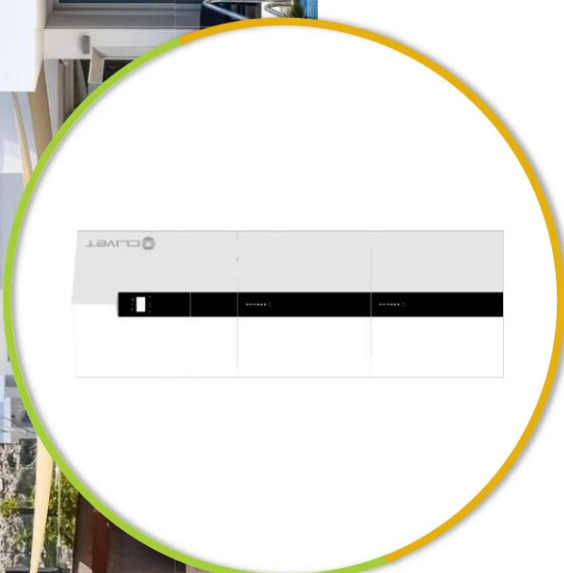


CLIVET SINERGY

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



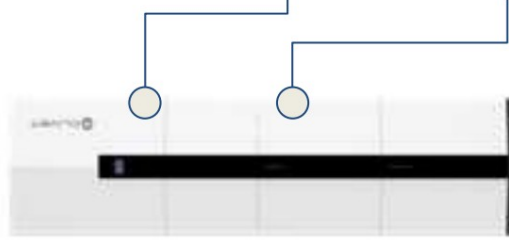
MideaGroup
Managing Technology

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)

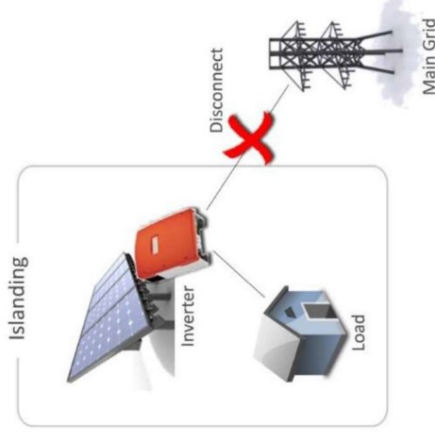
5kWh BATTERY PACK

- 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

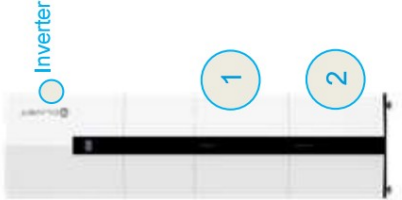


DF23B025GB-02 – 25/06/2024

Clivet Sinergy

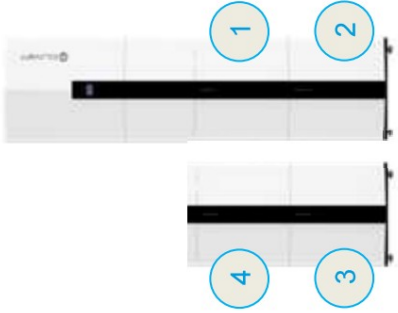
Sinergy three-phase product range – 4 sizes 10 / 20 / 30 / 40 kWh

CLIVET SINERGY
103.10



10 kWh
2 x battery packs 5 kWh

CLIVET SINERGY
103.20



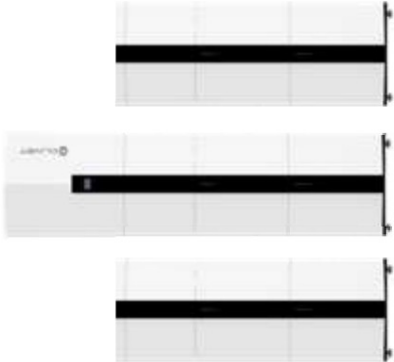
20 kWh
4 x battery packs 5 kWh

CLIVET SINERGY 103.30



30 kWh
6 x battery packs 5 kWh

CLIVET SINERGY
103.40



40 kWh
8 x battery packs 5 kWh



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CLIVET SINERGY

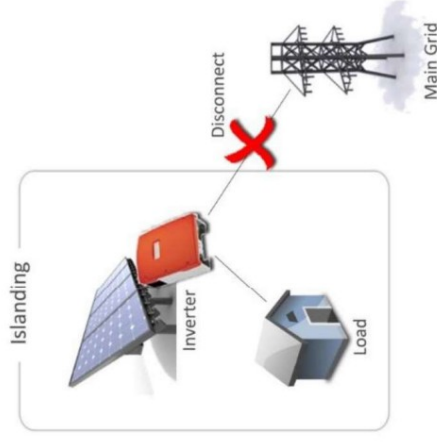
SINGLE-PHASE VERSION

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)



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

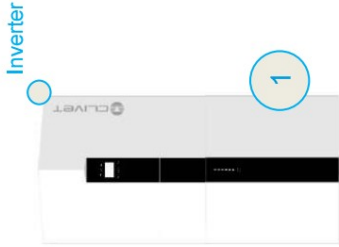


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CLIVET SINERGY

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

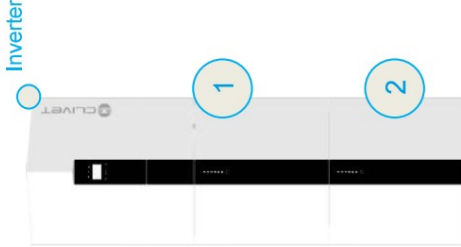
SINERGY 51.05



Single 5kW/h
battery pack

5KWh

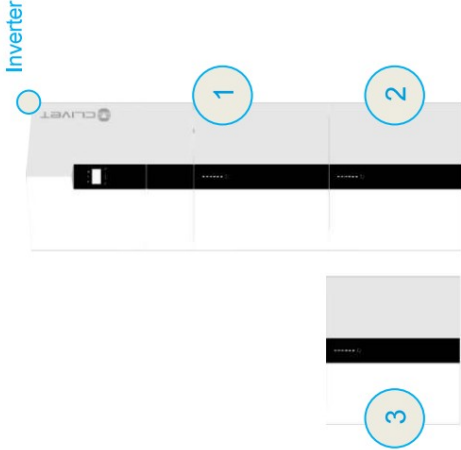
SINERGY 51.10



2 x 5kW/h
battery packs

10KWh

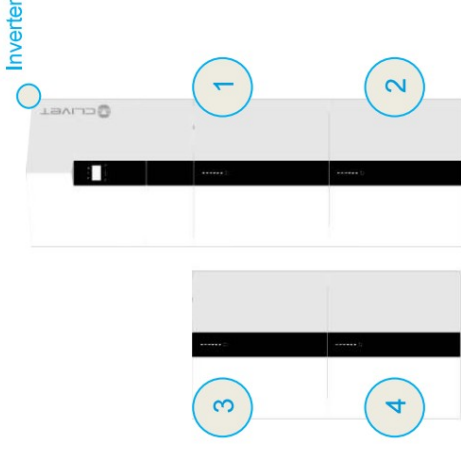
SINERGY 51.15



3 x 5kW/h
battery packs

15KWh

SINERGY 51.20



4 x 5kW/h
battery packs

20KWh



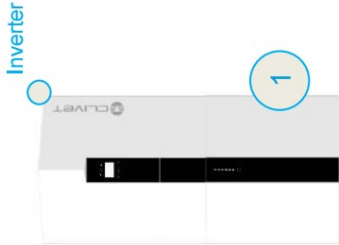
DF23B025GB-02 – 25/06/2024

CLIVET SINERGY

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

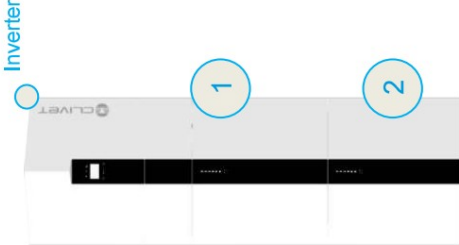
SINERGY 31.05

SINERGY 31.10



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

5KWh



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

10KWh



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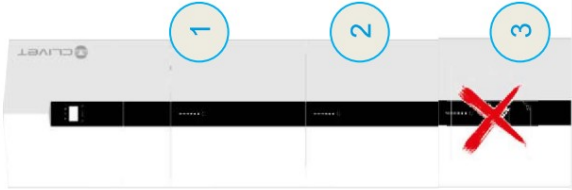
Installation guidelines

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



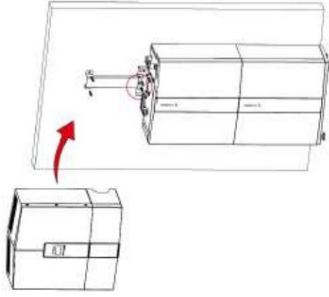
Lithium ferrophosphate

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

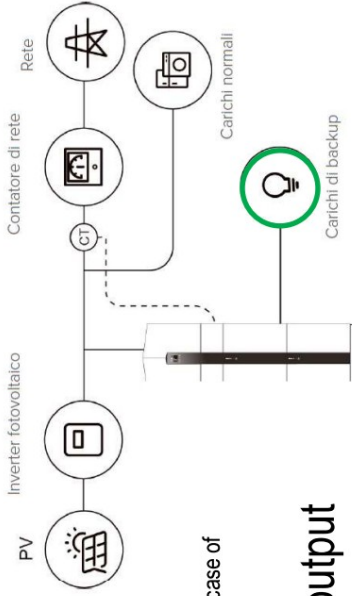
Installation

All-in-one stackable system
Easy of installation



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

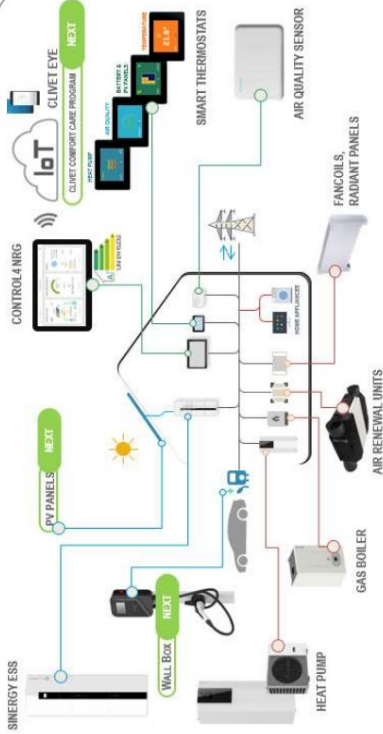
Back-up output



UPS like operating mode in case of power failure

5kW Direct output


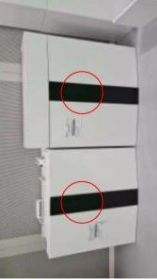
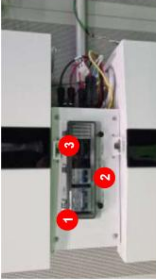
Smart Home



DF23B025GB-01 – 11/01/2024

MideaGroup
humanizing technology

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>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>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>CEC-S 5B is the same battery pack suitable for CEC-S 5K and CEC-T 10K</p>	<p>Distributed on each battery</p> <p>Each battery has its own Battery Management System to control charging & discharging operations</p>	<p>Integrated</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>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><p>NO NEED</p><p>The main ESS systems manufacturers provide it separately</p></div>	<p>Extended operating time due to the possibility of using the full battery charge</p> <p>UPS-like function</p>	<p>Warehouse management is easier with Clivet products (re-sellers, distributors, Clivet)</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>Ease of installation</p> <p>Cost effectiveness</p>  <ol style="list-style-type: none">1. BATTERY PACKS SWITCH2. PVS PANELS SWITCH3. BACK-UP OUTPUT SWITCH

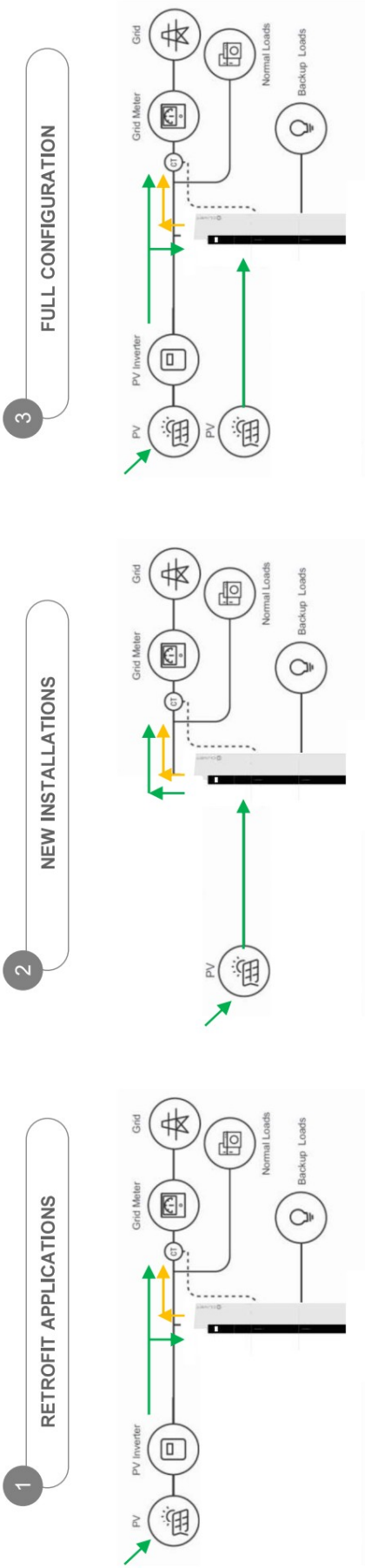
Caractéristiques principales

Avantages



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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



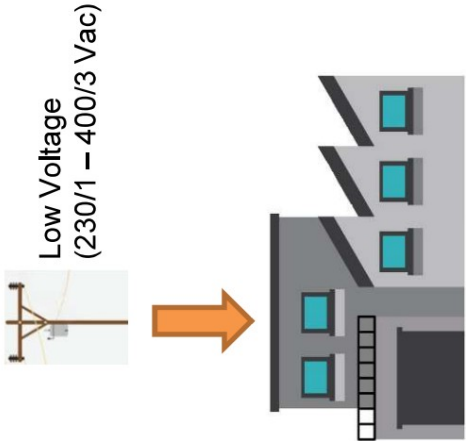
DF23B025GB-02 – 25/06/2024

Clivet Sinergy

Three-phase Sinergy – Parallel function

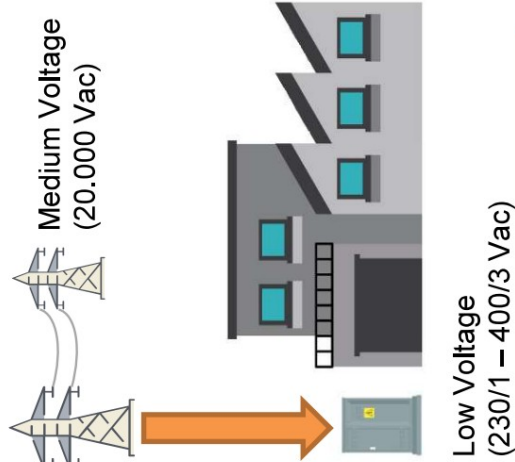
Parallel of three-phase systems

OK CEI 0-21



Parallelable systems	Max Power	Maximum capacity
4	40 kW	160 kWh

OK CEI 0-21



Parallelable systems	Max Power	Maximum capacity
3	30 kW	120 kWh

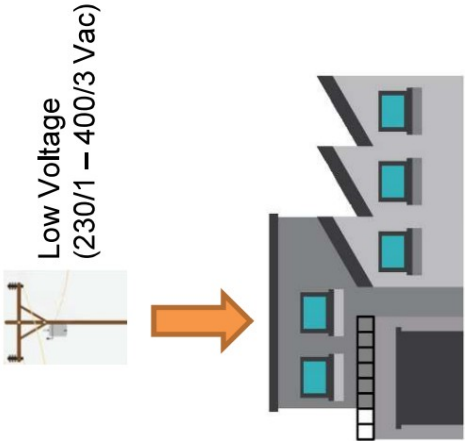


Clivet Sinergy

Three-phase Sinergy – Parallel function (Italian market)

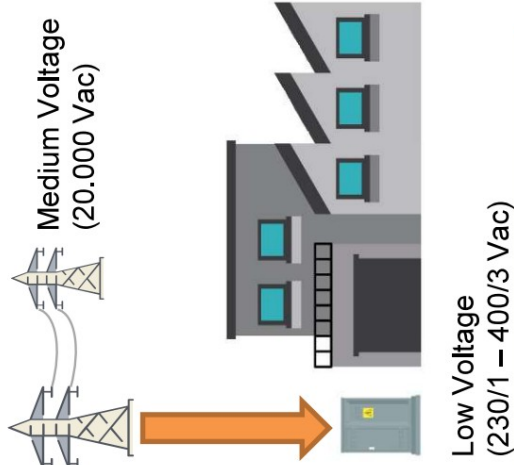
Parallel of three-phase systems

OK CEI 0-21



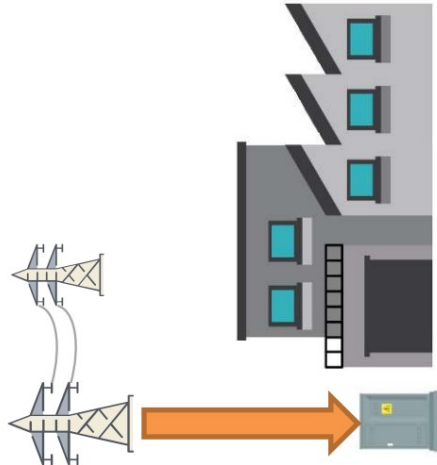
Parallelable systems	Max Power	Maximum capacity
4	40 kW	160 kWh

OK CEI 0-21



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-pahse Sinergy system

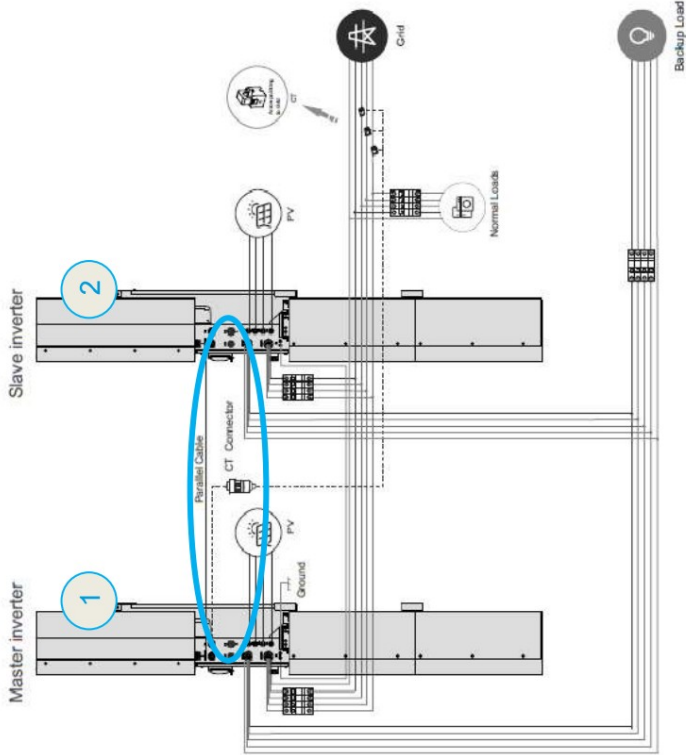
The master (1) and slave (s2) units are directly connected by using a parallel cable
It is necessary to create the parallel connection cables with Cat.5 or higher Ethernet cable in field (to be provided by the customer)

- 1
- 2

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

- 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

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



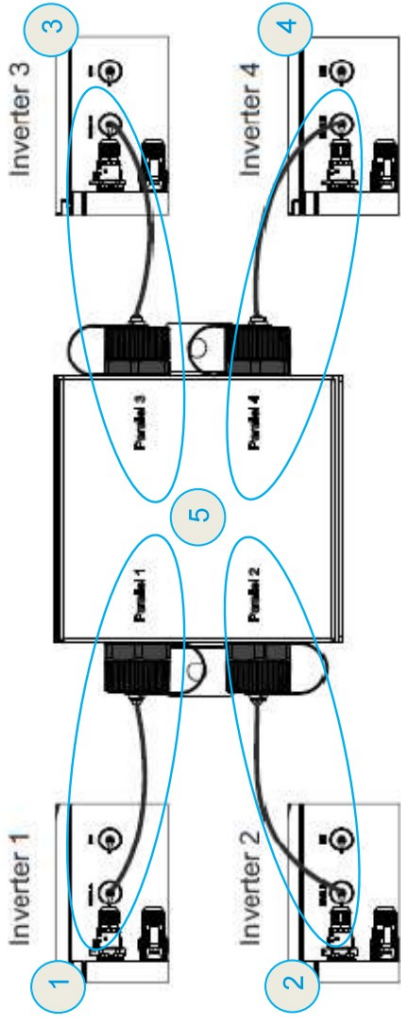
DF23B025GB-02 – 25/06/2024

Clivet Sinergy

Three-phase Sinergy – System architecture for parallel systems

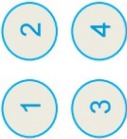
Parallel function up to 4 three-phase Sinergy systems

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 kWh
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

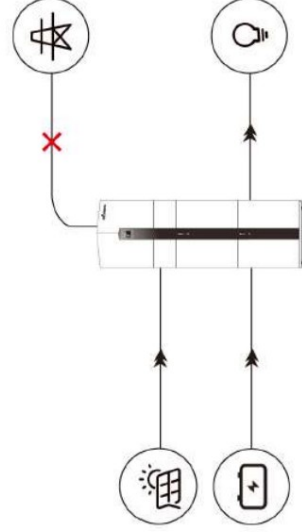
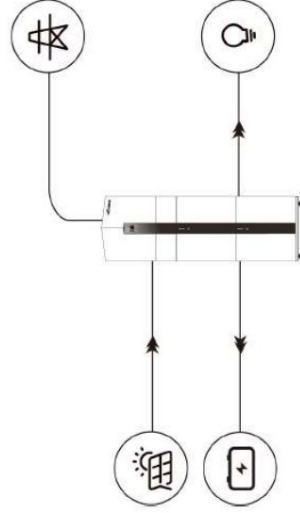
1. SELF CONSUMPTION

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.

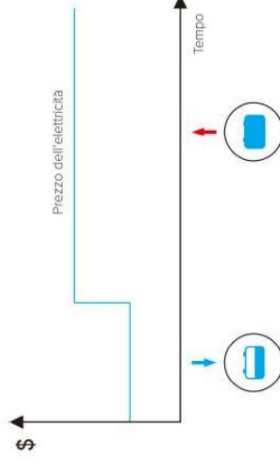
The customer is able to set up the charging/discharging time & power via inverter screen

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



Clivet

IP65
-25°C..60°C



ACS
Zucchetti

IP65
-10°C..50°C



Huawei

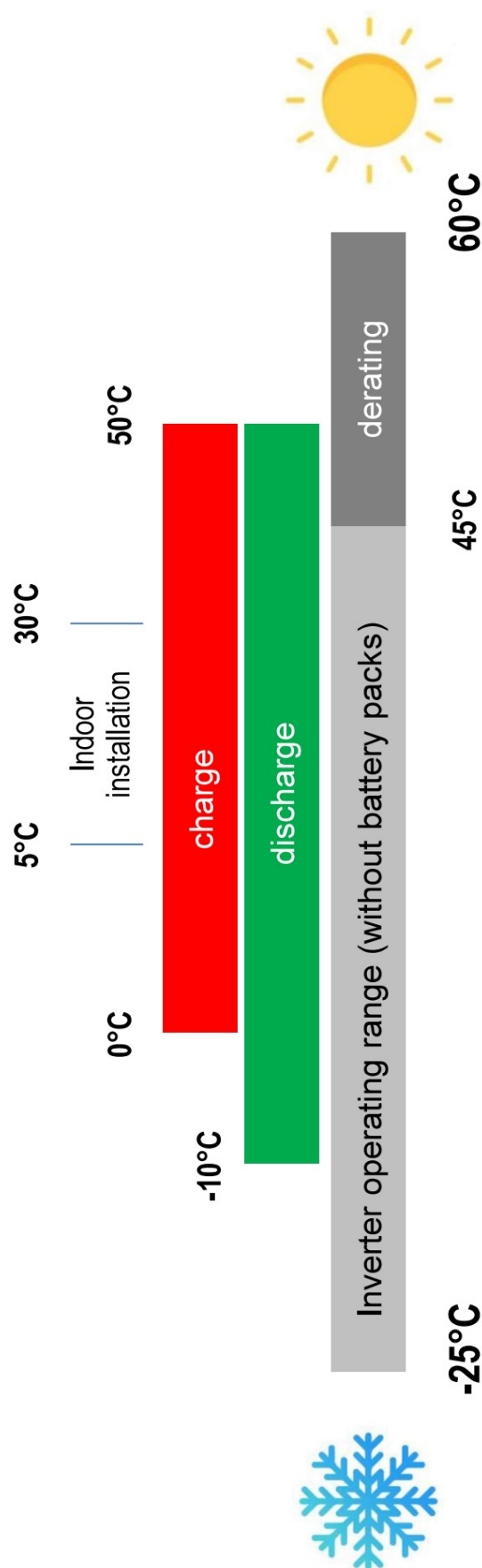
IP66
-10°C..55°C



Fronius

IP66
-20°C..50°C

Operating range based on the outdoor temperature



Technical benchmark – Indoor / outdoor Installation

Non All-in-one solutions

indoor



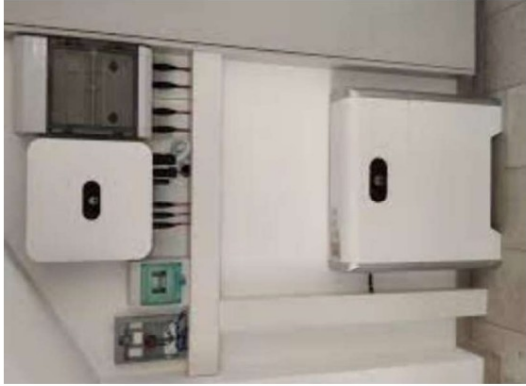
TESLA

indoor



ZCS AZZURRO

outdoor



HUAWEI



DF23B025GB-01 – 11/01/2024

Technical benchmark – Indoor Installation

All-in-one solutions

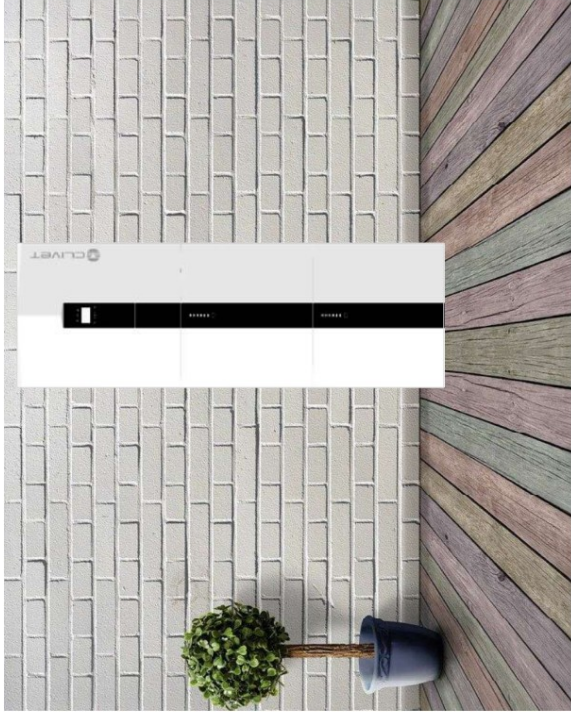
SONNEN



- 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




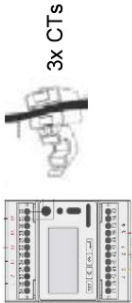
Installation inside habitable rooms are not allowed

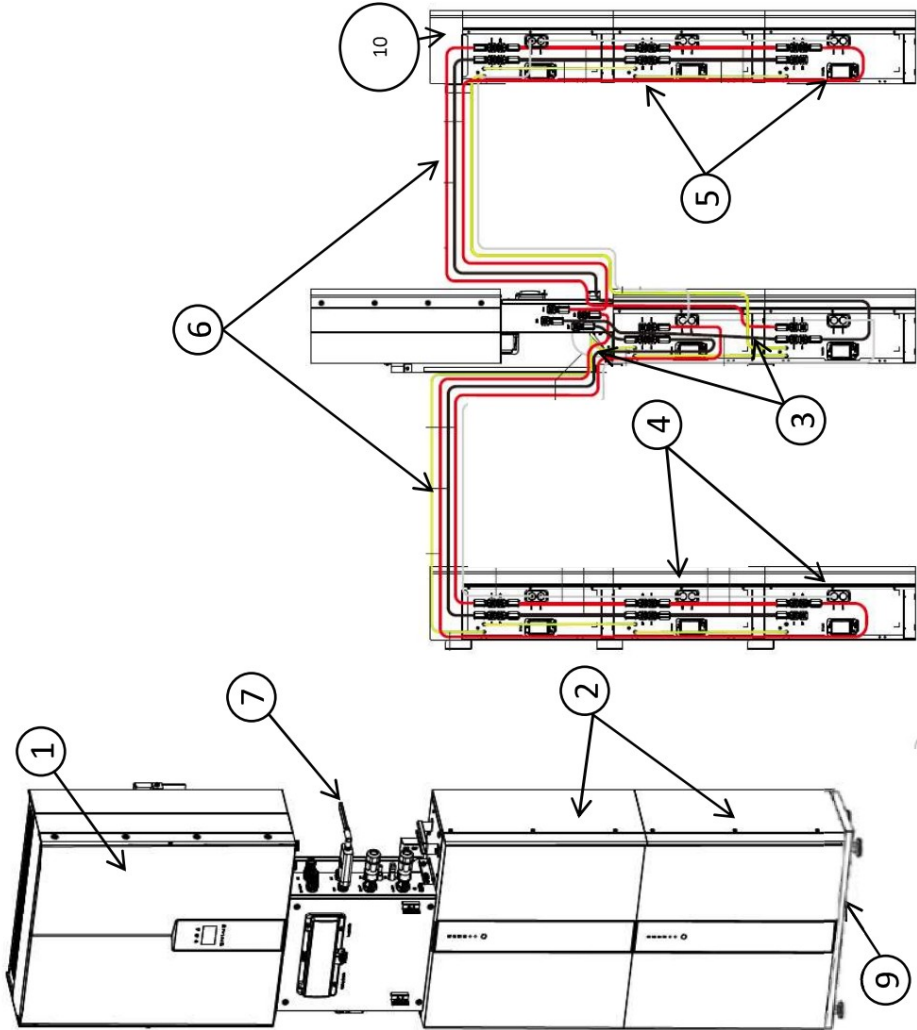


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Clivet Sinergy three-phase - List of components

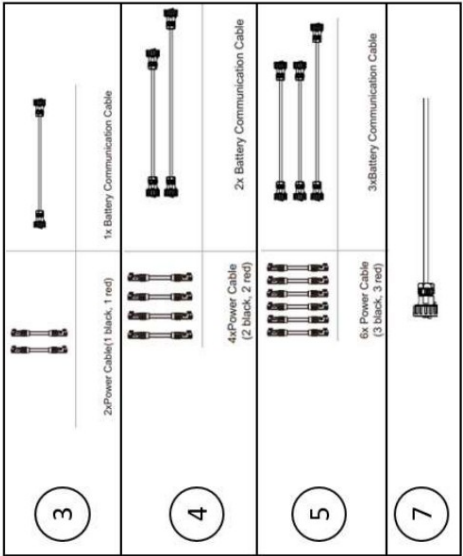
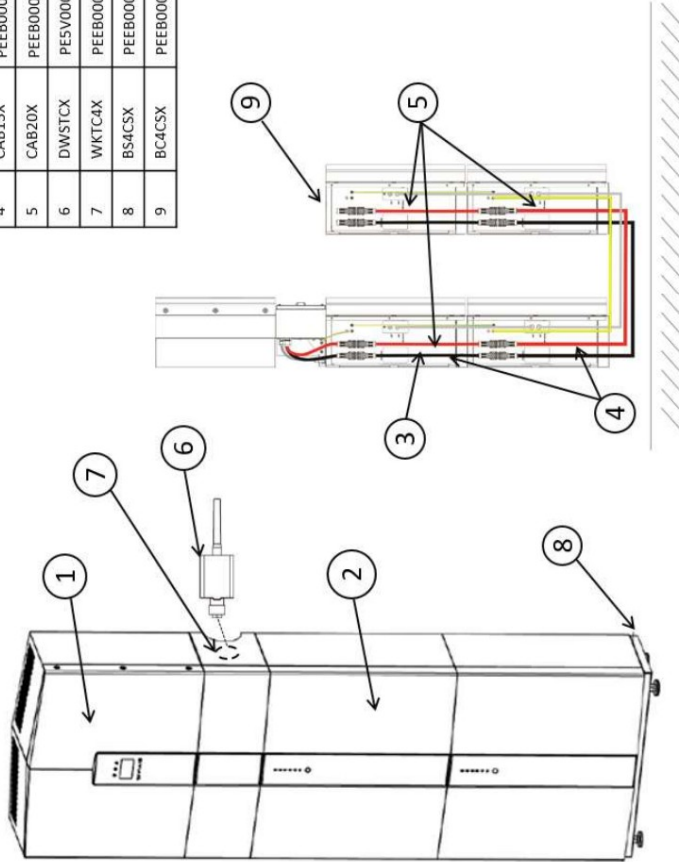
N.	Product type	Product part number	Description
1	CEC-T 10K	13512328	Three-phase 400Vac 50Hz hybrid inverter with 10KW nominal power
2	CEC-S B 5K	37022296	Battery pack 5KWh
3	CAB10TX	63502370	Cable kit for three-phase 10kWh electric storage system
4	CAB20TX	63502369	Cable kit for three-phase 20kWh electric 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>3</div> <div>4</div> <div>5</div> <div>6</div>	Every cable kit contains the cable quantity related to the specific capacity size: <ul style="list-style-type: none">• Power cables (red & black)• Battery communication cables• Earth cable
<div>8</div>	
<div>11</div>	 3x CTs



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	PEEB000001	Cable kit for 10kWh set/assembly
4	CAB15X	PEEB000002	Cable kit for 15kWh set/assembly
5	CAB20X	PEEB000003	Cable kit for 20kWh set/assembly
6	DWSTCX	PESV000014	Wi-Fi dongle for remote monitoring via mobile App
7	WKT4X	PEEB000005	Cable kit for connectivity to CONTROL4 NRG
8	BS4CSX	PEEB000006	Storage battery basement
9	BC4CSX	PEEB000007	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 two main cards: 'Bim Object' with a computer monitor icon and 'Certification' with a document icon. The 'Certification' card is highlighted with a red border and lists various certifications: Eurovent, SGI, ERP, CE, TUV, Ekosklad, Meps, H PKeymark, SG-Ready, Sinergy, and CEI-021. Below these cards is a 'Learn more →' button. To the right, a 'CLIVET DECLARATION OF CONFORMITY EU' document is shown, which includes a table of specifications and a section titled 'GUIDA ALLA COMPILAZIONE PER' (Guide to completion for). This section lists two types of declarations: 'Clivet CEC - T 10810, CEC - T 10820, CEC - T 10830, CEC - T 10840 SISTEMA DI ACCUMULO IBRIDO TRIFASE' and 'Clivet CEC - T 10810, CEC - T 10820, CEC - T 10830, CEC - T 10840 SISTEMA DI ACCUMULO TRIFASE'. The guide also mentions 'Portale e Distribuzione: domanda di connessione in file Semplificato' and 'Portale e Distribuzione: domanda di connessione per file Ordinario (modifica e nuova installazione)'. A red arrow points from the 'Certification' card to the 'DECLARATION OF CONFORMITY' document, and another red arrow points from the 'GUIDA ALLA COMPILAZIONE PER' section to the 'CEI-021 - declaration of conformity' and 'Guida alla compilazione dell'addendum tecnico per Sinergy' items in the list below.

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

Standard & certifications

- Declaration of conformity CE



CLIVET

DECLARATION OF CONFORMITY UE
DICHIARAZIONE DI CONFORMITÀ UE
DECLARATION OF CONFORMITY UE
DECLARATION DE CONFORMITÉ UE

WE DECLARE UNDER OUR SOLE RESPONSIBILITY THAT THE PRODUCT
DO NOT PRESENT ANY OF THE RISKS REFERRED TO IN THE
EUROPEAN DIRECTIVE ON THE RESPONSIBILITY OF THE PRODUCT
AND THAT IT IS IN FULL CONFORMANCE WITH THE EUROPEAN
STANDARDS AND STANDARDS OF THE EUROPEAN UNION.

EL FABRICANTE DECLARA BAJO SU ÚNICA RESPONSABILIDAD QUE EL PRODUCTO
NO PRESENTA NINGUNO DE LOS RIESGOS REFERIDOS EN LA
DIRECTIVA EUROPEA SOBRE LA RESPONSABILIDAD DEL PRODUCTO
Y QUE ESTÁ EN COMPLETA CONFORMIDAD CON LAS NORMAS
Y ESTÁNDARES EUROPEOS Y DE LA UNIÓN EUROPEA.

CATEGORY	BATTERY PACK
CATEGORIA	PACCO BATTERIE
CATEGORIE	BATTERIEPACK
CATEGORIE	PAQUET DE BATTERIES
CATEGORIA	PACK DE BATERÍAS

TYPE / TIPO / TYPE / TIPO

CEC-S B 5K

- CONFORMS WITH THE FOLLOWING EC DIRECTIVES INCLUDING THE MOST RECENT AMENDMENTS, AND THE RELEVANT NATIONAL HARMONIZATION LEGISLATION CURRENTLY IN FORCE.
- CONFORME A LA DIRECTIVE EUROPEENNE EN MATIERE DE RESPONSABILITE DU PRODUIT, Y COMPRENDANT LES DERNIERES MODIFICATIONS, ET LA LEGISLATION NATIONALE D'HARMONISATION EN VIGUEUR.
- EST CONFORME A LA DIRECTIVE EUROPEENNE EN MATIERE DE RESPONSABILITE DU PRODUIT, Y COMPRENDANT LES DERNIERES MODIFICATIONS, ET LA LEGISLATION NATIONALE D'HARMONISATION EN VIGUEUR.
- ES CONFORME A LA DIRECTIVA EUROPEA DE RESPONSABILIDAD DEL PRODUCTO, Y A LA LEGISLACION NACIONAL DE HARMONIZACION DE LA UNION EUROPEA.

<input checked="" type="checkbox"/> 2014/53/EC	Low voltage directive Direttiva sulla bassa tensione Directie laagspanning Directiva de joasă tensiune	CE (EU) 2014/53/EC CE (EU) 2014/53/EC CE (EU) 2014/53/EC CE (EU) 2014/53/EC
<input checked="" type="checkbox"/> 2014/53/UE	electromagnetic compatibility Compatibilitat electromagnètica Elektromagnetische Verträglichkeit Compatibilitat elettromagnètica Compatibilidade eletromagnética	CE (EU) 2014/53/UE CE (EU) 2014/53/UE CE (EU) 2014/53/UE CE (EU) 2014/53/UE
<input checked="" type="checkbox"/> 2011/65/UE	RoHS	CE (EU) 2011/65/UE CE (EU) 2011/65/UE CE (EU) 2011/65/UE CE (EU) 2011/65/UE

NAME / NOME / NOM / NOMBRE
FABRICANTE / COORDONATEUR / FABRICANTE / COORDONATEUR / FABRICANTE / COORDONATEUR

CLIVET S.p.A. - Via S. Maria 10 - 20139 Milano (MI) - Italy
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Thank you



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