zeroCO$_2$® large

Solutions for Three-Phase Installations, Business and Industrial Facilities

Three-phase hybrid inverters, high-voltage Pylontech batteries, three-phase 22kW wallbox

energy®
energyspa.com

Energy was founded in **2013** with a dream: make clean energy accessible to everyone, and at any time of day. We develop systems that store energy from renewable sources, and together with our advanced software, we empower everyone to store, monitor, and manage energy like never before.

The **zeroCO$_2$®** product range: small, large, and XL, encapsulates customized energy solutions for every need, **from residential to industrial, to agrisolar and grid scale**. Different sizes for every need, to take a step towards a world where renewable energy is not just a choice, but a way of life.

We design and manage in Italy production, research and development, all the way to after-sales service, stamping a mark of excellence and reliability on every product that leaves our warehouse

More than **80,000 installations** in Italy and Europe mount zeroCO$_2$ systems from Energy S.p.A.: from homes to large buildings, from companies to electric vehicles: we are radically changing the way we experience electricity.

We power the energy of the future.

Since over 10 years, we have been creating storage systems for renewable energy of all sizes, from home to industry, up to grid scale.

Industry leader

With more than 10 years of experience, Energy has shaped the energy storage industry in Italy, establishing itself as a leader and innovator.
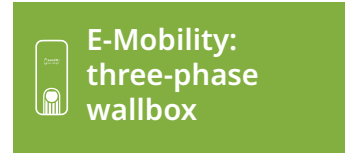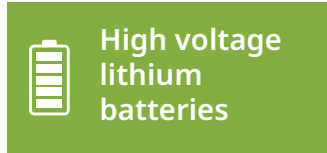

Italian excellence

From battery production to the cloud software, every element is designed and assembled in Italy.

Support from A to Z

Our technical support service is always by your side, from design to start-up to upgrade.

zeroCO$_2$ large solutions

| | Three-phase Hybrid Inverters | | High voltage lithium batteries | | E-Mobility: three-phase wallbox |

Indice

zeroCO$_2$ large (6-10)kW

Three-phase hybrid inverter

zeroCO$_2$ large inverters are three-phase hybrid inverters designed to integrate storage in a wide range of applications, from large residential buildings to commercial and industrial facilities. These inverters are available for **power ratings from 6 to 10 kW**, proving solutions for different energy needs.

One of the distinguishing features of this series is the ability to **connect inverters in parallel up to a maximum of 5 units**. This allows them to reach a total power output of **50 kW**, making them a versatile solution even for larger projects.

Compatible with the Pylontech high-voltage battery family, zeroCO$_2$ large inverters ensure efficient integration with state-of-the-art energy storage systems. This compatibility ensures optimal management of the energy produced, both in terms of immediate self-consumption and storage for future use.

Warranty 5 years extendable to 10 with "Energy Care"

Advanced features and guided installation

IP65 Protection class

Suitable for Domestic and Commercial Utilities: Versatile for a wide range of applications, from residential to commercial.

EPS (Emergency Power Supply) in the event of a power outage: In the event of a grid outage, it guarantees up to 10 kW of continuous power.

Meter and Wi-Fi module included: Equipped with built-in meter (meter) and Wi-Fi module for efficient monitoring.

Possibility of "Zero Feed-in" operation on the Grid: Can operate without feeding excess energy into the grid.

Parallelable up to 5 units: Up to 5 inverters can be connected in parallel, increasing total system capacity.

Retrofit Possibility: Can be integrated into existing systems, expanding or enhancing system capabilities.

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3 operating modes:
Maximum Self-Consumption: Optimizes the use of solar energy produced.
Use by Time Schedule: Allows you to manage energy according to time slots.
Off-Grid Backup: Provides power in case of grid failure.

Suitable for Energy Communities: Ideal for use in energy community projects, where sharing and efficient energy management are key.

MODEL	RHI-3P6K-HVES-5G	RHI-3P8K-HVES-5G	RHI-3P10K-HVES-5G
Item code	90050955	90050960	90050965
DC INPUT (PV SIDE)			
Max. DC input power [kW]	9.6	12.8	16
The max DC input voltage [V]		1000	
Nominal DC voltage [V]		600	
Start-up DC voltage [V]		160	
MPPT operating voltage range [V]		200-850	
Max. Input current [A]	13/13	26/13	26/26
Max. Short circuit current	16.5/16.5	32.5/16.5	32.5/32.5
MPPT number/Max. Input strings number	2/2	2/3	2/4
BATTERY			
Communication		CAN/RS485	
Battery voltage range [V]		160~600	
Max. Charging power [kW]	6	8	10
Max. Charge/discharge current [A]		25	
AC OUTPUT (BACK-UP)			
Rated output power [kW]	6	8	10
Max. Apparent output power [kVA]	6	8	10
Peak apparent output power [kVA, sec]	12, 60sec	16, 60sec	16, 60sec
Back-up switch time [ms]		40	
Rated voltage and frequency [V-Hz]		230/400 - 50/60	
Rated output current AC backup side [A]	9.2/8.7	12.2/11.6	15.2/14.5
Max. output current AC backup side [A]	10	13.4	16.7
THDi [%]		<2	
AC OUTPUT (GRID SIDE)			
Rated output power [kW]	6	8	10
Max. Apparent output power [kVA]	6.6	8.8	10
Rated grid voltage and frequency [V-Hz]		230/400 - 50/60	
Rated grid output current [A]	9.2/8.7	12.2/11.6	15.2/14.5
Max. output current [A]	10	13.4	16.7
Power Factor		>0.99 (0.8 leading ~ 0.8 lagging)	
THDi [%]		<2	
EFFICIENCY			
Max. efficiency [%]		98.4	
EU efficiency [%]		97.7	
MPPT efficiency [%]		99.9	
Battery charge/discharge efficiency [%]		97.5	
PROTECTION			
Anti-islanding protection, Output over current protection, Output short circuit protection, DC Switch, DC reverse-polarity protection, PV over voltage protection, Battery reverse polarity protection			
GENERAL DATA			
Dimensions [WxHxD] [mm]		535x455x181	
Weight [kg]		25.1	
Topology		Transformerless	
Self consumption (standby) [W]		<15	
Operation temperature range [°C]		-25~60	
Relative umidity [%]		0~100	
Protection degree		IP65	
Cooling concept		Natural convection	
Max. operation altitude [m]		4000	
Grid connection standard		G98 o G99, VDE-AR-N 4105 / VDE V 0124, EN 50549-1, VDE 0126 / UTE C 15/VFR:2019, RD 1699/RD 244 / UNE 206006 / UNE 206007-1, CEI 0-21, C10/11, NRS 097-2-1, EIFS 2018.2, IEC 62116, IEC 61727, IEC 60068, IEC 61683, EN 50530, MEA, PEA	
Safety/ EMC Standard		IEC 62109-1/-2, EN 61000-6-2/-3	
AC and DC Connections		Quick Connector / MC4 connector	
Display		LCD, 2x20Z.	
Communication		RS485; CAN; WiFi (optional)	
Warranty [years]		5 (*)	

(*) extendable to 10 years with "Energy Care", order code 99990050

CE CEI 0-21 VDE IEC UTE NRS Association   G98, G99, EN50549-1/-2, RD1699, EN61000-6-2/-3

Compatible Batteries

Lithium Iron Phosphate Pylontech Batteries

Pylon Technologies is one of the pioneering companies in the manufacture of Lithium batteries for use in renewable energy storage systems.

Building on its proprietary technology in the field of storage batteries and battery management systems (**BMS**), Pylontech is one of the few vertically integrated companies in the world in the field of Lithium battery manufacturing.

High Voltage Models

Our high-voltage batteries are specifically designed for commercial and industrial sized installations.

High-voltage batteries range in **capacity from 2.4 to 4.74 kWh** and their modular design allows multiple units to be connected in series for larger storage capacities, reaching up to **over 2 MWh** of storage.

The **H** series, featuring a "**rackable**" format, are ideal for housing in technical cabinets.

These models are available in various sizes, allowing easy integration and installation flexibility according to specific needs.

The **FH** series, features a "**stackable**" format, meaning the batteries can be stacked on top of each other, providing an efficient and space-saving storage solution.
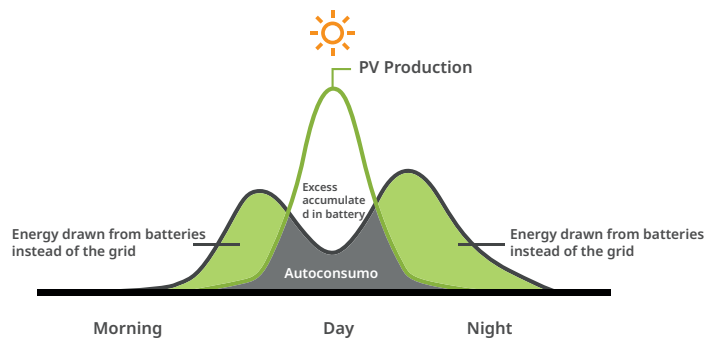
They are the most compact and easiest to install batteries.

Why install storage batteries?

A storage system allows you to store surplus energy produced by PV, and then use it at times when production is lower, such as at night or during cloudy days.

You use all the energy you produce, saving significantly on energy costs.

PV Production

Excess accumulated in battery

Energy drawn from batteries instead of the grid

Energy drawn from batteries instead of the grid

Autoconsumo

Morning   Day   Night

What does LFP mean?

Pylontech LFP batteries, use lithium iron phosphate (**LiFePO4**) as the cathode. This type of battery chemistry is known to be more stable and safer than other lithium technologies, reducing the risk of overheating or fire.

In addition, Pylontech batteries are equipped with an advanced Battery Management System (**BMS**), which provides more accurate control of charge and discharge cycles, further contributing to safety.

The BMS prevents overcharging and overdischarging through an automated on/off function, constantly monitoring cell temperature, voltage, and current to anticipate any abnormalities.

Installing instructions

Find out **how to optimally install and configure** zeroCO$_2$ products on our **YouTube** channel.

You will find a series of detailed and easy-to-follow video instructions that will guide you step by step through the installation process.

Subscribe on YouTube

H48050 & H48074

High voltage lithium battery

Longer life cycle, exceeding 5000 cycles, corresponding to about 11 years of work, with end-of-life capacity of 80%

BMS capable of managing and monitoring cell voltage, current and temperature

DoD Depth of Discharge of 95%, available for inverters aligned with the latest Pylontech protocol, means that almost all of the stored energy is actually usable in each charge cycle

10-year warranty

Ease of expansion, to increase storage

IP20 Protection class

MODEL	H48050	H48074
Item code	90040200	90040201
ELECTRICAL DATA		
Cell technology	Li-ion (LFP)	
Nominal voltage [V]	48	
Nominal capacity [kWh/Ah]	2.4 / 50	3.552 / 74
Depth of discharge DOD [%]	95	
Current [A]	25 (nominal) - 50 (max)	37 (nominal) - 74 (max)
Charge/discarge voltage [V, min ~ max]	43,5 ~ 54	
BUS		
Communication Bus	RS232, CAN	RS485, CAN
Communication protocol	YD/T 1363.3-2005	
Dimensions [WxHxD, mm]	442x100 (3U)x 390	442x132 (3U)x 390
Weight [kg]	24	32
GENERAL DATA		
Charge / discharge working temperature [°C]	0 ~ 50	
Storage temperature [°C]	-20 ~ 60	
Protection class	IP20	
Operation life at 25 °C [years]	15+	
Life cycles	5000	
Backup time [Nominal power 500 W]	≥ 5 h	
Duration of charge maintenance	6 months with off battery	
Transfer certificate	UN38.3, UN 3090	
EMC Standard	IEC 61000, EN 55022, GR-1089, GB/T 2423, TÜV, CE, TLC	IEC 61000, EN 55022, GR-1089, GB/T 2423, TÜV, CE

Nota: When choosing the number of modules to connect inside the rack, make sure that the resulting DC voltage is within the operating range of the inverter. For the selection of 19" racks sizes, please refer to the available documentation.

CE IEC UL CERTIFIED UN38.3 PASSED Transport Safety Certified TÜV Rheinland CERTIFIED VDE   GR-1089, UN 3090, EN55022, GB/T 2423

H32148-C

High voltage lithium battery

Designed to ensure reliable power delivery, for various types of equipment and systems

H32148-C modules operate in the charge/discharge regime at 0.5C

10-year warranty

Ease of expansion, to increase storage

Long service life and efficiency over time

MODEL	H32148-C
Item code	90040280
ELECTRICAL DATA	
Cell technology	Li-ion (LFP)
Nominal voltage [V]	32
Nominal capacity [kWh/Ah]	4.736 / 148
Depth of discharge DOD [%]	90 (8-98%)
Nominal Current [A]	74
Battery module cell quantity in series [pcs]	10
Battery cell voltage [V]	3.2
Battery cell capacity [Wh/Ah]	118.4 / 37
Battery module charge voltage [min~max, V]	30 ~ 36
Charge / discharge test current [A] (*)	29.6
Max charge / discharge current [A]	148
Efficiency [%]	96
BUS	
Communication Bus	RS485\CAN
GENERAL DATA	
Dimensions [WxHxD, mm]	330x150.5x628
Weight [kg]	48
Working temperature [°C]	0 ~ 50°C
Storage temperature [°C]	-20 ~ 60°C
Protection class	IP20
Operation life [years]	+10
Life cycles	4000
Transfer certificate	UN38.3
EMC Standard	TÜV (IEC62619)

(*) Current value used to determine the capacity of the battery during test.

BMS

Battery Management System

The **BMS** (battery management system) can manage and monitor cell information, including voltage, current, and temperature, as well as keep the cells balanced during the charge/discharge process in order to improve battery performance and lifetime. Multiple battery stacks can be connected in parallel to increase capacity and thus power output over a longer working period.

The battery management system (BMS) has **protection functions for overcharge, overvoltage, overcurrent, and high/low temperature**.

To ensure excellent charge/discharge performance and durability, the operating temperature range is 0°C to 50°C.

MODEL	SC0500-40S V2	SC0500-100S V2	SC1000-100*	SC1000-200J-C
Item code	90040272	90040273	90040210	90040281
ELECTRICAL DATA				
Related product	PowerCube X1-X2 V2, PowerCube H1-H2 V2		PowerCube H1-H2	H32148-C
Battery modules quantity [pcs]	from 2 to 10		from 5 to 18	up to 26
Self-consumption power [W]	8			6
Operating voltage [V]	60~600		200~1000	
System working voltage [V]	60~600		200~1000	
Discharge voltage [V]	60~600		200~1000	
Max. Charging current [A]	40	80	100	148
Communication	Modbus RTU\CAN\LAN		Modbus RTU\CAN	Modbus RTU\CAN\LAN
GENERAL DATA				
Dimension [WxHxD, mm]	442×87×390	442×132×390		330x150.5x628
Weight [kg]	7	9	8,5	13
Operating temperature [°C]	-20~65			
Storage temperature [°C]	-40~80			
Protection Class	IP20			
Operation life [years]	15+			
Transfer certificate	UN38.3			
EMC Standard	TUV, CE			

*Nota: With BMS **SC1000-100**, the parallel connection of multiple strings requires the **MBMS**, a device that enables communication between battery stacks in parallel. The available communication protocol is CAN/o RS485.

Rack Cabinets

"**Rackable**" series batteries range in size from 2U to 4U, a rack unit, abbreviated as U (Rack Unit), is a standard unit of measurement used to indicate the height of components installed in a rack.

We provide durable 19" rack cabinets, for wall or floor installations, designed to accommodate your storage systems.

Features:

- **Single-section rack cabinet** with reinforced thickness of painted galvanized steel and ventilation grilles;
- Polyester powder coated, embossed finish;
- Reversible door equipped with quarter-turn latch;
- Removable side panels with quarter-turn closure;
- Provided with cable entries at base and top end with pre-cut profiles;
- **19"** steel front rails;
- Grounding kit included;
- Protection class: IP20;
- Adjustable feet kit included;
- Rear brackets for battery support included.

CODE	MODEL	HEIGHT - H [mm]	WEIGHT [kg]	MAX. CAPACITY [kg]	HIGH VOLTAGE
90040348	Kit Case Pylontech 24U	1205	40	285	From 4 to 7 H48050 or from 4 to 7 H48074 +BMS
90040350	Kit Case Pylontech 33U	1605	51	390	From 4 to 10 H48050 or from 4 to 10 H48074 + BMS
90040352	Kit Case Pylontech 42U	2005	61	500	Configurable on request

Cabinet zeroCO$_2$ sun box

Energy also offers, to accommodate the full range of batteries, the **zeroCO$_2$ sun box** cabinet. With the same single-section structure with reinforced galvanized steel thickness, painted and with ventilation gratings, it has side support brackets for drawer installation of batteries.

CODE	MODEL	HEIGHT - H [mm]	WEIGHT [kg]	MAX. CAPACITY [kg]	HIGH VOLTAGE
90040546	Rack 19" ZeroCO2 Sun Box - 16U	858	31	189	4 H48050 + BMS o 4 H48074 + BMS
90040566	Rack 19" ZeroCO2 Sun Box - 16U Supplied in kit	858	31	189	4 H48050 + BMS o 4 H48074 + BMS

Force H1

High voltage stackable battery

Force H1 batteries are perfectly suited for residential use, combining elegant design and simple installation. Each **3.55 kWh** module is quickly assembled without cables by stacking them on top of each other. The capacity of each stack can be extended up to **24.85 kWh with 7 elements**, with a 95% depth of discharge.

Group BMS ensures optimal charge and discharge management, maximizing safety and longevity.

Expandable up to **6 batteries in parallel**, thanks to the new BMS, to reach a capacity of **149.10 kWh**.

With a **10-year warranty** and **IP55** protection rating, Force H1 batteries are built to withstand.
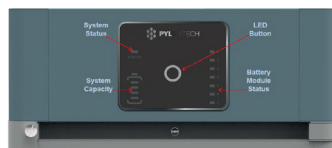
Complies with VDE 2510-50

Components

| BMS Module | BMS Display | Battery Module |

Connectable up to 6 batteries in parallel max.
149.10 kWh

Stack of Batteries

MODEL	FORCE-H1 V2					
Item code [battery module]	90040220					
Item code [BMS]	90040277					
Battery module quantity [pcs]	2	3	4	5	6	7
Battery system voltage [V]	96	144	192	240	288	336
Battery system capacity [kWh/Ah] 1 stack	7.10 / 74	10.65 / 74	14.20 / 74	17.76 / 74	21.31 / 74	24.85 / 74
Battery system charge/discharge current [A, normal]	37					
Dimensions 680x380xA [mm]	530	700	870	1040	1210	1380
Weight [kg]	86	122	158	194	230	266
Battery system charge voltage [min~max,V]	87 / 108	130.5 / 162	174 / 216	217.5 / 270	261 / 324	305 / 378
Charge / discharge test current [A] (*)	14.8					
Battery system charge/discharge current [A, max.]	42 @15s					
Short circuit rating [A]	<4000					
Battery module name	FH48074					
Battery module voltage [V]	48					
Battery module capacity [kWh/Ah]	3.552 / 74					
Depth of Discharge [%]	95					
Module available capacity [kWh / Ah]	3.374 / 70.3					
Efficiency [%]	96					
Battery controller name [BMS]	FC0500-40S-V2					
Communication bus	CANBUS / Modbus RTU					
Operation temperature [°C]	0 ~ 50					
Storage temperature [°C]	-20 ~ 60					
Altitude [mt]	<2000					
Protection class	IP55					
Operation Life [years]	15+					
Transport certificate	UN38.3					
Product certificate	VDE-AR-E 2510-50, IEC62619, IEC63056, IEC62040-1, 2014/53/EU(RED), UL1973					
Battery controller dimension [WxHxD]	600 x 150 x 380					
Battery bottom base dimension [WxHxD]	600 x 40 x 380					

(*) Current value used to determine the capacity of the battery during test.

Battery Module

MODEL	FH48074
Cell technology	Li-ion (LFP)
Battery module voltage [V]	48
Battery module capacity [kWh/Ah]	3.552 / 74
Dimensions [WxHxD, mm]	600x170x380
Weight [kg]	36
Battery cell voltage [V]	3.2
Battery cell capacity [Wh/Ah]	118.4 / 37
Operation temperature [°C]	0 ~ 50
Storage temperature [°C]	-20 ~ 60
Operation life [years]	15+
Operation cycle life	5000
Transport certificate	UN38.3

Force H2

High voltage stackable battery

Pylontech's Force H2 series represents the top in terms of home energy storage systems. With its modular and elegant design, it fits easily into any home space.

Each 3.55 kWh module installs quickly by stacking them without cables, with a 95% depth of discharge and expandable capacity up to 14.20 kWh per stack of 4 elements. The group BMS ensures optimal charge and discharge management, maximizing safety and longevity.

With the new BMS, up to 6 groups can be connected in parallel to reach a capacity of 85.2 kWh.

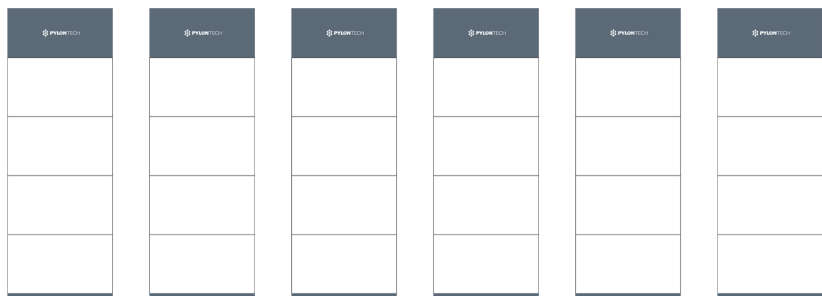Complies with VDE 2510-50

Components

BMS Module	BMS Display	Battery Module

Connectable up to 6 batteries in parallel max.
85,2 kWh

Stack of Batteries

MODEL	FORCE-H2 V2		
Item code [battery module]	90040218		
Item code [BMS]	90040222		
Battery module quantity [pcs]	2	3	4
Battery system voltage [V]	192	288	384
Battery system capacity [kWh/Ah] 1 stack	7.10/37	10.65/37	14.20/37
Dimensions 450X296xA [mm]	822	1118	1414
Weight [kg]	82	117	152
Battery system charge voltage [min~max,V]	174/216	261/324	348/432
Charge / discharge test current [A] (*)	7.4		
Battery system charge/discharge current [A, max.]	42 @15s		
Short circuit rating [A]	<4000		
Battery module name	FH9637M		
Battery module voltage [V]	96		
Battery module capacity [kWh/Ah]	3.552/37		
Depth of Discharge [%]	95		
Module available capacity [kWh / Ah]	3.374/35.1		
Efficiency [%]	96		
Battery controller name [BMS]	FC0500M-40S-V2		
Communication bus	CANBUS / Modbus RTU		
Operation temperature [°C]	0 ~ 50		
Storage temperature [°C]	-20 ~ 60		
Altitude [mt]	<2000		
Protection class	IP55		
Operation Life [years]	15+		
Transport certificate	UN38.3		
Product certificate	CE, VDE-AR-E 2510-50, IEC62619, IEC63056, IEC62040-1, 2014/53/EU(RED)		
Battery controller dimension [WxHxD]	450x190x296		
Battery bottom base dimension [WxHxD]	450x40x296		

(*) Current value used to determine the capacity of the battery during test.

Battery Module

MODEL	FH9637M
Cell technology	Li-ion (LFP)
Battery module capacity [kWh/Ah]	3.552/37
Dimensions [WxHxD, mm]	450x296x296
Weight [kg]	35
Battery cell voltage [V]	3.2
Battery cell capacity [Wh/Ah]	118.4/37
Battery Module Serial Cell Quantity [pcs]	30 (15)
Operation temperature [°C]	0 ~ 50
Storage temperature [°C]	-20 ~ 60
Operation life [years]	15+
Operation cycle life	5.000
Transport certificate	UN38.3

zeroCO$_2$ sun charger

22 kW Wallbox

The three-phas **zeroCO$_2$ sun charger** is the ideal solution for commercial use, such as **offices, dealerships or shopping malls and parking lots**. It is designed to integrate seamlessly with the zeroCO$_2$ range of inverters and storage systems.

This versatile device, is the ideal solution for home charging of electric vehicles.

IP54   Suitable for outdoor installation

Control via APP for dynamic power management and hourly scheduling

Ability to lock the wallbox for RFID card use

Integration with the zeroCO2 Range

When installed in systems with inverters and zeroCO2 systems, you will not need to install additional meters

Dynamic Recharge Distributor (RDR-EV)

Connects multiple wallboxes and distributes the available power among the wallboxes connected to the same POD

Installation Flexibility

Can be installed on the wall or as a stand-alone column with its floor stand

Smart Control

Automatically adjusts charging, to give power to the car only when available.

Advanced Safety

Overvoltage, undervoltage, overcurrent and short-circuit protections, and IP54 rating

5 Meter Charging Cable

Built-in charging cable

MODEL	zeroCO$_2$ sun charger 22K
Item code	90200015
TECHNICAL DATA	
Charging interface type	Type 2/standard 5m
Rated power [kW]	22
Input voltage range [Vac]	400Vac±10%
Rated frequency [Hz]	50/60
Output current range [A]	0-32
Startup mode	Plug and charge / APP (RFID optional)
Installation mode	Wall mounted (Column mounted optional)
PROTECTION	
Protection function	Overvoltage protection, undervoltage protection, overcurrent protection, short circuit protection, grounding protection and emergency stop protection
Leakage current protection	30mA type A RCD external/6mA DC component built-in
GENERAL DATA	
Dimensions [WxHxD] [mm]	170x400x110
Weight [kg]	5.9
Operation temperature range [°C]	-30 ~ 50
Storage temperature [°C]	-40 ~ 70
Working humidity	5%~95%RH
Protection degree	IP54
Noise [dB]	<65
Altitude [m]	≤2000
Status indication	3-colori LED
Communication mode	Bluetooth/WiFi (Ethernet Optional)
Metering function	Optional
Communication	RS485
Safety/ EMC Standard	IEC-61851-1-2017/IEC-61851-21-2-2018
Standard	CE
Warranty [years]	2

zeroCO$_2$ Dynamic Charging Management

zeroCO$_2$ sun charger wallboxes can be connected in parallel to manage multiple charging points, via the **Dynamic Charging Management (DCM)** device.

This system is designed to dynamically manage the load **from 2 up to 15 wallboxes** simultaneously, either single-phase or three-phase.

The system with DCM integrates seamlessly with zeroCO$_2$ hybrid inverters to allow vehicles to be charged only when excess energy is available.

NB: Item code: 90200016

The three-phase meter is included. In the case of single-phase system, it is necessary to order the single-phase meter kit SDM120CT available as an accessory.

How to size the storage system to the PV?

Proper sizing is crucial to ensure energy efficiency, economic viability and system longevity.

1. Assesses the Customer's Energy Consumption:

- Analyze the customer's daily energy consumption. Consider both daytime and nighttime consumption.
- Collect historical data if available to get a more accurate view of energy consumption during different seasons.

2. Capacity of Photovoltaics:

- Determines the capacity of the existing PV system or the one that will be installed, and estimates the average daily production.

3. Calculation of Accumulation Sizing:

- Calculate the difference between the energy produced by PV and the customer's daily energy consumption. This will give you an idea of the amount of energy that needs to be stored to cover consumption when PV is not producing.

4. Adaptability to Seasonal Variations:

- In summer, energy production will be higher; in winter, lower. Ensure that the storage can cover some of the consumption even during periods of lower solar production.
- Consider installing a storage system with a slightly higher capacity to compensate for these variations.

5. Lifespan and Life Cycles of the Battery:

- Choose Pylontech systems with a high number of life cycles to ensure long system life.

Accurate sizing of the storage system is critical to maximizing efficiency and customer satisfaction. Remember that each installation is unique, so tailor these principles to the specific needs and characteristics of the installation site.

Your expertise as an installer is crucial to ensure that the storage system works to its full potential.

Examples of complete solutions

The three-phase **zeroCO$_2$ large** inverter can be configured with:

- **H48050 Batteries** (minimum 4 modules)
- **H48074 Batteries** (minimum 4 modules)
- **Force H1 Batteries** (minimum 4 modules)
- **Force H2 Batteries** (minimum 2 modules)
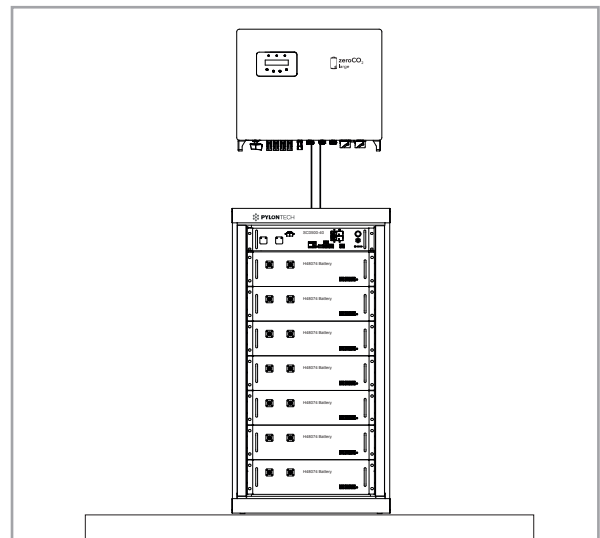
zeroCO2 large inverter with 7 H48074 batteries in 24U cabinet and 1 BMS SC0500-40

Accessories

zeroCO$_2$ EPS Box three-phase

The EPS Box allows the inverter to be used even **in the event of a blackout**, in the absence of the grid, allowing the loads to be supplied from both the public grid and the generation plant, avoiding parallel operation with the distributor's grid, by means of interlocked contactors.

The interlocking is realized electrically and mechanically, in accordance with the requirements of CEI 0-21. In order to ensure safety in island operation, the EPS box grounds the neutral during only off-grid operation.

NB: Item Code: 90900452

zeroCO$_2$ parallel box (EPM)

zeroCO$_2$ parallel box, is a device that allows multiple zeroCO$_2$ large inverters to be connected in parallel.

It simultaneously controls **up to 5 zeroCO$_2$ large hybrid inverters**.

It is possible to connect a single Wi-Fi datalogger to the parallel box to monitor all connected inverters.

MODEL	EPM3-5G-PLUS
Item code	90900415
TECHNICAL DATA	
Rated voltage [V]	400, 3/N/PE
Input voltage range [Hz]	320 ~ 480
Input frequency range [V]	45 ~ 65
COMMUNICATION	
Inverter communication	Modbus RS485
Communication interface	2pin RS485, RJ45
Max. communication distance [m]	1000
Monitoring	Wi-Fi
FEATURES	
Failsafe fuction	Yes
Remote upgrated	Yes
Control time [s]	5
Power Accuracy [%]	3
GENERAL DATA	
Dimensions [WxHxD] (mm)	488x446x149
Weight [kg]	5.4
AC connection	Quick connection terminal
Ambient temperature [° C]	-25 ~ 60
Relative humidity [%]	5 ~ 95
Protection class	IP65
Self consumption [night W]	<15
Display	LCD
CT connection	Plug terminal
CT specification	see Table below 1 : CT SPECIFICATION

CT SPECIFICATION

Specification	Dimensions (mm)			Hole size (mm)		Ratio
	Width	Height	Depth	a	e	
CT-30×20-100 A	90	114	40	22	32	100:5 A
CT-60×40-300 A	114	140	36	42	62	300:5 A
CT-80×40-600 A	122	162	40	42	82	600:5 A
CT-80×40-1000 A	122	162	40	42	82	1000:5 A
CT-160×80-2000 A	184	254	52	82	162	2000:5 A
CT-160×80-3000 A	184	254	52	82	162	3000:5 A

1 Due to different on-site installation conditions, there are optional specifications as shown in the above table. It is suggested that the client can choose the appropriate CT specifications according to the actual installation requirements.

Tigo TS4-A-O Optimizers

The **TIGO TS4-A-O** optimizer is the module to be integrated with PV panels for maximum yield. Designed for unequal string lengths, mixed orientations or mismatch. Also installable in shaded areas to increase panel efficiency.

In addition to optimization, TS4-A-O enables module-level monitoring and fast shutdown in compliance with NEC 2014, 2017, 2020.

It is available as a complete kit that includes a datalogger, the **Cloud Connected Advanced (CCA)** communication hub for Tigo's SMART platform, and the **Tigo Access Point (TPA)** that enables control and management of up to 300 TS4 units within a 35-meter radius.

MODEL	TS4-A-O	CCA	TPA
Complete kit code	Complete Kit: 90900720		
Item code	90900700		90900730
TECHNICAL DATA			
Max. Power [W]	700	-	-
Max. Input Voltage [V]	80	-	-
Voltage Range [V]	16 ~ 80	10 ~ 25 Vdc	
Power Consumption [W]	3 ~ 7		
Max. Current [A]	15	-	-
Recommended Fuse rating [A]	30	-	-
Capacity	-	Supports up to 900 TS4 units and up to 7 TAPs	Supports up to 300 TS4 units up to 115ft (35m) away
GENERAL DATA			
Dimensions [WxHxD] [mm]	138.4x22.9x139.7	31x71.54x115.51	126.2x26.8x130 (staffa inclusa)
Weight [g]	520	126	227
Operating Temperature range [°C]	-40°C~70°C	-20°C~70°C	-20 ~+85
Protection class	IP68, Type 4R (if installed in outdoor boxes)		
Altitude [m]	2000	-	-
Output cable Lenght [m]	1.2 (standard)	-	-
Connectors	MC4, EVO2	-	-
Cooling	Natural Convection		
Led Status	-	Multi-function LED status indicator	-
Communication	Wireless	Mobile App: Tigo SMART App for Android and iOS	-
Standard	CE, FCC, CSAus		
Warranty [years]	2		

N.B: For monitoring and security functions you must purchase the Kit Cloud Connect Tigo (COD. 90900720) complete with datalogger, Access Point (TPA) and DIN mounted power supply.

Item Codes

CODE	DESCRIPTION
90050955	zeroCO2 Large 6 - Inverter RHI-3P6K-HVES-5G with WiFi device and Meter - 5 YEAR WARRANTY
90050960	zeroCO2 Large 8 - Inverter RHI-3P8K-HVES-5G with WiFi device and Meter - 5 YEAR WARRANTY
90050965	zeroCO2 Large 10 - Inverter RHI-3P10K-HVES-5G with WiFi device and Meter - 5 YEAR WARRANTY
99990050	ENERGY CARE_extension of the zeroCO2 small warranty to 10 years_ CER provision included
90200015	zeroCO2 sun charger – 22 kW Wallbox with type 2 socket with 5mt cable
90040200	Pylontech H48050 - 2.4 kWh battery, for rack cabinets, high voltage
90040201	Pylontech H48074 - 3.55 kWh battery, for rack cabinets, high voltage
90040220	Pylontech Battery Module FH48074 Stackable - Force H1
90040277	Pylontech BMS FC0500-40S V2 - Stackable - for Force H1- Base and Brackets
90040218	Pylontech Battery Module FH9637M - Stackable - Force H2
90040222	Pylontech BMS FC0500M V2 - Stackable - for Force H2 - Base and Brackets
90040212	Pylontech MBMS1000 - MBMS parallel module for high-voltage batteries
90040272	Pylontech BMS HV SC0500-40S-V2 for H48050 and H48074
90040273	Pylontech BMS HV SC0500-100S-V2 for H48050 and H48074
90040210	Pylontech BMS SC1000A - for H48050 and H48074
90040280	Pylontech H32148C - 4.74 kWh battery
90040281	Pylontech BMS SC1000-200J-C with internal power supply (for H32148C)

Accessory Codes

CODE	DESCRIPTION
90900452	zeroCO2-EPS Box 3Ph - Double three-phase meter for island operation in EPS
90200016	zeroCO2 DCM - Dynamic Charging Management - Parallel module for sun charger
90200017	zeroCO2 RFID Card - RFID card for EV Charger
90200018	zeroCO2 Card reader - RFID reader for EV Charger
90200010	zeroCO2 sun charger - Floor stand black color
90900700	TIGO TS4-A-O module optimizer for panels up to 700 Wp
90900720	TIGO Complete Kit - CCA, TAP, DIN power supply and datalogger. For monitoring up to 900 TS4
90900730	TIGO TAP Additional Access point. Up to 7 total access points per Cloud Connect
90900415	Kit zeroCO2 parallel box (EPM) 3Ph Parallel router with 3 current transformers
90900365	Eastron three-phase meter kit with external CTs consisting of Eastron SDM630MCT (Max. current 40mA)
90900315	Eastron three-phase meter kit with external CTs consisting of Eastron SDM630MCT (Max. current 5A)
90900407	Wifi + LAN module for internet connection to the Solis portal - 4-pin connector
90900403	USB module for Solis Inverter FW update
90040348	Kit Case 24U Std
90040350	Kit Case 33U Std
90040352	Kit Case 42U Std
90040546	Rack 19” ZeroCO2 SunBox-16U

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