

**Fusionsolar**

# Residential Smart PV Solution Sales Guide

This version has been updated with the new product  
LUNA2000-7/14/21-S1



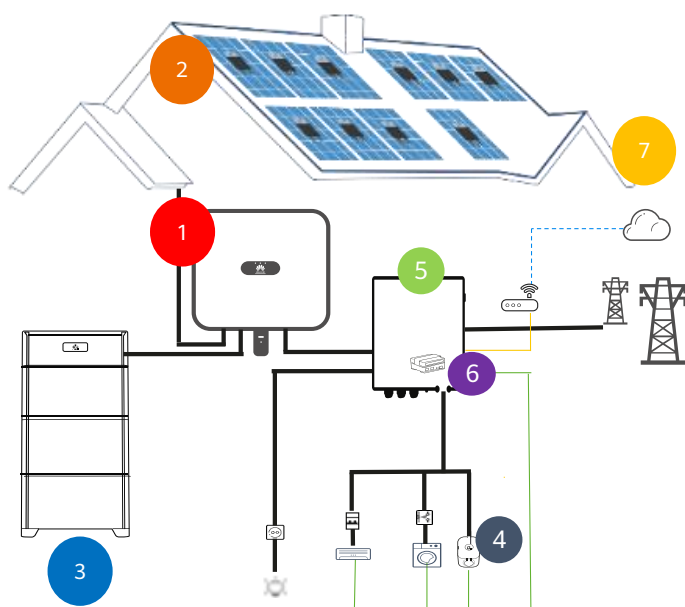
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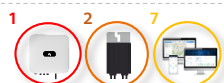


## Solution Overview



- ① Smart Energy Controller (Inverter)
- ② Smart Module Controller (Optimizer)
- ③ Smart String ESS (ESS)
- ④ Smart Charger
- ⑤ SmartGuard (Whole Home Back Up)
- ⑥ EMMA
- ⑦ Smart PVMS (Management)

## PV Only Solution



**Three-phase PV Only**  
(MB0/M1/M5+Optimizer+Smart PVMS)



**Single-phase PV Only**  
(LC0/L1+Optimizer+Smart PVMS)

## PV+ESS On-grid Solution



**Three-phase PV & ESS**  
(M1/MB0+Optimizer+ LUNA S0 or S1+Smart Charger+Smart PVMS)



**Three-phase PV & ESS**  
(M1/MB0+Optimizer+ LUNA S0 or S1+Smart Charger+EMMA+Smart PVMS)



**Single-phase Whole Home Backup**  
(L1/LC0+Optimizer+LUNA S0 or S1+Smart Charger+SmartGuard+Smart PVMS)



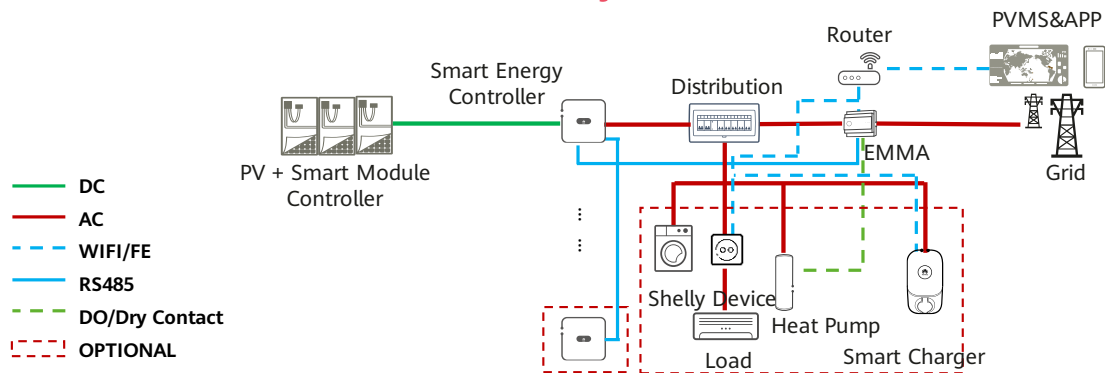
**Single-phase PV & ESS & Charger**  
(L1/LC0+optimizer+LUNA S0 or S1+ Smart Charger+EMMA+Smart PVMS)

## PV+ESS Off-grid Solution



**Single-phase Off-grid**  
(L1/LC0 + LUNA S0 or S1 + Smart PVMS)

## PV Only with EMMA



## BOQ 1-phase

Product Name	Product Model	Quantity
Smart Module Controller	SUN2000-450W-P2	Refer to user manual for guidance
	SUN2000-600W-P	
Smart Energy Controller	SUN2000-3/5KTL-L1	≤ 3
	SUN2000-10K-LC0	
EMMA	EMMA-A02	1
Smart Charger	SCharger-7KS-S0	≤ 2
Heat Pump	SG-ready	≤ 1
Shelly Device	Shelly Plus Plug S Shelly Pro 2PM Shelly Plus 2PM	≤ 20

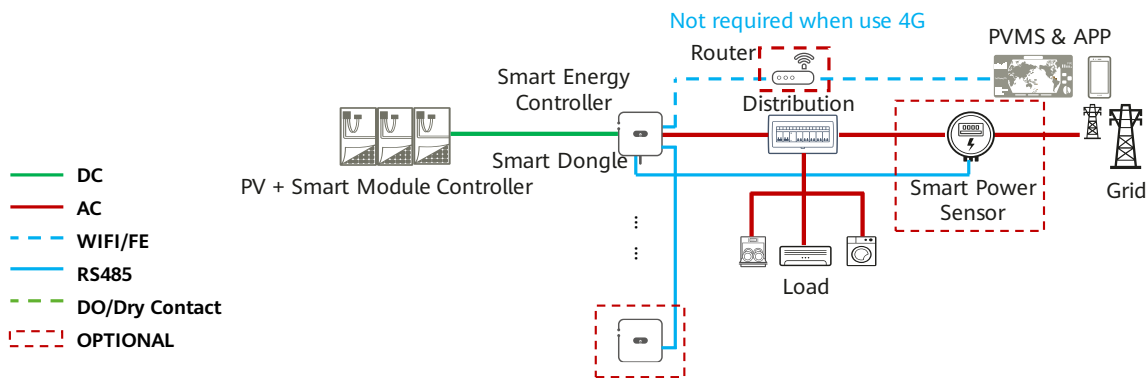
## BOQ 3-phase

Product Name	Product Model	Quantity
Smart Module Controller	SUN2000-450W-P2	Refer to user manual for guidance
	SUN2000-600W-P	
Smart Energy Controller	SUN2000-5/10KTL-M1	≤ 3
	SUN2000-12/15/20KTL-M5	
	SUN2000-15/20K-MB0	
EMMA	EMMA-A02	1
Smart Charger	SCharger-7KS-S0	≤ 2
	SCharger-22KT-S0	
Heat Pump	SG-ready	≤ 1
Shelly Device	Shelly Plus Plug S Shelly Pro 2PM Shelly Plus 2PM	≤ 20

## Notes

- L1 and LC0 cannot be mixed used in 1 system before 2024.Q1
- The charger, EMMA and router should be connected in wired mode to ensure the stability of communication
- 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
- Heat Pump and Shelly devices are not provided by HUAWEI
- Supported Shelly firmware can be found in User Manual
- 1 Heat Pumps are allowed to directly connect to EMMA-A02. More can be connected via shelly device
- EMMA doesn't support 4G communication. While, EMMA can be connected to 4G wireless router
- EMMA doesn't support 3<sup>rd</sup> party management system before 2024.Q2

## PV Only with Dongle



## BOQ 1-phase

Product Name	Product Model	Quantity
Smart Module Controller	SUN2000-450W-P2	Refer to user manual for guidance
	SUN2000-600W-P	
Smart Energy Controller	SUN2000-3/5KTL-L1	≤ 3 inverters for a system
	SUN2000-10K-LC0	
Smart Dongle	SDongleA-05	≤ 1
	SDongleB-06	
Smart Power Sensor	DDSU666-H	≤ 1

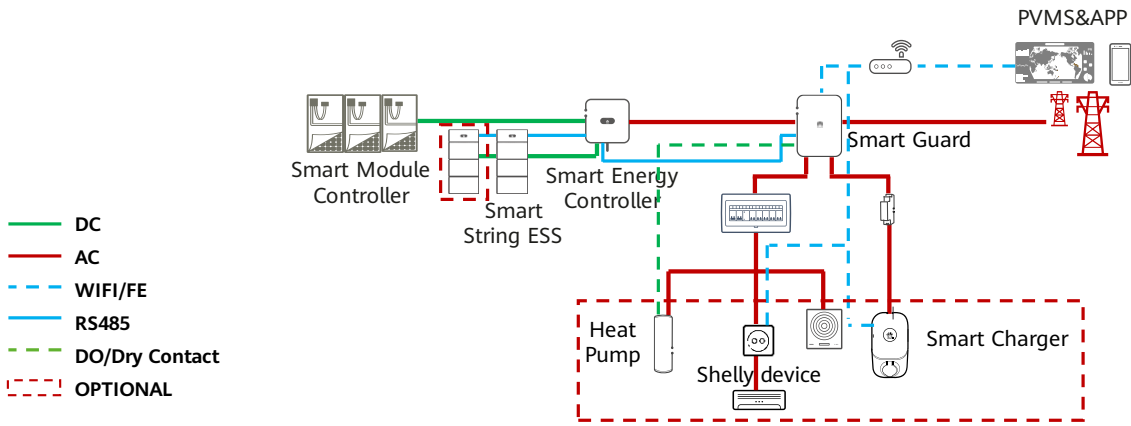
## BOQ 3-phase

Product Name	Product Model	Quantity
Smart Module Controller	SUN2000-450W-P2	Refer to user manual for guidance
	SUN2000-600W-P	
Smart Energy Controller	SUN2000-5/10KTL-M1	≤ 3 inverters for a system
	SUN2000-12/15/20KTL-M5	
	SUN2000-15/20K-MB0	
Smart Dongle	SDongleA-05	Either one
	SDongleB-06	
Smart Power Sensor	DTSU666-H 100A	≤ 1

## Notes

- L1 and LC0 cannot be mixed used in 1 system before 2024.Q1
- Single unit of L1 or LC0 with built-in WIFI module can connect to router directly to avoid using Smart Dongle
- M1 and M5 can cascade in mixture up to 10pcs if Smart Dongle is in use.
- The smart power sensor is compulsory only when the power consumption needs to be monitored or the power of the grid-tied point needs to be controlled, otherwise it is optional.

## PV+ESS On/off-grid with SmartGuard: PV+ESS+Charger+Loads+Backup



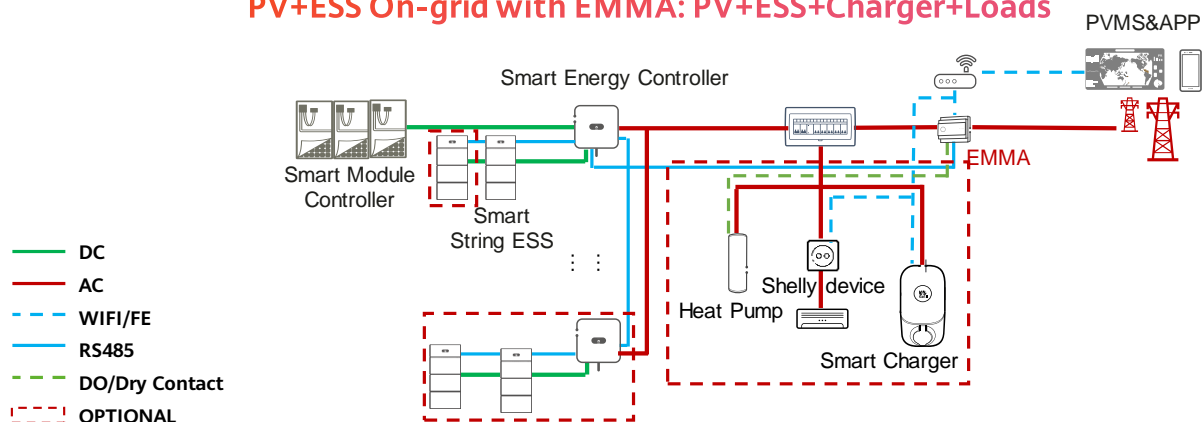
### BOQ Single-Phase

Product Name	Product Model	Quantity
Smart Module Controller	SUN2000-450W-P2	Refer to user manual
	SUN2000-600W-P	
Smart Energy Controller	SUN2000-3/5KTL-L1	1
	SUN2000-10K-LC0	
Smart String ESS	LUNA2000-5/10/15-S0	≤ 2 groups for an inverter
	<b>LUNA2000-7/14/21-S1</b>	<b>≤ 2 groups for an inverter</b>
Smart Charger	SCharger-7KS-S0	≤ 2
Whole Home Backup	SmartGuard-63A-S0	1
Heat Pump	SG ready	≤ 1
Shelly Device	Shelly Plus Plug S	≤ 20
	Shelly Pro 2PM	
	Shelly Plus 2PM	

### Notes

- SmartGuard doesn't support multiple inverters
- 1 L1 or LC0 inverter supports a maximal of 2 ESSs
- 1 ESS contains: 1 power control module + a maximum of 3 battery modules
- LUNA2000-5/10/15-S0 and LUNA2000-7/14/21-S1 can't be mixed used in a system.
- Smart Charger could not be placed as Backup load
- The charger, SmartGuard and router should be connected in wired mode to ensure the stability of communication
- 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
- The current capacity of main circuit breaker should be in 63A
- Heat Pump and Shelly devices are not provided by HUAWEI
- Supported Shelly firmware can be found in User Manual
- 1 Heat Pumps are allowed to directly connect to SmartGuard. More can be connected via shelly device
- SmartGuard doesn't support 4G communication. If necessary 4G router can be used
- SmartGuard doesn't support WIFI connection to router because the metal shell may weaken the signal
- SmartGuard doesn't support 3<sup>rd</sup> party management system before 2024.Q2

## PV+ESS On-grid with EMMA: PV+ESS+Charger+Loads



### BOQ Single-phase

Product Name	Product Model	Quantity
Smart Module Controller	SUN2000-450W-P2	Refer to user manual
	SUN2000-600W-P	
Smart Energy Controller	SUN2000-3/5KTL-L1	≤ 3 inverters for a system
	SUN2000-10K-LC0	
Smart String ESS	LUNA2000-5/10/15-S0	≤ 2 groups for an inverter
	<b>LUNA2000-7/14/21-S1</b>	<b>≤ 2 groups for an inverter</b>
Smart Charger	SCharger-7KS-S0	≤ 2
EMMA	EMMA-A02	1
Heat Pump	SG ready	≤ 1
Shelly Device	Shelly Plus Plug S	≤ 20
	Shelly Pro 2PM	
	Shelly Plus 2PM	

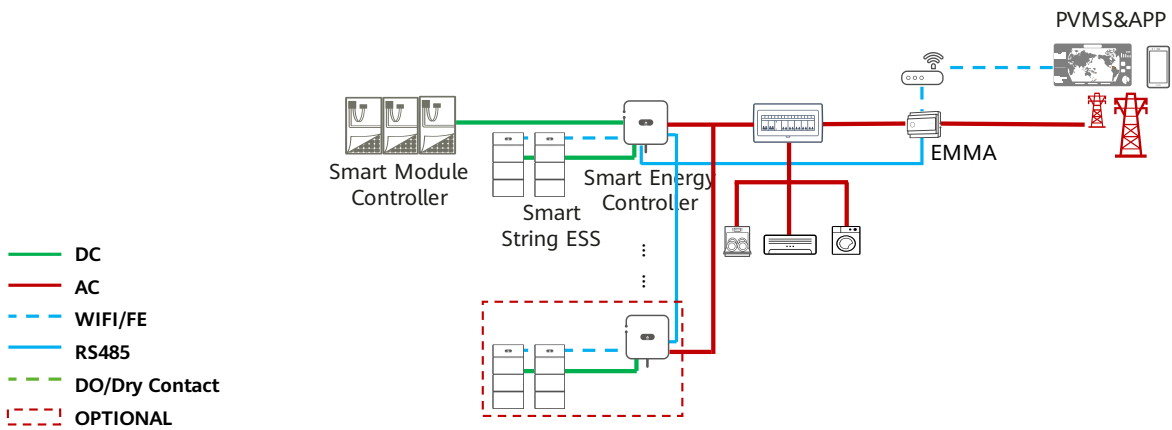
### BOQ 3-phase

Product Name	Product Model	Quantity
Smart Module Controller	SUN2000-450W-P2	Refer to user manual
	SUN2000-600W-P	
Smart Energy Controller	SUN2000-5/10KTL-M1	≤ 3 inverters for a system
	SUN2000-15/20K-MB0	
	SUN2000-12/15/20KTL-M5	
Smart String ESS	LUNA2000-5/10/15-S0	≤ 4 groups for MB0, ≤ 2 groups for M1
	<b>LUNA2000-7/14/21-S1</b>	<b>≤ 4 groups for MB0, ≤ 2 groups for M1</b>
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

- L1 and LC0 cannot be mixed used in 1 system before 2024.Q1
- 1 L1, LC0 or M1 inverter supports a maximal of 2 ESSs, 1 MB0 inverter supports a maximal of 2 ESSs before 2024.Q1. With later upgrade it supports a maximal of 4 ESSs
- 1 ESS contains: 1 power control module + a maximum of 3 battery modules
- LUNA2000-5/10/15-S0 and LUNA2000-7/14/21-S1 can't be mixed used in a system.
- The charger, EMMA and router should be connected in wired mode to ensure the stability of communication
- 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
- Heat Pump and Shelly devices are not provided by HUAWEI
- Supported Shelly firmware can be found in User Manual
- 1 Heat Pumps are allowed to directly connect to EMMA-A02. More can be connected via shelly device
- EMMA doesn't support 4G communication. If necessary 4G router can be used
- EMMA doesn't support 3<sup>rd</sup> party management system before 2024.Q2

## PV+ESS On-grid with EMMA: PV+ESS



## BOQ Single-phase

Product Name	Product Model	Quantity
Smart Module Controller	SUN2000-450W-P2	Refer to user manual
	SUN2000-600W-P	
Smart Energy Controller	SUN2000-3/5KTL-L1	≤ 3 inverters for a system
	SUN2000-10K-LC0	
Smart String ESS	LUNA2000-5/10/15-S0	≤ 2 groups for an inverter
	<b>LUNA2000-7/14/21-S1</b>	<b>≤ 2 groups for an inverter</b>
EMMA	EMMA-A02	1

## BOQ 3-phase

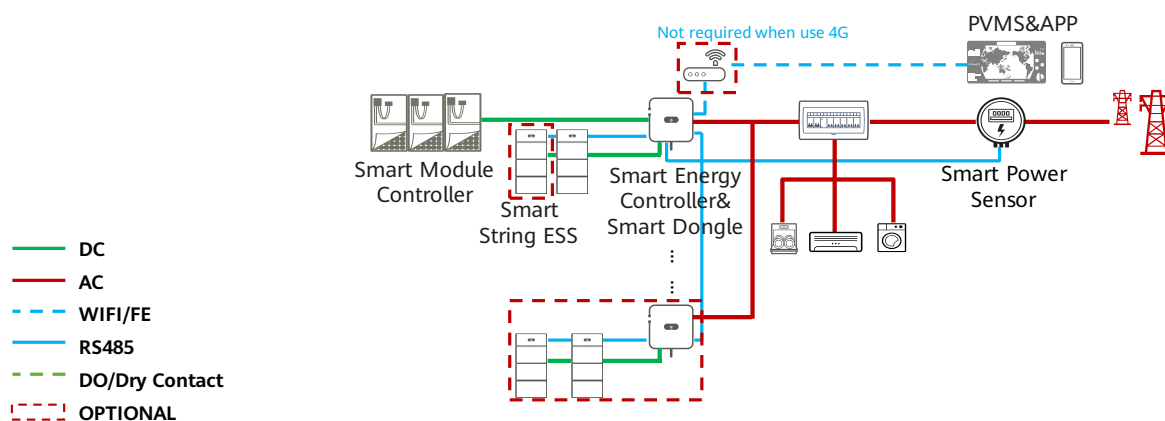
Product Name	Product Model	Quantity
Smart Module Controller	SUN2000-450W-P2	Refer to user manual
	SUN2000-600W-P	
Smart Energy Controller	SUN2000-5/10KTL-M1	≤ 3 inverters for a system
	SUN2000-15/20K-MB0	
	SUN2000-12/15/20KTL-M5	
Smart String ESS	LUNA2000-5/10/15-S0	≤ 4 groups for MB0, ≤ 2 groups for M1
	<b>LUNA2000-7/14/21-S1</b>	<b>≤ 4 groups for MB0, ≤ 2 groups for M1</b>
EMMA	EMMA-A02	1

## Notes

- L1 and LC0 cannot be mixed used in 1 system before 2024.Q1
- 1 L1, LC0 or M1 inverter supports a maximal of 2 ESSs. 1 MB0 inverter supports a maximal of 2 ESSs before 2024.Q1. With later upgrade it supports a maximal of 4 ESSs
- 1 ESS contains: 1 power control module + a maximum of 3 battery modules
- LUNA2000-5/10/15-S0 and LUNA2000-7/14/21-S1 can't be mixed used in a system.
- EMMA doesn't support 4G communication. If necessary 4G router can be used
- EMMA doesn't support 3<sup>rd</sup> party management system before 2024.Q2



## PV+ESS On-grid with Dongle: PV+ESS



### BOQ 1-phase

Product Name	Product Model	Quantity
Smart Module Controller	SUN2000-450W-P2	Refer to user manual
	SUN2000-600W-P	
Smart Energy Controller	SUN2000-3/5KTL-L1	≤ 3 inverters for a system
	SUN2000-10K-LC0	
Smart String ESS	LUNA2000-5/10/15-S0	≤ 2 groups for an inverter
	<b>LUNA2000-7/14/21-S1</b>	<b>≤ 2 groups for an inverter</b>
Smart Dongle	SDongleA-05	≤ 1
	SDongleB-06	
Smart Power Sensor	DDSU666-H	1

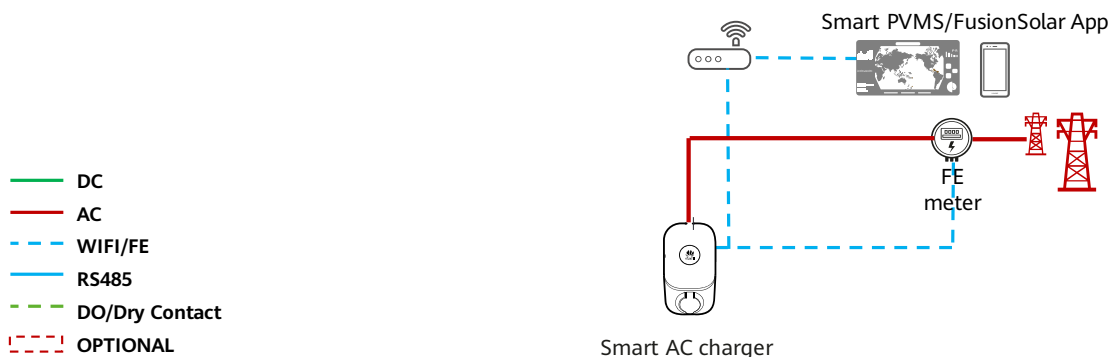
### BOQ 3-phase

Product Name	Product Model	Quantity
Smart Module Controller	SUN2000-450W-P2	Refer to user manual
	SUN2000-600W-P	
Smart Energy Controller	SUN2000-5/10KTL-M1	≤ 3 inverters for a system
	SUN2000-15/20K-MB0	
	SUN2000-12/15/20KTL-M5	
Smart String ESS	LUNA2000-5/10/15-S0	≤ 4 groups for MB0, ≤ 2 groups for M1
	<b>LUNA2000-7/14/14-S1</b>	<b>≤ 4 groups for MB0, ≤ 2 groups for M1</b>
Smart Dongle	SDongleA-05	≤ 1
	SDongleB-06	
Smart Power Sensor	DDSU666-H	1

### Notes

- L1 and LC0 cannot be mixed used in 1 system before 2024.Q1
- 1 L1, LC0 or M1 inverter supports a maximal of 2 ESSs. 1 MB0 inverter supports a maximal of 2 ESSs before 2024.Q1, with later upgrade it supports a maximal of 4 ESSs. In the Dongle networking scenario, when MB0 services as the primary inverter and needs to be connected to both meter and ESS, the meter has requirements when more than two ESS are connected. For details, pls. check the MB0 user manual.
- M5 cannot be used in PV+ESS solution with dongle before 2024.Q1.
- MB0 doesn't support multi inverter cascaded with dongle before 2024.Q1
- 1 ESS contains: 1 power control module + a maximum of 3 battery modules
- LUNA2000-5/10/15-S0 and LUNA2000-7/14/21-S1 can't be mixed used in a system
- Single unit of L1 or LC0 with built-in WIFI module can connect to router directly to avoid using Smart Dongle

## PV+ESS On-grid: Charger Only



## BOQ 1-phase

Product Name	Product Model	Quantity
Smart Charger	SCharger-7KS-S0	1
FE Meter	DTSU666-FE	≤ 1

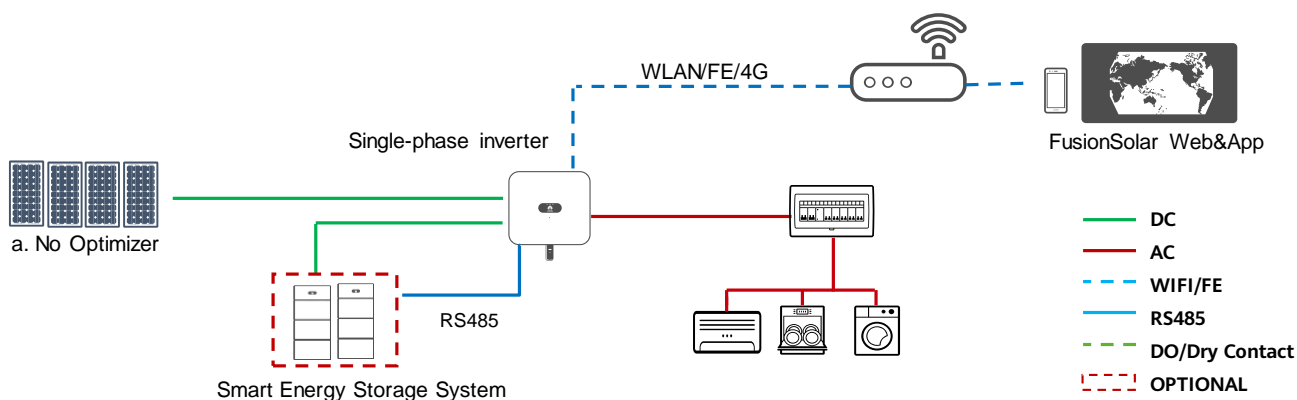
## BOQ 3-phase

Product Name	Product Model	Quantity
Smart Charger	SCharger-7KS-S0	1
	SCharger-22KT-S0	
FE Meter	DTSU666-FE	≤ 1

## Notes

- The charger should connect to FE Meter or the same router with FE Meter in wired mode, ensuring the stability of communication
- FE Meter is not provided by HUAWEI. The datasheet and purchase method is:  
<http://3ms.huawei.com/documents/docinfo/822198462456102912?bookstackId=48409&catalogId=359426470384066560&attachmentIdx=20>
- FE Meter is not mandatory. It is needed only for the dynamic charging power function, which can avoid the overloading caused by too high charging power

## PV+ESS Off-grid



## BOQ 1-phase

Product Name	Product Model	Quantity
Smart Energy Controller	SUN2000-3/5KTL-L1	1
	SUN2000-10K-LC0	
Smart String ESS	LUNA2000-5/10/15-S0	≤ 2 groups for an inverter
	<b>LUNA2000-7/14/21-S1</b>	<b>≤ 2 groups for an inverter</b>
Smart Dongle	SDongleA-05	Either one
	SDongleB-06	

## Notes

- 1 L1 or LC0 inverter supports a maximal of 2 ESSs.
- 1 ESS contains: 1 power control module + a maximum of 3 battery modules
- LUNA2000-5/10/15-S0 and LUNA2000-7/14/21-S1 can't be mixed used in a system
- Optimizer: Not supported for optimizer in pure off-grid scenario, because when the ESS reaches the discharge cut-off SOC, then no power to power on the optimizer and overall PV system can't work when optimizer power off
- Direct connection: because L1/LC0 has built-in WIFI module to connect router
- Dongle: is only mandatory when WIFI is not available