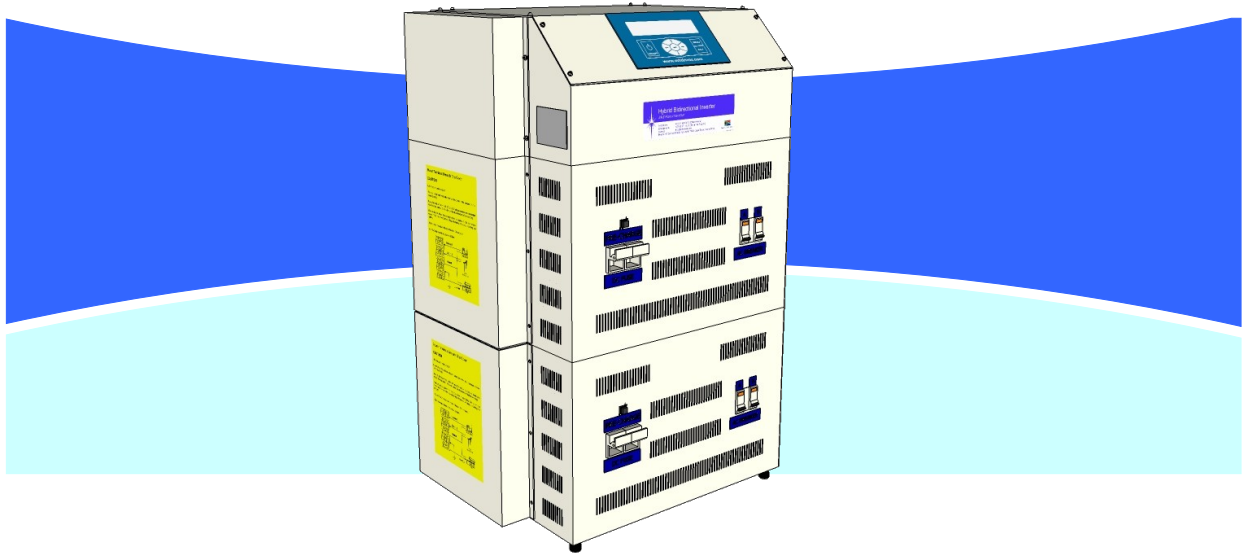


Technical Specification

MULTI POWER CONTROLLER

Model: MPC-12K-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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MLTDRIVES

Technical Specification

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 $\pm 1\%$, single phase, 2 Wire output. Nominal voltage can be adjusted by $\pm 10\%$ via system settings |
| Output Frequency (Adjustable) | 50Hz $\pm 0.5\%$ nominal, (47 to 63 Hz adjustable). Inverter to follow grid/generator frequency up to ± 5 Hz of the nominal output frequency during parallel operation |
| Continuous AC Power (30°C) | 12kW (Inverter Only) |
| Surge Rating | Up to 18KVA (150% of the continuous rating) for a maximum of 30 seconds. Up to 24kVA for 5 seconds. |
| Battery Voltage (nominal) | 48 volts DC |
| Battery Charge Current (Adj.) | 200A 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 | 87W (1.8A 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) | <ul style="list-style-type: none"> ▪ 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: <ul style="list-style-type: none"> ▪ 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 |

Technical Specification

| INVERTER PARAMETERS | INFORMATION |
|-----------------------------------|---|
| Front Panel Controls (via keypad) | <ul style="list-style-type: none"> System On-Off, Equalise Battery, Force Start Generator |
| Circuit Breakers | <ul style="list-style-type: none"> 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 6kVA to 16kVA single phase |
| Nominal Voltage & Frequency | 230 volts 50Hz, 2 wire. Operating voltage can be adjusted by $\pm 5\%$ |
| 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 930 (H) |
| Weight | 140 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 | <ul style="list-style-type: none"> 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 |

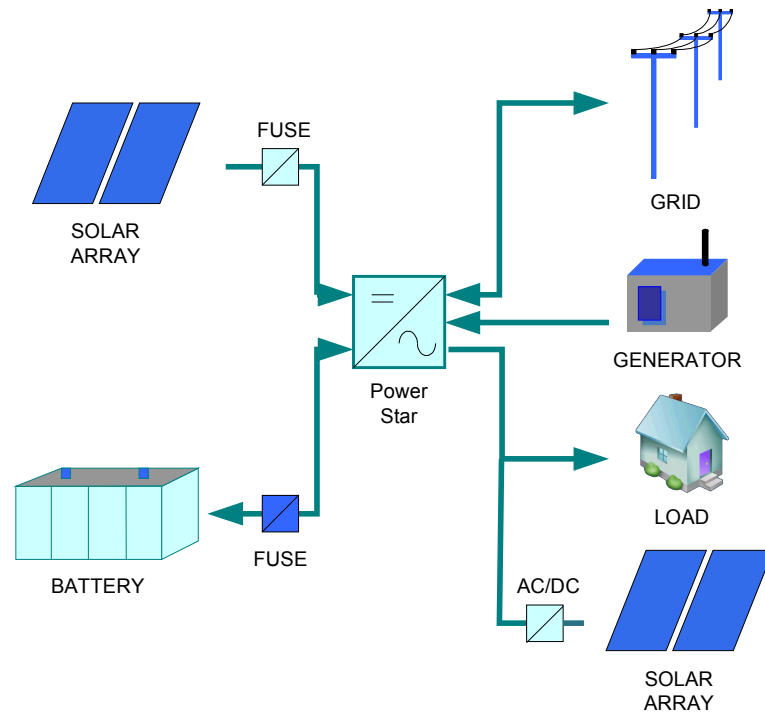
As MLT Drives is constantly improving its products, specifications are subject to change without notice.
Optional data logging, remote system control and data download via GSM/GPRS network available. For more information contact info@mlt drives.com.

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MLT DRIVES

Technical Specification

TYPICAL HARDWARE CONFIGURATION



MPC – Multi Power Controller - Bidirectional Inverter Charger Module
Battery Bank (48V, 400Ah minimum)
Solar PV cell array (6KW max)
Solar regulator
Grid Supply
Generator Backup Supply (6 to 12 KVA configurable)
Load (12 KVA + 'Generator Size' Maximum)

CONNECTIONS

| | |
|------------------------|--|
| Grid/Generator Inputs | Three core 16mm ² isolated flex cable with bootlace ferrule screwed into terminal block on left side of inverter. |
| Load Output | Three core 16mm ² isolated flex cable with bootlace ferrule screwed into terminal block on left side of inverter. |
| Battery DC | 1.5m 100mm 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) |