A31 DC-AC Inverter

The La Marche A31 Inverter is the ideal choice when AC power requirements are critical. This inverter has a wide range of standard features such as a sine wave output, voltage regulation, protection from AC-DC shorts, under/over-voltage conditions, input filtering and overload protection. It incorporates a DC input breaker and an automatic under/over-voltage shutdown circuit to protect the inverter. The A31 has a polarity indicator to tell you if the battery is connected incorrectly. The unit is equipped with an input filter pre-charge circuit which includes an indicator to inform you that the inverter is ready for operation. Applications may include data centers, fire alarms, telecommunications, emergency lighting, security, oil exploration and utility substation systems.

Available in 50 or 60 Hz 120, 240, 208 or 220 AC Output.

Standard Features

- Highly Reliable Ferroresonant Transformer
- Available DC Inputs 24V or 48V or 120V
- DC to AC Isolation
- Pure Sine Wave Output
- Adjustable DC Under/Over Voltage Shutdown
- Analog AC Ammeter & Voltmeter (2%) (Optional on 250 VA & 500 VA)
- Overload/Current Limit
- Inverter On/Off Switch
- AC Circuit Breaker
- DC Circuit Breaker
- IGBT Power Block Technology
- UL 1012 Listed, UL 1481 Listed (selected models) and C-UL Listed
- 5-Year Limited Warranty

Options

- **22P** 1ms Static Transfer Switch (Inverter Prime) (available on 1KVA and larger)
- **22S** 1ms Static Transfer Switch (Inverter Standby) (available on 1KVA and larger)
- **22A** Static Switch Alarm Package consisting of the following: 2 Form “C” Contacts for Phase Lock, Utility Available, Inverter Available, Load on Preferred, Load on Alternate, Requires 22P or 22S.
- **22D** Digital Display (replaces AC analog meters). Used only with 1ms Static Switch. Requires 22P or 22S.
- **09A** UL 1481
- **164** 10-15ms Static Switch Transfer (Inverter Prime) (not available on 4KVA & above)
- **165** 10-15ms Static Switch Transfer (Inverter Standby) (not available on 4KVA & above)
- **130** Inverter Failure Relay and Light (not available with option 22A)
- **132** Inverter Failure Relay (1 Form “C”) (not available with option 22A)
- **133** Utility Available Relay (1 Form “C”) (not available with option 22A)
- **123** Duplex Receptacles (not UL Listed)
- **06L** AC Ammeter (Std. on 750 VA and larger)
- **06M** AC Voltmeter (Std. on 750 VA and larger)
- **06C** DC Ammeter (2%)
- **06D** DC Voltmeter (2%)
<table>
<thead>
<tr>
<th>Model Number</th>
<th>DC Input Amps</th>
<th>AC Output</th>
<th>BTU Hour***</th>
<th>Case No.</th>
<th>Approx. Weight</th>
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<tbody>
<tr>
<td></td>
<td>No Load</td>
<td>Full Load***</td>
<td>VA</td>
<td>Volts</td>
<td>Amps</td>
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<td>A31-250-24V-A6</td>
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<td>120</td>
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<td>1000</td>
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<td>8.33</td>
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<td>12.50</td>
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<td>2000</td>
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<td>16.67</td>
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<td>A31-4K-24V-A6</td>
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<td>278.0</td>
<td>10000</td>
<td>120</td>
<td>25.00</td>
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</table>

When ordering, please specify:
- La Marche Model Number A31 Inverter
- Desired output power (VA)
- Battery type and number of cells
- Output voltage and frequency
- Description of load
- Optional Accessories

Output Specifications:
- **AC Output Voltage**
  - 120V Nominal (Standard)
  - 240V (Optional)
  - 208V and 220V (Optional, Not UL Listed)
- **Load Regulation**
  - ±3% Over DC Battery Range
- **Current Limit**
  - Approximately 150%. Protected by AC Output Breaker
- **Total Harmonic Distortion**
  - Approximately 5% at nominal DC Input and Full Load. Less than 3% for any single harmonic.
- **Noise**
  - Less than 32 dBrn “C” message weighted with a battery (24VDC and 48VDC only).
- **Audible Noise**
  - 65 dB @ 5 feet
- **Approximate Efficiency**
  - 24VDC models 70-75%
  - 48VDC models 85-90%
  - 120VDC models 85-90%
- **Load Crest Factor**
  - Will operate with Load Crest Factors up to 2.8

Environmental:
- **Operating Temperature**
  - 0 to 50°C
- **Storage Temperature**
  - -20 to 60°C
- **Relative Humidity**
  - 0-95% (non-condensing)
  - Convection Cooled (4KVA and larger units are fan assisted)

Agency Approvals:
- **UL 1012**
- **UL 1481** (Available for selected models, refer to chart)
- **C-UL**
22P / 22S Static Switch
1MS Electronic Transfer Switch

1MS Electronic Static Switch for La Marche A31 DC to AC Inverter

The La Marche Electronic Static Switch is an automatic device that will transfer an AC load to and from the Prime Source to an Alternate Source, if the Prime Source fails, in a rapid 1 millisecond. The Static Transfer Switch is intended for use on the La Marche A31 DC to AC Inverters ranging from 1kVA to 15kVA models (consult factory for other applications). A customer calibration mode is incorporated into the Static Switch Menu to allow for on site settings that are best suited for the intended application.

A Digital Display Panel, which replaces the unit’s AC analog meters, is also offered as an option. The Digital Display will allow the operator to view Load Voltage, Load Current, VA (Volt-Amps), Utility Voltage, Utility Frequency, Inverter Voltage and Inverter Frequency readings.

Status Display
A Status Display panel consisting of (5) LED indicator lights and (2) switches are provided on the front of the unit.

- Phase Lock
- Utility Available
- Inverter Available
- Load on Preferred Source
- Load on Alternate Source
- Auto/Manual Switch
- Test Transfer Pushbutton

Indicates when the Prime and Alternate sources are in synchronization
Indicates the Alternate source is connected and operating within its proper range
Indicates the Inverter is operating within its proper range
Indicates the AC load is operating on the Prime source
Indicates the AC load is operating on the Secondary source
Allows for an Automatic or Manual Transfer
Allows an active check of the Static Switch operation

Customer Calibration Mode
The customer calibration mode allows the user to select the available parameters and to set per preferences.

SELECTIONS
1. Preferred Source
2. Load Voltage Window Upper Limit
3. Load Voltage Window Lower Limit
4. Utility Voltage Upper Limit
5. Utility Voltage Lower Limit
6. Inverter Voltage Upper Limit
7. Inverter Voltage Lower Limit
8. Inverter Sense Delay
9. Utility Sense Delay
10. Retransfer Delay
11. Hit Counter

SETTINGS
May be selected to either Utility or Inverter
Maximum voltage allowed on the Load
Minimum voltage allowed on the Load
Maximum voltage allowed for Utility to be considered good
Minimum voltage allowed for Utility to be considered good
Maximum voltage allowed for Inverter to be considered good
Minimum voltage allowed for Inverter to be considered good
The amount of time the Inverter must be within the upper and lower limits before the Inverter is considered within tolerance
The amount of time the Utility must be within the upper and lower limits before the Utility is considered within tolerance
Used to set the time the Static Switch will attempt retransfer from the Alternate Source to the Primary Source
Used to determine the maximum allowable load voltage deviations outside of the pre-defined envelope that will trigger a transfer

Static Switch Options
Option #22A Alarm Relay Board consisting of (2) sets of Form “C” Contacts for each of the following:
- Phase Lock
- Utility Available
- Inverter Available

Option #22D Digital Display (replacing AC analog meters on unit) to indicate the following:
- Load Voltage
- Load Current
- VA (Volt-Amps)
- Utility Voltage
- Utility Frequency
- Inverter Voltage
- Inverter Frequency
Manual Bypass Switch
For AC Applications

Manual Bypass Switch
The Manual Bypass Switch (MBS) provides a mechanical means to transfer between power sources to your critical loads. Whether you are performing regular schedule maintenance on the system or in the event of an unexpected system malfunction, the power to the load can be safely transferred without being interrupted.

La Marche offers two types of MBS configurations, a Make-Before-Break (MB4B) and a Break-Before-Make (BB4M). The MB4B switch links both primary and secondary sources momentarily before completing the transfer. The MB4B is the preferred configuration for use with critical loads.

<table>
<thead>
<tr>
<th>Rack Panel</th>
<th>Inverter Rating</th>
<th>Rack Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>20A</td>
<td>250 TO 1.5kVA</td>
<td>2</td>
</tr>
<tr>
<td>45A</td>
<td>2k to 4kVA</td>
<td>3</td>
</tr>
<tr>
<td>75A</td>
<td>5kVA</td>
<td>4</td>
</tr>
<tr>
<td>200A</td>
<td>7.5 to 15kVA</td>
<td>8</td>
</tr>
</tbody>
</table>

### Standard Features
- Input & Output Terminal Block
- Rotary CAM Type Switch
- 2- Position for Complete Isolation
- Rack or Wall Mount available
- UL Listed Bypass Switches
- 20 to 200 AMP Rating Switches

### Option
- 06J - Frequency Meter
  (available for MB23 & MBW)

Note: For use on 120 VAC Inverters. For other AC Voltages consult factory.