

Bi-Directional Converter (125kW and 300kW)

Unit – 1 – 125kW	Specification and Details	
Rating	Rated Power	125 KVA
	Rated AC voltage	400 V
	Rated DC voltage	720 V
AC rating(Grid mode)	Rated Grid Voltage	400 V 3Ph/3 Wire/ 4 Wire
	Voltage range	±10 %
	Rated Grid Frequency	50 Hz
	Frequency Range	± 10% Adjustable
	Rated AC current	180 A
	Current THD	<3% at rated power
	Reactive power	0.8 leading to 0.8 lagging at rated power
	Connection Type	Bus bar
AC rating(Standalone)	Rated Voltage	400 V 3Ph/3 Wire/4 Wire
	Rated AC current	180 A
	Frequency	50 Hz, +/-1%
	Voltage harmonic distortion	<3% (Linear load)
	Power factor	0.8 (lagging) to 0.8(leading)
	Voltage regulation	<2% (Linear load)
	Overload capacity	110% for 60s
	Voltage Asymmetry with unbalance load	< 1.5% (resistive load)
DC Rating	Rated DC voltage	720 Vdc
	Voltage range	630-890 Vdc
	Rated DC current	205 A
	DC disconnection isolator	Yes (Inbuilt)
Battery Charger	Connection Type	Bus bar
	Rated AC input	400 V 3Ph/3 Wire/4 Wire
	Rated charging power	125kW (@ Unity PF in grid connected mode)
	Charging method	CC-CV
	Battery maximum charging voltage	890 V
	Battery minimum Charging Voltage	630 V
Battery maximum charging current	205 A	
Efficiency	Maximum efficiency	98.50% (Power Vs Efficiency Curve/Map to be provided in Technical Bid)
Protection	DC Over voltage protection	Yes
	DC side short circuit protection	Yes
	AC Over voltage protection	Yes
	AC Over current protection	Yes
	Over temperature protection	Yes
	Load side short circuit protection	Yes
	Grid synchronisation lost protection	Yes
	AC side protection device	MCCB (L-S-I protection)
	DC side protection device	Fuse
	AC side surge protection-Inbuilt	SPD (Type I+II+III)
	DC surge protection inbuilt	SPD (Type I+II)
	Isolation	Should work without Galvanic Isolation.
	LVRT, HVRT(FRT)	Yes
Black start capability	Yes	
Communication	Local monitoring/Display	10.1" LCD display (HMI)-Touch screen
	Built in energy data logger	Yes (5 Years)
	Emergency power off	Yes
	Field bus communication	MODBUS TCP-IP
	Protocol and Mapping	All Communication protocols related to parameter monitoring and control (Mapping details) should be provided during technical Bid. Firmware to be shared if selected.
General data	Operating temperature range	-10°C to +50°C
	Relative humidity	5~95%, Noncondensing/Non dripping
	Degree of protection	IP-54
	Pollution degree	PD 3
	Protective class	Class 1

	Over voltage category	OVC III Mains
	Environmental category	Outdoor with Canopy
	Noise level (Typical)	< 80 dBA
	Cooling	Forced air/Natural Air with energy saving mode
	Seismic zone	Zone 4
	Corrosion class	4C2
	Black Start Capability	Yes
Compliance standards	EMC	IEC 61000-4-2, 3,4,6 & 8
	Anti-Islanding protection	IEEE 1547
	Safety	IEC 62477
	Efficiency	IEC 61683: 1999
	Harmonics	IEEE 519
	Environmental stress tests	IEC 60068-2-1,2,14 & 30
	HVRT	CEA
	LVRT	CEA, IEC 62910
Quality and Inspection	IP Test	IEC 60529
	Pre-Inspection	for agreed charge/discharge/frequency/voltage/capacity test must be done at site in IIT Madras.
	Life expectancy- 15 yrs	15Yrs
	Warranty	1 Yr, 1 Yr extended warranty to be quoted separately in the Bid
	AMC	AMC after warranty period to be quoted during bidding process separately. (It is mandatory for the vendor to Quote for AMC)
Machine Up time	>98%	
Unit – 2 – 300kW	Specification and Details	
Rating	Rated Power	300 KVA
	Rated AC voltage	400 V
	Rated DC voltage	720 V
AC rating(Grid mode)	Rated Grid Voltage	400 V 3Ph/3 Wire/ 4 Wire
	Voltage range	±10 %
	Rated Grid Frequency	50 Hz
	Frequency Range	± 10% Adjustable
	Rated AC current	433 A
	Current THD	<3% at rated power
	Reactive power	0.8 leading to 0.8 lagging at rated power
	Connection Type	Bus bar
AC rating(Standalone)	Rated Voltage	400 V 3Ph/3 Wire/4 Wire
	Rated AC current	433 A
	Frequency	50 Hz, +/-1%
	Voltage harmonic distortion	<1.5% (Linear load)
	Power factor	0.8 (lagging) to 0.8(leading)
	Voltage regulation	<2% (Linear load)
	Overload capacity	110% for 60s
	Voltage Asymmetry with unbalance load	< 1.5% (resistive load)
DC Rating	Rated DC voltage	720 Vdc
	Voltage range	630-930 Vdc
	Rated DC current	496 A
	DC disconnection isolator	Yes (Inbuilt)
	Connection Type	Bus bar
Battery Charger	Rated AC input	400 V 3Ph/3 Wire/4 Wire
	Rated charging power	300 kW
	Charging method	CC-CV
	Battery maximum charging voltage	930 V
	Battery minimum Charging Voltage	630 V
Battery maximum charging current	496 A	
Efficiency	Maximum efficiency	96 % (Power Vs Efficiency Curve/Map to be provided in Technical Bid)
Protection	DC Over voltage protection	Yes
	DC side short circuit protection	Yes
	AC Over voltage protection	Yes
	AC Over current protection	Yes
	Over temperature protection	Yes
	Load side short circuit protection	Yes

	Grid synchronisation lost protection	Yes
	AC side protection device	MCCB (L-S-I-G protection)
	DC side protection device	Fuse
	AC side surge protection	Yes
	DC surge protection inbuilt	Yes
	Isolation	Galvanic Isolation
	LVRT, HVRT(FRT)	Yes
	Black start capability	Yes
Communication	Local monitoring/Display	10.1" LCD display (HMI)-Touch screen
	Built in energy data logger	Yes (5 Years)
	Emergency power off	Yes
	Field bus communication	MODBUS TCP-IP
	Protocol and Mapping	All Communication protocols related to parameter monitoring and control (Mapping details) should be provided during technical Bid. Firmwares to be shared if selected.
General data	Operating temperature range	-10°C to +50°C
	Relative humidity	5~95%, Noncondensing/Non dripping
	Degree of protection	IP-54
	Pollution degree	PD 3
	Protective class	Class 1
	Over voltage category	OVC III Mains
	Environmental category	Outdoor with Canopy
	Noise level (Typical)	< 80 dBA
	Cooling	Forced air/Natural Air with energy saving mode
	Seismic zone	Zone 4
Corrosion class	4C2	
Compliance standards	EMC	IEC 61000-4-2, 3,4,6 & 8
	Anti-Islanding protection	IEEE 1547
	Safety	IEC 62477
	Efficiency	IEC 61683: 1999
	Harmonics	IEEE 519
	Environmental stress tests	IEC 60068-2-1,2,14 & 30
	HVRT	CEA
	LVRT	CEA, IEC 62910
IP Test	IEC 60529	
Quality and Inspection	Pre-Inspection	for agreed charge/discharge/frequency/voltage/capacity test must be done at site in IIT Madras.
	Life expectancy- 15 yrs	15Yrs
	Warranty	1 Yr, 1 Yr extended warranty to be quoted separately in the Bid
	AMC	AMC after warranty period to be quoted during bidding process separately. (It is mandatory for the vendor to Quote for AMC)
	Machine Up time	>98%

Note:

1. The bidders should quote for both Unit 1 and Unit 2.
2. IIT Madras will have discretion of purchasing either one of the items or both the items or either one of the item in 2 numbers