

KEOR HPE 60-80

311087 – 311088 – 311089 – 311090 – 311091



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1. TECHNICAL FEATURES

1. General Features		
Power (KVA)	60	80
UPS Topology	ON LINE – Double Conversion	
Nominal Apparent Output Power (kVA Cosφ 1.0)	60	80
Nominal Active Output Power (kW Cosφ 1.0)	60	80
Efficiency (AC ÷ AC) (%)	Up to 93%	
@25% load	Up to 94.5%	
@50% load	Up to 95%	
@75% load	Up to 95%	
@100% load	Up to 95%	
Efficiency (AC ÷ AC) (Eco Mode)	>98%	
Heat dissipation at rated load, VFI voltage (kW)	3.2	4.2
UPS Ambient Temperature (°C)	0 ÷ 40	
BATTERY ambient temperature (°C)	0 ÷ 25	
UPS storage temperature (°C)	10 ÷ 70	
BATTERY storage temperature (°C)	10 ÷ 60	
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)	1100	1000
Audible noise level (according to IEC EN 62040-3)	< 60dB	
Number of cells for standard Lead acid battery	360 ÷ 372	
Protection Degree	IP20	
Electromagnetic Compatibility EMI	According to "IEC EN 62040-2" (CE marking)	
Safety	IEC / EN 620401	
Test and performance	IEC / EN 620403	
Colour	RAL9005 (Black) RAL9003 (White)	
Accessibility	Front Access	
Installation	Against the Wall	
Dimensions (mm) (WxDxH)	560 x 940 x 1500	
Weight kg (without battery)	225	250
Max Weight kg (with battery)	770	785
Input/output cable connection	Cables entry front bottom	
Transport	Base provided for forklift handling	
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	Liquid Cristal Display, Touch-screen (optional)	
Voltage-free contact interface	Optional for signalisations / alarms	
Serial communication interface	Standard: RS232 - USB Optional: RS485 (Mod-Bus RTU protocol)	
Parallel configuration (optional)	Up to 5+1 (redundant parallel) Up to 6 (power parallel)	

2. Input: rectifier and battery charger		
Power (KVA)	60	80
Input	Three-phase	
Nominal input voltage (Vac)	400	
Input voltage range (%)	20 / +15	
Input frequency (Hz)	50 60	
Input frequency range (%)	±10	
Input power factor	>0,99	
Input current THD at nominal voltage and THDV <0,5% (%)	Up to 93%	
@25% load	Up to 94.5%	
@50% load	Up to 95%	
@75% load	Up to 95%	
@100% load	Up to 95%	
DC output voltage accuracy (%)	±1	
DC output voltage ripple (%)	1	
Battery recharging characteristic	Intermittent charging with prevailing state of complete rest and control of the battery status IU (DIN 41773)	
Maximum recharging current (A)	15	
- at nominal load	15	15
- with DCM function (max current)	30	30
AC-DC converter type	IGBT PFC	
Input protection	Fuses	
Nominal current absorbed from mains (at nominal load and battery charged) (A)	91	122
Maximum current absorbed from mains (at nom. load, nom. voltage and max. recharging current) (A)	136	175
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		
Potenza (KVA)	60	80
Power (KVA)	Sealed lead acid (VRLA - maintenance free)	
Type (standard) other on request	360 - 372	
Number of Cells	812 for 360 cells, 840 for 372 cells	
Floating Voltage at 25°C	620 for 360 cells, 632 for 372 cells	
Minimum Discharge Voltage Vdc	61.9	82.5
Power drawn by the inverter (at rated load cosφ = 1) (KW)	100	133
Power drawn by the inverter (at rated load and minimum battery voltage) (KW)	Fuses	
Battery Protection	Provided as Standard	

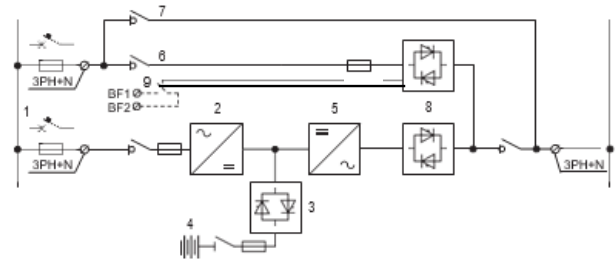
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4. Output Inverter		
Power (KVA)	60	80
Inverter Bridge	3-Level IGBT (High Frequency PWM)	
Nominal Apparent Output Power (kVA Cosφ 1.0)	60	80
Nominal Active Output Power (kW Cosφ 1.0)	60	80
Efficiency (DC ÷ AC) (%)		
- @25% load	Up to 96	
- @50% load	Up to 97	
- @75% load	Up to 97	
- @100% load	Up to 97	
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 (Step Load 20%÷ 100% ÷20%) (%)	± 5	
- Output Volt. Recovery Time(after step load) (ms)	< 20	
- IEC EN 62040-3	VFISS111	
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 (others on request)	
- Slew rate (Hz/s)	< 1	
Nominal Output Current (@ 400 Vac output) (A)	87	115
Overload Capability	10 min >100%...125% 30 s >125%...150% 100 ms >150%	
Short Circuit Current (A)	200	265
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 without derating	3:1	

5. Bypass	
Automatic static by-pass	Electronic Thyristor Switch Three-phase + Neutral
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

2. BLOCK DIAGRAM



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

3. OPTIONS

1. Battery cabinet
2. Serial interface RS485 (ModBus protocol RTU)
3. SNMP adapter
4. Parallel card interface kit
5. Sync card interface kit
6. Isolation transformer

4. SOFTWARE ENABLED FUNCTIONS

1. OPERATION WITH GENERATOR
2. RECTIFIERS SEQUENTIAL STAR (PARALLEL UPSs)
3. SOFTSTART RECTIFIER
4. DYNAMIC CHARGING MODE (DCM)
5. VFI / VFD (ECO) OPERATING MODE MANAGEMENT
6. FREQUENCY CONVERTER

KEOR HPE 100-125-160

960569 – 960570 – 960571



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- 4. SOFTWARE ENABLED FUNCTIONS 2

1. TECHNICAL FEATURES

1. General Features			
Power (KVA)	100	125	160
UPS Topology	ON LINE – Double Conversion		
Nominal Apparent Output Power (kVA Cosφ 1.0)	100	125	160
Nominal Active Output Power (kW Cosφ 1.0)	100	125	160
Efficiency (AC ÷ AC) (%)	@25% load up to 94 @50% load up to 95 @75% load up to 95,5 @100% load up to 94,5		
Efficiency (AC ÷ AC) (Eco Mode)	>98%		
Heat dissipation at rated load, VFI voltage (kW)	5,3	6,6	8,4
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)	1800	2200	2300
Audible noise level (according to IEC EN 62040-3)	< 65dB		
Number of cells for standard Lead acid battery	360 ÷ 372		
Protection Degree	IP20		
Electromagnetic Compatibility EMI	According to "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) (WxDxH)	560 x 940 x 1800		
Weight kg (without battery)	320	360	380
Input/output cable connection	Cables entry front bottom		
Transport	Base provided for forklift handling		
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	Liquid Cristal Display Touch-screen (optional)		
Voltage-free contact interface	Optional for signalisations / alarms Standard: RS232 - USB		
Serial communication interface	Optional: RS485 (Mod-Bus RTU protocol)		
Parallel configuration (optional)	Up to 5+1 (redundant parallel) Up to 6 (power parallel)		

2. Input: rectifier and battery charger			
Power (KVA)	100	125	160
Input	Three-phase		
Nominal input voltage (Vac)	400		
Input voltage range (%)	-20/+15		
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 < 5 @50% load < 4 @75% load < 3 @100% load < 3		
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	15	20	20
- with DCM function (max current)	50	50	50
AC-DC converter type	IGBT-based PFC		
Input protection	Fuses		
Nominal current absorbed from mains (at nominal load and battery charged) (A)	152	190	243
Maximum current absorbed from mains (at nom. load, nom. voltage and max. recharging current) (A)	170	214	267
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)	100	125	160
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)	103,1	128,9	164,9
Power drawn by the inverter (at rated load and minimum battery voltage) (KW)	166	208	266
Battery Protection	Fuses		
Battery Test	Provided as Standard		

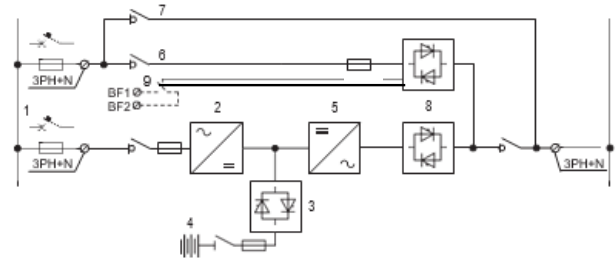
KEOR HPE 100-125-160

960569 – 960570 – 960571

4. Output Inverter			
Power (KVA)	100	125	160
Inverter Bridge	3-Level IGBT (High Frequency PWM)		
Nominal Apparent Output Power (kVA Cosφ 1.0)	100	125	160
Nominal Active Output Power (kW Cosφ 1.0)	100	125	160
Efficiency (DC ÷ AC) (%)	Up to 96		
- @25% load	Up to 97		
- @50% load	Up to 97		
- @75% load	Up to 97		
- @100% load	Up to 97		
Output	3 Phase / 4 Wires		
Rated Output Voltage (selectable) (Vac)	380-400-415		
Output Voltage Stability	± 1		
- Static (Balanced Load) (%)	± 2		
- Static (Unbalanced Load) (%)	± 5		
- Dynamic (Step Load 20%÷ 100% ÷20%) (%)	< 20		
- Output Volt. Recovery Time(after step load) (ms)	VFI-SS-111		
- IEC EN 62040-3			
Phase Angle Accuracy (°)	± 1		
- Balanced Load	± 1		
- 100% Unbalanced Load			
Output Frequency (selectable) (Hz)	50 / 60		
Output Frequency Stability	± 0,001		
- Free Running Quartz Oscillator (Hz)	± 2 (others on request)		
- Inverter Sync. with Mains (Hz)	< 1		
- Slew rate (Hz/s)			
Nominal Output Current (@ 400 Vac output) (A)	144	180	231
Overload Capability	10 min >100%...125%		
	30 s >125%...150%		
	100 ms >150%		
Short Circuit Current (A)	400	490	640
Short Circuit Characteristic	Current limited with electronic protection Automatic stop after 5 seconds		
Output Waveform	Sinewave		
Output Harmonic Distortion (%)	< 1		
- Linear Load	< 5		
- Non Linear Load	Fully compliant		
- IEC EN 62040-3			
Max Crest Factor without derating	3 : 1		

5. Bypass	
Automatic static by-pass	Electronic Thyristor Switch Three-phase + Neutral
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

2. BLOCK DIAGRAM



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

3. OPTIONS

1. BATTERY CABINET
2. SERIAL INTERFACE RS-485 (ModBus protocol RTU)
3. SNMP ADAPTER
4. PARALLEL CARD INTERFACE KIT
5. LOAD-SYNC CARD INTERFACE KIT
6. ISOLATION TRANSFORMER
7. WALL MOUNTED FUSED SWITCH BOX

4. SOFTWARE ENABLED FUNCTIONS

1. DIESEL MODE OPERATION
2. RECTIFIER WALK-IN TIME
3. RECTIFIER DELAY ON STARTUP (HOLD-OFF TIME)
4. DYNAMIC CHARGING MODE (DCM)
5. VFI / VFD (ECO) OPERATING MODE MANAGEMENT
6. FREQUENCY CONVERTER

KEOR HPE 200-250-300



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1. TECHNICAL FEATURES

1. General Features			
Power (KVA)	200	250	300
UPS Topology	ON LINE – Double Conversion		
Nominal Apparent Output Power (kVA Cos ϕ 1.0)	200	250	300
Nominal Active Output Power (kW Cos ϕ 1.0)	200	250	300
Efficiency (AC \div AC) (%)	Up to 94,5		
@25% load	Up to 95,8		
@50% load	Up to 96		
@75% load	Up to 95,5		
@100% load	>98%		
Efficiency (AC \div AC) (Eco Mode)	>98%		
Heat dissipation at rated load, VFI voltage (kW)	9,4	11,8	14,1
UPS Ambient Temperature (°C)	0 \div 40		
BATTERY ambient temperature (°C)	0 \div +25		
UPS storage temperature (°C)	-10 \div +70		
BATTERY storage temperature (°C)	-15 \div +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 (m ³ /h)	1800	2200	2300
Audible noise level (according to IEC EN 62040-3)	< 65dB		
Number of cells for standard Lead acid battery	360 \div 372		
Protection Degree	IP20		
Electromagnetic Compatibility EMI	According to "IEC EN 62040-2" (CE marking)		
Safety	IEC EN 62040-1		
Test and performance	IEC EN 62040-3		
Colour	RAL9005		
Accessibility	Front Access		
Installation	Against the Wall		
Dimensions (mm) (WxDxH)	880 x 966 x 1976		
Weight kg (without battery)	720	850	900
Input/output cable connection	Cables entry front bottom		
Transport	Base provided for forklift handling		
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	Optional for signalisations / alarms		
Serial communication interface	Standard: RS232 - USB Optional: RS485 (Mod-Bus RTU protocol)		
Parallel configuration (optional)	Up to 5+1 (redundant parallel) Up to 6 (power parallel)		

2. Input: rectifier and battery charger			
Power (KVA)	200	250	300
Input	Three-phase		
Nominal input voltage (Vac)	400		
Input voltage range (%)	-20/+15		
Input frequency (Hz)	50 - 60		
Input frequency range (%)	\pm 10		
Input power factor	>0,99		
Input current THD at nominal voltage and THDV <0,5% (%)	@25% load < 5 @50% load < 4 @75% load < 3 @100% load < 3		
DC output voltage accuracy (%)	\pm 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 30 40 40 - with DCM function (max current) 100 100 100		
AC-DC converter type	IGBT-based PFC		
Input protection	Fuses		
Nominal current absorbed from mains (at nominal load and battery charged) (A)	302	378	453
Maximum current absorbed from mains (at nom. load, nom. voltage and max. recharging current) (A)	423	518	611
Rectifier soft-start (walk-in) (sec)	Settable from 5" to 30"		
Rectifier sequential start-up (hold-off) (sec)	Settable from 1" to 300"		

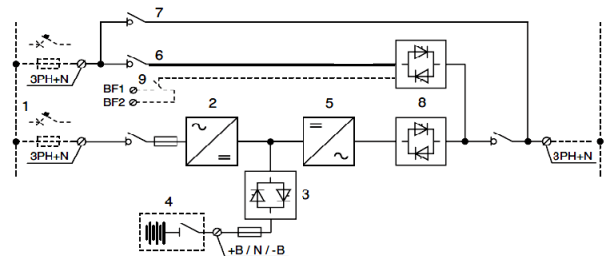
3. Batteries			
Power (KVA)	200	250	300
Type (standard) other on request	Sealed lead acid (VRLA - maintenance free)		
Number of Cells	360 - 372		
Floating Voltage at 25°C	812 for 360 cells, 840 for 372 cells		
Minimum Discharge Voltage Vdc	620 for 360 cells, 632 for 372 cells		
Power drawn by the inverter (at rated load cos ϕ = 1) (KW)	204,1	255,1	306,1
Power drawn by the inverter (at rated load and minimum battery voltage) (KW)	329,0	411,0	494
Battery Protection	Fuses		
Battery Test	Provided as Standard		

KEOR HPE 200-250-300

4. Output Inverter			
Power (KVA)	200	250	300
Inverter Bridge	3-Level IGBT (High Frequency PWM)		
Nominal Apparent Output Power (kVA Cos ϕ 1.0)	200	250	300
Nominal Active Output Power (kW Cos ϕ 1.0)	200	250	300
Efficiency (DC \div AC) (%)	Up to 96		
@25% load	Up to 97		
@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 (Step Load 20%+ 100%+20%) (%)	± 5		
- Output Volt. Recovery Time(after step load) (ms)	< 20		
- IEC EN 62040-3	VFI-SS-111		
Phase Angle Accuracy ($^{\circ}$)			
- Balanced Load	± 1		
- 100% Unbalanced Load	± 1		
Output Frequency (selectable) (Hz)	50 / 60		
Output Frequency Stability			
- Free Running Quartz Oscillator (Hz)	$\pm 0,001$		
- Inverter Sync. with Mains (Hz)	± 2 (other on request)		
- Slew rate (Hz/s)	< 1		
Nominal Output Current (@ 400 Vac output) (A)	289	361	433
Overload Capability	10 min >100%...125% 30 s >125%...150% 100 ms >150%		
Short Circuit Current (A)	720	900	1050
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 without derating	3 : 1		

5. Bypass	
Automatic static by-pass	Electronic Thyristor Switch Three-phase + Neutral
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. Optional contact for external back-feed protection

OPTIONS

1. BATTERY TEMPERATURE VOLTAGE COMPENSATION
2. SERIAL INTERFACE RS-485 (ModBus protocol RTU)
3. SNMP ADAPTER
4. PARALLEL CARD INTERFACE KIT
5. LOAD-SYNC CARD INTERFACE KIT
6. ISOLATION TRANSFORMER
7. WALL MOUNTED FUSED SWITCH BOX

SOFTWARE ENABLED FUNCTIONS

1. DIESEL MODE OPERATION
2. RECTIFIER WALK-IN TIME
3. RECTIFIER DELAY ON STARTUP (HOLD-OFF TIME)
4. DYNAMIC CHARGING MODE (DCM)
5. VFD (ECO) OPERATING MODE MANAGEMENT
6. UHE (ULTRA HIGH EFFICIENCY) OPERATING MODE MANAGEMENT
7. FREQUENCY CONVERTER

KEOR HPE 400 - 500



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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	>94,8%	95,3%	>94,8%	95,3%
@50% load	>96,0%	96,3%	>96,0%	96,3%
@75% load	>96,0%	96,4%	>96,0%	96,4%
@100% load	>95,6%	95,8%	>95,6%	95,8%
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			
Accessibility	Front Access			
Installation	Against the Wall			
Dimensions (mm) (W x D x H)	1430 x 970 x 1978			
Weight kg (without battery)	1080		1250	
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	Optional for signalizations / alarms			
Serial communication interface	Standard: RS232 – USB Optional: RS485 (Mod-Bus RTU protocol)			
Parallel configuration (optional)	Up to 5+1 (redundant parallel) Up to 6 (power parallel)			

2. Input: rectifier and battery charger		
Power (KVA)	400	500
Input	Three-phase + Neutral	
Nominal input voltage (Vac)	400	
Input voltage range (%)	-20 / +15	
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	< 9	
@50% load	< 5	
@75% load	< 3	
@100% load	< 3	
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	70
- with DCM function (max current)	100	120
AC-DC converter type	IGBT-based PFC	
Input protection	Fuses	
Nominal current absorbed from mains (at nominal load and battery charged) (A)	605	756
Maximum current absorbed from mains (at nom. load, min voltage and max. recharging current) (A)	829	1048
Rectifier soft-start (walk-in) (sec)	Settable from 5" to 30"	
Rectifier sequential start-up (hold-off) (sec)	Settable from 1" to 300"	

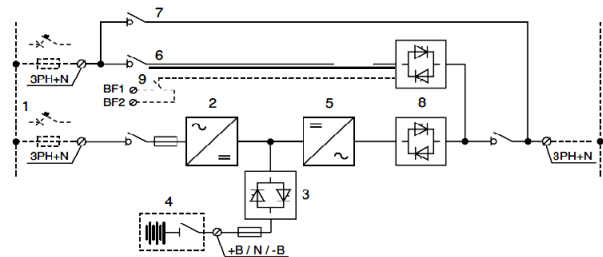
3. Batteries		
Power (KVA)	400	500
Type (standard) other on request	Sealed lead acid (VRLA - maintenance free)	
Number of Cells	360 - 372	
Floating Voltage at 25°C	812 for 360 cells, 840 for 372 cells	
Minimum Discharge Voltage Vdc	620 for 360 cells, 632 for 372 cells	
Power drawn by the inverter (at 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	

KEOR HPE 400 - 500

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 Cos ϕ 1.0)	400 500
Efficiency (DC \div 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% \div 100%+20%) (%)	
- Output Volt. Recovery Time (after step load) (ms)	< 20
- IEC EN 62040-3	VFI-SS-111
Phase Angle Accuracy ($^{\circ}$)	
- Balanced Load	± 1
- 100% Unbalanced Load	± 1
Output Frequency (selectable) (Hz)	50 / 60
Output Frequency Stability	
- Free Running Quartz Oscillator (Hz)	$\pm 0,001$
- 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 (A)	1400 1750
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