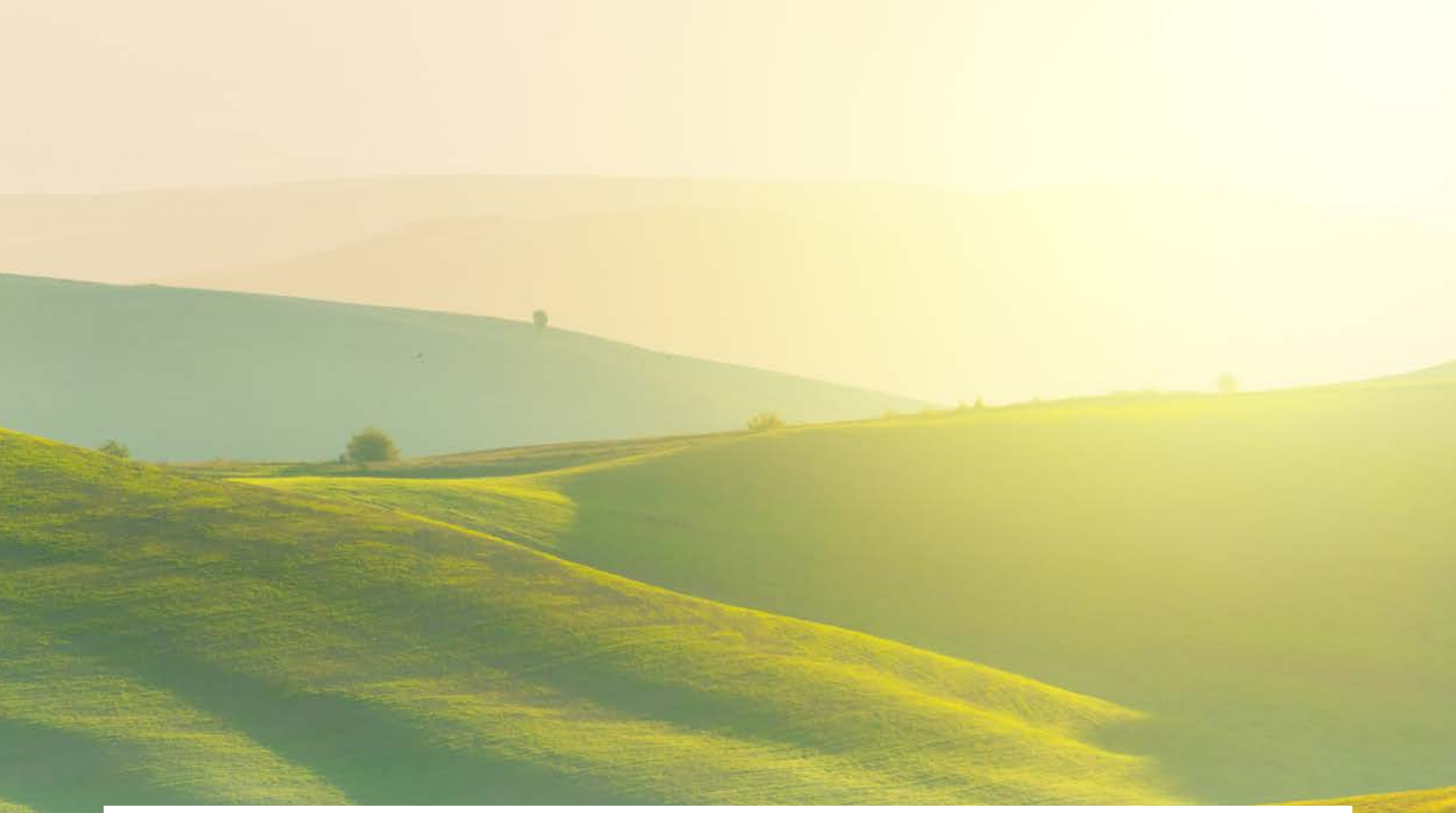
AZZURRO ZCS

Smart solutions for a **sustainable** world

ZUCCHETTI Centro Sistemi

GREEN INNOVATION



Contents

ZCS, connessi al futuro

IDEE E SOLUZIONI DELL'ERA DIGITALE

Zucchetti Centro Sistemi (ZCS) was founded in 1985 by **Fabrizio Bernini**, who now serves as the CEO. Through his innovative vision, the company rapidly gained a foothold in the global markets of robotics, automation and renewable energy.

Today, ZCS is renowned for its innovative **SMART & GREEN** solutions that integrate the most advanced technologies.

ZCS consists of **five Business Units** (software, automation, healthcare, robotics and energy renewable) that meet the need to diversify and extend the know-how acquired in the design of management software to different and complementary areas, aiming to deliver technological excellence in the areas of information technology, digitalisation and mechatronics.

INNOVATION AS CULTURE

The courage to design and create products that do not exist yet, but that could improve and simplify the daily lives of consumers, as well as optimise the efficiency of processes. Artificial intelligence, Cloud, Internet of Things, Big Data, Advanced Automation.

PEOPLE

Driven by shared corporate values such as creativity, enthusiasm, passion, job responsibility, ethics and respect for people.

SUSTAINABILITY

Technology and environment as a union to be explored and advanced with conviction. Economic, environmental and social sustainability.

GROUP

»**ZCS** belongs to the **Zucchetti Group,** which has over 8,000 employees and 700,000 customers *(2022 data)

ZCS FACTS AND FIGURES

»**500** people » **130** patents » **17** national and international awards and recognitions
» **5** business units

ZUCCHETTI Centro Sistemi

GREEN INNOVATION

AUTONOMY AND ENERGY SAVINGS FOR A SUSTAINABLE ENVIRONMENT

Distributes innovative energy-saving solutions for people and companies. Photovoltaic inverters, efficient storage systems, electric vehicle charging stations and monitoring systems designed to maximise energy independence in residential, commercial and industrial settings.

Technological partners

12

Commercial partners

30

Certified Installers

5.000

Plants installed

600.000

Power installed

>6.000 MV

Storage power installed

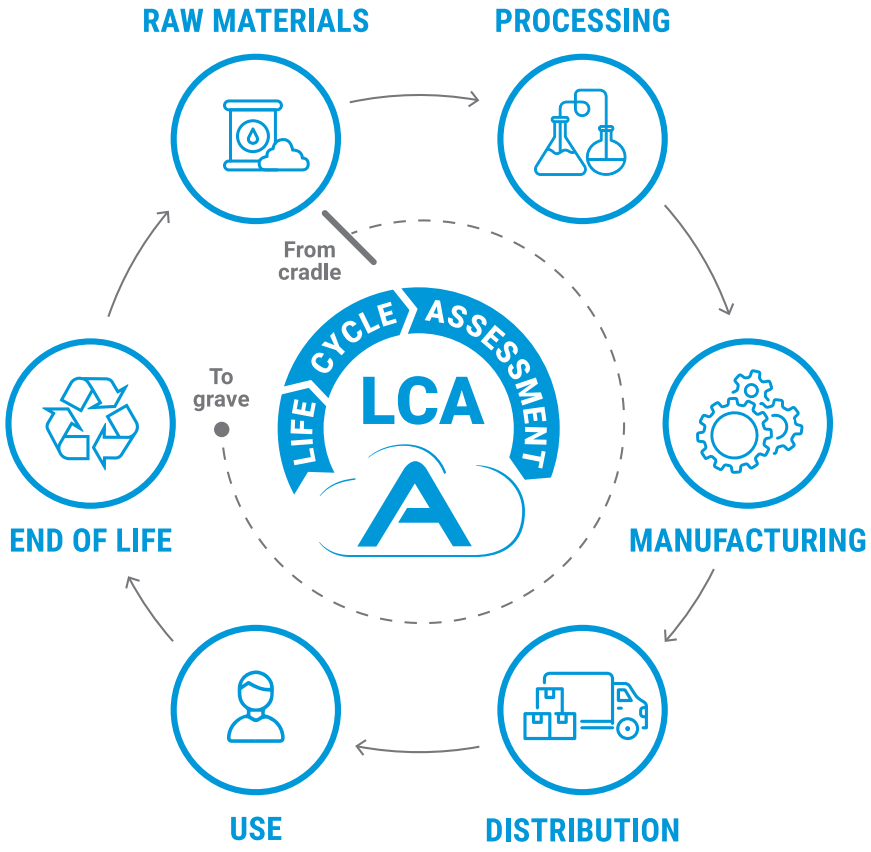
>1,5 GWh

LCA

Life **C**ycle **A**ssessment of **ZCS Azzurro**

ZCS Azzurro has always been dedicated to ensuring the excellence of its products and promoting environmental sustainability. For this reason, the company actively analyses its solutions, focusing on improving their efficiency, reparability and recyclability.

To achieve these results, aimed at optimising processes and improving energy efficiency, ZCS Azzurro has adopted the use of the **Life Cycle Assessment (LCA)**. This tool is widely recognised as the most comprehensive method for assessing the environmental impact of products and services.



Excellent products

Efficient resources

Environmental **awareness**

Sustainability

Single-phase hybrid **inverter**

CO_2 EMITTED during production **1,589 Kg**

CO_2 PAYBACK TIME **8 MTHS**

CO_2 SAVED* **51,906 Kg**

Equivalent to **303,856** km travelled by a petrol car

100-125 KTL three-phase photovoltaic **inverter**

CO_2 EMITTED during production **7,054 Kg**

CO_2 PAYBACK TIME **30 Days**

CO_2 SAVED* **1,653,990 Kg**

Equivalent to **9,682,414** km travelled by a petrol car

5000-20000 ZCS three-phase hybrid **inverter** & ZCS Azzurro HV battery

CO_2 EMITTED during production **2,625 Kg**

CO_2 PAYBACK TIME **5 MTHS**

CO_2 SAVED* **144,183 Kg**

Equivalent to **159,175** km travelled by a petrol car

* Emissions prevented throughout the lifetime of the system. The calculation excludes emissions generated by the production of power by photovoltaic panels.

Smart solutions for a sustainable world

With a foundation built on extensive experience and smart technologies, ZCS provides solutions for residential, commercial and industrial applications that enable continuous system monitoring for optimised performance, with a focus on enhancing energy efficiency and sustainability.

ZCS Azzurro also provides a comprehensive range of consultancy and support services. From the initial design phase to after-sales assistance, the company ensures a consistently high level of performance and guides users throughout their new energy transition journey.

RELIABLE
High-quality components and 5 or 10 year ZCS warranty

USER-FRIENDLY
Thanks to the multifunction graphic display

SIMPLE
Quick installation and configuration

Inverter di stringa **monofase**

The **ZCS Azzurro single-phase inverters** are the ideal solution for small photovoltaic systems in residential or commercial buildings. Available in sizes from 1 to 6 kW, they are small, easy to manage and easy to install. The wide range of input makes them easy to configure and suitable for any type of need, both for new installations and for retrofitting existing ones. The alphanumeric display allows you to consult the inverter data, while Wi-Fi connectivity allows remote monitoring anytime and anywhere.

ZCS AZZURRO TECHNOLOGY

› Performance optimisation
› Wi-Fi integration on ZCS platform for stable, effective and intelligent connectivity

MAXIMUM ENERGY YIELD

› Stable efficiency in all working conditions
› Rapid and accurate MPPT algorithm

FLEXIBLE, COST-EFFECTIVE AND EASY-TO-INSTALL SOLUTION

› Protection class of IP65
› “Plug & Play” AC and DC connections
› Wireless communication with integrated Web Server
› ENEL Autotest in standard or fast versions
› Updates and diagnostics via USB

RELIABILITY STRENGTH AND FLEXIBILITY

› Rust-proof, corrosion-proof and UV-proof aluminium exterior casing
› Natural ventilation cooling
› Fast and flexible management of function parameters
› Simple and user-friendly monitoring

SMART GRID MANAGEMENT

› Dynamic management of grid feed-in
› “Zero Grid Feed-in” functionality *
› Remote control of the deliverable active/reactive power limit

* Possible with the use of a current sensor (ZST-ACC-TA)

IDEAL FOR RETROFITTING

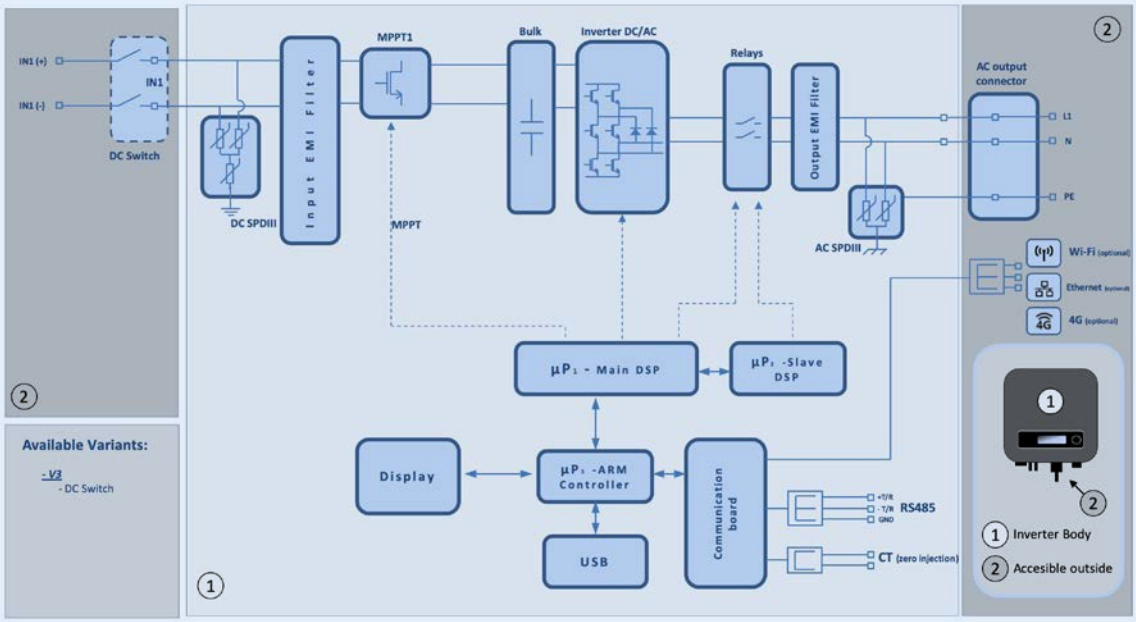
› Compact size
› Simple and user-friendly installation and configuration

1PH 1100TL-V3/1PH 3300TL-V3

Single-phase string inverter

- Maximum yield 97.7%
- Single MPPT channel
- Fast and safe installation with all required parts included
- Ultra compact
- 5 or 10 year ZCS warranty
- Wide input operating range from 50V to 550V

BLOCK DIAGRAM



TECHNICAL DATA	1PH 1100TL-V3	1PH 1600TL-V3	1PH 2200TL-V3	1PH 2700TL-V3	1PH 3000TL-V3	1PH 3300TL-V3
DC Input data						
Typical DC power*	1210W	1760W	2420W	2970W	3300W	3630W
No. of independent MPPTs / No. of strings per MPPT	1/1					
Maximum DC input voltage	500V				550V	
Start-up voltage	70V					
Nominal DC input voltage	360V					
MPPT DC voltage range	50V-500V				50V-550V	
DC voltage range at full load	110V-450V	150V-450V	200V-450V	250V-500V	275V-500V	300V-500V
Maximum input current for each MPPT	12A					
Maximum absolute current for each MPPT	15A					
AC Output data						
Rated AC power	1100W	1600W	2200W	2700W	3000W	3300W
Maximum AC power	1100VA	1600VA	2200VA	2700VA	3000VA	3300VA
Maximum AC current	5.3A	7.7A	10.6A	13A	14.5A	16A
Connection type/Rated grid voltage	Single-phase L/N/PE / 220V,230V,240V					
Grid voltage range	180V~276V (according to the local grid standards)					
Rated grid frequency	50Hz/60Hz					
Grid frequency range	45Hz~55Hz / 54Hz~66Hz (according to the local grid standards)					
Total harmonic distortion	<3%					
Power factor	1 (programmable +/-0.8)					
Active power adjustment range (settable)	0~100%					
Grid feed-in limit	Feed adjustable from zero to nominal power value**					
Efficiency						
Maximum efficiency	97.5%				97.7%	
Weighted efficiency (EURO)	96.9%				97.2%	
MPPT efficiency	>99.9%					
Consumption at night	<1W					
Protections						
Internal interface protection	Yes					
Safety protections	Anti-islanding, RCMU, Ground Fault Monitoring					
Reverse polarity protection DC	Yes					
DC circuit breaker	Integrated					
Overheating protection	Yes					
Overvoltage category/Protection class	Overvoltage Category III / Protection class I					
Integrated dischargers	AC/DC MOV: Type 3 standard					
Standard						
EMC	EN 61000-6-1/3, EN 61000-3-2/3					
Safety standard	IEC 62116, IEC 61727, IEC 61683, IEC 60068-1/2/14/30, IEC 62109-1/2					
Grid connection standard	Connection certificates and standards available at www.zcsazzurro.com					
Communication						
Communication interfaces	Wi-Fi/4G/Ethernet (optional), RS485 (proprietary protocol), USB					
Additional inputs or connections	Input for current sensor connection					
General data						
Allowable ambient temperature range	-30°C...+60°C (power limit above 45°C)					
Topology	Transformerless					
Environmental protection class	IP65					
Allowable relative humidity range	0%.....95% non-condensing					
Maximum operating altitude	4000m					
Noise level	< 25dB @ 1mt					
Weight	5.5 kg				6.3 kg	
Cooling	Forced fan convection					
Dimensions (H x L x D)	303mmx260.5mmx118mm				321mmx260mmx131.5mm	
Data monitoring	LCD Display + APP					
Warranty	5 or 10 years (NB: the extended warranty can be obtained by registering on the EXTENDED WARRANTY section of the zcsazzurro.com website)					

* The typical DC power does not represent a maximum applicable power limit. The online configurator available at www.zcsazzurro.com will provide any applicable configurations.
** Possible by connecting a current sensor (ZST-ACC-TA) or using a specific meter

1PH 3000TLM-V3/1PH 6000TLM-V3

Single-phase string inverter

- Maximum yield 98.4%
- Dual MPPT channel
- Fast and safe installation with all required parts included
- Ultra compact
- 5 or 10 year ZCS warranty
- Wide input operating range from 80V to 550V

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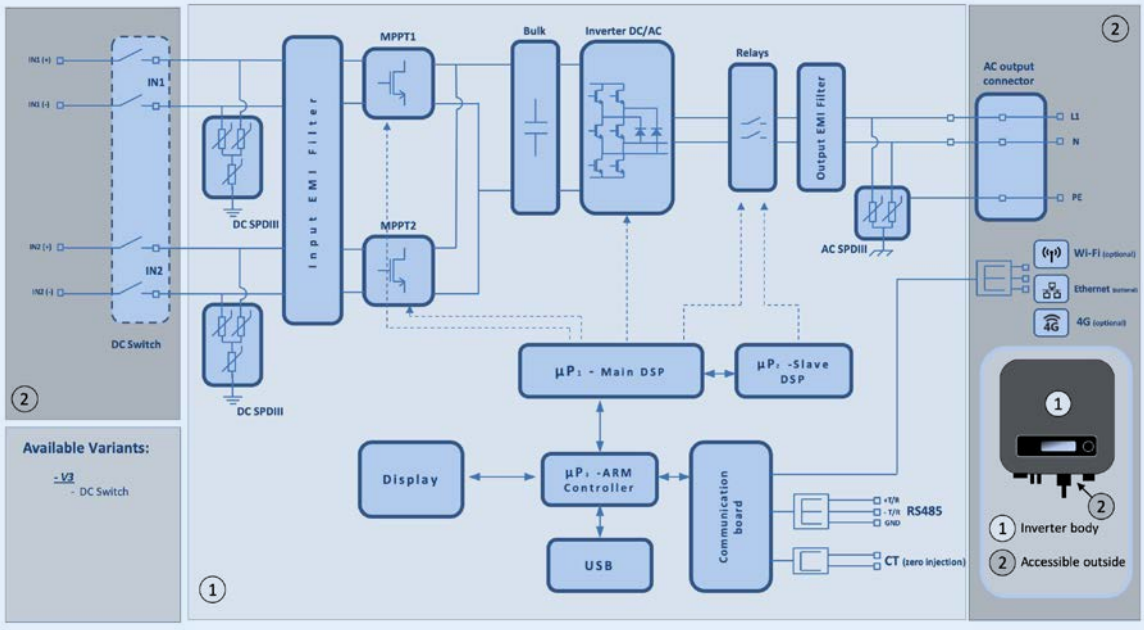
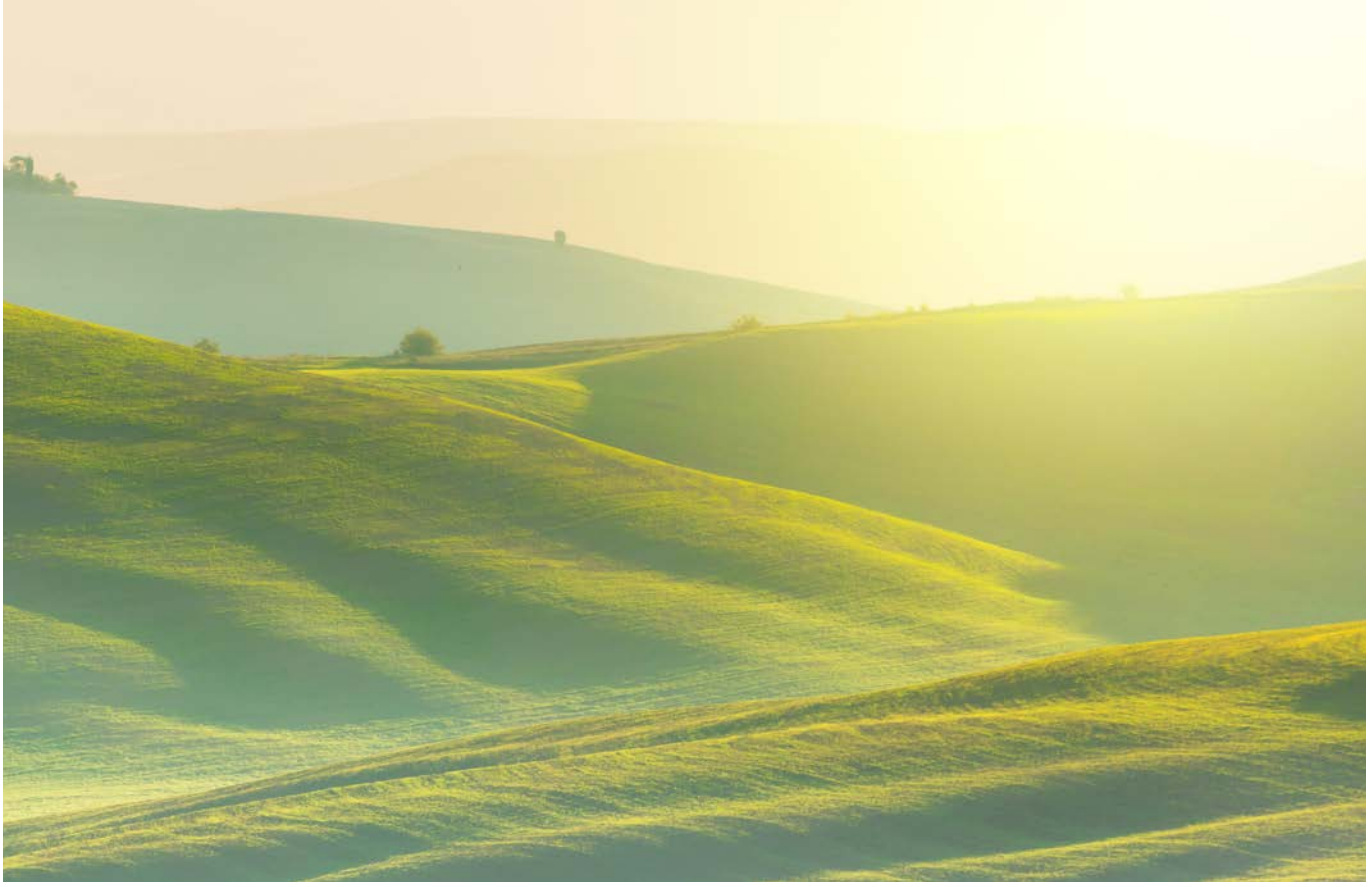
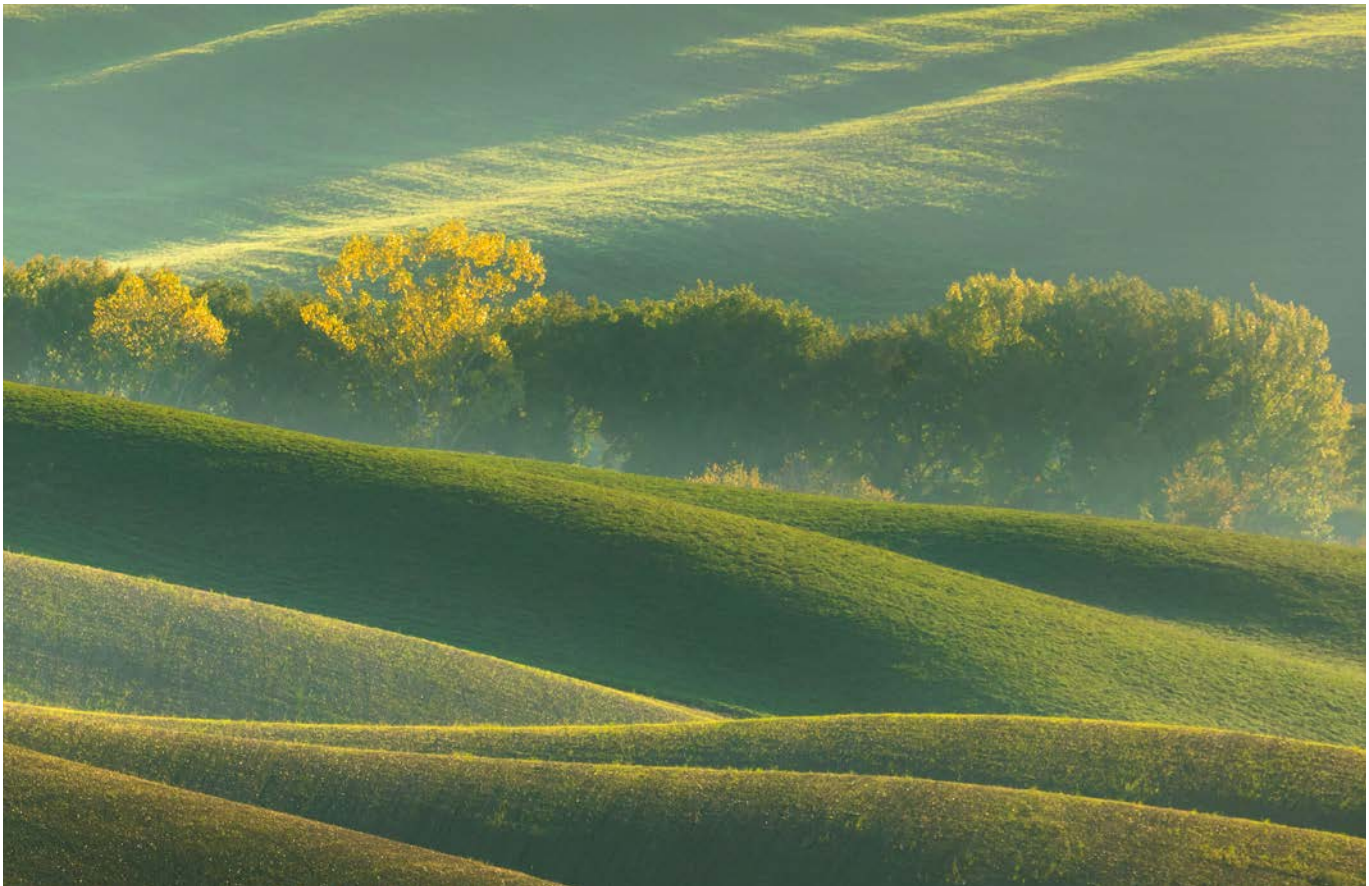


TECHNICAL DATA	1PH 3000-TLM-V3	1PH 3680-TLM-V3	1PH 4000-TLM-V3	1PH 4600-TLM-V3	1PH 5000-TLM-V3	1PH 6000-TLM-V3
DC Input data						
Typical DC power*	3300W	4048W	4400W	5060W	5500W	6600W
Maximum power for channel	3000W (200V-500V)		3500W (230V-500V)		3750W (250V-500V)	4500W (300V-500V)
No. of independent MPPTs / No. of strings per MPPT	2/1					
Maximum DC input voltage	600V					
Start-up voltage	90V					
Nominal DC input voltage	380V					
MPPT DC voltage range	80V-550V					
DC voltage range at full load	200V-500V				210V-500V	260V-500V
Maximum input current for each MPPT	15A/15A					
Maximum absolute current for each MPPT	22.5A/22.5A					
AC Output data						
Rated AC power	3000W	3680W	4000W	4600W	5000W	6000W
Maximum AC power	3300VA	3680VA	4400VA	4600VA	5500VA	6600VA
Maximum AC current	15A	16A	20A	23A	25A	29A
Connection type/Rated grid voltage	Single-phase L/N/PE / 220V,230V,240V					
Grid voltage range	180V~276V (according to the local grid standards)					
Rated grid frequency	50Hz/60Hz					
Grid frequency range	45Hz~55Hz / 54Hz~66Hz (according to the local grid standards)					
Total harmonic distortion	<3%					
Power factor	1 (programmable +/-0.8)					
Active power adjustment range (settable)	0~100%					
Grid feed-in limit	Feed-in adjustable from zero to nominal power value**					
Efficiency						
Maximum efficiency	98.2%				98.4%	
Weighted efficiency (EURO)	97.3%				97.5%	
MPPT efficiency	>99.9%					
Consumption at night	<1W					
Protections						
Internal interface protection	Yes					
Safety protections	Anti-islanding, RCMU, Ground Fault Monitoring					
Reverse polarity protection DC	Yes					
DC circuit breaker	Integrated					
Overheating protection	Yes					
Overvoltage category/Protection class	Overvoltage Category III / Protection class I					
Integrated dischargers	AC/DC MOV: Type 3 standard					
Standard						
EMC	EN 61000-6-2/3, EN 61000-3-2/3/11/12					
Safety standard	IEC 62116, IEC 61727, IEC 61683, IEC 60068-1/2/14/30, IEC 62109-1/2					
Grid connection standard	Connection certificates and standards available at www.zcsazzurro.com					
Communication						
Communication interfaces	Wi-Fi/4G/Ethernet (optional), RS485 (proprietary protocol), USB, Bluetooth					
Additional inputs or connections	Input for current sensor connection					
General data						
Allowable ambient temperature range	-30°C...+60°C (power limit above 45°C)					
Topology	Transformerless					
Environmental protection class	IP65					
Allowable relative humidity range	0%.....95% non-condensing					
Maximum operating altitude	4000m					
Noise level	< 25dB @ 1mt					
Weight	9.2 kg				10 kg	
Cooling	Natural convection					
Dimensions (H x L x D)	349mmx344mmx164mm					
Data monitoring	LCD Display + APP					
Warranty	5 or 10 years (NB: the extended warranty can be obtained by registering on th EXTENDED WARRANTY section of the zcsazzurro.com website)					

* The typical DC power does not represent a maximum applicable power limit. The online configurator available at www.zcsazzurro.com will provide any applicable configurations.
** Possible by connecting a current sensor (ZST-ACC-TA) or using a specific meter



AZZURRO ZCS



Three-phase string **inverter**

The **ZCS Azzurro three-phase inverters** are the best solution for medium-size photovoltaic systems to be installed in commercial and industrial buildings.
The advanced technology developed by ZCS makes the Azzurro three-phase inverters efficient, versatile and highly functional. Available in sizes from 3.3 to 350 kW, they are easy to configure, safe and robust and able to adapt to every type of need, for both new installations and retrofitting of existing ones.

ZCS AZZURRO TECHNOLOGY

› Performance optimisation
› Wi-Fi integration on ZCS platform for stable, effective and intelligent connectivity

MAXIMUM ENERGY YIELD

› Stable efficiency in all working conditions
› Rapid and accurate MPPT algorithm

FLEXIBLE, COST-EFFECTIVE AND EASY-TO-INSTALL SOLUTION

› Protection class of IP65
› Power Management Unit

RELIABILITY STRENGTH AND FLEXIBILITY

› Rust-proof, corrosion-proof and UV-proof aluminium exterior casing
› Flexible and user-friendly management of functional parameters
› Topology without transformer

SMART GRID MANAGEMENT

› Dynamic management of grid feed-in
› Remote control of the deliverable active/reactive power limit

IDEAL FOR RETROFITTING

› Compact size
› Simple and user-friendly installation and configuration

3PH 3.3KTL-V3/3PH 12KTL-V3

Three-phase string inverter

- Maximum yield 98.5%
- Dual input section with independent MPPTs
- Updates and diagnostics via USB
- 5 or 10 year ZCS warranty
- “Zero Grid Feed-in” functionality
- Possibility to manage reactive power
- Wide operating input range from 140V to 1000V also suitable for small-sized string systems

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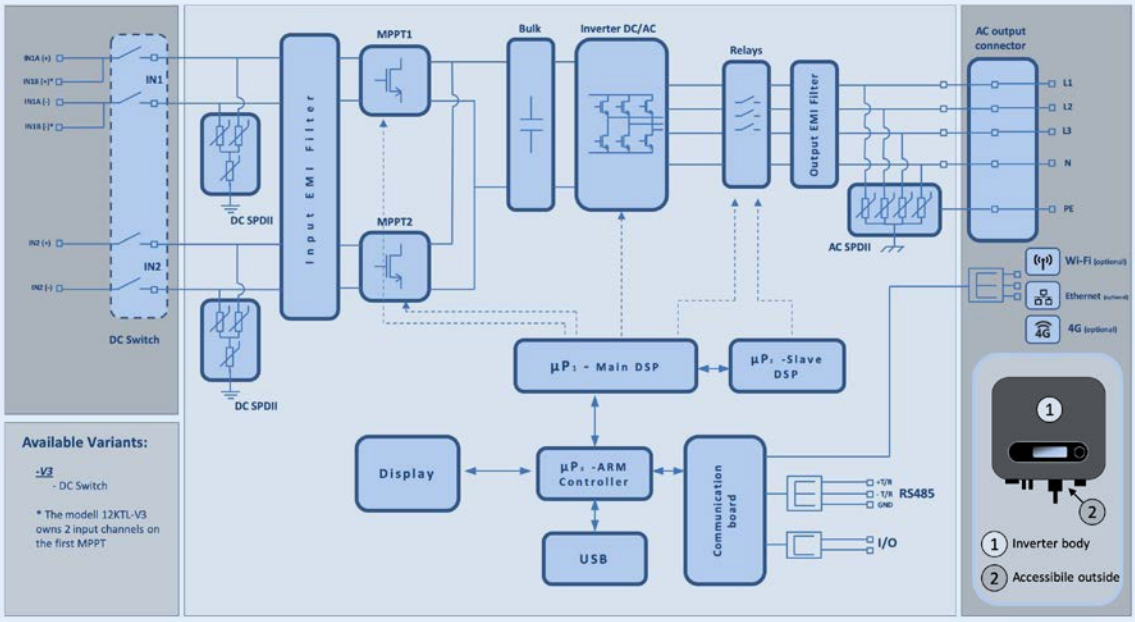

TECHNICAL DATA	3PH 3.3KTL-V3	3PH 4.4KTL-V3	3PH 5.5KTL-V3	3PH 6.6KTL-V3	3PH 8.8KTL-V3	3PH 11KTL-V3	3PH 12KTL-V3
DC Input data							
Typical DC power*	3960W	5280W	6600W	7920W	10560W	13200W	14400W
Maximum DC power per MPPT	3550W (320V-850V)	4500W (410V-850V)	5700W (520V-850V)	6250W (570V-850V)	6200W(560V-850V)		6850W (620V-850V)
No. of independent MPPTs / No. of strings per MPPT	2/1						2/(2/1)
Maximum DC input voltage	1100V						
Start-up voltage	160V						
Nominal DC input voltage	650V						
MPPT DC voltage range	140V-1000V						
DC voltage range at full load	160V-850V	190V-850V	240V-850V	290V-850V	380V-850V	420V-850V	420V-850V
Maximum input current per MPPT	15A/15A						30A/15A
Maximum absolute current per MPPT	22.5A/22.5A						45A/22.5A
AC Output data							
Rated AC power	3000W	4000W	5000W	6000W	8000W	10000W	12000W
Maximum AC power	3300VA	4400VA	5500VA	6600VA	8800VA	11000VA	13200VA
Maximum AC current per phase	5A	6.7A	8.3A	10A	13.3A	16.7A	20A
Connection type/Rated grid voltage	Three-phase 3PH/N/PE 220V/230V/240V (PH-N); 380V/400V/415V (PH-PH) o Three-phase 3PH/ PE 380V/400V/415V (PH-PH)						
Grid voltage range	184V~276V (PH-N); 310V~480V (PH-PH) (according to the local grid standards)						
Rated grid frequency	50Hz/60Hz						
Grid frequency range	45Hz~55Hz / 54Hz~66Hz (according to the local grid standards)						
Total harmonic distortion	<3%						
Power factor	1 (programmable +/-0.8)						
Active power adjustment range (settable)	0~100%						
Grid feed-in limit	Feed-in adjustable from zero to nominal power value**						
Efficiency							
Maximum efficiency	98.4%					98.5%	
Weighted efficiency (EURO)	97.5%					98%	
MPPT efficiency	>99.9%						
Consumption at night	<1W						
Protections							
Internal interface protection	Yes						No
Safety protections	Anti-islanding, RCMU, Ground Fault Monitoring						
Reverse polarity protection DC	Yes						
DC circuit breaker	Integrated						
Overheating protection	Yes						
Overvoltage category/Protection class	Overvoltage Category III / Protection class I						
Integrated dischargers	AC/DC MOV: Type 2 standard						
Standard							
EMC	EN 61000-6-1/2/3/4,						
Safety standard	IEC 62116, IEC 61727, IEC 61683, IEC 60068-1/2/14/30, IEC 62109-1/2						
Grid connection standard	Connection certificates and standards available at www.zcsazzurro.com						
Communication							
Communication interfaces	Wi-Fi/4G/Ethernet (optional), RS485 proprietary protocol) USB, Bluetooth						
General data							
Allowable ambient temperature range	-30°C...+60°C (power limit above 45°C)						
Topology	Transformerless						
Environmental protection class	IP65						
Allowable relative humidity range	0%.....95% non-condensing						
Maximum operating altitude	4000m						
Noise level	< 40dB @ 1mt						
Weight	17kg					18kg	
Cooling	Natural convection						
Dimensions (H x L x D)	430mmx385mmx182mm						
Data monitoring	LCD Display + APP						
Warranty	5 or 10 years (NB: the extended warranty can be obtained by registering on the EXTENDED WARRANTY section of the zcsazzurro.com website)						

* The typical DC power does not represent a maximum applicable power limit. The online configurator available at www.zcsazzurro.com will provide any applicable configurations.
** Possible by using a specific meter

3PH 15KTL-V3/3PH 24KTL-V3

Three-phase string inverter

- Maximum yield 98.6%
- Dual input section with independent MPPTs
- Updates and diagnostics via USB
- 5 or 10 year ZCS warranty
- “Zero Grid Feed-in” functionality
- Possibility to manage reactive power
- Wide operating input range from 140V to 1000V also suitable for small-sized string systems

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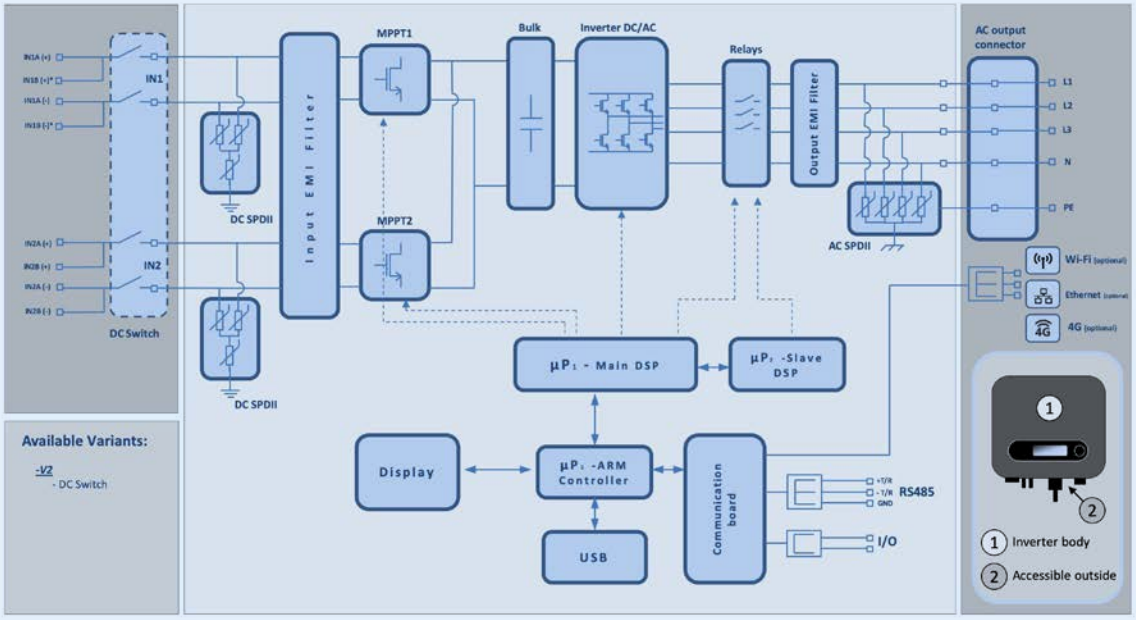

TECHNICAL DATA	3PH 15KTL-V3	3PH 17KTL-V3	3PH 20KTL-V3	3PH 22KTL-V3	3PH 24KTL-V3
DC Input data					
Typical DC power*	18000W	20400W	24000W	26400W	28800W
Maximum DC power for each MPPT	10000W (400V-850V)	12000W (460V-850V)	12000W (460V-850V)	15000W (580V-850V)	15000W (580V-850V)
No. of independent MPPTs / No. of strings per MPPT	2/2				
Maximum DC input voltage	1100V				
Start-up voltage	160V				
Nominal DC input voltage	650V				
MPPT DC voltage range	140V-1000V				
DC voltage range at full load	300V-850V	340V-850V	400V-850V	440V-850V	480V-850V
Maximum input current for each MPPT	26A/26A				
Maximum absolute current for each MPPT	36A/36A				
AC Output data					
Rated AC power	15000W	17000W	20000W	22000W	24000W
Maximum AC power	16500VA	18700VA	22000VA	24200VA	26400VA
Maximum AC current per phase	23.9A	27.1A	31.9A	35.1A	38.3
Connection type/Rated grid voltage	Three-phase 3PH/N/PE 220V/230V/240V (PH-N); 380V/400V/415V (PH-PH) o Three-phase 3PH/PE 380V/400V/415V (PH-PH)				
Grid voltage range	184V~276V (PH-N); 320V~480V (PH-PH) (according to the local grid standards)				
Rated grid frequency	50Hz/60Hz				
Grid frequency range	45Hz~55Hz / 54Hz~66Hz (according to the local grid standards)				
Total harmonic distortion	<3%				
Power factor	1 (programmable +/-0.8)				
Active power adjustment range (settable)	0~100%				
Grid feed-in limit	Feed-in adjustable from zero to nominal power value**				
Efficiency					
Maximum efficiency	98.6%				
Weighted efficiency (EURO)	98.2%				
MPPT efficiency	>99.9%				
Consumption at night	<1W				
Protections					
Internal interface protection	No				
Safety protections	Anti-islanding, RCMU, Ground Fault Monitoring				
Reverse polarity protection DC	Yes				
DC circuit breaker	Integrated				
Overheating protection	Yes				
Overvoltage category/Protection class	Overvoltage Category III / Protection class I				
Integrated dischargers	AC/DC MOV: Type 2 standard				
Standard					
EMC	EN 61000-6-1/2/3/4,				
Safety standard	IEC 62116, IEC 61727, IEC 61683, IEC 60068-1/2/14/30, IEC 62109-1/2				
Grid connection standard	Connection certificates and standards available at www.zcsazzurro.com				
Communication					
Communication interfaces	Wi-Fi/4G/Ethernet (optional), RS485 (proprietary protocol), USB, Bluetooth				
General data					
Allowable ambient temperature range	-30°C...+60°C (power limit above 45°C)				
Topology	Transformerless				
Environmental protection class	IP65				
Allowable relative humidity range	0%.....95% non-condensing				
Maximum operating altitude	4000m				
Noise level	< 40dB @ 1mt				
Weight	20 kg	22 kg			23 kg
Cooling	Natural convection	Forced fan convection			
Dimensions (H x L x D)	430mmx520mmx189mm				
Data monitoring	LCD Display + APP				
Warranty	5 or 10 years (NB: the extended warranty can be obtained by registering on the EXTENDED WARRANTY section of the zcsazzurro.com website)				

* The typical DC power does not represent a maximum applicable power limit. The online configurator available at www.zcsazzurro.com will provide any applicable configurations.
** Possible by using a specific meter

3PH 25KTL-V3/3PH 50KTL-V3

Three-phase string inverter

- Maximum yield 98.8%
- Up to 4 independent MPPTs
- Updates and diagnostics via USB
- 5 or 10 year ZCS warranty
- “Zero Grid Feed-in” functionality
- Possibility to manage reactive power
- Wide operating input range from 180V to 1000V

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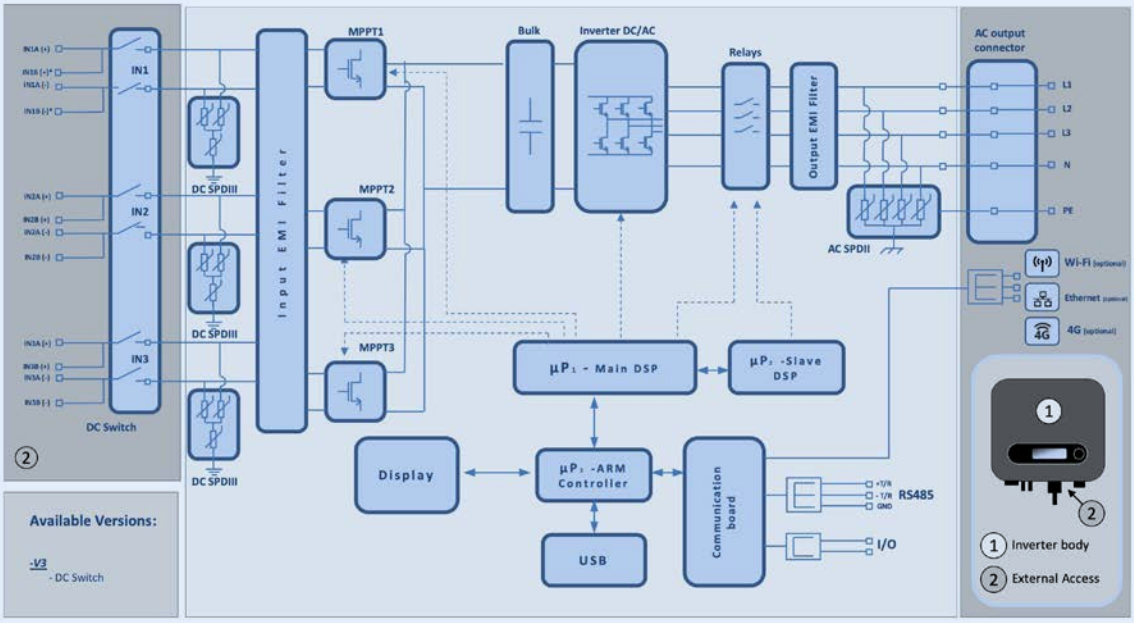


TECHNICAL DATA	3PH 25KTL-V3	3PH 30KTL-V3	3PH 33KTL-V3	3PH 36KTL-V3	3PH 40KTL-V3	3PH 45KTL-V3	3PH 50KTL-V3
DC Input data							
Typical DC power*	30000W	36000W	39600W	43200W	48000W	54000W	60000W
Maximum DC power for each MPPT	25000(625V-850V)						
No. of independent MPPTs/N.o of strings per MPPT	3/2					4/2	
Maximum DC input voltage	1100V						
Start-up voltage	200V						
Nominal DC input voltage	620V						
MPPT DC voltage range	180V-1000V						
DC voltage range at full load	480V-850V		510V-850V	540V-850V	480V-850V	510V-850V	540V-850V
Maximum input current for each MPPT	40A/40A/40A					40A/40A/40A/40A	
Maximum absolute current for each MPPT	50A/50A/50A					50A/50A/50A/50A	
AC Output data							
Rated AC power	25000W	30000W	33000W	36000W	40000W	45000W	50000W
Maximum AC power	28000VA	34000VA	37000VA	40000VA	44000VA	50000VA	55000VA
Maximum AC current per phase	42.4A	51.5A	56A	60.6A	66.7A	75.8A	83.3A
Connection type/Rated grid voltage	Three-phase 3PH/N/PE 220V/230V/240V (PH-N); 380V/400V/415V (PH-PH) or Three- phase 3PH/PE 380V/400V/415V (PH-PH)						
Grid voltage range	184V~276V (PH-N); 310V~480V (PH-PH) (according to the local grid standards)						
Rated grid frequency	50Hz/60Hz						
Grid frequency range	45Hz~55Hz / 54Hz~66Hz (according to the local grid standards)						
Total harmonic distortion	<3%						
Power factor	1 (programmable +/-0.8)						
Active power adjustment range (settable)	0~100%						
Grid feed-in limit	Feed adjustable from zero to nominal power value**						
Efficiency							
Maximum efficiency	98.6%					98.8%	
Weighted efficiency (EURO)	98.2%						
MPPT efficiency	>99.9%						
Consumption at night	<3W						
Protection							
Internal interface protection	No						
Safety protections	Anti-islanding, RCMU, Ground Fault Monitoring						
Reverse polarity protection DC	Yes						
DC circuit breaker	Integrated						
Overheating protection	Yes						
Overvoltage category/Protection class	Overvoltage Category III / Protection class I						
Integrated dischargers	AC/DC MOV: Type 2 standard						
Standard							
EMC	EN 61000-6-1/2/3/4,						
Safety standard	IEC 62116, IEC 61727, IEC 61683, IEC 60068-1/2/14/30, IEC 62109-1/2						
Grid connectio standard	Connection certificates and standards available at www.zcsazzurro.com						
Communication							
Communication interfaces	Wi-Fi/4G/Ethernet (optional), RS485 (proprietary protocol), USB, Bluetooth						
General data							
Allowable ambient temperature range	-30°C...+60°C (power limit above 45°C)						
Topology	Transformerless						
Environmental protection class	IP65						
Allowable relative humidity range	0%.....95% non-condensing						
Maximum operating altitude	4000m						
Noise level	< 60dB @ 1mt						
Weight	36 kg					37 kg	
Cooling	Forced fan convection						
Dimensions (H x L x D)	480mmx585mmx220mm						
Data monitoring	LCD Display + APP						
Warranty	5 or 10 years (NB: the extended warranty can be obtained by registering on the EXTENDED WARRANTY section of the zcsazzurro.com website)						

* The typical DC power does not represent a maximum applicable power limit. The online configurator available at www.zcsazzurro.com will provide any applicable configurations
** Possible using specific meter

3PH 60KTL-V3/3PH 80KTL-V3

Three-phase string inverter

- Maximum yield 98.7%
- Up to 6 independent MPPTs
- Updates and diagnostics via USB
- 5 or 10 year ZCS warranty
- “Zero Grid Feed-in” functionality
- Possibility to manage reactive power
- Wide operating input range from 180V to 1000V

TECHNICAL DATA	3PH 60KTL-V3	3PH 80JKTL-V3
DC Input data		
Typical DC power*	72000W	96000W
Maximum DC power for each MPPT	18000W (550V-850V)	24000W (550V-850V)
No. of independent MPPTs/N.o of strings per MPPT	6/2	
Maximum DC input voltage	1100V	
Start-up voltage	200V	
Nominal DC input voltage	620V	
MPPT DC voltage range	180V-1000V	
DC voltage range at full load	550V-850V	
Maximum input current for each MPPT	32A	40A
Maximum absolute current for each MPPT	50A	60A
AC Output data		
Rated AC power	60kW	80kW
Maximum AC power	66kVA	88kVA
Maximum AC current per phase	100A	133.3A
Connection type/Rated grid voltage	Three-phase 3PH/N/PE 220V/230V/240V (PH-N); 380V/400V/415V (PH-PH) o Three-phase 3PH/PE 380V/400V/415V (PH-PH)	
Grid voltage range	184V~276V (PH-N); 320V~480V (PH-PH) (according to the local grid standards)	
Rated grid frequency	50Hz/60Hz	
Grid frequency range	45Hz~55Hz / 54Hz~66Hz (according to the local grid standards)	
Total harmonic distortion	<3%	
Power factor	1 (programmable +/-0.8)	
Active power adjustment range (settable)	0~100%	
Grid feed-in limit	Feed adjustable from zero to nominal power value**	
Efficiency		
Maximum efficiency	98.7%	
Weighted efficiency (EURO)	98.2%	
MPPT efficiency	>99.9%	
Consumption at night	<2W	
Protection		
Internal interface protection	No	
Safety protections	Anti-islanding, RCMU, Ground Fault Monitoring	
Reverse polarity protection DC	Yes	
DC circuit breaker	Integrated	
Overheating protection	Yes	
Overvoltage category/Protection class	Overvoltage category III / Protection class I	
Integrated dischargers	AC/DC: Type 2 standard	
Standard		
EMC	EN 61000-6-2/4, EN 61000-3-11/12	
Safety standard	IEC 62109-1/2, IEC62116, IEC61727, IEC61683, IEC60068(1,2,14,30)	
Grid connectio standard	Connection certificates and standards available at www.zcsazzurro.com	
Communication		
Communication interfaces	Wi-Fi/4G/Ethernet (optional), RS485 (proprietary protocol), USB, Bluetooth	
General data		
Allowable ambient temperature range	-30°C...+60°C (power limit above 45°C)	
Topology	Transformerless	
Environmental protection class	IP66	
Allowable relative humidity range	0%.....95% non-condensing	
Maximum operating altitude	4000m	
Noise level	< 60dB @ 1mt	
Weight	50 kg	
Cooling	Forced fan convection	
Dimensions (H x L x D)	561mmx687mmx275mm	
Data monitoring	LCD Display + APP	
Warranty	5 or 10 years (NB: the extended warranty can be obtained by registering on the EXTENDED WARRANTY section of the zcsazzurro.com website)	

* The typical DC power does not represent a maximum applicable power limit. The online configurator available at www.zcsazzurro.com will provide any applicable configurations
** Possible using specific meter

3PH 100KTL-V4/110KTL-V4

Three-phase string inverter

- Maximum yield 98,6%
- Protection class of IP66
- Integrated Arc Fault Circuit Interruption and String Fault Monitoring
- Forced convection with speed-controlled cooling
- PID Recovery function available
- Class II surge protection devices (AC and DC)
- 5 or 10 year ZCS warranty
- 180V to 1000v operating range and up to 10 independent MPPT channels for enhanced configuration flexibility

TECHNICAL DATA	3PH 100KTL-V4	3PH 110KTL-V4
DC Input data		
Typical DC power*	120000W	132000W
Maximum DC power for each MPPT	20000W	
No. of independent MPPTs / No. of strings per MPPT	10/2	
Maximum DC input voltage	1100V	
Start-up voltage	200V	
Nominal DC input voltage	625V	
MPPT DC voltage range	180V-1000V	
DC voltage range at full load	500V-850V	
Maximum input current for each MPPT	40A	
Maximum absolute current for each MPPT	50A	
AC Output data		
Rated AC power	100kW	110kW
Maximum AC power	110kVA	125kVA
Maximum AC current per phase	160A	181A
Connection type/Rated grid voltage	Three-phase 3PH/N/PE 220V/230V/240V (PH-N); 380V/400V/415V (PH-PH) or Three-phase 3PH/PE 380V/400V/415V (PH-PH)	
Grid voltage range	179V~276V (PH-N); 310V~480V (PH-PH) (according to the local grid standards)	
Rated grid frequency	50Hz/60Hz	
Grid frequency range	45Hz~55Hz / 55Hz~65Hz (according to the local grid standards)	
Total harmonic distortion	<3%	
Power factor	1 (Programmable +/-0.8)	
Active power adjustment range (settable)	0~100%	
Grid feed-in limit	Feed-in adjustable from zero to nominal power value**	
Efficiency		
Maximum efficiency	98.6%	
Weighted efficiency (EURO)	98.3%	
MPPT efficiency	>99.9%	
Consumption at night	<1W	
Protections		
Internal interface protection	No	
Safety protections	Anti islanding, RCMU, Ground Fault Monitoring,	
Enabled safety protections	Arc Fault Circuit Interruption, PID Recovery	
Reverse polarity protection DC	Yes	
DC circuit breaker	Integrated	
Overheating protection	Yes	
Overvoltage category/Protection class	Overvoltage category III / Protection class I	
Integrated dischargers	AC/DC: Type 2 Standard	
Standard		
EMC	EN 61000-6-2/4, EN 61000-3-11/12	
Safety standard	IEC 62109-1/2	
Grid connection standard	Connection certificates and standards available on www.zcsazzurro.com	
Communication		
Communication interface (optional)	Wi-Fi/4G/Ethernet (optional), RS485 (proprietary protocol), USB, Bluetooth	
General data		
Allowable ambient temperature range	-30°C...+60°C (power limit above 45°C)	
Topology	Transformerless	
Environmental protection class	IP66	
Allowable relative humidity range	0%.....100%	
Maximum operating altitude	4000m	
Noise level	< 60dB @ 1mt	
Weight	75 kg	
Cooling	Forced fan convection	
Dimensions (H x L x D)	695 mm x 970mm x 325 mm	
Data monitoring	LCD Display + APP	
Warranty	5 or 10 years (NB: the extended warranty can be obtained by registering on the EXTENDED WARRANTY section of the zcsazzurro.com website)	

* The typical DC power does not represent a maximum applicable power limit. The online configurator available at www.zcsazzurro.com will provide any applicable configurations.
** Possible by using a specific meter

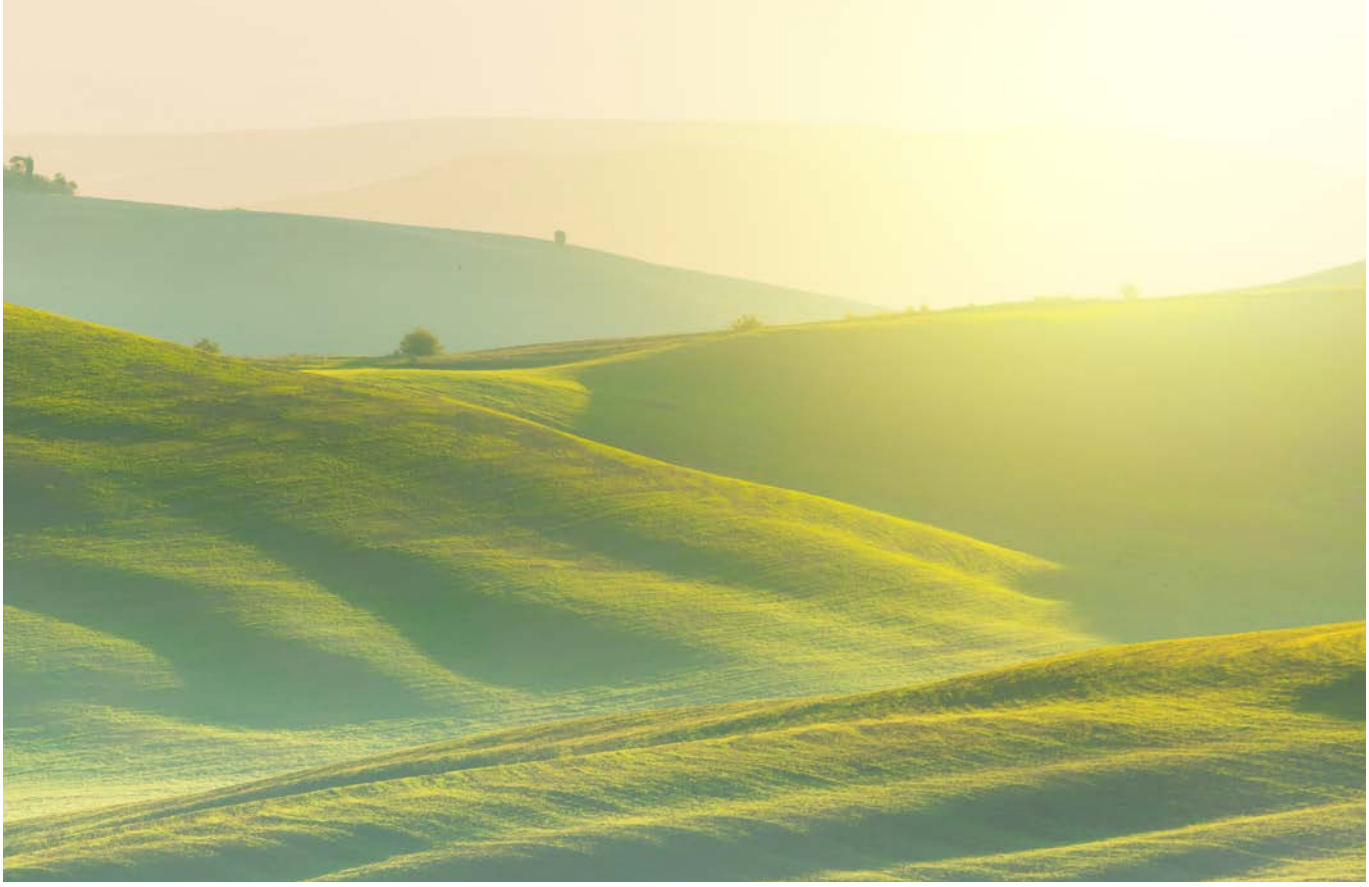
3PH 250KTL-HV Z0/3PH 350KTL-HV Z0

Three-phase string inverter

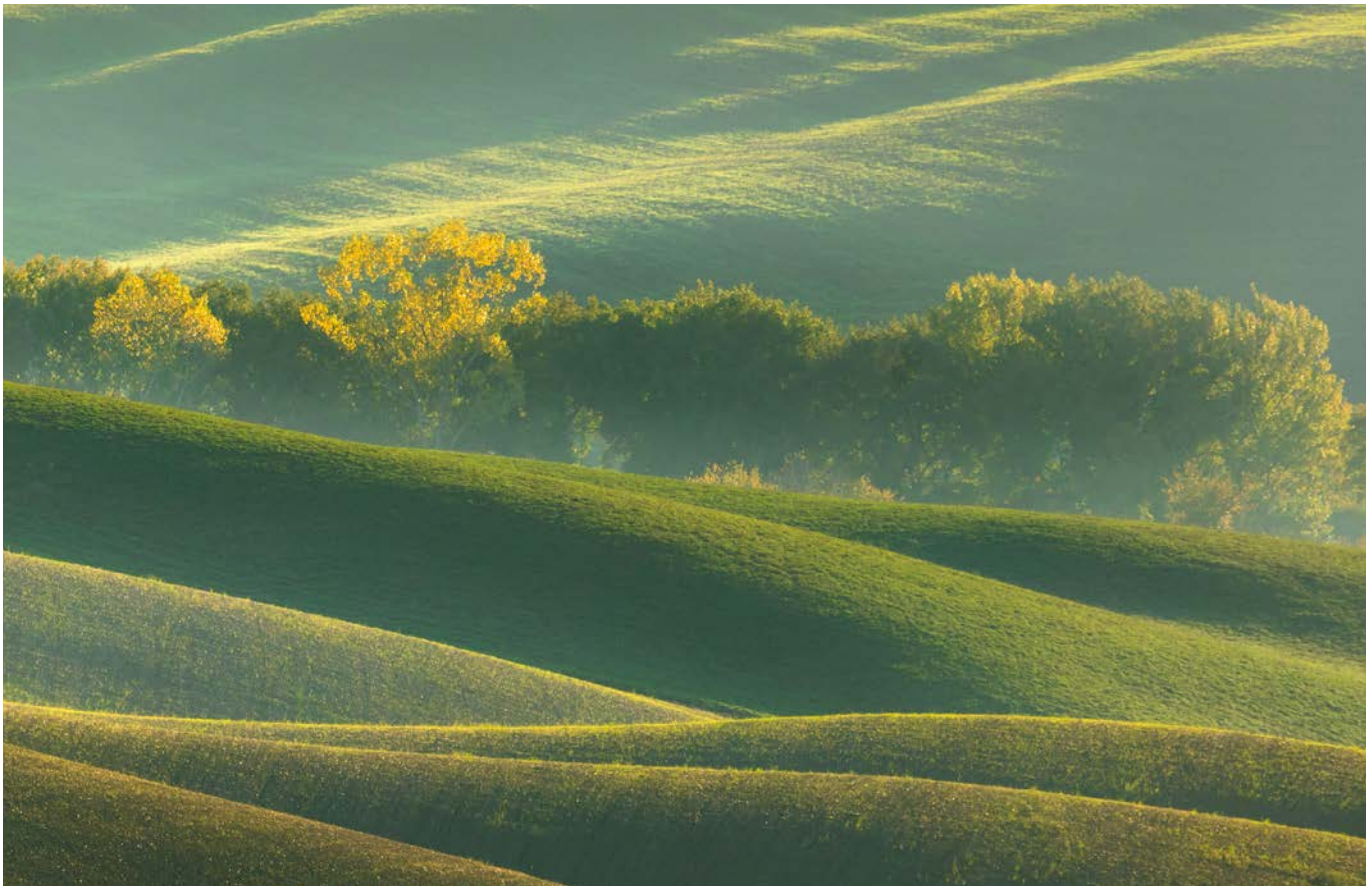
- Maximum yield 99%
- Protection class IP66
- Updates and diagnostics via USB
- Forced convection with cooling at controlled speed
- Overvoltage protection devices II (AC and DC)
- 5 or 10 year ZCS warranty
- Wide operating range from 500V to 1500V for increased flexibility in setup
- Up to 8 independent MPPT channels, for a total of 32 outputs

TECHNICAL DATA	AZZURRO 3PH 250KTL-HV Z0	AZZURRO 3PH 330KTL-HV Z0	AZZURRO 3PH 350KTL-HV Z0
DC Input data			
Typical DC power*	300000W	390000W	420000W
Maximum DC power for each MPPT	72000W (860-1300V)		
Number of independent MPPTs/Number of strings per MPPT	6/4	8/4	
Maximum DC input voltage	1500V		
Start-up voltage	550V		
Rated DC input voltage	1160V		
MPPT DC voltage range	500V-1500V		
DC voltage range at full load	860-1300V		
Maximum input current for each MPPT	60A		
Maximum absolute current for each MPPT	100A		
AC Output data			
Rated AC power	250kW	330kW	350kW
Maximum AC power	250kVA	330kVA	350kVA
Maximum AC current per phase	180.5A	238.2A	256.6A
Connection type/Rated grid voltage	Three-phase 3PH/PE 800V (PH-PH)		
Grid voltage range	640V~920V (PH-PH) (according to the local grid standards)		
Rated grid frequency	50Hz/60Hz		
Grid frequency range	45Hz~55Hz / 54Hz~66Hz (according to the local grid standards)		
Total harmonic distortion	<3%		
Power factor	1 (Programmable +/-0.8)		
Active power adjustable range	0~100%		
Grid feed-in limit**	Feed-in adjustable from zero to nominal power value		
Efficiency			
Maximum efficiency	99.05%		
Weighted efficiency (EURO)	98.80%		
MPPT efficiency	>99.9%		
Consumption at night	<10W		
Protections			
Internal interface protection	No		
Safety protections	Anti islanding, RCMU, Ground Fault Monitoring		
Enabled safety protections	PID Recovery		
Reverse polarity protection DC	Yes		
Monitoring of string faults	Yes		
DC circuit breaker	Integrated		
Overheating protection	Yes		
Overvoltage category/Protection class	Overvoltage category III / Protection class I		
Integrated dischargers	AC/DC: Tipo 2 standard		
Standard			
EMC	EN 61000		
Safety standard	EN/IEC 62109-1/2, IEC 62116, IEC 61727, IEC 61683, IEC 60068-2-1/2/14/30, EN 50530, IEC 62910		
Grid connection standard	Connection certificates and standards available on www.zcsazzurro.com		
Communication			
Communication interface (optional)	Wi-Fi/4G/Ethernet (optional), RS485 (proprietary protocol), USB, Bluetooth		
General data			
Allowable ambient temperature range	-30°C...+60°C (power limit above 45°C)		
Topology	Transformerless		
Environmental protection class	IP66		
Allowable relative humidity range	0%.....100%		
Maximum operating altitude	4000m		
Noise level	< 60dB @ 1mt		
Weight	113 kg		
Cooling	Forced fan convection		
Dimensions (H x L x D)	828mm*1159mm *366mm		
Data monitoring	LED indicators + APP		
Warranty	5 or 10 years (NB: the extended warranty can be obtained by registering on the EXTENDED WARRANTY section of the zcsazzurro.com website)		

* The typical DC power does not represent a maximum applicable power limit. The online configurator available at www.zcsazzurro.com will provide any applicable configurations.
** Possible by using a specific meter



AZZURRO ZCS



Storage inverters

The **ZCS Azzurro Storage Inverters** are ideal for optimising energy independence in residential and commercial buildings. They are quick and easy to install and come with automatic configuration features.
There are two types of ZCS storage solutions: retrofit and hybrid. The first has a nominal power of 3 kW and a storage capacity of up to 25 kWh, and is designed for new installations and for retrofitting of existing ones. While the hybrid inverters have a nominal power from 3 kW to 6 kW single-phase and from 5 kW to 20 kW three-phase, ideal for new installations.
The entire range can also operate in stand-alone mode, ensuring continuity of power in the event of a power blackout.

SIMPLE AND RELIABLE

› LCD graphic display for local monitoring
› Remote monitoring system via APP for viewing consumption, PV production, energy stored and exchanges with the grid

EASY INSTALLATION

› Does not require changes or upgrades to the existing electrical system thanks to the use of an open-core current sensor

FLEXIBLE DISCHARGE SOLUTION

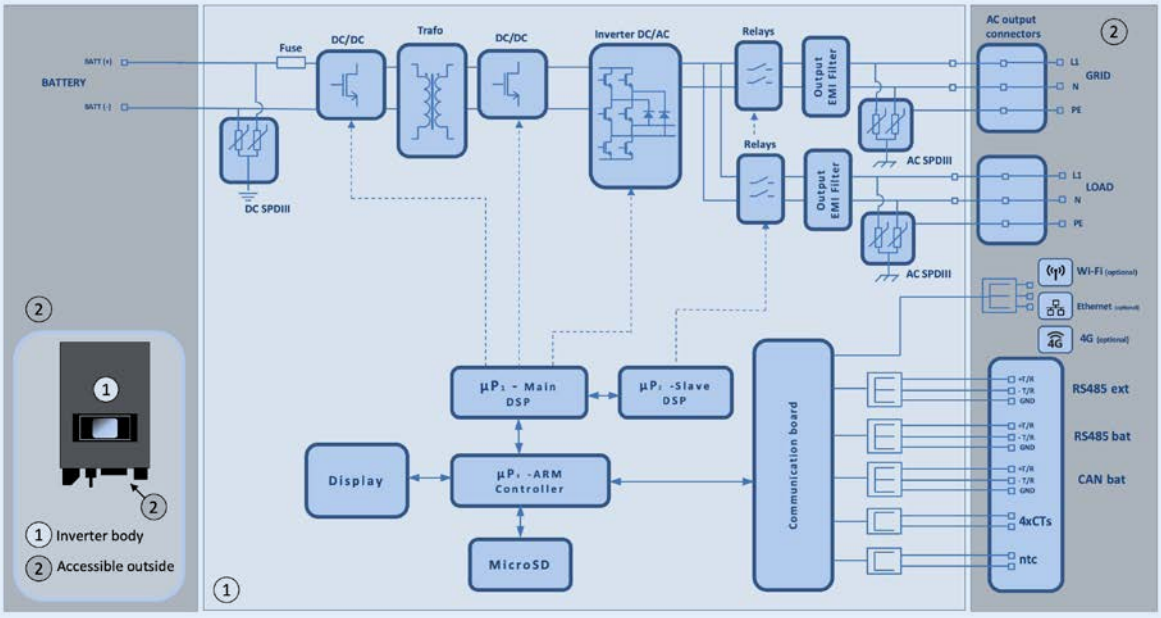
› Flexible charging/discharging management in accordance with local standards
› Maximisation of self-consumption above 80%

3000SP

Retrofit storage inverter

- System for retrofit application with energy exchange directly in AC
- Compatible with all existing inverters already connected to the grid
- Suitable for installing on both single-phase and three-phase systems
- Unit compatible with 48V lithium batteries
- Stand-Alone support mode guarantees continuity of operation in the event of a power failure through the Emergency Power Supply (EPS) function

BLOCK DIAGRAM



TECHNICAL DATA	3000SP
Battery connection data	
Type of compatible battery	Lithium-ion (supplied by Zucchetti)
Rated voltage	48V
Allowable voltage range	42V-58V
Maximum charge/discharge power	3000W
Allowable temperature range*	-10°C/+50°C
Maximum charge current	65A (programmable)
Maximum discharge current	65A (programmable)
Charge curve	Managed by the BMS
Depth of Discharge (DoD)	0%-90% (programmable)
AC input (grid side)	
Rated power	3000W
Maximum Power	3000VA
Maximum current	13A
Connection type/Rated voltage	Single-phase L/N/PE 220,230,240V
AC voltage range	180V-276V (according to the local standards)
Rated frequency	50Hz/60Hz
AC frequency range	44Hz-55Hz / 54Hz-66Hz (according to the local standards)
Total harmonic distortion	< 3%
Power factor	1 default (programmable +/- 0.8)
EPS Output (Emergency Power Supply)	
Maximum power supplied in EPS mode**	3000VA
EPS output voltage and frequency	Single-phase 230V 50Hz/60Hz
Current supplied in EPS mode	13A
Apparent peak power in EPS mode	4000VA per 10s
Total harmonic distortion	< 3%
Switch time	< 3s (programmable from display)
Efficiency	
Maximum battery charge efficiency	>95%
Maximum battery discharge efficiency	>95%
Consumption in stand-by	< 5W
Protections	
Internal interface protection	Yes
Safety protections	Anti-islanding, RCMU, Ground Fault Monitoring
Overheating protection	Yes
Overvoltage category/Protection class	Overvoltage Category III / Protection class I
Integrated dischargers	AC MOV: Type 3 standard
Battery soft start	Yes
Standard	
EMC	EN 61000-6-1/2/3/4, EN 61000-6-2/3
Safety standard	IEC 62116, IEC 61727, IEC 61683, IEC 60068-1/2/14/30, IEC 62109-1/2
Grid connection standard	Connection certificates and standards available at www.zcsazzurro.com
Communication	
Communication interfaces	Wi-Fi/4G/Ethernet (optional), RS485 (proprietary protocol), SD card, CAN 2.0 (for battery connection)
Additional inputs or connections	Input for DC current sensor connection + 3 inputs for AC current sensor connection
Data storage on SD	25 years
General data	
Allowable ambient temperature range	-30°C...+60°C (power limit above 45°C)
Topology	High-frequency isolation battery output
Environmental protection class	IP65
Allowable relative humidity range	0%.....95% non-condensing
Maximum operating altitude	2000m
Noise level	< 25dB @ 1mt
Weight	16kg
Cooling	Natural convection
Dimensions (H x L x D)	543.2mmx358mmx171.7mm
Data monitoring	LCD Display + APP
Warranty	5 or 10 years (NB: the extended warranty can be obtained by registering on th EXTENDED WARRANTY section of the zcsazzurro.com website)

* Standard value for lithium batteries; maximum operating range between +10°C/+40°C
** Power output in EPS mode depends on the type of batteries and the status of the system (e.g. residual capacity, temperature)

1PH HYD 3000 ZSS HP/1PH HYD 6000 ZSS HP

Hp series single-phase hybrid inverter

- Automatic management of the energy flows from the photovoltaic system, battery and grid
- On-board Energy Meter
- Parallel-ready
- Possibility of operation in zero grid feed-in mode
- Unit compatible with 48V lithium batteries
- Stand-Alone support mode guarantees continuity of operation and “island” operation, both from the photovoltaic source and battery in the event of power failure.
- Maximum charge/discharge power 5000W

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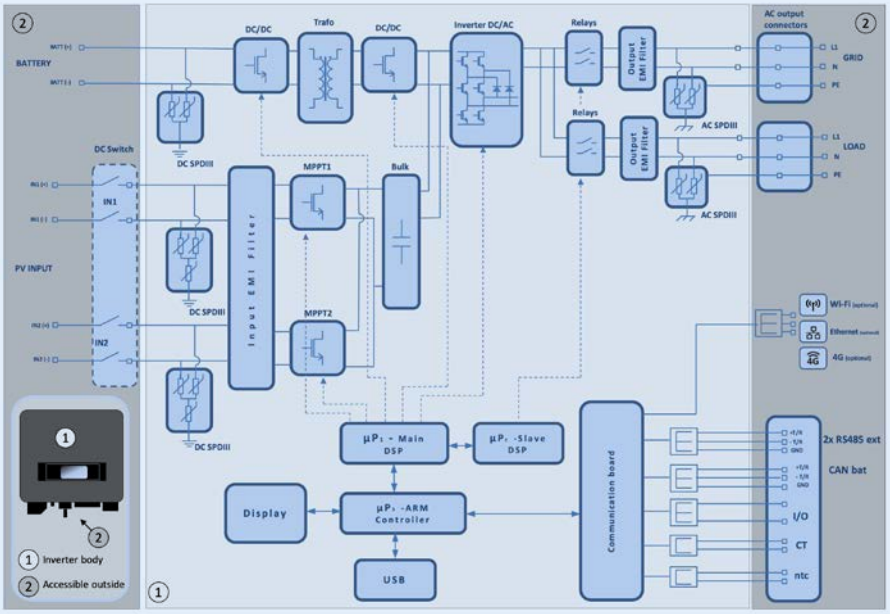
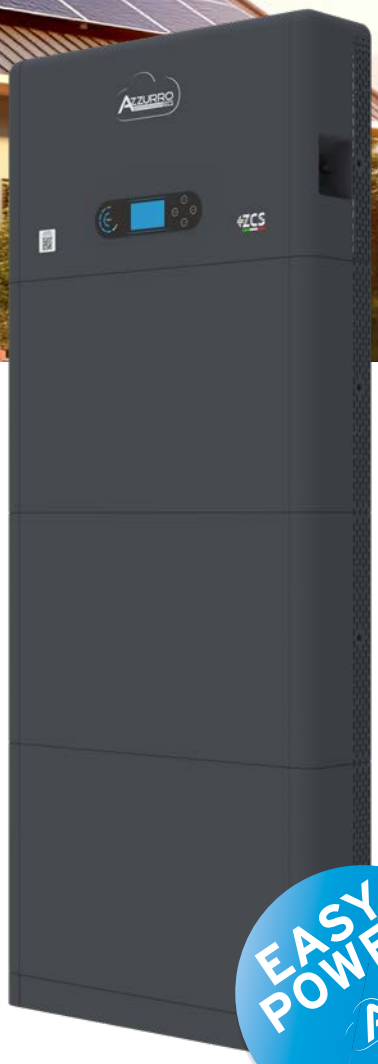


TECHNICAL DATA	1PH HYD 3000 ZSS HP	1PH HYD 3600 ZSS HP	1PH HYD 4000 ZSS HP	1PH HYD 4600 ZSS HP	1PH HYD 5000 ZSS HP	1PH HYD 6000 ZSS HP
DC input data (photovoltaic)						
Typical DC power*	4500W	5400W	6000W	6900	7500W	9000W
Maximum DC power for each MPPT	3500W (270V-520V)				3750W (300V-520V)	
No. of independent MPPTs / No. of strings per MPPT	2/1					
Maximum input voltage	600V					
Start-up voltage	100V					
Rated Input voltage	360V					
MPPT DC voltage range	90V-550V					
DC voltage range at full load	160V-500V	180V-500V	200V-500V	230V-500V	250V-500V	300V-500V
Maximum input current for each MPPT	13A/13A					
Maximum absolute current for each MPPT	18A/18A					
Battery connection data						
Type of compatible battery	Lithium-ion (supplied by Zucchetti)					
Rated voltage	48V					
Allowable voltage range	42V-58V					
Maximum charge/discharge power**	3750W	4000W	4250W		5000W	
Allowable temperature range***	-10°C/+50°C					
Maximum charge current	75A (programmable)	80A (programmable)	85A (programmable)		100A (programmable)	
Maximum discharge current	75A (programmable)	80A (programmable)	85A (programmable)		100A (programmable)	
Charge curve	Managed by the BMS					
Depth of Discharge (DoD)	0%-90% (programmable)					
AC output (grid side)						
Rated power	3000W	3680W	4000W	4600W	5000W	6000W
Maximum Power	3300VA	3680VA	4400VA	4600VA	5500VA	6000VA
Maximum current	15A	16A	20A	20.9A	25 A	27.3A
Connection type/Rated voltage	Single-phase L/N/PE 220,230,240V					
AC voltage range	180V-276V (according to the local standards)					
Rated frequency	50Hz/60Hz					
AC frequency range	44Hz-55Hz / 54Hz-66Hz (according to the local standards)					
Total harmonic distortion	< 3%					
Power factor	1 default (programmable +/- 0.8)					
Grid feed-in limit	Programmable from display					
EPS Output (Emergency Power Supply)						
Maximum power supplied in EPS mode****	3000VA (3600VA per 60s)	3680VA (4400VA per 60s)	4000VA (4800VA per 60s)	4600VA (5520VA per 60s)	5000VA (6000VA per 60s)	
EPS output voltage and frequency	Single-phase 230V 50Hz/60Hz					
Current supplied in EPS mode	13.6A	16A	18.2A	20.9A	22.7A	
Total harmonic distortion	< 3%					
Switch time	< 10ms					
Efficiency						
Maximum efficiency		97.6%			97.8%	98.0%
Weighted efficiency (EURO)		97.2%			97.3%	97.5%
MPPT efficiency	>99.9%					
Maximum battery charge/discharge efficiency	94.6%					
Consumption in stand-by	< 10W					
Protections						
Internal interface protection	Yes					
Safety protections	Anti-islanding, RCMU, Ground Fault Monitoring					
Reverse polarity protection DC	Yes					
DC circuit breaker	Integrated					
Overheating protection	Yes					
Overvoltage category/Protection class	Overvoltage Category III / Protection class I					
Integrated dischargers	AC/DC MOV: Type 3 standard					
Battery soft start	Yes					
Standard						
EMC	EN 61000-3-2/3/11/12, EN 61000-6-2/3					
Safety standard	IEC 62116, IEC 61727, IEC 61683, IEC 60068-1/2/14/30, IEC 62109-1/2					
Grid connection standard	Connection certificates and standards available at www.zcsazzurro.com					
Communication						
Communication interfaces	Wi-Fi/4G/Ethernet (optional), RS485 (proprietary protocol), USB, CAN 2.0 (for battery connection), Bluetooth					
Additional inputs or connections	Input for current sensor connection or meter					
General data						
Allowable ambient temperature range	-30°C...+60°C (power limit above 45°C)					
Topology	Trasformerless / High-frequency isolation battery output					
Environmental protection class	IP65					
Allowable relative humidity range	0%.....95% non-condensing					
Maximum operating altitude	4000m					
Noise level	< 25dB @ 1mt					
Weight	21.5kg					
Cooling	Natural convection					
Dimensions (H x L x D)	482mmx503mmx183mm					
Data monitoring	LCD Display + APP					
Warranty	5 or 10 years (NB: the extended warranty can be obtained by registering on th EXTENDED WARRANTY section of the zcsazzurro.com website)					

*The typical DC power does not represent a maximum applicable power limit. The online configurator available at www.zcsazzurro.com will provide any applicable configurations.
**Only referred to the drum channel
*** Standard value for lithium batteries; maximum operating range between +10°C and +40°C
**** Power output in EPS mode depends on the number and type of batteries, and the status of the system (e.g. residual capacity, temperature)

1PH HYD 3000 ZP1/ 1PH HYD 6000 ZP1

Single-phase hybrid system



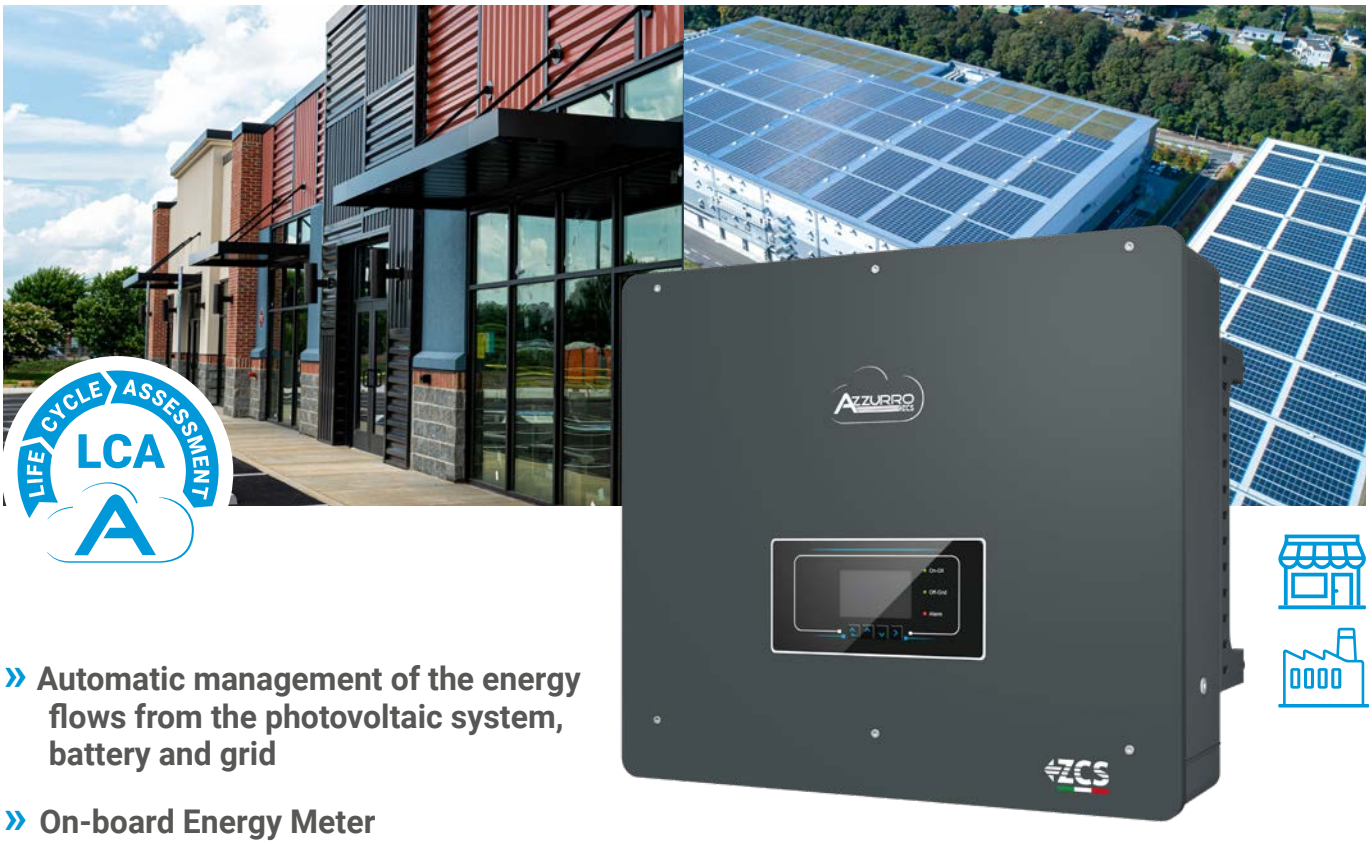
- Integrated storage system, with modular installation for easy mounting
- Automatic management of the energy flows from the photovoltaic system, battery and grid
- Compact design and extremely small footprint
- Parallel-ready
- Possibility of operation in zero grid feed-in mode
- Independently managed batteries via integrated PCU (Power Control Unit)
- Stand-Alone support mode guarantees continuity of operation and “island” operation, both from the photovoltaic source and battery in the event of power failure.
- Maximum flexibility for expanding storage capacity (from 5.1kWh to 20.4kWh)

TECHNICAL DATA	1PH HYD 3000 ZP1	1PH HYD 3680 ZP1	1PH HYD 4000 ZP1	1PH HYD 4600 ZP1	1PH HYD 5000 ZP1	1PH HYD 6000 ZP1
DC input data (photovoltaic)						
Typical DC power*	4500W	5400W	6000W	6900	7500W	9000W
Maximum DC power for each MPPT	2250W	2700W	3000W	3450W	3750W	4500W
No. of independent MPPTs / No. of strings per MPPT	2/1					
Maximum input voltage	550V					
Start-up voltage	100V					
Rated Input voltage	360V					
MPPT DC voltage range	85V-520V					
DC voltage range at full load	140V-500V	170V-500V	185V-500V	215V-500V	235V-500V	280V-500V
Maximum input current for each MPPT	16A/16A					
Maximum absolute current for each MPPT	22.5A/22.5A					
Battery technical data						
Type of compatible battery	HV ZBT 5K					
Rated voltage	400V					
Allowable voltage range	350-435V					
Maximum charge/discharge power	3000W	3680W	4000W	4600W	5000W	6000W
Allowable temperature range**	0°C/+50°C (Charge) / -10°C/+50°C (Discharge)					
Number/capacity of installable batteries	1-4 / 5.1-20.4kWh					
Charge curve	Managed by integrated BMS					
Depth of Discharge (DoD)	0%-90% (programmable)					
Dimensions (H x L x D)	420mm*7087mm*170mm					
Weight	50kg					
AC output (grid side)						
Rated power	3000W	3680W	4000W	4600W	5000W	6000W
Maximum Power	3300VA	3680VA	4400VA	4600VA	5500VA	6600VA
Maximum current	15A	16.7A	20A	20.9A	25 A	30A
Connection type/Rated voltage	Single-phase L/N/PE 220, 230, 240V					
AC voltage range	180V-276V (according to the local standards)					
Rated frequency	50Hz/60Hz					
AC frequency range	44Hz -55Hz / 54Hz -66Hz (according to the local standards)					
Total harmonic distortion	< 3%					
Power factor	1 default (Programmable +/- 0.8)					
Grid feed-in limit	Programmable from display					
EPS Output (Emergency Power Supply)						
Maximum power supplied in EPS mode***	3000VA	3680VA	4000VA	4600VA	5000VA	6000VA
EPS output voltage and frequency	Single-phase 230V 50Hz/60Hz					
Current supplied in EPS mode	13A	16A	17.4A	20A	21.7A	26A
Total harmonic distortion	< 3%					
Switch time	< 10ms					
Efficiency						
Maximum efficiency	97.7%				97.8%	
Weighted efficiency (EURO)	97%				97.1%	
MPPT efficiency	>99.9%					
Consumption in stand-by	< 10W					
Protections						
Internal interface protection	Yes					
Safety protections	Anti-islanding, RCMU, Ground Fault Monitoring					
Reverse polarity protection DC	Yes					
DC circuit breaker	Integrated					
Overheating protection	Yes					
Overvoltage category/Protection class	Overvoltage Category III / Protection class I					
Integrated dischargers	AC/DC MOV: Type 3 Standard					
Battery soft start	Yes					
Standard						
EMC	EN 61000-3-2/3/11/12, EN 61000-6-2/3					
Safety standard	IEC 62116, IEC 61727, IEC 61683, IEC 60068-1/2/14/30, IEC 62109-1/2					
Grid connection standard	Connection certificates and standards available on www.zcsazzurro.com					
Communication						
Communication interfaces	Wi-Fi/4G/Ethernet (optional), RS485 (proprietary protocol), USB, CAN 2.0, Bluetooth					
Additional inputs or connections	Input for current sensor connection or meter					
Inverter general information						
Allowable ambient temperature range	-10°C...+50°C (power limit above 45°C)					
Topology	Transformerless / High-frequency isolation battery output					
Environmental protection class	IP65					
Allowable relative humidity range	5% - 95% without condensation					
Maximum operating altitude	4000m (power limit above 2000m)					
Noise level	< 25dB @ 1mt					
Weight	23.5 kg					
Cooling	Natural convection					
Dimensions (H x L x D)	410mm*708mm*170mm					
Data monitoring	LCD Display + APP					
Warranty	10 years (NB: the extended warranty can be obtained by registering on the EXTENDED WARRANTY section of the zcsazzurro.com website)					

* The typical DC power does not represent a maximum applicable power limit. The online configurator available at www.zcsazzurro.com will provide any applicable configurations.
** Standard value for lithium batteries; maximum operating range between +10°C and +40°C;
*** Power output in EPS mode depends on the number and type of batteries, and the status of the system (e.g. residual capacity, temperature)

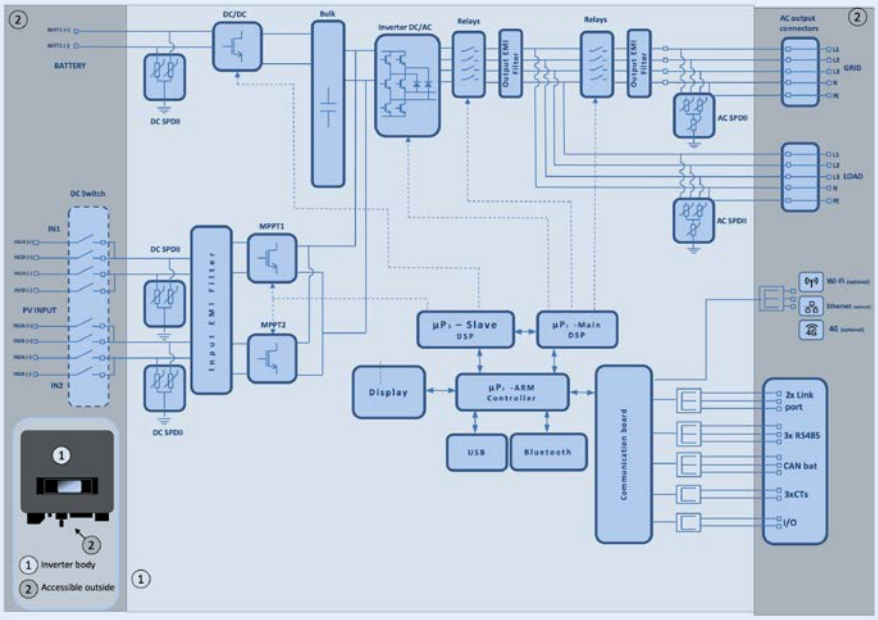
3PH HYD 5000 ZSS/3PH HYD 8000 ZSS

Three-phase hybrid inverter



- Automatic management of the energy flows from the photovoltaic system, battery and grid
- On-board Energy Meter
- Parallel-ready
- Possibility of operation in zero grid feed-in mode
- Unit compatible with high voltage lithium battery (180-750V)
- Stand-Alone support mode guarantees continuity of operation and “island” operation, both from the photovoltaic source and battery in the event of power failure.

BLOCK DIAGRAM



TECHNICAL DATA	3PH HYD5000 ZSS	3PH HYD6000 ZSS	3PH HYD8000 ZSS
DC input data (photovoltaic)			
Typical DC power*	7500W	9000W	12000W
Maximum DC power for each MPPT	6000W (480V-850V)	6600W (530V-850V)	
No. of independent MPPTs / No. of strings per MPPT		2/1	
Maximum input voltage		1000V	
Start-up voltage		200V	
Rated Input voltage		600V	
MPPT DC voltage range		180V-960V	
DC voltage range at full load	250V-850V	320V-850V	360V-850V
Maximum input current for each MPPT		12.5A/12.5A	
Maximum absolute current for each MPPT		15A/15A	
Battery connection data			
Type of compatible battery		Lithium-ion (supplied by Zucchetti)	
Allowable voltage range		180V-750V	
Number of independent battery channels		1	
Maximum charge/discharge power	5000W	6000W	8000W
Allowable temperature range**		-10°C/+50°C	
Maximum charge current per battery channel		25A (40A of peak for 60s)	
Maximum discharge current per battery channel		25A (40A of peak for 60s)	
Charge curve		Managed by the BMS	
Depth of Discharge (DoD)		0%-90% (programmable)	
AC output (grid side)			
Rated power	5000W	6000W	8000W
Maximum Power	5500VA	6600VA	8800VA
Maximum current	8A	10A	13A
Connection type/Rated voltage		Three-phase 3/N/PE, 220/380, 230/400	
AC voltage range		184V~276V (according to the local standards)	
Rated frequency		50Hz/60Hz	
AC frequency range		45Hz~55Hz / 55Hz~65Hz (according to the local standards)	
Total harmonic distortion		<3%	
Power factor		1 default (programmable +/- 0.8)	
Grid feed-in limit		programmable from display	
EPS Output (Emergency Power Supply)			
Power supplied in EPS mode***	5000W	6000W	8000W
Apparent peak power in EPS mode***	10000VA per 60s	12000VA per 60s	16000VA per 60s
EPS output voltage and frequency		Trifase 230V/400V 50Hz	
Current supplied in EPS mode (peak)	8A (15A per 60s)	10A (18A per 60s)	13A (24A per 60s)
Total harmonic distortion		3%	
Switch time		<20ms	
Efficiency			
Maximum efficiency		98.0%	
Weighted efficiency (EURO)		97.5%	
MPPT efficiency		99.9%	
Maximum battery charge/discharge efficiency		97.6%	
Consumption in stand-by		<15W	
Protections			
Internal interface protection		Yes	
Safety protections		Anti-islanding, RCMU, Ground Fault Monitoring	
Reverse polarity protection DC		Yes	
DC circuit breaker		Integrated	
Overheating protection		Yes	
Overvoltage category/Protection class		Overvoltage Category III / Protection class I	
Integrated dischargers		AC/DC MOV: Type 2 standard	
Output overcurrent protection		Yes	
Battery soft start		Yes	
Standard			
EMC		EN61000-1, EN61000-3	
Safety standard		IEC62109-1, IEC62109-2, NB-T32004/IEC62040-1	
Grid connection standard		Connection certificates and standards available at www.zcsazzurro.com	
Communication			
Communication interfaces		Wi-Fi/4G/Ethernet (optional), RS485 (proprietary protocol), USB, CAN 2.0 (for battery connection), Bluetooth	
Other inputs		RS485 line for external meters up to 4 meters can be connected), 6 digital input (5V TTL), connection for direct sensors (CT)	
General data			
Allowable ambient temperature range		-30°C...+60°C (limitation above 45°C)	
Topology		Transformerless	
Environmental protection class		IP65	
Allowable relative humidity range		0~100%	
Maximum operating altitude		4000m	
Noise level		<45 dB @ 1m	
Weight		33kg	
Cooling		Natural convection	
Dimensions (H x L x D)		515mmx571.4mmx264.1mm	
Data monitoring		LCD Display + APP	
Warranty		5 or 10 years (NB: the extended warranty can be obtained by registering on the EXTENDED WARRANTY section of the zcsazzurro.com website)	

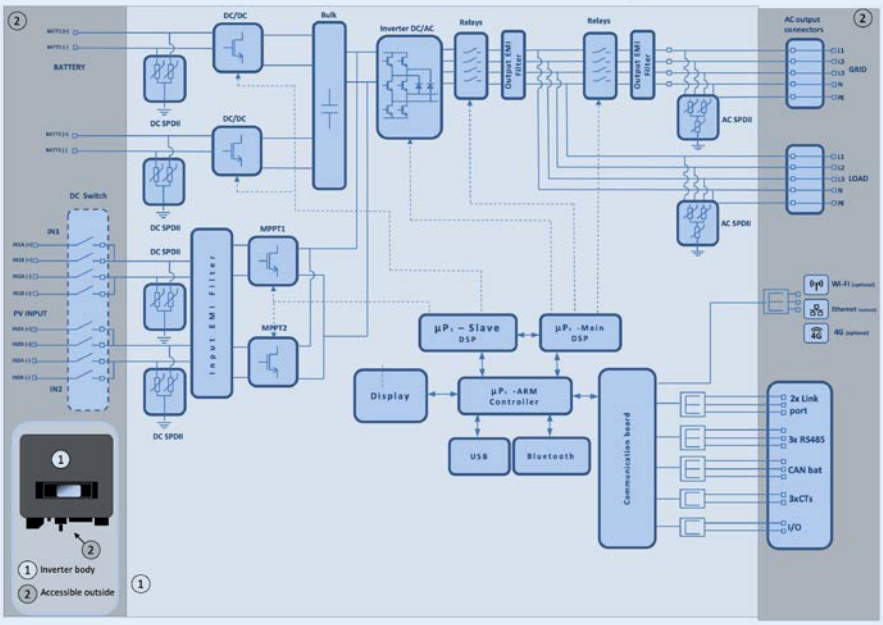
* The typical DC power does not represent a maximum applicable power limit. The online configurator available at www.zcsazzurro.com will provide any applicable configurations.
** Standard value for lithium batteries; maximum operating range between +10°C and +40°C
*** Power output in EPS mode depends on the number and type of batteries, and the status of the system (e.g. residual capacity, temperature)

3PH HYD 10000 ZSS/3PH HYD 20000 ZSS

Three-phase hybrid inverter

- Automatic management of the energy flows from the photovoltaic system, battery and grid
- On-board Energy Meter
- Parallel-ready
- Possibility of operation in zero grid feed-in mode
- Unit compatible with high voltage lithium battery (180-750V)
- Stand-Alone support mode guarantees continuity of operation and “island” operation, both from the photovoltaic source and battery in the event of power failure.

BLOCK DIAGRAM



TECHNICAL DATA	3PH HYD10000 ZSS	3PH HYD15000 ZSS	3PH HYD20000 ZSS
DC input data (photovoltaic)			
Typical DC power*	15000W	22500W	30000W
Maximum DC power for each MPPT	7500W (300V-850V)	11250W (450V-850V)	15000W (600V-850V)
No. of independent MPPTs / No. of strings per MPPT		2/2	
Maximum input voltage		1000V	
Start-up voltage		200V	
Rated Input voltage		600V	
MPPT DC voltage range		180V-960V	
DC voltage range at full load	220V-850V	350V-850V	450V-850V
Maximum input current for each MPPT		25A/25A	
Maximum absolute current for each MPPT		30A/30A	
Battery connection data			
Type of compatible battery		Lithium-ion (supplied by Zucchetti)	
Allowable voltage range		180V-750V	
Number of independent battery channels		2 HV battery channels (configurable as independent or in parallel)	
Maximum charge/discharge power	10000W	15000W	20000W
Allowable temperature range**		-10°C/+50°C	
Maximum charge current per battery channel		25A (35A of peak for 60s)	
Maximum discharge current per battery channel		25A (35A of peak for 60s)	
Charge curve		Managed by the BMS	
Depth of Discharge (DoD)		0%-90% (programmable)	
AC output (grid side)			
Rated power	10000W	15000W	20000W
Maximum Power	11000VA	16500VA	22000VA
Maximum current	16A	24A	32A
Connection type/Rated voltage		Three-phase 3/N/PE, 220/380, 230/400	
AC voltage range		184V~276V (according to the local standards)	
Rated frequency		50Hz/60Hz	
AC frequency range		45Hz~55Hz / 55Hz~65Hz (according to the local standards)	
Total harmonic distortion		<3%	
Power factor		1 default (programmable +/- 0.8)	
Grid feed-in limit		Programmable from display	
EPS Output (Emergency Power Supply)			
Power supplied in EPS mode***	10000W	15000W	20000W
Apparent peak power in EPS mode***	20000VA per 60s	22000VA per 60s	22000VA per 60s
EPS output voltage and frequency		Three-phase 230V/400V 50Hz	
Current supplied in EPS mode (peak)	16A (30A for 60s)	24A (32A for 60s)	32A (33A for 60s)
Total harmonic distortion		3%	
Switch time		<20ms	
Efficiency			
Maximum efficiency		98.2%	
Weighted efficiency (EURO)		97.7%	
MPPT efficiency		99.9%	
Maximum battery charge/discharge efficiency		97.8%	
Consumption in stand-by		<15W	
Protections			
Internal interface protection	Yes		No
Safety protections		Anti-islanding, RCMU, Ground Fault Monitoring	
Reverse polarity protection DC		Yes	
DC circuit breaker		integrated	
Overheating protection		Yes	
Overvoltage category/Protection class		Overvoltage Category III / Protection class I	
Integrated dischargers		AC/DC MOV: Type 2 standard	
Output overcurrent protection		Yes	
Battery soft start		Yes	
Standard			
EMC		EN61000-1, EN61000-3	
Safety standard		IEC62109-1, IEC62109-2, NB-T32004/IEC62040-1	
Grid connection standard		Connection certificates and standards available at www.zcsazzurro.com	
Communication			
Communication interfaces		Wi-Fi/4G/Ethernet (optional), RS485 (proprietary protocol), USB, CAN 2.0 (for battery connection), Bluetooth	
Other inputs		RS485 line for external meters (up to 4 meters can be connected), 6 digital inputs (5V TTL), connection for direct sensors (CT)	
General data			
Allowable ambient temperature range		-30°C...+60°C (power limitation over 45°C)	
Topology		Transformerless	
Environmental protection class		IP65	
Allowable relative humidity range		0~100%	
Maximum operating altitude		4000m	
Noise level		<45 dB @ 1m	
Weight		37kg	
Cooling		Forced convection	
Dimensions (H x L x D)		515mmx571.4mmx264.1mm	
Data monitoring		LCD Display + APP	
Warranty		5 or 10 years (NB: the extended warranty can be obtained by registering on the EXTENDED WARRANTY section of the zcsazzurro.com website)	

* The typical DC power does not represent a maximum applicable power limit. The online configurator available at www.zcsazzurro.com will provide any applicable configurations.
** Standard value for lithium batteries; maximum operating range between +10°C and +40°C
*** Power output in EPS mode depends on the number and type of batteries, and the status of the system (e.g. residual capacity, temperature)

ZCS Azzurro

LV BATTERIES FOR STORAGE OR HYBRID SYSTEMS

The **low voltage batteries** for **ZCS Azzurro hybrid inverters and storage systems** are the best solution for optimising energy independence in residential applications.
Modular and parallelable, they are the ideal devices for storage installations with **ZCS Azzurro inverters**. They can be configured automatically without the need for manual settings.
The Lithium Ion or Lithium-Iron-Phosphate technology allows efficient use even at high depths of discharge, thus optimising energy storage and reuse. Easy installation and long service life make these batteries highly efficient and practical.

EASY INSTALLATION

- Communication cables, power and battery parallel connection cables always included
- Installation on the ground or wall by means of the appropriate brackets
- Possibility of installing additional batteries
- A total capacity of up to 30kWh can be installed

WECO 4K4

ZCS AZZURRO
ZSX5000 PRO

ZCS AZZURRO
ZSX5120

TECHNICAL DATA	WECO		PYLONTECH	ZCS AZZURRO	
General data					
Type	ZCS WECO 4K4 LT (ZZT-BAT-5KWH-WLT)	ZCS WECO 5K3 XP (ZZT-BAT-6KWH-WXP)	ZCS PYLONTECH US5000 (ZST-BAT-5KWH-PL)	ZCS LV ZSX5000 PRO (ZZT-BAT- 5KWH-ZPR)	ZCS LV ZSX5120 (ZZT-BAT-5KWH-ZSX5120)
Technology	Lithium Iron Phosphate				
Dimensions (H x L x D)	575mm* 485mm*155mm	585mm* 475mm*170mm	485mm*450mm *160mm (battery only); 677mm *530mm *280mm (storage box)	590mm* 480mm*170mm	600mm *440mm *140mm
Weight	46kg	57.3 kg	40kg	47kg	44kg
Protection Class	IP20	IP20	IP20	IP20	IP20
Mounting	To wall with bracket included	To wall with bracket included	On ground ,in storage box	On ground or wall	
Operating temperature when charging*	-2°C - +54°C		0°C - +50°C	0°C - +60°C	0°C - +50°C
Operating temperature when discharging	-20°C - +65°C		0°C - +45°C	-20°C-+60°C	-10°C-+50°C
Allowable relative humidity range	0....95% non-condensing				
Maximum operating altitude	2000m				
Operating cycles under standard conditions **	7000			>6000	
Estimated useful life under standard conditions**	10 years				
Maximum number of batteries that can be installed in parallel on inverters	5		5	4	5
Certifications	Connection certificates and standards available at www.zcsazzurro.com				
Warranty	10 years (NB: the extended warranty can be obtained by registering on the EXTENDED WARRANTY section of the zcsazzurro.com website)				
Communication	RS232, CAN bus, Wifi & Bluetooth (with external device)		RS232, RS485, CAN bus		
Capacity Data					
Nominal capacity of single module	4.9kWh	5.8kWh	4.8kWh	5.1kWh	5.12kWh
Useful capacity of single module	4.4kWh	5.3kWh	4.3kWh	4.6kWh	4.61kWh
Rated voltage	51.2V	51.2 V	48V	51.2V	51.2V
Maximum charge current of single module***	86A	100A	80A	100A	50A
Maximum discharge current of single module***	86A	100A	80A	100A	50A
Max depth of discharge (DoD that can be set in the inverter)****	90% of nominal capacity				

* To ensure optimal performance, it is recommended to install the inverter in a temperature-controlled environment between 15°C and 40°C (in temperatures below 15°C, the batteries automatically protect themselves by limiting the charge current)
** Standard operating conditions for batteries: 25°C, 40% humidity, Depth of Discharge (DoD) 80%
** *The actual charging and discharging currents of the system may be limited by the inverters to which the batteries are connected; please refer to the inverter datasheets for the actual charging and discharging current
**** The dept of discharge can be limited by the inverter depending on the used model battery

ZCS Azzurro

HV BATTERIES FOR STORAGE OR HYBRID SYSTEMS

The **high voltage batteries** for **ZCS Azzurro three-phase hybrid inverters and storage systems** are the best solution for optimising energy independence in residential applications. Capable of being installed up to a capacity of 60kWh, they are ideal for storage installations with **ZCS Azzurro** inverters. They configure themselves automatically, so there is no need for manual settings.

The Lithium Ion or Lithium-Iron-Phosphate technology allows efficient use even at high depths of discharge by optimising energy storage and reuse.

Easy installation and long service life make these batteries highly efficient and practical.

EASY INSTALLATION

- Communication cables, power and battery connection cables always included
- Floor or rack installation
- Possibility of installing additional batteries
- A total capacity of up to 60kWh can be installed

WECO 5K3 XP

PYLONTECH

ZCS AZZURRO HV ZBT 5K

TECHNICAL DATA	WECO	PYLONTECH	ZCS AZZURRO
General data			
Type	ZCS WECO 5K3 XP (ZZT-BAT-6KWH- WXP)	ZCS PYLONTECH H48050 (ZST-BAT-2,4KWH-H)	ZCS HV ZBT 5K (ZZT-BAT-ZBT5K)
Technology	Lithium Iron Phosphate		
Dimensions for single module (H x L x D)	475mm*585mm*170mm	485mm*435mm*90mm	420mm*708mm*170mm
Weight of one module	57.3kg	24kg	50kg
Protection Class	IP20		IP65 (Installazione indoor)
Mounting	On ground, stacked	On ground, on support structure	To wall with bracket included
Operating temperature when charging*	-2°C - +54°C	0°C - +50°C	0°C - +50°C
Operating temperature when discharging	-20°C - +65°C	0°C - +45°C	-10°C - +50°C
Allowable relative humidity range	0….95% non-condensing		
Maximum operating altitude	2000m		
Operating cycles under standard conditions **	7000	>6000	>6000
Estimated useful life under standard conditions*	10 anni		
Connection of battery modules	In series: minimum no. of modules: 4 maximum no. of modules: 11	In series: minimum no.of modules: 4 maximum no.of modules: 12	In parallel: minimum no.of modules: 1 minimum no.of modules: 4
BMS	Integrated outer HV-box necessary to protect against high voltage) (ZZT-HV-BOX-XP)	SC1000-100S o SC500-100S/40S (compulsory) (ZST-BMS-SC1000-H o ZST-BMS-SC500-H)	BDU (compulsory) (ZZT-ZBT5K-BDU)
Certifications	Connection certificates and standards available at www.zcsazzurro.com		
Warranty	10 years (NB: the extended warranty can be obtained by registering on the EXTENDED WARRANTY section of the zcsazzurro.com website)		
Communication	RS232, CAN bus, Wifi & Bluetooth (with external device)	RS232, RS485, CAN bus	
Capacity Data			
Useful capacity of single module	5.3kWh	2.2kWh	4.61kWh
Nominal capacity of single module	5.8kWh	2.4kWh	5.12kWh
Total effective capacity (90% depth of discharge)	From 21.2kWh (with 4 modules in series) Until 58.3kWh (with 11 modules in series	From 21.2kWh (with 4 modules in series) Until 58.3kWh (with 11 modules in series	From 4.61kW (with 1 modul in parallel) Until 18.44kWh (with 4 modules in parallel)
Total nominal voltage	From 204.8V (with 4 modules in series) Up to 563.2V (with 11 modules in series)	From 192V (with 4 modules in series) Up to 576V (with 12 modules in series)	400V
Maximum charge current***	100A	25A	7A * number of modules
Maximum discharge current***	100A	25A	7A * number of modules
Depth of Discharge (DoD)	90%		

* To ensure optimal performance, it is recommended to install the device in a temperature-controlled environment between 15°C and 40°C (in temperatures below 15°C, the batteries automatically protect themselves by limiting the charge current)
** Standard operating conditions for batteries: 25°C, 40% humidity, Depth of Discharge (DoD) 80%
*** Actual charge and discharge currents may be limited by battery operating conditions and the inverters to which the batteries are connected. Please refer to the data sheet of the inverters for the actual charge and discharge current.

ZCS Azzurro

MONITORING SYSTEMS

The ZCS Azzurro **monitoring** systems are the ideal solution for the complete control and display of all the main parameters of any PV system.

The wide range of options makes it possible to meet any requirement: from basic solutions to more complete and complex monitoring solutions.

The most complete monitoring solutions allow connecting external devices and a separate power supply unit for monitoring not only the inverters, but also the consumption of the entire system at all hours of the day and night.

SIMPLE AND RELIABLE

› Communication protocols with automatic inverters

› Possibility to monitor up to 31 inverters

EASY INSTALLATION

› Plug-and-play installation

› Easy to access and easy to configure

TECHNICAL DATA	ZSM-WIFI-EXT / ZSM-WIFI-USB	ZSM-ETH-EXT / ZSM-ETH-USB	ZSM-4G-EXT / ZSM-4G-USB	ZSM-DATALOG-04	ZSM-DATALOG-10	ZSM-RMS-001/ M200	ZSM-RMS-001/ M1000
General data							
Installation	On the mechanics of the inverter (dedicated slot)				Free		
Communication with inverter	RS232/USB				RS485		
Number of inverters that can be connected	1			Up to 4	Up to 10	Up to 31 (for installations with total power <200kW)	Up to 31 (for installations with total power >200kW)
Power Supply	Internal by inverter			External by means of dedicated power supply unit (included)			
Optional buffer battery	No					Yes	
Configuration	Access to dedicated WebServer page	No configuration required		Access to dedicated WebServer page		To request from ZCS	
Connection with APP/Portal	Wi-Fi	Ethernet	4G***	Wi-Fi; Ethernet		Access to dedicated WebServer page	
Other communication ports	No					2 x USB 2.0, HDMI, I/O	
Additional features	No					Option to connect to external meters and sensors for monitoring consumption and reporting to recognised customs agencies	
List of compatible inverters	List 1* for models ZSM-xxx-EXT; List 2** for models ZSM-xxx-USB			All Azzurro storage and hybrid inverters			

*List 1: 1100/3300TL-V3 / 20000/33000TL-V2 / 50000/60000TL-V1 / 1PH HYD 3000/6000 ZSS / AZZURRO 3000SP
**List 2: 3000/6000TLM-V3 / 3.3-12KTL-V3 / 15000/24000TL-V3 / 25/50KTL-V3 / 60/80KTL-V3 / 80-110KTL-LV / 100-136KTL-HV / 100-110KTL-V4 / 250/255KTL-HV / 250-350KTL-HV Z0 / 1PH HYD 3000/6000 ZSS HP / 1PH HYD 3000/6000 ZP1 / 3PH HYD 5000/20000 ZSS
*** The boards include an integrated virtual SIM card with data traffic fee included for 10 years

Wi-Fi module

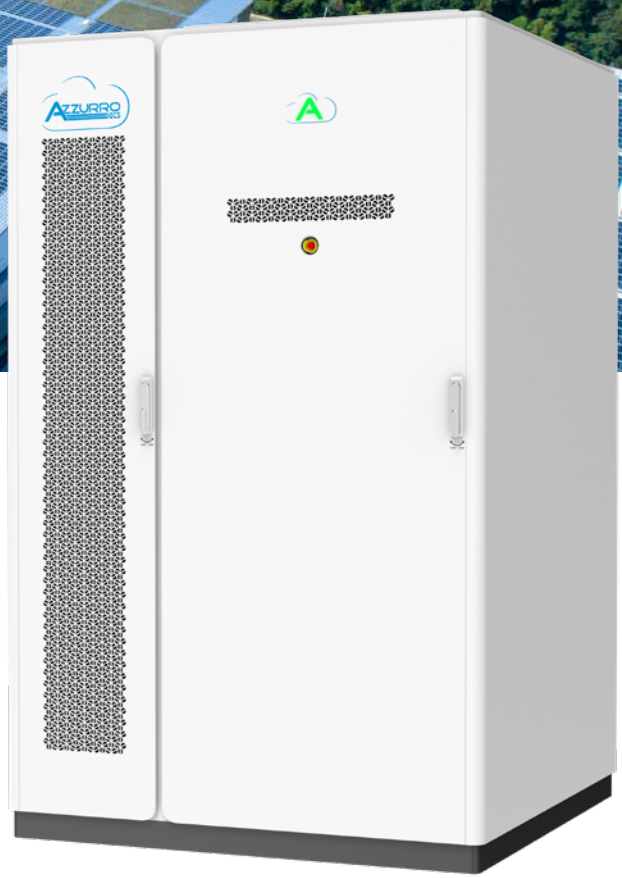
Ethernet Module

Easy Datalogger

Professional Datalogger

ZCS Azzurro POWER MAGIC

ZPM-215KLA-SC1/ ZPM-258KLA-SC1



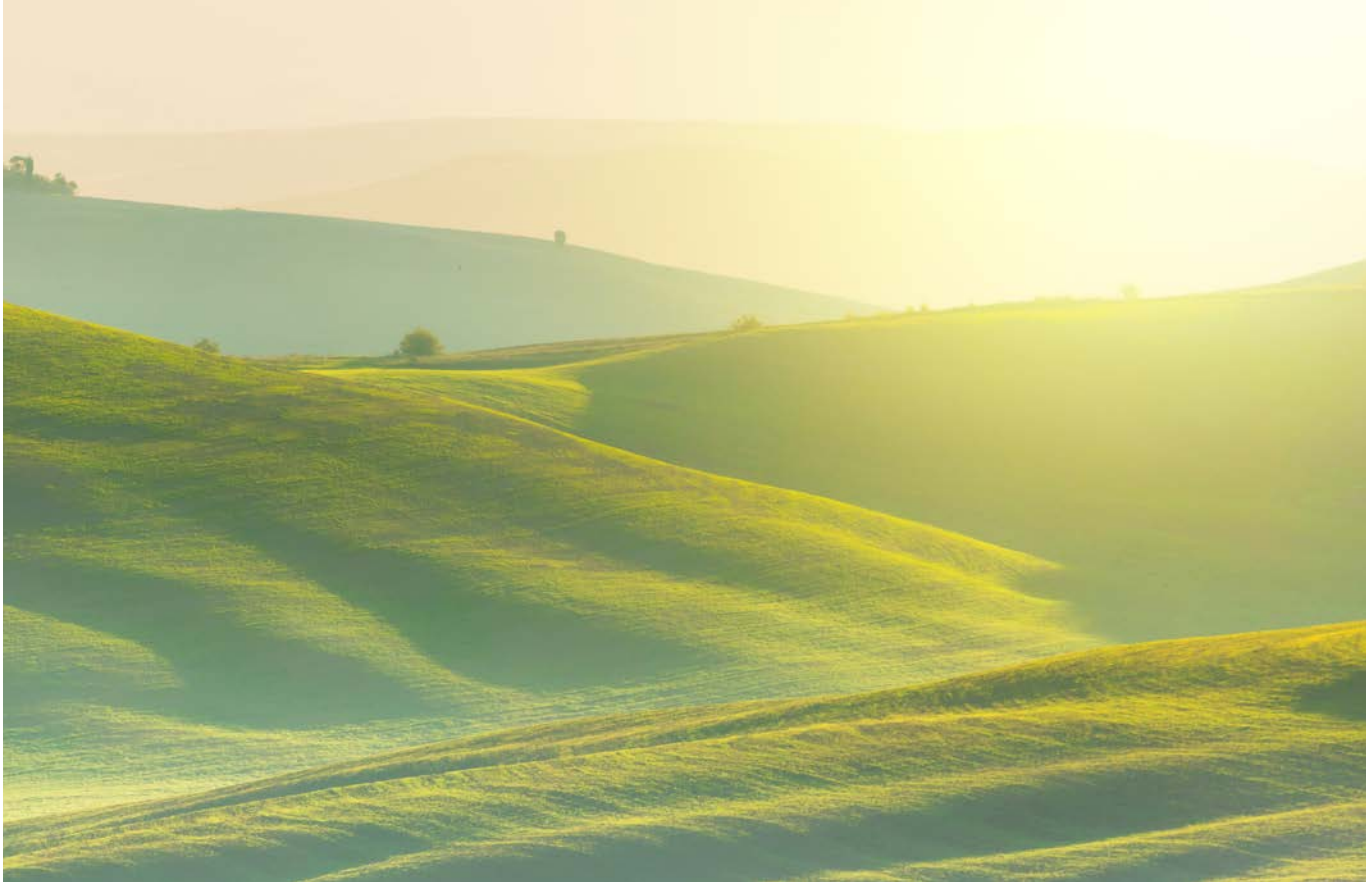
POWER MAGIC

Power Magic is the new outdoor retrofit storage system designed for high-power industrial installations. The system can be adapted to meet the needs of every customer, offering power capabilities ranging from 125 kW to 750 kW and storage capacities ranging from 250 kWh to 6 MWh. It is equipped with a fire extinguishing system with integrated sensors and monitoring features, as well as liquid cooling system. Installation is simple thanks to the intuitive Plug & Play system.

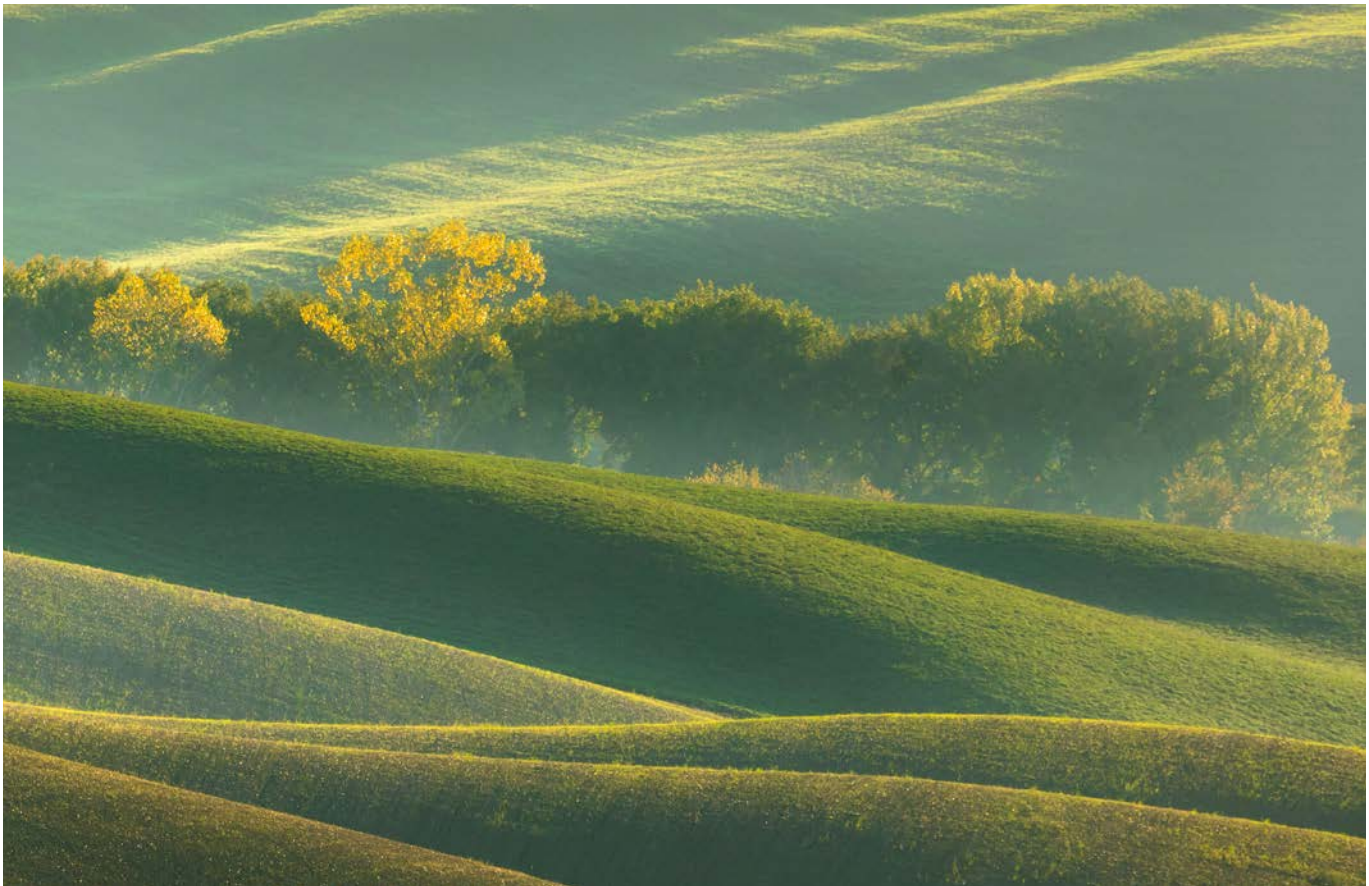
- **All-in-One design with high energy density**
- **Plug and Play design for fast and cost-effective installation**
- **Modular system offering extensive configuration flexibility, ranging 215 kWh to over 6 MWh**
- **Integrated fire protection system**
- **Liquid cooling system with anti-condensing design**
- **Physical separation of electrical and hydraulic circuits to minimise the failure risks**
- **Built-in energy management system (EMS) for extensive management flexibility**
- **Constant monitoring and alarm logging for fast and effective management of the entire system**

TECHNICAL DATA	ZPM-215KLA-SC1	ZPM-258KLA-SC1
Battery Connection technical data		
Technology and battery capacity	Lithium Iron Phosphate/280Ah	
Total battery capacity (per cabinet)	215kWh (5 pack)	258kWh (6 pack)
Battery pack rated voltage	768V	921.6V
Battery voltage operating range	680V-864V	734.4V-1036.8V
AC power to battery capacity ratio	≤0.5	
AC Connection technical data		
Connection type/Rated grid voltage	Trifase 3PH/PE 400V	
Rated grid frequency	50Hz	
Rated AC power	125kW	
Maximum AC power	138kW	
Maximum AC per phase	198A	
Power factor adjustment interval (settable)	-1 ~ +1	
Protection		
Fire suppression	Triple safety level: 1.Perfluorohexanone gas with battery module-level emission 2.Perfluorohexanone gas with cabinet-level emission 3.Water jet hydrant (optional)	
Additional safety systems	Gas emission openings and automatically opening top hatch	
Anti-corrosion-level	C3	
Standard		
Certifications	IEC/EN 61000-6-2/4, IEC 62477-1, IEC 62619, UN38.3	
Grid connection standard	Connection certificates and standards available on www.zsazzurro.com	
General information		
Allowable ambient temperature range	30°C...+50°C (power limit above 45°C)	
Storage ambient temperature range	-30°C...+60°C	
Environmental protection rating	IPS5 (outdoor installation)	
Allowable relative humidity range	0%.. 100% (non-condensing)	
Maximum operating altitude	<4000 m (power limit above 2000m)	
Complete Cabinet Storage Weight	<2.5t	<2.8t
Only-Battery Cabinet weight	<2.2t	<2.5t
Cooling	Integrated liquid cooling	
Dimensions-(HxW×D)-Complete Storage Cabinet	2320mm*1450mm*1350mm	
Dimensions (HxWxD)-Only Battery Cabinet	2320mm*1000mm*1350mm	
Installation	Outdoor ground installation	
Connectivity	Ethernet, local Bluetooth for configurations	
System modularity		
Battery Cabinet Extension	From 1 (215kWh) to 3 (774 kwH) additional Battery Cabinets in parallel	
Storage Cabinet Extension	From 1 (125kW) to 5 (625kW) additional Storage Cabinets in parallel (Junction Box required)	

TECHNICAL DATA	ZPM-215KLA-BC1	ZPM-258KLA-BC1
Battery Connection technical data		
Technology and battery capacity	Lithium Iron Phosphate/280Ah	
Total battery capacity (per cabinet)	215kWh (5 pack)	258kWh (6 pack)
Battery pack rated voltage	768V	921.6V
Battery voltage operating range	680V-864V	734.4V-1036.8V
AC power to battery capacity ratio	≤0.5	
Protection		
Fire suppression	Triple safety level: Perfluorohexanone gas with battery module-level emission Perfluorohexanone gas with cabinet-level emission Water jet hydrant (optional)	
Additional safety systems	Gas emission openings and automatically opening top hatch	
Anti-corrosion level	C3	
Standard		
Certifications	IEC 62619, UN38.3	
Grid connection standard	Connection certificates and standards available on www.zsazzurro.com	
General information		
Allowable ambient temperature range	30°C...+50°C (power limit above 45°C)	
Storage ambient temperature range	-30°C...+60°C	
Environmental protection rating	IP55 (outdoor installation)	
Allowable relative humidity range	0%...100% (non-condensing)	
Maximum operating altitude	<4000 m (power limit above 2000 m)	
Battery Cabinet Weight	<2.2t	<2.5t
Cooling	Integrated liquid cooling	<2.5t
Dimensions (H*W*D) Battery Cabinet	2320mm*1000mm*1350mm	
Communication interface	CAN, RS485	
Installation	Outdoor ground installation	
System modularity		
Battery Cabinet Extension	From 1 (215kWh) to 4 (774 kwH) Battery Cabinet in parallel for PCS	



AZZURRO ZCS



Charging stations for electric vehicles

The ZCS Azzurro charging stations rang3e is designed to ensure a n efficient, fast, sustainable and smart charging for any type of electric vehicle.

They are available in **5 models**, both in single-phase and three-phase versions, they are the ideal solution for residential, commercial and industrial systems.

The ZCS Azzurro charging stations can be **fully connectable** to any existing photovoltaic system. The result is a better optimization and control of energy.

In addition, the entire range is equipped with the innovative **ZCS Predictive Energy Intelligence** system, which allows to manage energy flows in a predictive way with the guarantee of optimal use of available resources.

ZCS Predictive Energy makes it possible to:

PREDICT
Predict the amount of power produced based on weather forecasts.

DISTRIBUTE
It optimally distributes the energy produced between the car and the house, in relation to the actual needs.

OPTIMISE
Optimise energy withdrawal from the grid

7KW & 22KW

Wallbox

» Innovative

- Tempered glass panel, modern design
- Commercial use with control via App

» Smart

- Wireless (Wi-Fi), Ethernet
- OCPP communication protocol with CMS
- Smart operation via App and cashless payment

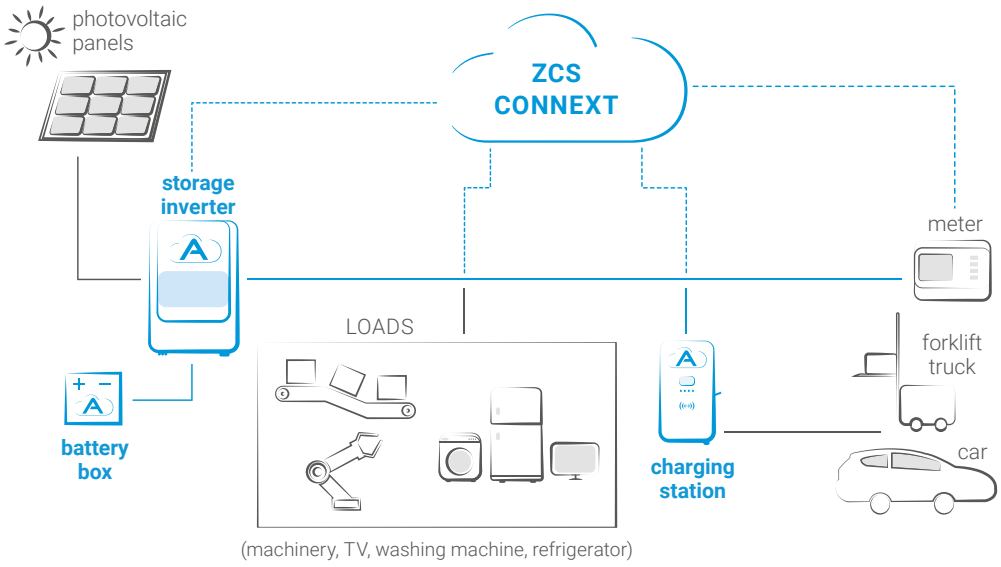
» Safe and secure

- Type-A RCD and 6m A DC residual current protection
- MID-certified energy meter with accurate measurement

» Flexible

- Type 2 universal socket, optional with charging cable
- App Operation / RFID Authentication / Plug & Play
- Wall mounting / Floor installation

DOMESTIC AND COMMERCIAL USE



TECHNICAL DATA	1PH 7KW	3PH 22KW
AC Input data		
Type of connection	Single-phase (1PH + Neutral + PE)	Three-phase (3PH + Neutral + PE)
AC input voltage	230V +/- 10%	400V +/- 10%
AC input frequency	50Hz	50Hz
AC Output data		
AC output voltage	230V +/- 10%	400V +/- 10%
Maximum AC output current	32A	32A
Maximum Power	7.4 kW (limitable from display)	22 kW (limitable from display)
General data		
Outer casing material	Plastic PC940	Galvanised steel
Front panel	Tempered glass	Tempered glass
Installation	To wall / On support metal	To wall / On support metal
Connector	Type2 Connector with shutter – cables not included (optional)	Type2 Connector with shutter – cables not included (optional)
LCD screen	Graphic screen	Graphic screen
Controls	4 touch keys – contact for RFID	4 touch keys – contact for RFID
RFID card	2 included	2 included
Energy Meter	MID Certificate	MID Certificate
RCD protection	TypeA + 6mA DC	TypeA + 6mA DC
Protection rating	IP54	IP54
Cooling	Natural convection	Natural convection
Environmental Data		
Operating temperature	-30°C / +50°C	-30°C / +50°C
Humidity	5% / 95% non-condensing	5% / 95% non-condensing
Maximum operating altitude	2000m	2000m
Installation	Indoor / Outdoor	Indoor / Outdoor
Safety protections		
Integrated protections	Over and under voltage, power overload, short circuit, dispersion currents, missing ground connection, surge, over and under temperature	Over and under voltage, power overload, short circuit, dispersion currents, missing ground connection, surge, over and under temperature
Applicable safety standards	IEC 61851-1: 2017, IEC 62916-2: 2016	IEC 61851-1: 2017, IEC 62916-2: 2016
Warranty	2 years	2 years
Dimensions and accessory parts		
Dimensions (H × L x D)	356 mm x 221mm x 136 mm	452 mm x 295mm x 148 mm
Weight	3 kg	10 kg
Accessories	Communication gateway (Ethernet/WIFI/4G), Ground mounting support, Type2-Type2 cable (5m)	Communication gateway (Ethernet/ WIFI/4G), Ground mounting support, Type2-Type2 cable (5m)

CARO SERIES HOME

Wallbox

» Innovative

- Type 2 cable / Type 2 socket
- Wall/floor mounting
- Start-up modes: RFID / Plug&Play / App

» Smart

- Multiple communications (Wi-Fi / 4G / Ethernet)
- Charging programming via App
- Load balancing (optional)
- Adjustable current
- Bluetooth

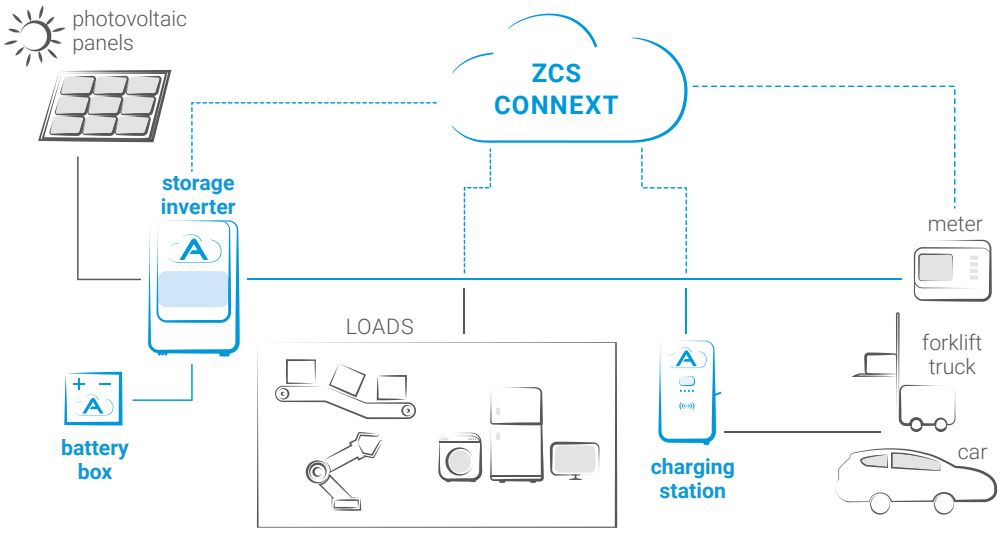
» Safe and secure

- Residual current protection 30 mA type A + 6 mA DC
- Relay adhesion protection
- Optional PEN-Fault protection

» Flexible

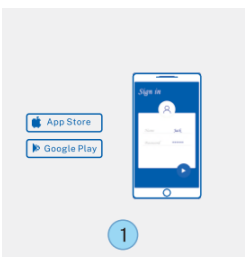
- Multicoloured RGB light indication
- Ergonomic and easy-to-use housing design
- T2S socket (optional)
- Automatic switching between single-phase and three-phase (<6A)

DOMESTIC AND COMMERCIAL USE



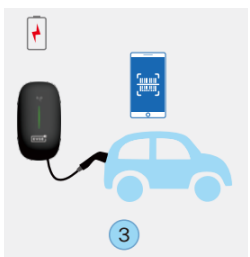
(machinery, TV, washing machine, refrigerator)

TECHNICAL DATA	AC7000-AE-35	AC011K-AE-35
Input		
Power Supply	1P+N+PE	3P+N+PE
Rated Voltage	320V AC	400V AC
Rated Current	32A	16A
Frequency	50/60Hz	50/60Hz
Output		
Output Voltage	230V AC	400V AC
Maximum Current	32A	16A
Output Power	7kW	11kW
User Interface		
Charge Connector	Type 2 cable (Type 2 socket optional)	
Cable Lenght	4m (7m optional)	
Housing Material	Plastic PC940	
LED Indicator	Green/Yellow/Red	
RFID Reader	Mifare ISO/IEC 14443	
Start Mode	Plug&Play/card RFID/App	
Communication		
WiFi	WiFi (2.5Ghz)	
4G	Optional	
Bluetooth	Yes	
Ethernet	Yes	
ESIM	Optional	
Optional	OCPP1.6 Json (OCPP2.0 upgraded)	
Security and Safety		
RCD	30mA + 6mA DC detection	
Ingress Protection	IP65	
Impact Protection	IK10	
Electrical Protection	Over current protection, Residual current protection, Surge protection, Over/Under voltage protection, Over/Under frequency protection, Over temperature protection	
Certification	CE/CB/UKCA/EN303546	
Certification standard	IEC 61851-1:2019 IEC 62955:2018 IEC 61851-21-2:2018 IEC62196	
Warranty	2 years	
Enironment		
Installation	Wall-mount/Pole-mount (Optional)	
Work Temperature	-30°C~+50°C	
Work Humidity	5%~95%	
Work Altitude	<2000m	
Package		
Product Dimension	344*201*100mm (A*L*P) Cable 344*201*135mm (A*L*P) Socket	
Package Dimension	440*340*240mm (A*L*P) Cable 400*250*210mm (A*L*P) Socket	
Net Weight	3.1kg	3.5kg
Gross Weight	3.6kg	4.1kg
Outer Package	Cardboard box	

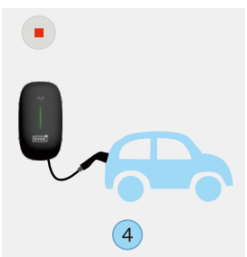


Download the App and register.

Connect the charging cable to the vehicle.



Scan the QR code to start charging.



Stop charging from the App.

COREBOX SERIES

Wallbox

» Innovative

- Anti-theft lock with special unlocking tool
- Home or business use via App
- Faster charging in a compact setup

» Smart

- Control of load balancing system (optional)
- OCPP 1.6 communication protocol with CMS

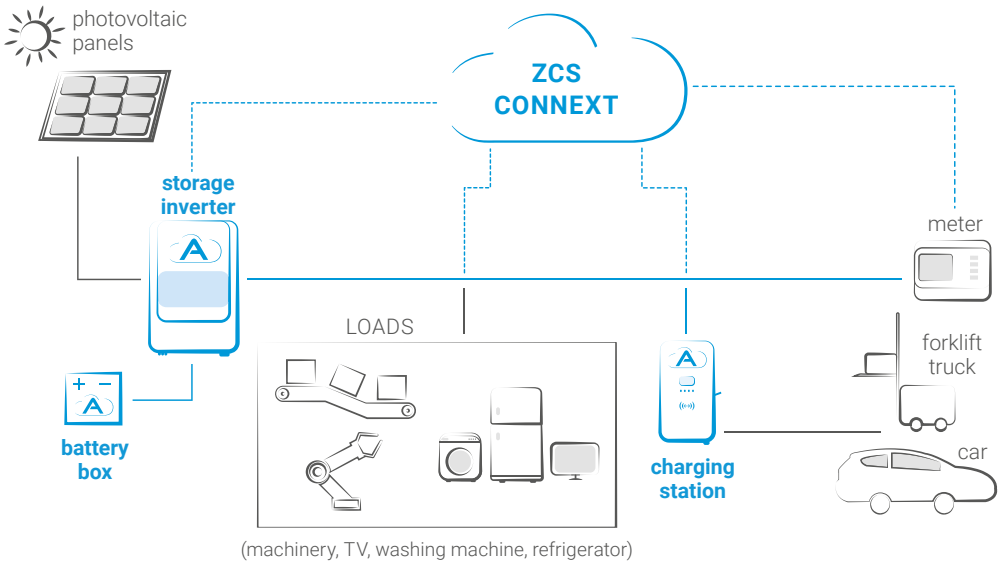
» Safe and secure

- Modular design, easy to repair and replace
- Emergency stop switch that enhances safety

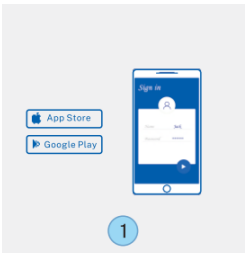
» Flexible

- Wall/floor mounting
- Start-up mode: RFID / App / Plug & Play (password)

DOMESTIC AND COMMERCIAL USE

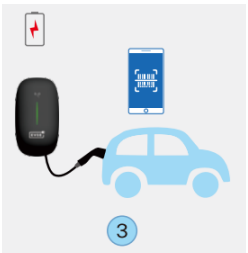


TECHNICAL DATA	DC030K-E2C22-75
Input	
Power supply	3P+N+PE
Rated voltage	400V AC
Rated current	48A
Frequency	50/60Hz
Output	
Output voltage	200V-1000V DC
Maximum current	75A
Rated power	30kW
User interface	
Load connector	CCS2
Cable length	5m
Housing	Galvanised steel
LED indicator	Green/Red/Yellow
LCD display	Colour touch screen 4.3"
RFID reader	Mifare ISO/IEC14443 A
Startup mode	RFID card/App/Plug&Play
Communication	
WiFi	Yes
Ethernet	Yes
4G	Optional
Bluetooth	No
OCPP	OCPP 1.6 Json (OCPP 2.0 upgradeable)
Meter	Yes
Safety	
Emergency button	Yes
Input protection	IP54
Impact protection	IK07
Electrical protection	Over-current protection, Residual current protection, Over-voltage protection Over/Under-voltage protection, Over/Under frequency protection. Over-temperature protection
Certification standards	EN IEC61851-1:2019, IEC 01851-1:2017, EN 61851-23:2014, EN 61851-24:2014
Certification	Efficiency: 94%
Warranty	2 years
Environment	
Installation	Wall/pole mounting (optional)
Cooling method	Fan cooling
Noise	60dB
Working humidity	-30°C~+50°C, 5%-95%
Working altitude	<2000m
Packaging	
Product dimensions	707x560x217mm (WxDxH)
Packaging dimensions	847x762x420mm (WxDxH)
Net weight	35.3 kg
Gross weight	40 kg
Outer pack	Cardboard box

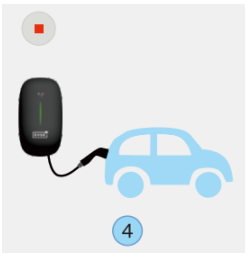


Download the App and register.

Swipe the RFID card to start charging.



The electric vehicle is charging.



Swipe the RFID card again to stop charging.

60KW & 120KW

EV-Charger

» High efficiency

- A battery charger with two outputs that charge simultaneously
- Two CCS2 DC connectors with output up to 60 kW
- Constant power from 300 to1000 voltage, less heat with lower current

» Smart

- Ethernet and Wi-Fi communication supported, 4G optional
- Smart control via App

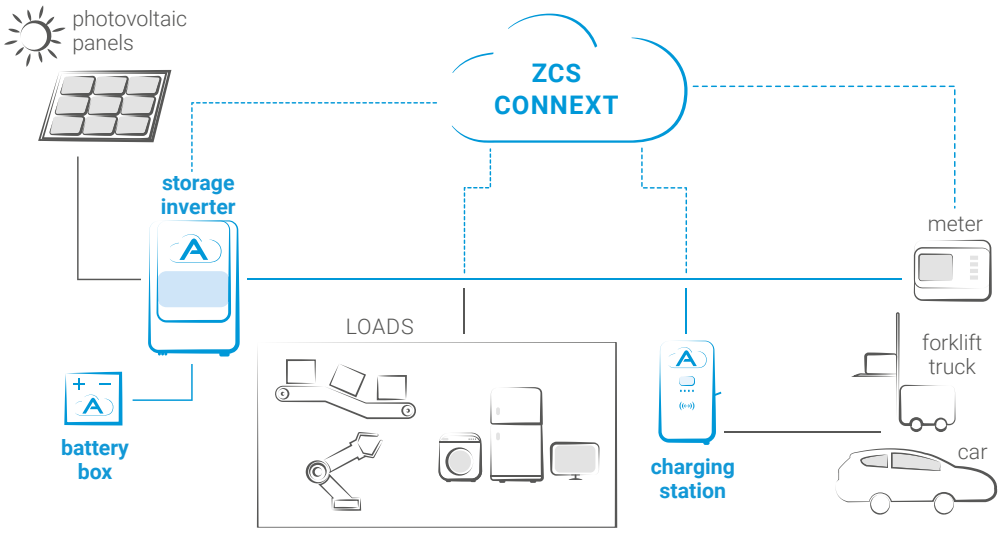
» Flexible option

- Operation by App/RFID Authentication/Plug&Play
- High protection rating of IP54

» Safe and secure

- Type-A RCD for residual current protection
- MID-certified AC meter
- ISO 15118 prepared for advanced Plug & Play operation

DOMESTIC AND COMMERCIAL USE



(machinery, TV, washing machine, refrigerator)

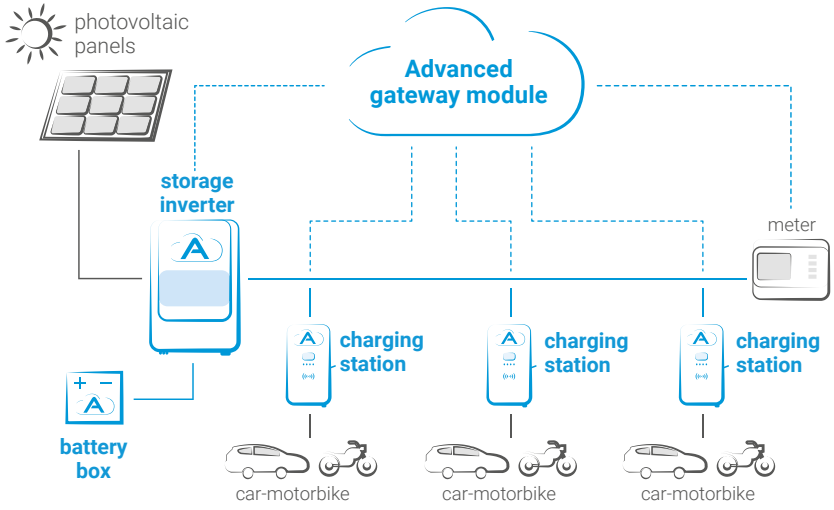
TECHNICAL DATA	ZVD-60K-POWER/P ZVD-60K-POWER/D	ZVD-120K-POWER/P ZVD-120K-POWER/D
AC Input data		
Type of connection	Three-phase (3PH + Neutral + PE)	
AC input voltage	400V +/- 10%	
Rated AC input current	96A	190A
AC input frequency	50/60Hz	
Power factor	>0.99% (from 50% to 100% power)	>0.99% (from 50% to 100% power)
THD	<5% (at 100% power)	<5% (at 100% power)
DC Output data		
DC output voltage	200-500V (CHAdeMo) 200-1000V (CCS2)	
Maximum DC output current	125A (CHAdeMo) 200A (CCS2)	
Maximum power	60kW	60kW (CHAdeMo) 120kW (CCS2)
General data		
Charging connectors	1x CHAdeMO, 1x CCS2 (ZVD-60k-POWER-D) 2x CCS2 (ZVD-60k-POWER-P)	1x CHAdeMO, 1x CCS2 (ZVD-120k-POWER-D) 2x CCS2 (ZVD-120k-POWER-P)
Cable length	5m	
Installation	On concrete platform	
LCD screen	LCD touch-screen display 10.1”	
Charging start	RFID Card, APP, Plug-In	
Energy Meter	MID certified	
RCD protection	TypeA + 6mA DC	
Protection rating	IP54 (ambient) IK07 (impact)	
Cooling	Internal fans on modules	
Emergency stop	Yes	
Communication	Wi-Fi, Ethernet	
Protocol	OCPP 1.6 JSON (possible upgrade to JSON 2.0)	
Maximum conversion efficiency	95%	
Environmental Data		
Operating temperature	-30°C / +50°C	
Humidity	5% / 95% non-condensing	
Maximum altitude	2000mt	
Installation	Indoor / Outdoor	
Safety protections		
Integrated protections	under voltage, power overload, short circuit, dispersion currents, missing ground connection, surge, over and under temperature	under voltage, power overload, short circuit, dispersion currents, missing ground connection, surge, over and under temperature
Applicable safety standards	IEC 61851-1: 2019, EN 61851-23:2014, EN 61851-24:2014	
Warranty	2 years	
Dimensions and accessory parts		
Dimensions (H × L × D)	1830mm × 750mm × 525mm	
Dimensions of wooden crate (H × W × D)	2020mm × 1020mm × 750mm	
Weight	228 kg	
Weight including wooden crate	268,5 kg	

ZCS Azzurro

ADVANCED GATEWAY MODULE

ZCS GATEWAY is the innovative Gateway that allows connecting up to 10 wallboxes via Wi-Fi or Ethernet to a portal for monitoring consumption, or directly to third-party portals that allow billing the energy used for charging. ZCS GATEWAY is useful in applications where the energy used to charge vehicles needs to be measured and monitored, and also for systems that require authorisation to recharge.

PARKING USE



TECHNICAL DATA	ZVM-GATEWAY
Dimensions	125.3 x 91.5 x 28.3(HxLxD)
Installation method	Mounted on wall near the wallbox
Power supply	CAN / external power connection
Working voltage	12-25V
Working current	500mA
Protection class	IP21
Working temperature	between -20°C and +50°C
Platform/system	Linux ARM9 system
LED indicators (left to right)	Operating status, connection to backend, connection to charger
MTBF (Mean Time Between Failures)	100,000 Hours
Protections	Anti-inversion connection
Maintenance inputs	Micro USB, UART
Data input	USB
EN-GATE v.s. Charger communication	CAN
EN-GATE v.s. backend communication	Ethernet
Internet communication protocol	OCPP1.6
Extension port	IO, TTL USART
Maximum number of chargers connected to EN-GATE	10 pieces

ZCS Azzurro

CONNEXT

The **ZCS CONNEXT** system is able to effectively supervise and control all ZCS devices. It can be connected to photovoltaic systems, storage systems and charging stations for ZCS Azzurro electric vehicles, and allows monitoring and controlling all the systems in an intelligent and predictive way.

ZCS CONNEXT interfaces with external current sensors which makes it suitable for installations where third-party inverters are present. The programmable functions allow intelligent use of renewable energies and accurate programming of the charging of storage batteries or electric vehicles.

The four programmable outputs can be used to switch on the utilities according to settable criteria. ZCS CONNEXT represents the last frontier in consumption optimisation!

TECHNICAL DATA	CONNEXT
General data	
Dimensions (H x L x D)	89mm x 105mm x 65mm (+20mm for external antenna)
Weight	300 g
Protection Class	IP20
Mounting	On DIN Bar
Power Supply	Integrated 110V-230V power supply unit
Operating temperature range	0°C...+40°C
Allowable relative humidity range	0....95% non-condensing
User interface	Graphic display
Communication ports with Azzurro devices	RS485, CAN bus
Ports for current sensor input	2
Additional input/output ports	2 DO Open Collectors, 2 clean contacts, 2 DI, 2 PT100, internal USB, Bluetooth optional
Communication with portal	2G / Ethernet (alternative)
Warranty	2 years
Consumption	< 7W

- **COMPATIBLE WITH ALL ZCS AZZURRO DEVICES**
- **CAN ALSO BE USED IN INSTALLATIONS WITH DIFFERENT BRANDS**
- **POSSIBILITY OF SETTING INTELLIGENT MANAGEMENT ALGORITHMS**
- **EQUIPPED WITH INPUTS FOR SYSTEM MONITORING SENSORS**

App **SYSTEMS**

Your photovoltaic system **always with you.**

The **ZCS Azzurro Systems App** is ideal to having control and management of your own system, in a simple and intuitive way.

- View of production and real-time energy consumption
- Control of the exchanged energy with the grid
- Checking the state of charge and discharge of the batteries
- Optimisation of energy flows

DOWNLOAD HERE

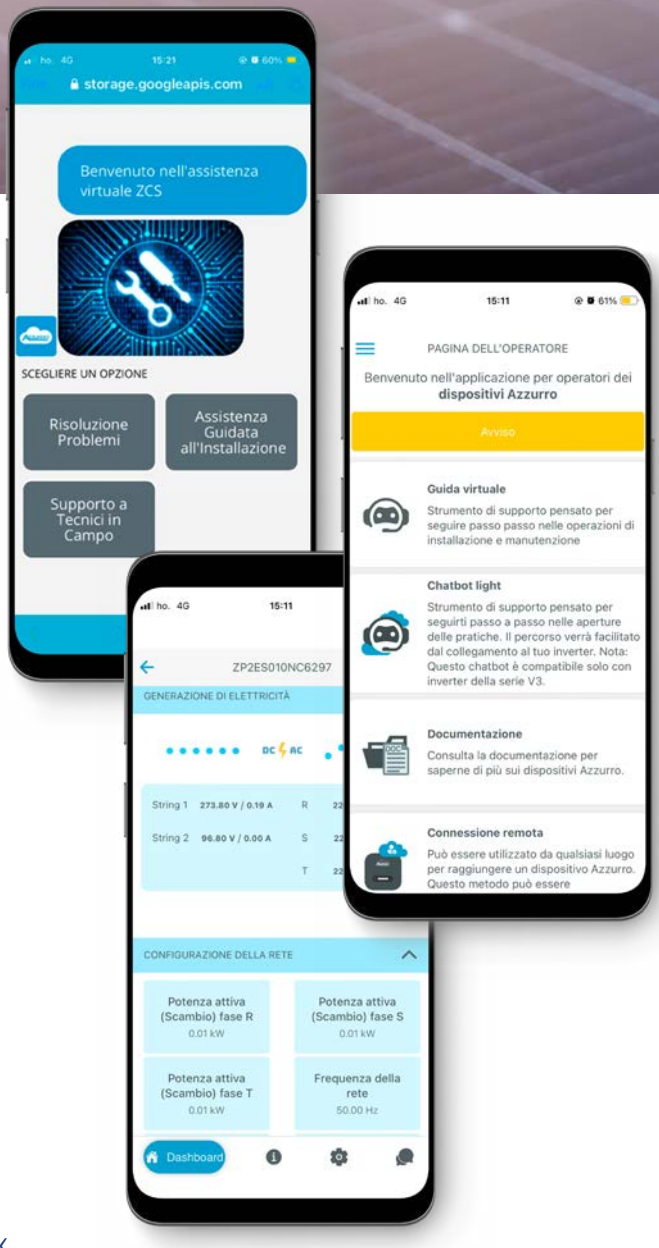
Available on App Store

Available on Google play

App **OPERATORS**

The **ZCS Azzurro Operators App** dedicated to **professionals** of photovoltaics.

- Complete inverter configuration
- Firmware update
- Monitoring of production data and real-time consumption
- Request for assistance to ZCS Azzurro through the dedicated chatbot



DOWNLOAD HERE

Available on App Store

Available on Google play

Technical **support**

ZCS Azzurro technical support is available in all countries where ZCS operates, through a network of local service centres.
ZCS Azzurro provides its customers with a support service that can be contacted:

› through the **SUPPORT** section of the website zcsazzurro.com

The ZCS Azzurro Customer Service will handle your request for assistance within 24 hours of receiving the request.

INSTALLATION AND COMMISSIONING

Would you like assistance in sizing your new photovoltaic system or in retrofitting existing systems? Are you having trouble configuring your ZCS Azzurro Inverter?
Do you have doubts on how to correctly use and install your inverter?
Contact our Technical Service Centre.

Our technical support service is able to provide assistance and support by ticket for pre-sales and after-sales requests, so our customers can receive all the information they need.

TRAINING AND EDUCATION

ZCS offers various training and education programs on various aspects relating to solar energy. The training and education sessions are organised both at the ZCS offices and externally at the premises of our distributors or in conference centres.

ZCS encourages all its customers to participate in one or more training courses, so that they are able to efficiently install the system and make it fully compliant with the applicable regulations.
The ZCS training courses normally include general and theoretical presentations aimed at developing technical knowledge on the inverters, as well as practical exercises aimed at explaining all the product features, the various applications, installation and commissioning procedures, programming, maintenance and fault identification.
The courses are open to all operators in the sector and are not limited to technical professionals.

SPARE PARTS AND ACCESSORIES

In the event of a known failure of an Azzurro inverter, ZCS will replace it with a new or reconditioned inverter. In some cases it may be quicker to simply replace some accessory parts.
Typical examples are the replacement of the fan tray in three-phase inverters, or the battery connection cables in storage systems.
On request, the ZCS Support Service will provide prices for spare parts and accessories that can be purchased separately.
For this purpose, ZCS always ensures that adequate stocks are available.

MAINTENANCE – EXTENDED WARRANTY – UPDATES - RETROFIT

The ZCS Azzurro string inverters do not require any special maintenance. Due to their long service life, however, regular inspections are recommended. ZCS offers this service at very convenient conditions, both during and after the warranty period. You can contact our offices at any time for a quotation.
Each inspection visit will include at least: a general check of the machine's operation, measurement of the parameters considered necessary to assess the overall status of the system and updating of the software to the latest version available.
At the end of the visit, a report is issued certifying the result of the visit.

REPAIR AND REPLACEMENT

At the sole discretion of ZCS, faulty inverters can be replaced with new or so-called reconditioned machines.
The reconditioning of the inverters, which is carried out under the full responsibility of ZCS, restores their original condition of efficiency and performance.
After a total inspection of the machine, its complete cleaning, and an analysis of any components to be replaced, the inverter is subjected to a complete cycle of tests.
In all cases, the replacement inverter, whether new or reconditioned, will be covered by a warranty at least equal to the warranty period remaining on the replaced inverter.

SERVICE PARTNERS

ZCS can intervene within 24 hours in any region of Italy and in any country in Europe.
ZCS adopts a relationship of trust with the installers it engages to carry out repairs at the customers' premises. In the absence of an installer responsible for the system, ZCS guarantees the assistance service through its own direct personnel or through local service partners.

ZCS Azzurro

END OF LIFE

The **ZCS AZZURRO** products are constantly evolving and always being updated. ZCS ensures ongoing technical support and warranties on its entire product range. To receive information on end-of-life models, please contact your distributor or visit **zcsazzurro.com**

Three-phase string **inverter**

20000TL-V2/25000TL-V2/30000TL-V2/33000TL-V2

Three-phase string **inverter**

50000TL-V1/60000TL-V1

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