

TECHNICAL SPECIFICATIONS FOR 1.5 KVA ONLINE UPS	
Capacity	1.5 Kva = 1.5 KW
Technology	Digital signal processor controlled True Online, High Frequency
Inverter Technology	PWM technology with IGBTs with built In galvanic isolation
Noise Level	Less than 50 dB
Operating Temperature	0-45 degree centigrade
Humidity	10 to 95% no-condensing
Harmonic Distortion	$\leq 2\%$ (linear load) $\leq 3\%$ (non-linear load)
Total DC bus voltage	36 VDC
Battery recharge time (After Complete discharge) to 100% charge	8 Hours
Crest Factor	Minimum 3:1 at full load
Out put Wave Form	Pure Sine wave
Cold Start feature	Required
INPUT	
Input	Single phase 3 wire
Input Voltage Range	1 phase 230VAC+ Neutral +earth
Input Frequency Range	46-54Hz
Line low/Hight Cutoff	118 VAC - 160 VAC Based on load
Power Factor	>0.9
OUTPUT	
Output Voltage	220/230/240 VAC programmable 1 phase+N
Output Frequency	50hz +/- 0.1%(Free running)
EFFICIENCY	
AC to AC	93%
DC to AC	94%
STATIC SWITCH (Bi-directional) for all ratings	Should take care of 100% load transfer without break
LOAD POWER FACTOR	0.9% lag to unity
OVERLOAD CAPACITY	150 % for 30 Sec, 110% for 1mts
UPS SHUT DOWN	
	UPS shut down with alarm and Indication in case of Out put over voltage Output undervoltage Battery Low Inverter over load Over temperature

	Output short
ISOLATION	
Isolation of power	Both input & Output have MCB's.
Isolation Transformer	At input
Galvanic Isolation	Required
Manual Service Bypass	Automatic Static bypass
PROTECTION	
Short Circuit Protection	MCB / MCCB Trips and UPS shut down with out Blowing any fuses
Input over and under voltage	UPS safe in the case of hight Voltage/High Current/ high spike/ high surges at input to the UPS
Output over & under voltage	The load conneted to the UPS should be protected under any circumstance
INDICATORS	
	Mains on Inverter On/Off Faulty Battery level Load level Static Bypass ON Battery Low Battery Over charge Inverter overload/Current Over temperature
LCD DISPLAY	Input/Output voltage Out put frequency Load current Battery voltage Load Level
DEGREE OF PROTECTION	IP 20
COMMUNICATION INTERFACE	RS 232 port for auto shut down, SNMP
AUDIBLE ALARM	
	Battery low Mains failure Out put over current Overload
BATTERY	80 AH Poly Propylene Tubular battery-3 Nos
QUALITY STANDARDS	

UPS	ISO 9001:2008
BATTERY	ISO 14001
BATTERY STAND	Required

TECHNICAL SPECIFICATIONS FOR 5 KVA ONLINE UPS	
Capacity	5 Kva = 5 KW
Technology	Digital signal processor controlled True Online, High Frequency
Inverter Technology	PWM technology with IGBTs with built In galvanic isolation
Noise Level	Less than 50 dB
Operating Temperature	0-45 degree centigrade
Humidity	10 to 95% no-condensing
Harmonic Distortion	≤2% (linear load) ≤5% (non-linear load)
Total DC bus voltage	120 VDC
Battery recharge time (After Complete discharge) to 100% charge	8 Hours
Crest Factor	Minimum 3:1 at full load
Out put Wave Form	Pure Sine wave
Cold Start feature	Required
INPUT	
Input	Single phase 3 wire
Input Voltage Range	1 phase 230VAC+ Neutral +earth
Input Frequency Range	46-54Hz
Line low/Hight Cutoff	175 VAC - 276 VAC
Power Factor	>0.9
OUTPUT	
Output Voltage	220/230 VAC programmable 1 phase+N
Output Frequency	50hz +/- 0.5%(Free running)
EFFICIENCY	
AC to AC	93%
DC to AC	94%
STATIC SWITCH (Bi-directional) for all ratings	Should take care of 100% load transfer without break
LOAD POWER FACTOR	0.9% lag to unit
OVERLOAD CAPACITY	125 % for 10 mts 150% for 1mts
UPS SHUT DOWN	
	UPS shut down with alarm and Indication in case of

	Out put over voltage
	Output undervoltage
	Battery Low
	Inverter over load
	Over temperature
	Output short
ISOLATION	
Isolation of power	Both input & Output have MCB's. Also battery connection have MCB/MCCB/ switch
Isolation Transformer	At input
Galvanic Isolation	Required
Manual Service Bypass	Automatic Static bypass
PROTECTION	
Short Circuit Protection	MCB / MCCB Trips and UPS shut down with out Blowing any fuses
Input over and under voltage	MCB with alarm. UPS safe in the case of hight Voltage/High Current/ high spike/ high surges at input to the UPS
Output over & under voltage	MCB with alarm. The load conneted to the UPS should be protected under any circumstance
INDICATORS	
	Mains on Inverter On Mains high mains low Inverter over voltage Inverter under voltage Battery Low Battery Over charge Inverter overload/Current Over temperature
LCD DISPLAY	Input/Output voltage Out put frequency Load current Battery voltage
DEGREE OF PROTECTION	IP 20
COMMUNICATION INTERFACE	RS 232 port for auto shut down, SNMP
AUDIBLE ALARM	
	Battery low Mains failure

	Out put over current Overload
BATTERY	100 AH Poly Propylene Tubular battery-10 Nos
QUALITY STANDARDS	
UPS	ISO 9001:2008
BATTERY	ISO 14001
BATTERY STAND	Required

TECHNICAL SPECIFICATIONS FOR 10 KVA ONLINE UPS	
Capacity	10 Kva = 10 KW
Technology	Digital signal processor controlled True Online,
	High Frequency
Inverter Technology	PWM technology with IGBTs with built In galvanic isolation
Noise Level	Less than 50 dB
Operating Temperature	0-45 degree centigrade
Humidity	10 to 95% no-condensing
Harmonic Distortion	≤2% (linear load) ≤5% (non-linear load)
Total DC bus voltage	240 VDC
Battery recharge time (After Complete discharge) to 100% charge	8 Hours
Crest Factor	Minimum 3:1 at full load
Out put Wave Form	Pure Sine wave
Cold Start feature	Required
INPUT	
Input	Three phase 4 wire
Input Voltage Range	415VAC+ Neutral +earth
Input Frequency Range	46-54Hz
Line low/High Cutoff	330 VAC to 478 VAC
Power Factor	>0.9
OUTPUT	
Output Voltage	220/230 VAC programmable 1 phase+N
Output Frequency	50hz +/- 0.5%(Free running)
EFFICIENCY	

AC to AC	93%
DC to AC	94%
STATIC SWITCH (Bi-directional) for all ratings	Should take care of 100% load transfer without break
LOAD POWER FACTOR	0.9% lag to unit
OVERLOAD CAPACITY	125 % for 10 mts
UPS SHUT DOWN	
	UPS shut down with alarm
	and Indication in case of
	Out put over voltage
	Output undervoltage
	Battery Low
	Inverter over load
	over temperature
	Output short
ISOLATION	
Isolation of power	Both input & Output have MCB's. Also battery connection have MCB/MCCB/ switch
Isolation Transformer	At input
Galvanic Isolation	Required
Manual Service Bypass	Automatic Static bypass
PROTECTION	
Short Circuit Protection	MCB / MCCB Trips and UPS shut down with out Blowing any fuses
Input over and under voltage	MCB with alarm. UPS safe in the case of hight Voltage/High Current/ high spike/ high surges at input to the UPS
Output over & under voltage	MCB with alarm. The load conneted to the UPS should be protected under any circumstance
INDICATORS	
	Mains on Inverter On Mains high mains low Inverter over voltage Inverter under voltage Battery Low Battery Over charge Inverter overload/Current Over temperature
LCD DISPLAY	Input/Output voltage Out put frequency

	Load current Battery voltage
DEGREE OF PROTECTION	IP 20
COMMUNICATION INTERFACE	RS 232 port for auto shut down, SNMP
AUDIBLE ALARM	
	Battery low Mains failure Out put over current Overload
BATTERY	100 AH Poly Propylene Tubular battery-20 Nos
QUALITY STANDARDS	
UPS	ISO 9001:2008
BATTERY	ISO 14001
BATTERY STAND	Required

TECHNICAL SPECIFICATIONS FOR 15 KVA ONLINE UPS	
Capacity	15 Kva = 15 KW
Technology	Digital signal processor controlled True Online,
	High Frequency
Inverter Technology	PWM technology with IGBTs with built In galvanic isolation
Noise Level	Less than 50 dB
Operating Temperature	0-45 degree centigrade
Humidity	10 to 95% no-condensing
Harmonic Distortion	≤2% (linear load) ≤5% (non-linear load)
Total DC bus voltage	360 VDC
Battery recharge time (After Complete discharge) to 100% charge	8 Hours
Crest Factor	Minimum 3:1 at full load
Out put Wave Form	Pure Sine wave
Cold Start feature	Required
INPUT	
Input	Three phase 4 wire

Input Voltage Range	415VAC+ Neutral +earth
Input Frequency Range	46-54Hz
Line low/High Cutoff	330 VAC to 478 VAC
Power Factor	>0.9
OUTPUT	
Output Voltage	220/230 VAC programmable 1 phase+N
Output Frequency	50hz +/- 0.5%(Free running)
EFFICIENCY	
AC to AC	93%
DC to AC	94%
STATIC SWITCH (Bi-directional) for all ratings	Should take care of 100% load transfer without break
LOAD POWER FACTOR	0.9% lag to unit
OVERLOAD CAPACITY	125 % for 10 mts
UPS SHUT DOWN	
	UPS shut down with alarm
	and Indication in case of
	Out put over voltage
	Output undervoltage
	Battery Low
	Inverter over load
	over temperature
	Output short
ISOLATION	
Isolation of power	Both input & Output have MCB's. Also battery connection have MCB/MCCB/ switch
Isolation Transformer	At input
Galvanic Isolation	Required
Manual Service Bypass	Automatic Static bypass
PROTECTION	
Short Circuit Protection	MCB / MCCB Trips and UPS I shut down with out Blowing any fuses
Input over and under voltage	MCB with alarm. UPS safe in the case of hight Voltage/High Current/ high spike/ high surges at input to the UPS
Output over & under voltage	MCB with alarm. The load conneted to the UPS should be protected under any circumstance
INDICATORS	
	Mains on Inverter On Mains high mains low

	Inverter over voltage Inverter under voltage Battery Low Battery Over charge Inverter overload/Current Over temperature
LCD DISPLAY	Input/Output voltage Out put frequency Load current Battery voltage
DEGREE OF PROTECTION	IP 20
COMMUNICATION INTERFACE	RS 232 port for auto shut down, SNMP
AUDIBLE ALARM	
	Battery low Mains failure Out put over current Overload
BATTERY	80 AH Poly Propylene Tubular battery-30 Nos
QUALITY STANDARDS	
UPS	ISO 9001:2008
BATTERY	ISO 14001
BATTERY STAND	Required

TECHNICAL SPECIFICATIONS FOR 20 KVA ONLINE UPS	
Capacity	20 Kva = 20 KW
Technology	Digital signal processor controlled True Online, High Frequency
Inverter Technology	PWM technology with IGBTs with built In galvanic isolation
Noise Level	Less than 50 dB
Operating Temperature	0-45 degree centigrade
Humidity	10 to 95% no-condensing
Harmonic Distortion	≤2% (linear load) ≤5% (non-linear load)
Total DC bus voltage	360 VDC
Battery recharge time	

(After Complete discharge) to 100% charge	8 Hours
Crest Factor	Minimum 3:1 at full load
Out put Wave Form	Pure Sine wave
Cold Start feature	Required
INPUT	
Input	Three phase 4 wire
Input Voltage Range	415VAC+ Neutral +earth
Input Frequency Range	46-54Hz
Line low/High Cutoff	330 VAC to 478 VAC
Power Factor	>0.9
OUTPUT	
Output Voltage	220/230 VAC programmable 1 phase+N
Output Frequency	50hz +/- 0.5%(Free running)
EFFICIENCY	
AC to AC	93%
DC to AC	94%
STATIC SWITCH (Bi-directional) for all ratings	Should take care of 100% load transfer without break
LOAD POWER FACTOR	0.9% lag to unit
OVERLOAD CAPACITY	125 % for 10 mts
UPS SHUT DOWN	
	UPS shut down with alarm
	and Indication in case of
	Out put over voltage
	Output undervoltage
	Battery Low
	Inverter over load
	over temperature
	Output short
ISOLATION	
Isolation of power	Both input & Output have MCB's. Also battery connection have MCB/MCCB/ switch
Isolation Transformer	At input
Galvanic Isolation	Required
Manual Service Bypass	Automatic Static bypass
PROTECTION	
Short Circuit Protection	MCB / MCCB Trips and UPS I shut down with out Blowing any fuses
Input over and under voltage	MCB with alarm. UPS safe in the case of hight Voltage/High Current/ high spike/ high surges

	at input to the UPS
Output over & under voltage	MCB with alarm. The load conneted to the UPS should be protected under any circumstance
INDICATORS	
	Mains on
	Inverter On
	Mains high
	mains low
	Inverter over voltage
	Inverter under voltage
	Battery Low
	Battery Over charge
	Inverter overload/Current
	Over temperature
LCD DISPLAY	
	Input/Output voltage
	Out put frequency
	Load current
	Battery voltage
DEGREE OF PROTECTION	IP 20
COMMUNICATION INTERFACE	RS 232 port for auto shut down, SNMP
AUDIBLE ALARM	
	Battery low
	Mains failure
	Out put over current
	Overload
BATTERY	150 AH Poly Propylene Tubular battery-30 Nos
QUALITY STANDARDS	
UPS	ISO 9001:2008
BATTERY	ISO 14001
BATTERY STAND	Required

Testing requirements for UPS

a) Type Test: Following shall constitute type test and at least one sample shall be type tested for each rating with maximum back up time. Type testing shall be conducted either at an independent Govt. Lab or at the premises of the manufacturer in presence of an officer from concerned Directorate of quality assurance.

- (i) Visual examination:
- (ii) Verification of output power and frequency
- (iii) Verification of voltage regulation
- (iv) Verification of efficiency
- (v) Verification of total harmonic distortion
- (vi) Verification of overshoot, undershoot limits and overvoltage protection
- (vii) Test for Insulation resistance and Leakage current, high voltage as per IS 616/86. Insulation resistance must be less than 100 Mega ohms
- (viii) Verification of VAH
- (ix) Environmental test: Following environmental tests shall be carried out in the highest rating. Test at Serial No. (i), (ii), (iii) shall be repeated during the last half an hour of each environmental condition. Test at Serial No, (i) to (vi) shall be repeated after completing the environmental test sequence of the 3 conditions and recovery period of 1 to 2 hours. There shall be no deterioration in any of these parameters when compared to the test results obtained before environmental tests.

(A) Dry Heat Test: shall be carried out in accordance with IS 9000 at 55 degree centigrade for 16 hours.

(B) Damp Heat: shall be carried out at upper temperature of 40 degree centigrade, 2 cycles of (12 + 12 hours) each in accordance with IS 9000.

(C) Cool Test: shall be carried out in accordance with IS 9000 at -10 degree centigrade for 4 hours.

b) Acceptance Test: Test listed at serial no: (i) to (viii) shall constitute acceptance test. Acceptance test shall be carried out on all the items offered for inspection.