

Grid-Connected MultiMode Power Conversion System



Description

The MultiMode Power Conversion System is a two-stage, DC to AC grid-tied inverter designed for residential and small commercial power systems. The standard MM is designed for 5kW applications. An entry-level 3kW version is also available. The first stage is a high-efficiency DC-DC voltage converter that optimally processes photovoltaic or wind power (48-120 VDC) and converts it to battery voltage. The second stage is a utility-grid-tied DC to AC inverter. Together, the MultiMode Power Conversion System provides a highly reliable source of AC power, capable of operating in stand-alone, grid-parallel, backup generator, and multi-unit modes. Full battery charge-control with automatic periodic battery equalization, plus a *Zero Current*[™] battery mode minimizes grid-connect power loss and extends battery life. Simplified programming and data retrieval, flexible operating modes, and intelligent user and wiring interfaces make the Advanced Energy MultiMode Power Conversion System simple to install, set up, and use. The outdoor-rated enclosure and the Advanced Energy five-year warranty are standard.

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Standard Features

- ~Fully integrated, single-box solution; outdoor-rated enclosure houses inverter, charge controller, and all switchgear
- ~Inverter efficiency 93% peak
- ~Accurate PV Maximum Power Point Tracking (MPPT) operation — independent of battery voltage and load changes — captures up to 15% more energy
- ~Superior power quality: <5% THD max. stand-alone; <3% THD max. grid-tied
- ~High reliability — transformer isolation provides lightning/conducted EMI protection
- ~Multiple inverter operating modes: stand-alone, grid-parallel, backup generator control, or multi-unit ganged
- ~Single reprogrammable microcontroller for highly flexible, complete system control
- ~Field-programmable operating parameters stored in non-volatile memory
- ~AEI patented anti-islanding technology in grid-parallel mode
- ~Simple LED front panel display shows system operating status
- ~Input ground fault protection circuit provides improved operating safety
- ~Opto-isolated RS485 serial communications link uses standard RJ-11 connectors
- ~Variable-speed cooling fans

Options

- ~Data monitor/display (Model AM 200)
- ~PC computer interface kit (Model PC 200)

Compliance

UL 1741, FCC Class B-Part 15; Certified NEC @ 690, IEEE 929 Compliant
Surge tested to IEEE C62.41
Certified for the California Energy Commission Buydown Program
Approved for Utility Interconnection by New York State Public Service Commission

Advanced Energy is the recognized leader in the innovative design and manufacture of utility-interactive inverters.

Specifications

Charge Controller (Photovoltaic DC to DC Converter)

Input Range48-120 VDC
Maximum Power Point Tracking for PV captures up to 15% more energy
Output48 V nominal battery voltage (44 to 60 VDC)
Power Rating5 kW (100 amps) continuous
Efficiency> 98% over full power range
ControlMicrocontroller PWM, programmable setpoints and battery state-of-charge
Battery Operating ModesFloat, bulk, boost, *Zero Current*™ with periodic equalization in grid-connect mode:
battery setpoints temperature-compensated with slope dependent on temperature
Input Connections
PhotovoltaicThree 50 amp 125 VDC circuit breakers
Ground Fault ProtectionImproved safety protocol trips all input breakers on sensing ground fault

Inverter

Input Range48 VDC nominal battery voltage; 44 to 60 VDC
Output Voltage120 VAC, 60 Hz
Power Output.....Continuous 5 Seconds (ratings are at 40C)
MM-50005 kVA 10 kVA
MM-30003 kVA 10 kVA
Total Harmonic Distortion
Stand-alone< 5% total, < 3% any single harmonic
Grid-tied< 3% total
Flicker/Step Response< 5% output voltage change on 1.5 kW stepload
Efficiency92% at half-power output; 90% at 5 kW
No Load LossAverage < 20W
Operating ModesStand-alone: controlled AC output voltage
Grid-parallel: controlled AC output current for power export or battery charging
Grid Transfer< 75 milliseconds; transfer from grid-parallel to stand-alone on loss of grid power
Grid/Load Connections
Contactors50 amps inductive; 70 amps resistive
Circuit BreakersInv Out Utility Generator
MM-500050A 50A 50A
MM-300040A 50A 50A

Communications

Serial PortRJ-11; RS485; proprietary serial protocol

Environment

Temperature Range-40 to +45C; non-condensing; non-corrosive; non-explosive

Mechanical

Weight118 pounds (MM-5000); 98 pounds (MM-3000)

Dimensions

Dimensions16" W x 10" D x 37" L

