

Powador XP Series.

The Superlative of Central Inverters.



**K A C O**   
new energy.

Powador  
XP100-HV  
XP350-HV TL

# Powador XP Series.

The superlative of central inverters.



# Worldwide.

Powador XP, inverters you can rely on.

## Reichstorf, Germany

Plant size: 298 kW  
Start-up date: December 2008



## Quintanar del Rey, Spain

Plant size: 1.9 MW  
Start-up date: September 2008



## Jindo, South Korea

Plant size: 923 kW  
Start-up date: December 2008



### Maximum reliability.

Using the central inverters of our Powador XP series, you will benefit from unbeatable reliability and yield stability. The internal power supply of the control is designed redundantly: If the primary power supply is interrupted, the second system jumps in. The powerful cooling system that protects all critical components is designed in the same way. The result: Inverters that turn the power of the sun into profit for you and do so continuously for a long time to come.

### Maximum performance.

Our unique control of power electronics significantly increases the switching efficiency of the power transistors: Depending on the input power currently present, one of several pulse-

width modulation methods is used. What this means for you is maximum efficiency at all times.

### Maximum security.

The error tracing function of Powador XP central inverters reports potential error statuses of the units immediately and sends diagrams that guarantee rapid localisation of the source of the error. The unit can be serviced over the Internet, saving you time. In addition, our intelligent Powador Argus string monitoring box informs you of the status of the PV generator. Along with the three-year warranty, our maintenance contracts will provide you assurances tailored to fit your needs. We have a variety of services to encompass all your needs – even compensating you for yield losses.

### Maximum operating comfort.

Inverters have never been so user friendly: Our central inverters display all operating data in detail and in a well organised format on a TFT LCD touchscreen. Preset, country-specific grid parameters make it easier for you to commission your plant on site. You can also select from a variety of menu languages independent of the country of installation. The fully digital control allows you to modify the operating parameters of the inverter at any time – with no on-site maintenance involved. If operating specifications for the units should change in the future, this lets you stay up-to-date with ease.

### Maximum flexibility.

Powador XP100-HV comes with a transformer and is ready for immediate use. Powador XP350-HV TL comes without a transformer. You can choose the transformer on a project-by-project basis, allowing you to take advantage of maximum flexibility in your planning. Designed with galvanic isolation, these inverters are both more than suitable for solar systems consisting of thin-film modules. We also offer a ready-to-use megawatt station consisting of three Powador XP350-HV TL units and a medium-voltage transformer in a concrete structure. Does your system plan require other ratings? Talk to us. We are developing the next XP units for additional power ratings.

# One of a kind.

These advantages can be found only with KACO.



Powador XP100-HV



Powador XP350-HV TL

## Redundant power supply

- Back-up systems for internal power supply and cooling systems provide maximum protection against failure

## Unique pulse width modulation

- Optimal energy yield in any range of partial load

## Fully digital control

- Always up-to-date using convenient modification of the operating parameters via remote access

## Highest degrees of efficiency

- With up to 98.2 % efficiency maximum conversion from DC to AC is guaranteed

## Worldwide use

- Grid parameters preset to each country's requirements allow for simple and quick start-up

## Colour touchscreen display

- Clear display of all operating data
- Free choice of menu language

## Error tracing

- Constant monitoring ensures direct reporting of abnormal operating states
- Remote access via the Internet from anywhere around the globe

# At a glance.

## Technical data for Powador XP100-HV and Powador XP350-HV TL.

Electrical data	XP100-HV	XP350-HV TL
<b>Input variables</b>		
PV max. generator output	110 kW	385 kW
MPP range	450 V ... 800 V	450 V ... 830 V
No-load voltage	950 V	1000 V
Max. input current	235 A	856 A
Ripple voltage	< 3 %	< 3 %
Ripple current	< 4 %	< 4 %
<b>Output variables</b>		
Rated output	100 kW	350 kW
Supply voltage	400 V (+/- 10 %)	acc. to local requirements*
Voltage to external transformer	-	3 x 290 V (+/- 10 %)
Rated frequency	50 Hz / 60 Hz	50 Hz / 60 Hz
Rated current	153 A	697 A
Distortion factor	< 3 % at rated output power	< 3 % at rated output power
cos phi	0.90 inductive ... 0.90 capacitive	0.90 inductive ... 0.90 capacitive
<b>General electrical data</b>		
Max. efficiency	97.1 %	98.2 %
European efficiency	96.5 %	97.8 %
Consumption	< 1 % of rated output power	< 1 % of rated output power
Standby consumption	< 40 W	< 100 W
Auxiliary power supply	230 V	230 V
Network monitoring	acc. to local requirements	acc. to local requirements
<b>Mechanical data</b>		
Display	TFT LCD touchscreen	TFT LCD touchscreen
Interfaces	RS485 / Ethernet / USB 4 x analog input 1 x digital input / 1 x S0-input 1 x digital output / 1 x S0-output SD card	RS485 / Ethernet / USB 4 x analog input 1 x digital input / 1 x S0-input 1 x digital output / 1 x S0-output SD card
Ambient temperature	-20 °C ... +50 °C	-20 °C ... +50 °C
Cooling	fan (max. 2 420 m³/h)	fan (max. 6 420 m³/h)
Protection class	IP21	IP21
Noise emission	< 70 dB (A)	< 70 dB (A)
EMC	acc. to EN 61000-6-2 / EN 61000-6-4	acc. to EN 61000-6-2 / EN 61000-6-4
CE-conformity	yes	yes
H x W x D	2 120 x 1 200 x 920 mm	2 110 x 2 400 x 850 mm
Base area (W x D)	1 200 x 780 mm	2 400 x 840 mm
Weight	1 120 kg	1 430 kg

The text and figures reflect the current technical state at the time of printing. Subject to technical changes. Errors and omissions excepted.  
\* Inverter needs to be operated in conjunction with an additional, appropriate transformer.

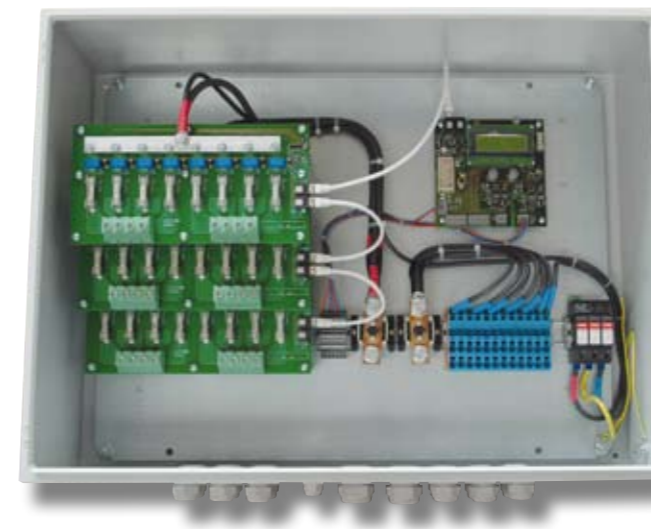
## Optional: grounding kit.

It is recommended that solar generators be grounded for operation with voltage-sensitive modules. To ground the generator, connect the plus or minus pole (refer to the recommendation of the module manufacturer) to ground via a ground fault detection interruption (GFDI). To do this, order our optional grounding kit „XP ground“.



# Intelligent.

## Powador Argus 16S and 24S string monitoring boxes.



For connecting large solar fields to our central inverters, we recommend the use of an “intelligent” generator junction box (GJB) – our Powador Argus string monitoring box. Versions 16S and 24S make ideal companions to Powador XP series central inverters. With the Powador Argus, the PV generator can be monitored in detail; faults are detected and directly evaluated using the Powador proLOG. It goes without saying that string fuses and overvoltage protection are included. Field use has shown that the dimensions of DC lines can vary greatly due to the long cable lengths in large solar systems with central inverters. The integrated bolt terminals provide universal connection options for various cable diameters. The communication line is connected using spring terminals. All cables are inserted from the underside to ensure that neither dirt nor moisture can enter, even if the unit is installed improperly. The waterproof and dustproof stainless steel housing (IP56) provides the Powador Argus with life-long protection against all weather conditions. Moreover, this housing is a perfect measure of fire safety.

## Technical data

Electrical data	Argus 16S	Argus 24S
Max. input voltage	1 000 V	1 000 V
Max. string current per input	16 A	16 A
Number of DC inputs	16	24
Fuse size	12 A*	12 A*
Max. output current	256 A	384 A
Auxiliary power supply	24 V DC**	24 V DC**
Power consumption	275 mA	350 mA
Interface	RS485	RS485
DC surge arrester	Type 2 / II	Type 2 / II
<b>Connections</b>		
String connection +	Screw terminals, no larger than 16 mm²; M40 cable fitting with sealing insert for multiple cables	Screw terminals, no larger than 16 mm²; M40 cable fitting with sealing insert for multiple cables
String connection -	Spring terminals, no larger than 16 mm²; M40 cable fitting with sealing insert for multiple cables	Spring terminals, no larger than 16 mm²; M40 cable fitting with sealing insert for multiple cables
DC connection to the inverter	Bolt terminals, 240 mm²; M12 connection, no larger than 240 mm²; M50 cable fitting	Bolt terminals, 240 mm²; M12 connection, no larger than 240 mm²; M50 cable fitting
RS485 and auxiliary power supply	Spring terminals, no larger than 2.5 mm²; M20/25 cable fitting	Spring terminals, no larger than 2.5 mm²; M20/25 cable fitting
Earth connection	Protective earth terminal, no larger than 16 mm²; M20 cable fitting	Protective earth terminal, no larger than 16 mm²; M20 cable fitting
<b>Mechanical data</b>		
Permitted ambient temperature	-25 °C ... +40 °C	-25 °C ... +40 °C
Relative humidity (non-condensing)	15 % ... 95 %	15 % ... 95 %
Protection rating according to EN 60529	IP56	IP56
W x H x D	approx. 800 x 600 x 300 mm	approx. 800 x 600 x 300 mm
Weight	approx. 38 kg	approx. 40 kg

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\* Other fuses available on request. \*\* External power supply needed.



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