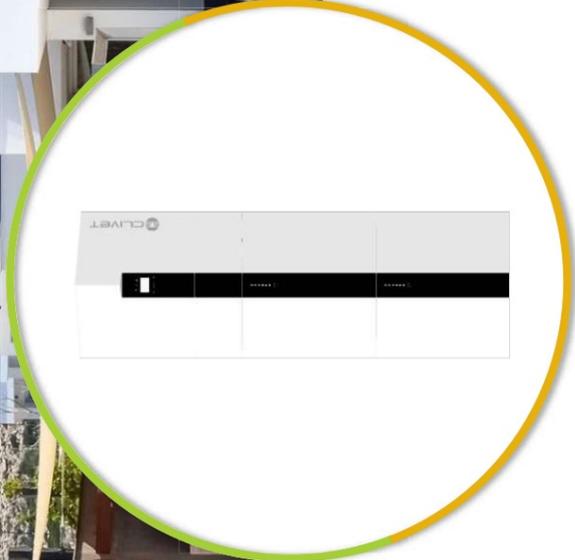


CLIVET
Inspiring Solutions. Since 1989



CLIVET SINERGY

Single-phase and three-phase energy storage solution
(ESS) for residential applications

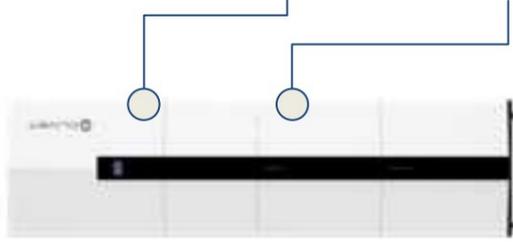
MideaGroup
Powering Technology

Clivet Sinergy

THREE-PHASE VERSION

GENERAL FEATURES

- Suitable for both new and retrofit installations
- Extended operating range from -25°C up to 60°C
- IP65 protection, suitable for outdoor installation
- Easy installation, all-in-one stackable system
- Wide application range 10/20/30/40 kWh (modular approach)
- Up to 4 systems can be connected in parallel



10kW HYBRID INVERTER

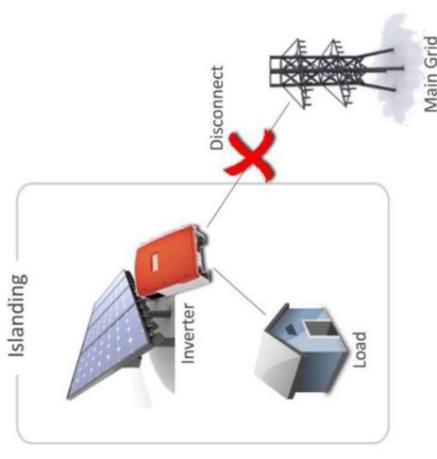
- 400Vac three phase
- Direct Input for PVs panels up 20 kWp
- Anti-islanding protection
- Back-up output line to ensure continuous operation (ups-like function)

5kWh BATTERY PACK

- High-end construction technology (LFP low density)
- Fire & explosive prevention



ANTI-ISLANDING PROTECTION
PREVENTS THE OPERATORS ELECTRICAL SHOCK
IN CASE OF GRID'S POWER FAILURES

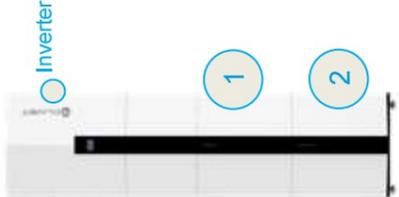


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Clivet Sinergy

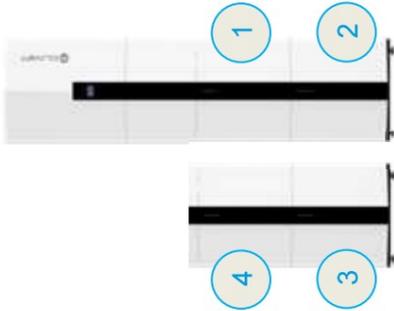
Sinergy three-phase product range – 4 sizes 10 / 20 / 30 / 40 kWh

CLIVET SINERGY
103.10



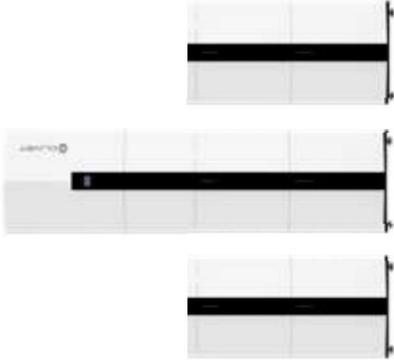
10 kWh
2 x battery packs 5 kWh

CLIVET SINERGY
103.20



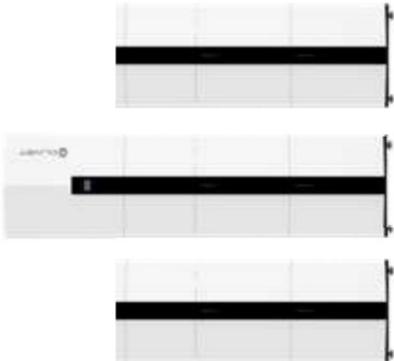
20 kWh
4 x battery packs 5 kWh

CLIVET SINERGY 103.30



30 kWh
6 x battery packs 5 kWh

CLIVET SINERGY
103.40



40 kWh
8 x battery packs 5 kWh



CLIVET

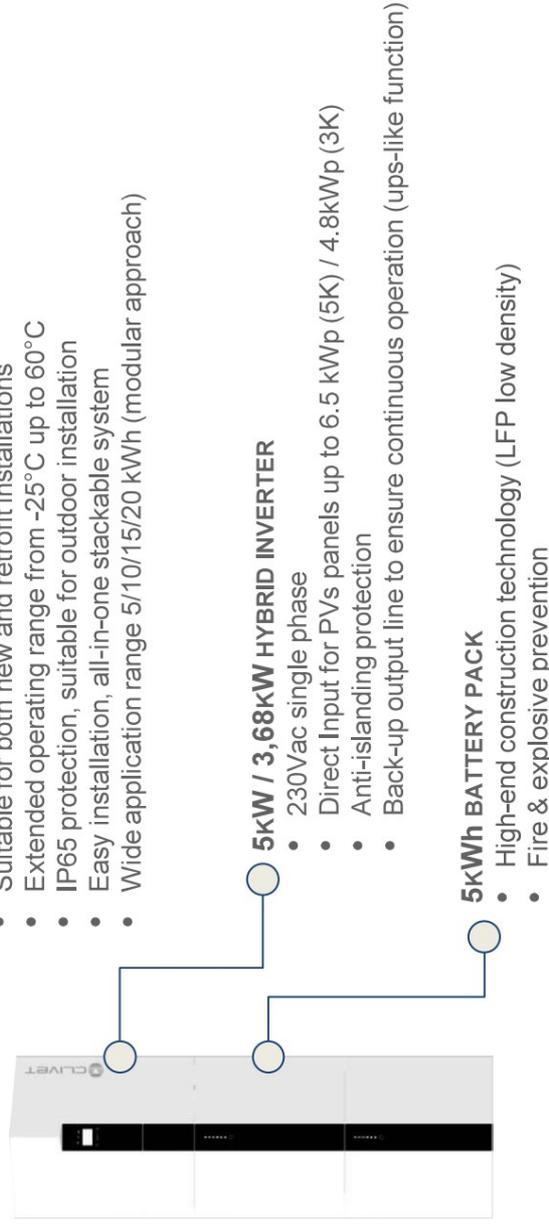
DF23B025GB-02 – 25/06/2024

CLIVET SINERGY

SINGLE-PHASE VERSION

GENERAL FEATURES

- Suitable for both new and retrofit installations
- Extended operating range from -25°C up to 60°C
- IP65 protection, suitable for outdoor installation
- Easy installation, all-in-one stackable system
- Wide application range 5/10/15/20 kWh (modular approach)



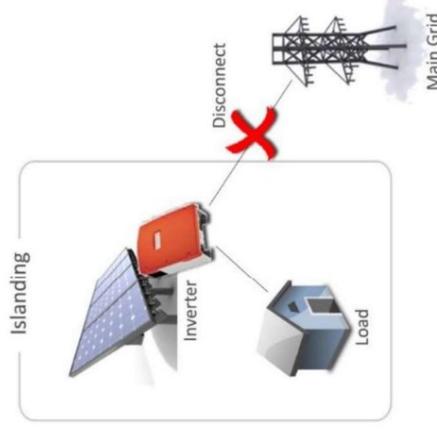
5kW / 3,68kW HYBRID INVERTER

- 230Vac single phase
- Direct Input for PV's panels up to 6.5 kWp (5K) / 4.8kWp (3K)
- Anti-islanding protection
- Back-up output line to ensure continuous operation (ups-like function)

5kWh BATTERY PACK

- High-end construction technology (LFP low density)
- Fire & explosive prevention

ANTI-ISLANDING PROTECTION
PREVENTS THE OPERATORS ELECTRICAL SHOCK
IN CASE OF GRID'S POWER FAILURES



CLIVET SINERGY

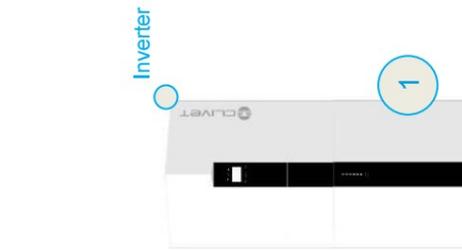
Sinergy single-phase 5kW – 4 sizes 5 / 10 / 15 / 20 kWh

SINERGY 51.05

SINERGY 51.10

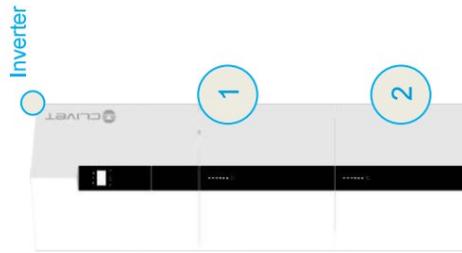
SINERGY 51.15

SINERGY 51.20



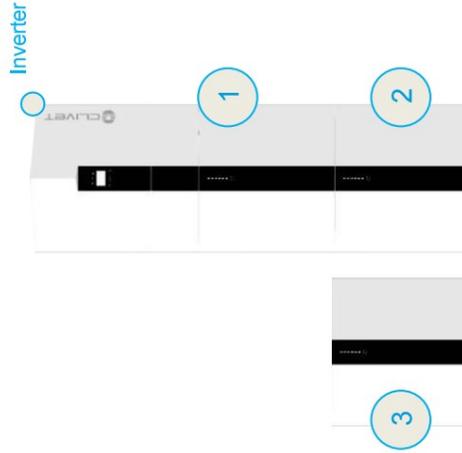
Single 5kWh
battery pack

5KWh



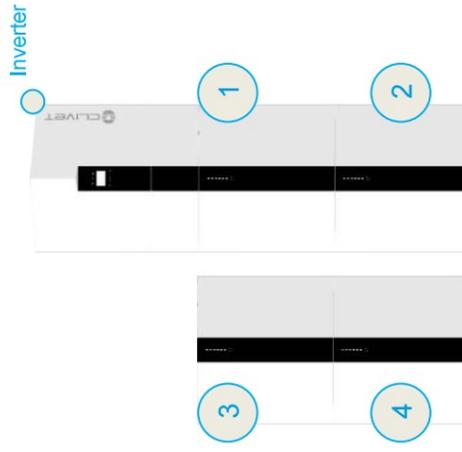
2 x 5kWh
battery packs

10KWh



3 x 5kWh
battery packs

15KWh



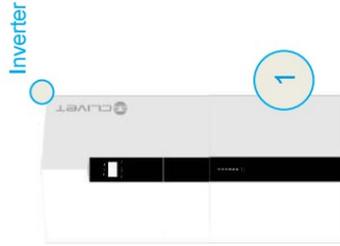
4 x 5kWh
battery packs

20KWh

CLIVET SINERGY

Sinergy single-phase 3kW – 2 sizes 5 / 10 kWh

SINERGY 31.05



3,68 kW single-phase hybrid inverter
Single battery pack 5kWh
No cable kit

5KWh

SINERGY 31.10



3,68 kW single-phase hybrid inverter
Two battery packs 5kWh
1 cable kit

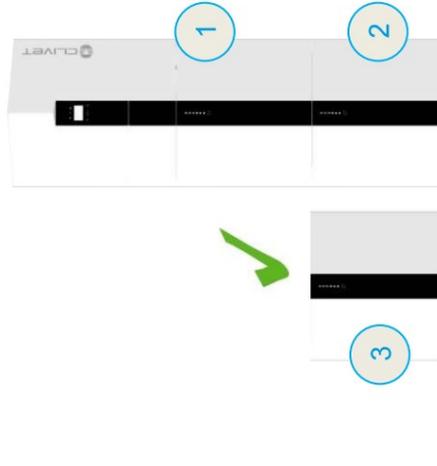
10KWh



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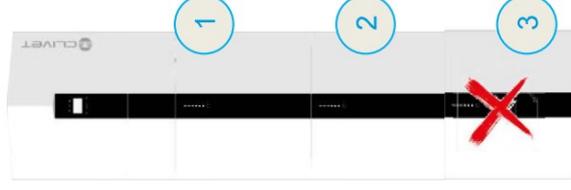
Installation guidelines

ALLOWED



3 x 5kWh
Battery packs

NOT ALLOWED



- Clearances over the inverter module (60cm min to the ceiling)
- Excess weight on the module installed on the bottom of the stack
- Inefficient ventilation flow on the rear side (natural convection)

Unique selling points

Operating cycles



Lithium ferrophosphate

10'000 cycles

27 years

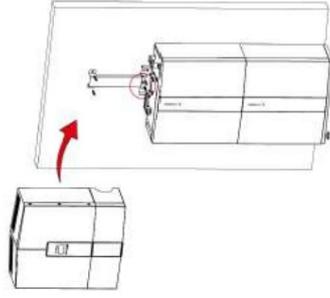
BMS (Battery Management System) integrated in each battery pack

- the whole system operates without the faulty battery pack
- better control of charging/discharging cycles

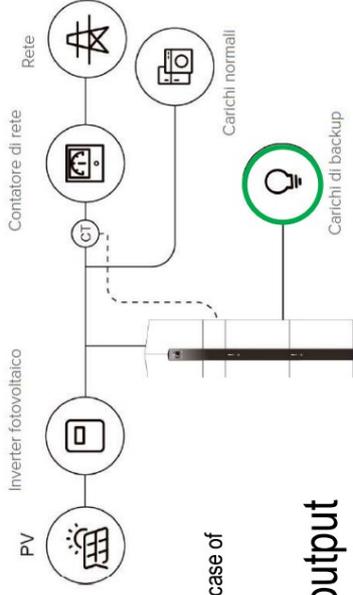
Installation

All-in-one stackable system
Easy of installation

Self-supporting base system
Wall fixing is to prevent the modules' overturning



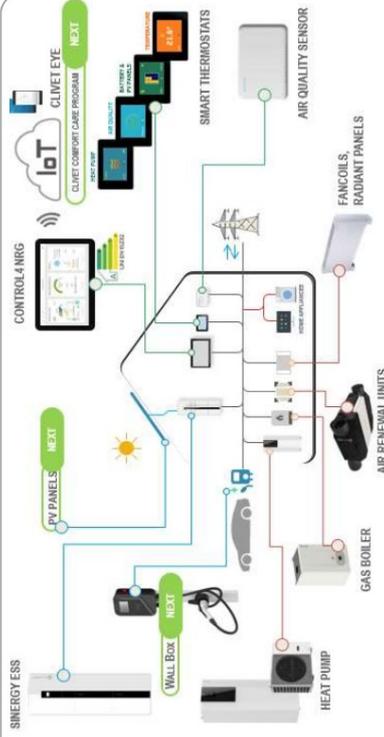
Back-up output



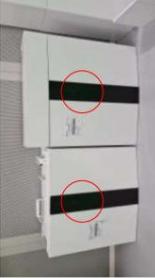
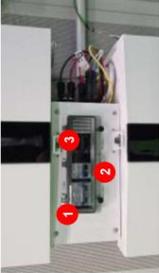
UPS like operating mode in case of power failure

5kW Direct output

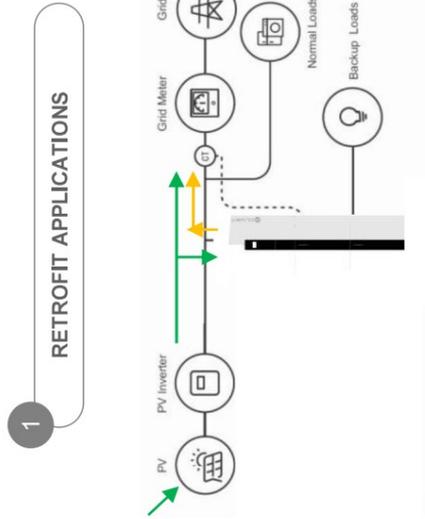
Smart Home



Clivet Sinergy - Premium features

1. Integrated battery charger	2. Integrated smart meter	3. Backup output	4. Battery pack	5. BMS Battery Management System	6. Electrical panel
<p>Integrated</p> <p>Slowly increasing the power supply to the battery pack</p> <p>Native battery wake-up function</p> <p>No onsite professional personnel (Clivet ATC or electrical installer) to wake-up the battery packs</p>	<p>Integrated with external 3CTs</p> <p>The CTs (current transformer) to detecting the flow direction of the current is included with the inverter supply</p> <p>Ease of installation</p> <p>Remote installation up to 20 meters</p> <p>The majority of ESS manufacturers need to install the power meter separately</p> <div data-bbox="935 1397 1209 1659" style="border: 1px dashed red; padding: 5px;"> <p>NO NEED</p> <p>The main ESS systems manufacturers provide it separately</p>  </div>	<p>Continuous operation</p> <p>No limits on time duration (DoD) and capacity (4.6kW on single-phase and 9.2kW on three-phase)</p> <p>Extended operating time due to the possibility of using the full battery charge</p> <p>UPS-like function</p>	<p>CEC-S 5B is the same battery pack suitable for CEC-S 5K and CEC-T 10K</p> <p>Warehouse management is easier with Clivet products (re-sellers, distributors, Clivet)</p>	<p>Distributed on each battery</p> <p>Each battery has its own Battery Management System to control charging & discharging operations</p> <p>Equal charge & discharge levels</p> <p>Direct view of charge level</p> <p>Top Reliability</p> <p>In case of 1 battery is damaged, all the other one keep on working regularly</p> <p>Battery duration (life)</p> 	<p>Integrated</p> <p>Ease of installation</p> <p>Cost effectiveness</p>  <ol style="list-style-type: none"> 1. BATTERY PACKS SWITCH 2. PVS PANELS SWITCH 3. BACK-UP OUTPUT SWITCH
<p>Caractéristiques principales</p>	<p>Avantages</p>				

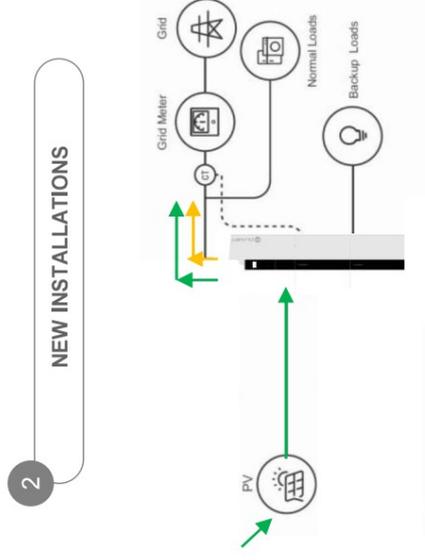
Application/installation architecture



Connection to existing installation without replacing the PV panels & Inverter

ESS accumulates the solar energy not used by the households automatically

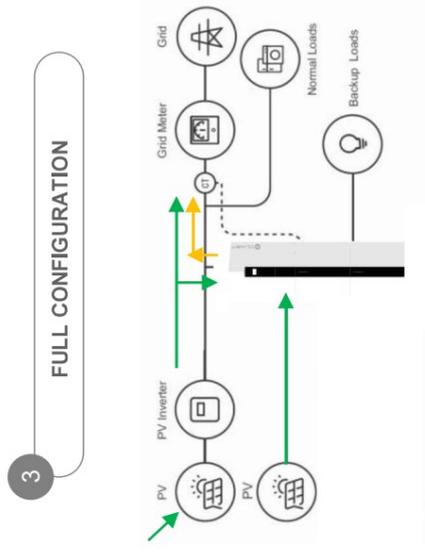
Easy to install to the home main electrical grid



New installation without, the PV panels are connected to the inverter of the ESS

The Inverter includes 2 strings for a 6.5kW PV panels for single-phase version

20kW PV panels for three-phase version



Connection to existing installation without replacing the PV panels & Inverter

Extension of the PV panels

The Inverter includes 2 strings for a 6.5kW PV panels for single-phase version

20kW PV panels for three-phase version



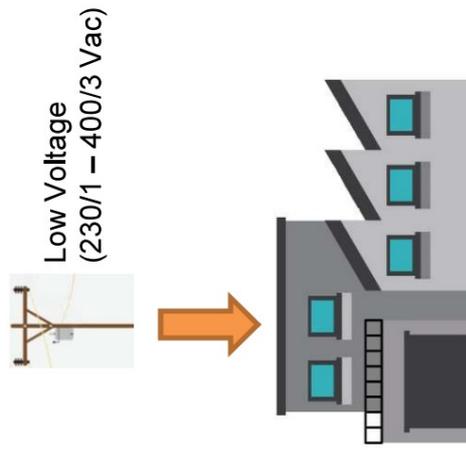
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Clivet Sinergy

Three-phase Sinergy – Parallel function

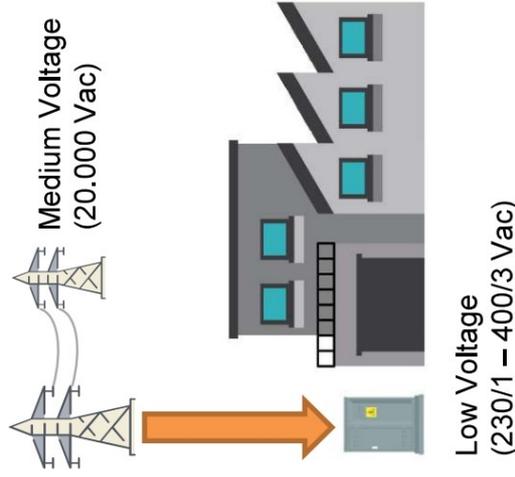
Parallel of three-phase systems

OK CEI 0-21



Paralleable systems	Max Power	Maximum capacity
4	40 kW	160 kWh

OK CEI 0-21



Paralleable systems	Max Power	Maximum capacity
3	30 kW	120 kWh

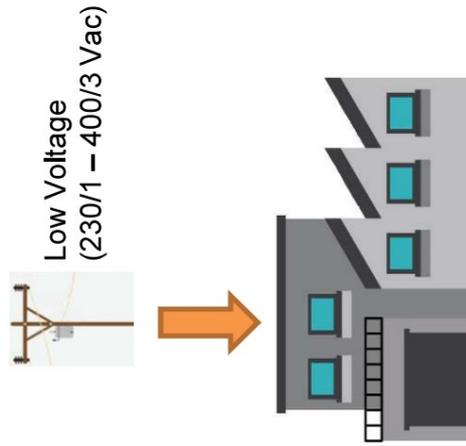


Clivet Sinergy

Three-phase Sinergy – Parallel function (Italian market)

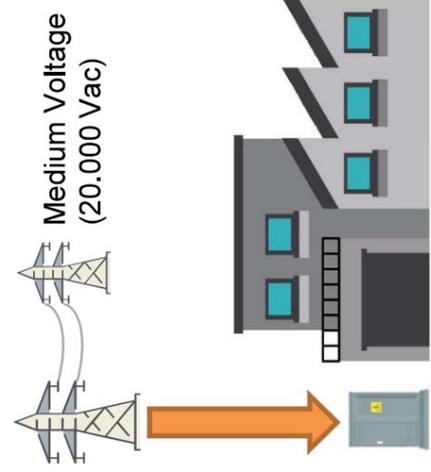
Parallel of three-phase systems

OK CEI 0-21



Parallelable systems	Max Power	Maximum capacity
4	40 kW	160 kWh

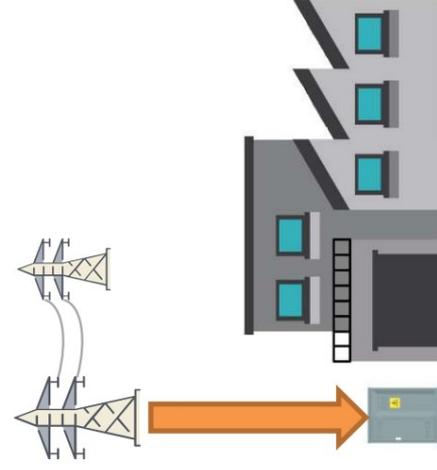
OK CEI 0-21



Low Voltage
(230/1 – 400/3 Vac)

Parallelable systems	Max Power	Maximum capacity
3	30 kW	120 kWh

Requires CEI 0-16
(not available)



Parallelable systems	Max Power	Maximum capacity
4 or more	---	---



Clivet Sinergy

Three-phase Sinergy – System architecture for parallel systems

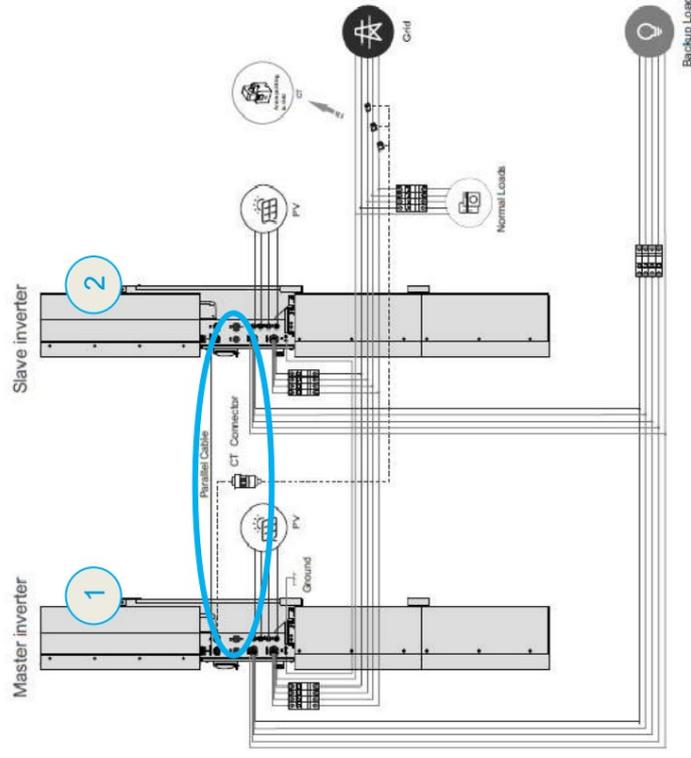
Parallel function of up to 2 three-phase Sinergy system

The master (1) and slave (s2) units are directly connected by using a parallel cable. It is necessary to create the parallel connection cables with Cat.5 or higher Ethernet cable in field (to be provided by the customer)

- Both systems work as a single systems
- No additional accessory is required
- The PV field remains independent for the two systems
- Capacity and power outputs are total up



Sinergy CEC-T 10K +
CEC-S 5BK



Parallelable systems	Total Output Power	Total Backup Power	Total capacity
2	20 kW	18.4 kW	80 kWh



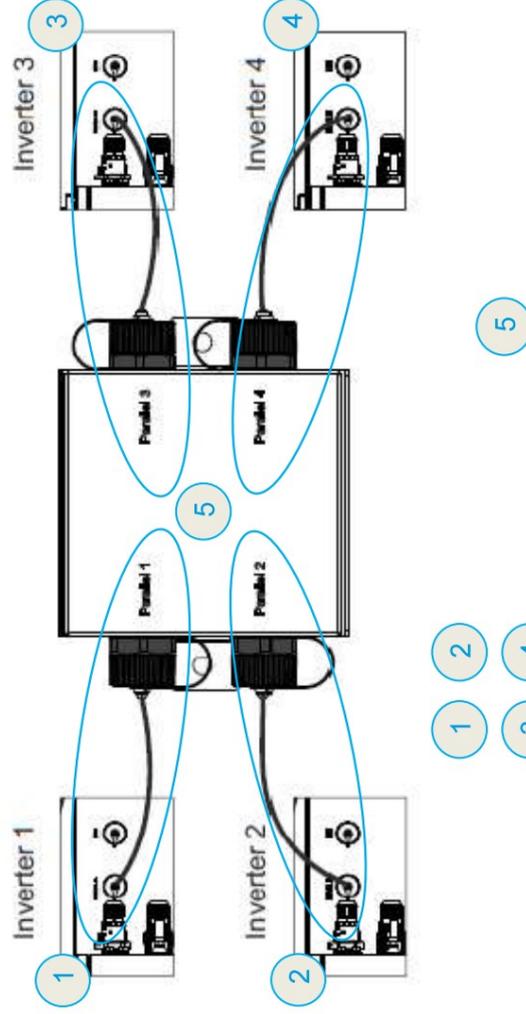
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Clivet Sinergy

Three-phase Sinergy – System architecture for parallel systems

Parallel function up to 4 three-phase Sinergy systems

One additional CB4PSX (Module for Sinergy connection in parallel) accessory is required to manage the parallel connection of up to 4 Sinergy systems. It is necessary to create the parallel connection cables with Cat.5 or higher Ethernet cable in field (to be provided by the customer)



- All systems work as a single systems
- The PV field remains independent for the two systems
- Capacity and power outputs are total up

Parallel systems	Total Output Power	Total Backup Power	Total capacity
3	30 kW	27.6 kW	120 kW
4	40 kW	38.4 kW	160 kWh

Sinergy CEC-T 10K
+ CEC-S 5BK

Module for Sinergy connection in parallel



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Operating modes

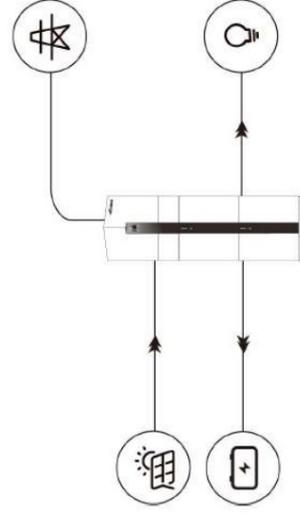
1. SELF CONSUMPTION

The energy generated by the solar panels will be used in the following order:

- Feed the home loads;
- Charge the battery and then,
- feed into the grid.

When the sun is off, the load will be supported by battery to enhance self consumption. If the power supply from the batteries is not sufficient, the grid will support the load demand.

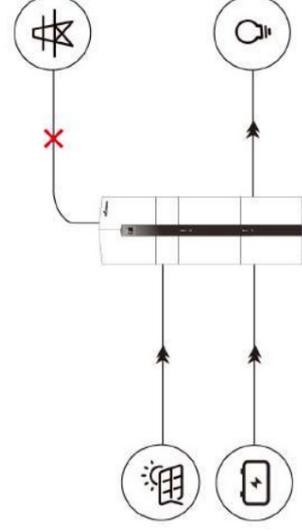
Common used application



2. BAT PRIORITY

Under this mode, the battery is only used as a backup power supply when the grid fails and as long as the grid works, the batteries won't be used to power the loads.

The battery will get charged with the power generated by the PV system or from the grid



3. PEAK SHIFT

This mode is designed for time-use mode customer.

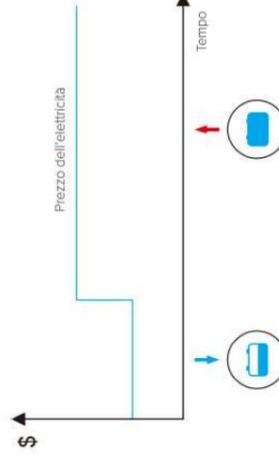
The customer is able to set up the charging/discharging time & power via inverter screen

Two (2) consequent charging / discharging fascia

- fascia 1 – charge and discharge
- fascia 2 – charge and discharge

Example

- fascia 1 – 8.00..12.00 (charge) e 12.00..16.00 (discharge)
- fascia 2 – 16.00..24.00 (charge) e 00.00..8.00 (discharge)



Technical benchmark – Installation



Outdoor installation is allowed

Need to protect the ESS from direct exposure to sun and water

- IP protection is not a parameter to be referred to for security
- Outdoor temperature range is much more important
- Outdoor temperature doesn't define the operating range

- All batteries can operate in the range 0..50°C (charge / discharge)
 - 0..50°C charging
 - -10..50°C discharging
- Inverter >45°C de-rating



Clivnet

IP65
-25°C..60°C



ACS
Zucchetti

IP65
-10°C..50°C



Huawei

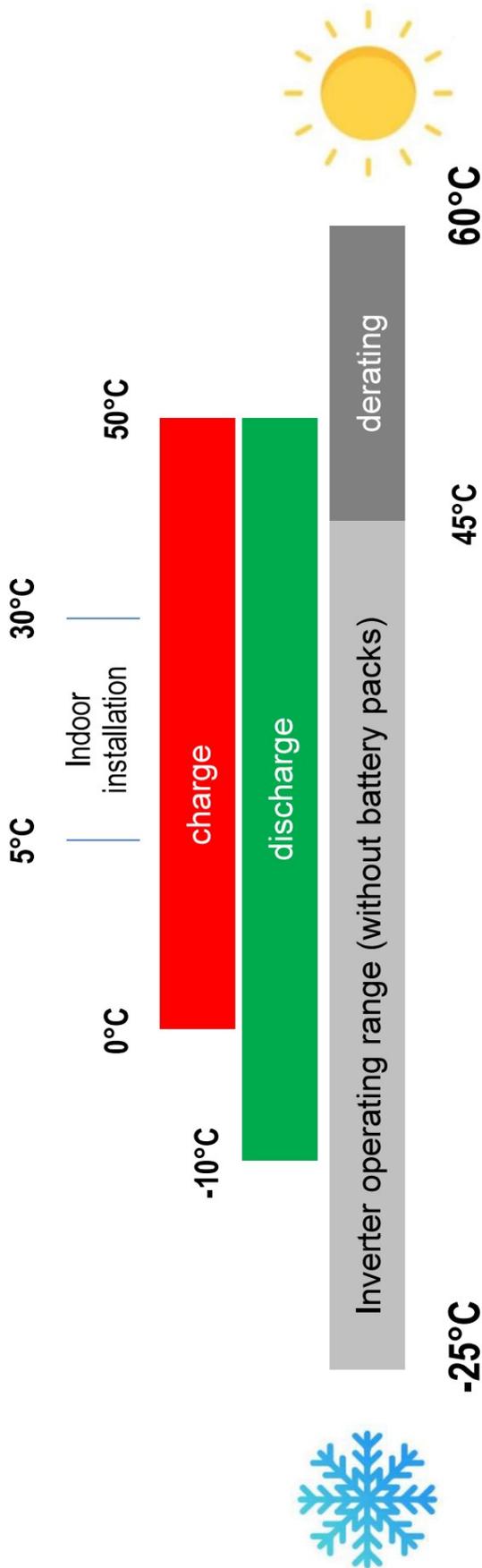
IP66
-10°C..55°C



Fronius

IP66
-20°C..50°C

Operating range based on the outdoor temperature



Technical benchmark – Indoor / outdoor Installation

Non All-in-one solutions

indoor



TESLA

indoor



ZCS AZZURRO

outdoor



HUAWEI

Technical benchmark – Indoor Installation

All-in-one solutions

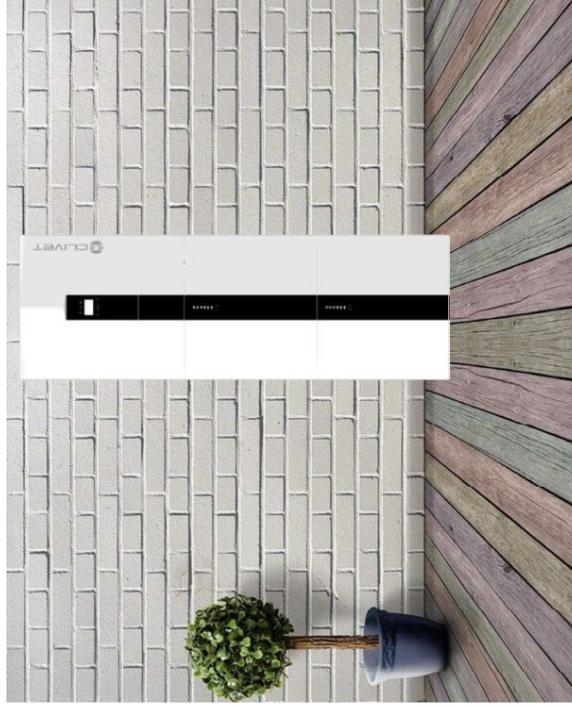
SONNEN



- The installation location must not be at risk of flooding.
- Installation room should be ventilated.
- The currently applicable building codes must be observed.
- Even floor, suitable for heavy loads.
- Observe fire control standards.
- Free from corrosive and explosive gases (ammonia content max. 20 ppm).
- Free from dust (especially flour dust or sawdust).
- Free from vibrations.
- Free access to the installation location.
- No direct sunlight.

Installation inside habitable rooms is critical

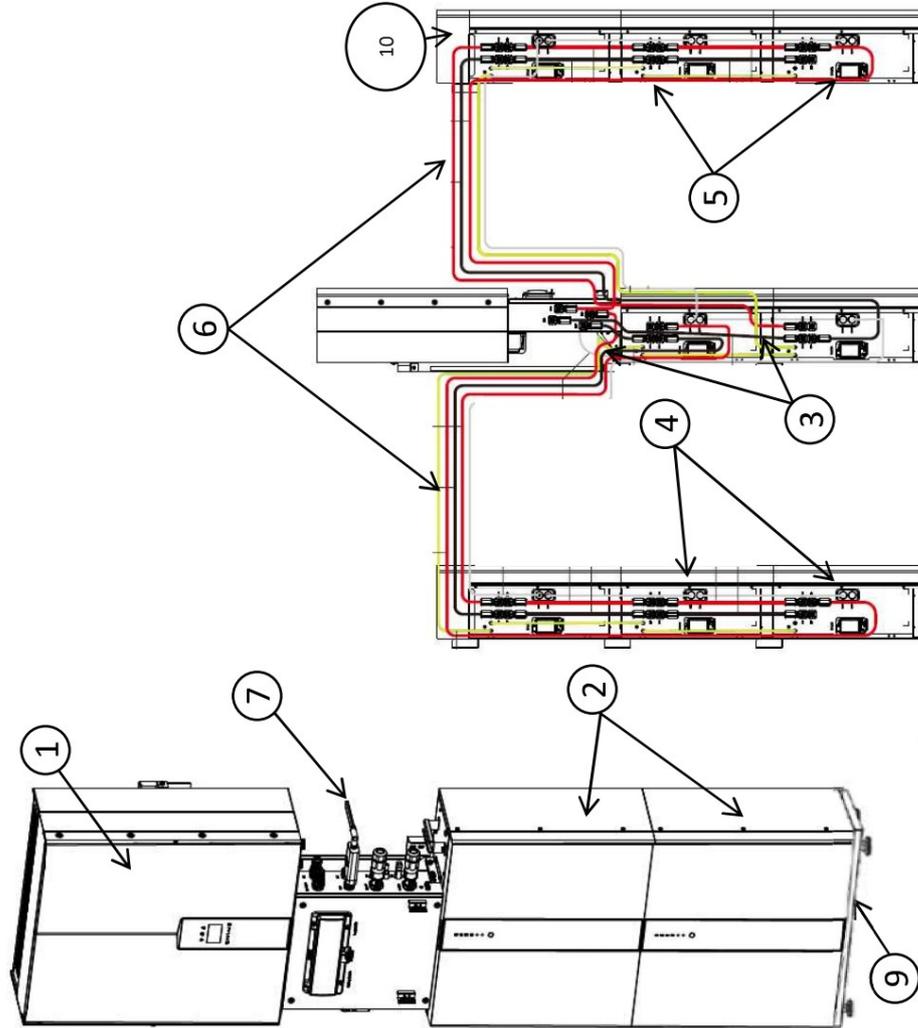
Clivet SINERGY

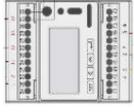


Installation inside habitable rooms are not allowed

Clivet Sinergy three-phase - List of components

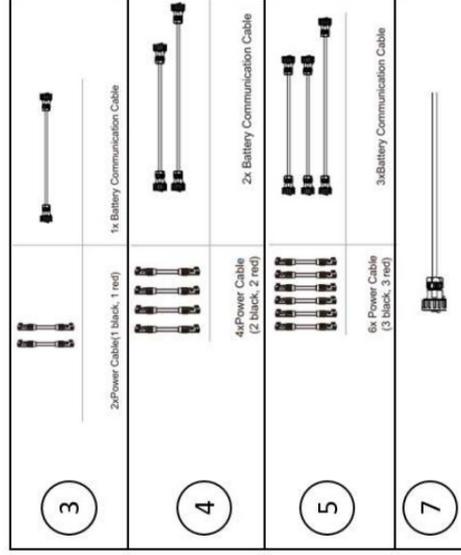
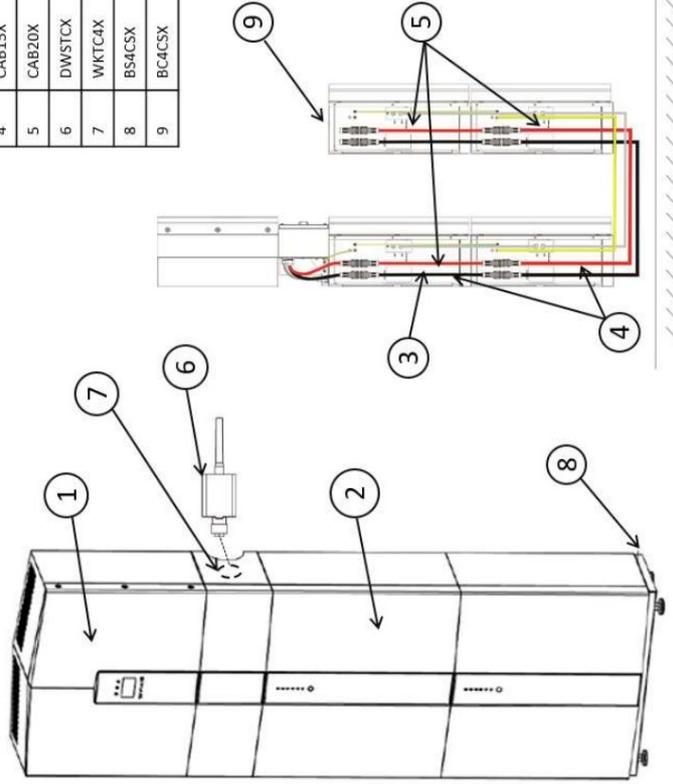
N.	Product type	Product part number	Description
1	CEC-T 10K	13512328	Three-phase 400Vac 50Hz hybrid inverter with 10KW nominal power
2	CEC-S B 5K	37022296	Battery pack 5KWh
3	CAB10TX	63502370	Cable kit for three-phase 10kWh electric storage system
4	CAB20TX	63502369	Cable kit for three-phase 20kWh electric storage system
5	CAB30TX	63502371	Cable kit for three-phase 30kWh electric storage system
6	CAB40TX	63502368	Cable kit for three-phase 40kWh electric storage system
7	DWTTX	76612336	Wi-Fi dongle for remote monitoring via mobile App (3P version)
8	WKTCA	91342242	Cable kit for connectivity to CONTROL4 NRG
9	BS4CSX	62442326	Storage battery basement
10	BC4CSX	62442322	Storage battery pack cover
11	SM4CSX	74522308	Smart meter for Sinergy 3P system
	CB4PSX	62812410	Module for Sinergy connection in parallel (required for paralleling 3 and 4 system)



<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; text-align: center; line-height: 30px;">3</div> <div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; text-align: center; line-height: 30px;">4</div> </div>	<p>Every cable kit contains the cable quantity related to the specific capacity size:</p> <ul style="list-style-type: none"> • Power cables (red & black) • Battery communication cables • Earth cable
<div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; text-align: center; line-height: 30px;">5</div>	
<div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; text-align: center; line-height: 30px;">6</div>	
<div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; text-align: center; line-height: 30px;">8</div>	
<div style="border: 1px solid black; border-radius: 50%; width: 30px; height: 30px; text-align: center; line-height: 30px;">11</div>	 <p>3x CTs</p>

Clivet Sinergy single-phase - List of components

N.	Product type	Component part number	Description
1	CEC-S 5K	AAEIFK00-0001	Hybrid inverter 230Vac 50Hz single-phase 5kW
2	CEC-S B 5K	AAEBFK00-0001	Battery pack 5kWh
3	CAB10X	PEEB00001	Cable kit for 10kWh set/assembly
4	CAB15X	PEEB00002	Cable kit for 15kWh set/assembly
5	CAB20X	PEEB00003	Cable kit for 20kWh set/assembly
6	DWSTCX	PESV00014	Wi-Fi dongle for remote monitoring via mobile App
7	WKTC4X	PEEB00005	Cable kit for connectivity to CONTROL4 NRG
8	BS4CSX	PEEB00006	Storage battery basement
9	BC4CSX	PEEB00007	Storage battery pack cover



Standard & certifications

<https://www.clivet.com/strumenti-di-progettazione>

DESIGN SUPPORT

Area meant for designers, where all the tools and the information for a plant design with Clivet specialized systems are availa

The screenshot displays the 'DESIGN SUPPORT' section of the Clivet website. It features three main content blocks:

- Bim Object:** A grey box with a computer monitor icon and the text 'Bim Object' and a blue 'Learn more →' button.
- Certification:** A grey box with a certification icon, the text 'Certification', 'Eurovent, SGI, ERP, CE, TUV, Ekosklad, Meps, H PKeymark, SG-Ready, Sinergy CEI-021', and a blue 'Learn more →' button. This box is highlighted with a red border.
- DECLARATION OF CONFORMITY:** A white box with the Clivet logo and the text 'DECLARATION OF CONFORMITY EU'. It contains detailed technical information and a 'CEI 0-21 DESCRIZIONE' section. A red arrow points from this section to a list of links.

Below the screenshot, a list of links is provided:

- CEI 0-21 - declaration of conformity
- Guida alla compilazione dell'addendum tecnico per Sinergy

Thank you



MideaGroup
Smart Living Technology