

Technical Specification

ATLAS 60÷120 kVA

POWERTRONIX ATLAS 60-120 KVA

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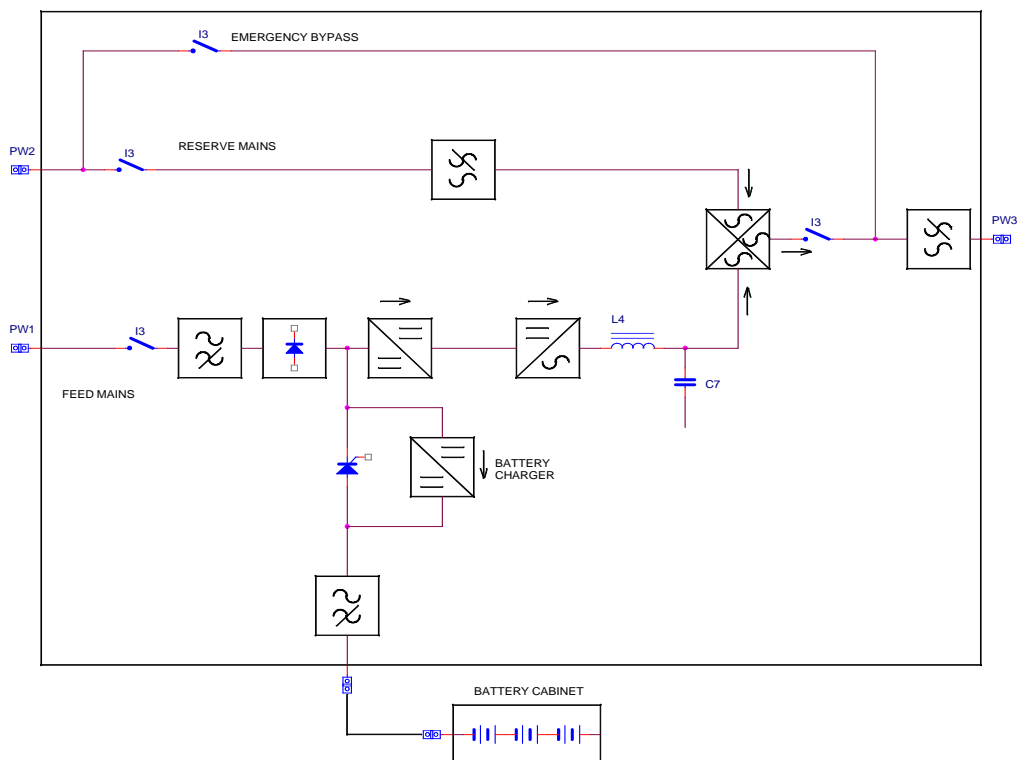
ATLAS 60÷120 kVA

Introduction

Present document defines technical specs of a new Powertronix medium power three phase UPS named *ATLAS* covering the power range from 60 to 120 kVA.. These equipments are characterized by reduced size and high efficiency, thanks to the conversion topology, which doesn't need transformers between mains, inverter and load. *ATLAS* UPS belongs to the "double conversion" equipments family, with all advantages given by this topology and without any penalty in total efficiency. As proposed for other POWERTRONIX products, suitable options are available to increase behavioural level referred to power management and/or power quality as indicated in the following items:

- harmonics reduction of mains input current
- input / output decoupling with suitable transformer
- mains insulation with suitable insulating transformer
- PC and / or LAN connection and dialogue capability
- remote UPS control
- additional free contacts for main alarms remotization

ATLAS UPS BLOCK DIAGRAM



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ATLAS UPS's are forced air cooled machines, equipped in a steel stand alone cubicle (battery is equipped in a separate one).
All models have the same cubicle size.
Outline of the ATLAS UPS is shown below.



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General features

Double conversion, digital control, trafoless

Control panel with LCD display, EPO integrated

Remote EPO facility

PC connection available:

- RS 232 C serial port with DB9 connector
- Software development suitable for the most popular operating systems (WINDOWS, NOVELL, UNIX, OS/2)
- Modem remote supervision available

Cubicle arrangement as Powertronix style

- critical parts accessibility by front of the equipment
- cables inlet from the bottom or from the top
- IP 20 protection degree

Related standards : IEC-EN62040-1-2 ; IEC-EN62040-1-2 ; IEC-EN62040-1-2 ; IEC 950

Class A UPS : suitable for use in all establishments other than domestic

System	60 kVA	80 kVA	100 kVA	120 kVA
Configuration		On line double conversion		
Mains input voltage		3ph + N 380÷ 415 Vac		
Mains voltage range		300÷480 Vac (330÷ 480 Vac at full load)		
Nominal mains frequency(selectable)		50/60 Hz		
Allowable frequency range		40÷70 Hz		
Max input current with 400 Vac	107 A	137 A	166 A	200 A
Nominal output voltage		380/400/415 Vac adjustable		
Nominal output frequency		50/60 Hz		
Voltage total harmonic distortion (THD)				
• with linear load		< 3 %		
• with non linear load (according to EN50091/3)		< 7 %		
Output voltage stability		± 1 %		
Output frequency regulation				
• with mains synchronism		± 1%, ± 4 % selectable		
• with inner oscillator		± 0.005%		
Output nominal power	60 kVA	80 kVA	100 kVA	120 kVA
Active power	48 kW	64 kW	80 kW	100 kW
Efficiency				
• 50% rated load	> 91 %	> 92 %	> 92 %	> 92.5 %
• 100% rated load	> 92 %	> 92,5 %	> 93 %	> 93,8 %
Maximum losses at nominal load	4,2 kW	5,2 kW	6,02 kW	6,6 kW
	3612 kcal/h	4472 kcal/h	5177 kcal/h	5685 kcal/h
Overload capability		125% for 10 minutes - 150% for 5 seconds		
• Inverter		150% for 30 minutes - 1000% for 100 milliseconds		
• Static switch				
By pass commutation voltage threshold		± 15%		

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System	60 kVA	80 kVA	100 kVA	120 kVA
Mechanical protection degree		IP20 (IEC529, IEC 944)		
Acoustic noise (at 1meter)	< 60 dBA	< 60 dBA	< 65 dBA	< 65 dBA
Operating temperature range		from 0 to 40°C		
Storage temperature range		from -20 to 70°C (batteries excluded)		
Relative humidity		< 95% (without condensation)		
Maximum installation height without derating		1000 m.o.s.l.		
Weigth	295 Kg	333 Kg	370 Kg	450 Kg
Dimensions W x D x H		700 x 730 x 1800 mm		
Electromagnetic compatibility	IEC-EN62040-2 class A, IEC801-2, IEC801-3, IEC801-4			

Other related standards IEC 146-4, IEC-EN62040-1-2, IEC-EN62040-3, IEC 950

Input rectifier and battery charger

Mains input voltage		3ph + N da 380V a 415 Vac		
Mains voltage range		from 330 Vac to 480 Vac		
Nominal mains frequency		50/60 Hz		
Allowable frequency range		40/70 Hz		
Input mains current total harmonic distortion		standard < 25% optional < 10,5%		
Input power factor		standard > 0.95 optional 0,99		
Max input current with 400 Vac	107 A	137 A	166 A	200 A
Soft start time		10 sec		
Battery charger output voltage		optional depending on battery type		
- float	432 Vdc	432 Vdc	432 Vdc	545 Vdc
- boost				
DC voltage regulation		± 1%		
Ripple voltage		< 1% (Vrms/Vb) x 100		
Maximum charging current	30 A	30 A	30 A	25 A
Current setting range	5÷30 A	5÷30 A	5÷30 A	5÷25 A
Battery charge standard		DIN 41773		
		optional compensated float charge voltage		

Battery

Number of cells				
- hermetic sealed lead	192	192	192	240
- open lead acid	192	192	192	240
- Ni - Cd		available option on customer demand		
Boost charge		depending on battery type		
- open lead acid				
- Ni - Cd				
Max. discharging current (Vdc = 320 V nom. load)	163 A	215 A	267 A	260 A
Mean ambient temperature		suggested 20°C		
Ambient temperature range		from 0 to 40 °C		

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Inverter Data	60 kVA	80 kVA	100 kVA	120 kVA
Nom.dc input voltage	384 Vdc (192 cells)	384 Vdc (192 cells)	384 Vdc (192 cells)	480Vdc (240 cells)
Vdc bus operating range	320-750 Vdc	320-750 Vdc	320-750 Vdc	396-750Vdc
Battery discharge prealarm	adjustable (350 V suggested)	adjustable (350 V suggested)	adjustable (350 V suggested)	adjustable (430 V suggested)
Maximum DC current (d.c.)	163 A	215 A	267 A	260 A
Nominal output current at 400 Vac	87 A	115 A	144 A	174 A
Full load efficiency			> 95%	
Output voltage		380/400/415 Vac selectable		
Total harmonic distortion				
- with linear load			< 3%	
- with non linear load (according to IEC-EN62040-3)			< 7%	
Output voltage setting range		380-415 Vac		
Output voltage phase displacement				
- with balanced load			120° ± 1%	
- with 100% unbalanced load			120° ± 3%	
Voltage simmetry				
- static with balanced load			< 1%	
- static with 50% unbalanced load			< 3%	
- static with 100% unbalanced load			< 5%	
- dynamic regulation 50% load step			< 4%	
- dynamic regulation 100% load step			< 6%	
Recovery time			< 50ms	
Short circuit current		150% nominal current for 5 sec.		
Maximum synchronizing window		1-4% selectable		
Maximum frequency variation		< 1 Hz/s		

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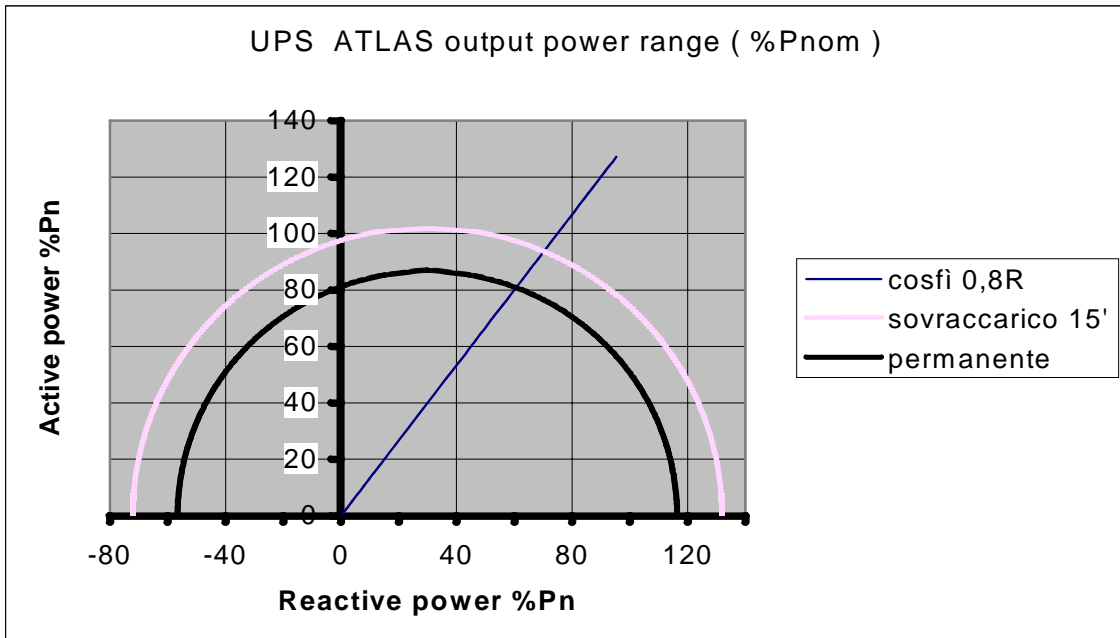
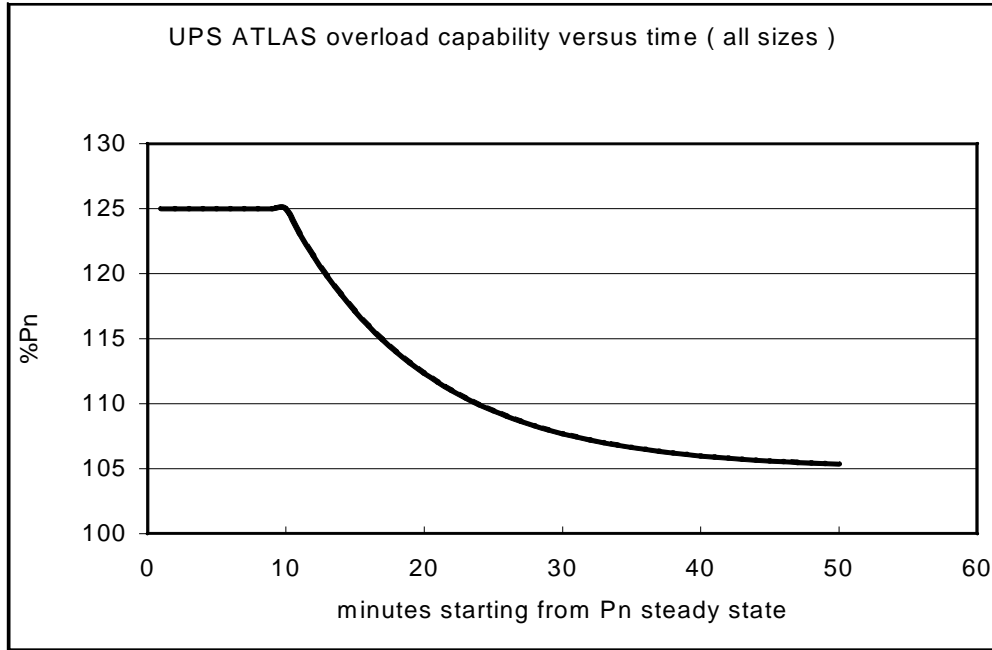
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Static switch	60 kVA	80k VA	100k VA	120 kVA
Mains input/output voltage 3ph + N			380/400/415 Vac	
Input mains voltage range			± 10% adjustable	
Overload			1.5 x In for 30 minutes 10 x In per 100ms	
Maximum switching time				
- Inverter - Bypass			< 1ms	
- Overload or manual operating			0 ms	
- Bypass - Inverter automatic recovery			0 ms	

To complete data collection some graphics and tables are following in the next pages

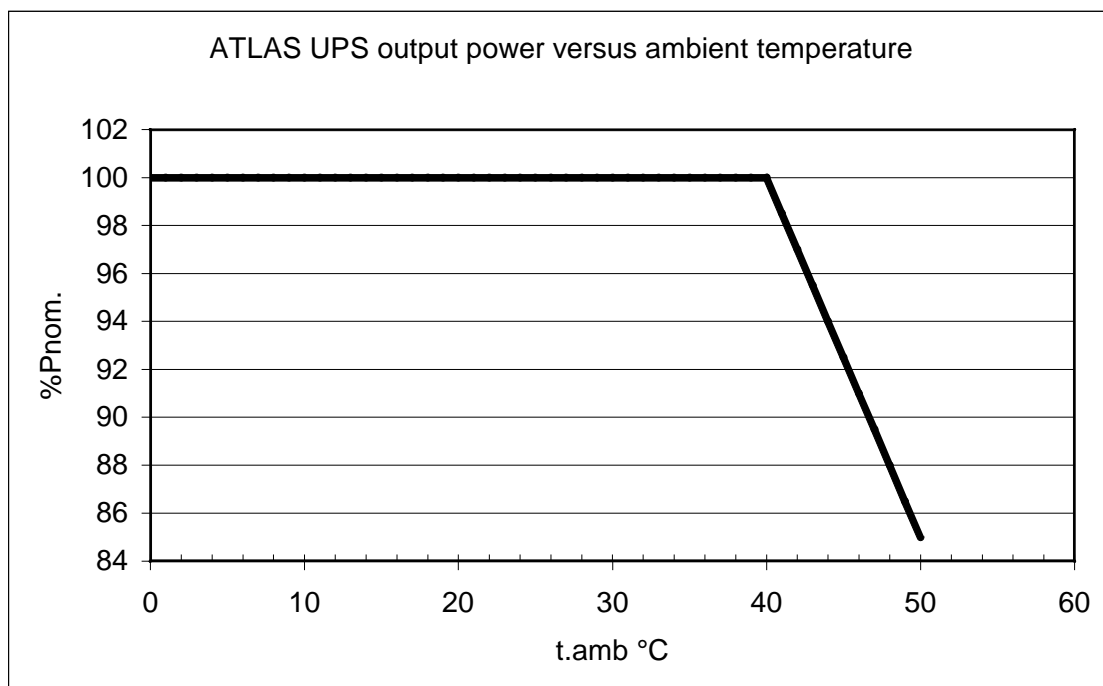
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Tables.

UPS ATLAS efficiency versus load.

Nominal Power (KVA)		60	80	100	120
Efficiency %	(25% Pnom)	88,5	89,5	90	90,5
	(50% Pnom)	91,7	92	92,5	92,7
	(75% Pnom)	92,5	93	93,5	94,5
	(100% Pnom)	92,2	92,5	93	93,8

UPS ATLAS voltage distortion factor versus load.

Nominal Power (KVA)		60	80	100	120
THD output voltage-- linear loads	(25% Pnom)	2%	2%	2%	2%
	(50% Pnom)	2%	2%	2%	2%
	(75% Pnom)	3%	3%	3%	3%
	(100% Pnom)	3%	3%	3%	3%
THD output voltage--distorting loads (25% Pnom)		3,5%	3,5%	3,5%	3,5%
(IEC-EN 62040-3)	(50% Pnom)	4%	4%	4%	5%
	(75% Pnom)	6%	6%	6%	6,5%
	(100% Pnom)	7%	7%	7%	7%

UPS ATLAS mains input power factor versus optional harmonic reduction input circuits.

Nominal Power (KVA)	60	80	100	120
Power factor – standard execution	>0,95			
Line current THD	<25%			
Power factor with 12 pulse input converter	0,99			
Line current THD	<10,5%			
Line current THD with 12 pulse input converter and mains inductor	<5% at full load			

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Display indications and alarms

- Mains Within Limits
- By-pass Line Within Limits
- Battery Voltage Within Limits
- Inverter Operating
- Inverter - By-pass
- Line Synchronised
- Load on Inverter
- Load on By-pass Line
- Inverter Overload
- Static Switch Failure
- Manual By-pass On
- Output Breaker Open
- Battery Breaker Open
- By-pass Line Breaker Open
- Mains out of Limits
- By-pass Line Out of Limits
- Inverter Off Emergency Power Off
- Battery Breaker Off
- Battery Charger Failure
- Battery Voltage High
- End Discharge Battery Voltage

Remote alarms

- UPS Running
- By-pass On
- Mains Presence
- Battery Flat

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Options

Led based remote control panel	
Battery cubicle	Prearranged for 30 min. and 1 hour autonomy
Manual emergency bypass (outside cubicle)	
Insulating transformer (outside cubicle)	
RS232 remote communication port	
RS485 remote communication port	
Modem interface	
SNMP ethernet adapter	
Additional Relay board	
RS232 Connector type	DB9 plug in connector
Transferred contacts	standard screw connector
Contacts current capability	250Vac/10A
Transferred signals	Mains present Inverter on Low battery prealarm Load on reserve mains
	Remote EPO connector
UPS remote monitoring software	<u><i>UPS Management Software Suite</i></u> <u><i>(Unix-Linux-Novell-Windows-MacOS Supported)</i></u>
Redundant parallel capability up to 8 units in parallel	