



# BATTERY STORAGE SOLUTION

with Fronius GEN24 Plus and compatible battery storage  
- BYD Battery-Box Premium HVS/HVM or  
- LG RESU FLEX

## THE ADVANTAGES AT A GLANCE:

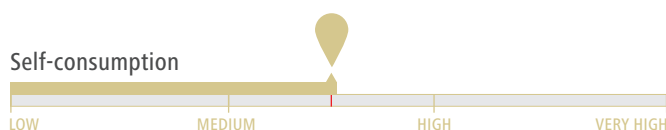
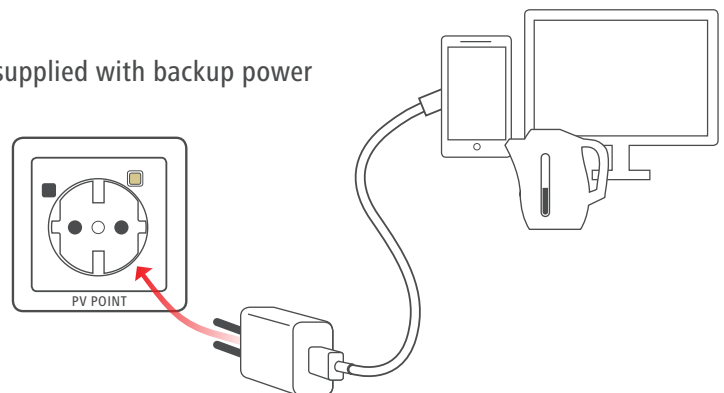
- / Use of PV energy also possible at night
- / Demand-oriented backup power variants
- / Simultaneous supply of the loads and charging of the battery also possible in the event of a power outage
- / High self-consumption and self-sufficiency rates
- / Highest system efficiency thanks to DC coupling of the battery storage and high voltage technology



- 1 Fronius Inverter
- 2 Fronius Smart Meter
- 3a **OPTION 1:** LG RESU FLEX
- 3b **OPTION 2:** BYD Battery-Box Premium HVS/HVM

## ONBOARD BASIC BACKUP POWER SUPPLY: THE PV POINT

- / Single-phase loads in households up to 3 kW can be supplied with backup power
- / No additional installations necessary
- / Automatic activation in case of a grid outage



\* depending on the heat generation in the household.

## COMPATIBILITIES AND MAXIMUM CHARGING AND DISCHARGING POWER:

| BYD BATTERY-BOX PREMIUM   |         |         |          |          |          |          |          |          |
|---|---------|---------|----------|----------|----------|----------|----------|----------|
| MAXIMUM DC CHARGING AND DISCHARGING POWER WITH GEN24 PLUS (KW) <sup>1</sup> | HVS     |         |          | HVM      |          |          |          |          |
|   | HVS 5.1 | HVS 7.7 | HVS 10.2 | HVM 11.0 | HVM 13.8 | HVM 16.6 | HVM 19.3 | HVM 22.1 |
| Primo GEN24 3.0 Plus  | 3.11    | 3.11    | -        | 3.11     | 3.11     | 3.11     | 3.11     | -        |
| Primo GEN24 3.6 Plus  | 3.81    | 3.81    | -        | 3.81     | 3.81     | 3.81     | 3.81     | -        |
| Primo GEN24 4.0 Plus  | 4.14    | 4.14    | -        | 4.14     | 4.14     | 4.14     | 4.14     | -        |
| Primo GEN24 4.6 Plus  | 4.51    | 4.75    | -        | 4.51     | 4.75     | 4.75     | 4.75     | -        |
| Primo GEN24 5.0 Plus  | 4.51    | 5.17    | -        | 4.51     | 5.17     | 5.17     | 5.17     | -        |
| Primo GEN24 6.0 Plus  | 4.51    | 6.20    | -        | 4.51     | 5.63     | 6.20     | 6.20     | -        |
| Symo GEN24 3.0 Plus   | 2.56    | 3.15    | 3.15     | 2.56     | 3.15     | 3.15     | 3.15     | 3.15     |
| Symo GEN24 4.0 Plus   | 2.56    | 3.84    | 4.18     | 2.56     | 3.20     | 3.84     | 4.18     | 4.18     |
| Symo GEN24 5.0 Plus   | 2.56    | 3.84    | 5.20     | 2.56     | 3.20     | 3.84     | 4.48     | 5.20     |
| Symo GEN24 6.0 Plus   | 4.51    | 6.22    | 6.22     | 4.51     | 5.63     | 6.22     | 6.22     | 6.22     |
| Symo GEN24 8.0 Plus   | 4.51    | 6.76    | 8.26     | 4.51     | 5.63     | 6.76     | 7.88     | 8.26     |
| Symo GEN24 10.0 Plus  | 4.51    | 6.76    | 9.01     | 4.51     | 5.63     | 6.76     | 7.88     | 9.01     |

| LG RESU FLEX  |      |      |      |
|---|------|------|------|
| MAXIMUM DC CHARGING AND DISCHARGING POWER WITH GEN24 PLUS (KW) <sup>1</sup> | 8.6  | 12.9 | 17.2 |
| Primo GEN24 3.0 Plus  | 3.11 | 3.11 | -    |
| Primo GEN24 3.6 Plus  | 3.81 | 3.81 | -    |
| Primo GEN24 4.0 Plus  | 4.14 | 4.14 | -    |
| Primo GEN24 4.6 Plus  | 4.30 | 4.75 | -    |
| Primo GEN24 5.0 Plus  | 4.30 | 5.17 | -    |
| Primo GEN24 6.0 Plus  | 4.30 | 6.20 | -    |
| Symo GEN24 3.0 Plus   | 2.86 | 3.15 | 3.15 |
| Symo GEN24 4.0 Plus   | 2.86 | 4.18 | 4.18 |
| Symo GEN24 5.0 Plus   | 2.86 | 4.29 | 5.20 |
| Symo GEN24 6.0 Plus   | 4.30 | 6.22 | 6.22 |
| Symo GEN24 8.0 Plus   | 4.30 | 6.50 | 8.26 |
| Symo GEN24 10.0 Plus  | 4.30 | 6.50 | 8.50 |

<sup>1</sup> The data in the table is the DC charging and discharging power. This DC discharge power differs from the AC power that then reaches the loads in the household, since the efficiency of the inverter must also be taken into account here.

## DIFFERENCES OF BYD BATTERY-BOX PREMIUM HVS VS. HVM:

| BYD BATTERY-BOX PREMIUM   |  |
|---|--|
| HVS   | HVM  |
| High battery module voltage, therefore excellent system efficiency (confirmed by HTW Berlin)        | Higher energy density, therefore lower space requirement   |
| Higher charging and discharging power at similar capacity: HVS 10.2 up to 9.01 kW                   | Lower charging and discharging power at similar capacity: HVM 11.0 up to 4.51 kW                     |
| Scalable up to 7.68 kWh (Primo GEN24 Plus) / 10.24 kWh (Symo GEN24 Plus) without parallel operation | Scalable up to 19.32 kWh (Primo GEN24 Plus) / 22.08 kWh (Symo GEN24 Plus) without parallel operation |
| Parallel operation up to 23.04 kWh (Primo GEN24 Plus) / 30.72 kWh (Symo GEN24 Plus)                 | Parallel operation up to 57.96 kWh   |

## PARALLEL OPERATION FRONIUS GEN24 PLUS AND BYD BATTERY-BOX PREMIUM HVS/HVM:

Due to the expandability of the BYD Battery-Box Premium HVS/HVM, up to 3 batteries can be operated in parallel. The advantage of parallel operation of several storage units is that a high capacity can be achieved. Thus, even small commercial systems can be realised with the combination of Fronius GEN24 Plus and BYD Battery-Box Premium HVS/HVM.

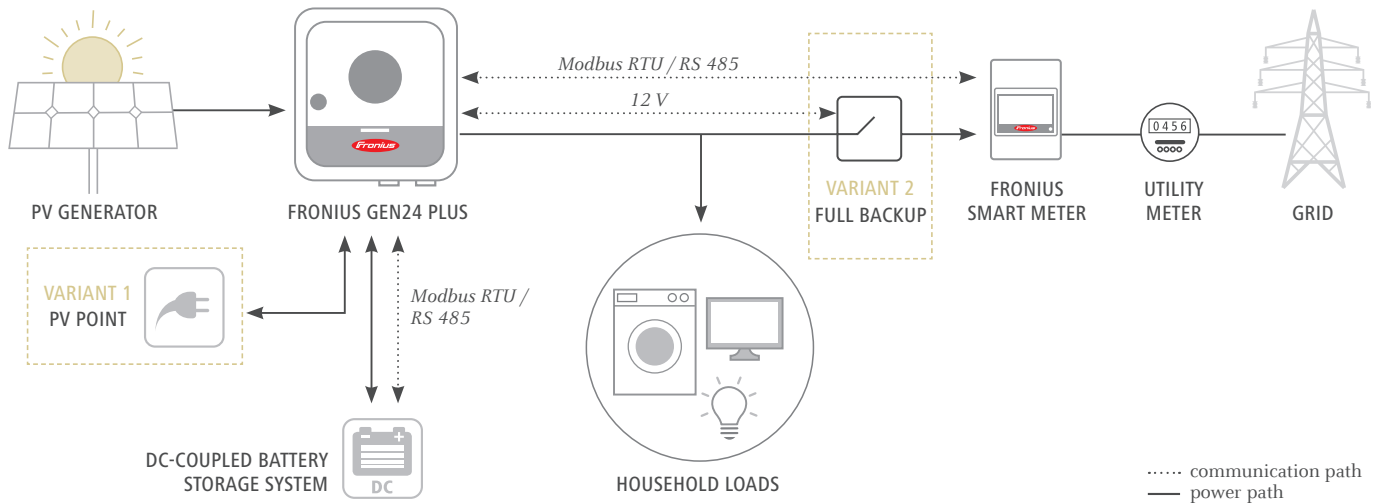
THE FOLLOWING TABLE SHOW THE POSSIBLE COMBINATIONS DEPENDING ON THE INVERTER AND STORAGE TYPE:

| BYD BATTERY-BOX PREMIUM  |                    |                    |                     |                     |                     |                     |                     |                |                |
|--------------------------|--------------------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------|----------------|
|                          | HVS                |                    |                     | HVM                 |                     |                     |                     |                |                |
|                          | 2x / 3x<br>HVS 5.1 | 2x / 3x<br>HVS 7.7 | 2x / 3x<br>HVS 10.2 | 2x / 3x<br>HVM 11.0 | 2x / 3x<br>HVM 13.8 | 2x / 3x<br>HVM 16.6 | 2x / 3x<br>HVM 19.3 | 2x<br>HVM 22.1 | 3x<br>HVM 22.1 |
| Fronius Primo GEN24 Plus | ✓                  | ✓                  | -                   | ✓                   | ✓                   | ✓                   | ✓                   | -              | -              |
| Fronius Symo GEN24 Plus  | ✓                  | ✓                  | ✓                   | ✓                   | ✓                   | ✓                   | ✓                   | ✓              | -              |

Parallel operation increases the capacity of the battery, but the charging and discharging power remain the same as when operating a single battery.

Please also follow the BYD guidelines for parallel operation of the BYD Battery-Box Premium HVS/HVM. National regulations, the grid operator's specifications or other factors may require a residual current circuit breaker in the AC connection lead. In this case, in accordance with national legislation, Fronius recommends that a residual current circuit breaker with a tripping current of at least 100 mA suitable for frequency converters be used. Parallel operation depends on the respective availability and the certification in the country.

## CONFIGURATION SCHEME



## WHAT IS NEEDED TO IMPLEMENT THE FRONIUS BATTERY STORAGE SOLUTION?

| DEVICE                                  | TYPE   | NOTE   |
|---|--|--|
| INVERTER                                | Fronius Primo GEN24 Plus or Fronius Symo GEN24 Plus  | Depending on the type of inverter and the type and capacity of the battery   |
| BATTERY STORAGE SYSTEM                  | BYD Battery-Box Premium HVS/HVM or LG RESU FLEX  | You can find more details on the BYD Battery-Box Premium HVS/HVM under the following link <a href="https://www.bydbatterybox.com/">https://www.bydbatterybox.com/</a><br>For more information on the LG RESU FLEX, go to <a href="https://www.lgessbattery.com/">https://www.lgessbattery.com/</a> |
| FRONIUS SMART METER                     | 63A-1; 63A-3; 50KA-3<br>240V-3 UL; 480V-3 UL; 600V-3 UL<br>TS 100A-1; TS 65A-3; TS 5KA-3   | / Suitable for single-phase and three-phase grids<br>/ Measures energy consumption and energy from the grid  |
| COMMUNICATION INVERTER WITH BATTERY     | The inverter communicates with the battery via a shielded 4-pin cable (CAT5 and higher) via Modbus RTU (RS485). The terminating resistors must be set at the end of the ring, with the BYD Battery-Box Premium HVS/HVM by means of a DIP switch directly on the battery, with the LG RESU FLEX in the RESU Monitor App. To ensure proper functioning, the inverter and battery always need to have the latest software update. The software update of the inverter can be activated via Fronius Solar.web. |  |
| COMMUNICATION INVERTER WITH SMART METER | Cable connection (CAT5 and higher) via Modbus RTU (RS485)  |  |

## BACKUP POWER OPTIONS<sup>1</sup>

### VARIANT 1:

BACKUP POWER VARIANT:  
„PV POINT“

- ON BOARD -

For the PV Point, a socket must be connected to the OP-terminal of the inverter in accordance with the installation standard. The PV Point can be implemented with or without a battery storage. For further details on installation, please refer to the Fronius GEN24 Plus Operating Instructions.

### VARIANT 2:

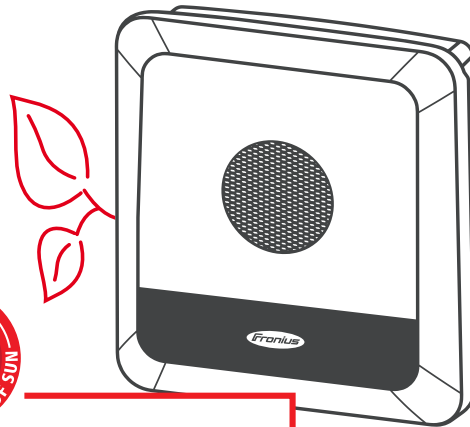
BACKUP POWER VARIANT:  
„FULL BACKUP“<sup>2</sup>

For the Full Backup, additional mains switchover contactors or auxiliary relays (Enwitec) are required. The requirements for this switchover vary from country to country - please contact your grid operator. For the Full Backup, a battery storage is required.

<sup>1</sup> Only one of the two backup power variants can be implemented.

<sup>2</sup> The Full Backup option is available for the Primo GEN24 Plus 3 - 6 kW and the Symo GEN24 Plus 6 - 10 kW.

Scan the QR code and discover the vision and storage solution of Fronius:



**APPROVED**

**GEN24 Plus brings us another step closer to our vision of 24 hours of sun:**

It's all about sustainability – throughout all phases of the product life cycle. The following facts confirm this:

- / Extension of the inverters service life thanks to active cooling
- / Comprehensive functions and open interfaces replace the need for additional equipment
- / > 90% recycled aluminium is used in the aluminium heat-sink



**Even more information on sustainability with the Fronius GEN24 Plus**

/ Perfect Welding / Solar Energy / Perfect Charging

### **THREE BUSINESS UNITS, ONE GOAL: TO SET THE STANDARD THROUGH TECHNOLOGICAL ADVANCEMENT.**

What began in 1945 as a one-man operation now sets technological standards in the fields of welding technology, photovoltaics and battery charging. Today, the company has around 5,660 employees worldwide and 1,321 patents for product development show the innovative spirit within the company. Sustainable development means for us to implement environmentally relevant and social aspects equally with economic factors. Our goal has remained constant throughout: to be the innovation leader.

Further information about all Fronius products and our global sales partners and representatives can be found at [www.fronius.com](http://www.fronius.com)

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