

# Bi-Directional Converter

## Unit- 1: Specification and Details (125kW)

1. AC Grid Connection
  - a. Rated Grid Voltage: 415V, 3 Phase, 3 Wire/4 Wire
  - b. Grid Voltage Range: 350 to 480 V AC
  - c. Rated Grid Frequency: 50 Hz
  - d. Frequency Range: 50 Hz +/- 10 % adjustable
  - e. Rated AC Power: 125 kVA
  - f. Rated AC Current: 200 Arms
  - g. Max Continuous AC Current: 230 Arms
  - h. Current THD IEEE 519 Compliant, < 3% at rated power
  - i. Power Factor 0.8 lagging ~ 0.8 leading
2. DC Connection
  - a. DC Voltage Range 630 to 900Vdc
  - b. Rated DC Voltage 830 Vdc
  - c. Rated Power 125kW
3. Standalone Operation
  - a. Rated Output Voltage 415V, 3 Phase - 3Wire
  - b. Rated Output Power 125 kVA/125 kW
  - c. Rated Output Current 200 A
  - d. Rated Output Frequency 50 Hz +/- 1%
  - e. Power Factor 0.8
  - f. Output Voltage Accuracy 1%
  - g. Output Voltage THD <3%
  - h. Output Voltage Regulation <10%, at dynamic; Recovering within tolerance in 100ms
4. Environmental
  - a. Operating Temperature -10 to +60 deg Full power (-10 deg to 50 deg)
  - b. Storage Temperature -25~70°C (-13~158°F)
  - c. Humidity 0 to 95% RH, no-condensing
  - d. Cooling Forced air w/ speed control
  - e. Accoustic Noise <75dBA @ 2 m
  - f. Enclosure Type Type 3R (IP54 Equivalent)
  - g. Ingress Rating IP54
5. INTERFACE
  - h. User Interface 10" LCD screen with operation button, Fault LEDs
  - i. Emergency Stop Local EPO button
  - j. Communication MODBUS TCP/IP
6. PERFORMANCE
  - k. Peak Efficiency / CEC Efficiency 98.6%
  - l. Standby Loss <10W
7. Compliance
  - a. Certificate IEEE 1547, IEC61000, IEEE519, IEC60068.
8. Quality and Inspection Criteria
  - a. Pre-Inspection for agreed charge/discharge/frequency/voltage/capacity test must be done at site in IIT Madras.
  - b. Life expectancy- 15 yrs
  - c. 1 Years Warranty and one year extended warranty should be Quoted.
  - d. Machine Uptime >98%

- e. AMC after warranty period to be quoted during bidding process separately. (It is mandatory for the vendor to Quote for AMC)

#### Unit- 2: Specification and Details (300kW)

1. AC Grid Connection
  - j. Rated Grid Voltage: 400V, 3 Phase, 4 Wire
  - k. Grid Voltage Range: 350 to 480 V AC
  - l. Rated Grid Frequency: 50 Hz
  - m. Frequency Range: 50 Hz
  - n. Rated AC Power: 300 kVA
  - o. Rated AC Current: 433 A
  - p. Power Factor 0.8 lagging ~ 0.8 leading
2. DC Connection
  - a. DC Voltage Range 630 to 930Vdc
  - b. Rated DC Voltage 720 Vdc
  - c. Rated Current 496A
  - d. Rated Power 300kW
3. Standalone Operation
  - a. Rated Output Voltage 400V, 3 Phase - 4Wire
  - b. Rated Output Power 300 kVA/300 kW
  - c. Rated Output Current 433 A
  - d. Rated Output Frequency 50 Hz +/- 1%
  - e. Power Factor 0.8
  - f. Output Voltage Accuracy 1%
  - g. Output Voltage THD <3%
4. Environmental
  - m. Operating Temperature -10 to +50 deg
  - n. Humidity 0 to 95% RH, no-condensing
  - o. Cooling Forced air w/ speed control
  - p. Accoustic Noise <80dBA @ 2 m
  - q. Enclosure Type Type 3R (IP54 Equivalent)
  - r. Ingress Rating IP54 for electronic/IP43 for magnetics
5. INTERFACE
  - s. User Interface 10" LCD screen with operation button, Fault LEDs
  - t. Emergency Stop Local EPO button
  - u. Communication MODBUS TCP/IP
6. PERFORMANCE
  - v. Peak Efficiency / CEC Efficiency 98.6%
  - w. Standby Loss <10W
7. Compliance
  - b. Certificate IEEE 1547, IEC61000, IEEE519, IEC60068 and other required
8. Quality and Inspection Criteria
  - f. Pre-Inspection for agreed charge/discharge/frequency/voltage/capacity test must be done at site in IIT Madras.
  - g. Life expectancy- 15 yrs
  - h. 2 Years Warranty
  - i. Machine Uptime >98%
  - j. AMC after warranty period to be quoted during bidding process separately. Efficiency >=96%

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 item or both the items or either one of the item in 2 numbers