MAN-MACHINE INTERFACE (FRONT PANEL)

The front panel is used for both AC and DC systems and facilitates a comprehensive and flexible man-machine interface. It is divided into four sections:

1.) The system panel shows the system’s current operation status, meaning which system part is supplying the load at the moment and which is in stand-by mode. LED’s also indicate possible faults.

2.) Operations for turning on and off the system and a lamp test button for checking if all LED indications function properly.

3.) On the alarm indication panel the respective LED lights up, after an alarm has occurred.

4.) The display unit consists of a LC display, an alarm LED, an acoustic alarm and a key-pad. With this the user can set following operational parameters, obtain a list of measurement data, and get access to the event and alarm log.

## Operational parameters
- Choice of optional language
- Auto Start programming
- Bypass operation
- Boost charge
- Battery capacity test
- Battery monitor test (optional)

## Measurements
- Load in % of nominal kVA rating
- AC rectifier mains 1 voltage and current
- AC bypass mains 2 voltage
- DC total current, battery voltage and current
- Battery temperature (with optional sensor)
- AC Inverter current
- AC output voltage, current and frequency
- AC output peak current
- Time left in battery operation with actual load (optional with programmed battery data)
- Alarm log with date and time

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Representative offices in China, Brazil, Emirates, Germany, India, Russia, Saudi Arabia, USA
UPS Input

Rectifier input voltage: 3x380/400/415V
- DC in tolerance: +/-10%
- for function: +/-10-15%
Bypass input voltage: 1x220/230/240V +/-10%
Frequency: 50/60Hz +/-6%

Intermediate DC Circuit

Voltage: 110/125/220/400V/DC
Rectifier voltage tolerance: +/-1% Lcl characteristic
Float voltage range at -10% mains: 100 - 115% programmable Boost voltage range at nominal mains: 100 - 125% programmable Boost charge time: 1-24 hours programmable
Charging current limitation: depending on battery, programmable
Inverter input range: +20-15%
Inverter maximum input range: typical +25%

UPS Output

Nominal UPS rating: KVA at PF 0.8 lag
Voltage: 1x220/230/240V
- static within 0-100% load: +/-1%
- dynamic at 100% load surge: +/-4%
- regulation time: < 25 ms
Overload:
- Inverter 1 min: 150%
- Inverter 10 min: 125%
- Bypass 100 ms: 1000%
Short-circuit Inverter 50 - 100ms: 200%
Frequency: 50/60Hz
Frequency stability, free running: < 0.1%
Synchronization range: 0.5/2.0/4.0%/8%/ programmable
Slave unit single unit: 0.250/0.5/1.0 Hertz programmable
Slave unit redundant system: 1.0 Hz/s
Wave form: sinusoidal
Output crest factor addressable: unlimited
Distortion factor with linear load: < 4%
Non linear load according to EN50091-1: < 5%
Allowable power factor: 0.46a - 0.8 load

General Data

Ambient temperature range for storage: from -20 to +70°C
Ambient temperature range for operating: from -10 to +40°C (100% nominal load)
Altitude above sea level: 1000m without load derating
Allowable air humidity: < 95% (noncondensing)
Noise level standard n+1 fan system: 60 - 70 dBA depending on type
Noise level 100% redundant fans: 65 - 75 dBA depending on type
Degree of protection: IP20 according to IEC 60529
Painting: pebble grey, RAL 7032 structured
Performance test:
- Safety: EN 50018 - 1, CE - Label
- EMC: EN 50091 - 2, CE - Label
Efficiency: 76 - 93% depending on type range
Cooling: forced ventilation with redundant n+1 supervisied fans

Battery Voltage & UPS Ratings

<table>
<thead>
<tr>
<th>Voltage (VDC)</th>
<th>110</th>
<th>125</th>
<th>220</th>
<th>400</th>
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<tr>
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<td>5 5 5 5</td>
<td>10 10 10 10</td>
<td>15 15 15 15</td>
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Higher ratings and other voltages on request

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Options

Parallel redundant configuration
Other input voltages: Frequency 60Hz +/-6%
12-pulse Rectifier with Isolation Transformer

Data subject to change

Additional options are available on request