MULTI POWER CONTROLLER

Model: MPC-6K-1P48V003

MLT DRIVES POWER CONTROLLERS

MLT Inverters are designed to be robust and tough both mechanically and electrically. The inverters have 150% overload capacity and wide operating temperature range designed for many harsh environments. These inverters are the perfect fit for low maintenance, grid-connected and off-grid, remote installations and industrial power management.

MLT Drives pioneered the design and development of solar inverters to power remote communities and remote installations. Our products have been in use reliably for over 20 years already. The system architecture guarantees optimal efficiency, maximizes system reliability and results in extended equipment life.

POWERSTAR INVERTERS

MLT Drives PowerStar inverters are the industry standard for applications involving the integration of grid, generator backup power, solar energy and batteries. Our inverters can if required be managed remotely via a GSM, phone line connection or local area network (RS485, RS232).

DESCRIPTION

This system primarily ensures that quality power to the load is maintained at all times. If renewable energy sources such as photovoltaic (PV) sources are available power is first drawn from these before using AC sources or battery power. Discharging of the battery is optional if grid power is available.

When no renewable energy is available, the load is powered by the grid supply with the PowerStar inverter used to provide reactive energy so as to maintain the load voltage at its nominal value even if the grid voltage varies within an adjustable tolerance.

The system provides input for two AC sources so an additional to your grid supply a generator can be connected for backup. This generator can be started when the batteries are low; the load is too big or after a predetermined time after the grid has failed. The AC sources can be used to substitute the total capacity of the PowerStar so that even bigger loads can be powered. This would imply that power from the grid/generator plus the battery power can be combined to give a 200% load supply for the duration until stored battery supply is depleted.

This system offers an intelligent method of incorporating multiple alternative energy sources to maximize grid-connected or off-grid homes, offices or even entire developments.

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System Features and Options

- Full automatic operation with no break to the supply during transitions from inverter to grid or generator parallel operation.
- The backup generator (if installed) can automatically be started when the grid fails.
- Renewable energy is fed directly to the load to overcome inefficiencies from the batteries.
- Capable of being integrated with renewable/distributed generation sources on both the AC and DC bus.
- Local LCD (liquid crystal display) and keypad can be used to change settings, monitor all supplies (Voltage, Current, Watts etc) and view event/fault logs (time and date stamped).
- Load sensing capability. System goes to low power standby when no load is connected.
- Smart load control. Certain non-essential loads can be turned off automatically when not enough energy is available.
- Optional built in MPPT regulator for maximizing PV power.

Typical Specifications

INVERTER PARAMETERS	INFORMATION
Nominal AC Output Voltage	230 volts ±1%, single phase, 2 Wire output. Nominal voltage can be adjusted by ±10% via system settings
Output Frequency (Adjustable)	50Hz ± 0.5% nominal, (47 to 63 Hz adjustable). Inverter to follow grid/generator frequency up to ±5Hz of the nominal output frequency during parallel operation
Continuous AC Power (30°C)	6kW (Inverter Only)
Surge Rating	Up to 9KVA (150% of the continuous rating) for a maximum of 30 seconds. Up to 12kVA for 5 seconds.
Battery Voltage (nominal)	48 volts DC
Battery Charge Current (Adj.)	100A Maximum
Control Type	Voltage source, microprocessor regulated
Waveform	Low THD, Pure sine-wave output
AC Power Control	Phase Controlled Pulse Width Modulation (PWM)
Output Harmonic Distortion	Less than 3%
Efficiency	Up to 92% stand alone, 95% or more when in parallel AC source
No Load Power Consumption	44W (0.8A typical)
Standby - Load Sensing	8W power consumption when in standby Automatically goes to standby when load is too low. Adjustable low load threshold.
Internal Protection System (using electronic detection)	▪ Inverter continuous overload protection ▪ Inverter short circuit protection ▪ Heat-sink over temperature protection ▪ Over/under voltage AC voltage protection ▪ Over/under frequency protection ▪ Over/under battery voltage protection
Alarm Signals	Via system fault relay (voltage free contact)
Front Panel Display (LCD)	40x4 LCD panel with membrane keypad displaying the following: ▪ Grid/Generator and inverter per phase kW, KVA, voltage, freq ▪ Grid/Generator and inverter on line status ▪ Battery voltage, battery current, battery temperature ▪ Solar current, power and voltage ▪ Heat-sink and cabinet temperature ▪ Fuel level, Solar radiation ▪ Inverter, Generator Load kWh summation, Generator run hours ▪ System settings, event logs

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Technical Specification

INVERTER PARAMETERS	INFORMATION
Front Panel Controls (via keypad)	▪ System On-Off, Equalise Battery, Force Start Generator
Circuit Breakers	▪ Grid and Generator Input ▪ Battery Input Fuse Breakers
EMI	Designed to minimise both conducted and radiated EMI emissions
Earthing Provisions	negative ground, AC surge protection to ground

AC INPUT SPECIFICATIONS (GRID AND GENERATOR)	
Capacity	Adjustable from 3kVA to 8kVA single phase
Nominal Voltage & Frequency	230 volts 50Hz, 2 wire. Operating voltage can be adjusted by ±5%
Control	Local keypad (HMI)

ENVIRONMENTAL	
Operating Temperature Range	-5 to 45 degrees Celsius
Humidity	0-90% non condensing
Enclosure	Rated for IP30 – not weatherproof

ENCLOSURE	
Dimensions	550(W) x 510 (D) x 550 (H)
Weight	60 kg

SOLAR MPPT CONTROLLER	(optional)
Control type	Dual-Channel PWM (pulse width modulated)
Capacity	Standard 4kW peak (80 amps max at the nominal battery volts).
Enclosure	Incorporated in the inverter control cabinet (top section)

LOGGING	
Event and Fault Logging	Up to 4000 events and faults are logged, accessible from locally All events have date and time stamps.
System Summations	▪ Load, Generator, Inverter, Battery and Solar kWh

COMMUNICATIONS	(optional)
RS485, RS232	MODBUS RTU slave port
GSM	Remote Communications using built in GSM Modem

MULTI PURPOSE INPUT/OUTPUT CARD	(optional)
Relay (Voltage Free)	3 Relays Configurable – Non Essential Loads, Generator Start & Crank, Alarm, Fan
Sensor Inputs	Battery Temperature, System Hot Bypass, E-Stop, Fuel Level

As MLT Drives is constantly improving its products, specifications are subject to change without notice.
Optional data logging, remote system control and data download via GSM/GPRS network available. For more information contact info@mltdrives.com.

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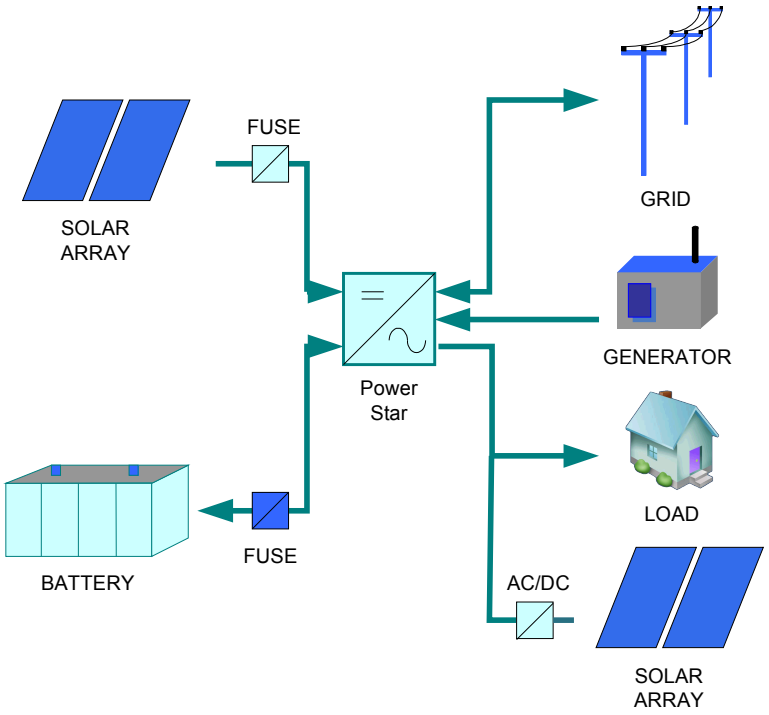
Typical Hardware Configuration



MPC – Multi Power Controller - Bidirectional Inverter Charger Module
Battery Bank (48V, 200Ah minimum)
Solar PV cell array (6KW max)
Solar regulator
Grid Supply
Generator Backup Supply (3 to 8 KVA configurable)
Load (6 KVA + 'Generator Size' Maximum)

Connections

Grid/Generator Inputs	Three core 10mm^2 isolated flex cable with bootlace ferrule screwed into terminal block on left side of inverter.
Load Output	Three core 10mm^2 isolated flex cable with bootlace ferrule screwed into terminal block on left side of inverter.
Battery DC	1.5m 50mm^2 isolated flex cable provided (positive and negative) with lugs (8mm hole)
Generator Start Output	2 pin mike plug NC510 (voltage free contact)
Battery Temperature	3 pin mike plug NC520 (Use LM35 temperature sensor only)

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