



# Product Catalogue

 **ASPOWER**  
nonstop life

## AS 1000 Series



### AS 1000 Series Technical Specifications

1-3 kVA 1 Phase Input - 1 Phase Output (HF) Online UPS

| MODEL                     | AS 1001  | AS 1001L   | AS 1002   | AS 1002L | AS 1003     | AS 1003L    |  |  |  |  |  |
|---------------------------|--|--|---|----------|-------------|-------------|--|--|--|--|--|
| Rated Power (kVA)         | 1 kVA  |  | 2 kVA   |          | 3 kVA       |             |  |  |  |  |  |
| Active Power (kW)         | 0,9 kW   |  | 1,8 kW  |          | 2,7 kW      |             |  |  |  |  |  |
| <b>INPUT</b>              |  |  |   |          |             |             |  |  |  |  |  |
| Rated Voltage             | 200/208/220/230/240 Vac (1P+N+PE)  |  |   |          |             |             |  |  |  |  |  |
| Voltage Range             | 125~290±%5@0-60% Rated Load<br>155~290±%5@70-80% Rated Load                                  |  | 135~290±%5@60-70% Rated Load<br>175~290±%5@80-100% Rated Load |          |             |             |  |  |  |  |  |
| Operating Frequency Range | 40/70 Hz   |  |   |          |             |             |  |  |  |  |  |
| Power Factor              | 0,99   |  |   |          |             |             |  |  |  |  |  |
| <b>OUTPUT</b>             |  |  |   |          |             |             |  |  |  |  |  |
| Rated Voltage             | 200/208/220/230/240 Vac (1P+N+PE)  |  |   |          |             |             |  |  |  |  |  |
| Voltage Regulation        | ±1%  |  |   |          |             |             |  |  |  |  |  |
| Frequency                 | Line<br>Battery  | 47-53 Hz or 57-63 Hz (Synchronized Range)<br>50/60±0,1 Hz  |   |          |             |             |  |  |  |  |  |
| Waveform                  | Pure Sine Wave   |  |   |          |             |             |  |  |  |  |  |
| Voltage Distortion (THDv) | <3% (linear load);<6%(Non-linear load)   |  |   |          |             |             |  |  |  |  |  |
| Output Power Factor       | 0,9  |  |   |          |             |             |  |  |  |  |  |
| Crest Factor              | 3:1  |  |   |          |             |             |  |  |  |  |  |
| Efficiency                | Line Mode<br>Battery Mode  | 88%<br>85%   | 92%<br>86%  | 87%      | 88%         | 89%         |  |  |  |  |  |
| <b>SYSTEM FEATURES</b>    |  |  |   |          |             |             |  |  |  |  |  |
| UPS Type / Technology     | Standalone Tower Type / True Online Double Conversion  |  |   |          |             |             |  |  |  |  |  |
| Transfer Time             | AC - Battery<br>INV - Bypass   | Zero<br>4 ms (Typical)   |   |          |             |             |  |  |  |  |  |
| Overload Capability       | Ambient Time<br><35 °C   | 105%-110%: UPS shuts down after 10 minutes at battery mode or transfer to bypass when the utility is normal<br>110%-130%: UPS shuts down after 1 minutes at battery mode or transfer to bypass when the utility is normal<br>>130%:UPS shuts down after 3 seconds at battery mode or transfer to bypass when the utility is normal |   |          |             |             |  |  |  |  |  |
|                           | 40°C < Ambient Temp<35°C   | 105%-110%: UPS shuts down after 1 minutes at battery mode or transfer to bypass when the utility is normal<br>>110%:UPS shuts down after 3 seconds at battery mode or transfer to bypass when the utility is normal  |   |          |             |             |  |  |  |  |  |
| Short Circuit             | Hold Whole System  |  |   |          |             |             |  |  |  |  |  |
| Overheat                  | Line Mode: Switch to Bypass; Backup Mode: Shut down UPS immediately                          |  |   |          |             |             |  |  |  |  |  |
| Low Battery Voltage       | Alarm and Switch Off   |  |   |          |             |             |  |  |  |  |  |
| EPO (optional)            | Shut down UPS Immediately  |  |   |          |             |             |  |  |  |  |  |
| Communication Interface   | USB (or Rs232), SNMPcard (optional) Relay card (optional)                                    |  |   |          |             |             |  |  |  |  |  |
| Audible & Visual Alarms   | Line Failure, Battery Low Overload, System Fault   |  |   |          |             |             |  |  |  |  |  |
| <b>BATTERY</b>            |  |  |   |          |             |             |  |  |  |  |  |
| Rated Voltage / Capacity  | 2x12V/9 Ah   |  | 4x12V/9 Ah  |          | 6x12V/9 Ah  |             |  |  |  |  |  |
| Typical Charge Time       | 4 Hours to %90 Capacity  |  |   |          |             |             |  |  |  |  |  |
| <b>ENVIRONMENT</b>        |  |  |   |          |             |             |  |  |  |  |  |
| Operating Temperature     | 0°C to 40 °C   |  |   |          |             |             |  |  |  |  |  |
| Storage Temperature       | -25°C to 55°C  |  |   |          |             |             |  |  |  |  |  |
| Relative Humidity         | < 20-95% @ 0°- 40 °C (non-condensing)  |  |   |          |             |             |  |  |  |  |  |
| Altitude                  | < 1500 m   |  |   |          |             |             |  |  |  |  |  |
| Audible Noise             | < 50 dBA   |  |   |          |             |             |  |  |  |  |  |
| <b>STANDARDS</b>          |  |  |   |          |             |             |  |  |  |  |  |
| LVD (Safety)              | IEC/EN 62040-1 / IEC/EN 60950-1  |  |   |          |             |             |  |  |  |  |  |
| EMC                       | IEC/EN 62040-2/IEC61000-4-2/IEC61000-4-3/IEC61000-4-4/IEC61000-4-5/IEC61000-4-6/IEC61000-4-8 |  |   |          |             |             |  |  |  |  |  |
| <b>PHYSICAL</b>           |  |  |   |          |             |             |  |  |  |  |  |
| Dimensions (WxDxH) [mm]   | 144x293x209  |  | 144x399x209   |          | 191x460x337 | 144x399x209 |  |  |  |  |  |
| Weight [kg]               | 9,8  | 4,1  | 17  | 6,8      | 27,6        | 7,4         |  |  |  |  |  |

### ONLINE UPS

AS 1000 Series, produced with PWM and IGBT technology provide sinusoidal waveform output and contains advanced communication options. These series are 1 phase input, 1 phase output online UPS. AS 1000 Series manufactured in different power ranges, are used to supply vital important equipment's such as medical analysis equipment's, operating rooms in hospitals, ultrasound equipment's, security systems, all kinds of automation systems, computer networks and communication systems. Thanks to higher protection providing technology. AS 1000 series protect them from problems of utility failures and irregular voltage.

### FEATURES

- True double-conversion
- Wide input voltage range (110-300 Vac)
- Input power factor correction 0.99
- Output Power Factor 0.9
- Maximum 12A charger for long-run models
- Charger current can be setting by LCD
- 50Hz/60Hz frequency converter mode
- Emergency power off function (EPO)
- Eco mode operation for energy saving (ECO)
- Generator compatible
- SNMP / USB / RS232 multiple communications
- Smart battery charger design for optimized battery performance
- Selectable output voltage: 200, 208, 220, 230, 240Vac

## AS 1000 Series



### AS 1000 Series Technical Specifications

6-10 kVA 1 Phase Input - 1 Phase Output (HF) Online UPS

| MODEL                                  | AS 1006   | AS 1006L  | AS 1010       | AS 1010L |
|--|---|---|---------------|----------|
| Rated Power (kVA)                      | 6   |   | 10            |          |
| Active Power (kW)                      | 5,4   |   | 9             |          |
| <b>INPUT</b>                           |   |   |               |          |
| Rated Power                            | 220/230/240 VAC 1P+N+PE   |   |               |          |
| Voltage Range                          | 120~276 VAC   |   |               |          |
| Operating Frequency Range              | 50Hz: 45-55Hz; 60Hz: 54-66Hz (Auto Sensing)   |   |               |          |
| Harmonic Distortion (THD) <sup>i</sup> | <3% (100% Liner Load)   |   |               |          |
| Power Factor                           | 0,99  |   |               |          |
| Bypass Voltage Range                   | Max. Voltage: 220V: +25%(optional +10%, +15%, +20%) 230V: +20%(optional +10%, +15%) 240V: +15%(optional +10%) Min.Voltage: -45% (optional -20%, -30%) |   |               |          |
| ECO Range                              | Same as the Bypass  |   |               |          |
| Harmonic Distortion (THD) <sup>i</sup> | <3% (100% Linear Load)  |   |               |          |
| Generator Input                        | Yes   |   |               |          |
| <b>OUTPUT</b>                          |   |   |               |          |
| Rated Voltage                          | 220/230/240 VAC 1P+N+PE   |   |               |          |
| Voltage Regulation                     | ±1%   |   |               |          |
| Frequency                              | Line  | ±1% / ±2% / 4% / ±5% / ±10% of the Rated Frequency (Optional)                     |               |          |
|  | Battery   | 50/60 ± 0,1 Hz  |               |          |
| Waveform                               | Pure Sine Wave  |   |               |          |
| Voltage Distortion (THDv)              | ≤ 2% (Liner Load); ≤ 5% (Non-Liner Load)  |   |               |          |
| Output Power Factor                    | 0,9   |   |               |          |
| Crest Factor                           | 3:1   |   |               |          |
| Efficiency                             | >93,5%  |   |               |          |
| <b>SYSTEM FEATURES</b>                 |   |   |               |          |
| UPS Type / Technology                  | Standalone Tower Type / True Online Double Conversion   |   |               |          |
| Transfer Time                          | Mains to Battery: 0 ms. Mains to Bypass: 0 ms.  |   |               |          |
| Overload                               | Line Mode   | Load≤ 110%: 60min; ≤125%:10min, ≤150%:1min, >150% turn to bypass mode immediately |               |          |
| Capability                             | Bypass Mode   | 40A (Breaker)   | 60A (Breaker) |          |
| Short Circuit                          |   | Hold Whole System   |               |          |
| Overheat                               |   | Line Mode: Switch to Bypass: Backup Mode: Shut down UPS immediately               |               |          |
| Low Battery Voltage                    |   | Alarm and Switch Off  |               |          |
| Battery                                |   | Advanced Battery Management   |               |          |
| LED & LCD Display                      | Line Mode, Bat Mode, Eco Mode, Bypass Mode, Battery Low, Overload & UPS Fault   |   |               |          |
| LCD Display                            | Input Voltage, Input Frequency, Output Voltage, Output Frequency, Load Percentage, Battery Voltage, Inner Temperature & Remaining Battery Backup Time |   |               |          |
| Self - Diagnostics                     |   | Upon Power On and Software Control  |               |          |
| Communication Interface                | USB (RS-232), SNMP card (optional), Relay card (optional)   |   |               |          |
| Audible & Visual Alarms                | Line Failure, Battery Low, Overload, System Fault   |   |               |          |
| <b>BATTERY</b>                         |   |   |               |          |
| Battery Voltage                        | ±96/108/120 Vdc (Optional)  |   |               |          |
| Capacity                               | 12V/7Ah/9Ah   |   |               |          |
| Typical Re-Charge Time                 | 6-8 Hours (to 90% of full capacity)   |   |               |          |
| Charge Current                         | 1A(Standard unit); long run unit max. current 10A (can be set according to battery capacity insalled)   |   |               |          |
| <b>ENVIRONMENT</b>                     |   |   |               |          |
| Operating Temperature                  | 0°C to 40°C   |   |               |          |
| Storage Temperature                    | -25°C to 55°C   |   |               |          |
| Reletive Humidity                      | 0-95% (non-condensing)  |   |               |          |
| Altitude                               | <1500m  |   |               |          |
| Audible Noise                          | <55 dBA   |   |               |          |
| <b>STANDARDS</b>                       |   |   |               |          |
| LVD (Safety)                           | IEC / EN 62040-1 / IEC / EN 60950-1   |   |               |          |
| EMC                                    | IEC/EN62040-2/IEC 61000-4-2/IEC61000-4-3/IEC61000-4-4/IEC61000-4-5/IEC61000-4-6/IEC61000-4-8  |   |               |          |
| <b>PHYSICAL</b>                        |   |   |               |          |
| Dimensions (WxDxH) (mm)                | 250X502X616   |   |               |          |
| Weight (kg)                            | 62  | 18  | 64            | 20       |

### ONLINE UPS

AS 1000 Series, produced with PWM and IGBT technology provide sinusoidal waveform output and contains advanced communication options. These series are 1 phase input, 1 phase output online UPS. AS 1000 Series manufactured in different power ranges, are used to supply vital important equipment's such as medical analysis equipment's, operating rooms in hospitals, ultrasound equipment's, security systems, all kinds of automation systems, computer networks and communication systems. Thanks to higher protection providing technology. AS 1000 series protect them from problems of utility failures and irregular voltage.

## AS 1000R Series



### AS 1000R Series Technical Specifications

1-3 kVA 1 Phase Input - 1 Phase Output (HF) Rack Type Online UPS

| MODEL                     | AS 1001R       | AS 1001RL | AS 1002R                                  | AS 1002RL   | AS 1003R       | AS 1003RL |
|---------------------------|----------------|-----------|---|---|----------------|-----------|
| Rated Power (kVA)         | 1000           |           | 2000                                      |   | 3000           |           |
| Active Power (W)          | 900            |           | 1800                                      |   | 2700           |           |
| <b>INPUT</b>              |                |           |   |   |                |           |
| Rated Power               |                |           | 200/208/220/230/240 VAC 1P+N+PE           |   |                |           |
| Voltage Range             |                |           | 110~300@0-60% Rated Load                  | 160~300@61-100% Rated Load  |                |           |
| Operating Frequency Range |                |           | 50Hz: 45-55Hz                             | 60Hz: 54-66Hz (Auto Sensing)  |                |           |
| Power Factor              |                |           |   | 0,99@Nominal Voltage (%100 Load)  |                |           |
| <b>OUTPUT</b>             |                |           |   |   |                |           |
| Rated Voltage             |                |           | 200/208/220/230/240 VAC 1P+N+PE           |   |                |           |
| Voltage Regulation        |                |           |   | ±1%   |                |           |
| Frequency                 | Line           |           | 45-55 Hz or 56-64 Hz (Synchronized Range) |   |                |           |
|                           | Battery        |           |   | 50/60±0,1 Hz  |                |           |
| Waveform                  |                |           | Pure Sine Wave                            |   |                |           |
| Voltage Distortion (THDv) |                |           |   | <3%(Liner Load);<6% (Non-Linear Load)   |                |           |
| Output Power Factor       |                |           |   | 0,9   |                |           |
| Crest Factor              |                |           |   | 3:1   |                |           |
| Efficiency                | Line Mode      |           | 88%                                       | 89%   | 90%            |           |
|                           | Battery Mode   |           | 83%                                       | 85%   | 86%            |           |
| <b>SYSTEM FEATURES</b>    |                |           |   |   |                |           |
| UPS Type / Technology     |                |           |   | Rack Mount Type / True Online Double Conversion   |                |           |
| Transfer                  | AC - Battery   |           |   |   | Zero           |           |
| Time                      | INV - Bypass   |           |   |   | 4 ms (Typical) |           |
| Management                | RS-232/USB     |           |   | Supports Windows • 2000/2003XP/2008 Windows 7/8, Linux, FreeBSD and MAC                     |                |           |
|                           | Optional SNMP  |           |   | Power Management from SNMP Manager and Web Browsee  |                |           |
| LCD Indicators            |                |           |   | Load Level, Battery Level, Ac Mode, Battery Mode, Bypass Mode, and Fault Indicators         |                |           |
| Audible Alarms            |                |           |   | Battery Mode, Fault, Overload, Battery Low,   |                |           |
| <b>BATTERY</b>            |                |           |   |   |                |           |
| Standart                  | Battery Type   |           | 2x12V/9Ah                                 | 4x12V/9 Ah  | 6x12V/9 Ah     |           |
| Model                     | Recharge Time  |           |   | 4 hours recover to 90% capacity   |                |           |
| (KR)                      | Charge Current |           |   |   | 1.0 A          |           |
|                           | Charge Voltage |           | 27,4Vdc±%1                                | 54,7 Vdc±%1   | 82,1 Vdc±%1    |           |
| Long Back-up              | Charge Current |           |   | 6 A/12A (Double Board)  |                |           |
| Model (KRL)               | Charge Voltage |           | 27.4Vdc±%1                                | 54,7 Vdc±%1   | 82,1 Vdc±%1    |           |
| <b>ENVIRONMENT</b>        |                |           |   |   |                |           |
| Operating Temperature     |                |           |   | 0°C to 40 °C  |                |           |
| Storage Temperature       |                |           |   | -25°C to 55°C   |                |           |
| Relative Humidity         |                |           |   | <20-90%@0°C - 40°C (non-condensing)   |                |           |
| <b>STANDARDS</b>          |                |           |   |   |                |           |
| LVD (Safety)              |                |           |   | IEC/EN 62040-1/IEC/EN 60950-1   |                |           |
| EMC                       |                |           |   | IEC/EN62040-2/IEC61000-4-2/IEC61000-4-3/IEC61000-4-4/IEC61000-4-5/IEC61000-4-6/IEC61000-4-8 |                |           |
| <b>SYSTEM FEATURES</b>    |                |           |   |   |                |           |
| Dimensions (WxDxH)(mm)    | Standart KR    |           | 440X430X86,5                              | 440x552x86,5  | 440x710x86,5   |           |
|                           | Long KRL       |           | 440X430X86,5                              |   | 440x552x86,5   |           |
| Weight (kg)               | Standart KR    |           | 13,9                                      | N/A   | 20,1           | N/A       |
|                           | Long KRL       |           | 8,2                                       |   | 10,9           | N/A       |
|                           |                |           |   |   | 11,3           |           |

### FEATURES

- Rack Tower Convertible Design
- Mimic LCD Display May be Rotated by Simply Pushing Front Button
- True Online Double Conversion
- High Output Power Factor at 0.9PF
- Comprehensive Display Allows Easy Monitoring and Access of UPS Status
- Smart SNMP works with either USB or RS-232 together
- Hot-Swappable Battery
- Efficiency up to 90%
- Estimated Remaining Time Displayed on the LCD
- Support Economic (ECO) Operation Mode
- Matching Battery Pack
- Optional Powerful Charger
- Cold Start
- Power Shedding May Turn off Uncritical Load In Battery Backup
- Emergency Power Off
- Frequency Converter Mode Is Settable

### ONLINE UPS

AS 1000R series online intelligent UPS, adopts DSP all-digital control technology, with more Excellent output index and multi term innovation design, able to provide full protection for high-performance serve, internet equipment telecommunication system, industry process and other key equipment. Tower and Rack Mount conversion function design, greatly improve the UPS adaptability to the Installation modes.

## AS 1000R Series



### FEATURES

- Online-Double conversion
- Non Transfer Time of Output
- PFC Technology
- Full Digital Control (DSP)
- Output Power Factor: 0.9
- Input Current Harmonic<3%
- ECO Function
- Charging/Rectifier/Inverter Fully Digital Control Technology
- Optimization Battery Group, the Quantity of Battery: 16/18/20 pieces (optional)
- Wide Input Voltage Range: 120-276Vac
- Wide Input Frequency Range: 45-55Hz/54-66 Hz
- Self-Testing When UPS Startup
- Input Over/Under Voltage Protection
- Automatic Bypass
- DC Start
- Communication Port: RS232, USB
- Options: SNMP Card/ Relay Card

### AS 1000R Series Technical Specifications

6-10 kVA 1 Phase Input - 1 Phase Output (HF) Rack Type Online UPS

| MODEL                     | AS 1006R   | AS 1010R |
|---------------------------|--|----------|
| Rated Power (kVA)         | 6  | 10       |
| Active Power (kW)         | 5,4  | 9        |
| <b>INPUT</b>              |  |          |
| Rated Voltage             | 220/230/240 VAC (1P+N+PE)  |          |
| Voltage Range             | 120~276 VAC  |          |
| Operating Frequency Range | 50 Hz: 45-55 Hz; 60 Hz:54-66 Hz (Auto Sensing)   |          |
| Power Factor              | ≥ 0,99   |          |
| Bypass Voltage Range      | Max. Voltage: 220V: +25% (optional +10%, +15%, +20%) 230V: +20% (optional +10%, +15%)<br>240V: +15% (optional +10%) Min. voltage: -45% (optional -20%, -30%) |          |
| ECO Range                 | Same as the Bypass   |          |
| Harmonic Distortion (THD) | <3% (100% linear load)   |          |
| Generator Input           | Yes  |          |
| <b>OUTPUT</b>             |  |          |
| Rated Voltage             | 220/230/240 VAC 1P+N+PE  |          |
| Voltage Regulation        | ±2%  |          |
| Frequency                 | Line: ±1%/±2%/±4%/±5%/±10% of the Rated Frequency (Optional)<br>Battery: 50/60± 0,1 Hz   |          |
| Waveform                  | Pure Sine Wave   |          |
| Voltage Distortion (THDv) | ≤ 2% (Linear load); ≤ 5% (Non-linear load)   |          |
| Output Power Factor       | 0,9  |          |
| Crest Factor              | 3 :1   |          |
| Efficiency                | >93,5%   |          |
| <b>SYSTEM FEATURES</b>    |  |          |
| UPS Type / Technology     | Rack Type / True Online Double Conversion  |          |
| Transfer Time             | Mains to Battery: Oms; Mains to Bypass: Oms  |          |
| Overload Capability       | Line Mode: Load ≤110%; 60min; ≤125%: 10min, ≤150%: 1min, >150% turn to bypass mode immediately<br>Bypass Mode: 40A (Breaker)                                 |          |
| Short Circuit             | Hold Whole System  |          |
| Overheat                  | Line Mode: Switch to Bypass; Backup Mode: Shut down UPS immediately  |          |
| Low Battery Voltage       | Alarm and Switch Off   |          |
| Battery                   | Advanced Battery Management  |          |
| LED & LCD Display         | Line Mode, Bat. Mode, Eco Mode, Bypass Mode, Battery Low, Overload & UPS Fault   |          |
| LCD Display               | Input Voltage, Input Frequency, Output Voltage, Output Frequency, Load Percentage, Battery Voltage, Inner Temperature & Remaining Battery Backup Time        |          |
| Self - Diagnostics        | Upon Power On and Software Control   |          |
| Communication Interface   | USB (or RS-232), SNMP Card (optional), Relay card (optional)   |          |
| EPO (Optional)            | Shut Down UPS Immediately  |          |
| <b>BATTERY</b>            |  |          |
| Battery Voltage           | ±96/108/120Vdc (Optional)  |          |
| Typical Re-Charge Time    | 6-8 Hours (to 90% of full capacity)  |          |
| Charge Current            | Maximum Current 6A(Standard unit); Long run unit max. current 10A(can be set according to battery capacity installed)  |          |
| <b>ENVIRONMENT</b>        |  |          |
| Operating Temperature     | 0°C to 40 °C   |          |
| Storage Temperature       | -25°C to 55°C  |          |
| Relative Humidity         | 0-95% (non-condensing)   |          |
| Altitude                  | < 1500m  |          |
| Audible Noise             | < 55 dBA   |          |
| <b>STANDARDS</b>          |  |          |
| LVD (Safety)              | IEC/EN 62040-1/IEC/EN 60950-1  |          |
| EMC                       | IEC/EN62040-2/IEC61000-4-2/IEC61000-4-3/IEC61000-4-4/IEC61000-4-5/IEC61000-4-6/IEC61000-4-8  |          |
| <b>PHYSICAL</b>           |  |          |
| Dimensions (WxDxH) [mm]   | 443x580x131 (3U)   |          |
| Weight [kg]               | 23   | 25       |

### ONLINE UPS

AS 1000R series online intelligent UPS, adopts DSP all-digital control technology, with more Excellent output index and multi term innovation design, able to provide full protection for high-performance serve, internet equipment telecommunication system , industry process and other key equipment. Tower and Rack Mount conversion function design, greatly improve the UPS adaptability to the Installation modes.

## AS 1000D Series



### AS 1000D Series Technical Specifications

5-15 kVA 1 Phase Input - 1 Phase Output (LF) Online UPS

| MODEL                    | AS 1005D   | AS 1007D    | AS 1010D    | AS 1015D    |  |  |
|--------------------------|--|-------------|-------------|-------------|--|--|
| Apparent Power (kVA)     | 5  | 7           | 10          | 15          |  |  |
| Active Power (kW)        | 3,25   | 4,55        | 7           | 10,5        |  |  |
| <b>INPUT</b>             |  |             |             |             |  |  |
| Voltage                  | 220/230 Vac (1P+N+PE)  |             |             |             |  |  |
| Voltage Tolerance        | ±%15   |             |             |             |  |  |
| Frequency                | 50 Hz (60Hz On Request)  |             |             |             |  |  |
| Frequency Range          | 5%   |             |             |             |  |  |
| Current                  | 30A  | 40A         | 58A         | 87A         |  |  |
| <b>OUTPUT</b>            |  |             |             |             |  |  |
| Voltage                  | 220 Vac (1Ph+N+PE)   |             |             |             |  |  |
| Voltage Regulation       | ±1%  |             |             |             |  |  |
| Frequency                | 50 Hz (60 Hz On Request)   |             |             |             |  |  |
| Frequency Tolerance      | Synchronized to Network ±2% in Line Mode; ±0,2 Hz in Free Running      |             |             |             |  |  |
| Crest Ratio              | 3:1  |             |             |             |  |  |
| Efficiency (100% Load)   | 85 - 87 %  |             | 86 - 90 %   |             |  |  |
| THDv                     | <3% Linear Load, <5% Non Linear Load                                   |             |             |             |  |  |
| Overload                 | %100<load<%125 for 10 min., %125<load<%150 for 1 min, Load> 150:Bypass |             |             |             |  |  |
| Short Circuit Protection | Electronic Protection  |             |             |             |  |  |
| <b>BATTERY</b>           |  |             |             |             |  |  |
| Type                     | Maintenance Free Lead Acid Battery                                     |             |             |             |  |  |
| Quantity                 | 16   | 18          | 20          |             |  |  |
| Charge Voltage           | 216VDC   | 243VDC      | 270VDC      |             |  |  |
| End of Discharge Voltage | 160VDC   | 180VDC      | 200VDC      |             |  |  |
| Battery Protection       | Automatic Circuit Breaker  |             |             |             |  |  |
| Ambient Temperature      | 25°C   |             |             |             |  |  |
| Battery Cabinet          | Internal   |             | External    |             |  |  |
| <b>COMMUNICATION</b>     |  |             |             |             |  |  |
| Interface                | RS-232 and Dry Contacts  |             |             |             |  |  |
| Software                 | UPS Management SW (3Client + 1Server)                                  |             |             |             |  |  |
| <b>ENVIRONMENTAL</b>     |  |             |             |             |  |  |
| Operating Temperature    | 0 to 40 °C   |             |             |             |  |  |
| Storage Temperatura      | -25 to + 55°C  |             |             |             |  |  |
| Relative Humidity        | %0-90 (Non-condensing)   |             |             |             |  |  |
| Altitude                 | <1000 m  |             |             |             |  |  |
| Protection Level         | IP20   |             |             |             |  |  |
| Acoustic Noise           | <45 dBA  |             |             |             |  |  |
| <b>PHYSICAL</b>          |  |             |             |             |  |  |
| Dimensions (WxDxH)       | 265x600x590  | 265x660x640 | 265x740x720 | 300x810x720 |  |  |
| Weight (kg)              | 60   | 75          | 82          | 107         |  |  |
| <b>OPTIONS</b>           |  |             |             |             |  |  |
| Input Transformer        | Galvanic Isolation for the Input                                       |             |             |             |  |  |
| MBS                      | Maintenance Bypass Switch for Complete Isolation                       |             |             |             |  |  |
| Interface                | SNMP, MODBUS, Remote Mon. Panel, RS-485                                |             |             |             |  |  |
| Parallel Operation       | N+1 Unit (Up to 2 Units)   |             |             |             |  |  |
| <b>STANDARDS</b>         |  |             |             |             |  |  |
| Harmonized Standards     | EN 62040-1 (LVD), EN 62040-2 (EMC), EN 62040-3                         |             |             |             |  |  |

#### ONLINE UPS

AS 1000D Series Online UPSs protect mono phase critical loads against utility failures and irregular voltage cases. They produce pure sine wave output via microprocessor controlled, manufactured with the state of the art PWM and IGBT technology. Galvanic isolation transformer, parallel operability, communication port are available. IT applications, small offices, service providers, communication networks, control equipment's, automation systems etc. are the main fields of use with a proved reliable high technology.

#### FEATURES

- Output transformer for galvanic isolation
- Static by-pass through the utility at Overload or UPS breakdown
- Load, battery state and detailed information including advanced LCD front panel
- 64 registered events history
- RS-232 and dry contact output



## AS 2000 Series Technical Specifications

10-20 kVA 3 Phase Input - 1 Phase Output (HF) Online UPS



| MODEL                      | AS 2010 / 2010L  | AS 2015  | AS 2020        |  |  |
|----------------------------|--|--|----------------|--|--|
| Rated Power (kVA)          | 10   | 15   | 20             |  |  |
| Active Power (kW)          | 9  | 13,5   | 18             |  |  |
| <b>INPUT</b>               |  |  |                |  |  |
| Rated Power                | 380/400/415 VAC (3P+N+PE)  |  |                |  |  |
| Voltage Range              | 208~478 VAC  |  |                |  |  |
| Operating Frequency Range  | 50Hz: 45-55Hz; 60Hz: 54-66Hz (Auto Sensing)  |  |                |  |  |
| Harmonic Distortion (THDi) | <5% (100% Liner Load)  |  |                |  |  |
| Power Factor               | 0,99   |  |                |  |  |
| Bypass Voltage Range       | Max.Voltage: 380V: +25%(optional +10%, +15%, +20%) 400V: +20%(optional +10%, +15%)<br>4150V: +15%(optional +10%) Min.Voltage: -45% (optional -20%, -30%) |  |                |  |  |
| ECO Range                  | Same as the Bypass   |  |                |  |  |
| Harmonic Distortion (THD)  | <5% (100% Linear Load)   |  |                |  |  |
| Generator Input            | Yes  |  |                |  |  |
| <b>OUTPUT</b>              |  |  |                |  |  |
| Rated Voltage              | 220/230/240 VAC 1P+N+PE  |  |                |  |  |
| Voltage Regulation         | ±1%  |  |                |  |  |
| Frequency                  | Line   | ±1% / ±2% / 4% / ±5% / ±10% of the Rated Frequency (Optional)                    |                |  |  |
|                            | Battery  | 50/60 ± 0,1 Hz   |                |  |  |
| Waveform                   | Pure Sine Wave   |  |                |  |  |
| Voltage Distortion (THDV)  | ≤ 2% (Liner Load); ≤ 5% (Non-Liner Load)   |  |                |  |  |
| Output Power Factor        | 0,9  |  |                |  |  |
| Crest Factor               | 3:1  |  |                |  |  |
| Efficiency                 | >93,5%   | >94,5%   |                |  |  |
| <b>SYSTEM FEATURES</b>     |  |  |                |  |  |
| UPS Type / Technology      | Standalone Tower Type / True Online Double Conversion  |  |                |  |  |
| Transfer Time              | Mains to Battery: Oms Mains to Bypass: Oms   |  |                |  |  |
| Overload                   | Line Mode  | Load≤ 110%: 60min; ≤125%:10min, ≤150%:1min,>150% turn to bypass mode immediately |                |  |  |
| Capability                 | Bypass Mode  | 63A (Breaker)  | 100A (Breaker) |  |  |
|                            |  | 125A (Breaker)   |                |  |  |
| Short Circuit              | Hold Whole System  |  |                |  |  |
| Overheat                   | Line Mode: Switch to Bypass; Backup Mode: Shut down UPS immediately  |  |                |  |  |
| Low Battery Voltage        | Alarm and Switch Off   |  |                |  |  |
| Battery                    | Advanced Battery Management  |  |                |  |  |
| LED & LCD Display          | Line Mode, Bat Mode, Eco Mode, Bypass Mode, Battery Low, Overload & UPS Fault  |  |                |  |  |
| LCD Display                | Input Voltage, Input Frequency, Output Voltage, Output Frequency, Load Percentage, Battery Voltage, Inner Temperature & Remaining Battery Backup Time    |  |                |  |  |
| Self - Diagnostics         | Upon Power On and Software Control   |  |                |  |  |
| Communication Interface    | USB (or RS-232), SNMP card (optional), Relay card (optional)   |  |                |  |  |
| Audible & Visual Alarms    | Line Failure, Battery Low, Overload, System Fault  |  |                |  |  |
| <b>BATTERY</b>             |  |  |                |  |  |
| Battery Voltage            | ±96/108/120 Vdc (Optional)   |  |                |  |  |
| Capacity                   | 12V/7Ah/9Ah  |  |                |  |  |
| Typical Re-Charge Time     | 6-8 Hours (to 90% of full capacity)  |  |                |  |  |
| Charge Current             | 1A(Standard unit); long run unit max. current 10A (Long Run Unit)  |  |                |  |  |
| <b>ENVIRONMENT</b>         |  |  |                |  |  |
| Operating Temperature      | 0°C to 40°C  |  |                |  |  |
| Storage Temperature        | -25°C to 55°C  |  |                |  |  |
| Reletive Humidity          | 0-95% (non-condensing)   |  |                |  |  |
| Altitude                   | <1500m   |  |                |  |  |
| Audible Noise              | <55 dBA  | <58 dBA  |                |  |  |
| <b>STANDARDS</b>           |  |  |                |  |  |
| LVD (Safety)               | IEC / EN 62040-1 / IEC / EN 60950-1  |  |                |  |  |
| EMC                        | IEC/EN62040-2/IEC 61000-4-2/IEC61000-4-3/IEC61000-4-4/IEC61000-4-5/IEC61000-4-6/IEC61000-4-8   |  |                |  |  |
| <b>PHYSICAL</b>            |  |  |                |  |  |
| Dimensions (WxHxL) (mm)    | 250x597x655(K)/250x502x616(PL)   | 250x502x616  |                |  |  |
| Weight (kg)                | 76(K) / 35(PL)   | 45   | 46             |  |  |

### FEATURES

- N+X Parallel Redundancy
- Online Double Conversion with DSP Control
- Input Current Harmonic: <5%
- Optimization Battery Group, the Quantity of Battery: 16/18/20 pieces (optional)
- Output Power Factor is Changed When Selection Different Battery Quantity  
16 pcs: 0.7PF; 18pcs:0.8PF; 20pcs:0.9PF
- Wide Input Voltage Range: 208-478Vac
- Wide Input Frequency Range (50Hz: 45-55Hz; 60Hz: 54-66Hz)
- Support Generator Input
- Support Economic (ECO) Operation Mode
- Self-Testing When UPS Startup
- Options: SNMP Card/Relay Card/ Parallel Board
- Cold start

### ONLINE UPS

AS 2000 Series of three phases in / single phase out with high frequency online double conversion UPS is a stable and reliable UPS system which was designed by ASPOWER Company according to inter national power grid environment and network systems requirements. Its excellent quality and perfect usability provide safe network power supply with reliable protection and satisfy the users' requirements of protecting overall equipment.

## AS 2000D Series



### FEATURES

- IGBT Rectifier and Inverter
- Active Input Current Correction < %5
- DSP Controlled
- Up to 0.99 Input Power Factor Correction
- Static Bypass at UPS Overload or UPS Failure
- Advanced LCD Panel
- Up to 500 Event History
- Optional SNMP

### AS 2000D Series Technical Specifications 3 Phase Input - 1 Phase Output (HF) Online UPS

| MODEL                    | AS 2010D  | AS 2015D | AS 2020D | AS 2030D |
|--------------------------|---|----------|----------|----------|
| Power (kVA)              | 10  | 15       | 20       | 30       |
| Active Power (kW)        | 8   | 12       | 16       | 24       |
| <b>INPUT</b>             |   |          |          |          |
| Voltage                  | 380/400/415 Vac (3 Ph+N+PE)   |          |          |          |
| Voltage Tolerance        | ±%20  |          |          |          |
| Frequency                | 50 Hz (On Request 50Hz)   |          |          |          |
| Frequency Tolerance      | ±6%   |          |          |          |
| THDi                     | <%5   |          |          |          |
| Input Power Factor       | 0,99  |          |          |          |
| <b>OUTPUT</b>            |   |          |          |          |
| Voltage                  | 220 Vac (1Phase+N+PE)   |          |          |          |
| Voltage Regulation       | <±1%  |          |          |          |
| Frequency                | 50 Hz (60 Hz On Request)  |          |          |          |
| Frequency Range          | Synchronized to Network ±2% in Linemode; ±0,05 Hz in Free Running       |          |          |          |
| Crest Ratio              | 3:1   |          |          |          |
| Efficiency (100% Load)   | Up to %91   |          |          |          |
| THDv                     | <3% Linear Load, <5% Non Linear Load                                    |          |          |          |
| Overload                 | %100<load<%125 for 10 min., %125<load<%150 for 1 min,                   |          |          |          |
| Short Circuit Protection | Electronic Protection   |          |          |          |
| <b>BYPASS</b>            |   |          |          |          |
| Voltage Range            | 220 Vac ±%15  |          |          |          |
| Frequency Range          | 50 Hz ± %10   |          |          |          |
| <b>BATTERY</b>           |   |          |          |          |
| Type                     | Maintenance Free Lead Acid Battery (On request other types)             |          |          |          |
| Quantity                 | 60  |          |          |          |
| Charge Voltage           | 810 Vdc   |          |          |          |
| End of Discharge Voltage | 630 Vdc   |          |          |          |
| Protection               | Deep Discharge Protection   |          |          |          |
| <b>DISPLAY PANEL</b>     |   |          |          |          |
| LCD                      | Graphic LCD Panel, Mimic Diagram and Control Panel                      |          |          |          |
| LED                      | Line, Battery, Inverter, Load, Fault Indications                        |          |          |          |
| <b>COMMUNICATION</b>     |   |          |          |          |
| Interface                | Dry Contacts (Battery Low, Input Failure, System Bypass)                |          |          |          |
| <b>ENVIRONMENTAL</b>     |   |          |          |          |
| Operating Temperature    | -20 °C ~ +50°C  |          |          |          |
| Storage Temperatura      | -20 °C ~ +60°C  |          |          |          |
| Relative Humidity        | %0-95 (non condensing)  |          |          |          |
| Altitude                 | <1000m  |          |          |          |
| Cooling                  | Air Cooling   |          |          |          |
| Protection Level         | Ip20  |          |          |          |
| Acoustic Noise           | <55dBA  |          |          |          |
| <b>PHYSICAL</b>          |   |          |          |          |
| Dimensions (WxDxH) (mm)  | 350x795x1280  |          |          |          |
| Weight                   | 95  | 100      | 100      | 105      |
| <b>OPTIONS</b>           |   |          |          |          |
| Functions                | Eco Mode, Parallel Operation, EPO Emergency Stop, Isolation Transformer |          |          |          |
| Communication            | SNMP, Modem, Modbus   |          |          |          |
| <b>STANDARDS</b>         |   |          |          |          |
| Standards                | EN 62040-1 (LVD), EN 62040-20 (EMC), EN 62040-3                         |          |          |          |

### ONLINE UPS

AS 2000D Series Online UPS's protect mono phase critical loads against utility failures and irregular voltage cases where you have three phase electricity. They produce pure sine wave output via microprocessor controlled, manufactured with the state of the art PWM and IGBT technology. Industrial automation, integrated facilities, building security automation, medical, communication and laboratory equipment, etc. are the main fields of use with a proved reliable high technology.

## AS 3000 Series



### FEATURES

- IGBT Rectifier and Inverter
- Active Input Current Correction < %5
- Regenerative Operating
- Re-adjustable Battery Charge Current
- Built-in Self-Test
- Silent Performance
- Up to 6 Parallel Operation
- DSP Controlled
- Up to 0.99 Input Power Factor Correction
- Static Bypass at UPS Overload or UPS Failure
- Advanced LCD Panel
- Up to 500 Event History
- CE Certificate
- Patented Technology

### AS 3000 Series UPS

10-800 kVA 3 Phase Input - 3 Phase Output (HF) Online UPS

| MODEL                        | AS 3100  | AS 3120    | AS 3160    | AS 3200    | AS 3250    | AS 3300    | AS 3400 | AS 3500 | AS 3600 | AS 3800 |
|------------------------------|--|------------|------------|------------|------------|------------|---------|---------|---------|---------|
| Apparent Power (kVA)         | 100  | 120        | 160        | 200        | 250        | 300        | 400     | 500     | 600     | 800     |
| Active Power (kW)            | 80   | 96         | 128        | 160        | 200        | 240        | 320     | 400     | 480     | 640     |
| <b>INPUT</b>                 |  |            |            |            |            |            |         |         |         |         |
| Voltage                      | 380(Optional 400/415/440) Vac 3 PH+N+PE  |            |            |            |            |            |         |         |         |         |
| Voltage Tolerance            | ±%5...%20 (Adjustable with 1% step)  |            |            |            |            |            |         |         |         |         |
| Frequency                    | 50 Hz (On Request 60 Hz)   |            |            |            |            |            |         |         |         |         |
| Frequency Range              | %5   |            |            |            |            |            |         |         |         |         |
| THDi                         | <5%  |            |            |            |            |            |         |         |         |         |
| Input Power Factor           | 0,99   |            |            |            |            |            |         |         |         |         |
| <b>OUTPUT</b>                |  |            |            |            |            |            |         |         |         |         |
| Voltage                      | 380 (Optional 400/415/440) Vac 3Ph+N+PE  |            |            |            |            |            |         |         |         |         |
| Voltage Regulation           | <±1%   |            |            |            |            |            |         |         |         |         |
| Frequency                    | 50 Hz(On Request 60 Hz)  |            |            |            |            |            |         |         |         |         |
| Frequency Range              | Synchronized to Network ±2% in Line mode; ±0,05 Hz in Free Running   |            |            |            |            |            |         |         |         |         |
| Crest Ratio                  | 3:1  |            |            |            |            |            |         |         |         |         |
| Efficiency (100% Load)       | > %93  |            |            |            |            |            |         |         |         |         |
| Power Factor                 | 0,8  |            |            |            |            |            |         |         |         |         |
| THDv                         | <3% Linear Load, <5% Non Linear Load   |            |            |            |            |            |         |         |         |         |
| Owerload                     | %100<load<%125 for min., %125<load<150for 1 min., load>150: Bypass   |            |            |            |            |            |         |         |         |         |
| Short Circuit Protection     | Electronic Protection  |            |            |            |            |            |         |         |         |         |
| <b>BYPASS</b>                |  |            |            |            |            |            |         |         |         |         |
| Voltage Range                | 380 Vac ±%15(Optional 400/415/440 Vac)   |            |            |            |            |            |         |         |         |         |
| Frequency Range              | 50 Hz±10%  |            |            |            |            |            |         |         |         |         |
| <b>BATTERY</b>               |  |            |            |            |            |            |         |         |         |         |
| Type                         | Maintenance Free Lead Acid Battery   |            |            |            |            |            |         |         |         |         |
| Quantity                     | 60   |            |            |            |            |            |         |         |         |         |
| Charge Voltage               | 810 Vdc  |            |            |            |            |            |         |         |         |         |
| End of Discharge Voltage     | 630 Vdc  |            |            |            |            |            |         |         |         |         |
| Battery Protection           | Deep Discharge Protection  |            |            |            |            |            |         |         |         |         |
| Battery Test                 | Automatic / Manual   |            |            |            |            |            |         |         |         |         |
| <b>DISPLAY PANEL</b>         |  |            |            |            |            |            |         |         |         |         |
| LCD                          | Graphic LCD Panel, Mimic Panels and Control Panel  |            |            |            |            |            |         |         |         |         |
| LED                          | Line, Battery, Inverter, Load, Fault Indications   |            |            |            |            |            |         |         |         |         |
| <b>COMMUNICATION</b>         |  |            |            |            |            |            |         |         |         |         |
| Interface                    | Dry Contacts (Battery Low, Input Failure, System Bypass)   |            |            |            |            |            |         |         |         |         |
| <b>ENVIRONMENTAL</b>         |  |            |            |            |            |            |         |         |         |         |
| Operating Temperature        | 0-40°C   |            |            |            |            |            |         |         |         |         |
| Storage Temperature          | -25~+70°C  |            |            |            |            |            |         |         |         |         |
| Relative Humidity            | %0-95 (Non- Condensing)  |            |            |            |            |            |         |         |         |         |
| Altitude                     | <1000 m  |            |            |            |            |            |         |         |         |         |
| Cooling                      | Air Cooling  |            |            |            |            |            |         |         |         |         |
| Protection Level             | IP 20  |            |            |            |            |            |         |         |         |         |
| Acoustic Noise               | <65dBA   | <70 dBA    | <74 dBA    |            |            |            |         |         |         | <75 dBA |
| <b>PHYSICAL</b>              |  |            |            |            |            |            |         |         |         |         |
| Dimesions (WxDxH)cm          | 55x80x134  | 68x101x175 | 78x126x190 | 160x87x180 | 219x81x203 | 322x87x180 |         |         |         |         |
| Weight without Batteries(kg) | 240  | 250        | 380        | 400        | 820        | 850        | 950     | 990     | 1400    | 2100    |
| <b>OPTIONS</b>               |  |            |            |            |            |            |         |         |         |         |
| Connections                  | Without Neutral for Input and / or Output  |            |            |            |            |            |         |         |         |         |
| Functions                    | Up to 6 Units Parallel Operation, EPO, Emergency Stop, Split Bypass, Battery Temperature Compensation, Transportable LCD Panel |            |            |            |            |            |         |         |         |         |
| Communication                | SNMP, Modem, RS232, RS485  |            |            |            |            |            |         |         |         |         |
| <b>STANDARS</b>              |  |            |            |            |            |            |         |         |         |         |
| Harmonized Standars          | EN 62040-1 (LVD), EN 62040-2 (EMC), EN 62040-3   |            |            |            |            |            |         |         |         |         |

### ONLINE UPS

AS 3000 Series are, 3 Phase in/3 Phase out 10-800 kVA True Online, Transformer-less, Double Conversion UPS Systems with IGBT rectifier providing high input power factor and low input current THD. They produce microprocessor controlled pure sine wave output to critical loads. Industrial manufacturing machines, hospital and monitoring equipment, heavy, medical, communication and laboratory equipment, etc. are the main fields of use with a proved reliable high technology.

## AS 3000PF Series



### FEATURES

- IGBT Rectifier and Inverter
- Active Input Current Correction < %5
- Regenerative Operating
- Re-adjustable Battery Charge Current
- High Efficiency ( $\text{Cos}\theta:0,9$ )
- Built-in Self-Test
- Silent Performance
- Up to 6 Parallel Operation
- DSP Controlled
- Up to 0.99 Input Power Factor Correction
- Static Bypass at UPS Overload or UPS Failure
- Advanced LCD Panel
- Up to 500 Event History
- CE Certificate
- Patented Technology

### AS 3000PF Series UPS

10-800 kVA 3 Phase Input - 3 Phase Output 0,9 PF Online UPS

| MODEL                        | 3010PF   | 3015PF | 3020PF | 3030PF | 3040PF | 3060PF       | 3080PF |
|------------------------------|--|--------|--------|--------|--------|--------------|--------|
| Apparent Power (kVA)         | 10   | 15     | 20     | 30     | 40     | 60           | 80     |
| Active Power (kW)            | 9  | 13,5   | 18     | 27     | 36     | 54           | 72     |
| <b>INPUT</b>                 |  |        |        |        |        |              |        |
| Voltage                      | 380(Optional 400/415/440) Vac (3 Ph+N+PE)                            |        |        |        |        |              |        |
| Voltage Tolerance            | $\pm 5\ldots \pm 20$ (Adjustabe with %1 Step)                        |        |        |        |        |              |        |
| Frequency                    | 50 Hz (On Request 60 Hz)   |        |        |        |        |              |        |
| Frequency Range              | %5   |        |        |        |        |              |        |
| THDI                         | <5%  |        |        |        |        |              |        |
| Input Power Factor           | 0,99   |        |        |        |        |              |        |
| <b>OUTPUT</b>                |  |        |        |        |        |              |        |
| Voltage                      | 380 (Optional 400 / 415 / 440) Vac (3 Ph+N+PE)                       |        |        |        |        |              |        |
| Voltage Regulation           | <±1%   |        |        |        |        |              |        |
| Frequency                    | 50 Hz(On request 60 Hz)  |        |        |        |        |              |        |
| Frequency Range              | Synchronized to Newwork ±2% in Line mode; ±0,05 Hz in Free Running   |        |        |        |        |              |        |
| Crest Ratio                  | 3:1  |        |        |        |        |              |        |
| Efficiency (100% Load)       | >%92   |        |        |        |        |              |        |
| Power Factor                 | 0,9  |        |        |        |        |              |        |
| THDv                         | <3% Linear Load, <5% Non Linear Load                                 |        |        |        |        |              |        |
| Owerload                     | %100<load<%125 for 10 min %125<load<150 for 1 min., load>150: Bypass |        |        |        |        |              |        |
| Short Circuit Protection     | Electronic Protection  |        |        |        |        |              |        |
| <b>BYPASS</b>                |  |        |        |        |        |              |        |
| Voltage Range                | 380 Vac ± 20%  |        |        |        |        |              |        |
| Frequency Range              | 50 Hz±10%  |        |        |        |        |              |        |
| <b>BATTERY</b>               |  |        |        |        |        |              |        |
| Type                         | Maintenance Free Lead Acid Battery                                   |        |        |        |        |              |        |
| Quantity                     | 60   |        |        |        |        |              |        |
| Charge Voltage               | 810 Vdc  |        |        |        |        |              |        |
| End of Discharge Voltage     | 630 Vdc  |        |        |        |        |              |        |
| Battery Protection           | Deep Discharge Protection  |        |        |        |        |              |        |
| Battery Test                 | Automatic / Manuel   |        |        |        |        |              |        |
| <b>DISPLAY PANEL</b>         |  |        |        |        |        |              |        |
| LCD                          | Graphic LCD Panel, Mimic Panels and Control Panel                    |        |        |        |        |              |        |
| LED                          | Line, Battery, Inverter, Load, Fault Indications                     |        |        |        |        |              |        |
| <b>COMMUNICATION</b>         |  |        |        |        |        |              |        |
| Interface                    | Dry Contacts (Battery Low, Input Failure, System Bypass)             |        |        |        |        |              |        |
| <b>ENVIRONMENTAL</b>         |  |        |        |        |        |              |        |
| Operating Temperature        | 0-40°C   |        |        |        |        |              |        |
| Storage Temperature          | -25~+55°C  |        |        |        |        |              |        |
| Relative Humidity            | %0-95 (Non- Condensing)  |        |        |        |        |              |        |
| Altitude                     | <1000 m  |        |        |        |        |              |        |
| Cooling                      | Air Cooling  |        |        |        |        |              |        |
| Protection Level             | IP 20  |        |        |        |        |              |        |
| Acoustic Noise               | <55 dBA  |        |        |        |        | <60 dBA      |        |
| <b>PHYSICAL</b>              |  |        |        |        |        |              |        |
| Dimensions (WxDxH)cm         | 350x795x1110   |        |        |        |        | 500x806x1213 |        |
| Weight without Batteries(kg) | 100  | 105    | 110    | 110    | 135    | 140          | 155    |
| <b>OPTIONS</b>               |  |        |        |        |        |              |        |
| Functions                    | Parallel Operation, EPO, Emergency Stop                              |        |        |        |        |              |        |
| Communication                | SNMP, Modem, RS-232, RS485   |        |        |        |        |              |        |
| <b>STANDARS</b>              |  |        |        |        |        |              |        |
| Harmonized Standars          | EN 62040-1 (LVD), EN 62040-2 (EMC), EN 62040-3                       |        |        |        |        |              |        |

### ONLINE UPS

AS 3000PF Series are, 3 Phase in/3 Phase out 10-800 kVA True Online, Transformer-less, Double Conversion UPS Systems with IGBT rectifier providing 0,9 Output Power factor and very low input current THD. They produce microprocessor controlled pure sine wave output to critical loads. Industrial manufacturing machines, hospital and monitoring equipment, heavy, medical, communication and laboratory equipment, etc. are the main fields of use with a proved reliable high technology.

## AS 3000PF Series



### FEATURES

- IGBT Rectifier and Inverter
- Active Input Current Correction < %5
- Regenerative Operating
- Re-adjustable Battery Charge Current
- High Efficiency ( $\text{Cos}\phi$ :0,9)
- Built-in Self-Test
- Silent Performance
- Up to 6 Parallel Operation
- DSP Controlled
- Up to 0.99 Input Power Factor Correction
- Static Bypass at UPS Overload or UPS Failure
- Advanced LCD Panel
- Up to 500 Event History
- CE Certificate
- Patented Technology

### AS 3000PF Series UPS

10-800 kVA 3 Phase Input - 3 Phase Output 0,9 PF Online UPS

| MODEL                    | 3100PF  | 3120PF        | 3160PF        | 3200PF        | 3250PF        | 3300PF        | 3400PF | 3500PF | 3600PF | 3800PF  |
|--------------------------|---|---------------|---------------|---------------|---------------|---------------|--------|--------|--------|---------|
| Apparent Power (kVA)     | 100   | 120           | 160           | 200           | 250           | 300           | 400    | 500    | 600    | 800     |
| Active Power (kW)        | 90  | 108           | 144           | 180           | 225           | 270           | 360    | 450    | 540    | 720     |
| <b>INPUT</b>             |   |               |               |               |               |               |        |        |        |         |
| Voltage                  | 380(Optional 400/415/440) Vac (3 Ph+N+Pe)                                     |               |               |               |               |               |        |        |        |         |
| Voltage Tolerance        | $\pm 5\ldots 20$ (Adjustable with 1% Step)                                    |               |               |               |               |               |        |        |        |         |
| Frequency                | 50 Hz (On Request 60 Hz)  |               |               |               |               |               |        |        |        |         |
| Frequency Range          | %5  |               |               |               |               |               |        |        |        |         |
| THDi                     | <5%   |               |               |               |               |               |        |        |        |         |
| Input Power Factor       | 0,99  |               |               |               |               |               |        |        |        |         |
| <b>OUTPUT</b>            |   |               |               |               |               |               |        |        |        |         |
| Voltage                  | 380(Optional 400/415/440) Vac (3 Ph+N+Pe)                                     |               |               |               |               |               |        |        |        |         |
| Voltage Regulation       | < $\pm 1\%$   |               |               |               |               |               |        |        |        |         |
| Frequency                | 50 Hz (On Request 60 Hz)  |               |               |               |               |               |        |        |        |         |
| Frequency Range          | Synchronized to Network $\pm 2\%$ in line mode; $\pm 0,05$ Hz in Free Running |               |               |               |               |               |        |        |        |         |
| Crest Ratio              | 3:1   |               |               |               |               |               |        |        |        |         |
| Efficiency (100% Load)   | $\geq 93$   |               |               |               |               |               |        |        |        |         |
| Power Factor             | 0,9   |               |               |               |               |               |        |        |        |         |
| THDv                     | <3% Linear Load, <5% Non Linear Load  |               |               |               |               |               |        |        |        |         |
| Owerload                 | %100<load<125 for 10 min., %125<load<%150 for 1 min., load>150: Bypass        |               |               |               |               |               |        |        |        |         |
| Short Circuit Protection | Electronic Protection   |               |               |               |               |               |        |        |        |         |
| <b>BYPASS</b>            |   |               |               |               |               |               |        |        |        |         |
| Voltage Range            | 380 Vac $\pm 15$  |               |               |               |               |               |        |        |        |         |
| Frequency Range          | 50 Hz $\pm 10\%$  |               |               |               |               |               |        |        |        |         |
| <b>BATTERY</b>           |   |               |               |               |               |               |        |        |        |         |
| Type                     | Maintenance Free Lead Acid Battery  |               |               |               |               |               |        |        |        |         |
| Quantity                 | 60  |               |               |               |               |               |        |        |        |         |
| Charge Voltage           | 810 Vdc   |               |               |               |               |               |        |        |        |         |
| End of Discharge Voltage | 630 Vdc   |               |               |               |               |               |        |        |        |         |
| Battery Protection       | Deep Discharge Protection   |               |               |               |               |               |        |        |        |         |
| Battery Test             | Automatic / Manual  |               |               |               |               |               |        |        |        |         |
| <b>DISPLAY PANEL</b>     |   |               |               |               |               |               |        |        |        |         |
| LCD                      | Graphic LCD Panel, Mimic Panels and Control Panel                             |               |               |               |               |               |        |        |        |         |
| LED                      | Line, Battery, Inverter, Load, Fault Indications                              |               |               |               |               |               |        |        |        |         |
| <b>COMMUNICATION</b>     |   |               |               |               |               |               |        |        |        |         |
| Interface                | Dry Contacts (Battery Low, Input Failure, System Bypass)                      |               |               |               |               |               |        |        |        |         |
| <b>ENVIRONMENTAL</b>     |   |               |               |               |               |               |        |        |        |         |
| Operating Temperature    | 0-40°C  |               |               |               |               |               |        |        |        |         |
| Storage Temperature      | -25~ +70°C  |               |               |               |               |               |        |        |        |         |
| Relative Humidity        | %0-95 (Non Condensing)  |               |               |               |               |               |        |        |        |         |
| Altitude                 | <1000 m   |               |               |               |               |               |        |        |        |         |
| Cooling                  | Air Cooling   |               |               |               |               |               |        |        |        |         |
| Protection Level         | IP 20   |               |               |               |               |               |        |        |        |         |
| Acoustic Noise           | <65dBA  | <70 dBA       | <74 dB        |               |               |               |        |        |        | <75 dBA |
| <b>PHYSICAL</b>          |   |               |               |               |               |               |        |        |        |         |
| Dimensions (WxDxH)cm     | 550x800x1335  | 680x1010x1750 | 780x1280x1900 | 1600x870x1800 | 2190x801x2030 | 3220x870x1800 |        |        |        |         |
| Weight (kg)              | 290   | 315           | 490           | 540           | 870           | 1300          | 1370   | 1480   | 1700   | 1750    |
| <b>OPTIONS</b>           |   |               |               |               |               |               |        |        |        |         |
| Functions                | Parallel Operation, EPO Emergency Stop  |               |               |               |               |               |        |        |        |         |
| Communication            | SNMP, Modem, RS-232, RS-485   |               |               |               |               |               |        |        |        |         |
| <b>STANDARDS</b>         |   |               |               |               |               |               |        |        |        |         |
| Harmonized Standards     | EN 62040-1 (LVD), EN 62040-2 (EMC), EN 62040-3                                |               |               |               |               |               |        |        |        |         |

### ONLINE UPS

AS 3000PF Series are, 3 Phase in/3 Phase out 10-800 kVA True Online, Transformer-less, Double Conversion UPS Systems with IGBT rectifier providing 0,9 Output Power factor and very low input current THD. They produce microprocessor controlled pure sine wave output to critical loads. Industrial manufacturing machines, hospital and monitoring equipment, heavy, medical, communication and laboratory equipment, etc. are the main fields of use with a proved reliable high technology.

## AS 3000L Series



### AS 3000L Series Technical Specifications

Three Level (3L) High Efficiency 3 Phase Input - 3 Phase Output Online UPS

| MODEL                    | 3010L   | 3020L        | 3030L        | 3040L        | 3060L         | 3080L | 3100L | 3120L | 3160L | 3200L | 3250L | 3300L |
|--------------------------|---|--------------|--------------|--------------|---------------|-------|-------|-------|-------|-------|-------|-------|
| Rated Power (kVA)        | 10  | 20           | 30           | 40           | 60            | 80    | 100   | 120   | 160   | 200   | 250   | 300   |
| Active Power (kW)        | 9   | 18           | 27           | 36           | 54            | 72    | 90    | 108   | 144   | 180   | 225   | 270   |
| <b>INPUT</b>             |   |              |              |              |               |       |       |       |       |       |       |       |
| Voltage                  | 380 (Optional 400/415/440) Vac (3 Ph+N+PE)                              |              |              |              |               |       |       |       |       |       |       |       |
| Voltage Tolerance        | ±%5...%20 (Adjustable with %1 Step)                                     |              |              |              |               |       |       |       |       |       |       |       |
| Frequency                | 50 Hz (On Request 60 Hz)  |              |              |              |               |       |       |       |       |       |       |       |
| Frequency Range          | 5%  |              |              |              |               |       |       |       |       |       |       |       |
| THDi                     | <%3   |              |              |              |               |       |       |       |       |       |       |       |
| Input Power Factor       | 0,99  |              |              |              |               |       |       |       |       |       |       |       |
| <b>OUTPUT</b>            |   |              |              |              |               |       |       |       |       |       |       |       |
| Voltage                  | 380 (Optional 400/415/440) Vac (3 Ph+N+PE)                              |              |              |              |               |       |       |       |       |       |       |       |
| Voltage Regulation       | <±1%  |              |              |              |               |       |       |       |       |       |       |       |
| Frequency                | 50 Hz (On request 60 Hz)  |              |              |              |               |       |       |       |       |       |       |       |
| Frequency Range          | Synchronized to Network ±2% in line mode; ±0,05 Hz in Free Running      |              |              |              |               |       |       |       |       |       |       |       |
| Crest Ratio              | 3:1   |              |              |              |               |       |       |       |       |       |       |       |
| Efficiency (100% Load)   | Up to %96   |              |              |              |               |       |       |       |       |       |       |       |
| Power Factor             | 0,9   |              |              |              |               |       |       |       |       |       |       |       |
| THDv                     | <2%   |              |              |              |               |       |       |       |       |       |       |       |
| Overload                 | %100<load<%125 for 10 min., %125<load<%150 for 1 min., load>150 :Bypass |              |              |              |               |       |       |       |       |       |       |       |
| Short Circuit Protection | Electronic Protection   |              |              |              |               |       |       |       |       |       |       |       |
| <b>BYPASS</b>            |   |              |              |              |               |       |       |       |       |       |       |       |
| Voltage Range            | 380/400/415 Vac ± %20 (3Ph+N+PE)  |              |              |              |               |       |       |       |       |       |       |       |
| Frequency Range          | 50 Hz ± %10   |              |              |              |               |       |       |       |       |       |       |       |
| <b>BATTERY</b>           |   |              |              |              |               |       |       |       |       |       |       |       |
| Battery Type             | Maintenance Free Lead Acid Battery                                      |              |              |              |               |       |       |       |       |       |       |       |
| Quantity                 | 60  |              |              |              |               |       |       |       |       |       |       |       |
| Charge Voltage           | 810 Vdc   |              |              |              |               |       |       |       |       |       |       |       |
| End of Discharge Voltage | 630 Vdc   |              |              |              |               |       |       |       |       |       |       |       |
| Battery Test             | Automatic / Manual  |              |              |              |               |       |       |       |       |       |       |       |
| Battery Protection       | Deep Discharge Protection   |              |              |              |               |       |       |       |       |       |       |       |
| <b>DISPLAY PANEL</b>     |   |              |              |              |               |       |       |       |       |       |       |       |
| LCD                      | Graphic LCD Panel, Mimic Panels and Control Panel                       |              |              |              |               |       |       |       |       |       |       |       |
| LED                      | Line,Battery,Inverter, Load, Fault Indications                          |              |              |              |               |       |       |       |       |       |       |       |
| <b>COMMUNICATION</b>     |   |              |              |              |               |       |       |       |       |       |       |       |
| Interface                | Dry Contacts (Battery Low, Input Failure, System Bypass)                |              |              |              |               |       |       |       |       |       |       |       |
| <b>ENVIRONMENTAL</b>     |   |              |              |              |               |       |       |       |       |       |       |       |
| Operating Temperature    | 0-40°C  |              |              |              |               |       |       |       |       |       |       |       |
| Storage Temperature      | -25~ +70°C  |              |              |              |               |       |       |       |       |       |       |       |
| Relative Humidity        | %0-95 (Non Condensing)  |              |              |              |               |       |       |       |       |       |       |       |
| Altitude                 | <1000 m   |              |              |              |               |       |       |       |       |       |       |       |
| Cooling                  | Forced Air Cooling  |              |              |              |               |       |       |       |       |       |       |       |
| Protection Level         | IP 20   |              |              |              |               |       |       |       |       |       |       |       |
| Acoustic Noise           | <55 dBA   | <60 dBA      | <65 dBA      | <70 dBA      |               |       |       |       |       |       |       |       |
| <b>PHYSICAL</b>          |   |              |              |              |               |       |       |       |       |       |       |       |
| Dimesions (WxDxH)cm      | 350x795x1110  | 500x806x1213 | 500x880x1360 | 605x936x1605 | 780x1260x1900 |       |       |       |       |       |       |       |
| Weight (kg)              | 105   | 110          | 140          | 155          | 240           | 300   | 380   | 400   | 820   | 850   |       |       |
| <b>OPTIONS</b>           |   |              |              |              |               |       |       |       |       |       |       |       |
| Functions                | Parallel Operation, EPO, Emergency Stop, Isolation Transformer          |              |              |              |               |       |       |       |       |       |       |       |
| Communication            | SNMP, Modem, Rs232, RS485   |              |              |              |               |       |       |       |       |       |       |       |
| <b>STANDARS</b>          |   |              |              |              |               |       |       |       |       |       |       |       |
| Harmonized Standars      | EN 62040-1 (LVD), EN 62040-2 (EMC), EN 62040-3                          |              |              |              |               |       |       |       |       |       |       |       |

### FEATURES

- 3L UPS Technology
- High Efficiency Up to %96
- IGBT Rectifier and Inverter
- Active Input Current Harmonic Correction
- Up to 0,999 Input Power Factor
- Very Low THDv <%2
- Advanced LCD Panel
- Up to 500 Event Log History

### ONLINE UPS

AS 3000L Series are, 3 Phase in/3 Phase out 3 Level, High Efficiency True Online, Transformer-less, UPS Systems with IGBT rectifier providing highest input power factor and lowest input current THD. They produce microprocessor controlled pure sine wave output to critical loads. Industrial manufacturing machines, hospital and monitoring equipment, heavy, medical, communication and laboratory equipment, etc. are the main fields of use with a proved reliable high technology.

## AS 4000 Series



### FEATURES

- Output Isolation Transformer
- IGBT Rectifier and Inverter
- Active Input Current Correction < %5
- DSP Controlled
- Up to 0.99 Input Power Factor Correction
- Static Bypass at UPS Overload or UPS Failure
- Advanced LCD Panel
- Up to 500 Event History
- Optional SNMP

### AS 4000 Series Technical Specifications

10-300 kVA 3 Phase Input - 3 Phase Output (HF) Online UPS with Transformer

| MODEL                      | AS 4010   | AS 4015 | AS 4020 | AS 4030 | AS 4040      | AS 4060 | AS 4080 |
|----------------------------|---|---------|---------|---------|--------------|---------|---------|
| Apparent Power (kVA)       | 10  | 15      | 20      | 30      | 40           | 60      | 80      |
| Active Power (kW)          | 8   | 12      | 16      | 24      | 32           | 48      | 64      |
| <b>INPUT</b>               |   |         |         |         |              |         |         |
| Voltage                    | 380/400/415 Vac (3 Ph+N+PE)   |         |         |         |              |         |         |
| Voltage Tolerance          | ±%20  |         |         |         |              |         |         |
| Frequency                  | 50 Hz (Optional 60 Hz)  |         |         |         |              |         |         |
| Frequency Range            | ±5%   |         |         |         |              |         |         |
| THDi                       | <%5   |         |         |         |              |         |         |
| <b>OUTPUT</b>              |   |         |         |         |              |         |         |
| Voltage                    | 380/400/415 Vac (3 Ph+N+PE) (Optional 440 Vac)                      |         |         |         |              |         |         |
| Voltage Regulation         | <±1%  |         |         |         |              |         |         |
| Frequency                  | 50 Hz (Optional 60 Hz)  |         |         |         |              |         |         |
| Frequency Range            | Synchronized to Network ±%2 in Line Mode: ± 0,05 Hz in Free Running |         |         |         |              |         |         |
| Power Factor               | 0,8   |         |         |         |              |         |         |
| Efficiency (100% Load)     | Up to %91   |         |         |         |              |         |         |
| Crest Ratio                | 3:1   |         |         |         |              |         |         |
| THDv                       | <3% Linear Load, <5% Non Linear Load                                |         |         |         |              |         |         |
| <b>BYPASS</b>              |   |         |         |         |              |         |         |
| Voltage Range for Bypass   | 380/400/415 Vac (3 Ph+N+PE) (Optional 440 Vac)                      |         |         |         |              |         |         |
| Frequency Range for Bypass | 50 Hz ±%10  |         |         |         |              |         |         |
| <b>BATTERY</b>             |   |         |         |         |              |         |         |
| Battery Type               | Dry Type 12 Vdc   |         |         |         |              |         |         |
| Quantity                   | 60  |         |         |         |              |         |         |
| Float Charge Voltage       | 630 Vdc   |         |         |         |              |         |         |
| Min. Discharge Voltage     | 810 Vdc   |         |         |         |              |         |         |
| Battery Protection         | Deep Discharge Protection   |         |         |         |              |         |         |
| <b>GENERAL</b>             |   |         |         |         |              |         |         |
| Display                    | Graphic LCD Monitor, Control Panel, Mimic Diagram                   |         |         |         |              |         |         |
| LED                        | Line, Battery, Inverter, Load, Fault Indications                    |         |         |         |              |         |         |
| Operating Type             | Static, Online,DSP Control  |         |         |         |              |         |         |
| Topology                   | High Frequency PWM, IGBT Technology, Output Isolation Transformer   |         |         |         |              |         |         |
| <b>ENVIRONMENTAL</b>       |   |         |         |         |              |         |         |
| Operating Temperature      | 0~40°C  |         |         |         |              |         |         |
| Storage Temperature        | -25~70°C  |         |         |         |              |         |         |
| Relative Humidity          | %20-%90 (Non-Condensing)  |         |         |         |              |         |         |
| Altitude                   | <1000 m   |         |         |         |              |         |         |
| Protection Level           | IP20  |         |         |         |              |         |         |
| Acoustic Noise (from 1m.)  | <55 dBA   |         |         |         |              |         |         |
| <b>PHYSICAL</b>            |   |         |         |         |              |         |         |
| Dimesions (WxDxH)mm        | 350x800x1650  |         |         |         | 500x810x1900 |         |         |
| Weight (kg)                | 195   | 205     | 215     | 225     | 260          | 290     | 410     |
| <b>OPTIONS</b>             |   |         |         |         |              |         |         |
| Functions                  | Eco Mode,Parallel Operation, Emergency Stop (EPO)                   |         |         |         |              |         |         |
| Communication              | SNMP or Modbus,Modem  |         |         |         |              |         |         |
| <b>STANDARS</b>            |   |         |         |         |              |         |         |
| Harmonized Standars        | EN 62040-1 (LVD), EN62040-2(EMC), EN62040-3                         |         |         |         |              |         |         |

### ONLINE UPS

AS 4000 Series are, 3 Phase in/3 Phase out 10-300 kVA True Online, with isolation transformer, Double Conversion UPS Systems with IGBT rectifier providing high input power factor and low input current THD. They produce microprocessor controlled pure sine wave output to critical loads. Industrial manufacturing machines, hospital and monitoring equipment, heavy, medical, communication and laboratory equipment, etc. are the main fields of use with a proved reliable high technology.

## AS 4000 Series



### AS 4000 Series Technical Specifications

10-300 kVA 3 Phase Input - 3 Phase Output (HF) Online With Transformer

| MODEL                     | AS 4100   | AS 4120 | AS 4160 | AS 4200       | AS 4250 | AS 4300 |  |  |
|---------------------------|---|---------|---------|---------------|---------|---------|--|--|
| Apparent Power (kVA)      | 100   | 120     | 160     | 200           | 250     | 300     |  |  |
| Active Power (kW)         | 80  | 96      | 128     | 160           | 200     | 240     |  |  |
| <b>INPUT</b>              |   |         |         |               |         |         |  |  |
| Voltage                   | 380/400/415 Vac 3 Ph+N+PE (Optional 440 Vac)                        |         |         |               |         |         |  |  |
| Voltage Range             | ±%5...%20 (Adjustable with %1 Step)                                 |         |         |               |         |         |  |  |
| Frequency                 | 50 Hz (Optional 60 Hz)  |         |         |               |         |         |  |  |
| Frequency Range           | ±5%   |         |         |               |         |         |  |  |
| THDi                      | <%5   |         |         |               |         |         |  |  |
| <b>OUTPUT</b>             |   |         |         |               |         |         |  |  |
| Voltage                   | 380/400/415 Vac 3 Ph+N+PE (Optional 440 Vac)                        |         |         |               |         |         |  |  |
| Voltage Regulation        | <±1%  |         |         |               |         |         |  |  |
| Frequency                 | 50 Hz (Optional 60 Hz)  |         |         |               |         |         |  |  |
| Frequency Range           | Synchronized to Network ± %2 in Line Mode; ± 0.05Hz in Free Running |         |         |               |         |         |  |  |
| Power Factor              | 0,8 (Full Load)   |         |         |               |         |         |  |  |
| Efficiency (100% Load)    | Up to % 92  |         |         |               |         |         |  |  |
| Crest Factor              | 3:1   |         |         |               |         |         |  |  |
| THDI                      | Linear Load for <3%, Nonlinear Load for <5%                         |         |         |               |         |         |  |  |
| <b>BYPASS</b>             |   |         |         |               |         |         |  |  |
| Voltage                   | 380/400/415 Vac ±%20  |         |         |               |         |         |  |  |
| Frequency                 | 50 Hz ±%10  |         |         |               |         |         |  |  |
| <b>BATTERY</b>            |   |         |         |               |         |         |  |  |
| Battery Type              | Maintenance Free Lead Acid Battery 12 Vdc (On request other types)  |         |         |               |         |         |  |  |
| Quantity                  | 60  |         |         |               |         |         |  |  |
| Float Charge Voltage      | 810 Vdc   |         |         |               |         |         |  |  |
| Min. Discharge Voltage    | 630 Vdc   |         |         |               |         |         |  |  |
| Battery Protection        | Deep Discharge Protection   |         |         |               |         |         |  |  |
| <b>GENERAL</b>            |   |         |         |               |         |         |  |  |
| Display                   | Graphic LCD, Control Panel, Mimic Diagram                           |         |         |               |         |         |  |  |
| LED                       | Line, Battery, Inverter, Load Fault Indication                      |         |         |               |         |         |  |  |
| Operating Type            | Static, Online DSP Control  |         |         |               |         |         |  |  |
| Topology                  | High Frequency PWM, IGBT Technology, Output Isolation Transformer   |         |         |               |         |         |  |  |
| <b>ENVIRONMENTAL</b>      |   |         |         |               |         |         |  |  |
| Operating Temperature     | 0~40 °C   |         |         |               |         |         |  |  |
| Storage Temperature       | -25~+70°C   |         |         |               |         |         |  |  |
| Relative Humidity         | %20-%90 (Non-condensing)  |         |         |               |         |         |  |  |
| Altitude                  | <1000 m   |         |         |               |         |         |  |  |
| Protection Level          | IP 20   |         |         |               |         |         |  |  |
| Acoustic Noise (from 1m.) | <65 dBA   |         | <70 dBA |               | <75 dBA |         |  |  |
| <b>PHYSICAL</b>           |   |         |         |               |         |         |  |  |
| Dimensions (WxDxH) mm     | 550x810x2040  |         |         | 1610x870x1900 |         |         |  |  |
| Weight (kg)               | 600   | 680     | 900     | 1030          | 1640    | 1720    |  |  |
| <b>OPTIONS</b>            |   |         |         |               |         |         |  |  |
| Functions                 | Eco Mode, Parallel Operation, Emergency Stop (EPO)                  |         |         |               |         |         |  |  |
| Communication             | SNMP or Modbus, Modem   |         |         |               |         |         |  |  |
| <b>STANDARDS</b>          |   |         |         |               |         |         |  |  |
| Harmonized Standards      | EN 62040-1 (LVD), EN 62040-2 (EMC), EN 62040-3                      |         |         |               |         |         |  |  |

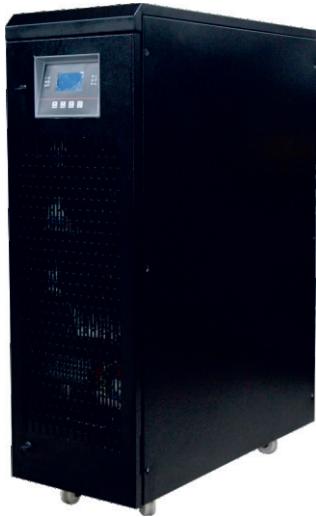
### FEATURES

- Output Isolation Transformer
- IGBT Rectifier and Inverter
- Active Input Current Correction < %5
- DSP Controlled
- Up to 0.99 Input Power Factor Correction
- Static Bypass at UPS Overload or UPS Failure
- Advanced LCD Panel
- Up to 500 Event History
- Optional SNMP

### ONLINE UPS

AS 4000 Series are 3 phase input, 3 phase output with transformer true online double conversion UPS series, featured with IGBT Rectifier and Inverter, DSP Control, is an ideal solution to your server, bank, industrial equipment, internet data center, telecom, IT equipment and other Mission-critical application.

## AS 3000 Series



### FEATURES

- IGBT Rectifier and Inverter
- Active Input Current Correction < %5
- Regenerative Operating
- Re-adjustable Battery Charge Current
- Built-in Self-Test
- Silent Performance
- Up to 6 Parallel Operation
- DSP Controlled
- Up to 0.99 Input Power Factor Correction
- Static Bypass at UPS Overload or UPS Failure
- Advanced LCD Panel
- Up to 500 Event History
- CE Certificate
- Patented Technology

### AS 3000 Series UPS 10-800 kVA 3 Phase Input - 3 Phase Output (HF) Online UPS

| MODEL                        | AS 3010  | AS 3015 | AS 3020 | AS 3030 | AS 3040 | AS 3060      | AS 3080 |
|------------------------------|--|---------|---------|---------|---------|--------------|---------|
| Apparent Power (kVA)         | 10   | 15      | 20      | 30      | 40      | 60           | 80      |
| Active Power (kW)            | 8  | 12      | 16      | 24      | 32      | 48           | 64      |
| <b>INPUT</b>                 |  |         |         |         |         |              |         |
| Voltage                      | 380 (Optional 400/415/440) Vac 3PH+N+PE  |         |         |         |         |              |         |
| Voltage Tolerance            | ±%5...%20 Adjustable with 1% step  |         |         |         |         |              |         |
| Frequency                    | 50 Hz (On Request 60 Hz)   |         |         |         |         |              |         |
| Frequency Range              | %  |         |         |         |         |              |         |
| THDi                         | <5%  |         |         |         |         |              |         |
| Input Power Factor           | 0,99   |         |         |         |         |              |         |
| <b>OUTPUT</b>                |  |         |         |         |         |              |         |
| Voltage                      | 380 (Optional 400/415/440) Vac 3Ph+N+PE  |         |         |         |         |              |         |
| Voltage Regulation           | <±1%   |         |         |         |         |              |         |
| Frequency                    | 50 Hz(On request 60 Hz)  |         |         |         |         |              |         |
| Frequency Range              | Synchronized to Network ±2% in Line mode; ±0,05 Hz in Free Running   |         |         |         |         |              |         |
| Crest Ratio                  | 3:1  |         |         |         |         |              |         |
| Efficiency (100% Load)       | Up to %93  |         |         |         |         |              |         |
| Power Factor                 | 0,8  |         |         |         |         |              |         |
| THDv                         | <3% Linear Load, <5% Non Linear Load   |         |         |         |         |              |         |
| Owerload                     | %100<load<%125 for 10 min., %125<load<150 for 1 min., load>150: Bypass   |         |         |         |         |              |         |
| Short Circuit Protection     | Electronic Protection  |         |         |         |         |              |         |
| <b>BYPASS</b>                |  |         |         |         |         |              |         |
| Voltage Range                | 380 (Optional 400/415/440) Vac 3Ph+N+PE  |         |         |         |         |              |         |
| Frequency Range              | 50 Hz±10%  |         |         |         |         |              |         |
| <b>BATTERY</b>               |  |         |         |         |         |              |         |
| Type                         | Maintenance Free Lead Acid Battery   |         |         |         |         |              |         |
| Quantity                     | 60   |         |         |         |         |              |         |
| Charge Voltage               | 810 Vdc  |         |         |         |         |              |         |
| End of Discharge Voltage     | 630 Vdc  |         |         |         |         |              |         |
| Battery Protection           | Deep Discharge Protection  |         |         |         |         |              |         |
| Battery Test                 | Automatic / Manual   |         |         |         |         |              |         |
| <b>DISPLAY PANEL</b>         |  |         |         |         |         |              |         |
| LCD                          | Graphic LCD Panel, Mimic Panels and Control Panel  |         |         |         |         |              |         |
| LED                          | Line, Battery, Inverter, Load, Fault Indications   |         |         |         |         |              |         |
| <b>COMMUNICATION</b>         |  |         |         |         |         |              |         |
| Interface                    | Dry Contacts (Battery Low, Input Failure, System Bypass)   |         |         |         |         |              |         |
| <b>ENVIRONMENTAL</b>         |  |         |         |         |         |              |         |
| Operating Temperature        | 0-40°C   |         |         |         |         |              |         |
| Storage Temperature          | -25~+70°C  |         |         |         |         |              |         |
| Relative Humidity            | %0-95 (Non- Condensing)  |         |         |         |         |              |         |
| Altitude                     | <1000 m  |         |         |         |         |              |         |
| Cooling                      | Air Cooling  |         |         |         |         |              |         |
| Protection Level             | IP 20  |         |         |         |         |              |         |
| Acoustic Noise               | <55 dBA  |         |         |         |         | <60 dBA      |         |
| <b>PHYSICAL</b>              |  |         |         |         |         |              |         |
| Dimensions (WxDxH)cm         | 350x795x1110   |         |         |         |         | 500x806x1213 |         |
| Weight without Batteries(kg) | 100  | 105     | 110     | 110     | 135     | 140          | 155     |
| <b>OPTIONS</b>               |  |         |         |         |         |              |         |
| Connections                  | Without Neutral for Input and / or Output  |         |         |         |         |              |         |
| Functions                    | Up to 6 Units Parallel Operation, EPO, Emergency Stop, Split Bypass, Battery Temperature Compensation, Transportable LCD Panel |         |         |         |         |              |         |
| Communication                | SNMP, Modem, RS232, RS485  |         |         |         |         |              |         |
| STANDARDS                    | EN 62040-1 (LVD), EN 62040-2 (EMC), EN 62040-3   |         |         |         |         |              |         |

### ONLINE UPS

AS 3000 Series are, 3 Phase in/3 Phase out 10-800 kVA True Online, Transformer-less, Double Conversion UPS Systems with IGBT rectifier providing high input power factor and low input current THD. They produce microprocessor controlled pure sine wave output to critical loads. Industrial manufacturing machines, hospital and monitoring equipment, heavy, medical, communication and laboratory equipment, etc. are the main fields of use with a proved reliable high technology.

## AS-MOD Series



### AS-MOD MODULAR UPS Series Technical Specifications 10-1560 kVA 3 Phase Input - 3 Phase Output Modular UPS

| MODEL                                  |   | MOD 3060  | MOD 3100   | MOD 3200                     | MOD 3060                        | MOD 3060                | MOD 3060                | MOD 3060                |  |  |  |  |  |  |  |  |  |  |  |
|--|---|---|--|------------------------------|---------------------------------|-------------------------|-------------------------|-------------------------|--|--|--|--|--|--|--|--|--|--|--|
| Capacity (kVA/kW)                      | UPS Cabinet MEDI Module   | 10-60k/9-54k<br>10kVA/9kW; 15kVA/13,5kW; 20kVA/18kW                                 | 10-100k/9-90k<br>10kVA/9kW; 15kVA/13,5kW; 20kVA/18kW | 10-200k/9-180k<br>20kVA/18kW | 250k/225k<br>25kVA/22,5kW       | 90k/81k<br>25kVA/22,5kW | 150k/135k<br>30kVA/27kW | 300k/270k<br>30kVA/27kW |  |  |  |  |  |  |  |  |  |  |  |
| <b>INPUT</b>                           |   |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Rated Voltage                          | 380/400/415 VAC 3P+N+PE   |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Voltage Range                          | 208~478 Vac   |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Operating Frequency Range              | 40~70 Hz  |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Harmonic distortion (THDi)             | <3% (100% Linear Load)  |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Power Factor                           | ≥0,99   |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Bypass Voltage Range                   | Max. Voltage:220V: +25%(Optional +10%, +15%, +20%)<br>240: +15%(Optional +10%) Min.Voltage: +45%(Optional -20%, -30%) Frequency Protection Range10% |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Harmonic Distortion (THD) <sub>i</sub> | <2% (100% Nonlinear Load)   |   |  |                              | <3%(100% Nonlinear Load)        |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Generator Input                        | Yes   |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| <b>OUTPUT</b>                          |   |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Rated Voltage                          | 380/400/415 Vac 3P+N+PE   |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Voltage Regulation                     | ±1%   |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Frequency                              | Line  | ±1%/±2%/±4%/±5%/±10% of the Rated Frequency (Optional)                              |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
|  | Battery   | 50/60 ± 0,1 Hz  |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Voltage Distortion (THD) <sub>v</sub>  | ≤2% (Linear Load); ≤5% (Non-Linear Load)  |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Output Power Factor                    | 0,9   |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Crest Factor                           | 3:1   |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Efficiency                             | 95,5%   |   |  |                              | 95%                             |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| <b>SYSTEM FEATURES</b>                 |   |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| UPS Type / Technology                  | Modular Type / True Online Double Conversion  |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Transfer Time                          | Mains to Battery: 0ms; Mains to Bypass: 0ms   |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Overload Capability                    | Line Mode   | Load ≤110%: 60min; ≤125%: 10min, ≤150%: 1min, >150% turn to bypass mode immediately |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
|  | Battery Mode  | Load ≤110%: 10min; ≤125%: 1min, ≤150%: 1sec >150% turn to bypass mode immediately   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
|  | Bypass Mode   | Breaker (10k:20A, 15k:32A, 20k:40A) Breaker(25k:40A, 30k:60A)                       |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Short Circuit                          | Hold Whole System   |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Noise Suppression                      | Complies with EN62040-2   |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Communication Interface                | UPS Cabinet   | RS232, RS485, Dry Contact, 2x Intelligent Slot (SNMP Card, Relay Card optional)     |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
|  | MEDI Module   | RS232   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| <b>BATTERY</b>                         |   |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Battery Voltage                        | ±192/204/216/228/240Vdc (Battery quantity Optional)   |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Chage Current                          | UPS Cabinet   | Max. 18A  | Max. 30A   | Max. 60A                     | Max. 60A                        | Max. 30A                | Max. 50A                | Max. 100A               |  |  |  |  |  |  |  |  |  |  |  |
|  | MEDI Module   | Max. 6A   |  | Max. 6A                      | 25 kVA: 6A Max; 30 kVA: 10A Max |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| <b>ENVIRONMENT</b>                     |   |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Operating Temperature                  | 0°C to 40 °C  |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Storage Temperature                    | -25°C to 55°C   |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Relative Humidity                      | 0-95% (non-condensing)  |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Altitude                               | < 1500 m  |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Audible Noise                          | < 65 dB   |   |  |                              | < 70 dB                         |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| <b>STANDARDS</b>                       |   |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| LVD (Safety)                           | IEC/EN 62040-1 / IEC/EN 60950-1   |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| EMC                                    | IEC/EN 62040-2 / IEC61000-4-2 / IEC61000-4-3 / IEC61000-4-4 / IEC61000-4-5 / IEC61000-4-6 / IEC61000-4-8  |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| <b>PHYSICAL</b>                        |   |   |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Dimensions (WxDxH) [mm]                | UPS Cabinet   | 600x840x1400  |  | 600x1100x2000                |                                 | 840x600x1400            |                         | 1100x600x2000           |  |  |  |  |  |  |  |  |  |  |  |
|  | MEDI Module   | 580x443x131 (3U)  |  |                              |                                 |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |
| Weight [kg]                            | UPS Cabinet   | 149   | 152  | 290                          | 158                             | 170                     | 307                     |                         |  |  |  |  |  |  |  |  |  |  |  |
|  | MEDI Module   | 10 kVA:26; 15 kVA:30; 20 kVA:31   |  | 32                           | 25 kVA:32; 30 kVA:33,5          |                         |                         |                         |  |  |  |  |  |  |  |  |  |  |  |



### FEATURES

- High Frequency and Double Conversion on-line Technology
- Advanced PFC technology
- 3U Frame, Rack-Mounted and Tower Convertible
- EPO Function
- Wide Input Voltage Range
- Fully Digitized Microprocessor Control
- Parallel Redundancy
- Advanced Battery Management
- Lightning and Surge Protection, Short Circuit and Overload Protection
- Multilingual LCD and LED display
- EMI RFI Noise Filter
- Smart RS232 Communication with Monitoring Software
- Optional SNMP Card Slot

## AS-MOD Series



### AS-MOD MODULAR UPS Series Technical Specifications 10-1560 kVA 3 Phase Input - 3 Phase Output Modular UPS

| MODEL                      |                         | MOD 3400  | MOD 3520  | MOD 3800                       | MOD 31040     | MOD 31560      |  |  |  |
|----------------------------|-------------------------|---|---|--------------------------------|---------------|----------------|--|--|--|
| Capacity (kVA/kW)          | UPS Cabinet MEDI Module | 400kVA/360kW  | 520kVA/468kW  | 800kVA/720kW                   | 1040kVA/936kW | 1560kVA/1404kW |  |  |  |
| <b>INPUT</b>               |                         |   |   |                                |               |                |  |  |  |
| Rated Voltage              |                         | 380/400/415 Vac 3P+N+PE   |   |                                |               |                |  |  |  |
| Voltage Range              |                         | 208~478 Vac   |   |                                |               |                |  |  |  |
| Operating Frequency Range  |                         | 40~70 Hz  |   |                                |               |                |  |  |  |
| Harmonic distortion (THDi) |                         | <3% (100% Linear Load)  |   |                                |               |                |  |  |  |
| Power Factor               |                         | 0,99  |   |                                |               |                |  |  |  |
| Bypass Voltage Range       |                         | Max. Voltage: 220V: +25%(optional +10%,+15%,+20%)<br>240V: +15%(optional +10%)                          | 230V: +20%(optional +10%,+15%)<br>Min.Voltage: -45% (optional -20%, -30%) | Frequency Protection Range 10% |               |                |  |  |  |
| Harmonic Distortion (THDi) |                         | <3% (100% nonlinear load)   |   |                                |               |                |  |  |  |
| Generator Input            |                         | Yes   |   |                                |               |                |  |  |  |
| <b>OUTPUT</b>              |                         |   |   |                                |               |                |  |  |  |
| Rated Voltage              |                         | 380/400/415 Vac 3P+N+PE   |   |                                |               |                |  |  |  |
| Voltage Regulation         |                         | ±1%   |   |                                |               |                |  |  |  |
| Frequency                  | Line                    | ±1%/±2%/±4%/±5%/±10% of the Rated Frequency (Optional)  |   |                                |               |                |  |  |  |
|                            | Battery                 | 50/60 ± 0,1 Hz  |   |                                |               |                |  |  |  |
| Voltage Distortion (THDv)  |                         | ≤2% (Linear Load); ≤5% (Non-Linear Load)  |   |                                |               |                |  |  |  |
| Output Power Factor        |                         | 0,9   |   |                                |               |                |  |  |  |
| Crest Factor               |                         | 3:1   |   |                                |               |                |  |  |  |
| Efficiency                 |                         | 95%   |   |                                |               |                |  |  |  |
| <b>SYSTEM FEATURES</b>     |                         |   |   |                                |               |                |  |  |  |
| UPS Type / Technology      |                         | Modular Type / True Online Double Conversion  |   |                                |               |                |  |  |  |
| Transfer Time              |                         | Mains to Battery: 0ms; Mains to Bypass: 0ms   |   |                                |               |                |  |  |  |
| Overload Capability        | Line Mode               | Load ≤110%: 60min; ≤125%: 10min, ≤150%: 1min, >150% turn to bypass mode immediately                     |   |                                |               |                |  |  |  |
|                            | Battery Mode            | Load ≤110%: 10min; ≤125%: 1min, ≤150%: 1sec >150% turn to bypass mode immediately                       |   |                                |               |                |  |  |  |
|                            | Bypass Mode             | Breaker (40k:95A)   |   |                                |               |                |  |  |  |
| Short Circuit              |                         | Hold Whole System   |   |                                |               |                |  |  |  |
| Noise Suppression          |                         | Complies with EN62040-2   |   |                                |               |                |  |  |  |
| Communication Interface    | UPS Cabinet             | RS232, RS485, Dry Contact, 2x Intelligent Slot (SNMP Card, Relay Card optional)                         |   |                                |               |                |  |  |  |
|                            | MEDI Module             | RS232   |   |                                |               |                |  |  |  |
| <b>BATTERY</b>             |                         |   |   |                                |               |                |  |  |  |
| Battery Voltage            |                         | ±192/204/216/228/240Vdc (Battery quantity Optional)   |   |                                |               |                |  |  |  |
| Chage Current              | UPS Cabinet             | Max. 100A   | Max. 130A   | Max. 200A                      | Max. 260A     | Max. 390A      |  |  |  |
|                            | MEDI Module             | Max. 10A  |   |                                |               |                |  |  |  |
| <b>ENVIRONMENT</b>         |                         |   |   |                                |               |                |  |  |  |
| Operating Temperature      |                         | 0°C to 40 °C  |   |                                |               |                |  |  |  |
| Storage Temperature        |                         | -25°C to 55°C   |   |                                |               |                |  |  |  |
| Relative Humidity          |                         | 0-95% (non-condensing)  |   |                                |               |                |  |  |  |
| Altitude                   |                         | < 1500 m  |   |                                |               |                |  |  |  |
| Audible Noise              |                         | < 73 dB   |   |                                |               |                |  |  |  |
| <b>STANDARDS</b>           |                         |   |   |                                |               |                |  |  |  |
| LVD (Safety)               |                         | IEC/EN 62040-1 / IEC/EN 60950-1   |   |                                |               |                |  |  |  |
| EMC                        |                         | IEC/EN 62040-2 / IEC61000-4-2 / IEC61000-4-3/ IEC61000-4-4 / IEC61000-4-5 / IEC61000-4-6 / IEC61000-4-8 |   |                                |               |                |  |  |  |
| <b>PHYSICAL</b>            |                         |   |   |                                |               |                |  |  |  |
| Dimensions (WxDxH) [mm]    | UPS Cabinet             | 860x1200x2000   |   |                                |               |                |  |  |  |
|                            | MEDI Module             | 580x443x131 (3U)  |   |                                |               |                |  |  |  |
| Weight [kg]                | UPS Cabinet             | 750   | 860   | 1300                           | 1810          | 2800           |  |  |  |
|                            | MEDI Module             | 34  |   |                                |               |                |  |  |  |



### FEATURES

- High Frequency and Double Conversion on-line Technology
- Advanced PFC technology
- 3U Frame, Rack-Mounted and Tower Convertible
- EPO Function
- Wide Input Voltage Range
- Fully Digitized Microprocessor Control
- Parallel Redundancy
- Advanced Battery Management
- Lightning and Surge Protection, Short Circuit and Overload Protection
- Multilingual LCD and LED display
- EMI RFI Noise Filter
- Smart RS232 Communication with Monitoring Software
- Optional SNMP Card Slot

## AS-REC 1000 Series

### AS-REC Series

Mono Phase Input Battery Charger / Rectifier



## BATTERY CHARGING RECTIFIERS

Main purpose of Battery Charging Rectifier is to convert AC Voltage to DC Voltage. Rectifiers are designed to charge batteries and to provide energy needs of DC power-fed devices. According to the fields of application, Rectifiers are entitled as Rectifier, Battery Charger and Rectifier & Charger. In accordance with input voltage, rectifiers are produced in two types as 1 phase 220VAC and 3 phase 380VAC. Battery chargers can be designed in 12V, 24V, 48V, and 110 and 220 VDC output voltages to the type of applications.

## AS-REC 3000 Series

### AS-REC 3000 Series

3 Phase Input Battery Charger / Rectifier



AS-REC Series Battery chargers (rectifiers) can usually charge all battery types like as gel battery, liquid battery or dry battery etc. Recently, solar charger, wind charger, solar and wind inverters are widely used together with inverter & battery charging rectifier in solar and wind energy applications. The most common uses of direct current power supplies are zones where storage of energy is needed (stored), emergency lighting, security systems and routing systems.

AS-VREC series Battery Chargers are designed by using today's technology for charging batteries of electric vehicles and DC energy necessity of the equipment's which are supplied with the very sensitive direct current. To provide the minimum ripples, Battery Charger uses DSP Controlled IGBT technology and advanced filters at the input and output.

## AS-VREC Series

### AS-VREC Series

3 Phase Input Electric Vehicle Battery Charger



Battery chargers' most common usage areas are telecommunications, power distribution stations, sea and land transport vehicles, industrial and military facilities, substations, wind and solar power plants, power stations, UPS (Uninterruptible Power Supply) systems, intelligent building projects and all kinds of battery charging applications.

## AS-REC 1000 Series



Up to 1,2 kW



Up to 10 kW



Up to 33 kW

### AS-REC 1000 Series Technical Specifications Mono Phase Input Rectifier / Battery Charger with Transformer

#### MODEL (See Below Tables)

##### INPUT

|                     |                                |
|---------------------|--------------------------------|
| Voltage             | 220 Vac (Optional 230/240 Vac) |
| Voltage Tolerance   | ± 20%                          |
| Frequency           | 50 Hz (Optional 60 Hz)         |
| Frequency Tolerance | ± 5%                           |

##### OUTPUT

|                     |   |
|---------------------|---|
| Voltage Range (Vdc) | 12, 24, 48, 110, 220 Vdc (Others on Request)                              |
| Voltage Regulation  | ± 2%  |
| Output Currents (A) | 10, 15, 20, 25, 30, 40, 50, 60, 75, 80, 100, 120, 125 (Others on Request) |
| Ripple              | < 5% (Without Battery)  |
| Efficiency          | Up to 88%   |

##### GENERAL

|                     |   |
|---------------------|---|
| Control             | Microprocessor Controlled   |
| Protections         | Short Circuit, Over Current, Over Temperature, Output Voltage Low/High, DC Ground Missing Warning |
| Battery Charge Mode | Automatic Charge, Boost Charge<br>Float Charge : 2 - 2.45V/Cell (Depends Battery Type)            |
| Display             | 128x64 Graphic LCD, 4 key, 6 pcs LED  |
| Isolation           | Input-Output: 2000 V, Input/Output-Ground: 500V   |

##### ENVIRONMENTAL

|                       |                          |
|-----------------------|--------------------------|
| Operating Temperature | 0...+40 °C               |
| Storage Temperature   | -20...+70 °C             |
| Relative Humidity     | % 0-95 (Non-condensing)  |
| Cooling               | Forced Cooling with Fan  |
| Protection Level      | IP20 (Others on Request) |
| Acoustic Noise        | 55 dBA                   |

##### PHYSICAL

|                        |              |             |
|------------------------|--------------|-------------|
| Dimensions (HxWxD) mm. | Up to 1,2 kW | 500x370x630 |
|                        | Up to 10 kW  | 580x470x870 |

##### STANDARDS

|                      |  |
|----------------------|--|
| Harmonized Standards | EN62040-1, EN 61204 (LVD), EN61204-3 (EMC) |
|----------------------|--|

#### BATTERY CHARGING RECTIFIERS

AS-REC 1000 series rectifiers are designed by today's technology for charging batteries and for the DC energy necessity of the equipment's which are supplied with the direct current. Common usage areas are telecommunication, energy distribution stations, land and marine transport vehicles, industrial and military foundations and all kinds of battery charging applications. Rectifiers have completely electronic structure and they check the output current and voltage by power part with thyristor. To provide the minimum ripples, the output part is equipped with the filter containing capacitors, and shock inductors.

#### GENERAL FEATURES

- Thyristor Phase Control Technology
- Voltage Controlled Automatic Charge
- Usage as DC Power Supply
- Wide Power Range
- High Efficiency and Reliability
- Electronic Protections
- User Friendly LCD Panel
- Optional Double LCD for Load and Battery
- Optional Portable LCD Panel
- LCD works without AC Input
- Easy to Use

#### AS-REC SINGLE PHASE MODELS

| V   | A | 10      | 12      | 15      | 20      | 30      | 40      | 50      | 60      | 100      | Page |
|-----|---|---------|---------|---------|---------|---------|---------|---------|---------|----------|------|
| 24  |   | 1024-10 | 1024-12 | 1024-15 | 1024-20 | 1024-30 | 1024-40 | 1024-50 | 1024-60 | 1024-200 | 30   |
| 48  |   | 1048-10 | 1048-12 | 1048-15 | 1048-20 | 1048-30 | 1048-40 | 1048-50 | 1048-60 | 1048-200 | 30   |
| 110 |   | 1110-10 | 1110-12 | 1110-15 | 1110-20 | 1110-30 | 1110-40 | 1110-50 | 1110-60 | 1110-200 | 30   |

## AS-REC 3000 Series



### AS-REC 3000 Series Technical Specifications 3 Phase Input Rectifier / Battery Charger with Transformer

| MODEL (See Below Tables) |   |   |
|--------------------------|---|---|
| INPUT                    |   |   |
| Voltage                  | 380 (Optional 400/415/440) Vac 3 Ph+N+PE  |   |
| Voltage Tolerance        | ± 20%   |   |
| Frequency                | 50 Hz (Optional 60 Hz)  |   |
| Frequency Tolerance      | ± 5%  |   |
| OUTPUT                   |   |   |
| Voltage Range (Vdc)      | 24, 48, 110, 220 Vdc (Others on Request)  |   |
| Voltage Regulation       | ± 2%  |   |
| Output Currents (A)      | 30, 40, 50, 60, 80, 100, 150, 200, 250, 300, 400, 600 (Others on Request)                         |   |
| Ripple                   | < 5% (Without Battery)  |   |
| Efficiency               | Up to 90%   |   |
| GENERAL                  |   |   |
| Control                  | Microprocessor Controlled   |   |
| Protections              | Short Circuit, Over Current, Over Temperature, Output Voltage Low/High, DC Ground Missing Warning |   |
| Battery Charge Mode      | Automatic Charge, Boost Charge<br>Float Charge : 2 - 2.45V/Cell (Depends Battery Type)            |   |
| Display                  | 128x64 Graphic LCD, 4 key, 6 pcs LED  |   |
| Isolation                | Input-Output: 2000 V, Input/Output-Ground: 500V   |   |
| ENVIRONMENTAL            |   |   |
| Operating Temperature    | 0...+40 °C  |   |
| Storage Temperature      | -20...+70 °C  |   |
| Relative Humidity        | % 0-95 (Non-condensing)   |   |
| Cooling                  | Forced Cooling with Fan   |   |
| Protection Level         | IP20 (Others on Request)  |   |
| Acoustic Noise           | 55 dBA  |   |
| PHYSICAL                 |   |   |
| Dimensions (HxWxD) mm.   | Up to 10 kW<br>Up to 33 kW<br>Others  | 580x470x870<br>650x1100x700<br>Ask for Other Models |
| STANDARDS                |   |   |
| Harmonized Standards     | EN62040-1, EN 61204 (LVD), EN61204-3 (EMC)  |   |

#### BATTERY CHARGING RECTIFIERS

AS-REC 3000 series rectifiers are designed by today's technology for charging batteries and for the DC energy necessity of the equipment's which are supplied with the direct current. Common usage areas are telecommunication, energy distribution stations, land and marine transport vehicles, industrial and military foundations and all kinds of battery charging applications. Rectifiers have completely electronic structure and they check the output current and voltage by power part with thyristor. To provide the minimum ripples, the output part is equipped with the filter containing capacitors and shock inductors.

#### GENERAL FEATURES

- Thyristor Phase Control Technology
- Voltage Controlled Automatic Charge
- Usage as DC Power Supply
- Wide Power Range
- High Efficiency and Reliability
- Electronic Protections
- User Friendly LCD Panel
- Optional Current Sharing Parallel Operating
- Optional Double LCD for Load and Battery,
- Optional Portable LCD Panel
- LCD works without AC Input
- Easy to Use

#### AS-REC THREE PHASE MODELS

| V   | A | 30      | 40      | 50      | 60      | 100      | 150      | 200      | 250      | 300      | 400      | 600      | Page |
|-----|---|---------|---------|---------|---------|----------|----------|----------|----------|----------|----------|----------|------|
| 24  |   | 3024-30 | 3024-40 | 3024-50 | 3024-60 | 3024-100 | 3024-150 | 3024-200 | 3024-250 | 3024-300 |          |          | 31   |
| 48  |   | 3048-30 | 3048-40 | 3048-50 | 3048-60 | 3048-100 | 3048-150 | 3048-200 | 3048-250 | 3048-300 | 3048-400 | 3048-600 | 31   |
| 110 |   | 3110-30 | 3110-40 | 3110-50 | 3110-60 | 3110-100 | 3110-150 | 3110-200 | 3110-250 | 3110-300 | 3110-400 |          | 31   |
| 220 |   | 3220-30 | 3220-40 | 3220-50 | 3220-60 | 3220-100 | 3220-150 | 3220-200 | 3220-250 | 3220-300 |          |          | 31   |

## AS-VREC Series Technical Specifications

### 3 Phase Input Vehicle Battery Charger With Isolation Transformer



| MODEL (See Below Tables)     |   |                      |
|------------------------------|---|----------------------|
| <b>INPUT</b>                 |   |                      |
| Voltage                      | 380 Vac (Optional 400/415 Vac)  |                      |
| Voltage Tolerance            | ± 20%   |                      |
| Frequency                    | 50 Hz , (Optional 60 Hz)  |                      |
| Frequency Tolerance          | ± 5%  |                      |
| <b>OUTPUT</b>                |   |                      |
| Voltage Range (Vdc)          | 400, 600 Vdc (Others on Request)  |                      |
| Voltage Regulation           | ± 1%  |                      |
| Output Currents (A)          | 40,125A (Others on Request)   |                      |
| Ripple                       | <1% (Without Battery)   |                      |
| Efficiency                   | 90% >   |                      |
| <b>GENERAL</b>               |   |                      |
| Control                      | Microprocessor Controlled   |                      |
| Protections                  | Short Circuit, Over Current, Over Temperature, Ouput Voltage Low/High, input voltage Low/High |                      |
| Battery Charge Mode          | Float Charge  |                      |
| Display                      | 128x64 Graphic LCD, 4 key, 6 pcs LED  |                      |
| Isolation                    | Input-Output: 2000 V, Input/Output to Ground: 1000V   |                      |
| <b>ENVIRONMENTAL</b>         |   |                      |
| Operating Temperature        | 0...+40 °C  |                      |
| Storage Temperature          | -20...+70 °C  |                      |
| Relative Humidity            | % 0-95 (Non-condensing)   |                      |
| Cooling                      | Forced Cooling with Fan   |                      |
| Protection Level             | IP20, IP43 (Others on Request)  |                      |
| Acoustic Noise               | 60 dBA  |                      |
| <b>PHYSICAL</b>              |   |                      |
| Dimensions<br>(HxDxW)<br>cm. | Up to 24 kW   | 1300x800x590         |
|                              | Up to 50 kW   | 1546 x 800 x 738     |
|                              | Others  | Ask for Other Models |
| <b>STANDARDS</b>             |   |                      |
| Harmonized Standards         | EN62040-1, EN 61204 (LVD)   |                      |

#### BATTERY CHARGING RECTIFIERS

AS-VREC series Battery Chargers are designed by using today's technology for charging batteries of electric vehicles and DC energy necessity of the equipment's which are supplied with the very sensitive direct current. To provide the minimum ripples, Battery Charger uses DSP Controlled IGBT technology and advanced filters at the input and output.

#### GENERAL FEATURES

- Ideal Charger for Electric Vehicle Battery
- IGBT Rectifier
- Voltage and Current Controlled Automatic Charge
- Low Ripple Value
- High Efficiency and Reliability
- Electronic Protections
- Microprocessor Controlled
- CANBUS Communication for Smart Battery Charging
- User Friendly LCD Panel
- Easy to Use

#### AS-VREC

| V \ A | 30     | 40     | 50     | 60     | 100     | 150     | 200     | 250     | 300     | 400     | 600     | Page |
|-------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|------|
| 400   | 400-30 | 400-40 | 400-50 | 400-60 | 400-100 | 400-150 | 400-200 | 400-250 | 400-300 | 400-400 | 600-400 | 32   |
| 600   | 600-60 | 600-40 | 600-50 | 600-60 | 600-100 | 600-150 | 600-200 | 600-250 | 600-300 | 600-400 | 600-600 | 32   |

## AS-INV 3000 G Series

**AS-INV 3000 G Series On-Grid String Inverters**  
20-30 kW (HF) Ongrid Inverters



### POWER INVERTER

The inverter by its own cannot produce electricity, but just converts the existing DC voltage (direct current) voltage into AC (alternating current). Inverter converting the DC voltage into AC voltage is a device designed to satisfy the energy requirements of instruments where there is no mains. In other words, the inverter can be described as a device that converter 12, 24, 48 and 110 VDC battery voltage into 220 VAC, 50Hz voltage. 50Hz 220VAC output inverters are manufactured mainly in 3 types as Square wave inverters, sinusoidal analogy output inverters and Modified Sine wave inverters. Today, Grid Connected inverters have been developed having high DC voltage input range for renewable energy applications. There are two types Grid connected Inverter as Ongrid and Offgrid. Ongrid Inverters can feed the grid while Offgrid inverters work independent from grid and feed its own loads.

## AS-INV 3000 C Series

**AS-INV 3000 C Series**  
110-500 kW (HF) Ongrid Central Inverters



## AS-INV 3000 Series

**AS-INV 3000 Series**  
2,4-20 kW (LF) Offgrid Inverters



Inverters are usually used in various places for different applications as wind and solar energy applications, sea and land transport vehicles, the GSM network and other communication areas, in zones in where no mains, applications need to store energy (backed up energy) etc. Recently, solar charger, wind charger, solar and wind inverter&battery charging rectifier in solar and wind energy applications.

## AS-INV 1000 Series

**AS-INV 1000 Series**  
1-6 kW (LF) Offgrid Inverter with Charger



## AS-INV 3000 G Series

### AS-INV 3000 G Series On-Grid Inverter Technical Specifications 20-30 kW Three Phase String PV Inverter



Bottom View

| MODEL                        | INV G 3020                      | INV G 3030  |
|------------------------------|---------------------------------|-------------|
| <b>DC DATA</b>               |                                 |             |
| Recommended PV Power (kW)    | 24                              | 32          |
| MPPT Voltage Range           | 580-850 Vdc                     |             |
| Max. DC Voltage              | 1000 Vdc                        |             |
| Max. DC Current              | 42                              | 63          |
| MPP Tracking                 | 1x Fast Precise MPP Tracking    |             |
| Number of DC Connections     | 6                               |             |
| <b>AC DATA</b>               |                                 |             |
| Max AC Power (kW)            | 20                              | 30          |
| AC Grid Connection           | L1, L2, L3, N, PE               |             |
| AC Rated Voltage             | 400 Vac +%10 - %20              |             |
| Frequency Range              | 50, 60 / 45 ... 65 Hz           |             |
| CosØ                         | 0,9i...0,9c                     |             |
| Max. AC Current              | 28,9                            | 43,4        |
| THDi                         | < 3%                            |             |
| Max. Efficiency              | 98,10%                          |             |
| EU Efficiency                | 97,50%                          |             |
| CEC Efficiency               | 97,70%                          |             |
| <b>PROTECTIONS</b>           |                                 |             |
| Overvoltage Category (AC/DC) | Type II                         |             |
| AC Short Circuit             | Electronic Protection           |             |
| Grid High / Low Voltage      | Yes                             |             |
| <b>ENVIRONMENTAL</b>         |                                 |             |
| Ambient Temperature          | -10...+50 °C                    |             |
| Altitude                     | <2000 m                         |             |
| Acoustic Noise (1 m.)        | <50 dBA                         |             |
| Protection Type              | IP65                            |             |
| <b>COMMUNICATION</b>         |                                 |             |
| Interface                    | RS485                           |             |
| <b>PHYSICAL</b>              |                                 |             |
| Dimensions (WxDxH) mm.       | 480x325x705                     | 700x325x705 |
| Weight (kg)                  | 45                              | 50          |
| <b>STANDARDS</b>             |                                 |             |
| EMC                          | EN 61000-6-2, EN 61000-6-4      |             |
| LVD                          | DIN EN 62109-1 , DIN EN 62109-2 |             |
| Grid Protection              | VDE 0126-1-1                    |             |
| Environmental Classes        | DIN IEC 721-3-3                 |             |
| Certificate                  | CE                              |             |

#### GENERAL FEATURES

- 3 Phase Utility Connection
- Built-in MPPT
- IGBT Based PWM Technology
- High Efficiency
- DSP Controlled
- User Friendly LCD Panel
- Easy to Use
- CE Certificate

#### ONGRID SOLAR INVERTER

AS-INV 3000 G solar inverter gets the energy from the PV panel and injects it to the grid. AS-INV 3000 G has three levels IGBT technology inside therefore its efficiency is very high with respect to conventional solar inverters. Not only is nominal power, even if low power, its efficiency is very high. Beside the three levels technology, it has DSP (digital signal processor) technology. Thanks to DSP all the controls of the inverter are made by software. On the other hand, inverter has graphic LCD at front panel to display all the necessary information to the user including current, voltage, etc. Because of MPPT feature of the inverters, the maximum powers of the PV panels are tracked in every condition.

## AS-INV 3000 C Series

### AS-INV 3000 C Series On-Grid Inverter Technical Specifications 110-500 kW 3 Phase Ongrid Central Inverter

| MODEL                         | INV C 3110   | INV C 3150                      | INV C 3250       | INV C 3500 |
|-------------------------------|--------------|---------------------------------|------------------|------------|
| <b>DC DATA</b>                |              |                                 |                  |            |
| Recommended PV Power (kW)     | 110          | 160                             | 260              | 520        |
| MPPT Voltage Range            |              | 580-850 Vdc                     |                  |            |
| Max. DC Voltage               |              | 1000 Vdc                        |                  |            |
| Max. DC Current               | 198A         | 270A                            | 450A             | 900A       |
| MPP Tracking                  |              | 1                               | 1 (on request 2) |            |
| Number of DC Connections      | 4-8          | 4-8                             | 4-10             | 4-15       |
| DC Protection                 |              |                                 | Yes              |            |
| <b>AC DATA</b>                |              |                                 |                  |            |
| Max AC Power (kW)             | 110          | 150                             | 250              | 500        |
| AC Grid Connection            |              | L1, L2, L3, N, PE               |                  |            |
| AC Rated Voltage              |              | 400 Vac +%10 -%20               |                  |            |
| Frequency Range               |              | 50, 60 / 45 ... 65 Hz           |                  |            |
| CosØ                          |              | 0,9i...0,9c                     |                  |            |
| Max. AC Current               | 160A         | 217A                            | 362A             | 724A       |
| THDi                          |              | < 3%                            |                  |            |
| Max. Efficiency               |              | 98,80%                          |                  |            |
| EU Efficiency                 |              | 98,00%                          |                  |            |
| CEC Efficiency                |              | 98,50%                          |                  |            |
| <b>PROTECTIONS</b>            |              |                                 |                  |            |
| Over Voltage Category (AC/DC) |              | Type II                         |                  |            |
| AC Short Circuit              |              | Electronic Protection           |                  |            |
| Grid High / Low Voltage       |              | Yes                             |                  |            |
| <b>ENVIRONMENTAL</b>          |              |                                 |                  |            |
| Operation Temperature         |              | -10...+50 °C                    |                  |            |
| Cooling                       |              | Fan                             |                  |            |
| Altitude                      |              | <2000 m                         |                  |            |
| Acoustic Noise (from 1m.)     |              | <70 dBA                         |                  |            |
| Protection Class              |              | IP20, IP43                      |                  |            |
| <b>COMMUNICATION</b>          |              |                                 |                  |            |
| Interface                     |              | RS485                           |                  |            |
| <b>PHYSICAL</b>               |              |                                 |                  |            |
| Dimensions (WxDxH) mm.        | 840x680x1670 | 1000x868x1800                   |                  |            |
| Weight (kg)                   | 290          | 315                             | 540              | 685        |
| <b>STANDARDS</b>              |              |                                 |                  |            |
| EMC                           |              | EN 61000-6-2, EN 61000-6-4      |                  |            |
| LVD                           |              | DIN EN 62109-1 , DIN EN 62109-2 |                  |            |
| Mains Protection              |              | VDE 0126-1-1                    |                  |            |
| Environmental Class           |              | DIN IEC 721-3-3                 |                  |            |



**INV C 3110**



**INV C 3500**

#### ONGRID SOLAR INVERTER

AS-INV 3000 C Ongrid Solar Inverter converts DC energy coming from PV Panels to AC Voltage and transfer it Interconnected Mains System. It uses built in MPPT algorithm and transfer maximum power to mains. User can track all electrical values of Inverter and produced power statistics by means of Advanced LCD Panel

#### GENERAL FEATURES

- 3 Phase Utility Connection
- Built-in MPPT
- IGBT Based PWM Technology
- High Efficiency
- DSP Controlled
- User Friendly LCD Panel
- Easy to Use

## AS-INV 3000 Series



### AS-INV 3000 Series Offgrid Inverter Technical Specifications 3-20 kVA LF Offgrid Inverter

| MODEL                  | 3048  | 5048 | 7548 | 10048  | 3060 | 5060 | 7560    | 10060 | 3110 | 5110 | 8110 | 10110 | 12110 | 15110 | 20110 |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|---|------|------|--------|------|------|---------|-------|------|------|------|-------|-------|-------|-------|--|--|--|--|--|--|--|--|--|--|--|--|
| Apparent Power (kVA)*  | 3   | 5    | 7,5  | 10     | 3    | 5    | 7,5     | 10    | 3    | 5    | 8    | 10    | 12    | 15    | 20    |  |  |  |  |  |  |  |  |  |  |  |  |
| Active Power (kW)*     | 2,4   | 4    | 6    | 8      | 2,4  | 4    | 6       | 8     | 2,4  | 4    | 6,4  | 8     | 9,6   | 12    | 16    |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>INPUT</b>           |   |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Voltage                | 48 Vdc  |      |      | 60 Vdc |      |      | 110 Vdc |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Voltage Tolerance      | ± 10%   |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Ripple                 | <3%   |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Low Input Level        | 40 Vdc  |      |      | 54 Vdc |      |      | 88 Vdc  |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| High Input Level       | 60 Vdc  |      |      | 72 Vdc |      |      | 137 Vdc |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Bypass Voltage         | 220 VAC ±%20  |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>OUTPUT</b>          |   |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Voltage                | 220 Vac (Optional 230/240 Vac)  |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Voltage Tolerance      | ± %2  |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Frequency              | 50/60/83/400 Hz   |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Frequency Tolerance    | <± 0.4%   |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Waveform               | Pure Sine Wave  |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| THDv                   | < % 6   |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Crest Ratio            | 3:1   |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Overload               | 60 sec for %150 load@50 Hz  |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>GENERAL</b>         |   |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Display                | Graphic LCD   |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Alarm Contacts         | Available   |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Output GND Isolation   | 2000 V  |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Input Output Isolation | 500 V   |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Protections            | Soft Start,Over Temperature,High/Low Input Voltage,High/Low Output Voltage,Overload,Short Circuit |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>ENVIRONMENTAL</b>   |   |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Operating Temperature  | 0-40 °C   |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Storage Temperature    | -40 ~ +70 °C  |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Relative Humidity      | % 0-95 (Non-condensing)   |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Altitude               | <2000 m   |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Cooling                | Forced Air Cooling  |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Protection Level       | IP20  |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>PHYSICAL</b>        |   |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Dimensions (HxWxD) mm. | Up to 5 kVA 315x535x435;5-10 kVA:460x600x550 15-20 kVA:439x623x1186                               |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>STANDARTLAR</b>     |   |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |
| Harmonized Standards   | EN 620400-1 (LVD), EN 62040-2 (EMC)   |      |      |        |      |      |         |       |      |      |      |       |       |       |       |  |  |  |  |  |  |  |  |  |  |  |  |

\*Other powers can be manufactured per request

### OFFGRID SINE WAVE INVERTER

The AS-INV 3000 series inverters produced in AS facilities with the latest technology are power supplies providing the same voltage form as the utility. They have advanced technology of DSPs (Digital Signal Processors) to convert 48V, 60V and 110V DC voltages into 220 Vac, 50Hz. These inverters can be utilized for the supplying of all electrical equipment without any trouble because of the pure sine wave at the output. Since the energy source is a DC voltage when there is no utility source, they can provide long-life energy in land, marine vehicles, industrial institutions, railways, military applications, telecommunication switchboards, energy production centers. Thanks to the DSP technology, frequencies are available to be formed sensitively, with a little change in software; they can be reassigned as 60Hz, 83Hz and 400Hz. These inverters are available for all kinds of applications due to the wide input voltages, standard power options between 3000VA to 20.000 VA, silent performance, high efficiency, and pure sine wave.

## AS-INV 1000 Series



### AS-INV 1000 Series 1-6 kW (LF) Inverter with Charger

| MODEL                            | 1012M   | 2012M       | 3012M        | 4024M  | 5024M  | 6024M  |  |  |  |  |
|----------------------------------|---|-------------|--------------|--------|--------|--------|--|--|--|--|
|                                  | 1024M   | 2024M       | 3024M        | 4048M  | 5048M  | 6048M  |  |  |  |  |
| <b>INVERTER OUTPUT</b>           |   |             |              |        |        |        |  |  |  |  |
| Continuous Output Power          | 1000W   | 2000W       | 3000W        | 4000W  | 5000W  | 6000W  |  |  |  |  |
| Surge Rating(20s)                | 3000W   | 6000W       | 9000W        | 12000W | 15000W | 18000W |  |  |  |  |
| Output Waveform                  | Pure Sine wave/Same as input(Bypass mode)               |             |              |        |        |        |  |  |  |  |
| Nominal Efficiency               | >88%(Peak)  |             |              |        |        |        |  |  |  |  |
| Line Mode Efficiency             | >95%  |             |              |        |        |        |  |  |  |  |
| Power Factor                     | 0.9-1.0   |             |              |        |        |        |  |  |  |  |
| Nominal Output Voltage RMS       | 230Vac  |             |              |        |        |        |  |  |  |  |
| Output Voltage Regulation        | ±10% RMS  |             |              |        |        |        |  |  |  |  |
| Output Frequency                 | 50/60Hz ± 0.3Hz   |             |              |        |        |        |  |  |  |  |
| Short Circuit Protection         | Yes, Current Limit Function (Fault after 10sec)         |             |              |        |        |        |  |  |  |  |
| Typical Transfer Time            | 10ms  |             |              |        |        |        |  |  |  |  |
| THDi                             | < 3%  |             |              |        |        |        |  |  |  |  |
| <b>DC INPUT</b>                  |   |             |              |        |        |        |  |  |  |  |
| Nominal Input Voltage            | 12.0Vdc (*2 for 24Vdc, *4 for 48Vdc)                    |             |              |        |        |        |  |  |  |  |
| Minimum Start Voltage            | 10.0 Vdc  |             |              |        |        |        |  |  |  |  |
| Low Battery Alarm                | 10.5/11.0 Vdc   |             |              |        |        |        |  |  |  |  |
| Low Battery Trip                 | 10.0/10.5 Vdc   |             |              |        |        |        |  |  |  |  |
| High Voltage Alarm & Fault       | 16.0Vdc   |             |              |        |        |        |  |  |  |  |
| Idle Consumption-Search Mode     | < 25 W when Power Saver On                              |             |              |        |        |        |  |  |  |  |
| <b>CHARGER</b>                   |   |             |              |        |        |        |  |  |  |  |
| Input Voltage Range              | Narrow : 194~243VAC; Wide : 164~243VAC                  |             |              |        |        |        |  |  |  |  |
| Output Voltage                   | Depends on battery type                                 |             |              |        |        |        |  |  |  |  |
| Charger Breaker Rating           | 10  | 20          | 30           |        |        |        |  |  |  |  |
| Max Charge Rate ( $\pm 5A$ )     | 35A/70A   |             |              |        |        |        |  |  |  |  |
| Over Charge Protection Shutdown  | 15.7V for 12Vdc (*2 for 24Vdc, *4 for 48Vdc)            |             |              |        |        |        |  |  |  |  |
| <b>BYPASS &amp; PROTECTION</b>   |   |             |              |        |        |        |  |  |  |  |
| Input Voltage Waveform           | Sine wave (Grid or Generator)                           |             |              |        |        |        |  |  |  |  |
| Nominal Voltage                  | 230Vac  |             |              |        |        |        |  |  |  |  |
| Low Voltage Trip                 | 184V/154V±4%  |             |              |        |        |        |  |  |  |  |
| Low Voltage re Engage            | 194V/164V±4%  |             |              |        |        |        |  |  |  |  |
| High Voltage Trip                | 253V±4%   |             |              |        |        |        |  |  |  |  |
| High Voltage re Engage           | 243V±4%   |             |              |        |        |        |  |  |  |  |
| Max Input AC Voltage             | 270VAC  |             |              |        |        |        |  |  |  |  |
| Nominal Input Frequency          | 50Hz or 60Hz (Auto detect)                              |             |              |        |        |        |  |  |  |  |
| Low Freq Trip                    | 47±0.3Hz for 50Hz, 57±0.3Hz for 60Hz                    |             |              |        |        |        |  |  |  |  |
| High Freq Trip                   | 55±0.3Hz for 50Hz, 65±0.3Hz for 60Hz                    |             |              |        |        |        |  |  |  |  |
| Output Short Circuit Protection  | Circuit Breaker   |             |              |        |        |        |  |  |  |  |
| Bypass Overload Current          | 35 A (Alarm)  |             | 45 A (Alarm) |        |        |        |  |  |  |  |
| Max Bypass Current               | 30 A  |             | 40 A         |        |        |        |  |  |  |  |
| <b>MECHANICAL SPECIFICATIONS</b> |   |             |              |        |        |        |  |  |  |  |
| Mounting                         | Wall mount  |             |              |        |        |        |  |  |  |  |
| Dimensions (WxDxH) mm            | 382x218x179   | 442x218x179 | 598x218x179  |        |        |        |  |  |  |  |
| Weight (Net/Gross) kg.           | 18/21   | 20/23       | 24/27        | 35/39  | 45/49  | 45/49  |  |  |  |  |
| Display                          | Status LEDs   |             |              |        |        |        |  |  |  |  |
| <b>STANDARDS</b>                 |   |             |              |        |        |        |  |  |  |  |
| Standards                        | EN 60950-1; EN61000-3-2; EN61000-3-3:2005, EN55024:2003 |             |              |        |        |        |  |  |  |  |

#### HIGH FREQUENCY INVERTER

AS-INV 1000 Series inverters are devices forming line voltage from 12 V, 24 V and 48 V battery voltages used in daily life and business life. Thanks to practical uses, output isolation transformer structures and charging facilities, these units are used safely in land and sea vehicles and open spaces. Because generates output voltage in the form of Sinusoidal, they offer trouble-free solution to all kinds of loads such as computer, TV, refrigerator, lighting, engine load and so on.

## CUSTOMIZED PRODUCTS BY ASPOWER



### Customized Power Supplies:

Since its establishment, AS POWER has been manufacturing customized power supplies to the customer specifications. Nowadays, it's extensively needed non-standard and easy-inaccessible AC and DC power supplies especially in defense industry and electricity generation facilities where auxiliary power sources are needed. These electronic power supplies of which specifications prepared by our customers entirely including their own unique demands, are projected being carefully examined by AS POWER R&D Department and resulted in a design-to-one matching to the specifications. The production department of Aspower manufactures and presents these designs to the customer's use by the latest technology complying with the requirements of ISO 9001 quality management system. Aspower service technicians taking the necessary training in the post-production services, fulfill the most secure aftersales service to customers whenever needed.

All type of power electronics technologies available in the world, are easily used in our company and not hold back executing and implementing the newest technologies in need. In this context, the designs and the devices by ASPOWER include: inverters, rectifiers, static converters and UPSs for the requirements of Land Forces, Naval Forces and Air Forces in Turkish Armed Forces, Battery Charging Rectifiers for power plants and electricity distribution companies, Inverters for the State Railways and wide variety of products for different projects such as these.



### 28 Vdc-2000 A Rectifier for Helicopters

This rectifier is designed for Turkish Army Forces and can be used as fixed or portable. This device can supply up to 2000 A Direct Current which is startup DC energy of helicopter for at least 20 seconds at 28 Vdc.



### Submarine Frequency Converter

This converter is produced according to the Military standards and provides different AC Output Voltages at different frequencies in only one cabinet. Converter can resist against to the very high shock and vibration values which are usual for Navy due to very rugged and strong chassis



### 800 kVA Mobile UPS

This unit was designed according to Military Standards for Military Purposes. It includes Industrial Air Conditioning System. This system can be used as fixed or mobile.

## RUGGED TRUCK MOUNTED MILITARY SHELTER WITH 300 KVA UPS

ASPOWER Mobile Uninterruptible Power Supply is designed and manufactured according to military standards and is used to supply high power systems working at field. It is composed 300 kVA UPS, Industrial Air Condition System, Cabin and Semi-Trailer. It can work in hard environmental conditions. System is equipped with air conditioning to work at temperature between -25°C and +45°C. Cabin carried by the trailer can be used as mobile or fixed unit by placed in the platform. The system can be carried on 30% gradient asphalt and stabilize road and safety brakes can fix the whole system on %30 gradient.



### AS 3300 MODEL UPS

|                  |  |
|------------------|--|
| Apparent Power   | 300 kVA  |
| Active Power     | 240 kW   |
| Input Voltage    | 380 Vac ±20 3 Ph+N+PE  |
| Input Frequency  | 47 - 53 Hz   |
| Output Voltage   | 380 Vac ± 1% (Online Mod)                                      |
| Output Frequency | 50 Hz  |
| Efficiency       | 93%  |
| Battery Quantity | 180  |
| Backup Time      | 10 min.  |
| Communication    | Modem, SNMP (Optional)   |
| Technology       | Online, Double Conversion, Transformerless, High Frequency PWM |
| Standards        | EN62040-1, EN62040-2, EN62040-3                                |

### CABINET

|                    |                                   |
|--------------------|-----------------------------------|
| Material           | 3 mm. Steel (EN 10130 Compliant)  |
| Protection Class   | IP 55                             |
| Protection         | Surge, Vibration, Rain, Corrosion |
| Internal Lightning | 400 Lux                           |
| Color              | Olive Green                       |
| Dimensions         | 2450 x 7280 x 2400 mm             |
| Weight             | Empty : 3500 kg, Full : 9100 kg.  |

### SEMI TRAILER

|                        |                       |
|------------------------|-----------------------|
| Material               | ST-52 Steel           |
| Max. Carrying Capacity | 18 ton                |
| Suspension System      | Air Type              |
| Braking System         | Air Type              |
| Max. Speed (Secured)   | 60 km/h               |
| Color                  | Olive Green           |
| Dimensions             | 2500 x 7280 x 1600 mm |
| Weight                 | 4400 kg               |

### INDUSTRIAL AIR CONTION SYSTEM

|                     |            |
|---------------------|------------|
| Total Capacity      | 26.6 kW    |
| SHR                 | 0.89       |
| EHR                 | 3.41       |
| Compressor Quantity | 1          |
| Fan Quantity        | 1          |
| Air Circulation     | 5750 m3/h  |
| Max. ESP            | 270/270 Pa |
| Acoustic Noise      | 54.4 dBA   |

## AS-FC 3000 M Series



### Frequency Converters Technical Specifications

10-300 kVA 3 Phase Input - 3 Phase Output (HF) 400 Hz

| MODEL                        | 3010 M   | 3015 M | 3020 M | 3030 M | 3040 M       | 3060 M | 3080 M | 3100 M | 3120 M       | 3160 M        | 3200 M        | 3250 M        | 3300 M  |
|------------------------------|--|--------|--------|--------|--------------|--------|--------|--------|--------------|---------------|---------------|---------------|---------|
| Apparent Power(kVA)          | 10   | 15     | 20     | 30     | 40           | 60     | 80     | 100    | 120          | 160           | 200           | 250           | 300     |
| Active Power (kW)            | 8  | 12     | 16     | 24     | 32           | 48     | 64     | 80     | 96           | 128           | 160           | 160           | 240     |
| <b>INPUT</b>                 |  |        |        |        |              |        |        |        |              |               |               |               |         |
| Voltage                      | 115/200 Vac, 220/380 Vac, 254/440 Vac 3 Phase+N or Optional Special Design W/O Neutral   |        |        |        |              |        |        |        |              |               |               |               |         |
| Voltage Tolerance            | ± 5...%20 (Adjustable with %1 step)  |        |        |        |              |        |        |        |              |               |               |               |         |
| Frequency                    | 50 Hz (On request 60 Hz)   |        |        |        |              |        |        |        |              |               |               |               |         |
| Frequency Tolerance          | %5   |        |        |        |              |        |        |        |              |               |               |               |         |
| THDi                         | <5%  |        |        |        |              |        |        |        |              |               |               |               |         |
| Input Power Factor           | 0.99   |        |        |        |              |        |        |        |              |               |               |               |         |
| <b>OUTPUT</b>                |  |        |        |        |              |        |        |        |              |               |               |               |         |
| Voltage                      | 115/200 Vac, 220/380 Vac, 254/440 Vac 3 Phase+N or Optional Special Design W/O Neutral   |        |        |        |              |        |        |        |              |               |               |               |         |
| Voltage Regulation           | <±1%   |        |        |        |              |        |        |        |              |               |               |               |         |
| Frequency                    | 400 Hz ±0.5%   |        |        |        |              |        |        |        |              |               |               |               |         |
| Crest Ratio                  | 3:1  |        |        |        |              |        |        |        |              |               |               |               |         |
| Efficiency (100 Load)        | >89%   |        |        |        |              |        |        |        |              |               |               |               | >90%    |
| Power Factor                 | 0,8  |        |        |        |              |        |        |        |              |               |               |               |         |
| THDv                         | <3% Linear Load, <5% Non Linear Load   |        |        |        |              |        |        |        |              |               |               |               |         |
| Overload                     | %100<load<%125 for 10 min., %125<load<%150 for 1 min., load>150 :Shut down   |        |        |        |              |        |        |        |              |               |               |               |         |
| Short Circuit Protection     | Electronic Protection, Fuse  |        |        |        |              |        |        |        |              |               |               |               |         |
| <b>GENERAL FEATURES</b>      |  |        |        |        |              |        |        |        |              |               |               |               |         |
| Working Type                 | Static, Online, DSP Controlled   |        |        |        |              |        |        |        |              |               |               |               |         |
| Topology                     | High Frequency PWM , IGBT Technology   |        |        |        |              |        |        |        |              |               |               |               |         |
| Display                      | 128x64 Graphic LCD   |        |        |        |              |        |        |        |              |               |               |               |         |
| LED                          | 6 pcs for Line, Charge, Battery, Inverter, Overload Failure  |        |        |        |              |        |        |        |              |               |               |               |         |
| Event Logs                   | Up to 500 Logged Event History   |        |        |        |              |        |        |        |              |               |               |               |         |
| <b>ENVIRONMENTAL</b>         |  |        |        |        |              |        |        |        |              |               |               |               |         |
| Operating Temperature        | 0-40 °C  |        |        |        |              |        |        |        |              |               |               |               |         |
| Storage Temperature          | -25 ~ +55 °C   |        |        |        |              |        |        |        |              |               |               |               |         |
| Relative Humidity            | % 0-95 (Non-condensing)  |        |        |        |              |        |        |        |              |               |               |               |         |
| Altitude (without derating)  | <1000 m  |        |        |        |              |        |        |        |              |               |               |               |         |
| Cooling                      | Forced Air Cooling   |        |        |        |              |        |        |        |              |               |               |               |         |
| Protection Level             | IP20 (Others on request)   |        |        |        |              |        |        |        |              |               |               |               |         |
| Acotic Noise                 | <55 dBA  |        |        |        |              |        |        |        |              |               |               |               | <70 dBA |
| <b>PHYSICAL</b>              |  |        |        |        |              |        |        |        |              |               |               |               |         |
| Dimesions (WxDxH)cm          | 350x795x1110   |        |        |        | 500x806x1213 |        |        |        | 550x800x1335 | 680x1007x1747 | 780x1260x1930 | 1600x888x1800 |         |
| Weight without Batteries(kg) | 112  | 115    | 119    | 160    | 165          | 172    | 290    | 315    | 490          | 540           | 870           | 1300          |         |
| <b>OPTIONS</b>               |  |        |        |        |              |        |        |        |              |               |               |               |         |
| Functions                    | Parallel Operation, EPO, Emergency Stop, Heater  |        |        |        |              |        |        |        |              |               |               |               |         |
| Battery                      | 60x12 Vdc Maintenance Free Type  |        |        |        |              |        |        |        |              |               |               |               |         |
| Isolation Transformer        | Input and/or Output  |        |        |        |              |        |        |        |              |               |               |               |         |
| Communication                | Dry Contacts, SNMP, Modem, RS232, RS485  |        |        |        |              |        |        |        |              |               |               |               |         |
| <b>STANDARDS</b>             |  |        |        |        |              |        |        |        |              |               |               |               |         |
| Harmonized Standards         | EN 62040-1(LVD), EN 62040-2(EMC), EN 62040-3, EN 55011, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-2-2, MIL-STD-461, MIL-STD-1310G |        |        |        |              |        |        |        |              |               |               |               |         |



### FREQUENCY CONVERTER

Static frequency converters are used with the devices which cannot adapt to line frequency. Static converters are more economic and more technological solution than the conventional motor generator (Dynamic Converter) for these problems. Their efficiency is higher, but operation costs are lower. Frequency converter's dynamic response is very short, because of working with static components. They are DSP controlled and they can be developed according to customer needs. Battery can be added to system and converter can continue to work even in line failures.

## AS-FC 3000 Series



### Frequency Converters Technical Specifications

10-800 kVA 3 Phase Input 3 Phase Output (HF)

| MODEL                        | 3010   | 3015 | 3020 | 3030         | 3040 | 3060 | 3080 |  |  |  |  |
|------------------------------|--|------|------|--------------|------|------|------|--|--|--|--|
| Apparent Power(kVA)          | 10   | 15   | 20   | 30           | 40   | 60   | 80   |  |  |  |  |
| Active Power (kW)            | 8  | 12   | 16   | 24           | 32   | 48   | 64   |  |  |  |  |
| <b>INPUT</b>                 |  |      |      |              |      |      |      |  |  |  |  |
| Voltage                      | 115/200 Vac, 220/380 Vac, 254/440 Vac 3 Phase+N or Optional Special Design W/O Neutral |      |      |              |      |      |      |  |  |  |  |
| Voltage Tolerance            | $\pm 5\ldots 20\%$ (Adjustable with $\frac{1}{10}$ step)                               |      |      |              |      |      |      |  |  |  |  |
| Frequency                    | 50 Hz (On request 60 Hz)   |      |      |              |      |      |      |  |  |  |  |
| Frequency Tolerance          | $\pm 5\%$  |      |      |              |      |      |      |  |  |  |  |
| THDi                         | <5%  |      |      |              |      |      |      |  |  |  |  |
| Input Power Factor           | 0.99   |      |      |              |      |      |      |  |  |  |  |
| <b>OUTPUT</b>                |  |      |      |              |      |      |      |  |  |  |  |
| Voltage                      | 115/200 Vac, 220/380 Vac, 254/440 Vac 3 Phase+N or Optional Special Design W/O Neutral |      |      |              |      |      |      |  |  |  |  |
| Voltage Regulation           | < $\pm 1\%$  |      |      |              |      |      |      |  |  |  |  |
| Frequency                    | 50 Hz; 60 Hz $\pm 0.5\%$   |      |      |              |      |      |      |  |  |  |  |
| Crest Ratio                  | 3:1  |      |      |              |      |      |      |  |  |  |  |
| Efficiency (100 Load)        | >89%   |      |      | >90%         |      |      |      |  |  |  |  |
| Power Factor                 | 0,8  |      |      |              |      |      |      |  |  |  |  |
| THDv                         | <3% Linear Load, <5% Non Linear Load   |      |      |              |      |      |      |  |  |  |  |
| Overload                     | %100<load<%125 for 10 min., %125<load<%150 for 1 min., load>150 :Shut down             |      |      |              |      |      |      |  |  |  |  |
| Short Circuit Protection     | Electronic Protection, Fuse  |      |      |              |      |      |      |  |  |  |  |
| <b>GENERAL FEATURES</b>      |  |      |      |              |      |      |      |  |  |  |  |
| Working Type                 | Static, Online, DSP Controlled   |      |      |              |      |      |      |  |  |  |  |
| Topology                     | High Frequency PWM , IGBT Technology   |      |      |              |      |      |      |  |  |  |  |
| Display                      | 128x64 Graphic LCD   |      |      |              |      |      |      |  |  |  |  |
| LED                          | 6 pcs for Line, Charge, Battery, Inverter, Overload Failure                            |      |      |              |      |      |      |  |  |  |  |
| Event Logs                   | Up to 500 Logged Event History   |      |      |              |      |      |      |  |  |  |  |
| <b>ENVIRONMENTAL</b>         |  |      |      |              |      |      |      |  |  |  |  |
| Operating Temperature        | 0-40 °C  |      |      |              |      |      |      |  |  |  |  |
| Storage Temperature          | -25 ~ +55 °C   |      |      |              |      |      |      |  |  |  |  |
| Relative Humidity            | % 0-95 (Non-condensing)  |      |      |              |      |      |      |  |  |  |  |
| Altitude (without derating)  | < 1000 m   |      |      |              |      |      |      |  |  |  |  |
| Cooling                      | Forced Air Cooling   |      |      |              |      |      |      |  |  |  |  |
| Protection Level             | IP20 (Others on request)   |      |      |              |      |      |      |  |  |  |  |
| Acoustic Noise               | <55 dBA  |      |      | <60dBA       |      |      |      |  |  |  |  |
| <b>PHYSICAL</b>              |  |      |      |              |      |      |      |  |  |  |  |
| Dimensions (WxDxH)cm         | 350x795x1110   |      |      | 500x806x1213 |      |      |      |  |  |  |  |
| Weight without Batteries(kg) | 112  | 115  | 119  | 160          | 165  | 172  |      |  |  |  |  |
| <b>OPTIONS</b>               |  |      |      |              |      |      |      |  |  |  |  |
| Functions                    | Parallel Operation, EPO, Emergency Stop, Heater  |      |      |              |      |      |      |  |  |  |  |
| Battery                      | 60x12 Vdc Maintenance Free Type  |      |      |              |      |      |      |  |  |  |  |
| Isolation Transformer        | Input and/or Output  |      |      |              |      |      |      |  |  |  |  |
| Communication                | Dry Contacts, SNMP, Modem, RS232, RS485  |      |      |              |      |      |      |  |  |  |  |
| <b>STANDARDS</b>             |  |      |      |              |      |      |      |  |  |  |  |
| Harmonized Standards         | EN 62040-1 (LVD), EN 62040-2 (EMC), EN 62040-3   |      |      |              |      |      |      |  |  |  |  |



### FREQUENCY CONVERTER

Static frequency converters are used with the devices which cannot adapt to line frequency. Static converters are more economic and more technological solution than the conventional motor generator (Dynamic Converter) for these problems. Their efficiency is higher, but operation costs are lower. Frequency converter's dynamic response is very short, because of working with static components. They are DSP controlled and they can be developed according to customer needs. Battery can be added to system and converter can continue to work even in line failures.

## AS-FC 3000 Series



### Frequency Converters Technical Specifications

10-800 kVA 3 Phase Input - 3 Phase Output (HF)

| MODEL                        | 5100   | 5120         | 5160              | 5200          | 5250              | 5300          | 5400 | 5500 | 5600 | 5800 |  |  |  |  |  |
|------------------------------|--|--------------|-------------------|---------------|-------------------|---------------|------|------|------|------|--|--|--|--|--|
| Apparent Power(kVA)          | 100  | 15           | 120               | 160           | 250               | 300           | 400  | 500  | 600  | 800  |  |  |  |  |  |
| Active Power (kW)            | 80   | 12           | 96                | 128           | 200               | 240           | 320  | 400  | 40   | 640  |  |  |  |  |  |
| <b>INPUT</b>                 |  |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Voltage                      | 115/200 Vac, 220/380 Vac, 254/440 Vac 3 Phase+N or Optional Special Design W/O Neutral |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Voltage Tolerance            | $\pm 5\% \dots 20\%$ (Adjustable with $\pm 1$ step)                                    |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Frequency                    | 50 Hz (On request 60 Hz)   |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Frequency Tolerance          | $\pm 5\%$  |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| THDi                         | <5%  |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Input Power Factor           | 0.99   |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| <b>OUTPUT</b>                |  |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Voltage                      | 115/200 Vac, 220/380 Vac, 254/440 Vac 3 Phase+N or Optional Special Design W/O Neutral |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Voltage Regulation           | $<\pm 1\%$   |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Frequency                    | 50 Hz; 60 Hz $\pm 0.5\%$   |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Crest Ratio                  | 3:1  |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Efficiency (100 Load)        | >89%   |              |                   |               |                   | >90%          |      |      |      |      |  |  |  |  |  |
| Power Factor                 | 0.8  |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| THDv                         | <3% Linear Load, <5% Non Linear Load   |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Overload                     | %100<load<%125 for 10 min., %125<load<%150 for 1 min., load>150 :Shut down             |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Short Circuit Protection     | Electronic Protection, Fuse  |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| <b>GENERAL FEATURES</b>      |  |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Working Type                 | Static, Online, DSP Controlled   |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Topology                     | High Frequency PWM , IGBT Technology   |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Display                      | 128x64 Graphic LCD   |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| LED                          | 6 pcs for Line, Charge, Battery, Inverter, Overload Failure                            |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Event Logs                   | Up to 500 Logged Event History   |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| <b>ENVIRONMENTAL</b>         |  |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Operating Temperature        | 0-40 °C  |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Storage Temperature          | -25 ~ +55 °C   |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Relative Humidity            | % 0-95 (Non-condensing)  |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Altitude (without derating)  | <1000 m  |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Cooling                      | Forced Air Cooling   |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Protection Level             | IP20 (Others on request)   |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Acotic Noise                 | <65 dBA  | <70 dBA      | <74dBA            | <75dBA        |                   |               |      |      |      |      |  |  |  |  |  |
| <b>PHYSICAL</b>              |  |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Dimensions (WxDxH)cm         | 550X800X1335   | 68X1007X1747 | 780X1260<br>X1900 | 1600X868X1800 | 2190X801<br>X2029 | 3216X868X1800 |      |      |      |      |  |  |  |  |  |
| Weight without Batteries(kg) | 290  | 315          | 490               | 540           | 870               | 1300          | 1370 | 1480 | 1690 | 1750 |  |  |  |  |  |
| <b>OPTIONS</b>               |  |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Functions                    | Parallel Operation, EPO, Emergency Stop, Heater  |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Battery                      | 60x12 Vdc Maintenance Free Type  |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Isolation Transformer        | Input and/or Output  |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Communication                | Dry Contacts, SNMP, Modem, RS232, RS485  |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| <b>STANDARDS</b>             |  |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |
| Harmonized Standards         | EN 62040-1 (LVD), EN 62040-2 (EMC), EN 62040-3   |              |                   |               |                   |               |      |      |      |      |  |  |  |  |  |



### FREQUENCY CONVERTER

Static frequency converters are used with the devices which cannot adapt to line frequency. Static converters are more economic and more technological solution than the conventional motor generator (Dynamic Converter) for these problems. Their efficiency is higher, but operation costs are lower. Frequency converter's dynamic response is very short, because of working with static components. They are DSP controlled and they can be developed according to customer needs. Battery can be added to system and converter can continue to work even in line failures.

## AS-SRG Series



### Static Voltage Stabilizers Technical Specifications

7,5-2000 kVA 1 Phase Input - 1 Phase Output / 3 Phase Input - 3 Phase Output

| MODEL                    | 1075   | 1015     | 1030     | 3030                                       | 3060      | 3100      | 3250       | 3500       | 31000       | 31500       | 32000       |  |  |  |  |  |  |
|--------------------------|--|----------|----------|--|-----------|-----------|------------|------------|-------------|-------------|-------------|--|--|--|--|--|--|
| Power (kVA)*             | 7,5  | 15       | 30       | 30   | 360       | 100       | 250        | 500        | 1000        | 1500        | 2000        |  |  |  |  |  |  |
| <b>INPUT</b>             |  |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Voltage                  | 220 Vac (230/240 Optional) (1P+N+GND)                |          |          | 380 Vac (400/415 Vac Optional) (3 P+N+GND) |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Voltage Tolerance        | 175-260 Vac  |          |          | 300-450 Vac                                |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Frequency                | 50 Hz  |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Frequency Tolerance      | ±5%  |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Current (A)              | 45   | 90       | 180      | 60   | 120       | 100       | 475        | 950        | 1900        | 2850        | 3800        |  |  |  |  |  |  |
| <b>OUTPUT</b>            |  |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Voltage                  | 220 Vac (1Phase+N+GND)                               |          |          | 380 Vac (3Phase+N+GND)                     |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Voltage Tolerance        | ±%2  |          |          | ± 2%                                       |           |           | ± 3%       |            |             |             |             |  |  |  |  |  |  |
| Correction Speed         | 5000 V/sn.   |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Frequency                | 50 Hz ±%   |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Current (A)              | 35   | 68       | 135      | 45   | 90        | 150       | 380        | 750        | 1500        | 2250        | 3000        |  |  |  |  |  |  |
| Efficiency (100% load)   | >97%   |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| THDv                     | <3%  |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| <b>LCD CONTROL PANEL</b> |  |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Type                     | 2x16 / 4x20 Alpha Numeric LCD Panel                  |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Measurement              | Input, Output and Status Information                 |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Warnings                 | High Input, Low Input, " error"                      |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| <b>PROTECTIONS</b>       |  |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Output Voltage           | Low : 180 V Adjustable High : 240 V Adjustable (P-N) |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Over Load                | 20 ms for %500 ; 1 min. for %150                     |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Thyristor Error          | System do not work                                   |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Over Temperature         | Exceed 70 °C of Heat Sink temp.                      |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Noise Filter             | EMI/RFI Filter                                       |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Bypass                   | Manuel (Automatic Optional)                          |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| <b>ENVIRONMENTAL</b>     |  |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Operating Temp.          | -15 ~ +45 °C   |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Humidity                 | % 0 °C - 90 °C (Non Condensing)                      |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Cooling                  | Fan  |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Protection Class         | IP20   |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Acoustic Noise           | <55 dBA  |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| <b>PHYSICAL</b>          |  |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Dimensions (WxDxH) cm.   | 27x47x48   | 27x47x48 | 40x47x70 | 40x80x70                                   | 70x70x110 | 70x70x120 | 140x70x135 | 180x95x160 | 240x100x210 | 270x110x210 | 270x110x210 |  |  |  |  |  |  |
| Weight (kg)              | 25   | 55       | 95       | 90   | 125       | 185       | 900        | 1900       | 2900        | 3650        | 4000        |  |  |  |  |  |  |
| <b>STANDARDS</b>         |  |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |
| Standards                | EN50091-1/EN62040-1(LVD) EN50091-2/EN62040-2 (EMC)   |          |          |  |           |           |            |            |             |             |             |  |  |  |  |  |  |

\*10, 20, 30, 45, 60, 75, 90, 120, 150, 180, 200, 250, 300, 400, 500, 600, 800, 1000, 1250, 1600, 2000, 3000 kVA models are available.



### FEATURES

- Digital Microprocessor Control
- 20 ms Response Time
- Zero Transfer Time
- Low/High Voltage Protection,
- Over Temp. Protection
- EMI/RFI Filter
- LCD Panel

### STATIC VOLTAGE STABILIZERS

AS-SRG Series Automatic Voltage Regulator is a static voltage regulator and do not include any moving parts. Voltage regulation is realized by microprocessor control via digital technology within milliseconds. It has not any corroding part where as servo regulator have these parts. MADRA Series protects itself and your critical loads at low/high voltage levels. There are RFI and EMI filters at all power levels. AS POWER Static Voltage Regulators are used at Industrial machines, Radio and TV transmitters GSM Base stations, Communication Systems, Hospitals, Studios, etc.

## Servo Voltage Stabilizers Technical Specifications

1-2100 kVA 1 Phase Input / 1 Phase Output - 3 Phase Input / 3 Phase Output



| MODEL (See Below Table)       | 1 PHASE                       | 3 PHASE                               |
|-------------------------------|-------------------------------|---------------------------------------|
| Power Range                   | 1-1000 kVA                    | 3-3000 kVA                            |
| Input Voltage Range           | 150-250 Vac*                  | 275-450 Vac*                          |
| Min. Input Range (Optional)   | 120-230 Vac                   | 210-400 Vac                           |
| Output Voltage                | 220 Vac (Optional 230-240Vac) | 380 Vac (Optional 400-415 Vac)        |
| Output Voltage Tolerance      | ±2%                           |                                       |
| Frequency                     | 50 Hz (On Request 60 Hz)      |                                       |
| Correction Speed              |                               | 150 V/sn.                             |
| Control Method                |                               | Microprocessor Controlled             |
| Display                       |                               | Input / Output Voltage and currents   |
| Efficiency                    |                               | >%95                                  |
| Conductor Type                |                               | Aluminium (On Request Copper)         |
| High Voltage Protection       |                               | Optional                              |
| Phase Protection Unit         |                               | Optional                              |
| Over Temperature Protection   |                               | Optional                              |
| Over Current Protection       |                               | Optional                              |
| Short Circuit Protection Unit |                               | Optional                              |
| Operating Temperature         |                               | -10...+40°C                           |
| Storage Temperature           |                               | -25...+60°C                           |
| Altitude                      |                               | <3000 m.                              |
| Protection Class              |                               | IP 20 (21,22,31,44,31,44,54 Optional) |
| Acoustic Noise                |                               | <60 dBA (from 1 m.)                   |
| Standards                     |                               | TS EN 61000, EN 55011:2009, EN 1558-1 |

\* Other Voltage ranges can be manufactured per request

| SINGLE PHASE MODELS |         | THREE PHASE MODELS |          |          |          |
|---------------------|---------|--------------------|----------|----------|----------|
| MODEL NO            | POWER   | MODEL NO           | POWER    | MODEL NO | POWER    |
| 1001                | 1 kVA   | 30003              | 3 kVA    | 30250    | 250 kVA  |
| 1002                | 2 kVA   | 30006              | 6 kVA    | 30300    | 300 kVA  |
| 1004                | 3,5 kVA | 30010              | 10,5 kVA | 30400    | 400 kVA  |
| 1005                | 5 kVA   | 30015              | 15 kVA   | 30500    | 500 kVA  |
| 1008                | 7,5 kVA | 30023              | 22,5 kVA | 30600    | 600 kVA  |
| 1010                | 10 kVA  | 30030              | 30 kVA   | 30800    | 800 kVA  |
| 1015                | 15 kVA  | 30045              | 45 kVA   | 31000    | 1000 kVA |
| 1020                | 20 kVA  | 30060              | 60 kVA   | 31200    | 1200 kVA |
| 1025                | 25 kVA  | 30075              | 75 kVA   | 31600    | 1600 kVA |
| 1030                | 30 kVA  | 30100              | 100 kVA  | 32000    | 2000 kVA |
| 1040                | 40 kVA  | 30150              | 150 kVA  | 32500    | 2500 kVA |
| 1050                | 50 kVA  | 30200              | 200 kVA  | 33250    | 3250 kVA |



### GENERAL SPECIFICATIONS

- Wide power range from 1kVA to 3000kVA
- Provides stable voltage to your critical loads like as industrial and military devices, CNC machine tools, elevators, medical system etc.
- Excellent Voltage Regulation.
- AS-RG Series stabilizers quickly pay itself with his long-lasting and maintenance free structure.
- High speed correction by PWM control technology.



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