

Live Webinar

How installers can meet surging consumer demand for holistic home solar, storage and EV charging systems

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TECHTalk

Co-hosting with



FusionSolar

Residential Smart PV Launch

By **Thomas Herold**,

Technical Director of Huawei FusionSolar Germany

June 15, 2022



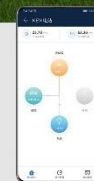
Building a Fully Connected, Intelligent World

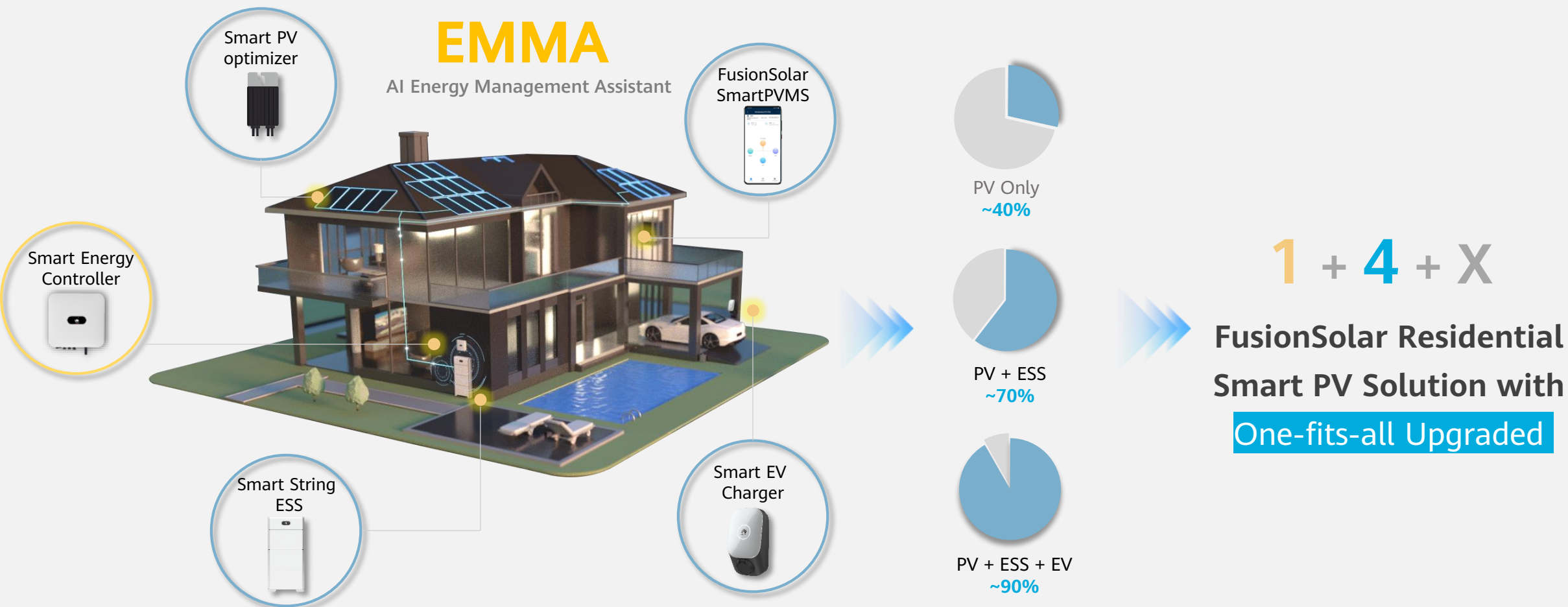
FusionSolar for a Better Life

Optimal Electricity Cost | Active Safety | Better Experience | Intelligent Assistant



in YouTube f t
@Huawei FusionSolar





Optimal Electricity Cost

Active Safety

Better Experience

Intelligent Assistant

Smart Module Controller

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



Harvest the Sunlight from your Rooftop. More Energy with Optimizers

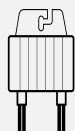
Smart Module Controller

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



Dimension

75x140x28 mm



50% Smaller than
Industry Average Size

Weight

0.6 kg



Hold with one hand for more convenient installation

One Smart Module Controller Fits All installation Scenarios

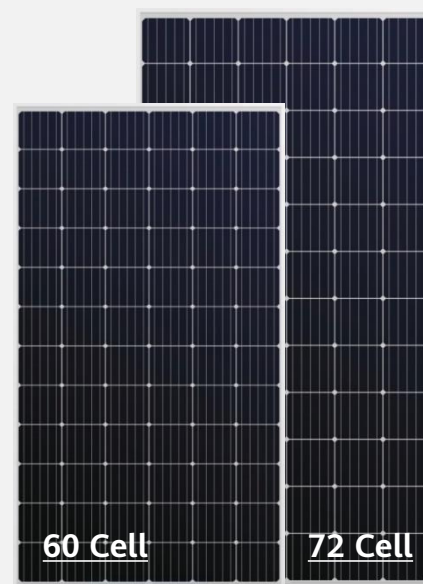


Max. Short Circuit Current

13_A ↗ 14.5_A

Fits new high-current PV Modules

Fits All 60 & 72 cell crystalline silicon PV modules on the market



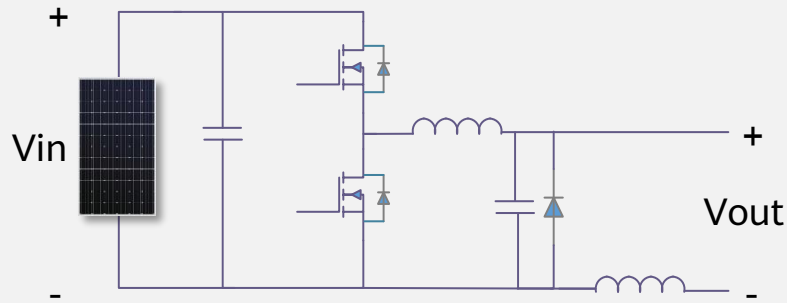
Fits All installation scenarios

- 1.3m output cable suits both landscape and portrait oriented installation of PV module
- Supports both rack & PV module frame mounting



Fewer optimizer models simplifies business operating and reduces cost of warehouse management and logistic

Innovative Structure for Improved Reliability



Buck Circuit Design and optimization



Quantity of electronics

200 pcs

Compared with others

30% ↘

**Fewer Electronics for
Higher Reliability**

Lower BoS Cost with Long & Flexible String Design

Max number of PV module in the string

* Taking JAM72S01-350/SC/1000V & SUN2000-10KTL-M1 as example

19_{pcs}
No Optimizer String Design
* 1000 Vdc / 52.2 Vdc ≈ 19

vs

28_{pcs}
Full Optimizer Long String Design
* 10,000 W / 350 W ≈ 28

| Long String Design | SUN2000-2-6KTL-L1 | SUN2000-3-10KTL-M1 | SUN2000-12-20KTL-M2 | SUN2000-30-40KTL-M3 |
|--------------------------------------------------|-------------------|--------------------|---------------------|---------------------|
| Minimum optimizer number per string ⁶ | 4 | 6 | 6 | 6 |
| Maximum optimizer number per string | 25 | 35 | 35 | 25 |
| Maximum DC power per string | 6,000 W | 10,000 W | 12,000 W | 12,000 W |



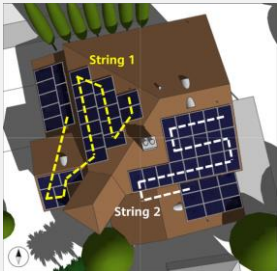
Higher DC/AC Oversizing

max DC/AC oversizing ratio

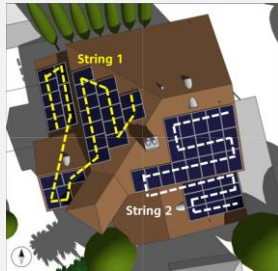
133%
= 19 * 350 * 2 / 10000

185%
= (26+27) * 350 / 10000

No Optimizer Design



Long String Design



Lower BoS Cost

Number of Strings

2
12 modules per string

1
24 modules in a single string



5s Module Physical Layout Creating

Physical Layout Design on the FusionSolar App (Connected to the SmartPVMS)

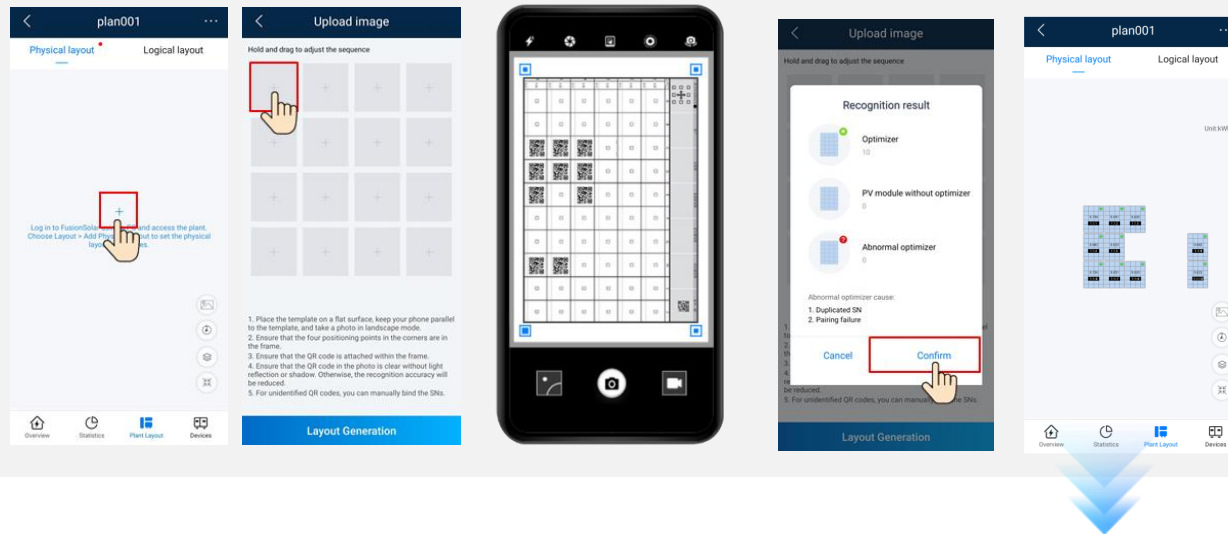
Step 1: In FusionSolar app, click 'layout' -> 'Add',

Step 2: Take Photo of the template pasted with optimizer QR codes and wait for detecting of optimizer QR code completion.

Step 3: check the number of optimizers and then click 'Confirm'.

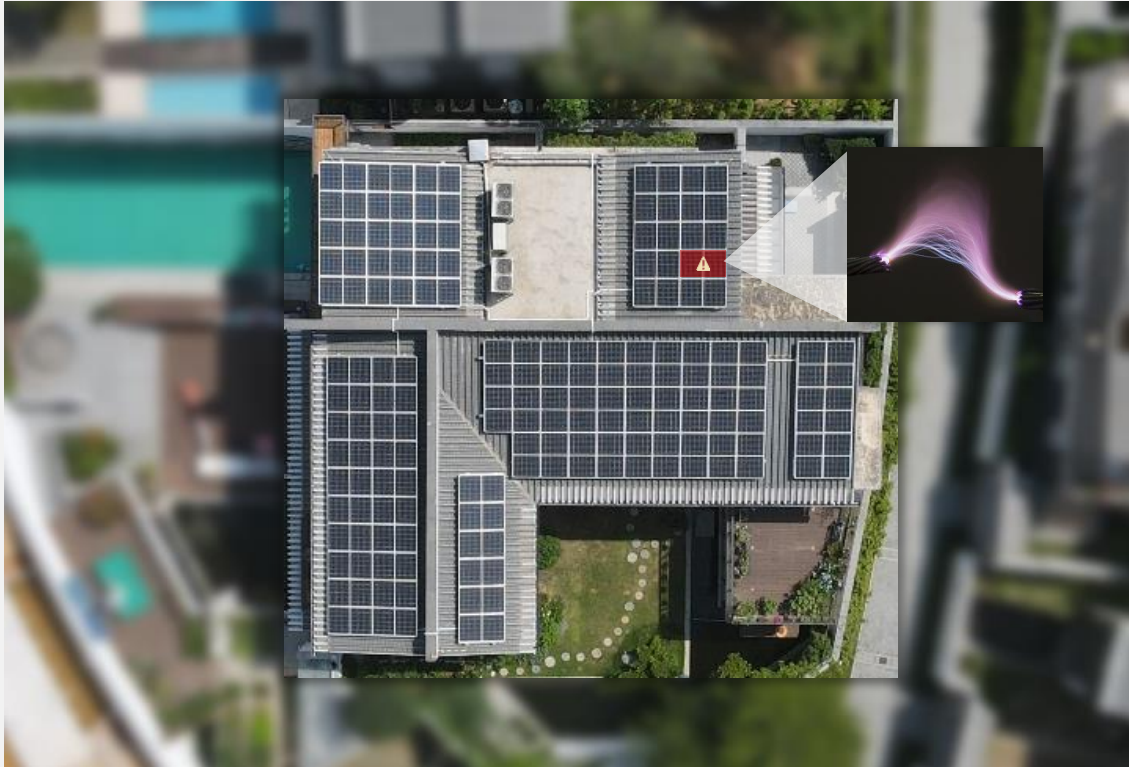
Step 4: Wait for detected information uploading to inverter.

Step 5: Module physical view creation is completed

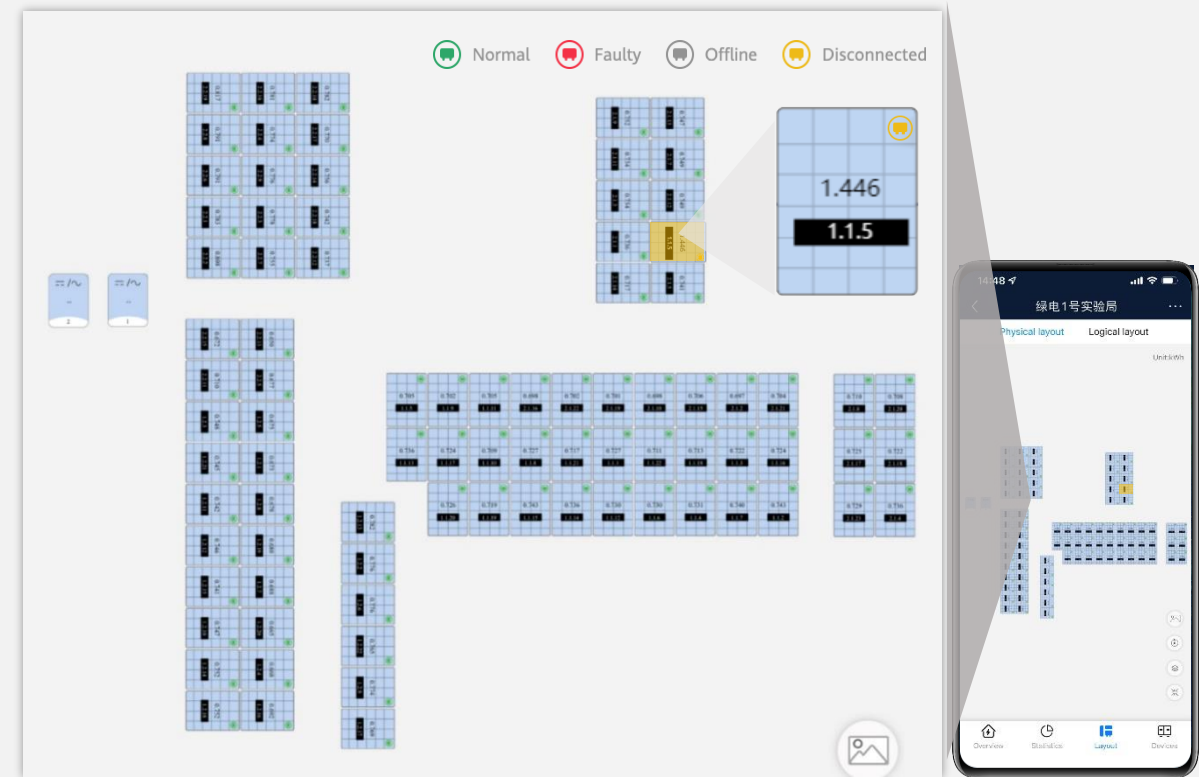


Saving **86%** configuration time compared with other solutions

Pinpoint disconnection Positioning for Easier Troubleshooting



Arc fault positioning is one of the scopes of disconnection detection



Module level monitoring

Two Main applications

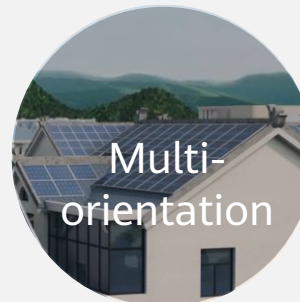
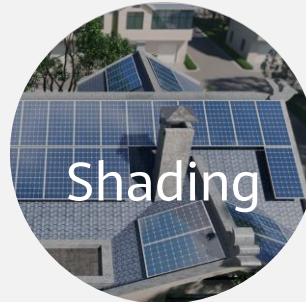
No Optimizer



Full Optimizer



...



Cover
more scenarios

Smart String ESS

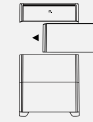
LUNA2000-5/10/15-S0



Sleek Design - Waterfall

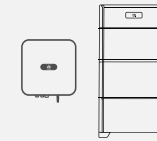
Smart String Energy Storage System

Beyond Modular Design



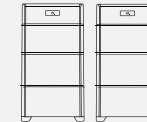
1~3 Optional Modules

Flexible module capacity configuration



1P/3P Inverters Supported

High voltage DC couple Solution



Up to 2 ESS

Operates in Parallel in 1 System

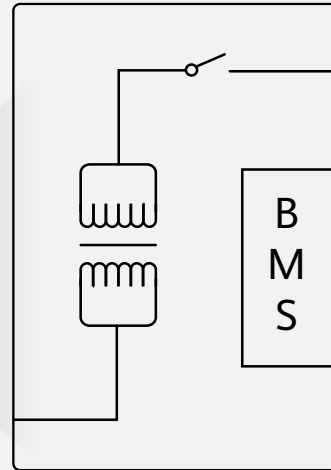


-25°C ~ 55°C

Smart Thermal Management For Low Temperature Environment

LUNA2000-5/10/15-S0

Modular⁺ Energy Optimizer



Parallel Architecture

One battery pack does not affect other battery packs.

Electric Isolation

Each battery pack is charged and discharged independently by the energy optimizer.



Avoid the Impact of Cell Inconsistency, More Useable Energy

Modular⁺ Energy Optimizer

SOH SOC

New Installation Scenario



Auto SOC Adjustment

Within 1 charging/discharging cycle

Expansion Scenario



Old Mixed with **New**

Easily Expand Your Capacity

New Battery pack could charge/discharge independently, avoid the influence from the old battery pack



No Pre-charge Needed When Apply New Battery Pack In System



Modular⁺ 4 Level Safety Protection



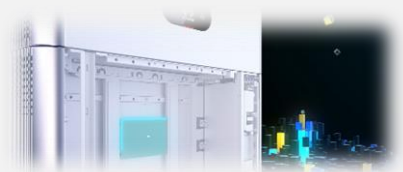
LiFePO₄ (LFP) cell



Cell Level Monitoring

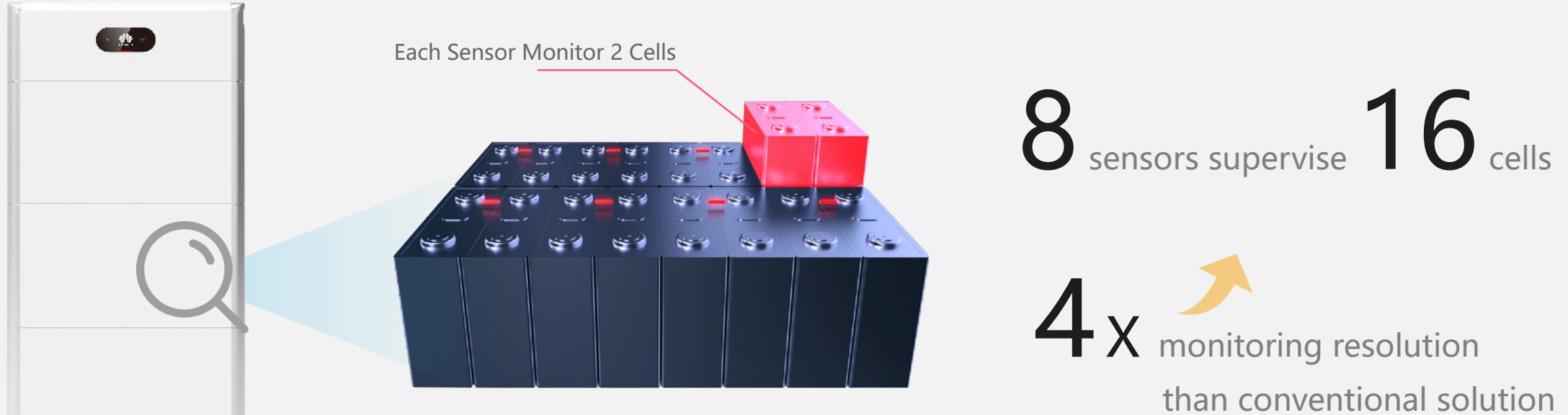


0V at Ports



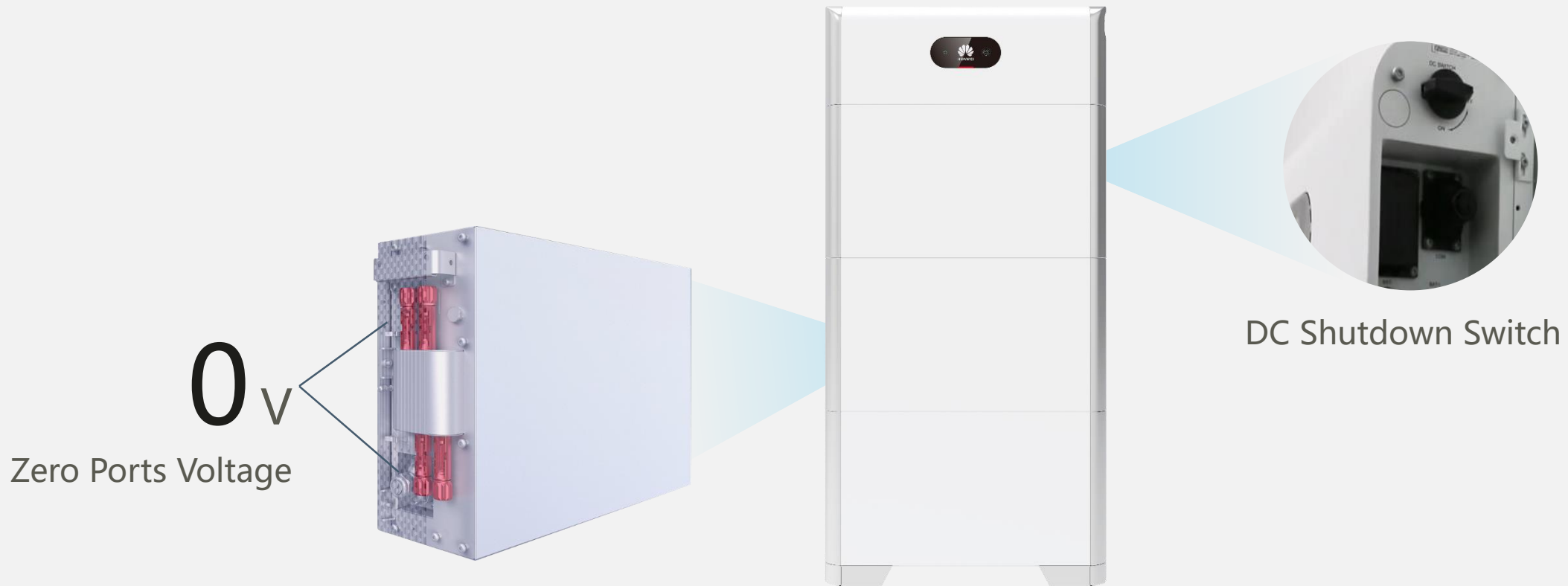
Extinguish Bag

4 Level Protection: Cell-level Monitoring In Real Time



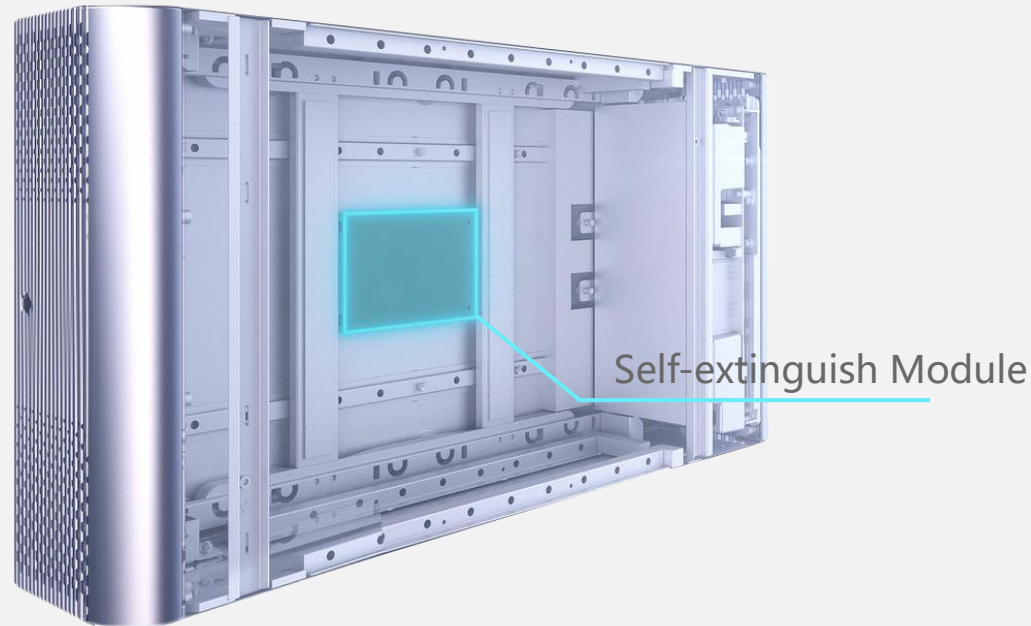
Each sensor works independently and monitors only 2 cells, achieving higher monitoring precision

4 Level Protection: Zero Voltage at Ports



Auto Port Zero Voltage, Manual Emergency Shutdown
All-round security

4 Level Protection: Self-extinguish Bag



Build-in Self-extinguish Module

- Fastest response to high temperatures
- Physical and chemical double extinguish mood

Working Principle

Step 1 Startup at temperature 170°C

Step 2 Release inner Aerosols, double extinguish means

- Generate large amount gas to rapidly blows out the fire
- Participate in a combustion reaction to chemically block the burning process



Gas Blowout combined with chemical Suppression,
effective extinguish within 15 seconds.

FUSIONCHARGE, CHARGE SMARTER



Single Phase

7 kW/32A

AP07N-EU

Three Phase

22 kW/32A

AP22N-EU

Sleek Design

3 Steps Click-in Fast Installation

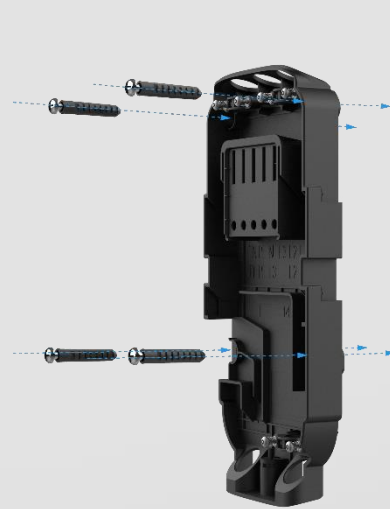
Installation:

HW 16 min vs 23 min

Replacement:

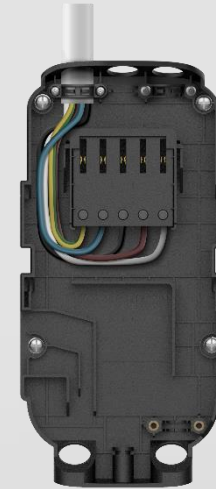
HW 4 min vs 30 min

*Compared with conventional design
which requires uncover for installation & replacement



Step 1

Fix back plate to a wall
(10 min)



Step 2

Finish wiring
(4 min)



Step 3

Click main body into place
(2 min)

Green Power Preferred for Optimal Electricity Cost

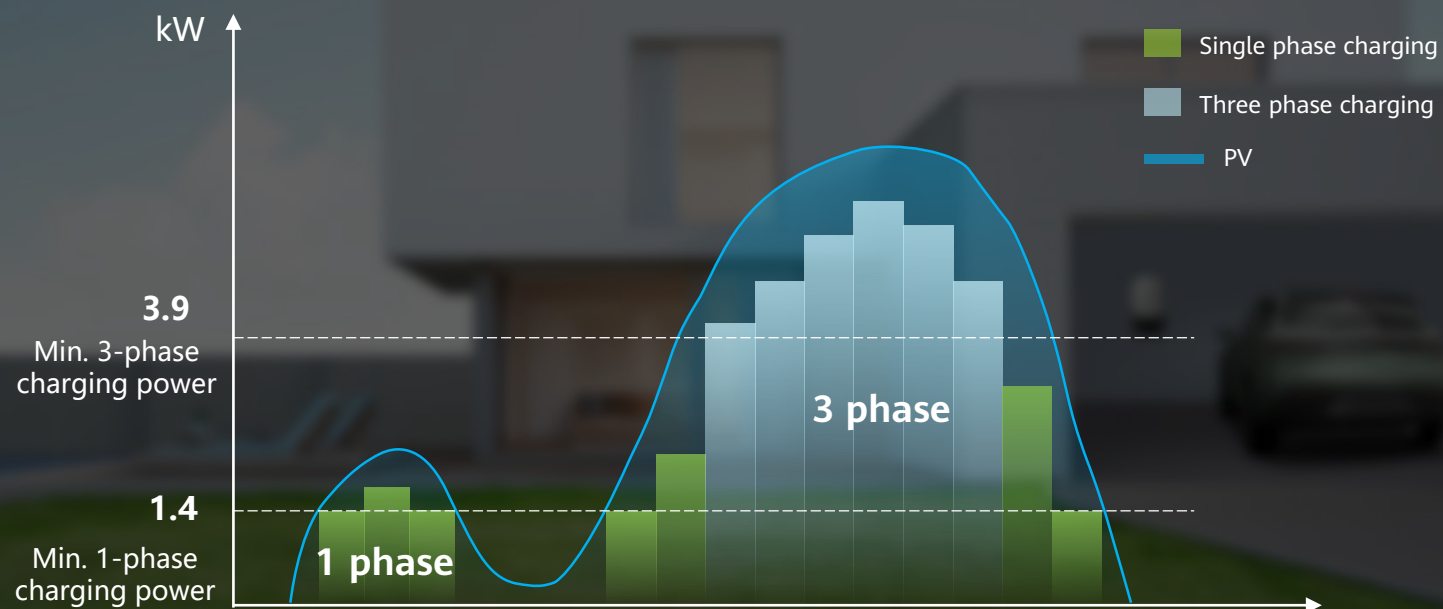


Green power adaptive charging at peak hours with a PV self-consumption rate up to 90%



Automatic phase switchover to maximize green power utilization at 1.4–3.9 kW charging power

Green power adaptive charging Switching between 1 & 3 phase charging



TOU Scheduled Charging, Saving on Electricity Bills

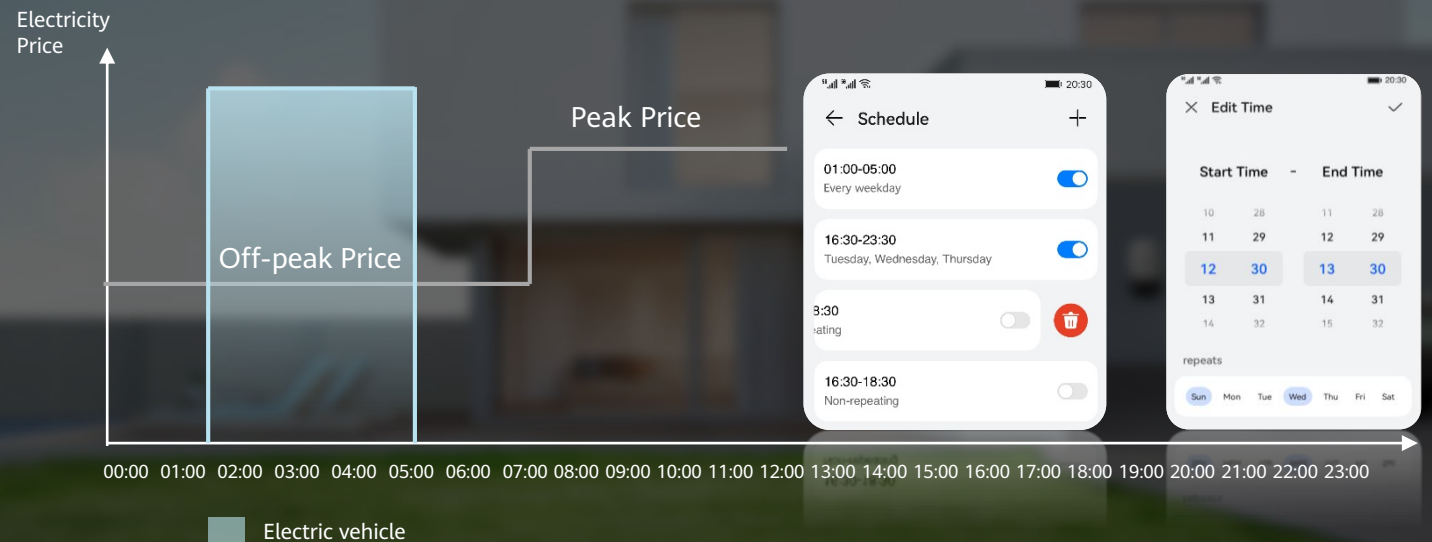


Scheduled fast charging from mains at off-peak hours, lowering electricity bills



Set the charge time through FusionSolar app

Scheduled fast charging from mains at off-peak hours



Fast Charging at Max. Power for Urgent Travel

$$\begin{array}{ccccc} 60 & = & 22 & \times & 2.7 \\ \text{kWh} & & \text{kW} & & \text{hours}^* \\ \text{EV battery capacity} & & \text{Charging power} & & \text{Charging time} \end{array}$$



Fast charging up to 7 kW/32 A or
22 kW/32 A

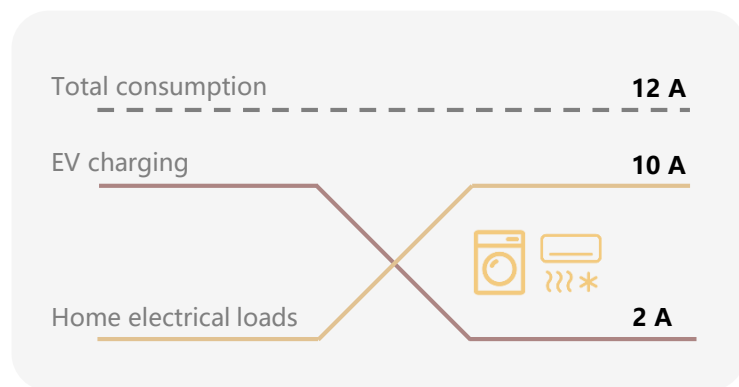


Charging at maximum power from
PV or mains



* Using a 22 kW/32 A AC Charger and the OBC must support 22kw charging power.

Load Balancing, No Tripping



Dynamically adjusts charging power to ensure total consumption at safe levels

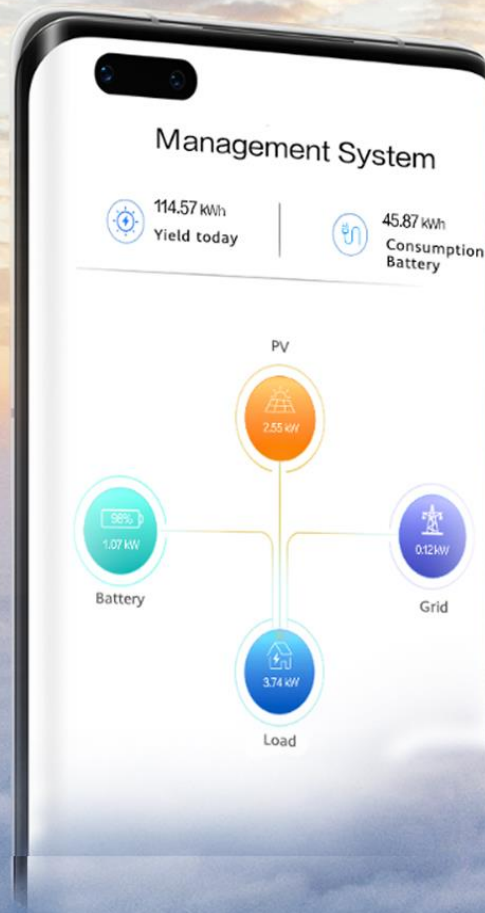


Set total power consumption through the app





Scan code to download



FusionSolar App

Sleek Design - Simple and generous



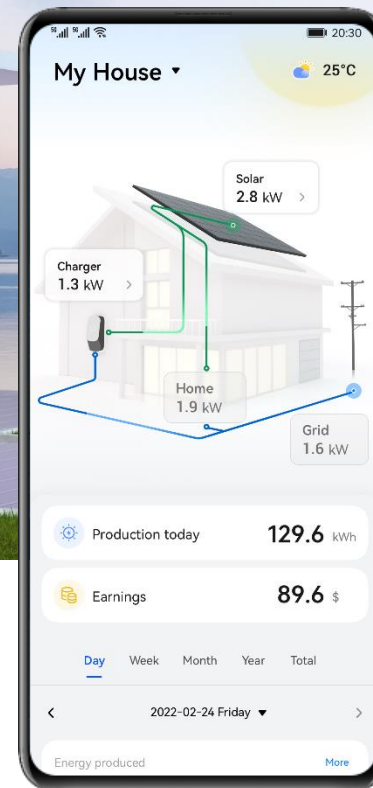
One-fits-all App for Full Control Anytime, Anywhere

Charging
Status

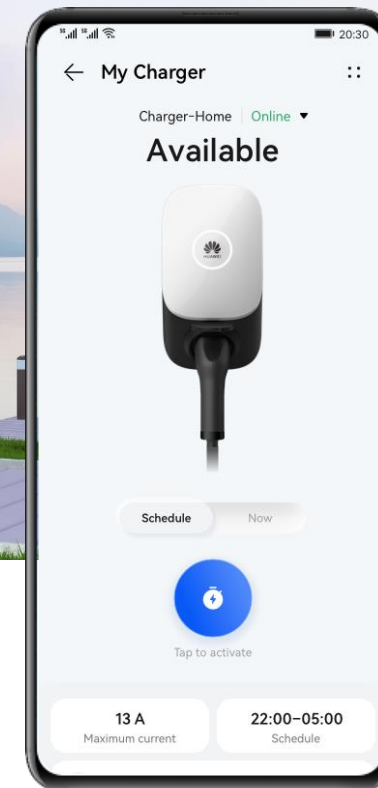
Charging
Mode

Scheduled
Charging

Anti-Theft
E-Lock



Green Power
Charging with ESS



Stand Alone
Charging Scenario

Big Data Analysis

Meteorological data



Historical load consumption curve



Local electricity price information



Power limit on feed-in to grid



Irradiation Intensity



PV & ESS capacity



Running data of home energy system



Production & consumption prediction

Meet EMMA

Your AI Energy Management Assistant

Always preparing the best working mode in advance to achieve optimal system performance

PV Peak Clipping
Absorbing

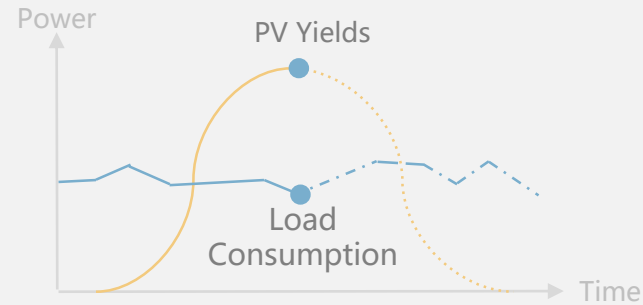
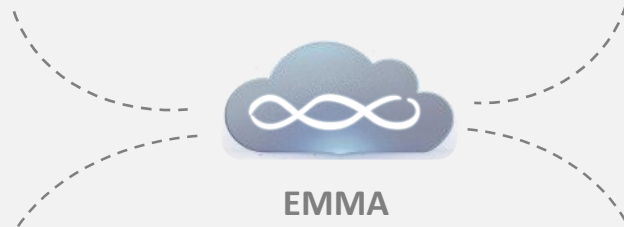
Rainy Day
Pre-charging

EV Charger
Shifting

Disaster
Preparedness

Real-time and historical running data of PVs, inverters, ESS and electricity meters

Meteorological data, geographical location, radiation data
Historical system running data



Production & Consumption Forecast

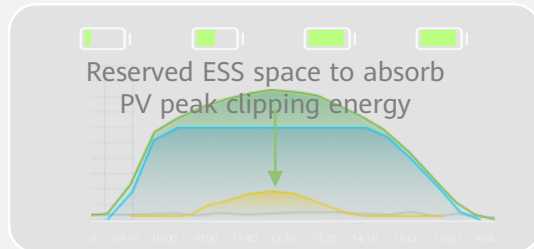


EMMA

Your AI Energy

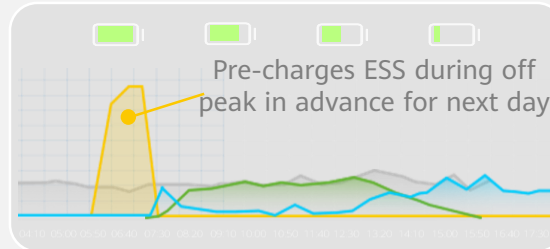
Management Assistant

PV Peak Clipping Storage



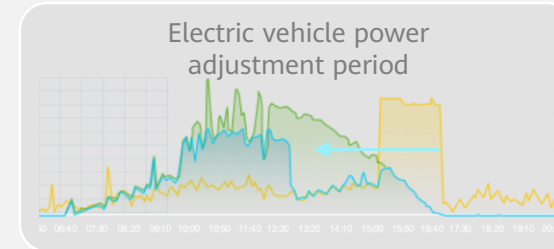
In Germany, Emma can help produce and store **extra 5-6%** PV peak clipping power per day, improving solar incomes.

Rainy Days Pre-charging



Off-peak night rate is only **50%** of on-peak day rate. With annual 160 rainy days, saving up to **288 Euros per year** *

Load Shifting



For a 10kW PV system, Emma can help increase self-consumption PV energy by 20% and saving **10kWh, 3.7 Euros per day**.*

Design



3D faster PV+ESS
system design

Commissioning



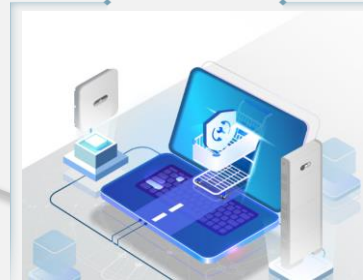
One-fits-all FusionSolar
APP commissioning

O&M



Module-level
fault positioning

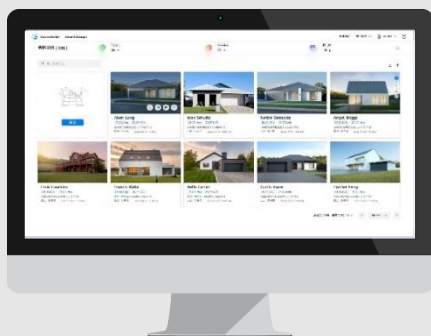
Value Added Service



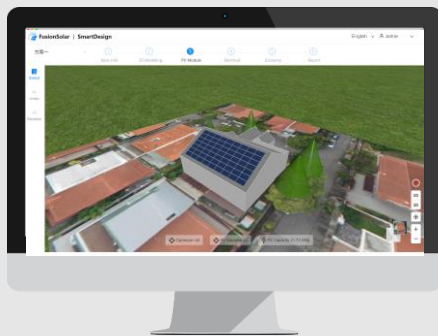
Online Mall for
value added service



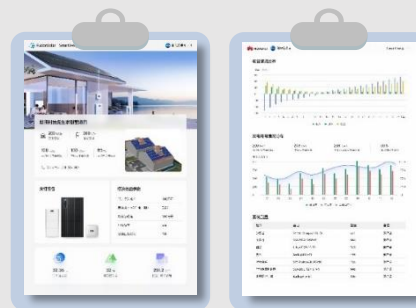
One-stop platform
Providing E2E service
Better Experience



Design Gallery
Managing all system design easily



<10min Faster Satellite-
based PV System Design



Vivid 3D Site Report
for export to end customer

07.21 TechTalk
SmartDesign



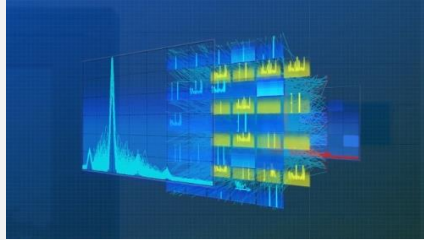
Scan code to sign up



Above
Rooftop

Under
Rooftop

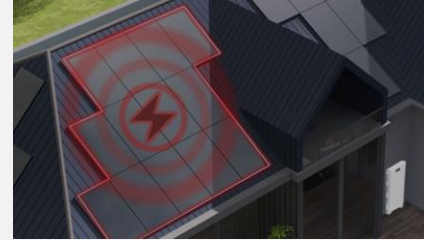
PV Arcing



AI Powered Arc Fault Circuit Interrupter

Speedy arc fault protection by inverter shutdown **in 0.5s**

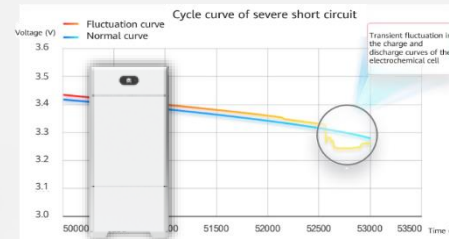
High Voltage



PV Voltage Quick Shutdown

Bring absolute safety to
Installers & firefighters **with 0V**

ESS Internal Short Circuit



AI Powered internal short circuit diagnosis

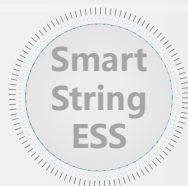
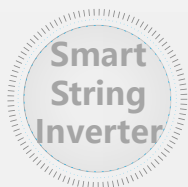
Precise identification and quick alarm
reporting **within 10s**



Internal Extinguishing Bag to prevent fire hazard

Auto release of **fire extinguishing bag**
under emergency

Active Safety
For peace of mind



Leading Innovation
for Best Value Creation

FusionSolar

Smart PV for Future



Speaker

Thomas Herold

Technical Director, Huawei FusionSolar Germany

Email: thomas.herold@huawei.com

Thank you.

把数字世界带入每个人、每个家庭、
每个组织，构建万物互联的智能世界。

Bring digital to every person, home and
organization for a fully connected,
intelligent world.

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