refers to a grid-tied residential PV power system. In this system, no energy storage system is attached. And PV power generated can be consumed by home appliances or fed back to the grid.



Product Name	Product Model	Quantity	Remarks
Smart Module Controller	SUN2000-450W-P2/600W-P	Refer to user manual for guidance	
	MERC-600W-PA0		
Smart Energy Controller	SUN2000-2/3/3.68/4/4.6/5/6KTL-L1; SUN2000-3/6K-LB0; SUN2000-5/6/8/10/12KTL-M1; SUN2000-12/15/17/20/25KTL-M5; SUN2000-12/15/17/20/25K-MB0	1	
	SUN2000-5-12K-MAP0 SUN5000-8/12K-MAP0 (EU) SUN5000-17/25K-MB0 (EU)		
Dongle	Smart DongleA-05(AP+STA) Smart DongleB-06	Optional	EMMA can replace dongle + sensor
Sensor	DTSU666-H（250A/100A）、DTSU666-HW、YDS60-80、YDS60-C24、DTSU71、DHSU1079-CT	≤ 1	
EMMA	EMMA-A02	Optional	
Smart Charger	SCharger-7KS/22KT-S0	≤ 2 with EMMA, 1 with Dongle	
Heat Pump	SG-ready	≤ 1	3rd Party
Shelly Device	Shelly Plus Plug S Shelly Pro 2PM Shelly Plus 2PM	≤ 20	

Notes:

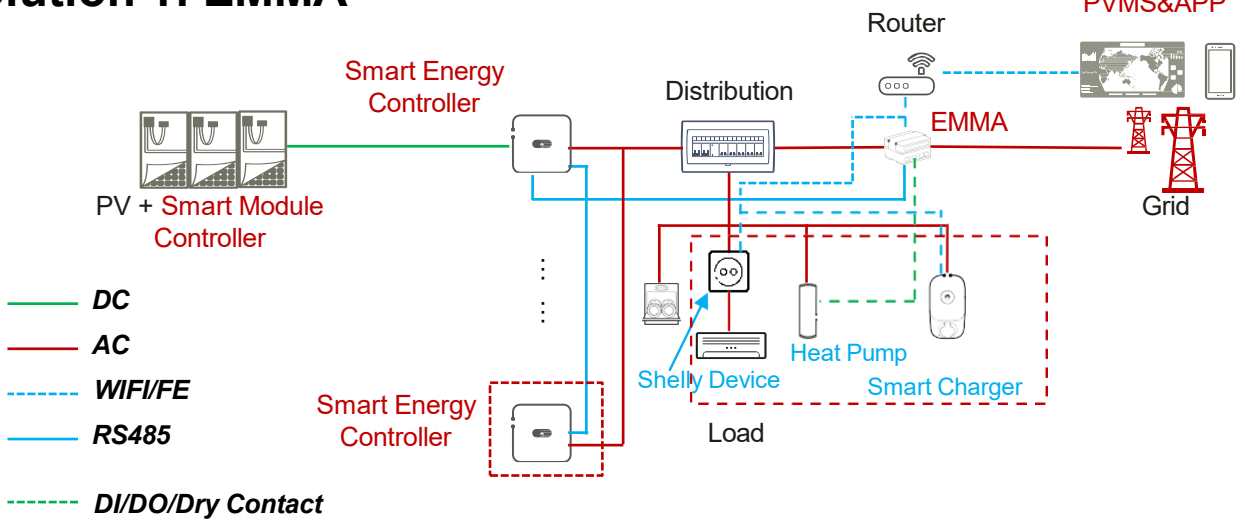
- The SUN5000 inverter must be equipped with an optimizer. The SUN2000 inverter is fully equipped with/without an optimizer.
- The EMMA is must when there are intelligent load control and smart charger.
- There is no need to install Dongle and EMMA when the SUN2000-L1 inverter is connect directly to WiFi.
- S0 and S1 cannot be used together in the same inverter. CAN be used together in the same system different inverter.

PV + Optimizer Scenarios (Parallel Inverters) with EMMA

Solution Description

- It refers to a grid-tied residential PV power system. In this system, no energy storage system is attached. And PV power generated can be consumed by home appliances or fed back to the grid.

Solution 1: EMMA



Product Name	Product Model	Quantity	Remarks
Smart Module Controller	SUN2000-450W-P2/600W-P MERC-600W-PA0	Refer to user manual for guidance	
Smart Energy Controller	SUN2000-2/3/3.68/4/4.6/5/6KTL-L1; SUN2000-3/6K-LB0; SUN2000-5/6/8/10/12KTL-M1; SUN2000-12/15/17/20/25KTL-M5; SUN2000-12/15/17/20/25K-MB0	1 ≤ n ≤ 3	Single phase and 3 phase inverters canno be cascaded. MAP0 can only be cascaded with MAP0; OR with MB0 only if the system is 3 wire.
	SUN2000-5-12K-MAP0 SUN5000-8/12K-MAP0 (EU) SUN5000-17/25K-MB0 (EU)		
EMMA	EMMA-A02	1	
Smart Charger	SCharger-7KS/22KT-S0	≤ 2	
Heat Pump	SG-ready	≤ 1	3rd Party
Shelly Device	Shelly Plus Plug S Shelly Pro 2PM Shelly Plus 2PM	≤ 20	

Notes:

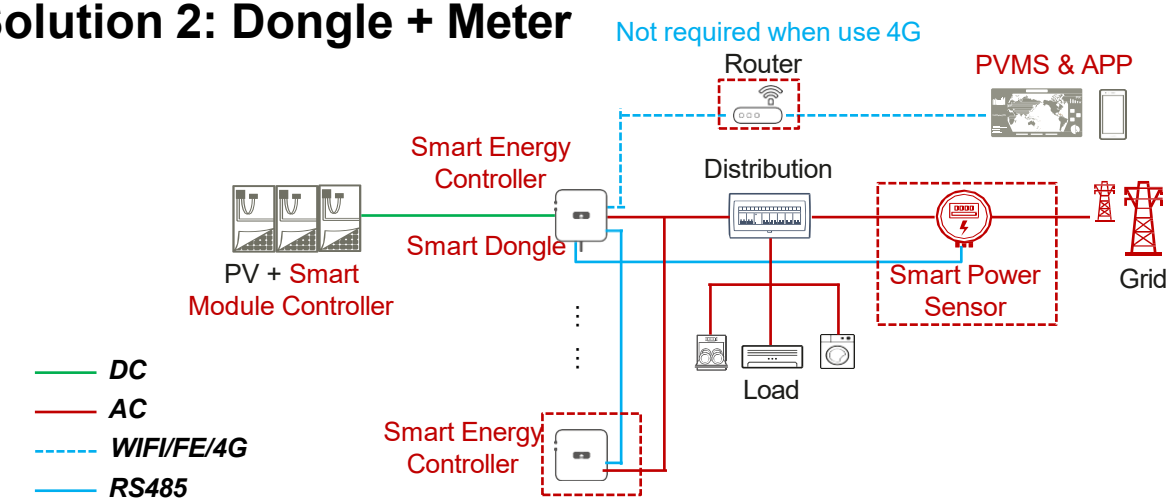
- MAP0 can't cascade with M1/BEM1/M5/MB0 if the system is 3P4W.
- When MAP0 is used as 3P4W, EMMA is required for parallel operation.
- The SUN5000 inverter must be equipped with an optimizer. The SUN2000 inverter is fully equipped with/without an optimizer.
- The SUN2000 inverter cannot be operated in parallel with the SUN5000 inverter.
- The EMMA is must when there are intelligent load control and smart charger.
- S0 and S1 cannot be used together in the same inverter. CAN be used together in the same system different inverter.

PV + Optimizer Scenarios (Parallel Inverters) with Dongle + Meter

Solution Description

- It refers to a grid-tied residential PV power system. In this system, no energy storage system is attached. And PV power generated can be consumed by home appliances or fed back to the grid.

Solution 2: Dongle + Meter



Product Name	Product Model	Quantity	Remarks
Smart Module Controller	SUN2000-450W-P2/600W-P	Refer to user manual for guidance	
	MERC-600W-PA0		
Smart Energy Controller	SUN2000-2/3/3.68/4/4.6/5/6KTL-L1; SUN2000-3/6K-LB0; SUN2000-5/6/8/10/12KTL-M1; SUN2000-12/15/17/20/25KTL-M5; SUN2000-12/15/17/20/25K-MB0	1 ≤ n ≤ 9 Refer to note	Single phase and 3 phase inverters cannot be cascaded. MAP0 can only be cascaded with MAP0; OR with MB0 only if the system is 3 wire.
	SUN2000-5-12K-MAP0 SUN5000-8/12K-MAP0 (EU) SUN5000-17/25K-MB0 (EU)		
Smart Dongle	SDongleA-05	Either one	Refer to note
	SDongleB-06		
Smart Power Sensor	DTSU666-H（250A/100A）、DTSU666-HW、YDS60-80、YDS60-C24、DTSU71、DHSU1079-CT	≤ 1	

Notes:

- When the MAP0 is used as 3P3W, the Dongle supports 3 parallel units; when the MAP0 is used with 3P4W, the Dongle supports a single unit.
- MAP0 can't cascade with M1/BEM1/M5/MB0 if the system is 3P4W.
- The SUN5000 inverter must be equipped with an optimizer. The SUN2000 inverter is fully equipped with/without an optimizer.
- The SUN2000 inverter cannot be operated in parallel with the SUN5000 inverter.
- S0 and S1 cannot be used together in the same inverter. CAN be used together in the same system different inverter.

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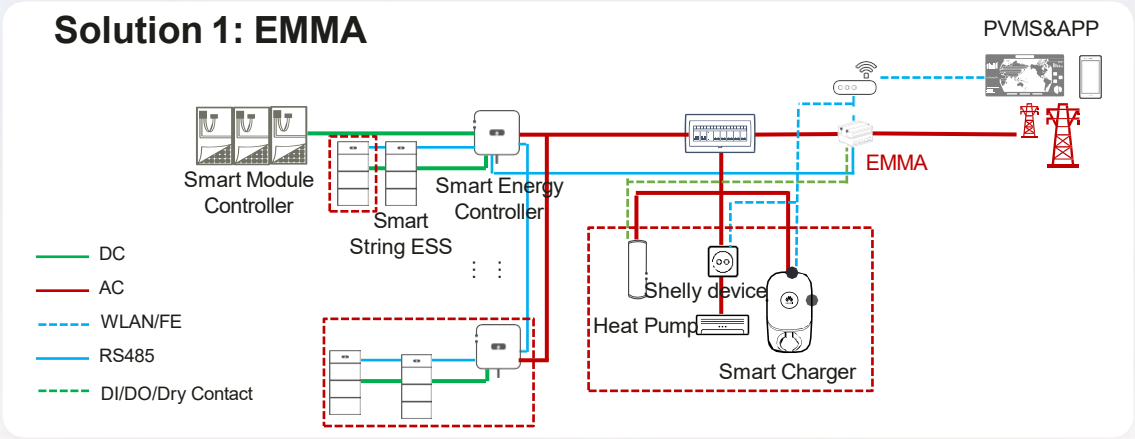
Configurazioni
PV + ESS – On grid

Description of Residential PV+ESS Solutions for On-grid Single-Phase Scenario - EMMA

Solution Description

- When the power grid is very stable and the backup function is not wanted.

Solution 1: EMMA



Solution Configuration Table

Product	Model	Quantity
Optimizer	SUN2000-450W-P2/600W-P	Refer to the user manual.
	MERC-600W-PA0	
Inverter	SUN2000-2-6KTL-L1	≤ 3
	Or: SUN2000-3-6K-LB0	
	Or: SUN5000-3/6K-LB0	
	Or SUN2000-8/10K-LC0	
ESS	LUNA2000-5/10/15-S0/S1	≤ 2 ESSs
	Or: LUNA2000-7/14/21-S1	
Charger	SCharger-7KS-S0	≤ 2
EMMA	EMMA-A02	1
heat pump	SG ready	≤ 1
Smart switch	Shelly Plus Plug S	≤ 20
	Shelly Pro 2PM	
	Shelly Plus 2PM	

Notes:

- L1 and LB0 can be mixed used in 1 system
- SUN5000 can not be mixed with SUN2000 inverter: the SUN2000 and SUN5000 cannot be used in parallel
- The SUN5000 must be fully equipped with the optimizer. Otherwise, the SUN5000 cannot be started.
- 1 L1 or LB0 inverter supports a maximal of 2 ESSs (L1 can support 2 S1 only with EMMA)
- S0 and S1 cannot be used together in the same inverter. CAN be used together in the same system different inverter.
- PV preferred mode for the charger is unavailable with zero-export mode
- PV preferred mode is unavailable, when limited-export mode is active and the limit power lower than startup power in PV preferred mode

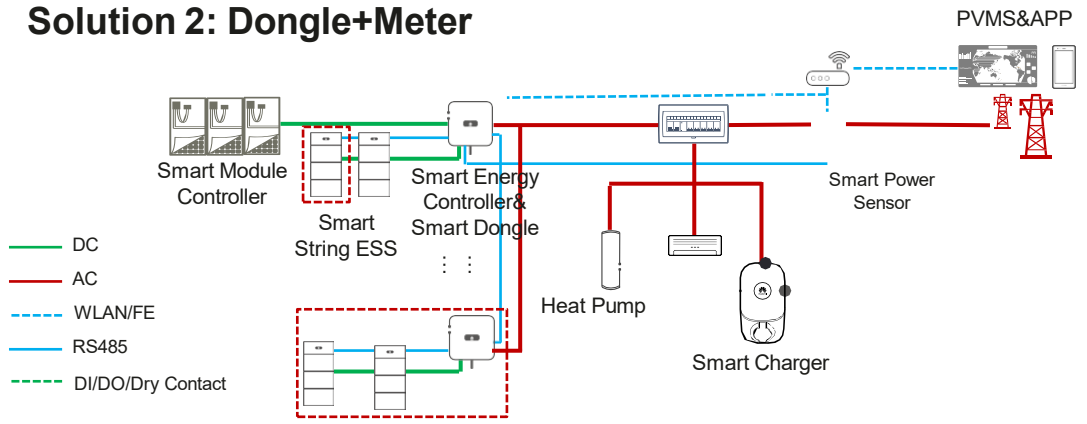
- The EMMA can use an external CT. For details, see the EMMA User Manual.

Description of Residential PV+ESS Solutions for On-grid Single-Phase Scenario – DONGLE + METER

Solution Description

- When the power grid is very stable and the backup function is not wanted.

Solution 2: Dongle+Meter



Notes:

- L1 can connect only one S1 with Dongle scenario (or 2 S0), and connect two S1 (or two S0) with EMMA. LB0 can connect 2 S1 or 2 S0 also with Dongle.
- L1 and LB0 can be mixed used in 1 system
- SUN5000 can not be mixed with SUN2000 inverter
- The SUN5000 must be fully configured with the optimizer. Otherwise, the SUN5000 cannot be started.
- S0 and S1 cannot be used together in the same inverter. CAN be used together in the same system different inverter.
- PV preferred mode is unavailable with zero-export mode
- PV preferred mode is unavailable, when limited-export mode is active and the limit power lower than startup power in PV preferred mode
- L1 or LC0 have built-in WIFI module, no need of additional dongle

Solution Configuration Table

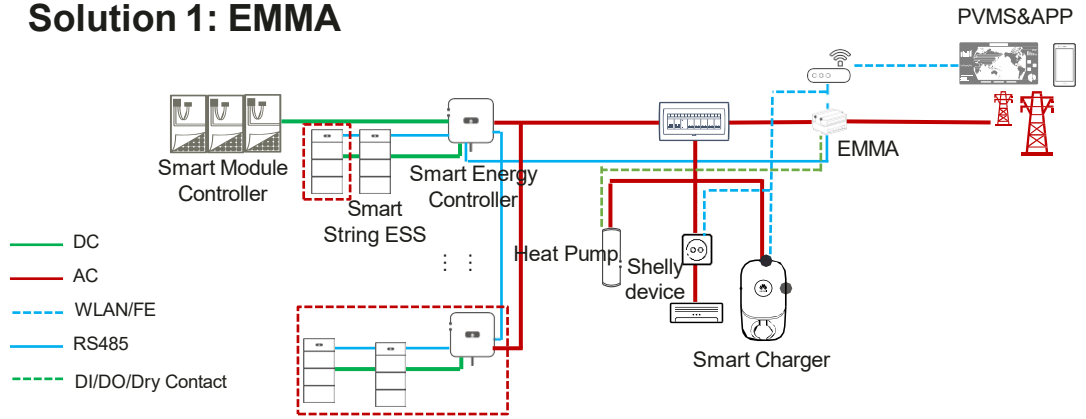
Product	Model	Quantity
Optimizer	SUN2000-450W-P2/600W-P	Refer to the user manual.
	MERC-600W-PA0	
Inverter	SUN2000-2-6KTL-L1	≤ 3
	Or: SUN2000-3-6K-LB0	
	Or: SUN5000-3/6K-LB0	
	Or SUN2000-8/10K-LC0	
Energy storage	LUNA2000-5/10/15-S0	≤ 2 ESSs
	Or: LUNA2000-7/14/21-S1	
Charging pile	SCharger-7KS-S0	≤ 1
Dongle	SDongleA-05	1
	SDongleB-06	
Electric meter	YDS60-80, YDS60-C24	1
heat pump	SG ready	≤ 1
Intelligent switch	Shelly Plus Plug S	≤ 20
	Shelly Pro 2PM	
	Shelly Plus 2PM	

Description of Residential PV+ESS Solutions for On-grid Three-Phase Scenario - EMMA

Solution Description

- The solution can also be used in 3-phase scenario with 3-phase inverter.

Solution 1: EMMA



Product Name	Product Model	Quantity
Smart Module Controller	SUN2000-450W-P2	Refer to user manual Full optimizer with SUN5000
	SUN2000-600W-P	
Smart Energy Controller	SUN2000-3-10KTL-M1	Max 3 inverters supported MAP0 can only be cascaded with MAP0 OR with MB0 only if the system is 3 wire.
	Or: SUN2000-12-25K-MB0	
	Or: SUN5000-17/25K-MB0	
	Or: SUN2000-8-12K-MAP0	
	Or: SUN5000-8/12K-MAP0	
Smart String ESS	LUNA2000-5/10/15-S0	For M1、MAP0：≤ 2 ESSs For MB0：≤ 4 ESSs
	OR: LUNA2000-7/14/21-S1	
Smart Charger	SCharger-7KS-S0	≤ 2
	SCharger-22KT-S0	
EMMA	EMMA-A02	1
Heat Pump	SG ready	≤ 1
Shelly Device	Shelly Plus Plug S	≤ 20
	Shelly Pro 2PM	
	Shelly Plus 2PM	

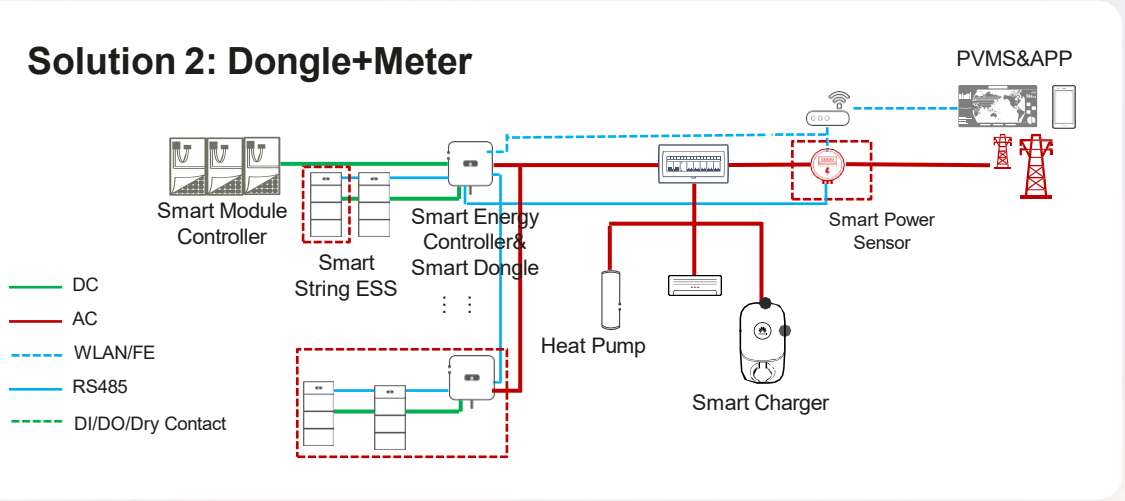
Notes:

- 1 M1/MAP0 inverter supports a maximal of 2 ESSs, 1 MB0 inverter supports a maximal of 4 ESSs
- SUN5000 series inverter must be full optimizers connected.
- SUN5000 and SUN2000 inverter can not be mixed used
- S0 and S1 cannot be used together in the same inverter. CAN be used together in the same system different inverter.
- For current > 63 A, an externat CT is required (current: 50 mA)
- Smart Charger could not be installed in the backup load port
- PV preferred mode is unavailable with zero-export mode
- PV preferred mode is unavailable, when limited-export mode is active and the limit power is lower than startup power in PV preferred mode

Description of Residential PV+ESS Solutions for On-grid Three-Phase Scenario – DONGLE + METER

Solution Description

- The solution can also be used in 3-phase scenario with 3-phase inverter.



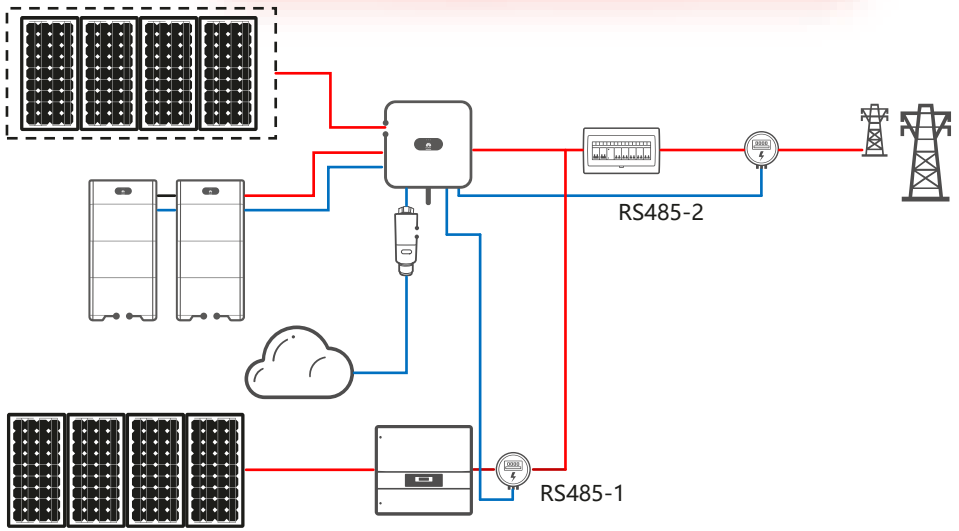
Product Name	Product Model	Quantity
Smart Module Controller	SUN2000-450W-P2/600W-P	Refer to user manual Full optimizer with SUN5000
	MERC-600W-PA0	
Smart Energy Controller	SUN2000-3-10KTL-M1	Max 3 inverters supported MAP0 can only be cascaded with MAP0. OR with MB0 only if the system is 3 wire.
	Or: SUN2000-12-25K-MB0	
	Or: SUN5000-17/25K-MB0	
	Or: SUN2000-8-12K-MAP0	
	Or: SUN5000-8/12K-MAP0	
Smart String ESS	LUNA2000-5/10/15-S0	For M1、MAP0：≤ 2 ESSs For MB0：≤ 4 ESSs. MAX. 6 BMS con S.Dongle
	OR: LUNA2000-7/14/21-S1	
Smart Charger	SCharger-7KS-S0	≤ 1
	SCharger-22KT-S0	
Heat Pump	SG ready	≤ 1
Smart Dongle	SDongleA-05	Either one
	SDongleB-06	
Smart Power Sensor	DTSU666-H（250A/100A）、DTSU666-HW、YDS60-80、 YDS60-C24、DTSU71、DHSU1079-CT	≤ 1

Notes:

- 1 M1/MAP0 inverter supports a maximal of 2 ESSs, 1 MB0 inverter supports a maximal of 4 ESSs
- When the MAP0 is used as 3P3W, the Dongle supports 3 parallel units; when the MAP0 is used with 3P4W, the Dongle supports a single unit.
- SUN5000 series inverter must be full optimizers connected.
- SUN5000 and SUN2000 inverter can not be mixed used
- S0 and S1 cannot be used together in the same inverter. CAN be used together in the same system different inverter.
- PV preferred mode is unavailable with zero-export mode
- PV preferred mode is unavailable, when limited-export mode is active and the limit power is lower than startup power in PV preferred mode

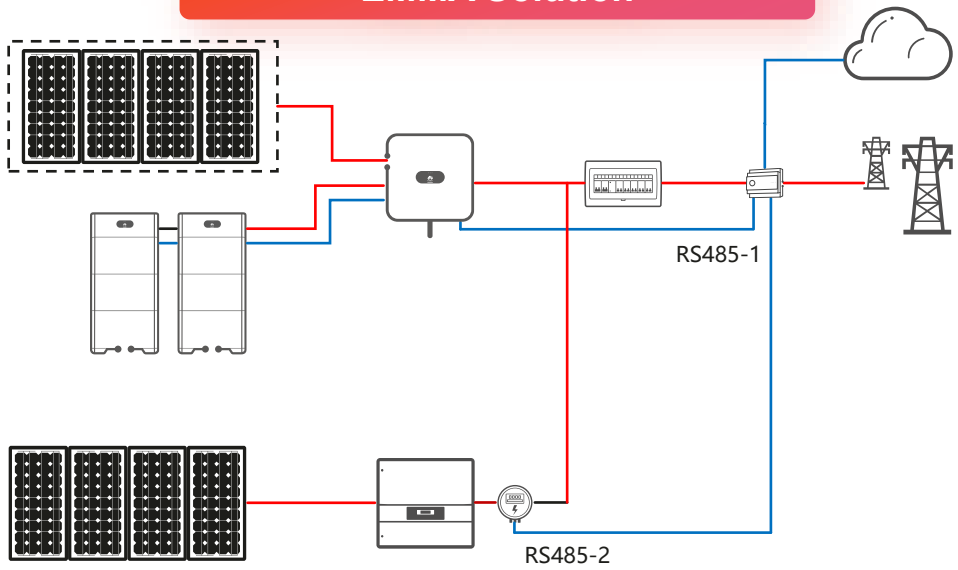
Huawei inverter with 3rd-party Inverter

Dongle Solution



- Communication device: WLAN-FE Dongle
- 1 × Inverter: SUN2000-L1, SUN2000-M1
- ESS: LUNA-S0,
- Meter: DDSU666-H, DTSU666-H, SmartPS-100A-S0, SmartPS-80AI-T0, SmartPS-250A-T0
- Optimizer: SUN2000-450W-P2, SUN2000-600W-P
- FusionSolar PVMS: only displays the total energy flow of the system

EMMA Solution



- Communication device: EMMA-A02
- 3 × Inverter: SUN2000-L1, SUN2000-LB0, SUN2000-M1, SUN2000-MAP0, SUN2000-MB0*
- ESS: LUNA-S0&S1, max. 12 BMS
- Meter: DDSU666-H, DTSU666-H, SmartPS-100A-S0, SmartPS-80AI-T0, SmartPS-250A-T0
- Optimizer: SUN2000-450W-P2, SUN2000-600W-P
- FusionSolar PVMS: display the total energy flow, and energy curve of meter 2

- Support Dynamic tariff and optimization during negative price, but not recommended, because it may not work well. No Intelligent Scheduling.
- Support TOU mode and manual control of intelligent load.
- MAP0 is more recommended than M1 and MB0, because lower limit of SOC is 15% when no PV with M1 and MB0
- Lower limit of SOC is 15% when no PV also with L1 and LB0

Also with Smartguard retrofit is allowed, max. 1 Huawei inverter (3 is allowed only with MAP0 and Smartguard-T0), more informations: Electrical Connections - Residential Smart PV Solution User Manual (SmartAssistant Networking and SmartGuard Networking) – Huawei

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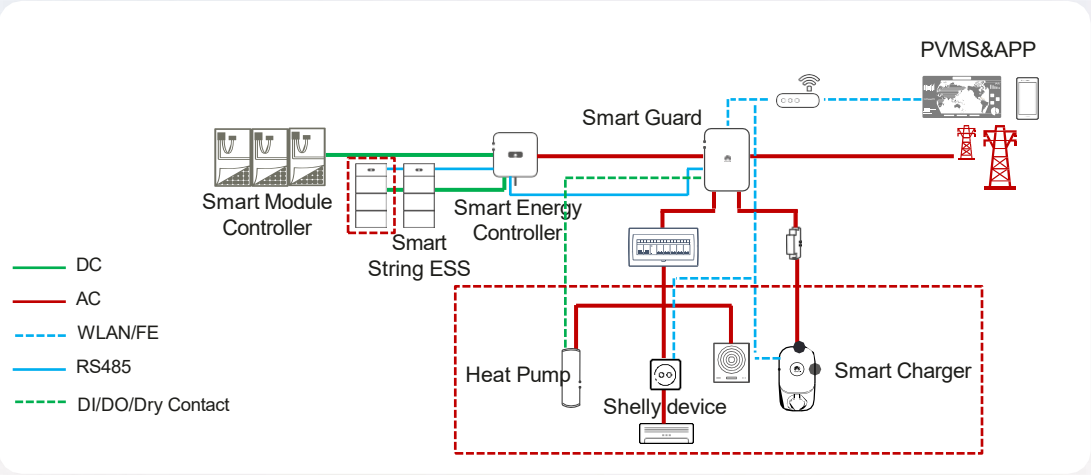


Configurazioni
PV + ESS + Backup – On/Off grid

Description of Residential PV+ESS+Backup Solutions for On-grid Single-Phase Scenario

Solution Description

- Currently Single-phase Smart Guard is available.



Notes:

- SmartGuard doesn't support multiple inverters for single-phase scenario
- Smart Charger could not be installed in the backup load port
- The current capacity of main circuit breaker should be in 63A
- S0 and S1 cannot be used together in the same inverter. CAN be used together in the same system different inverter.
- The SUN5000 must be fully equipped with the optimizer. Otherwise, the SUN5000 cannot be started.
- The SUN2000 and SUN5000 cannot be used in parallel.
- In zero-power grid-tied mode, green power is unavailable first.
- The charging post must be connected to the non-backup power port of the SmartGuard.

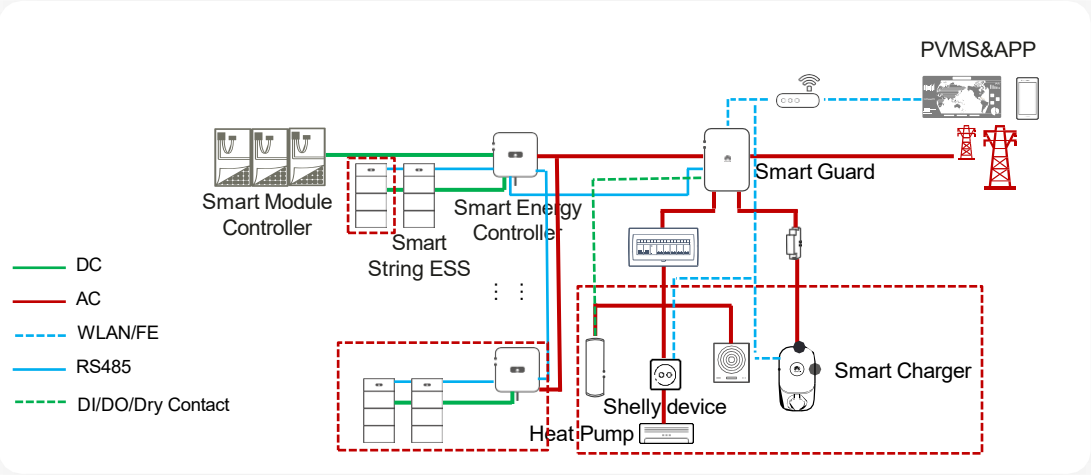
Solution Configuration Table

Product	Model	Quantity
Optimizer	SUN2000-450W-P2/600W-P	Refer to the user manual.
	MERC-600W-PA0	
Inverter	SUN2000-2-6KTL-L1	1
	Or: SUN2000-3-6K-LB0	
	Or: SUN5000-3/6K-LB0	
	Or SUN2000-8/10K-LC0	
Energy storage	LUNA2000-5/10/15-S0	≤ 2 ESSs
	Or: LUNA2000-7/14/21-S1	
Charging pile	SCharger-7KS-S0	≤ 2
Power backup box	SmartGuard-63A-S0	1
heat pump	SG ready	≤ 1
Smart switch	Shelly Plus Plug S	≤ 20
	Shelly Pro 2PM	
	Shelly Plus 2PM	

Description of Residential PV+ESS+Backup Solutions for On-grid Three-Phase Scenario

Solution Description

- Currently three-phase backup solution is available.



Product Name	Product Model	Quantity
Smart Module Controller	SUN2000-450W-P2/600W-P	Refer to user manual Full optimizer with SUN5000
	MERC-600W-PA0	
Smart Energy Controller	SUN2000-3-10KTL-M1	Only 1 inverter supported
	Or: SUN2000-12-25K-MB0	
	Or: SUN5000-17/25K-MB0	
	Or: SUN2000-8-12K-MAP0	Max 3 inverters supported only with MAP0
	Or: SUN5000-8/12K-MAP0	
Smart String ESS	LUNA2000-5/10/15-S0	For M1、MAP0：≤ 2 ESSs For MB0：≤ 4 ESSs
	Or: LUNA2000-7/14/21-S1	
Whole Home Backup	SmartGuard-63A-T0	1
	SmartGuard-63A-AUT0	
Antenna	Internal Integrated Antenna	≤ 1
Smart Charger	SCharger-7KS/22KT-S0	≤ 2
Heat Pump	SG ready	≤ 1
Shelly Device	Shelly Plus Plug S	≤ 20
	Shelly Pro 2PM	
	Shelly Plus 2PM	

Notes:

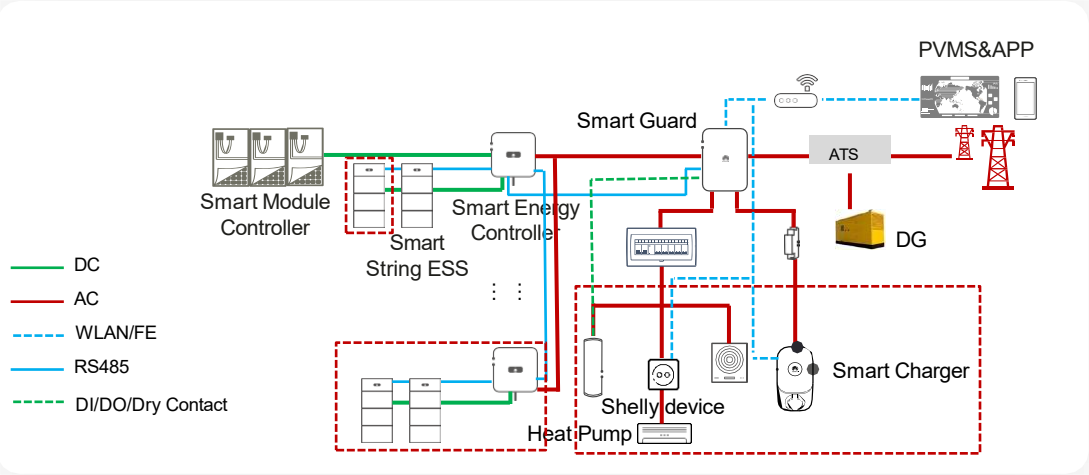
- Three-phase SmartGuard supports 3 inverters(MAP0) in max, only supports 1 inverter for M1/MB0
- Three-phase loads backup supported only with MAP0, for M1/MB0 can only support single-phase loads backup
- 1 M1/MAP0 inverter supports a maximal of 2 ESSs, 1 MB0 inverter supports a maximal of 4 ESSs
- SUN5000 series inverter must be full optimizers connected.
- SUN5000 and SUN2000 inverter can not be mixed used
- S0 and S1 cannot be used together in the same inverter. CAN be used together in the same system different inverter.

- SmartGuard supports a max of 3 inverters MAP0 and 1 MB0/M1
- If the SmartGuard is connected by WIFI, the antenna module should be order indipendently
- The current capacity of main circuit breaker should be in 63A
- Smart Charger could not be installed in the backup load port
- PV preferred mode is unavailable with zero-export mode
- PV preferred mode is unavailable, when limited-export mode is active and the limit power is lower than startup power in PV preferred mode

Description of Residential PV+ESS+Backup+DG Solutions for On-grid Three-Phase Scenario

Solution Description

- Currently three-phase backup+DG solution is available.



Notes:

- 1 MAP0 inverter supports a maximal of 2 ESSs
- SUN5000 series inverter must be full optimizers connected.
- SUN5000 and SUN2000 inverter can not be mixed used
- S0 and S1 cannot be used together in the same inverter. CAN be used together in the same system different inverter.

Product Name	Product Model	Quantity
Smart Module Controller	SUN2000-450W-P2/600W-P	Refer to user manual Full optimizer with SUN5000
	MERC-600W-PA0	
Smart Energy Controller	SUN2000-3-10KTL-M1	Only 1 inverter supported
	Or: SUN2000-12-25K-MB0	
	OR: SUN5000-17/25K-MB0	
	OR: SUN2000-8-12K-MAP0	Max 3 inverters supported only with MAP0
	OR: SUN5000-8/12K-MAP0	
Smart String ESS	LUNA2000-5/10/15-S0	For M1、MAP0：≤ 2 ESSs For MB0：≤ 4 ESSs
	Or: LUNA2000-7/14/21-S1	
Whole Home Backup	SmartGuard-63A-T0	1
	OR: SmartGuard-63A-AUT0	
Diesel Generator	Third-party DG	1
ATS	Third-party ATS	1
Antenna	Internal Integrated Antenna	≤ 1
Smart Charger	SCharger-7KS-S0	≤ 2
Heat Pump	SG ready	≤ 1
Shelly Device	Shelly Plus Plug S	≤ 20
	Shelly Pro 2PM	
	Shelly Plus 2PM	

- SmartGuard supports a max of 3 inverters MAP0 and 1 MB0/M1
- If the SmartGuard is connected by WIFI, the antenna module should be order indipendently
- The current capacity of main circuit breaker should be in 63A
- Smart Charger could not be installed in the backup load port
- PV preferred mode is unavailable with zero-export mode
- PV preferred mode is unavailable, when limited-export mode is active and the limit power is lower than startup power in PV preferred mode

Grazie!

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home and organization for a fully connected, intelligent world.

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