



**HYD**

## **3000 ... 6000-ES**

3000 / 3600 / 4000 / 4600 / 5000 / 6000

### **SINGLE-PHASE ENERGY STORAGE INTEGRATED INVERTER**

- Various operational modes available
- Flexible configuration, allowing both lead-acid and lithium batteries
- Supports both on- and off-grid operation
- IP65 design for outdoor
- Smart fanless cooling design
- EPS function (switchover time less than 10 ms)
- Built-in zero export function

Datasheet	HYD 3000-ES	HYD 3600-ES	HYD 4000-ES	HYD 4600-ES	HYD 5000-ES	HYD 6000-ES
<b>Battery Input Data</b>						
Battery type	Lithium-ion, Lead-acid					
Rated battery voltage (V)	48					
Battery voltage range (V)	42 – 58					
Battery capacity (Ah)	50 – 2000					
Max. charging / discharging power (W)	3000					
Max. charging current (A)	65 (programmable)					
Max. discharging current (A)	70 (programmable)					
Charging curve (Lithium-ion)	BMS					
Charging curve (Lead-acid)	3-Stage adaptive with maintenance					
Depth of discharge	Lithium-ion: 0 – 90% DOD adjustable, Lead-acid: 0 – 50% DOD adjustable					
<b>Input DC (PV side)</b>						
Recommended max. PV input power (Wp)	3990	4790	5320	6120	6650	7980
Max. DC power for single MPPT (W)	2000	2400	2600	2800	3000	3500
Max. input voltage (V)	600					
Start-up voltage (V)	120					
Rated DC voltage (V)	360					
MPPT operating voltage range (V)	90 – 580					
Full power MPPT voltage range (V)	160 – 520	180 – 520	200 – 520	230 – 520	250 – 520	300 – 520
MPPT number	2					
Max. DC input current (A)	12 / 12					
Max. DC input short current (A)	15 / 15					
<b>Output AC (Grid side)</b>						
Max. output power (W)	3000	3680	4000	4600	5000	6000
Max. output current (A)	13.7	16	18.2	21.0	22.8	27.3
Rated grid voltage	L / N / PE, 230 Vac					
Operation phase	Single (L-N-PE)					
AC voltage range (V)	180 – 276 (according to local standard)					
Grid frequency range	44 – 55 Hz / 55 – 65 Hz (according to local standard)					
THD	< 3%					
Power factor	1 default (+/-0.8 adjustable)					
<b>Output AC (Emergency Power Supply)</b>						
EPS rated power (VA)	3000					
Operation phase	Single (L-N-PE)					
EPS rated voltage, frequency	230 V, 50 / 60 Hz					
EPS rated current (A)	13.2					
Peak output apparent power (VA, s)	4000, 10					
THD	< 3%					
Switch time	10 ms default					
<b>Efficiency</b>						
MPPT efficiency	99.9%					
Max efficiency of solar inverter	97.6%		97.8%		98.0%	
European efficiency of solar inverter	97.2%		97.3%		97.5%	
Max. charging efficiency of battery	94.6%					
Max. discharging efficiency of battery	94.6%					
<b>Protection</b>						
PV reverse polarity protection	Yes					
PV insulation detection	Yes					
Ground fault monitoring	Yes					
Overcurrent protection	Yes					
Overvoltage protection	Yes					
Battery soft start protection	Yes					
DC-Switch	Optional					
SPD protection	III					
<b>General Data</b>						
Ambient temperature range	-25°C – 60°C (above 45°C derating)					
Standby losses (W)	< 10					
Topology	High frequency insulation (for battery)					
Degree of protection	IP65					
Allowable relative humidity range	0 – 100%					
Communication	RS485 / WiFi / Ethernet / SD / CAN2.0					
Protective class	Class I					
Max. operating altitude	2000 m					
Current sensor connection	External					
Noise	<25 dB					
Weight (kg)	20.5					
Cooling	Natural					
Dimension (mm)	566*394*173					
Display	LCD					
Warranty	Standard 5 years, optional: up to 20 years					
<b>Certifications &amp; Standards</b>						
EMC	EN 61000-6-2, EN 61000-6-3, EN 61000-3-2, EN 61000-3-3, EN 61000-3-11, EN 61000-3-12					
Safety	IEC 62109-1 / 2, IEC62040-1, IEC 62116, IEC 61727, IEC 61683, IEC 60068 (1, 2, 14, 30)					
Grid	VDE V 0124-100, V 0126-1-1, VDE-AR-N 4105, CEI 0-21, EN 50549, G83 / G59 / G98 / G99, UTE C15-712-1, UNE 206 007-1					