

# AZZURRO - THREE-PHASE STRING INVERTER

30000TL/33000TL/40000TL



The **ZCS three-phase** inverters are the best solution for medium to large roof and ground mounted photovoltaic systems.

The advanced technology developed by ZCS makes the Azzurro series efficient, versatile and highly functional.

Available in sizes from 30 to 40kw and equipped with dual MPPT channel, their very wide input range makes them easy to configure and suitable for any type of need, in both new installations and retrofit projects.



## ZCS AZZURRO TECHNOLOGY

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



## MAXIMUM ENERGY EFFICIENCY

- Maximum performance 98.7%
- Stable efficiency in all working conditions
- Rapid and accurate MPPT algorithm
  - Dual input section with independent MPPTs



## FLEXIBLE, ECONOMICAL AND EASY-TO-INSTALL SOLUTION

- Protection rating of IP65
- Integrated string combiner with different configuration options
  - Power Management Unit
  - 4-inch LCD graphic display
- SD card for updates and diagnostics



## RELIABILITY, DURABILITY AND FLEXIBILITY

- Rust-proof, corrosion-proof and UV-proof aluminium exterior casing
  - Flexible and user-friendly management of operating parameters
  - Optional Class II surge protection devices (AC and DC)
  - Topology without transformer
    - 5 - 10 year ZCS warranty



## INTELLIGENT GRID MANAGEMENT

- Dynamic management of grid feed-in
  - "Zero Grid Feed-in" functionality\*
- Possibility to manage reactive power
  - Remote control of the deliverable active/reactive power limit



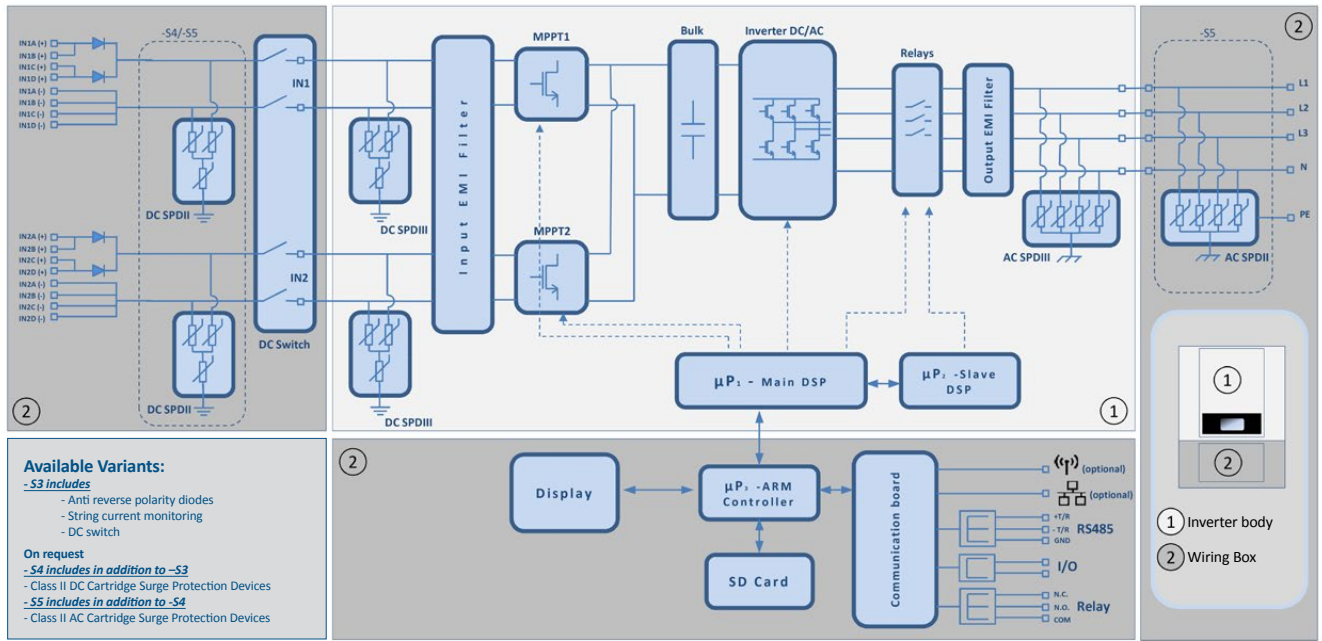
## IDEAL FOR RETROFITTING

- Wide operating input range from 250V to 960V also suitable for small-sized string systems
  - Compact size
- Simple and user-friendly installation and configuration
  - Dual MPPT channel

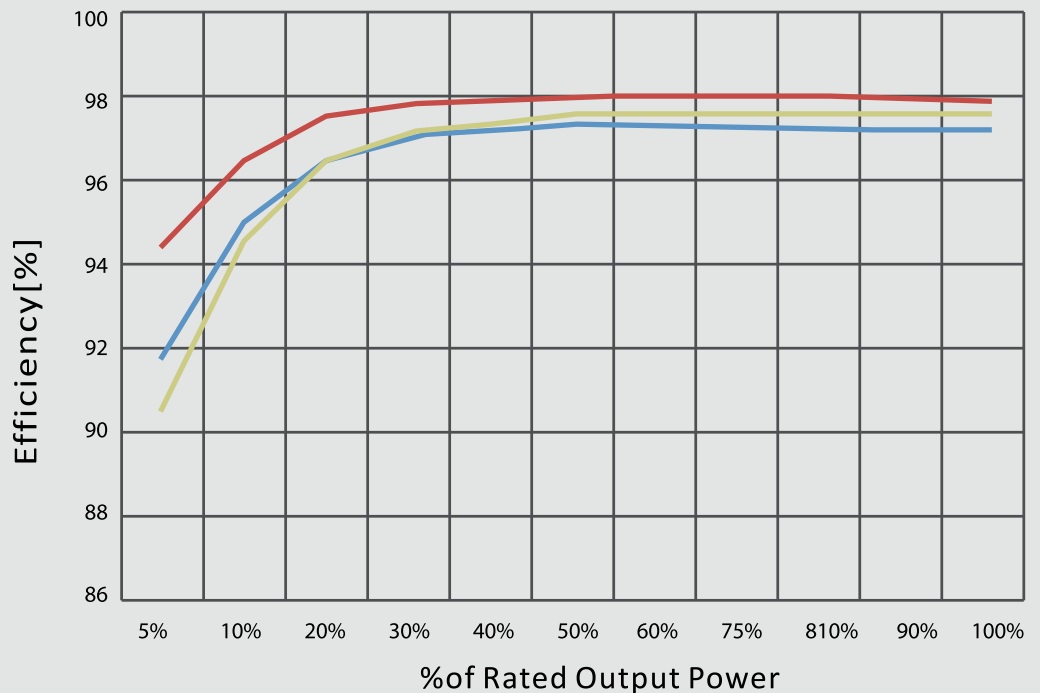


\*Possible through current sensor (ZST-ACC-TA) and anti-reverse power controller (ZSM-ZEROINJ)

# FLOW CHART



# EFFICIENCY CURVE



| TECHNICAL DATA                                   | 30000TL   | 33000TL  | 40000TL   |
|--|---|--|---|
| <b>DC input data</b>                             |   |  |   |
| Maximum DC power                                 | 33000W  | 36300W   | 44000W  |
| Maximum DC power for each MPPT                   | 15360W (480V-800V)  | 17000W (480V-800V)   | 20400W (570V-800V)                                |
| No. of independent MPPTs/No. of strings per MPPT | 2/4   |  |   |
| Maximum DC input voltage                         | 1000V   |  |   |
| Activation voltage                               | 350V  |  |   |
| Nominal DC input voltage                         | 600V  | 600V   | 700V  |
| DC voltage MPPT range                            | 250V-960V   |  |   |
| DC voltage range at full load                    | 480V-800V   |  |   |
| Maximum input current for each MPPT              | 32A/32A   | 35A/35A  | 35A/35A   |
| <b>AC output data</b>                            |   |  |   |
| Nominal AC power                                 | 30000W  | 33000W   | 40000W  |
| Maximum AC power                                 | 30000VA   | 33000VA  | 40000VA   |
| Maximum AC current per phase                     | 43A   | 48A  | 48A   |
| Type of connection/Nominal grid voltage          | Three-phase 3PH/N/PE, 220V, 230V, 240V/380V, 400V, 415V<br>or Three-phase 3PH/PE, 220V, 230V, 240V/380V, 400V, 415V | Three-phase 3PH/N/PE, 277V/480V<br>Three-phase 3PH/PE, 277V/480V |   |
| Grid voltage range                               | 180V~270V (according to the local grid standards)   |  | 243V~304V (according to the local grid standards) |
| Grid nominal frequency                           | 50Hz/60Hz   |  |   |
| Grid frequency range                             | 45Hz~53Hz / 57Hz~63Hz (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 limitation                          | Feed-in adjustable from zero to the nominal power value*  |  |   |
| <b>Efficiency</b>                                |   |  |   |
| Maximum efficiency                               | 98.5%   |  | 98.7%   |
| Weighted efficiency (EURO)                       | 98.2%   |  | 98.4%   |
| MPPT efficiency                                  | >99.9%  |  |   |
| Night-time consumption                           | <1W   |  |   |
| <b>Protections</b>                               |   |  |   |
| Safety protections                               | Anti-islanding, RCMU, Ground Fault Monitoring   |  |   |
| DC reverse polarity protection                   | Yes   |  |   |
| DC switch  | Integrated  |  |   |
| Surge protection                                 | Yes   |  |   |
| Protection class/Surge category                  | I/III   |  |   |
| Integrated dischargers                           | AC/DC MOV: Type III standard, optional AC/DC dischargers type II (only S5 models)                                   |  |   |
| <b>Standard</b>                                  |   |  |   |
| 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                         | CE, CGC, ZVRT, AS 4777, AS 3100, VDE-AR-N 4105, EN50438, G83/2, G59/3, C10/11, CEI 0-21, CEI 0-16                   |  |   |
| <b>Communication</b>                             |   |  |   |
| Communication interfaces                         | Wi-Fi (Optional), RS485 (proprietary protocol), SD card   |  |   |
| Additional inputs or connections                 | I/O inputs for anti-reverse power controller connection   |  |   |
| Data storage on SD                               | 25 years  |  |   |
| <b>General information</b>                       |   |  |   |
| Permissible ambient temperature range            | -25°C...+60°C (power limitation above 45°C)   |  |   |
| Topology   | Transformerless   |  |   |
| Environmental protection rating                  | IP65  |  |   |
| Permissible relative humidity range              | 0%.....95% without condensation   |  |   |
| Maximum operating altitude                       | 2000m   |  |   |
| Noise  | < 30dB @ 1mt  | < 45dB @ 1mt   |   |
| Weight   | 50Kg  |  |   |
| Cooling  | Natural ventilation   | Forced ventilation with fans                                     | Forced ventilation with fan                       |
| Dimensions (H*L*D)                               | 767mm*564mm*290.5mm   |  |   |
| Display  | LCD   |  |   |
| Warranty   | 5 - 10 years  |  |   |

\*Possible by connecting current sensor (ZST-ACC-TA) and anti-reverse power controller (ZSM-ZEROINJ)



AS4777 G83/2 G59/3

CE, CEI 0-21, CQC, IEC, VDE-AR-N4105/VDE-0126, EMC, C10/11, EN50438, RD1669