Technical Specifications for 3 kVA Ups System

S.N.	P A R A M E T E R S	S P E C I F I C A T I O N S
A	Technology	True ON-LINE, IGBT based, Microprocessor Controlled Double Conversion Technology.
B	Capacity	3 kVA (Commensurate with P.F.)
C	**I N P U T**	
i.	Voltage	160 - 280 V, Single Phase
ii.	Input Frequency	50 Hz. (± 6%) i.e, 47 Hz - 53 Hz (IGBT based PFC correction)
iii.	Power Factor	> 0.9 or Output = 2.7 KW
iv.	Rectifier	Full Wave
v.	Rectifier Battery Charger	Constant Voltage with Current limit. SMPS based Battery Charger with I/P Power correction with IGBT as switching element.
D	**O U T P U T**	
i.	Load Power Factor	0.8 lag to 0.8 lead to unity
ii.	Nominal Voltage	230V, single phase ± 1%
iii.	Regulation (IGBT based)	± 1 %
iv.	Frequency	Constant 50 Hz. Crystal generated frequency on mains & battery
v.	Waveform	True Sine wave
vi.	Total Harmonic Distortion	< 3% Max. for 100% Linear Load
vii.	Total Harmonic Distortion	< 5% for 100% Non-Linear Load.
viii.	Overload Capacity	110% for 1 min. 125% for 30 sec.
ix.	Inverter	IGBT based PWM with INSTANTANEOUS SINEWAVE CONTROL
X.	Transient Response	For 100% load change – Voltage remains within ± 5%, Recovery to ± 1% within 60 ms (3 cycles)
	Crest Factor	> 3 : 1
	Duty	Continuous
E	**E F F I C I E N C Y (AT FULL LOAD)**	
i.	Inverter efficiency	Greater than 90%
ii.	Over all efficiency	Greater than 85%
F	**TESTING STANDARDS**	**IEC 62040 - PART III**

S.N.	PARAMETERS	SPECIFICATIONS
G	**SURGE PROTECTION AND NOISE FILTERING**	
	Surge protection device should be a physically separate module in series with load / UPS housed in the UPS cabinet	
	Leakage current	Less than 300 micro Amp
	Clamping Voltage (Maximum continuous operator Voltage)	275 V
	Peak Current for SPD	20KA
	Rated Load Current	15 A
	Max. transient energy for 2 ms	Greater than 400 J
	Response time	Less than 30 Nano second
	For an infused open circuit voltage of 6 KV or surge current of 3 KV (8/20 micro sec.) the UPS output should not be more than 100V.	
	RFI protection	
	EMI protection	
H	**B A T T E R Y P A R A M E T E R S**	
i.	Back up Time	>30 Minutes at full load
ii.	Battery Type	Sealed Maintenance Free Lead Acid
iii.	VAH	2400 (Minimum)
iv.	Battery Model/ make	Sealed maintenance free batteries of standard recognized make like Exide (Power safe) / Panasonic/ Global Yuasa/ Amco. The battery should be housed in a powder coated MS cabinet.
I	**OTHER P R O T E C T I O N S**	
	Load Isolation	Isolation Transformer at Input.
	Input Ac over voltage/ under voltage/ AUTO RECOVERY	
	DC Over voltage/ under voltage, Over Temperature, Over Current Rectifier	
	Output over voltage, under voltage	
	Output over load, short circuit	
	Over current for rectifier	
	The UPS should work trouble free in dusty and hot conditions of Retail Outlets.	

S.N.	PARAMETERS	SPECIFICATIONS
J	**E N V I R O N M E N T A L**	
i.	Acoustic Noise Level	< 55db
ii.	Ambient Temperature	0 to 50 Deg C (In UPS only/ Not for Battery)
ii.	Storage Temperature	-10 to 70 Deg C
iv.	Humidity	Up to 95% RH, Non Condensing
v.	Altitude	< 1000 Mtrs. Above Sea Level (without de-rating)
K	**P H Y S I C A L**	
i.	Enclosure Protection Grade	IP – **21**
ii.	Cooling	Forced Air
iii	Cable entry	From the back. No female socket or switch. Terminal blocks for input & output. Input cable with both sides crimped lug to be provided.
L	**D I S P L A Y**	
	▪ Battery Voltage ▪ Battery charge / discharge	▪ Input Voltage / output voltage ▪ Current (Input / Output) ▪ Frequency (Input / Output)
M	**AUDIO ALARM**	
	▪ Rectifier Trip ▪ Low Battery ▪ Over load ▪ System trip	▪ Main fail
N	**SWITCH GEAR**	
	MCB for mains, MCB for Load	15 Amps, Havells orHager make one each at input and output
O	**WARRANTY**	
	For UPS: 2 year (Onsite warranty incl. replacement with proper working UPS at site – **No Repair at site)** from date of commissioning.	For Battery: 1 year
P	**COMMUNICATIONS**	
	232 port.	PC should be able to communicate through RS232 port (RJ-45 JACK). S/w to be provided along with UPS. This s/w should have self diagnosing feature.
	SNMP	compatible for future up gradation to a LAN / web based monitoring facility

S.N.	PARAMETERS	SPECIFICATIONS
Q	**ISOLATION TRANSFORMER (INPUT SIDE)**	
	Ration	1:1
	Insulation class	B
	DC galvonic isolation	> 100 ohm
	Dielectric strength	2500 v for 60 sec
	Common mode Noise	100 DB (100 khz to 1000 kHz) std
	Differential mode noise	50 DB (100 khz to 1000 kHz)
	Rejection	120 DB (100 khz to 1000 kHz) opt
	Coupling capacitance.	0.005 pf
	Line leakage currents	< 10 mA
R	**CERTIFICATES & STANDARDS**	
	ISO 9001:2000 certificate, EN 50091-1 as safety certificate, EN 50091-2 for EMC	
	The UPS specifications must be validated by Indian Govt. approval bodies – ERTL-ETDC-SAMEER or otherwise CE/UL approval.	

Servo Voltage Stabilizer Typical Specifications.

INPUT:

Voltage	:	400 VAC
Line Range	:	242 to 502 V line to line ie 140 to 290 V line to neutral
Frequency	:	50 HZ Nominal
Range	:	47Hz to 53 Hz
Phase	:	Single/Three Phase & Neutral
Wave Form	:	Sinusoidal

OUTPUT:

Capacity	:	30kva (30 KVA – 3 Phase implies 10 KVA load per phase)
30 KVA must have 3 nos. of variac rated at 35 amps each 3 nos. buck boost transformer rated at 4.2 KVA each		
Voltage	:	400VAC Nominal 3Phase
Line Regulation	:	230VAC ± 5% (P-N)
Load Regulation	:	230VAC ± 5% (P-N)
Max O/P Current	:	1.5 Times the rated current for 1 min at nominal conditions
Frequency	:	Same as Input
I/P power Factor	:	Better than 0.98
Speed of Correction	:	Better than 50V/sec.
Load Power Factor	:	0.7 lag to Unity
I/P Current Harmonics	:	< 2%
Efficiency at full Load	:	Better than 97% at nominal Voltage

ADDITIONAL POINTS TO BE NOTED:

ONLINE UPS:

A) UPS topology should be true On-line double conversion.

B) Technology Microprocessor based and inverter current controlled PWM technique using IGBTs.

C) Software configurable: The UPS should be software controlled & configurable with self diagnostic facility & RS232 based communication with computer systems for monitoring. UPS must be SNMP compatible for future up gradation to a LAN / web based monitoring facility

D) Battery Isolation: The battery connection should have MCB/MCCB

E) Battery Start Facility should be available

F) Protections against Surges as per IEEE 587

G) EMI / RFI Filtering as per EN50091-1 & EN50091-2

H) Degree of protection of enclosure: **IP21**

I) Standards: CE-mark

J) Battery Type: SMF (Sealed Maintenance Free)
Battery Rating: NOT LESS THAN 2400 (V*Ah)

K) UPS shall be tested at 3 kVA (full non-linear load)

L) Battery Back up shall be tested for 30 mins back up at 2.4 kW (full linear load)

M) The UPS should be provided with suitable isolation transformer at **Input**.

N) The UPS offered has to be SNMP compatible which can be upgraded for remote monitoring at a later date i.e. the UPS will have the necessary communication ports and SNMP card slot.

O) Also battery provided with the UPS shall be Lead-Acid battery of approval make by BPCL.

P) The UPS offered should meet the EN 50091-1 & EN 500091-2 standards or Equivalent IEC standards.

Q) Bye pass provision to be removed.

R) Provision to be provided on the body of the UPS where Dedicated Earth Pit to be connected.

S) Effective audio/visual Alarm on failure of UPS component to be provided.

T) No switch/plug/socket in input/output circuit. Supply to UPS to be directly though BUS with 2 core cables. Similarly, output should be connected to UPS bus directly through 3 core cable.

SERVO VOLTAGE STABILIZER

Rating 30 Kva (0.7 to Unity)

Type: Unbalanced suitable for un-balanced input voltages & un-balanced loading

Design: Servo Controlled using AC high torque motors (with long life characteristics) Motors should not use any carbon brushes

The Servo Stabilizers must have output sensing Over Voltage / Under Voltage trip facility with electronic time delay (to avoid nuisance tripping). Similarly, Servo Stabiliser should have over voltage / under voltage trip facility at the input (supply)

Auto Reset Facility with electronic time delay.

No bye pass arrangement is to be provided either internally or externally.

Over Load / Short Circuit Protection (Incl. resistance to over voltage / incoming supply for reasonable time without burning of stabilizer components)

Even if 1 phase fails other 2 phases must continue to get stabilized supply.

Line Regulation : 230 VAC ± 1% (P-N)
Load Regulation : 230 VAC ± 1% (P-N)

Protection against surges for 30 KVA Servo Stabiliser is as specified below :

a). Three numbers pluggable type Surge Protection Device (SPD) of MOV with thermal disconnector and provision for inbuilt visual indication mechanical flag for L – N is to be connected between Line and Neutral,

b). One number pluggable type SPD of Spark Gap type between Neutral and Earth of following rating is to be connected in a common base

PARAMETERS	SPECIFICATIONS (LINE TO NEUTRAL)	SPECIFICATIONS (NEUTRAL TO EARTH)
Type	MOV with built in Thermal Fuse	Spark Gap Encapsulated/Non encapsulated
Nominal Voltage	230 v, 50/60 Hz	230 v, 50/60 Hz
Maximum Continuous Operating Voltage	320 V	255 V
Nominal Discharge Current	30 kA (8/20 usec)	30 kA (8/20 usec)

Maximum Discharge Current	50 kA (8/20 usec)	50 kA (8/20 usec)
Lightning Impulse Current	7 kA (10/350 usec)	25 kA (10/350 usec)
Voltage Protection Level	< 1.3kV	< 1.2 kV
Response Time	< 25 nano seconds	< 100 nano seconds
Operating Temperature Range	Minus 40 Degrees C to 80 Degrees C	Minus 40 Degrees C to 80 Degrees C
Mounting On	Din Rail	Din Rail
Degree of Protection	IP 21	IP 21
Maximum back up fuse / MPCB	Upto 160 Amps maximum, depending on panel design & breaking capacity	Upto 160 Amps maximum, depending on panel design & breaking capacity

TWO 3 KVA UPS in hot stand by configuration with a common battery bank – the specification of both the UPS & battery bank will remain same be as per technical specification mentioned above. The system should be designed such that there is Auto switch to shift the load from one UPS to other in case one of them stops working.