Hybrid Power Manager

• Utilizes input power from multiple sources:
  • Wind Turbine
  • Photovoltaic Arrays
  • Diesel (combustion) Generator
  • Batteries
  • Other custom engineered inputs possible

• Application specific control algorithms to maximize fuel savings

• Optimum temperature compensated battery charging profiles maximize battery service life

• Can be configured for various power inputs and outputs to suit application

• Multiple units can be interconnected for distributed power input sources and consumer outputs

Features

• Seamless integration of all input sources and output

• Delivers uninterrupted power to variable output load from 0 to 100%

• Programmable Wind Turbine Power Curve

• Maximum Wind Turbine energy capture using high performance quasi-sinewave conversion

• Compatible with most available battery technologies

• Intelligent battery charging methods depending on state of charge and battery temperature

• Battery condition monitoring available

• Isolated battery stack voltage for positive or negative grounding systems

• Configurable combustion generator (gasoline, diesel, propane, etc.) starting and shutdown control according to OEM guidelines.

• Output over current protection via software and hardware
  • Automatic output overload fold-back prevents shut down from transient overload
  • Short circuit; line-to-line or line-to-ground
  • Output Demand Overload protection/shutdown

• Transient voltage protection:
  • Level IV+ IEC Immunity Compliance
    • IEC 61000-4-2 Electrostatic discharge immunity test – Level IV+
    • IEC 61000-4-4 Electrical fast transient/burst immunity test – Level IV+
    • IEC 61000-4-5 Surge Immunity test – Level IV+
    • IEC 61312 Protection against Lightning Electromagnetic Impulse

• UL508C and EN50178 Safety Design Standards

• IP66 / NEMA 4X Enclosure with passive anti-condensation

• Outdoor coastal and marine environmental package

• 20 year design life

* 5 kW models shown
Automatic Operation:
• Operation of the Hybrid Power Manager is continuous and automatic.
• Rich Object Data Dictionary provides operational performance data storage and on demand or real-time output to telemetry.

Power Conversion and Flow Scenarios
• The HPM will provide seamless flow of power automatically and continuously to meet the demands of the output load and any battery charging requirements.
• Power Source Priority
  1a. Wind Turbine
  1b. PV Array
  2. Battery
  3. Diesel Generator

Wind Turbine Power Regulator
AC Input Configuration 3 Phase as 400V - Neutral Not Required
Operating AC Voltage Range 50 to 440 V
Operating Frequency Range 2 to 500 Hz
Rated Inlet AC Current 8.5A, 17A, 35A, 70A
Maximum Survival Inlet Voltage 520 V, 2 sec

Diesel Generator Rectifier
AC Input Configuration 440/Y 250 Neutral Connected PE
Maximum AC Voltage 277 V L-N
Rated Inlet Power
According to application requirements
Inlet Frequency Range 50 to 500 Hz
Rated Inlet Voltage 250 V L-N

Bi-Directional DC/DC Converter
Rated Charge Voltage Range 46 to 58 V
Maximum Charge Voltage 60 V
Rated Discharge Power 2.7kW, 5.5 kW, 11 kW, 22kW
Rated Discharge Voltage Range 46 to 56 V
Minimum Discharge Voltage 42 V

Power Output Inverter
Output Connection Single Phase, Neutral Earth
Rated AC Power 2.5kW, 5 kW, 10kW, 20kW
Maximum AC Power 110% of Rated
Rated AC Output Voltage 205 to 254 V
Output Frequency Selectable 50 or 60 Hz
Frequency Range 50 Hz 47 to 53 Hz
Frequency Range 60 Hz 57 to 63 Hz
Load Power Factor > 0.95 or Consult Engineering
Total Load Current Harmonic Distortion < 2% or Consult Engineering
Load Asymmetry Maximum 2% or Consult Engineering

Environmental Ratings
Rated Temperature Range -40 to +40 C
Derated Operating Temperature Range +40 to +60 C
Rated Maximum Operating Altitude 1000 m
Derated Operating Altitude Range 1000 to 3500 m
Humidity 0 to 100% Condensing
Atmosphere Outdoor Coastal Operation