Micro-Grid C&I Solution

2025/04/21

SIGENERGY

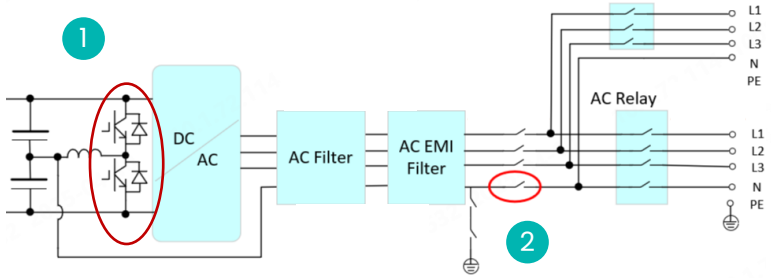
Micro-Grid C&I Solution with HYB and SigenStack



SIGENERGY

Balanced Bridge and N-line Design for HYB inverter

Sigen PV 50-110 M1-HYB 3P4W system



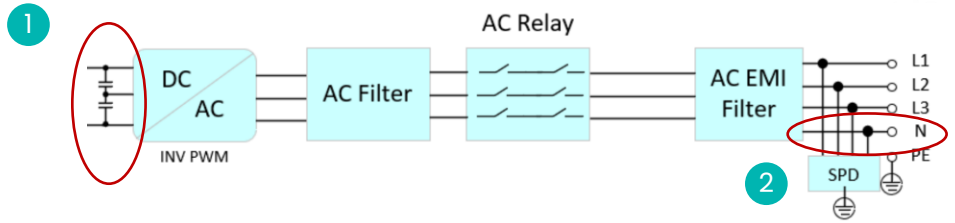
1. Balanced Bridge Design

Keep the balance of voltage between upper and lower busbar when inverter works in off-grid mode, which make the system more stable and reliable in off –grid mode.

2. Actual Neutral design

Neutral line from the balanced bridge will can support the balance of between the single-phase equipment connection and enable the system with unbalance load capacity.

Sigen PV 50-125 M1-HYA 3P4W system



1. No Balanced Bridge Design

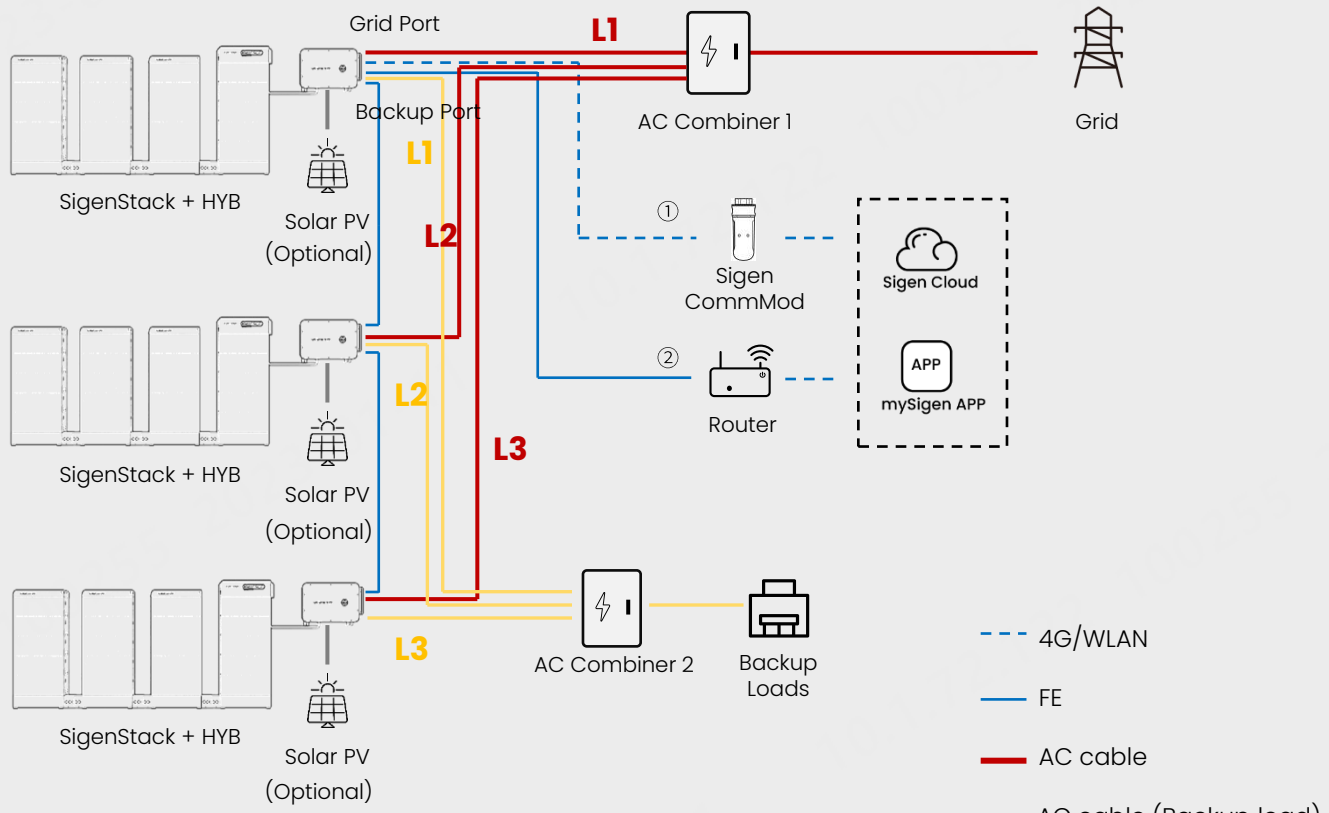
The different voltage between the upper and lower busbar will cause the unstable operation in the off-grid mode, and inverter can not work as the voltage source for the off-grid system.

2. Virtual Neutral design

The neutral is not connected to the busbar, the function is only for phase voltage sampling, which can not enable the system with unbalance load capacity.

Solution: On/Off-Grid system without Gateway

Maximum 3 units HYB in parallel (without generator)



Boundary condition

1. Unstable grid, whole backup scenario.
2. Optional for PV panel, DC Coupling
3. For whole backup scenario, no power sensor is needed since the inverter has the zero-export limitation function.
4. 4-21 units SigenStack BAT 12.0 in parallel for one HYB inverter, only SigenStack BC M2-0.5C-BST/1C-BST is used.
5. Maximum 3 units Sigen PV 50~110 M1-HYB in parallel.
6. The total length of AC cable from AC combiner 1 (Grid) to INV to AC combiner 2 (Load) for each inverter is recommended to be the same: L1+L1=L2+L2=L3+L3 * (Please pay attention to Note)
7. AC combiner boxes (1&2) are supplied by installer.
8. Optional Ethernet, WIFI, and 4G for single unit, recommended to use Ethernet hand in hand communication in parallel scenarios.

Each system supports :

SigenStack BAT × 21 per inverter

Sigen PV 50~110 M1-HYB × 1 ~ 3 in parallel

Max AC output power 330 kWac*

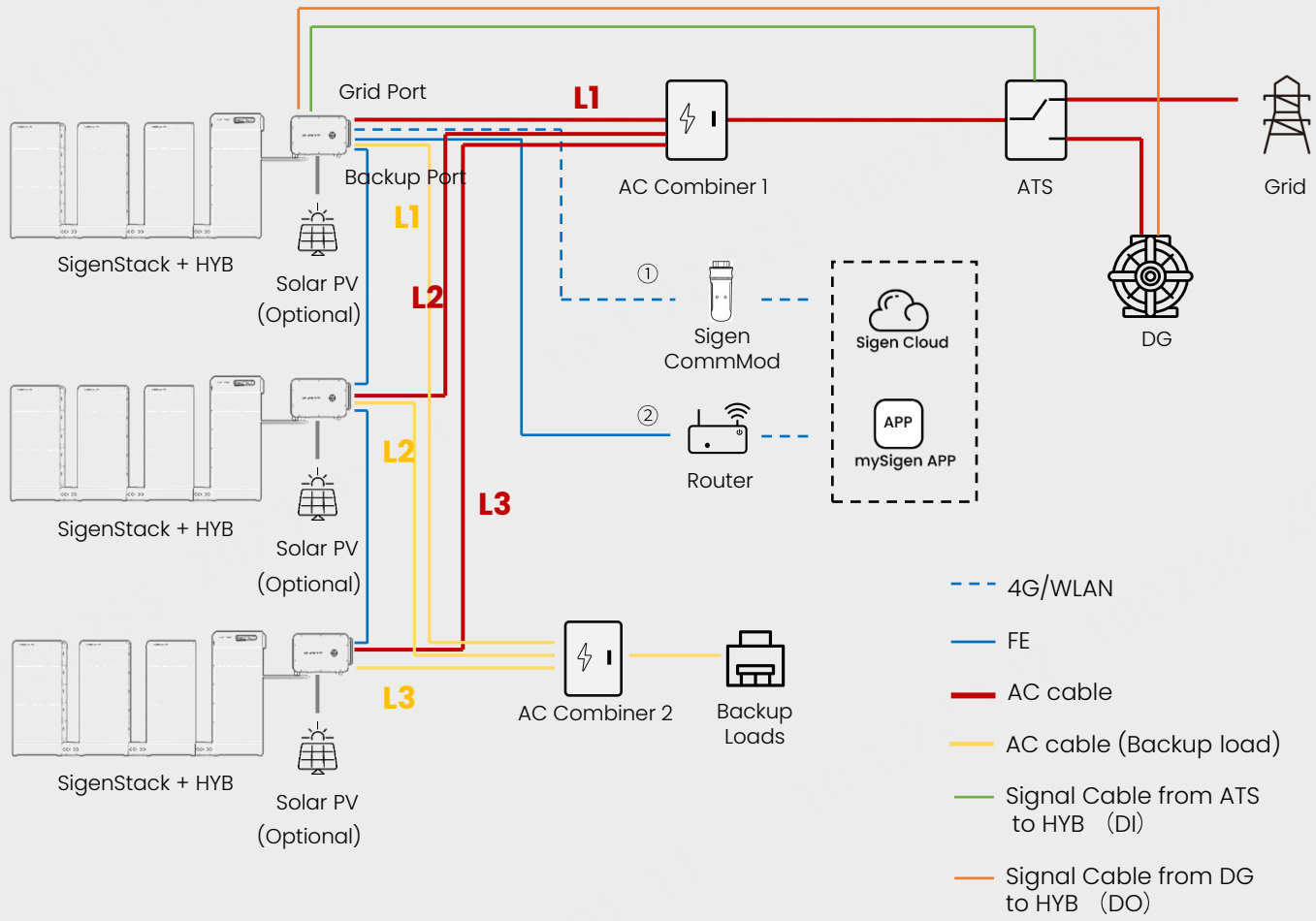
Max. ESS capacity 759 kWh*

**Take Sigen Hybrid Inverter 110 kW & SigenStack BAT 12.0 as an example*

Note: * The cable selection (conduct size) of L1, L1, L2, L2, L3, L3 should be the same, otherwise, the L1=L2=L3 and L1=L2=L3

Solution: On/Off-Grid system without Gateway

Maximum 3 units HYB in parallel (with generator)



Boundary condition

1. Unstable grid, whole backup scenario.
2. Optional for PV panel, DC Coupling, no power sensor
3. 4-21 units SigenStack BAT 12.0 in parallel for one HYB inverter, only SigenStack BC M2-0.5C-BST/1C-BST is used.
4. Maximum 3 units Sigen PV 50~110 M1-HYB in parallel.
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6. AC combiner boxes (1&2) are supplied by installer.
7. Diesel Generator is connected at the grid port, the ATS is needed (Supplied by installer). The signal cable from ATS and DG need to be connected to the DI and DO of inverter to realize "Two-wire Start" .
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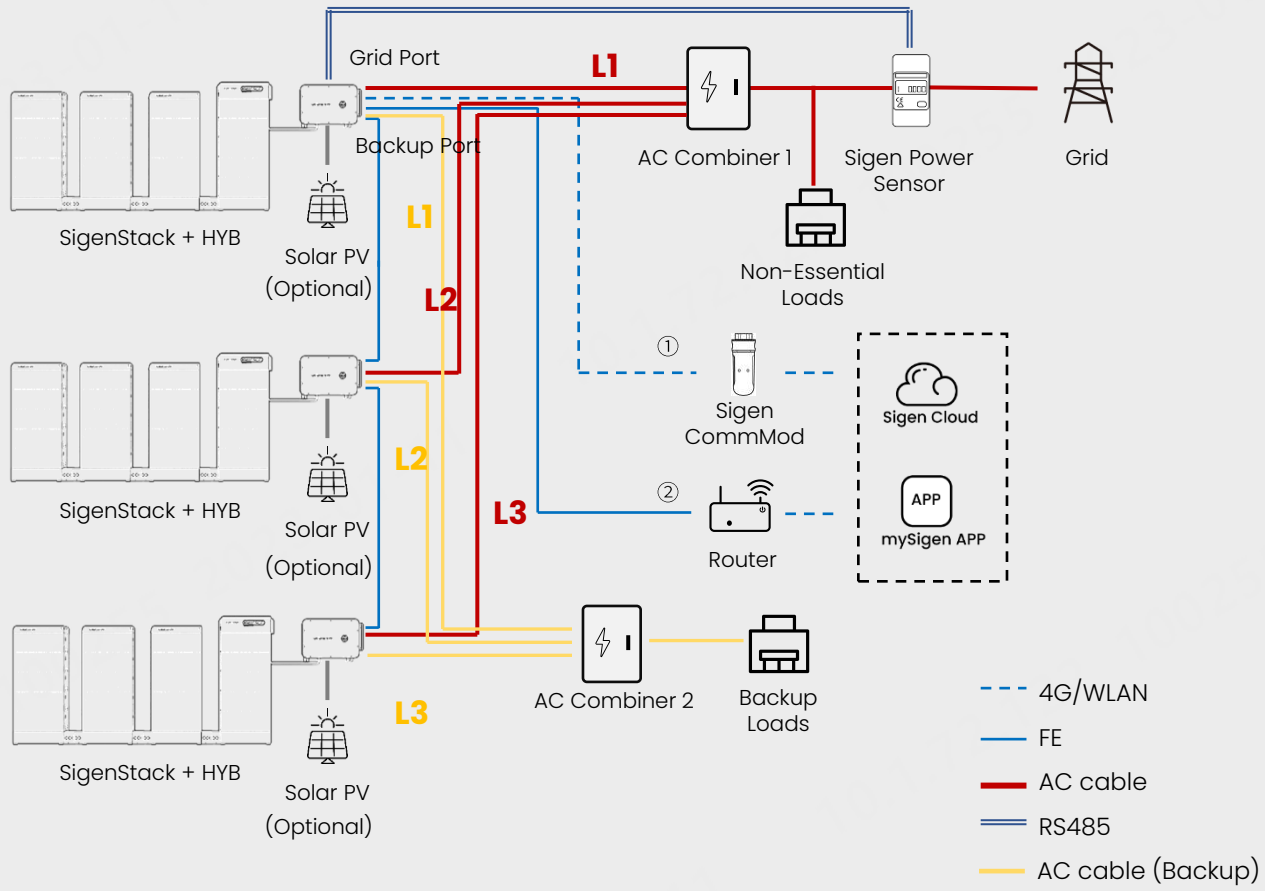
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Solution: On/Off-Grid system without Gateway

Maximum 3 units HYB in parallel (without generator)



Boundary condition

1. Unstable grid, partial backup scenario.
2. Optional for PV panel, DC Coupling.
3. Sigen Power Sensor is used for power control at the grid connection point for zero-export limitation.
4. 4-21 units SigenStack BAT 12.0 in parallel for one HYB inverter, only SigenStack BC M2-0.5C-BST/1C-BST is used.
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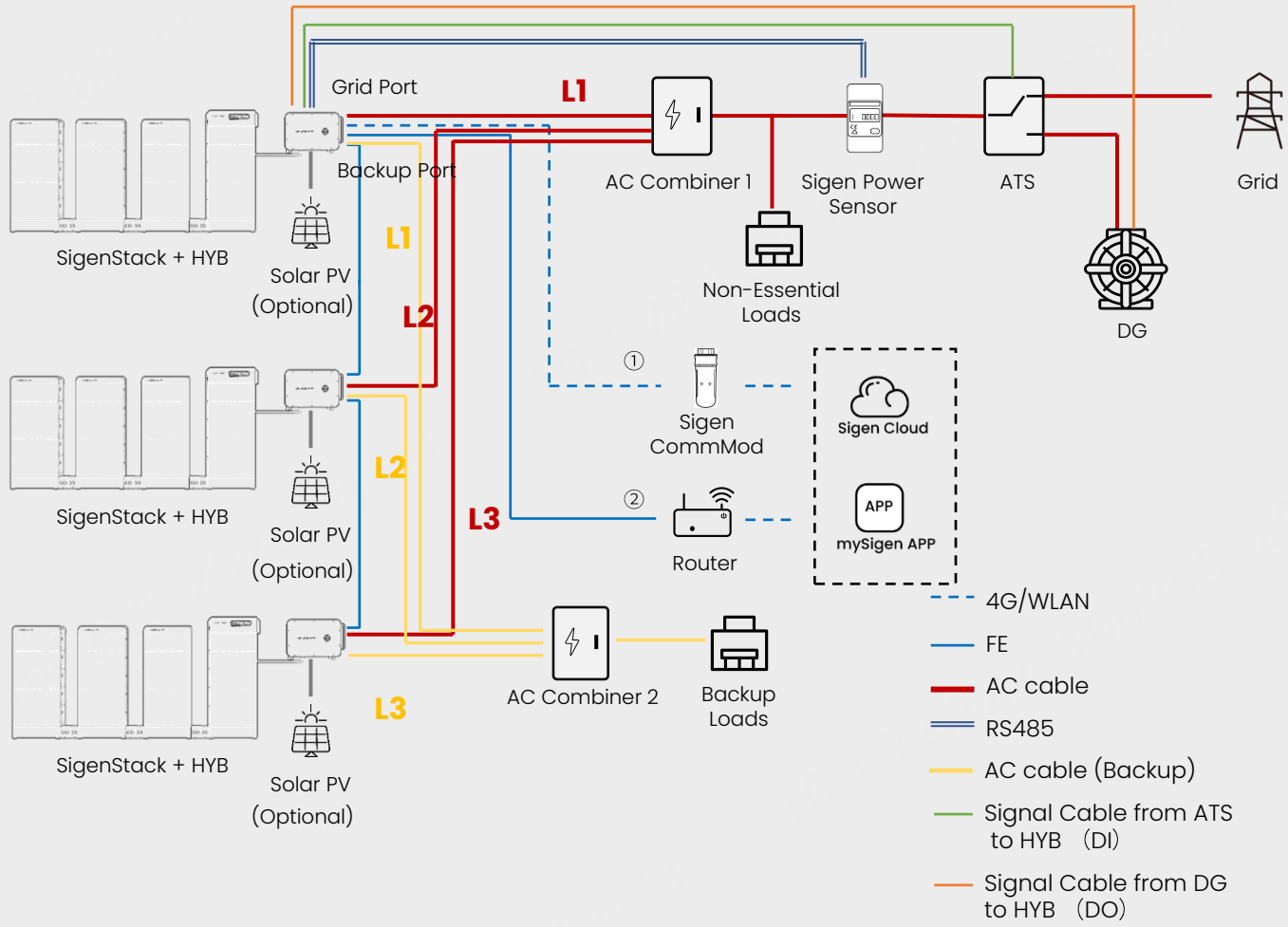
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Solution: On/Off-Grid system without Gateway

Maximum 3 units HYB in parallel (with generator)



Boundary condition

1. Unstable grid, partial backup scenario.
2. Optional for PV panel, DC Coupling, Sigen Power Sensor needed
3. 4-21 units SigenStack BAT 12.0 in parallel for one HYB inverter, only SigenStack BC M2-0.5C-BST/1C-BST is used.
4. Maximum 3 units Sigen PV 50~110 M1-HYB in parallel.
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7. Diesel Generator is connected at the grid port, the ATS is needed (Supplied by installer). The signal cable from ATS and DG need to be connected to the DI and DO of inverter to realize "Two-wire Start" .
8. Optional Ethernet, WIFI, and 4G for single unit, recommended to use Ethernet hand in hand communication in parallel scenarios.

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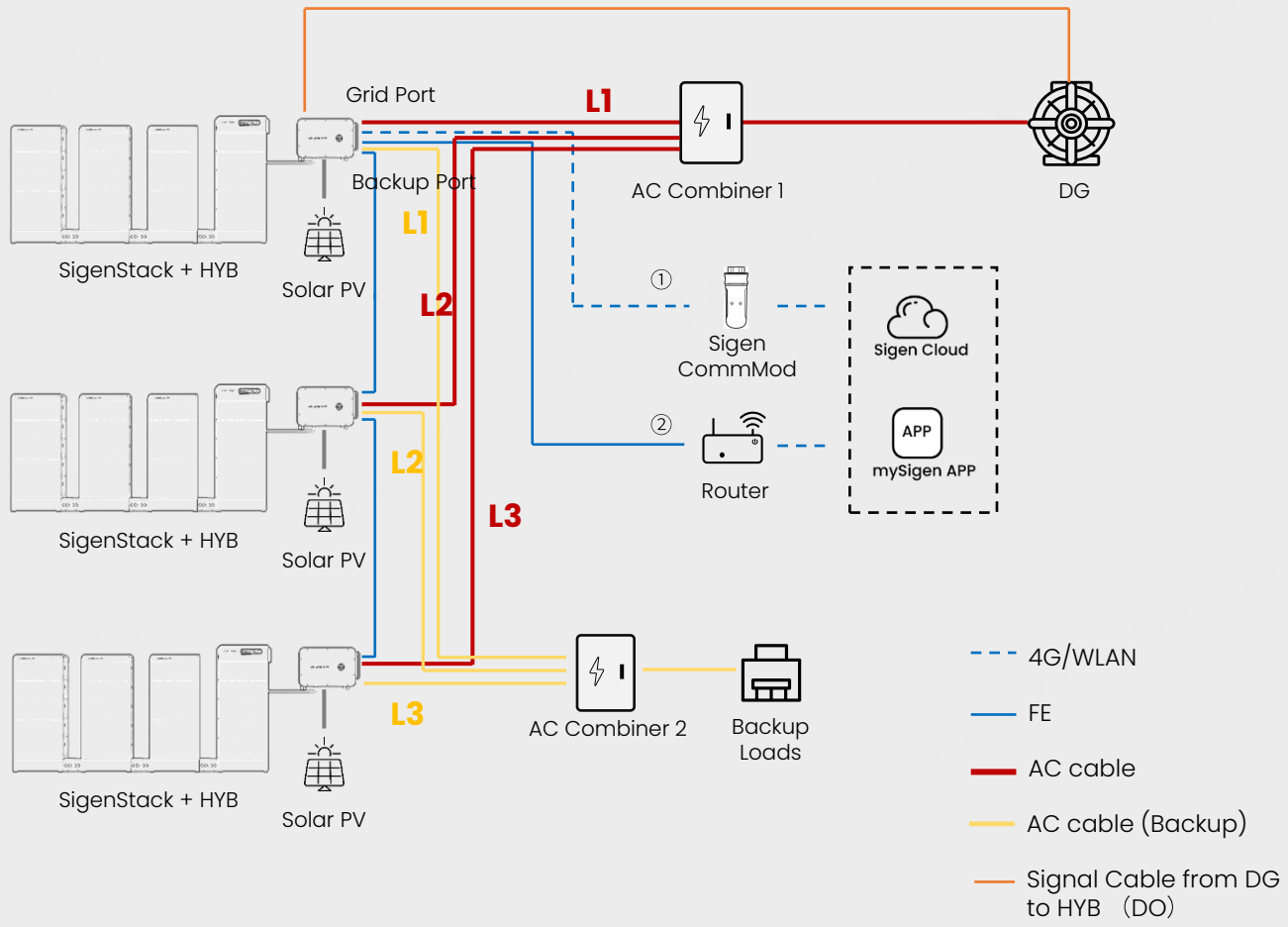
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Note: * The cable selection (conduct size) of L1, L1, L2, L2, L3, L3 should be the same, otherwise, the L1=L2=L3 and L1=L2=L3

Solution: Pure off-grid system without Gateway

Maximum 3 units HYB in parallel (with generator)



Boundary condition

1. No Grid, whole backup scenario.
2. PV panel should be enough for load, DC Coupling
3. No power sensor is needed since the inverter has the zero-export limitation function.
4. 4-21 units SigenStack BAT 12.0 in parallel for one HYB inverter, only SigenStack BC M2-0.5C-BST/1C-BST is used.
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7. AC combiner boxes (1&2) are supplied by installer.
8. Diesel Generator is optional and can be connected at the grid point. The signal cable from DG need to be connected to the DO of inverter.
9. Optional Ethernet, WIFI, and 4G for single unit, recommended to use Ethernet hand in hand communication in parallel scenarios.

Each system supports :

SigenStack BAT × 21 per inverter

Sigen PV 50~110 M1-HYB × 1 ~ 3 in parallel

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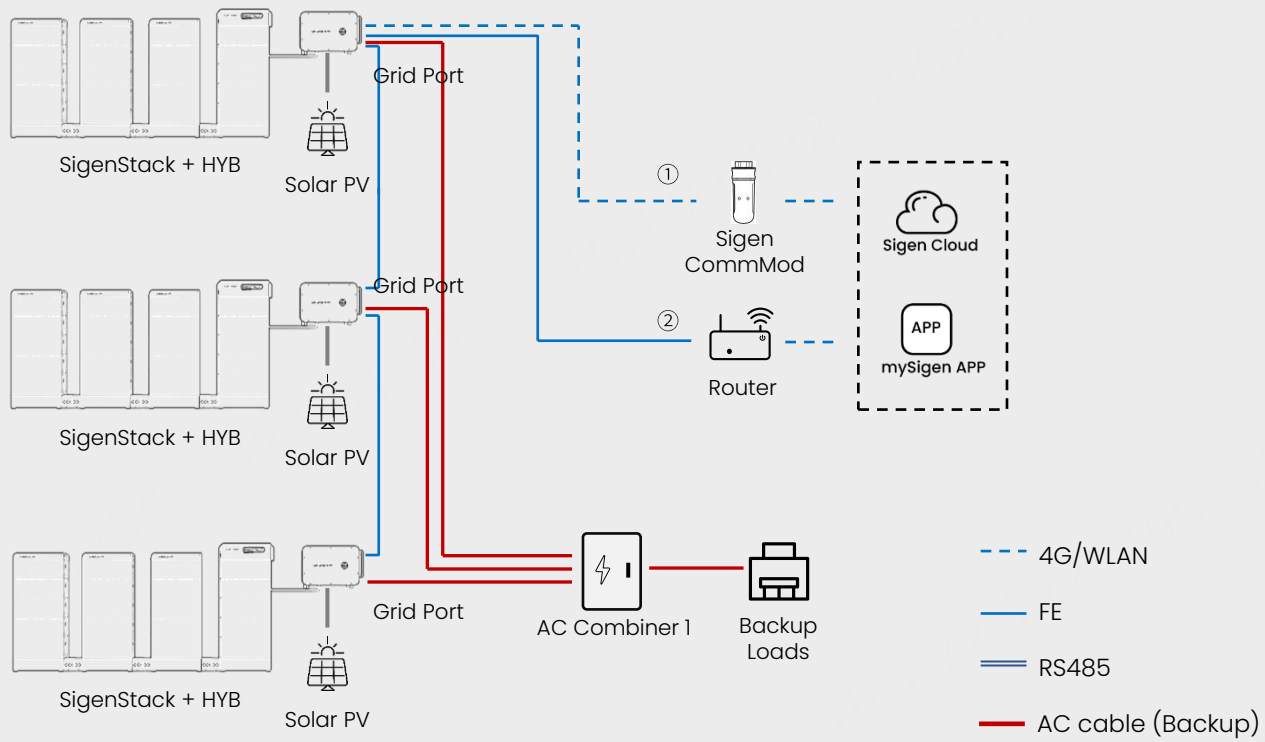
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Solution: Pure off-grid system without Gateway

Maximum 3 units HYB in parallel (without generator)



Boundary condition

1. No Grid, whole backup scenario.
2. PV panel should be enough for load, DC Coupling
3. 4-21 units SigenStack BAT 12.0 in parallel for one HYB inverter, only SigenStack BC M2-0.5C-BST/1C-BST is used.
4. Maximum 3 units Sigen PV 50~110 M1-HYB in parallel.
5. AC combiner (2) is supplied by installer.
6. Optional Ethernet, WIFI, and 4G for single unit, recommended to use Ethernet hand in hand communication in parallel scenarios.

Each system supports :

SigenStack BAT × 21 per inverter

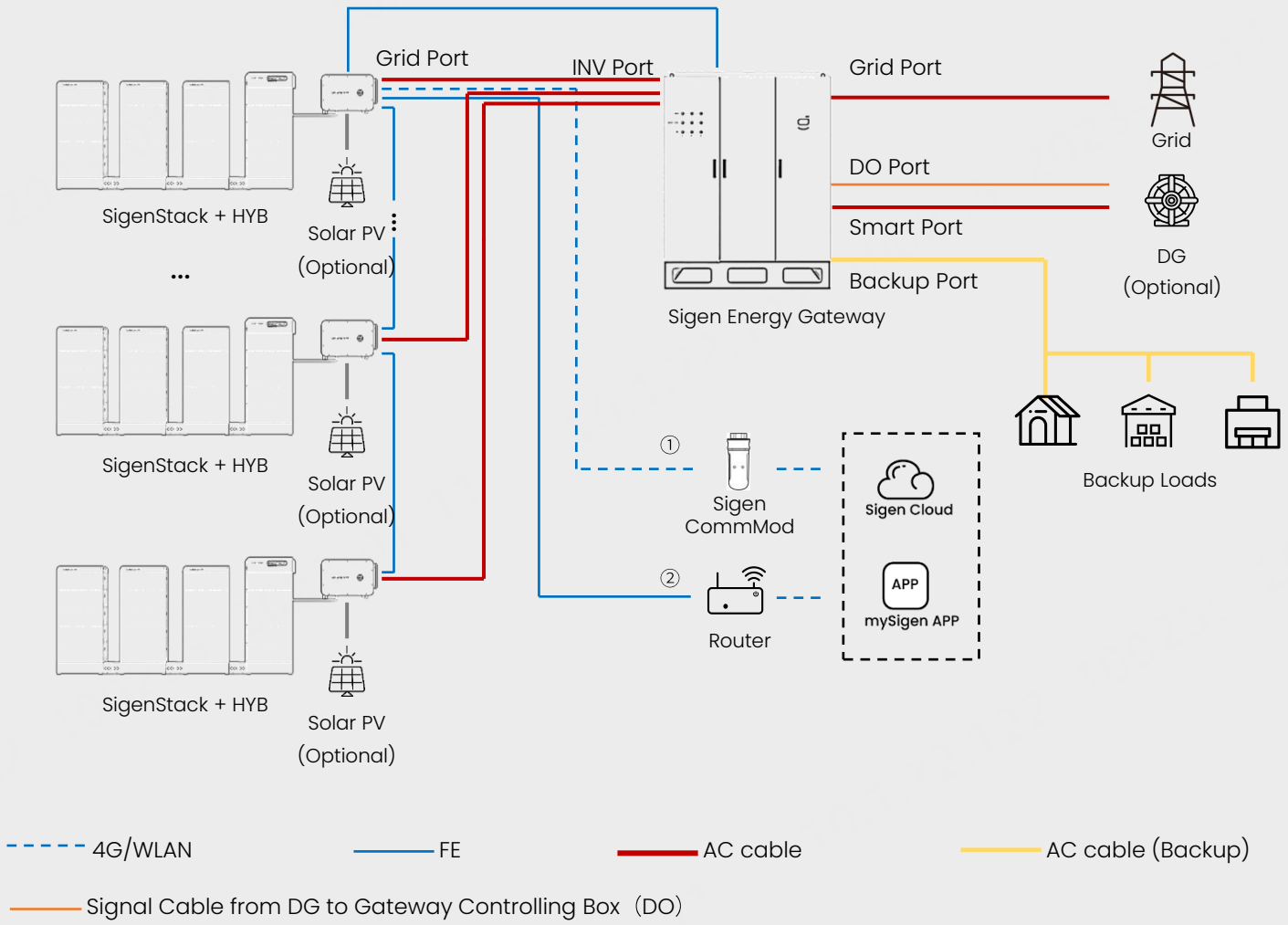
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Max AC output power 330 kWac*

Max. ESS capacity 759 kWh*

**Take Sigen Hybrid Inverter 110 kW & SigenStack BAT 12.0 as an example*

Solution: On/Off-Grid system with Gateway



Boundary condition

1. Unstable grid, whole backup scenario.
2. Optional for PV panel, DC Coupling.
3. No power sensor is needed since the gateway has the zero-export limitation function.
4. 4-21 units SigenStack BAT 12.0 in parallel for one HYB inverter, only SigenStack BC M2-0.5C-BST/1C-BST is used.
5. the number of HYB is depended on the capacity of gateway; Maximum 48 units of 50kW HYB for Gateway C2400-B.
6. If more than 3* HYB are needed, the Sigen Energy Gateway C600/C1200/C1600/C2000/C2400-B will be needed to support more HYB in parallel.
7. Diesel Generator is optional and can be connected at the smart port. The signal cable from DG need to be connected to the DO of Gateway to realize “Two-wire Start” function on the APP.
8. Optional Ethernet, WIFI, and 4G for single unit, recommended to use Ethernet hand in hand communication in parallel scenarios.

Each system supports :

SigenStack BAT × 21 per inverter

Sigen PV 50~110 M1-HYB × 24~48 in parallel

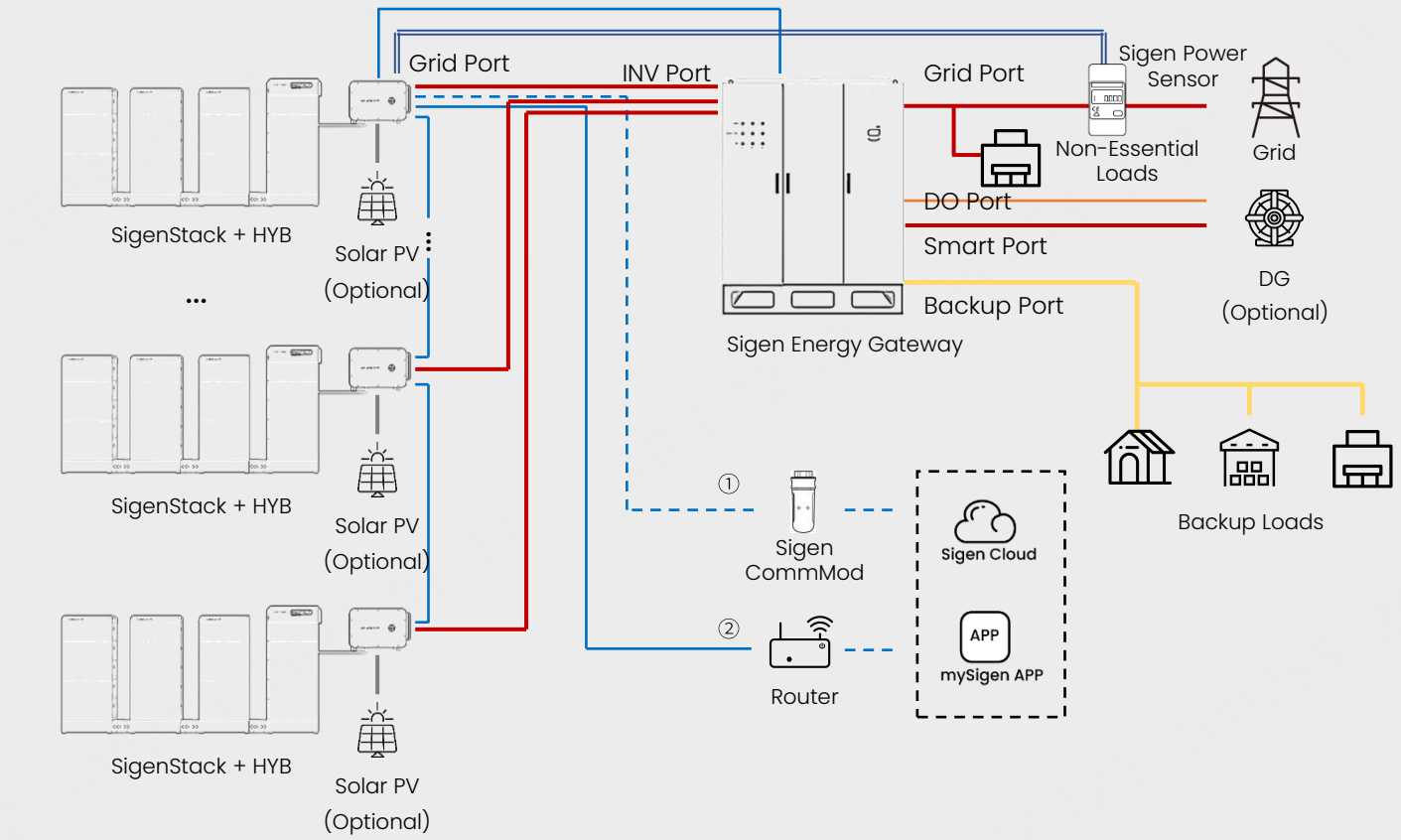
Sigen Gateway C600/C1200/C1600/C2000/C2400-B× 1

Max AC output power 2,400 kWac*

Max. ESS capacity 12,144 kWh*

**Take Sigen Hybrid Inverter 110 kW & SigenStack BAT 12.0 as an example*

Solution: On/Off-Grid system with Gateway



Boundary condition

1. Unstable grid, partial backup scenario.
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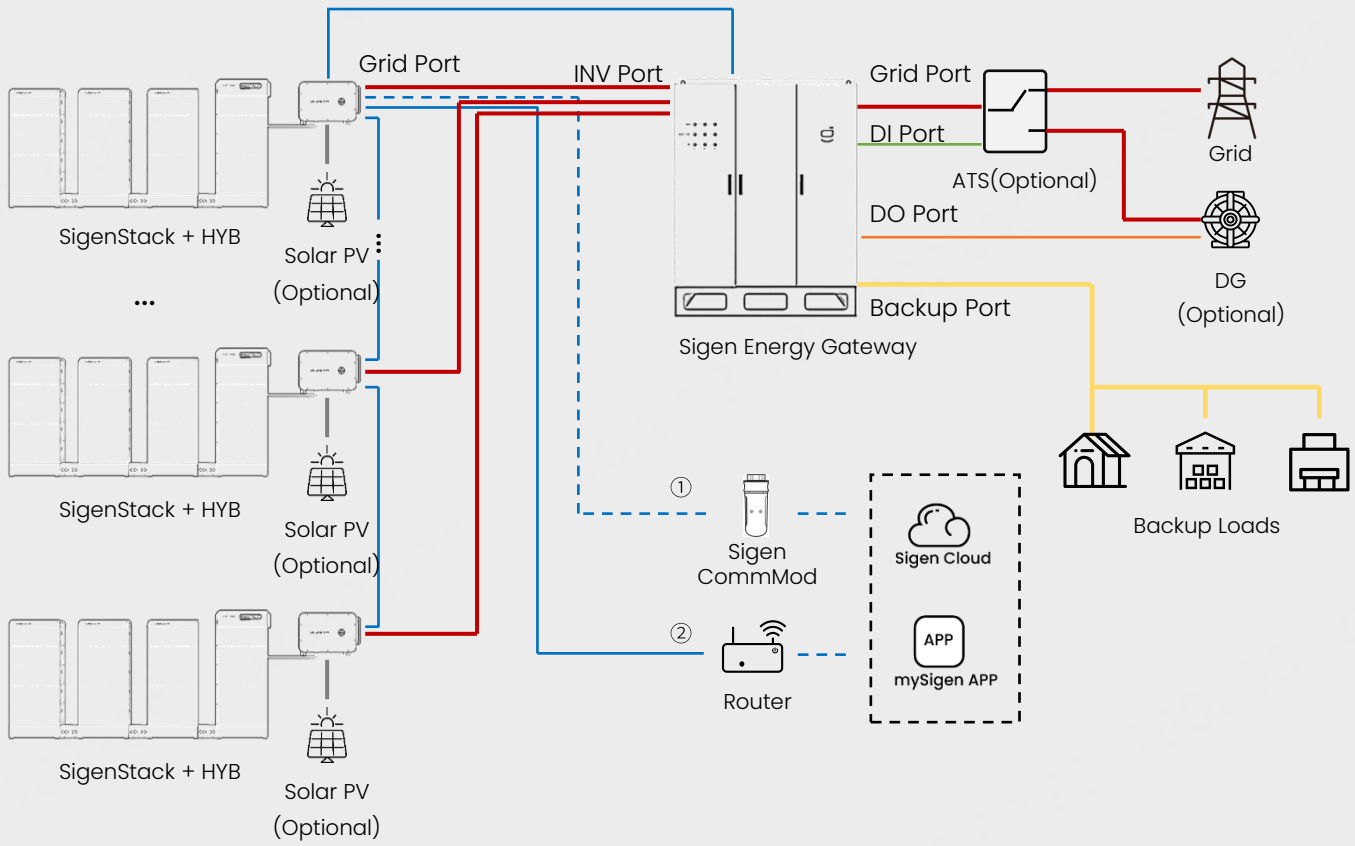
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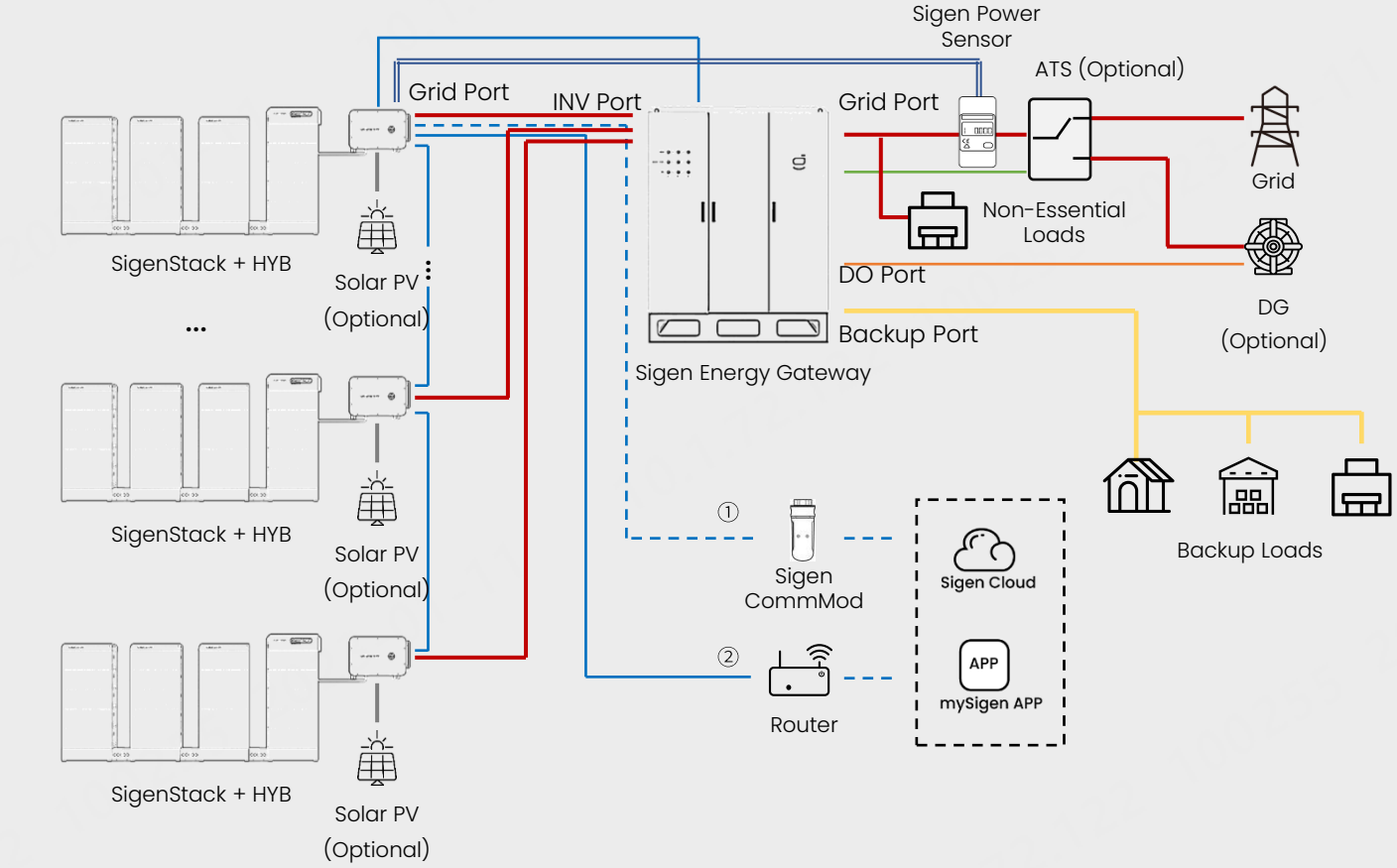
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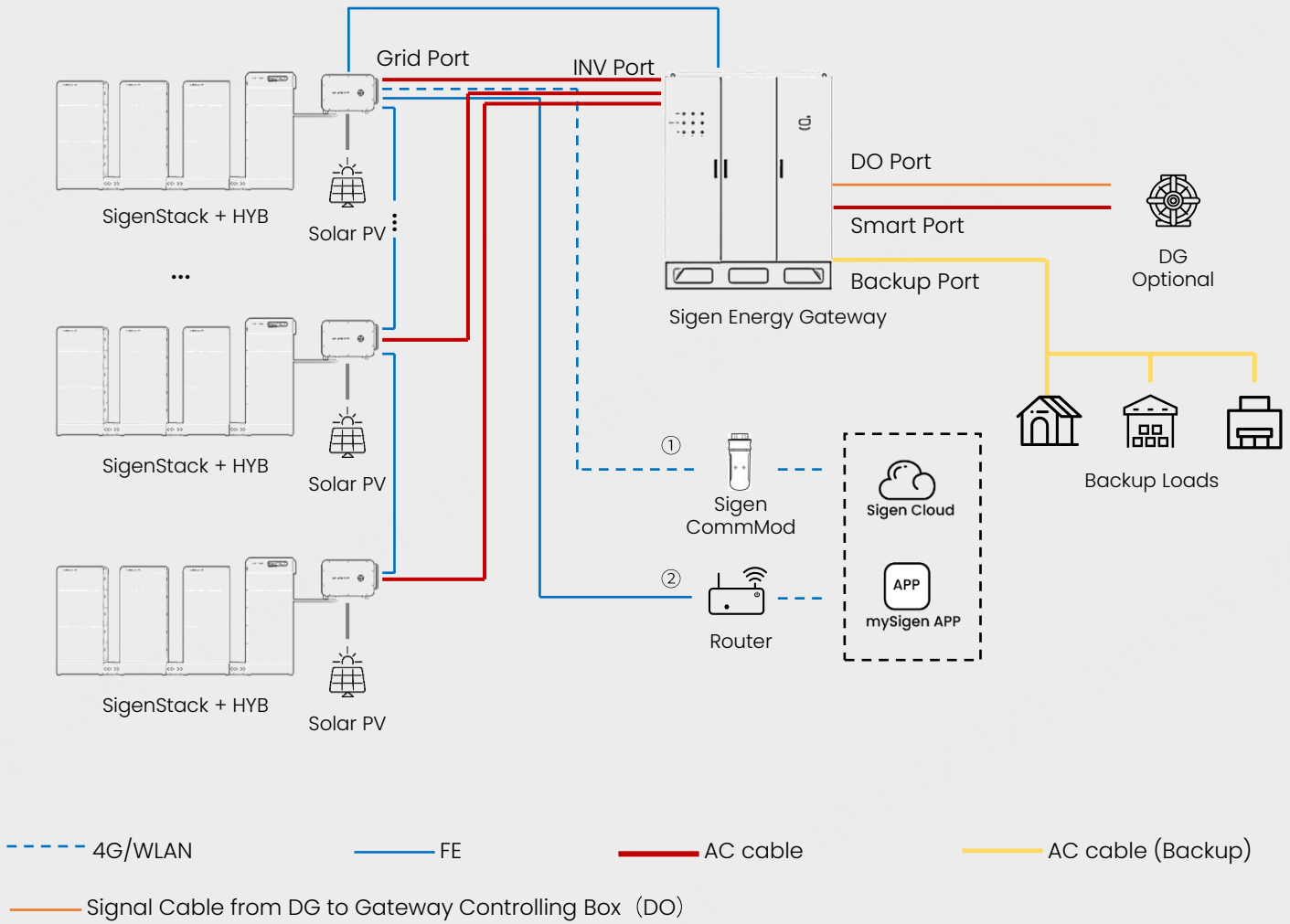
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Solution: Pure off-grid system with Gateway



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1. No Grid, whole backup scenario.
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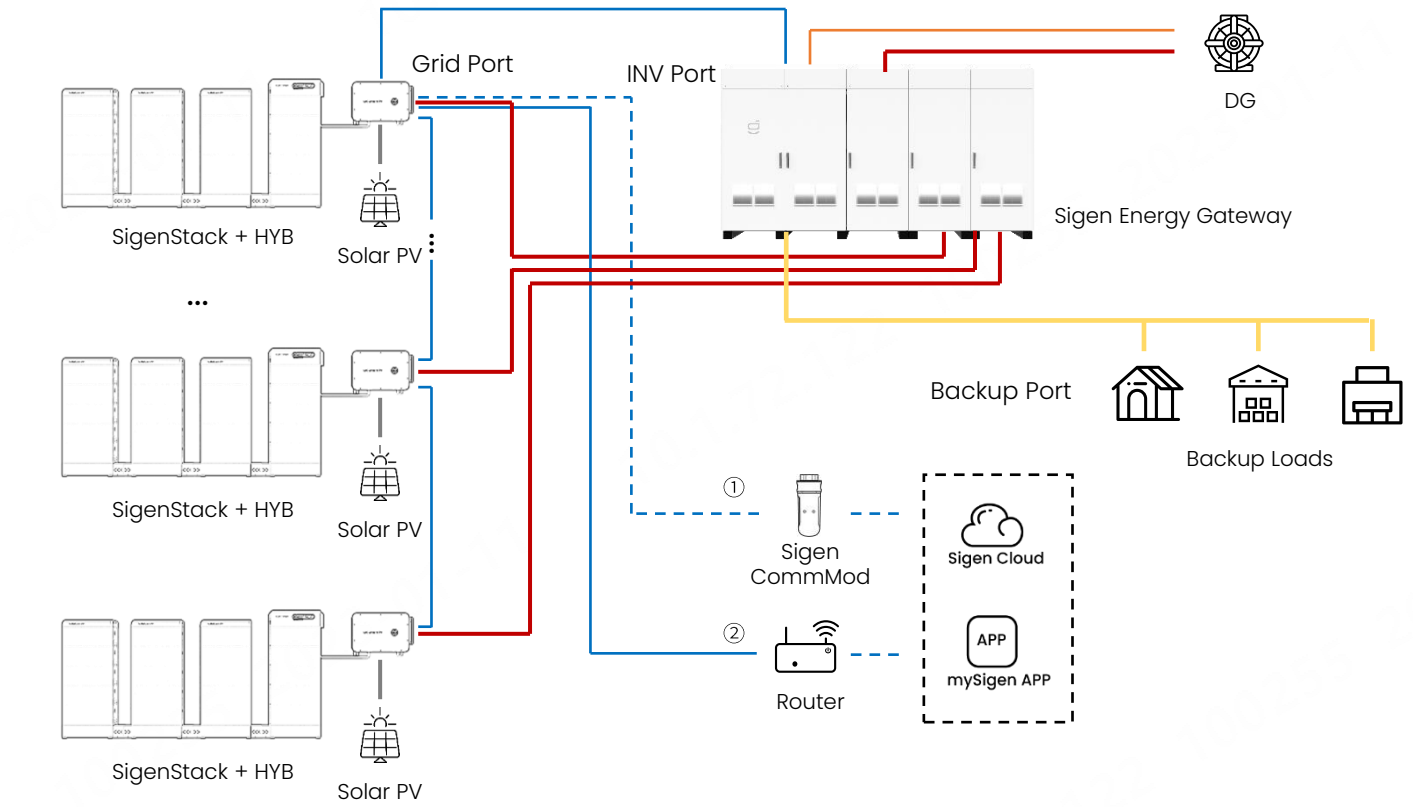
Thank you.

Enjoy Green Energy

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