

AN  
ISO 9001:2008  
CERTIFIED COMPANY

"World class technology®  
through power of Alliance"



**Pegasus ♦ UPS®**

UNINTERRUPTIBLE  
POWER SUPPLY

UPTO 2400 KVA

SAFETY | EFFICIENCY | RELIABILITY



**Autometers Alliance Ltd**

**Autometers Alliance Ltd (AAL)**; established since 1959, is an ISO 9001:2008 & TS 16949 certified Company, with Govt of India (DSIR) approved R&D Centre, having manufacturing units at Noida (U.P.) & Baddi (H.P.) and engaged in design, engineering, production, import, QC, marketing, installation & after-sales servicing of on-board & stationary electrical & electronic equipment for niche applications in Transportation (Railways/ Metros/ Bus), Industrial and Defence sectors. AAL's specific product range is CE & E Mark certified. AAL has got around 400 employees, of whom around 80% are technical & rest 20% are commercial personnel.

**AAL** ranks amongst the premier UPS manufacturers in the country, manufacturing Online **Pegasus ♦ UPS®** systems upto 2400 KVA (8×300 kVA) based on European technology sourced from **Powertronix S.p.A, Italy** and adapted to Indian operating conditions.

AAL offers **UPGRADABLE UPS** systems designed as **GREEN POWER SOLUTION** a boon for the company's expanding list of satisfied customers.

**Powertronix S.p.A.** Italy is Europe's leading designer and manufacturer of online UPS systems for over 20 years and present in six continents across the globe. Based on its research philosophy, strong design elements and strict testing procedures, Powertronix delivers high quality and reliable products confirming to International Standards as well as meeting regional Specifications.

**Powertronix continuously supports AAL in technology upgradation and customized application endeavors.**

## PRODUCT RANGE

Product Series	Configuration	Rating
PGS-31SERIES	Three Phase Input - Single Phase Output	10-60 kVA
PTX-3 SERIES	Three Phase Input - Three Phase Output	10-40 kVA
GAMMA SERIES	Three Phase Input - Three Phase Output	10-120 kVA*
ATLAS SERIES	Three Phase Input - Three Phase Output	60-120 kVA*
BETA SERIES	Three Phase Input - Three Phase Output	60-200 kVA*
SIGMA SERIES	Three Phase Input - Three Phase Output	160-300 kVA*
≤10 kVA UPS Range offered on request Customised UPS solutions & / or client 'Load Analysis' offered on demand		* Parallelable upto 8 systems

## FPGA (DSP) Based Double Conversion Topology

At input stage AC supply is converted to controlled DC and in second stage DC is converted to controlled AC which is used to support the critical loads. Due to double conversion the load is completely protected against spikes, surges and brownouts. Use of FPGA (DSP) ensures low component count and reliability of the circuit.

## Active Power Factor Correction at UPS Input

At input stage conversion from AC to controlled DC is achieved through high frequency PWM based Converter using IGBTs. This technology offers following benefits to the user.

- Input power factor >0.99
- Very low input current distortion (<3%), input current waveform similar to sinewave. No harmonics will be reflected back to mains, thus no pollution of the input mains
- UPS can operate with almost same capacity generator
- Autocorrection for input phase rotation reversal
- Reduced size of cabling and switchgear at the input stage

## High Frequency PWM Based Inverter Using IGBTs

Conversion from DC to controlled and pollution free AC is achieved through high frequency PWM based Inverter using IGBTs with instantaneous sinewave control. The technology offers following benefits to the users.

- High efficiency
- Low noise
- Compact size
- Faster transient response

## Parallel Redundancy

The Atlas, Gamma, Beta & Sigma series of UPS systems can be used in parallel configuration. Paralleling can be done for the purpose of either redundancy or capacity enhancement. These systems can be configured in Hot Stand-by, 100% parallel redundant and N+1 redundant mode.

## On Site Upgradability

PTX-3 series UPS systems can be upgraded on site from 10kVA to 40kVA and Atlas series systems can be upgraded from 60kVA to 120 kVA

## Auto Re-transfer Static Switch

These UPS systems have a unique feature of re-transferring load automatically back to inverter as long as inverter is healthy and the load is within the capacity of the UPS.

This feature is very helpful for starting of loads, which draw starting in-rush current more than capacity of the UPS. The UPS goes to bypass on sensing over load and comes back on inverter supply automatically once the load current is settled to normal level.

In addition to static switch, manual bypass switch is also provided for easy maintenance.

## Modular Construction

The power electronics is in the form of draw out modules having fork connectors for power and pluggable connectors for control. This ensures easy maintenance, low MTTR and compact size.

## Energy Saving Mode

The UPS can operate in the line-interactive mode simply by changing a jumper. The efficiency in this mode is more than 96% leading to a big energy saving in applications where UPS is used as standby power source.

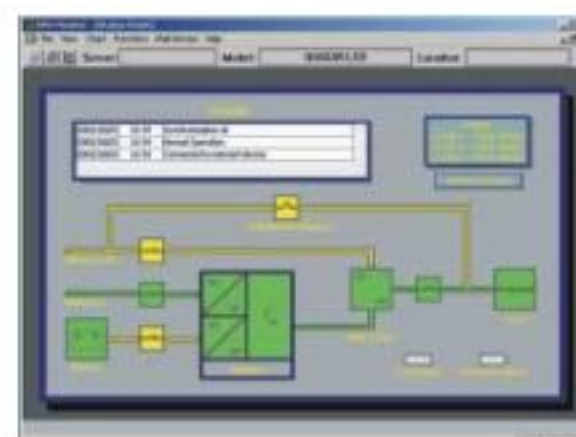
## UPS Management Software

UPS-Management Software is a client/server application for local, global networks and also for single workstation. The server module of the UPS Management Software is called UPSMAN, which communicates with the UPS in RS232 via cable, or through the network, by a SNMP adapter.

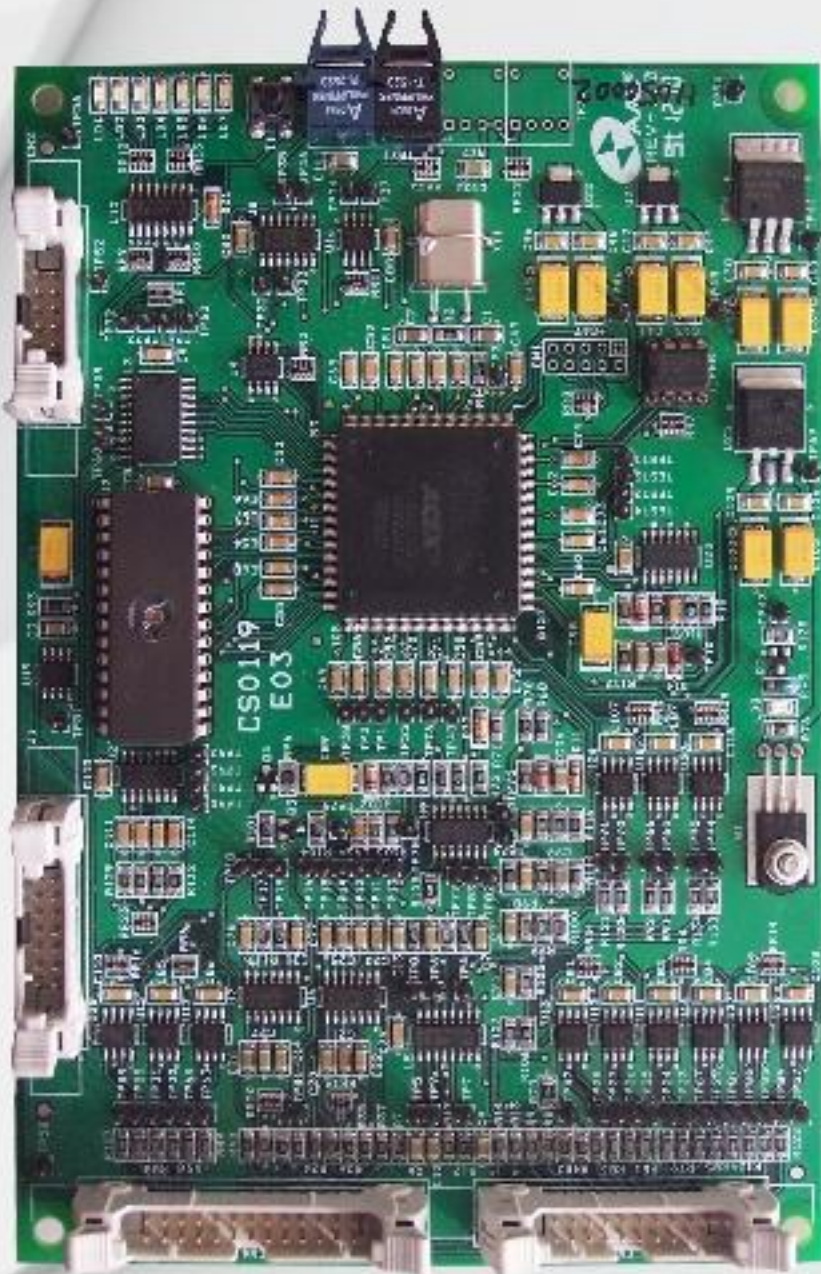
When the system starts up, UPSMAN automatically begins to collect all the information that the UPS makes available, and prepares to react to eventual UPS events according to the customer's settings.

All the available information is distributed on the network in various forms, among which: http through the integrated web server, SNMP with the special agent and another customized protocol to communicate with monitoring programme.

UPSMON and JAVAMON are used to maintain and monitor the UPS from any computer connected to the network and with every operating system that supports JAVA. It is possible to check the status of the UPS,



carry out different tests or visualize graphs of the measurements collected. It is also possible to constantly monitor the files of events and measurements that UPSMAN updates in real time.

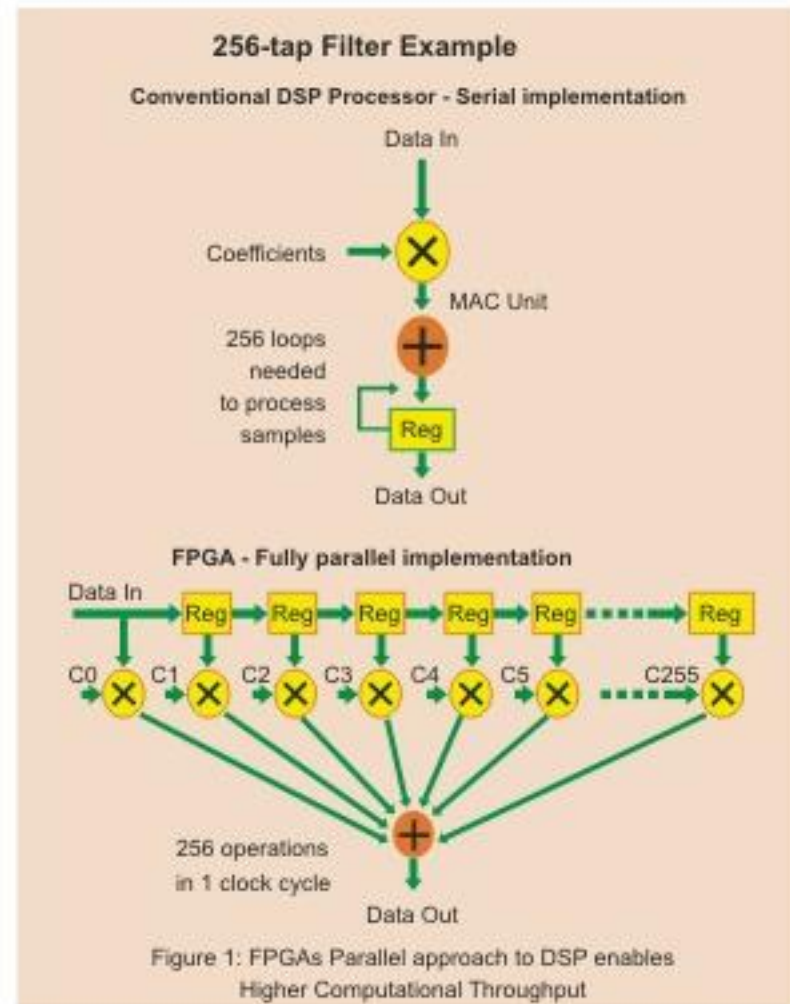


Core functions of PEGASUS UPS are controlled by state-of-art high performance FPGA based DSP, ensures multiple parallel processing and expandability.

A highly configurable hardware using FPGA provide tremendous conceptual throughput by using highly parallel architectures, breaking the paradigm of sequential execution and accomplishing more per clock. These parallel architectures are re-configurable.

As an example of real-life benefit of this capability let us consider a 256-tap FIR filter. A traditional DSP or microcontroller solution would implement multiple MAC functions in a serial manner as illustrated in Figure 1.

On the other hand, by using resources that are available in the FPGA fabric, designers can implement these multiple MAC functions in parallel using dedicated registers & multipliers to achieve higher computational throughput performance as illustrated in Figure 1.



## BENEFITS OF FPGA APPROACH

Scalability / Expandability	Unlimited potential for growth & flexibility
Parallel processing	Single or multi-systems on one chip
Deterministic Design	Won't impact the part of the design already in place
Limitless Performance	Out performs traditional DSP or Microcontroller
Bus-bridging & peripheral functions	Allows high level of system integration
State-of-art	Ready to use, re-configurable in the field

# PGS-31SERIES

Three Phase Input - Single Phase Output  
10-60KVA



Pegasus ♦ UPS®

## TECHNICAL SPECIFICATION

Ratings ( KVA / KW )	10/8	15/12	20/16	25/20	30/24	40/32	50/40	60/48
<b>INPUT</b>								
Nominal Voltage	3 $\phi$ , 380 / 400 / 415V							
Voltage variation	350 to 460							
Frequency	50 or 60 Hz							
Frequency variation	40 to 60Hz							
Current Distortion	<9% (Optional)							
Power Factor	0.99 (Optional)							
<b>OUTPUT</b>								
Nominal Voltage	220V/230V/240V							
Frequency	50 or 60 Hz (Selectable)							
Power Factor	0.8							
Voltage Variation								
Static	$\pm 1\%$							
Dynamic	$\pm 5\%$							
Voltage distortion	< 3% at linear load.							
Overload	125% for 10 minutes							
Crest factor	3:1							
Efficiency								
Inverter	92%							
Overall	90%							
<b>DC VOLTAGES</b>								
Battery Voltage	384 Volts							
Voltage Tolerance	$\pm 1\%$							
Voltage Ripple	< $\pm 1\%$							
<b>STATIC BYPASS</b>								
Switching time								
Inverter Failure	2 ms							
Other Modes	0							
<b>ENVIRONMENTAL CONDITION</b>								
Operating temperature	0-40°C							
Storage temperature	-20°C to +70°C (Not for batteries)							
Relative humidity	95% Non-condensing							
Maximum altitude above sea level	1000 meters without derating							
<b>PHYSICAL</b>								
Dimensions (WxDxH mm)	390x910x630	530x920x860	700x740x1800					
Approx. Weight (kg.)	200	250	300	350	380	425	450	475
<b>GENERAL</b>								
Ingress protection	IP - 21							
Audible noise at 1 meter	< 60dBA							
Cooling	Forced air							

### Options

- Software for auto shutdown
- SNMP for remote monitoring
- Potential free contacts for remote indications & shutdown
- Management Software

# PTX-3 SERIES

Three Phase Input - Three Phase Output  
10-40KVA



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## TECHNICAL SPECIFICATION

Ratings ( KVA / KW )	10/8	20/16	30/24	40/32
<b>INPUT</b>				
Nominal Voltage	3 $\phi$ , 380 / 400 / 415V			
Voltage variation	350 to 460			
Frequency	50 or 60 Hz			
Frequency variation	40 to 60Hz			
Current Distortion	<9% (Optional)			
Power Factor	0.99 (Optional)			
<b>OUTPUT</b>				
Nominal Voltage	3 $\phi$ , 380 / 400 / 415V(Adjustable)			
Frequency	50 or 60Hz (Selectable through jumper)			
Frequency Synchronization range	$\pm 1\%$ or $\pm 4\%$ , (Selectable through jumper)			
Power Factor	0.8			
Voltage Variation				
Balanced load	$\pm 1\%$			
Unbalanced load	$\pm 5\%$			
Phase Displacement				
Balanced load	$120^\circ \pm 1^\circ$			
Unbalanced load	$120^\circ \pm 3^\circ$			
Voltage distortion	< 3% at linear load.			
Overload	125% for 10 mins.			
Crest factor	3:1			
Efficiency				
Inverter	92%			
Overall	90%			
<b>DC VOLTAGES</b>				
Battery Voltage	384 Volts			
Voltage Ripple	< $\pm 1\%$ with Battery connected			
<b>STATIC BYPASS</b>				
Switching time				
Inverter Failure	2 ms			
Other Modes	0			
<b>ENVIRONMENTAL CONDITIONS</b>				
Operating temperature	0-40°C			
Storage temperature	-20°C to +70°C (Not for batteries)			
Relative humidity	95% Non-condensing			
Maximum altitude above sea level	1000 meters without derating			
<b>PHYSICAL</b>				
Dimensions (WxDxH mm)	550x950x1200			
Approx. Weight (kg.)	250	280	300	400
<b>GENERAL</b>				
Ingress protection	IP - 21			
Audible noise at 1 meter	< 55dBA	< 60dBA	< 60dBA	< 65dBA
Cooling	Forced air			

## Options

- External battery rack for longer backup
- Interactive software for remote monitoring with most popular operating systems
- SNMP for remote monitoring
- Green Power : Almost unity input power factor, Input current distortion <9%, Compatibility with almost same capacity generator
- Management Software

# GAMMA SERIES

Three Phase Input - Three Phase Output  
**10-120KVA**  
 Parallelable upto 8 systems



## TECHNICAL SPECIFICATION

Ratings ( KVA / KW )	10/8	15/12	20/16	25/20	30/24	40/32	60/48	80/64	100/80	120/96
<b>INPUT</b>										
Nominal Voltage	3 $\phi$ , 380 / 400 / 415V (Selectable through PC)									
Voltage variation	350 to 460									
Frequency	50 or 60 Hz (Selectable through PC)									
Frequency variation	40 to 60Hz									
<b>OUTPUT</b>										
Nominal Voltage	3 $\phi$ , 380 / 400 / 415V (Selectable through PC)									
Frequency	50 or 60 Hz (Selectable through PC)									
Frequency Synchronization Range	$\pm 1\%$ , $\pm 2\%$ , $\pm 5\%$ , $\pm 10\%$ (Selectable through PC)									
Power Factor	0.8									
<b>Voltage Variation</b>										
Balanced Load	$\pm 1\%$									
Unbalanced Load	$\pm 5\%$									
<b>Phase Displacement</b>										
Balance Load	$120^\circ \pm 1^\circ$									
Unbalanced Load	$120^\circ \pm 3^\circ$									
Voltage distortion	< 3% at linear load.									
Overload	125% for 10 minutes									
Crest factor	3:1									
<b>Efficiency</b>										
Inverter	92%									
Overall	90%									
Parallelability	Upto 8 Systems									
<b>DC VOLTAGES</b>										
Battery Voltage	384 Volts									
Voltage Tolerance	$\pm 1\%$									
Voltage Ripple	< $\pm 1\%$									
<b>STATIC BYPASS</b>										
<b>Switching time</b>										
Inverter Failure	2 ms									
Other Modes	0									
<b>ENVIRONMENTAL CONDITION</b>										
Operating temperature	0-40°C									
Storage temperature	-20°C to +70°C (Not for batteries)									
Relative humidity	95% Non-condensing									
Maximum altitude above sea level	1000 meters without derating									
<b>PHYSICAL</b>										
Dimensions (WxDxH mm)	440x900x1020			700x740x1800			1150x910x2200			
Approx. Weight (kg.)	200	225	250	280	300	350	500	550	650	700
<b>GENERAL</b>										
Ingress protection	IP - 20									
Audible noise at 1Meter.	<45 <sub>dBA</sub>	<50 <sub>dBA</sub>	<55 <sub>dBA</sub>	<60 <sub>dBA</sub>	<65 <sub>dBA</sub>	<70 <sub>dBA</sub>				
Cooling	Forced air									

## Options

- Management Software
- Remote Monitor for Alarms / Indications
- Remote Emergency Power Off
- Potential free contacts for Remote indications
- SNMP for remote monitoring
- Voltage stabiliser in Bypass Line
- Battery Management System

# ATLAS SERIES

Three Phase Input - Three Phase Output  
**60-120KVA**  
 Parallelabale upto 8 systems



**Pegasus ♦ UPS®**

## TECHNICAL SPECIFICATION

Ratings ( KVA / KW )	60/48	80/64	100/80	120/96
<b>INPUT</b>				
Nominal Voltage	3 $\phi$ , 380 / 400 / 415V(Selectable through PC)			
Voltage variation	350 to 460			
Frequency	50 or 60 Hz (Selectable through PC)			
Frequency variation	40 to 60Hz			
Current Distortion	<5% (Optional)			
Power Factor	0.99 (Optional)			
<b>OUTPUT</b>				
Nominal Voltage	3 $\phi$ , 380 / 400 / 415V(Selectable through PC)			
Frequency	50 or 60Hz (Selectable through PC)			
Frequency Synchronization range	$\pm 1\%$ , $\pm 2\%$ , $\pm 5\%$ , $\pm 10\%$ (Selectable through PC)			
Power Factor	0.8			
<b>Voltage Variation</b>				
Balanced load	$\pm 1\%$			
Unbalanced load	$\pm 5\%$			
<b>Phase Displacement</b>				
Balanced load	120° $\pm 1^\circ$			
Unbalanced load	120° $\pm 3^\circ$			
Voltage distortion	< 3% at linear load.			
Overload	125% for 10 mins.			
Crest factor	3:1			
<b>Efficiency</b>				
Inverter	94%			
Overall	92%			
Parallelability	Up to 8 systems			
<b>DC VOLTAGES</b>				
Battery Voltage	384 Volts			480 Volts
Voltage Ripple	< $\pm 1\%$ with Battery connected			
<b>STATIC BYPASS</b>				
<b>Switching time</b>				
Inverter Failure	2 ms			
Other Modes	0			
<b>ENVIRONMENTAL CONDITIONS</b>				
Operating temperature	0-40°C			
Storage temperature	-20°C to +70°C (Not for batteries)			
Relative humidity	95% Non-condensing			
Maximum altitude above sea level	1000 meters without derating			
<b>PHYSICAL</b>				
Dimensions (WxDxH mm)	700x740x1800			
Approx. Weight (kg.)	300	350	400	450
<b>GENERAL</b>				
Ingress protection	IP - 20			
Audible noise at 1 meter	< 60dBA	< 60dBA	< 65dBA	< 65dBA
Cooling	Forced air			

## Options

- 12 Pulse Rectifier at UPS Input
- Harmonic Filter at UPS Input
- Isolation Transformer at UPS Input and Output
- Management Software
- Remote Monitor for Alarms / Indications
- Remote Emergency Power Off
- Potential free contacts for Remote indications
- SNMP for remote monitoring
- Voltage stabiliser in Bypass Line
- Battery Management System



## BETA SERIES

Three Phase Input - Three Phase Output

**60-200KVA**

Parallelable upto 8 systems



**Pegasus** ♦ **UPS**®

### TECHNICAL SPECIFICATION

Ratings ( KVA / KW )	60/48	80/64	100/80	120/96	160/128	200/160
<b>INPUT</b>						
Nominal Voltage	380 / 400 / 415 VAC (Three Phase+N)					
Voltage Variation	330 to 480 VAC (Three Phase+N)					
Frequency	50 / 60 Hz					
Power Factor	.99					
Current Distortion	<3%					
<b>OUTPUT</b>						
Nominal Voltage	380 / 400 / 415 VAC (Three Phase+N)					
Frequency	50 or 60 Hz (Selectable)					
Power Factor	0.8					
Voltage Variation						
Static	±1%					
Dynamic	± 5%					
Voltage distortion	< 3% at linear load.					
Overload	125% for 10 minutes					
Crest factor	3:1					
Efficiency						
Inverter	95%					
Overall	93%					
Parallelability	Up to 8 Systems					
<b>DC VOLTAGES</b>						
Battery Voltage	720 Volts					
<b>STATIC BYPASS</b>						
Switching time						
Inverter Failure	2 ms					
Other Modes	0					
<b>ENVIRONMENTAL CONDITION</b>						
Operating temperature	0-40°C					
Storage temperature	-20°C to +70°C (Not for batteries)					
Relative humidity	95% Non-condensing					
Maximum altitude above sea level	1000 meters without derating					
<b>PHYSICAL</b>						
Dimensions (W×D×H mm)	410×835×1510		1000×900×2000			
<b>GENERAL</b>						
Ingress protection	IP – 20					
Audible noise at 1 meter	< 50dBA					
Cooling	Air Cooled		Liquid Cooled			

### Options

- Isolation Transformer at UPS Input and Output
- Management Software
- Remote Monitor for Alarms/ Indications
- Remote Emergency Power Off
- Potential free contacts for Remote indications
- SNMP for remote monitoring
- Voltage stabiliser in Bypass Line
- Battery Management System

# SIGMA SERIES

Three Phase Input - Three Phase Output  
**160-300KVA**  
 Parallelabale upto 8 systems



**Pegasus** ♦ **UPS**®

## TECHNICAL SPECIFICATION

Ratings ( KVA / KW )	160/128	200/160	225/180	250/200	300/240
<b>INPUT</b>					
Nominal Voltage	3ø, 380 / 400 / 415V(Selectable through PC)				
Voltage variation	350 to 460				
Frequency	50 or 60 Hz (Selectable through PC)				
Frequency variation	40 to 60Hz				
Current Distortion	<5% (Optional)				
Power Factor	0.99 (Optional)				
<b>OUTPUT</b>					
Nominal Voltage	3ø, 380 / 400 / 415V(Selectable through PC)				
Frequency	50 or 60Hz (Selectable through PC)				
Frequency Synchronization range	±1%, ±2%, ±5%, ±10%(Selectable through PC)				
Power Factor	0.8				
<b>Voltage Variation</b>					
Balanced load	±1%				
Unbalanced load	±5%				
<b>Phase Displacement</b>					
Balanced load	120° ±1°				
Unbalanced load	120° ±3°				
Voltage distortion	< 3% at linear load				
Overload	125% for 10 mins.				
Crest factor	3:1				
<b>Efficiency</b>					
Inverter	94%			93%	
Overall	92%			91%	
Parallelability	Up to 8 systems				
<b>DC VOLTAGES</b>					
Battery Voltage	528 Volts				
Voltage Ripple	< ± 1% with Battery connected				
<b>STATIC BYPASS</b>					
<b>Switching time</b>					
Inverter Failure	2 ms				
Other Modes	0				
<b>ENVIRONMENTAL CONDITIONS</b>					
Operating temperature	0-40°C				
Storage temperature	-20°C to +70°C (Not for batteries)				
Relative humidity	95% Non-condensing				
Maximum altitude above sea level	1000 meters without derating				
<b>PHYSICAL</b>					
Dimensions (W×D×H mm)	1150×910×2200			1900×950×2200	
Approx. Weight (kg.)	600	650	700	800	1600*
<b>GENERAL</b>					
Ingress protection	IP - 21				
Audible noise at 1 meter	< 70dBA		< 75dBA		
Cooling	Forced Air				

\* with Isolation Transformer at Inverter Output

### Options

- 12 Pulse Rectifier at UPS Input
- Harmonic Filter at UPS Input
- Isolation Transformer at UPS Input and Output
- Management Software
- Remote Monitor for Alarms / Indications
- Remote Emergency Power Off
- Potential free contacts for Remote indications
- SNMP for remote monitoring
- Voltage stabiliser in Bypass Line
- Battery Management System

## CUSTOMERS BENEFIT

AAL doesn't believe in short-cuts in its endeavor to serve its esteemed customers with engineering products & solutions including AAL's power conditioning range viz UPS and Static Converter (4-Q converter technology).

Sourcing World's best technologies and Licencing them for their local production in India (based on technology transfer, extensive training & improvisation as per Indian operating conditions) and their **customization** as per customer needs (varied load, operating environment, application requirements etc) is the hallmark of AAL.

CUSTOMER stands to benefit the MOST, as after purchasing AAL' UPS, he can rest assured on all technology related and servicing issues, year after year.

## FEW KEY SOLUTIONS OFFERED;

- 12 Pulse / 6 Pulse / IGBT Rectifier options at input.
- Redundancy in cooling fans
- Remote display and management of parameters
- Isolation transformer options (Inbuilt / External)
- Enhanced overload and inrush current capability
- Capability to design required degree of protection (as per IEC 60529)
- Provision of dynamic brake resistor for regenerative loads
- Neutral isolation through inbuilt transformer
- Customized industrial filters for dusty environments
- Frequency Converters
- SNMP with MODBUS connectivity, BMS integration etc.

Let us know your requirement and  
We will be glad to assist you !

- Team AAL





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