

# KEOR HPE 400 - 500

953502-953503



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## 1. TECHNICAL FEATURES

1. General Features				
Power (KVA)	400		500	
UPS Topology	ON LINE – Double Conversion			
Nominal Apparent Output Power (kVA)	400		500	
Nominal Active Output Power (kW Cosφ 1.0)	400		500	
Efficiency (AC ÷ AC)	Standard version	High Efficiency Kit	Standard version	High Efficiency Kit
	@25% load	≥95,2%	≥95,8%	≥95,2%
	@50% load	≥96,0%	≥96,4%	≥96,1%
	@75% load	≥95,9%	≥96,3%	≥96,0%
	@100% load	≥95,5%	≥95,9%	≥95,6%
Efficiency (AC ÷ AC) (Eco Mode)	98,0%			
Heat dissipation at rated load, VFI voltage (kW)	17.5		21.9	
UPS Ambient Temperature (°C)	0 ÷ 40			
BATTERY ambient temperature (°C)	0 ÷ 25			
UPS storage temperature (°C)	-10 ÷ 70			
BATTERY storage temperature (°C)	-15 ÷ 40			
Relative humidity (not condensing)	< 95%			
Altitude (m)	<1000 (Above Sea level)			
Power derating for altitude > 1000 m	According to "IEC62040-3", 0.5% every 100m			
Ventilation	Forced			
Requested cooling air volume (m³/h)	4000		4600	
Audible noise level (according to IEC EN 62040-3)	< 72dB			
Number of cells for standard Lead acid battery	360 ÷ 372			
Protection Degree	IP20			
Electromagnetic Compatibility	IEC / EN 62040-2 (CE Marking)			
Safety	IEC / EN 62040-1			
Test and performance	IEC / EN 62040-3			
Colour	RAL9005 (Black) RAL9003 (White)			
Accessibility	Front Access			
Installation	Against the Wall			
Dimensions (mm) (W x D x H)	1430 x 970 x 1978			
Weight kg (without battery)	1080		1150	
Input/output terminals	Cables input from bottom			
Handling	Base provided for forklift			
Storage and transport conditions	According to "IEC EN 62040-3"			
Reference standards	EN 62040-1 - EN62040-2 - EN62040-3 ISO 9001:2008 - ISO 14001			
Front panel	10" Touch-screen			
Voltage-free contact interface	signalizations / alarms			
Serial communication interface	Standard: RS232 – USB			
Parallel configuration (optional)	Optional: RS485 (Mod-Bus RTU protocol) Up to 5+1 (redundant parallel) Up to 6 (power parallel)			

2. Input: rectifier and battery charger		
Power (KVA)	400	500
Input	Three-phase/ 3Ph+N	
Nominal input voltage (Vac)	400	
Input voltage range (%)	-20 / +20	
Input frequency (Hz)	50 - 60	
Input frequency range (%)	±10	
Input power factor	>0,99	
Input current THD at nominal voltage and THDV <0.5% (%)	@25% load	< 8
	@50% load	< 4
	@75% load	< 3
	@100% load	< 2
DC output voltage accuracy (%)	±1	
DC output voltage ripple (%)	<1 (RMS)	
Battery recharging characteristic	Intermittent charging with prevailing state of complete rest and control of the battery status IU (DIN 41773)	
Maximum recharging current (A)	- at nominal load	50
	- with DCM function (max current)	100
AC-DC converter type	IGBT-based PFC	
Input protection	Fuses	
Nominal current absorbed from mains (at nominal load and battery charged) (A)	602	753
Maximum current absorbed from mains (at nom. load, min. mains voltage and max.recharging current) (A)	827	1046
Rectifier soft-start (walk-in) (sec)	Settable from 5" to 30"	
Rectifier sequential start-up (hold-off) (sec)	Settable from 1" to 300"	

3. Batteries		
Power (KVA)	400	500
Type (standard) other on request	Sealed lead acid (VRLA - maintenance free)	
Number of Cells	360 - 372	
Floating Voltage at 25°C	812 for 360 cells, 840 for 372 cells	
Minimum Discharge Voltage Vdc	620 for 360 cells, 632 for 372 cells	
Power drawn by the inverter (at rated load cosφ = 1) (KW)	407.7	509.7
Current drawn by the inverter (at rated load and minimum battery voltage) (A)	658	822
Battery Protection	Fuses	
Battery Test	Provided as Standard	

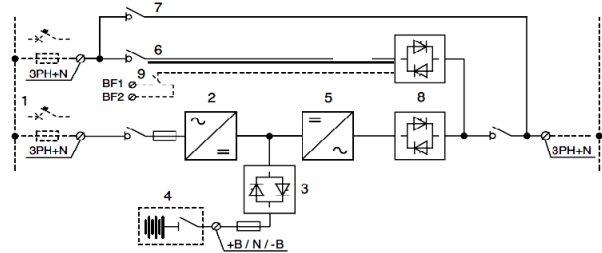
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4. Output Inverter	
Power (KVA)	400   500
Inverter Bridge	3-Level IGBT (High Frequency PWM)
Nominal Apparent Output Power (kVA)	400   500
Nominal Active Output Power (kW Cosφ 1.0)	400   500
Efficiency (DC ÷ AC) (%)	
- @25% load	Up to 96%
- @50% load	Up to 97%
- @75% load	Up to 97%
- @100% load	Up to 98%
Output	3 Phase / 4 Wires
Rated Output Voltage (selectable) (Vac)	380-400-415
Output Voltage Stability	
- Static (Balanced Load) (%)	± 1
- Static (Unbalanced Load) (%)	± 2
- Dynamic	± 5
- (Step Load 20%÷ 100%÷20%) (%)	
- Output Volt. Recovery Time (after step load) (ms)	< 20
- IEC EN 62040-3	VFI-SS-111
Phase Angle Accuracy (°)	
- Balanced Load	± 1
- 100% Unbalanced Load	± 1
Output Frequency (selectable) (Hz)	50 / 60
Output Frequency Stability	
- Free Running Quartz Oscillator (Hz)	± 0,001
- Inverter Sync. with Mains (Hz)	± 2 (other on request)
- Slew rate (Hz/s)	< 1
Nominal Output Current (@ 400 Vac output) (A)	577   722
Overload Capability	10 min >100%... 110% 5 min >110%... 125% 30 s >125%... 150% 100 ms >150%
Short Circuit Current 1 <sup>st</sup> Level (A)	1464   1785
Time of short circuit 1 <sup>st</sup> Level (ms)	70
Short Circuit Current 2 <sup>nd</sup> Level (A)	875   1094
Time of short circuit 2 <sup>nd</sup> Level (ms)	300
Short Circuit Characteristic	Current limited with electronic protection Automatic stop after 5 seconds
Output Waveform	Sinewave
Output Harmonic Distortion (%)	
- Linear Load	< 1
- Non-Linear Load	< 5
- IEC EN 62040-3	Fully compliant
Max Crest Factor	Up to 3:1

5. Bypass	
Automatic static by-pass	Electronic Thyristor Switch
Nominal input voltage (Vac)	380 – 400 - 415
Input voltage range (%)	±10
Input frequency (Hz)	50 - 60
Input frequency range (%)	±10
Transfer mode	Without break
Transfer: inverter - automatic bypass	In case of: - Short-circuit - Battery discharged - Inverter test - Inverter failure
Transfer: automatic bypass - inverter	- Automatic - Block on bypass after 6 transfers within 2 minutes, reset by front panel
Overload Capability (%)	150 Continuously / 1000 For 1 Cycle
Manual By-Pass	- Electronically controlled - No-break assisted re-start procedure
Back-feed protection	NC contact for the control of an external device

## 6. Block Diagram



1. Separate mains input for rectifier and bypass
2. Rectifier battery-charger
3. Battery static switch
4. External battery
5. Inverter
6. Emergency line (bypass)
7. Maintenance bypass line
8. Inverter (SSI) and bypass(SSB) static switch
9. Embedded contact for external back-feed protection

## OPTIONS

- SERIAL INTERFACE RS-485 (ModBus protocol RTU)
- SNMP ADAPTER
- PARALLEL CARD INTERFACE KIT
- LOAD-SYNC CARD INTERFACE KIT
- ISOLATION TRANSFORMER
- INTERNAL BACKFEED PROTECTION DEVICE
- SPECIAL COLOUR

## SOFTWARE ENABLED FUNCTIONS

- DIESEL MODE OPERATION
- RECTIFIER WALK-IN TIME
- RECTIFIER DELAY ON STARTUP (HOLD-OFF TIME)
- DYNAMIC CHARGING MODE (DCM)
- VFD (ECO) OPERATING MODE MANAGEMENT
- FREQUENCY CONVERTER