

Fronius Battery Storage Solution

With Fronius GEN24 Plus¹, Fronius Smart Meter² and BYD Battery-Box Premium HVS/HVM³



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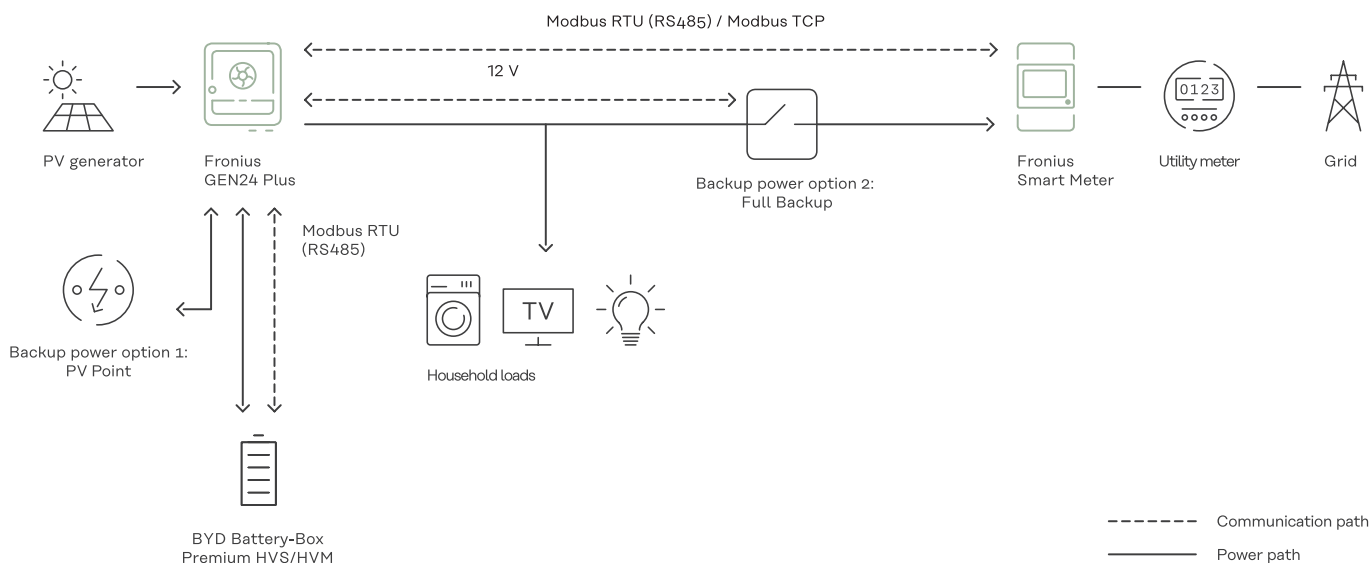


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All benefits at a glance

- 01 Use PV energy, even at night
- 02 Demand-based backup power variants
- 03 Simultaneous supply and charging also possible when using backup power
- 04 High self-consumption and self-sufficiency rates
- 05 Unsurpassed system efficiency thanks to DC coupling

Configuration scheme:



What is needed for implementation?

| Device | Type | Notes |
|------------------|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fronius Inverter | Fronius Primo/Symo GEN24 Plus | Depending on the type of inverter and the type and capacity of the battery |
| Battery storage | BYD Battery-Box Premium HVS/HVM | Types compatible with BYD Battery-Box Premium HVS: HVS 5.1 / HVS 7.7 / HVS 10.2 Types compatible with BYD Battery-Box Premium HVM: HVM 11.0 / HVM 13.8 / HVM 16.6 / HVM 19.3 / HVM 22.1 Compatibility of the individual storage types differ for Fronius Primo and Symo GEN24 Plus! |
| Energy meter | Fronius Smart Meter 63A-1, 63A-3, 50kA-3 | Current transformers with an output current of 5 A must be used for the Fronius Smart Meter 50kA-3 |
| | Fronius Smart Meter TS 100A-1, TS 65A-3, TS 5kA-3 | Current transformers with an output current of 5 A must be used for the Fronius Smart Meter TS 5kA-3 |
| | Fronius Smart Meter IP | Current transformers with an output voltage of 333 mV must be used for the Fronius Smart Meter IP |
| Communication | Inverter – battery | The inverter communicates with the battery via a shielded, 4-pole cable (CAT5 and higher) via Modbus RTU (RS485). The terminating resistors must always be placed at the end of the ring. With the BYD Battery-Box Premium HVS/ HVM, this is accomplished with a DIP switch directly on the storage system. To ensure error-free functionality, the inverter and the battery must always have the latest software update. The software update of the inverter can be activated via Fronius Solar.web. |
| | Inverter – Smart Meter & Smart Meter TS | Cable connection (CAT5 and higher) via Modbus RTU (RS485) |
| | Inverter – Smart Meter IP | Cable connection (CAT5 and higher) via Modbus RTU (RS485) or via Modbus TCP (WLAN, LAN) |

Backup power options

| Device | Type | Notes |
|------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Backup power variants* | PV Point (on board) | Socket supplied during backup power operation Single-phase power up to 3 kW Optional battery storage Fuse protection with 30 mA type A RCD required |
| | PV Point Comfort | Continuously supplied socket (backup power supply and parallel grid operation) Single-phase power up to 3 kW Optional battery storage Fuse protection with 30 mA type A RCD and 13 A line protection required |
| | Full Backup** | Backup power supplies the entire household when needed (1-phase and 3-phase) Manual or automatic changeover possible Battery storage required Additional contactors for switchover or auxiliary relays are required*** |

* Only one backup power variant can be implemented.

** The Full Backup option is not available for the Fronius Symo GEN24 3.0 - 5.0 Plus.

*** The requirements for this switchover vary from country to country – please contact your grid operator.

Compatibilities and maximum charge/discharge power:

| Nominal DC charge/ discharge power with GEN24 Plus [kW] * | BYD Battery-Box Premium | | | | | | | |
|-----------------------------------------------------------------|-------------------------|---------|----------|----------|----------|----------|----------|----------|
| | 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 | - |
| Primo GEN24 8.0 Plus | 4.51 | 6.76 | - | 4.51 | 5.63 | 6.76 | 7.88 | - |
| Primo GEN24 10.0 Plus | 4.51 | 6.76 | - | 4.51 | 5.63 | 6.76 | 7.88 | - |
| 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 |
| Symo GEN24 12.0 Plus SC | 4.51 | 6.76 | 9.01 | 4.51 | 5.63 | 6.76 | 7.88 | 9.01 |

* This data refers to the DC charge and discharge power. The DC discharge power varies from the AC power that reaches the loads in the home, since the efficiency rate of the inverter must also be included here.

Differences between 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 less space required |
| Higher charge and discharge power with similar capacity: HVS 10.2 bis zu 9,01 kW | Lower charge and discharge power with 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 approx. 23.04 kWh (Primo GEN24 Plus) / 30.72 kWh (Symo GEN24 Plus) | Parallel operation up to approx. 57.96 kWh |

Parallel operation Fronius GEN24 Plus and BYD Battery-Box Premium HVS/HVM

Thanks to the expandability of the BYD Battery-Box Premium HVS/HVM, up to 3 batteries can be operated in parallel on a Fronius GEN24 Plus inverter. The advantage of operating multiple storage units in parallel is that high capacities can be achieved. This means that even small commercial systems can be equipped with the combination of Fronius GEN24 Plus and BYD Battery-Box Premium HVS/HVM.

The following table shows the possible combinations depending on the inverter and storage type:

| | BYD Battery-Box Premium | | | | | | | | |
|------------------|-------------------------|--------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------|----------------|
| | HVS | | | HVM | | | | | |
| | 2x / 3x HVS 5.1 | 2x / 3x HVS 7.7 | 2x / 3x HVS 10.2 | 2x / 3x HVM 11.0 | 2x / 3x HVM 13.8 | 2x / 3x HVM 16.6 | 2x / 3x HVM 19.3 | 2x HVM 22.1 | 3x HVM 22.1 |
| Primo GEN24 Plus | ✓ | ✓ | - | ✓ | ✓ | ✓ | ✓ | - | - |
| Symo GEN24 Plus | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | - |

The parallel operation of multiple batteries (up to 3) increases the capacity, but the charge and discharge rates remain the same as when operating a single battery. Please also observe the BYD specifications for parallel operation of the BYD Battery-Box Premium HVS/HVM. National regulations of the grid operator or other conditions may require an earth-leakage circuit breaker in the AC connection cable. In this case, Fronius recommends using an earth-leakage circuit breaker suitable for frequency inverters with a tripping current of at least 100 mA, taking into account the national regulations. Parallel operation depends on the respective availability or certification in the country.

Any questions?



Here you will find our how-to videos



You can access recordings of our webinars here.