

RS Hybrid THREE-PHASE

HYBRID INVERTER
FOR PHOTOVOLTAIC STORAGE



HIGHLIGHTS

- **Plug & Play installation**
- **Self-consumption maximisation**
- **Natural ventilation**
- **Maximum DC power 150% overload**
- **2 MPPT and up to 3 strings**
- **Up to 10 inverters in parallel**
- **Integrated backup module**
- **Remote monitoring via app and WEB portal**
- **Compatible with RS Batlio 5500 battery systems (2 to 8 modules in series with a maximum capacity of 44 kWh)**

Riello Solartech's RS Hybrid three-phase inverters combine efficiency, flexibility and a compact design in a single system. Designed for commercial and industrial installations, they integrate solar power generation, energy consumption management and energy storage, ensuring maximum self-sufficiency and lower electricity bills.

Available in power ratings from 5 to 30 kW, they achieve a European efficiency of up to 97.4% and are easy to install thanks to their lightweight and compact design.

FEATURES AND SPECIFICATIONS

The architecture of the RS Hybrid three-phase system allows a three-phase load to be powered using energy generated by the photovoltaic modules, energy stored in the batteries or, where necessary, energy from the mains supply. The inverters have an IP65 protection rating, making them suitable for both indoor and outdoor installations, and feature two MPPT trackers with a wide photovoltaic voltage range and the option to connect up to three strings

in the higher-power models. The advanced control system also includes compatibility with Smart Grid networks and the ability to operate in Zero Injection mode. The unit features numerous integrated communication interfaces, including Bluetooth, Wi-Fi, RS485 and CAN-BUS ports, with Ethernet available as an option. CT sensors are fitted as standard, whilst the front LED panel allows for quick verification of the operating status. Commissioning is straightforward thanks to the dedicated app, and all configurations can be carried out intuitively. Up to ten inverters can be connected in parallel (in the higher-power models) to create systems with greater power output.

BACKUP MANAGEMENT

In the event of a power cut, the built-in backup function ensures that critical loads remain active, with a typical response time of 10 ms.

OPERATING MODES

- **Self-consumption:** in self-consumption mode, the energy generated by the photovoltaic modules is managed according to the following priority: Load → Battery → Grid.
The energy produced is therefore used first to power domestic or industrial loads; any surplus is used to charge the battery and, only once the battery is fully charged, fed into the electricity grid.
- **Grid feed-in:** in grid feed-in mode, the energy management priority is: Load → Grid → Battery.
In this case, any energy produced in excess of load demand is fed into the grid to maximise energy transfer, whilst the remaining energy is stored in the battery.
- **Time-controlled mode:** time-controlled mode allows the user to independently programme the battery's charging and discharging periods. This function enables the optimisation of energy use based on time of day, electricity tariffs or other operational requirements.
- **Back-up:** in back-up mode, the priority

order is: Battery → Load → Grid.

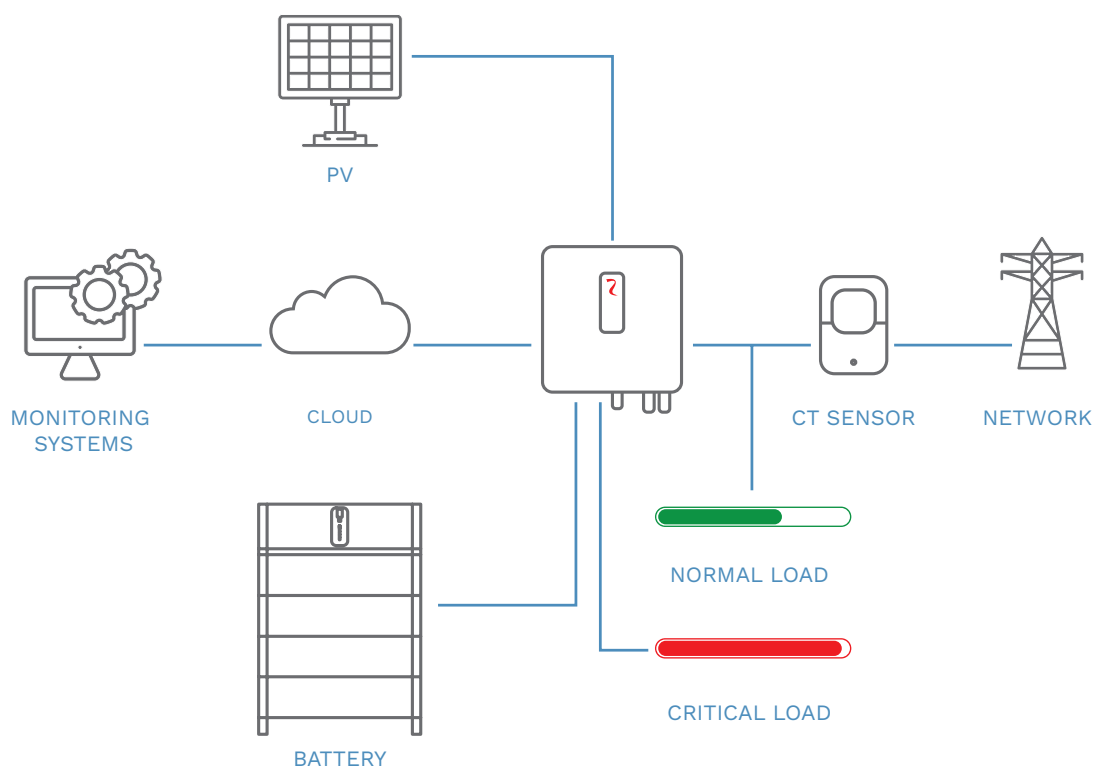
The aim is to ensure uninterrupted power supply in the event of a grid failure, prioritising rapid battery charging. It is also possible to enable charging from the AC grid to keep the battery ready for use at all times.

There are two operating options:

- Grid charging Prohibited
- Grid charging Permitted

- **Off-Grid:** off-grid mode allows only critical loads to be powered, ensuring they continue to operate even in the absence of the mains supply.

In this mode, the battery is essential, as the inverter cannot operate without it.



PARALLEL OPERATION

The parallel option allows two or more RS HYBRID three-phase inverters, each fitted with batteries, to be installed as a single system.

Activating the parallel function enables the hybrid inverters to calculate the total instantaneous consumption of the loads connected to the system, thereby managing photovoltaic generation and optimising the charging/discharging of the battery across all inverters, via a single reading of the power exchanged with the grid for the entire system.

The power exchange reading with the grid can be taken via a current transformer (CT) or meter connected to just one of the inverters in parallel.

This inverter will act as the “Master” and will share information for battery and load management with the other “Slave” inverters in parallel via a dedicated CAN bus (PARA).

PARALLEL PV OUTPUT MANAGEMENT

Inverters connected in parallel manage PV output independently of one another and work to maximise the output of the PV strings throughout operation.

Any limitations on PV power output, not caused by atmospheric conditions or the strings themselves, may occur depending on the instantaneous consumption of the loads, the battery’s SOC and any limitations on the power fed into the grid.

The absence or variation in available PV power on one or more parallel inverters does not affect the normal operation of the system. Inverters with insufficient PV power will help to supply power to loads from the battery (if sufficiently charged) or from the grid.

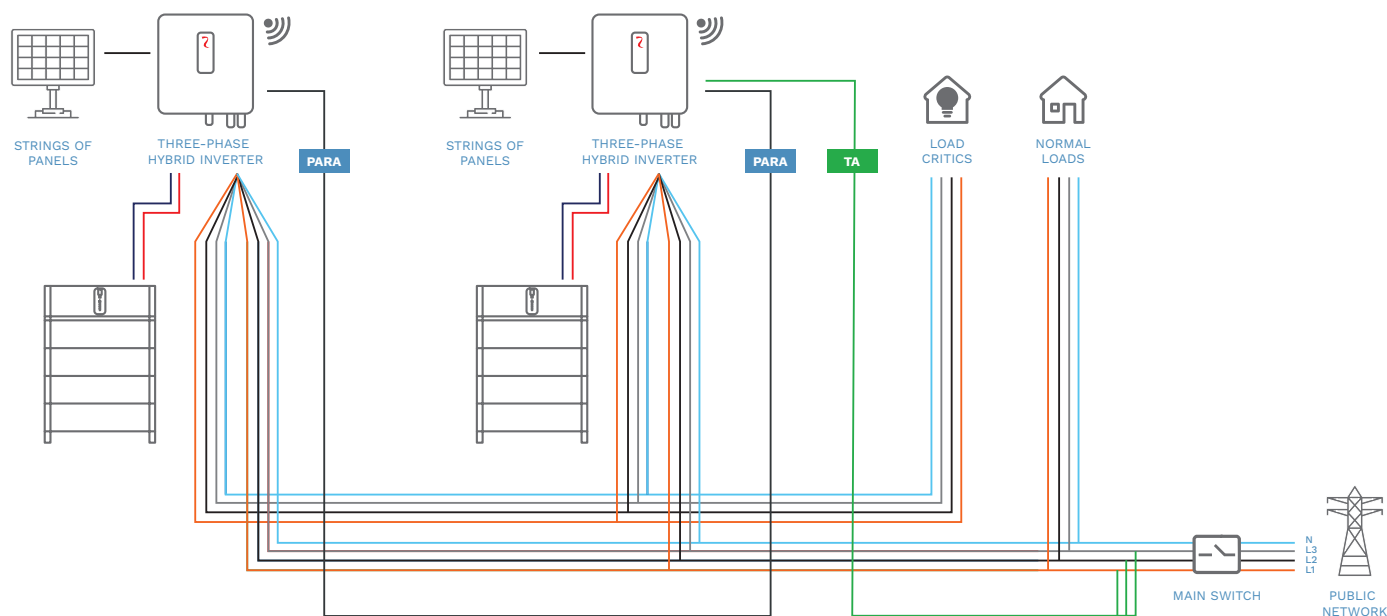
BATTERY CHARGE/DISCHARGE MANAGEMENT

Inverters connected in parallel manage the charging and discharging of the battery, so as to keep the battery SOC as balanced as possible across all inverters, subject to the available PV power and the instantaneous consumption of the loads connected to the system.

Any faults affecting the battery of one or more parallel inverters do not compromise the system’s operation.

The inverters can manage the charging and discharging of the remaining batteries, reporting the fault via the local app and/or remote monitoring.

The charging and discharging power will, of course, be adjusted to suit the operational capacity of the remaining batteries.



Power reading via the current transformer.

OPTIONS

MONITORING AND CONFIGURATION

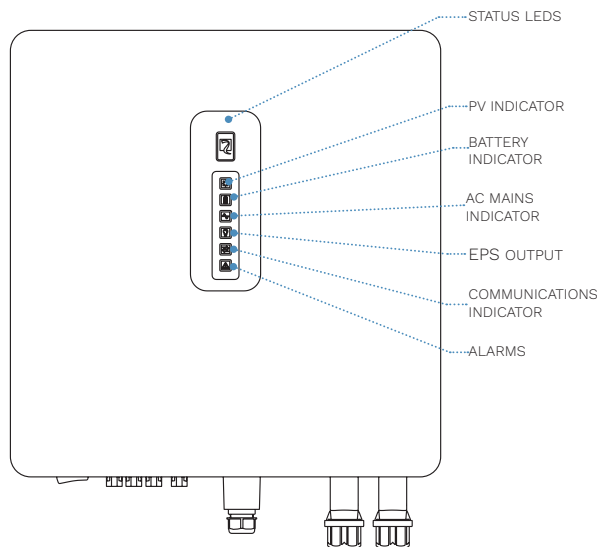
RS Connect / RS Monitoring 2.0

ACCESSORIES

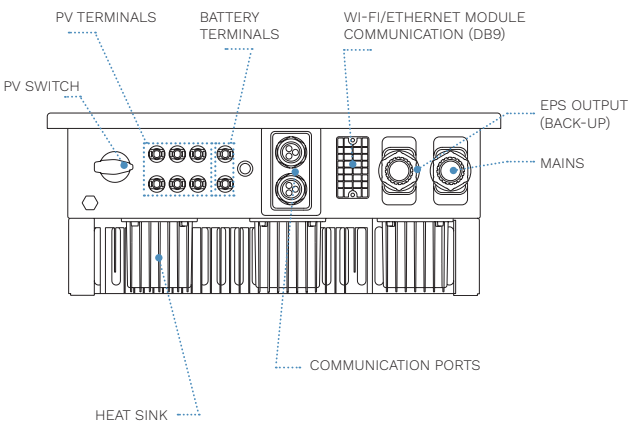
Ethernet card

Meter

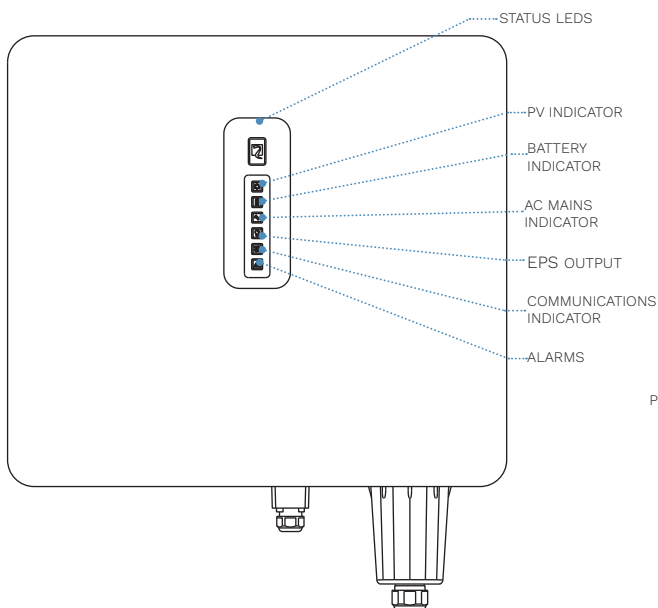
RS Hybrid three-phase 10 kW
(front view)



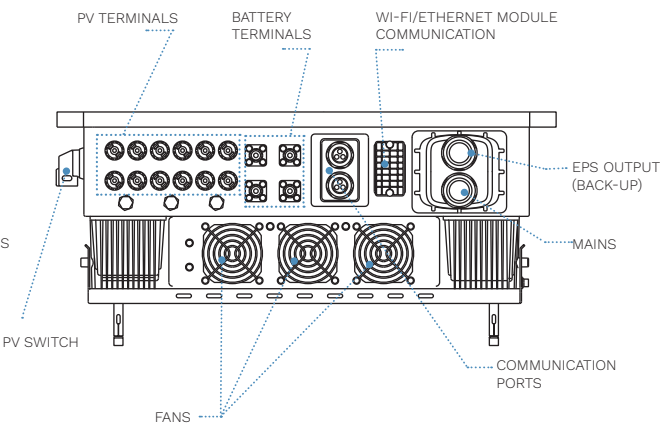
RS Hybrid three-phase 10 kW
(view from below)



RS Hybrid three-phase 30 kW
(front view)



RS Hybrid three-phase 30 kW
(view from below)



INVERTER MODEL	5 kW	6 kW	8 kW	10 kW	20 kW	30 kW
EFFICIENCY						
Maximum efficiency [%] (PV to grid)	97.1	97.1	97.4	97.4	97.8	97.8
Maximum charging/discharging efficiency [%]	96.5	96.6	96.8	96.8	98.0 / 97.1	98.5 / 97.4
PV INPUT						
Maximum input voltage [V]	1000					
Maximum DC power [W]	9000		15000		30000	45000
Maximum input current [A]	15 / 15		20 / 30		32 / 32	32 / 32 / 32
Maximum short circuit current [A]	20 / 20		30 / 40		40 / 40	40 / 40 / 40
MPPT operating voltage range [V]	160 to 950					
Maximum number of PV strings	2 (1/1)		3 (1/2)		2 / 2	3 / 3 / 3
MPPT number	2					3
BATTERY INPUT						
Compatible battery type	Lithium ion				Lithium ion / Lead acid	
Nominal battery voltage [V]	250 - 600				512	
Acceptable battery voltage range [V]	130 - 600				120 - 800	
Maximum charge/discharge current [A]	25 / 25		50 / 50		60 / 60	2*75 / 2*75
Maximum charge/discharge power [W]	9000 / 5800	9000 / 7000	15000 / 9300	15000 / 10500	30000 / 24000	45000 / 36000
GRID SIDE OUTPUT (ON-GRID)						
AC active power (nominal) [W]	5000	6000	8000	10000	20000	30000
Maximum apparent AC power [VA]	5500	6600	8800	11000	22000	33000
Active power max. AC (PF = 1) [W]	5500	6600	8800	11000	22000	33000
Max current AC output [A]	3*8.3	3*10	3*13.3	3*16.7	3*33.3	3*50
Nominal voltage AC [V]	380 / 400 / 415V, 3W+N+PE					
Nominal mains frequency [Hz]	50 / 60					
Grid frequency range [Hz]	45-55 / 55-65					
Harmonic distortion (THDi) [%]	<5 (nominal power)				<3 (nominal power)	
Power factor	> 0.99 nominal power (selectable 0.8 inductive – 0.8 capacitive)					
EPS OUTPUT (Backup)						
AC active power (nominal) [W]	5000	6000	8000	10000	20000	30000
Maximum power [VA]	5500	6600	8800	11000	22000	33000
Maximum power [VA] (10 sec.)	7500	9000	12000	15000	30000	45000
Intervention time [msec.]	10 msec. (typical), 20 msec. (max)					
Nominal voltage AC [V]	380 / 400, 3W+N+PE				380 / 400 / 4/5, 3W+N+PE	
Harmonic distortion (THDi) [%]	< 3 (R Load), 8 (RCD Load)				< 3 (nominal power)	
PROTECTIONS						
PV disconnect switch	Yes					
Anti-islanding protection	Yes					
AC overcurrent protection	Yes					
AC short circuit protection	Yes					
AC overvoltage protection	Yes					
Surge protection type (SPD)	DC type II / AC type III					
Differential protection (GFCI)	Yes					
Isolation detection (R-ISO)	Yes					
OVERALL SPECIFICATION						
CT included in the supply	3x 50 A - 10 m cable				3x 50 A - 10 m cable	
Type	Transformer-free					
Protection level	IP65				IP66	
Cooling	Natural ventilation					Forced with fans
Operating temperature range [°C]	-25 to 60				25 - 60 (> 45 derating)	
Relative humidity range [%]	0 to 100					
Maximum operating altitude [m]	4000 (> 2000 derating)					
Noise level [dB] (@ 1 m)	< 30				≤ 35	≤ 60
Units in parallel	9				10	
Dimensions (WxDxH) [mm]	530x212x550				660x235x596	
Weight [kg]	30		32		45	55
COMMUNICATIONS						
Display	LED					
Communications	Bluetooth / Wi-Fi / BMS (CAN/RS485) / CT Sensors / RS485 / Ethernet (optional) / METER (optional)				CAN/RS485 (for BMS), RS485 (for METER), RS485 (for communication with PC), DRMS, 2*DI (1 for RMO), 3*DO, CT Pack (cable length 10 m) Wi-Fi / Ethernet (optional) / METER (optional)	
Monitoring	APP, Supervisory Portal					



DATRS-HX3V26GSEN The product photos are merely an indication. Due to technical and/or regulatory updates, the product features may change at any time without notice.

