Powering Business Worldwide

Matrix 2000 Inverter
Installation and Operation Guide

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About This Guide

Purpose

The purpose of this manual is to provide explanations and procedures for installing, operating, maintaining, and troubleshooting a Matrix 2000 Inverter.

This manual should be read through carefully before installation and operation.

Please retain this manual for future reference.

Audience

This guide is intended for use by:

- Installers competent in:
  - installing and commissioning dc power systems and inverter systems
  - safe working practices for ac and dc powered equipment
  - the relevant local electrical safety regulations and wiring standards
- Operators and maintenance staff competent in:
  - operation of dc power systems and inverter systems
  - safe working practices for ac and dc powered equipment

Reporting Problems with this Guide

Please use this email address to report any problems you find in this guide:

Eaton DC Product Marketing Communications
EMAIL: DCInfo@eaton.com

For Further Information and Technical Assistance

For further information and technical assistance see Worldwide Support on page 29.

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General Description

Overview

The Matrix Standalone Inverter is a 1U, 19-inch rack mount module with output up to 2000VA/2000W (at 110/115/120 or 208/220/230/240V ac, 50 or 60Hz) from -48V dc input.

The module has a built-in automatic transfer switch (ATS), high efficiency and a wide operating temperature range.

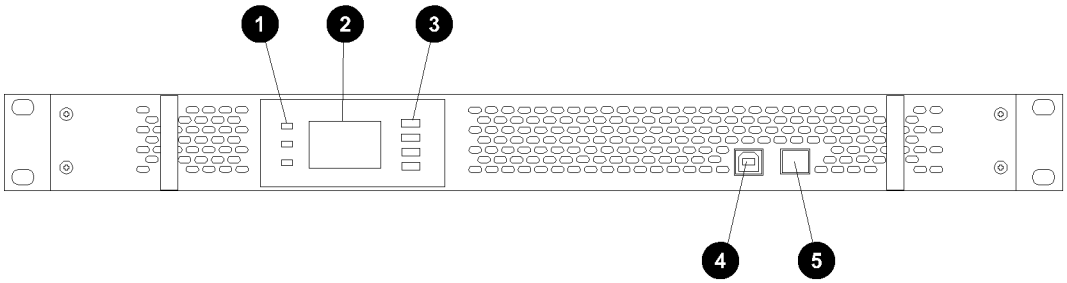
Alarm and monitoring is provided by an LCD screen, alarm LEDs and an alarm relay output.

Part Numbers

Part Number	Description
INV-4820ESA	Matrix 2000, 2000VA/2000W standalone inverter module with automatic transfer switch, 230V ac nominal output. 2 x IEC 320-C13 output sockets.
INV-4820SA	Matrix 2000, 2000VA/2000W standalone inverter module with automatic transfer switch, 120V ac nominal output. 2 x NEMA 5-20R output sockets. Includes AC input cord.

For full details refer to the Specifications on page 19.

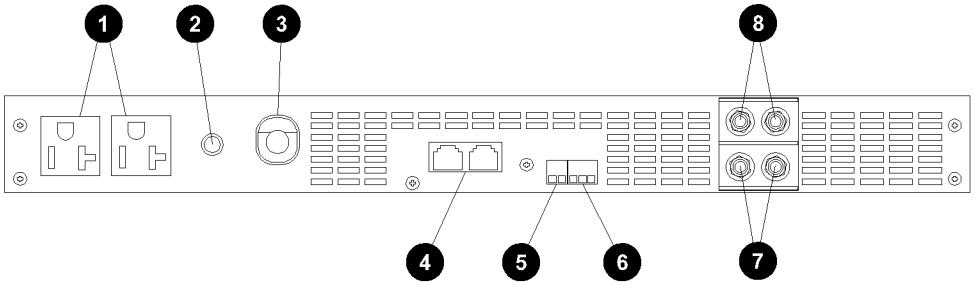
Front View



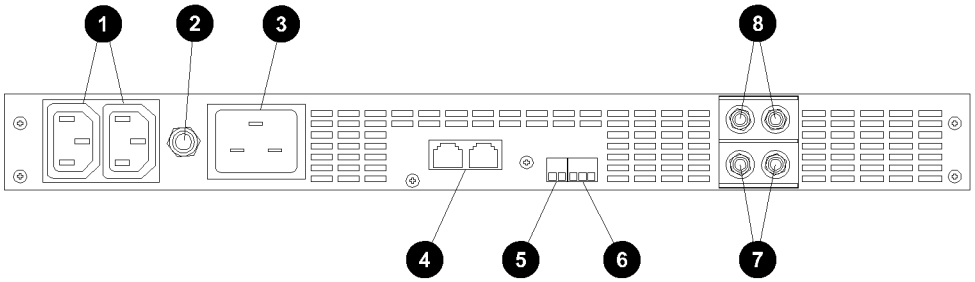
1. LEDs: Power (green), minor alarm (yellow), major alarm (red). See Troubleshooting on page 16.
2. LCD screen. See Menu details on page 10.
3. Keypad
4. USB 1.1 connector (reserved for future use)
5. ON/OFF power switch

Rear Views

120V Model



230V Model



1. AC output connectors (see Specifications on page 20).
2. AC input circuit breaker. Push in to reset.
3. 120V models: AC input cord, 230V models: AC input connector (see Specifications on page 19).
4. Parallel signal port (reserved for future use).
5. Remote on/off connector/screw terminals (wire size: 0.5 - 2.0mm^2, 20 - 14 AWG). See details on page 7.
6. Alarm relay output connector/screw terminals (wire size: 0.5 - 2.0mm^2, 20 - 14 AWG). See details on page 7.
7. 48V dc negative (-) input terminals. 1/4" studs, 5/8" separation.
8. 48V dc positive (+) input terminals. 1/4" studs, 5/8" separation.

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Preparation

Overview

General

1. Only mount the Matrix 2000 Inverter in either an open-frame relay rack or an enclosed cabinet. The Matrix 2000 Inverter is not designed for "bench top" or any other mounting arrangement.
2. Before installing and using the Matrix 2000 Inverter, read all instructions and cautionary markings on the equipment and all appropriate sections of this guide. Be sure to read all instructions and cautionary markings for any equipment attached to this unit.
3. This unit is designed for indoor use only. Do not expose the equipment to rain, snow, or spray.
4. To reduce the risk of fire hazard, do not cover or obstruct the ventilation openings. Do not install the equipment in a zero-clearance compartment.
5. Use only attachments recommended or sold by the manufacturer. Doing otherwise may result in a risk of fire, electric shock, or other injury.
6. To avoid a risk of fire and electric shock, make sure that existing wiring is in good condition and is not undersized. Do not operate the equipment with damaged or substandard wiring.
7. Do not operate the equipment if it has been damaged in any way.
8. **The Earthing System of the AC output from the inverter will change depending on whether it is in Mains Priority or Battery Priority (DC supply) mode. When in Mains Priority the AC output earthing system is the same as the AC supply network. When in Battery Priority the AC output earthing system is floating and the Neutral system arrangement at the Inverter output becomes "insulated" (IT), meaning both L1 and L2 being isolated from earth. This is the consequence of a requirement to isolate the input AC terminals when operating in Battery priority as the AC input is made via a pluggable connector. Due to EMC capacitors between L1 and L2 and earth, it is possible to measure half the nominal output voltage between L1 or L2 and earth. This is expected and only presents a low energy source.**
9. **Due to the earthing system outlined above, local electricity regulations of certain countries may mandate the fitment of an Insulation Monitoring Device (IMD) on the output, and/or the fitment of equipotential bonding conductors between all simultaneously accessible exposed conductive parts of fixed equipment and extraneous conductive parts Check with your local regulations.**
10. **It is not permitted to bond L1 or L2 to earth on the output**.

Battery Precautions

To avoid personal injury and property damage, read these battery precautions on handling, charging and disposing of batteries.

1. Never reverse the INPUT+ and INPUT- polarity to the battery.
2. Keep the battery away from heat sources including direct sunlight, open fires, microwave ovens, and high-voltages. Temperatures over 60°C may cause damage. Make sure the area around the battery is well ventilated.
3. Never smoke or allow a spark or flame near the battery.
4. Use caution to reduce the risk of dropping a metal tool on the battery. A spark or short circuit to the battery or other electrical parts could cause an explosion.
5. Remove all metal items, such as rings, bracelets, and watches when working on the batteries.
6. Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
7. If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters your eye, immediately flood it with running cold water for at least twenty minutes and get medical attention immediately.
8. If you need to remove a battery, always remove the grounded terminal from the battery first. Make sure all accessories are off so you do not cause a spark.

Inspecting the Equipment and Reporting Damage

Unpack the equipment and inspect it carefully for possible damage that may have occurred while in transit. Do not use any damaged equipment.

Report any damage immediately, using a completed Equipment Incident Report on page 27.

Keep the original packaging to use if any item needs to be returned for replacement or repair.

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Overview

Location

Install the Matrix 2000 in a location that meets the following requirements:

- **Dry:** Do not allow water to drip or splash on the inverter.
- **Cool:** Ambient air temperature between -20°C and 50°C.

  If the Matrix 2000 is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient.
- **Safe:** Do not install in a battery compartment or other areas where flammable fumes may exist, such as fuel storage areas or engine compartments.
- **Ventilated:** Allow at least 75mm (3") clearance all around for air flow. Ensure the ventilation openings on the front, rear and top of the unit are not obstructed.

  If the Matrix 2000 is installed in a closed rack, ensure there is adequate air flow.
- **Corrosion and Dust Free:** Do not install in a corrosive or dusty environment where contaminants (such as salt), dust, wood particles or other filings/shavings are present that may be pulled into the unit when the cooling fan is operating.
- **Close to Batteries:** Avoid excessive cable lengths but do not install in the same compartment as batteries. Use the recommended wire lengths and sizes (see details on page 6).

  Avoid mounting the inverter where it may be exposed to the gases produced by the battery. Prolonged exposure to these corrosive gases will damage the inverter.

Unpacking and Inspection

Remove the unit from its packaging and inspect it for scratches, cracks, broken connectors and missing accessories. Refer to Inspecting the Equipment and Reporting Damage on page 4.

The Matrix 2000 includes the following accessories:

- 4 x M4 screws to connect the brackets to the rack
- 2 x 19-inch rack mount brackets (factory-fitted)
- 2 x 23-inch rack mount brackets

Mounting

1. If the Matrix 2000 is to be mounted in a 23-inch rack:
   - Remove the factory-fitted 19-inch rack mount brackets.
   - Attach the 23-inch rack mount brackets.

2. Mount the Matrix 2000 in the rack:
   - Fit cage nuts in the rack.
   - Position the Matrix 2000.
   - Align the holes of mounting brackets and rack.
   - Secure with four cross screws provided.

AC Connections

- The ground wire of the ac input must be connected to the ground from your ac utility source.
- The ground wire of the ac output must be connected to the grounding point for your loads.
- Do not operate the unit without connecting it to ground. Electrical shock hazard may result.

1. Refer to the Specifications on page 19 for the correct ac input and output plugs/sockets.

   120V models are supplied with an ac input cord and plug.

2. Either:
   - For 230V models, connect an ac cord from the ac input plug to a nearby (easily accessible) ac outlet.

   or:
   - For 120V models, connect the ac cord to a nearby (easily accessible) ac outlet.
3. Connect ac cords from the ac output plugs to the load equipment.

DC Connections

The maximum dc input current is 46.3A. The cables from the dc supply to the Matrix 2000 must be in accordance with local electrical codes or regulations.

- Recommended input circuit protection: 60A.
- Recommended cable size: 6AWG/10mm^2 (copper).
- Increase the cable size if the dc supply is more than 10 feet/3m from the Matrix 2000. Maximum cable size is 2AWG/25mm^2.

Cables that are too small or too long will cause decreased inverter performance such as poor surge capability and frequent low input voltage warnings and shutdowns. These low input voltage warnings are due to dc voltage drop across the cables from the inverter to the dc supply. The longer and/or smaller these cables, the greater the voltage drop.

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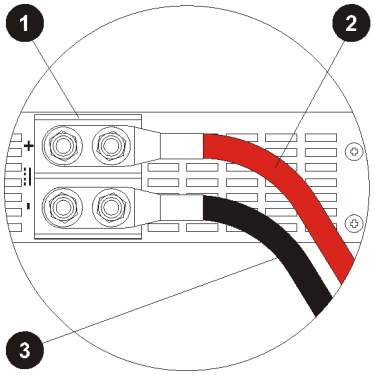
Connect the cables to the dc input terminals:

1. Terminate the cables with crimp lugs (2-hole, to suit 1/4" studs, 5/8" spacing). For 6AWG use:
   Strip length: 7/8" (22mm)
   Crimp lug: Burndy type YA6C-2L
   Crimp tool: Burndy type Y2MR
2. Connect the dc cables to the power input terminals on the rear panel.

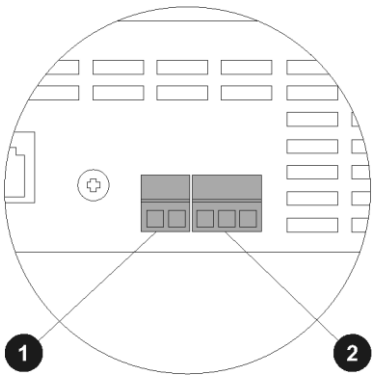
   [+] is positive; [-] is negative. Check carefully that dc input cable polarity is correct.
3. Tighten the nuts to 3.9 - 4.5Nm (35 - 39 inch-pounds).

   Loose connections will overheat and could result in a potential hazard.



1. DC terminals
2. Positive (+) dc input cable
3. Negative (-) dc input cable

Remote Control and Alarm Connections (Optional)



1. Remote on/off connector.
2. Alarm relay connector (COM-NC-NO).

Remote Control

If remote control is not required, leave the Remote On/Off terminals (Remote SW, 1 and 2) open (default).

For remote control, connect a switch or relay contacts to the Remote On/Off terminals (Remote SW, 1 and 2). Use wire size: 0.5 - 2.0mm2, 20 - 14 AWG.

See Remote Control Operation on page 10 for initial setup and operation.

Alarm Connections

If required, connect the alarm relay contacts to a remote alarm monitoring system. Use wire size: 0.5 - 2.0mm2, 20 - 14 AWG.

Alarm relay state	Inverter status
Released	Either: • the inverter has a fault condition • ac input is off • dc input is off.
Operated	Normal operation.

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Overview

Pre-Operation Check

Inverter Standalone check list

1. Check if the dc input polarity is correct.
2. Check the dc input voltage is in the standard range.
3. Check the input dc wire size is correct.

Apply Power

1. If a remote control switch or relay contacts are connected (see details on page 7) then set these to be OPEN.

   See Remote Control Operation on page 10 to setup remote control operation.

2. Set the Matrix 2000 ON/OFF switch to the OFF (out) position.
3. Connect the dc input cables to the dc source according to the manufacturer's instructions.

   Check for correct polarity.

4. Switch on the dc source. The Matrix 2000 will start.

   A Mains Abnormal alarm will be active.

5. Connect the ac input (automatic transfer switch input).

   The Mains Abnormal alarm will clear.

6. Press in the Matrix 2000 ON/OFF switch. The inverter ac output will start and the green LED will turn on.

   If the green LED is not on, or if any other LED is on or flashing then see Troubleshooting on page 16.

7. Check all system parameters.

   See Default Values on page 23 and Parameter Setting on page 13.

8. Check that the output ac voltage and frequency are correct.

   See Part Numbers on page 1 for the output voltage of the different models.

9. Connect the ac load equipment to the ac outputs. Check the equipment is operating correctly.

Remote Control Operation (Optional)

If a remote control switch or relay contacts are connected (see details on page 7), then:

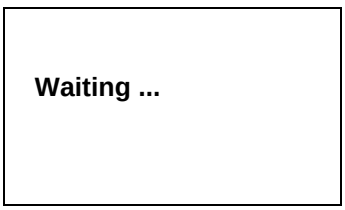
1. Set the remote control switch or relay contacts to be OPEN.
2. If off, turn on the Matrix 2000 using the front panel ON/OFF power switch.
3. Close the remote control switch or relay contacts to turn off the Matrix 2000 (after a 0.5s delay).

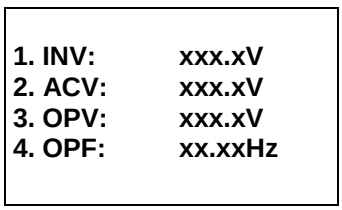
   The green Power LED will flash.

4. Open the remote control switch or relay contacts to turn on the Matrix 2000 (after a 0.5s delay).

Main Menu

With power on, the LCD will light and initially display "Waiting" during the self-diagnosis mode. The general status screen then appears, as follows.





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Press ↵ to display the *Main Menu*.

Press △ and ▽ then ↵ to select the *Status* or the *Settings* menu. See Menu structure on page 25.

```
Main Menu
> Status
  Settings
```

Status Menu

Inverter Menu	Description
OPV	Output voltage of the inverter module (V)
OPI	Output current of the inverter module (A)
OPF	Output frequency of the inverter module (Hz)
OPP	Output power of the inverter module (VA)
Input Volt	DC input voltage of the inverter (V)
Power Used	Load level (%)
Ambient Temp.	Inverter Ambient temperature (°C)
Power Limited	Power limited (%)
Mains AC Volt	Voltage of AC Input
Mains AC Freq	Frequency of AC Input
Priority	On-line/Off-line

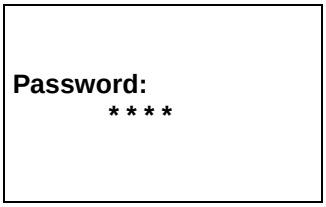
Alarm Menu	Description
Inverter	Alarm number and name

Version and Number Menu	Description
HW Ver	Hardware version of the inverter module
SW Ver	Software version of the inverter module
Serial No	Serial number of the inverter module

Settings Menu

The inverter system allows some parameters to be set from the front panel.

1. Press ▽ then ↵ to select Settings.
2. A 4-digit numeric password is requested.



Press ↵ to select the first digit. Press △ or ▽ to increase or decrease the number. Then press ↵.

The initial password is 0000. No setting modification can be executed if a wrong password is entered.

The *Settings* section is divided into two categories:

- **Inverter** - parameters related to the inverter functions
- **System** - system related setups.

Inverter Parameter Settings

Parameter	Setting Option
Output volt	Inverter output voltage For 230Vac output: 1) 208 Vac; 2) 220 Vac; 3) 230 Vac; 4) 240 Vac For 110Vac output: 1) 110Vac; 2) 115Vac; 3)120Vac
Output Freq	Inverter output frequency: 50Hz or 60Hz
OPV HL: High loss of inverter output voltage	For Output volt = 230V, adjustable 220 - 276V For Output volt = 110V, adjustable 117 - 138V
OPV LL: Low loss of inverter output voltage	For Output volt = 230V, adjustable 176 - 230V For Output volt = 110V, adjustable 90 - 115V
IPV LVSD	The minimum input voltage for inverter normal operation: Adjustable 40 - 44V.
IPV HVSD	The maximum input voltage for inverter normal operation: Adjustable 59 - 61V.
Power Limited	Inverter output power capacity: Adjustable 50 - 100%.
Inverter On/Off	Turns the inverter output ON/OFF. The controller and the static switch remain operational.
AC HL: High loss of AC input	For Output volt = 230V, adjustable 220 - 276V For Output volt = 110V, adjustable 117 - 138V
AC LL: Low loss of AC input	For Output volt = 230V, adjustable 176 - 230V For Output volt = 110V, adjustable 90 - 115V

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System Parameter Settings

Parameter	Specification
Language	English/ Simplified Chinese/ Traditional Chinese
Password	Set a new *Settings* menu password. ***1*** Use △ and ▽ to select new password. Press ↵ to validate each digit of password once the desired number is selected. ***2*** After 4-digit new password is input, the system would ask to re-key in the new password as confirmation. Repeat Step 1 to key in the new password again. ***3*** Once the password is successfully changed, DONE will appear on the screen.
Brightness	LCD brightness. From 00~63 for adjusting LCD contrast
Default	Restore factory settings. Press ↵ to reset the default value or **Esc** to cancel. Please refer to Default Values on page 23.

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Overview

- The Matrix 2000 contains hazardous voltages and hazardous energy levels. Before undertaking any maintenance task refer to the Warnings on page 3.
- If a maintenance task must be performed on a "live" system then take all necessary precautions to avoid short-circuits or disconnection of the load equipment, and follow any "live-working" instructions applicable to the site.
- Only perform the maintenance tasks described in the Maintenance chapter. All other tasks are classified as Servicing. Servicing must only be performed according to specific instructions and only by personnel authorized by Eaton. This includes disassembly and/or servicing of any modules.
- For further information on Servicing contact your local Eaton dc product supplier, or refer to the contact details on page 29.

Troubleshooting

If the Matrix 2000 fails to operate properly after installation and setup, use the following tables to determine the probable cause(s) and solution(s) to resolve the error conditions.

For unlisted error conditions, please contact your local dealer for technical assistance. See Worldwide Support on page 29.

Error Condition	Possible Cause	Recommendation
No AC output and all LEDs are off.	Lack of input power	1. Check if input cables are all firmly connected to power source. 2. Check if power source is switched on, or is low in power.
No AC output. Both green and yellow LEDs flash.	Inverter self-diagnosis	Inverter self-diagnosis takes a few seconds. LED then turns to a solid green.
No AC output. Both yellow and red LEDs are on.	Load exceeds 125%	Reduce the load to below 105% of the total power rating.
No AC output, Red LED is on.	1. Input wiring is reverse polarity.	Check input cable polarity (positive to positive, negative to negative).
	2. Internal fault	Reboot the inverter by switching the input power source on and off. If the inverter fails to operate, return the inverter for service.
	3. Inverter output is shorted	Turn off the input power source to remove all short circuits.
Red LED flashing fast	1. Inverter fails to soft start	Reboot the inverter by switching the input power source on and off.
	2. Inverter temperature is above the temperature limit.	Leave inverter idle to cool down for few minutes.
AC output exists with yellow LED flashing.	Input voltage is out of operating range.	Ensure input voltage is between 45V and 58V. Check if the dc source is connected.
AC output exists with yellow LED on	Load is over 100% but below 125%.	Reduce the load to below 105% of the total power rating.
Inverter continuously delivers power, with red LED flashing slowly.	Failure of EEPROM	Reboot the inverter system by switching the input power source on and off.
	Fan failure.	If the fan is blocked, remove the cause. If the fan fails to operate, return the inverter for service.

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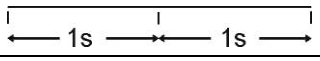
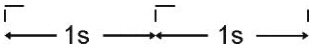
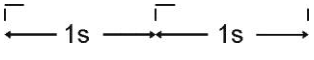
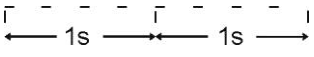
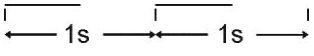
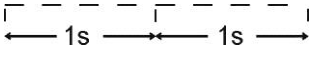
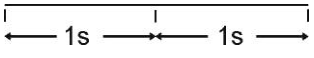
LED display status (Low to High Priority)

LED	LED Signal		Status
Green	Continuous		Normal operation.
	Short Slow Flash (1Hz)		Either: 1. Power On. Refer to note. 2. Shut down remotely.
Yellow	Short Slow Flash (1Hz)		Power On. Details refer to note.
	Continuous		Over Load (Load > 105%)
	Short Fast Flash (4Hz)		Either: 1. DC input abnormal. 2. AC input abnormal.
Red	Slow Flash (1Hz)		Either: 1. EEPROM Fault. 2. Inverter Fan Fault. Fan fails to operate.
	Fast Flash (4Hz)		Either: 1. Internal fault. 2. Temperature High.
	Continuous		Either: 1. The dc input voltage polarity is reversed. 2. Inverter output short circuit. 3. Abnormal output voltage. 4. Negative Power Protection. 5. Overload fault.

Notes:

Power On: In *Power On* mode, the green LED and the yellow LED flash together without any alarm.

Overload and Overload Fault:

When an *Overload Fault* alarm occurs, the yellow LED and red LED turn on together. When an *Overload* alarm occurs, only the yellow LED turns on.

Priority:

If more than one warning exists at the same time, then the LED will display the highest priority.

Alarm Codes

Alarm Name	Level	Remark	Output Status	Yellow LED	Red LED	Alarm Contacts
Inv fault	Critical	Inverter fault. Either: 1. The dc input voltage polarity is reversed. 2. Inverter output short circuit. 3. Abnormal output voltage. 4. Negative Power Protection. 5. Overload fault.	Off		On	Released
Over load	Warning	Inverter over-loading (Load > 105%)	On	On		
Fan fault	Major	Inverter fan fault	On		Slow Flash	Released
Power limit	Warning	Inverter power limited	On			
DC abnormal	Warning	Inverter input out of range		Fast Flash		Released
DC low off	Warning	Inverter shut down due to low input voltage		Fast Flash		Released
Bus High	Critical	Bus volt over maximum level	Off		Fast Flash	Released
Bus Low	Critical	Bus volt under minimum level	Off		Fast Flash	Released
BusSoft fail	Critical	Bus Soft Start Fail	Off		Fast Flash	Released
Output short	Critical	Inverter output short circuit	Off		On	Released
OPV Low	Critical	Inverter output voltage low	Off		On	Released
OPV High	Critical	Inverter output voltage high	Off		On	Released
Temp High	Critical	Inverter temperature high	Off		Fast Flash	Released
NegPow fault	Critical	Inverter negative power protection	Off		On	Released
SoftStart fail	Critical	Inverter soft start fail	Off		Fast Flash	Released
Mains abnormal	Warning	AC input unavailable		Fast Flash		Released
Eeprom fail	Major	Inverter EEPROM fault				Released

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DC Input

Connector	1/4" studs, 5/8" spacing to suit 2-hole crimp lugs (not included)
Nominal voltage	48V dc
Operating range	40 – 60V dc
Maximum input current	56A
Under voltage warning threshold	45V dc
Under voltage threshold	40V dc
Over voltage warning threshold	58V dc
Over voltage threshold	60V dc
Inrush current	$<2*I_{rated}$
Isolation DC-enclosure	707V dc (Varistors and filter capacitor removed)/1min
Input protection	Reverse Polarity Protection
Psophometric noise voltage	≤1.0mV ITU-T O.41 (16.66 ~ 6000Hz)
Wide Band Noise	<1.0mV psof (25Hz~5kHz) <20mV rms (25Hz~20kHz)
Peak to peak noise	150mV up to 100MHz

AC Input (with Transfer Switch)

Connector		
120V models:	Cord (2.2m/7 ft) with NEMA 5-20P	
230V models:	IEC 320-C20 plug to suit IEC 320-C19 socket (not included)	
Voltage Range	110/115/120V ac: 208/220/230/240V ac:	89 – 138V ac 176 – 276V ac
Frequency Range	50/60Hz ± 2.5%	
Nominal input current (maximum)	110/115/120V ac: 208/220/230/240V ac:	19A 10A
Over Voltage Threshold	138/276V ac	
Under Voltage Threshold	89/176V ac	
Transfer Time	Inverter to utility ac: Utility ac to inverter:	8ms 10ms

AC Output

Connectors	
120V models:	2 x NEMA 5-20R sockets to suit NEMA 5-20P plugs (not included)
230V models:	2 x IEC 320-C13 sockets to suit IEC 320-C14 plugs (not included)
Power Capacity	2000VA/2000W
Waveform	Pure sine wave
Power factor	1.0
Nominal output voltage	110/115/120V ac or 208/220/230/240V ac
Nominal output current (maximum)	110/115/120V ac: 18.2A 208/220/230/240V ac: 9.6A
Voltage regulation	±2%
Output frequency	50/60Hz
Frequency variation	±0.5%
Frequency setting	Manually, field selectable
Crest factor	3:1
THD	<3% for linear load <5% for non-linear load
Capacitive/inductive load	-1.0 to +1.0 without exceeding permissible distortion for resistive load
Efficiency	120V ac model: >90.5% 230V ac model: >91%
Current limitation	Electronic current limitation at overloads and short circuits.
Isolation AC-enclosure	Basic isolation (Pri-Gnd) 2121V dc/1min
Isolation AC-DC	Reinforced isolation (Pri-Sec) 4242V dc/1min
Surge protection	EN61000-4-5. Telcordia GR-1089 Core ANSI C62.41-IEEE, STD 587-1980
Dynamic response	<±10%, according to IEC 62040-3 class 1
Over load protection	1.2*I_{nom} permanent overload capacity @ 30ºC. 1.5*I_{nom}, 10s max 2*I_{nom}, 5s

Mechanical

Dimension (D, W, H)	360mm*, 19" mount/440mm, 1U/44mm (14.2", 17.3", 1.7") **Additional space required for ventilation.*
Weight	120V ac model: 7.6kg (16.7 lb) 230V ac model: 7.4kg (16.3 lb)

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Environmental

Operating temperature	–20°C to 60°C (-4°F to 140°F) –20°C to 50 °C (-4°F to 122°F) *full performance*
Storage temperature	-30°C to 80°C (-22°F to 176°F)
Operating humidity	95% Relative Humidity (non condensing)
Operating Attitude	1500m
Heat dissipation	Forced air
Audible noise	55dB ETS 300 753, class 3.1

Remote On/Off and Alarm Connection

Wire size (maximum)	14AWG / $2mm^2$
Remote On/Off operation	See details on page 10.
Alarm relay	Voltage-free contacts (COM-NC-NO)
Alarm relay operation	
Relay is released:	DC input is off or the inverter has a fault condition.
Relay is operated:	Normal operation.

Safety Standards

Safety compliance	EN 60950-1 / UL-60950-1
Certification	CE
RoHS	Compliant
EMC	EN300 386:2001. Class B Compliance
Mean Time Between Failures (MTBF)	$\geq$ 200,000 hours as per Telcordia SR-332

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ATS priority	on-line

230Vac Models

Mains high loss volt	276V
Mains low loss volt	176V
Inverter output highloss voltage	264V
Inverter output lowloss voltage	192V
Inverter shut down due to low input voltage	40V
Inverter shut down due to high input voltage	60V
Inverter output voltage	230V
Inverter output volt frequency	50Hz
Inverter output power limit	100%
Inverter ON/OFF	ON
Priority	Battery mode

120Vac Models

Mains high loss volt	138V
Mains low loss volt	89V
Inverter output highloss voltage	140V
Inverter output lowloss voltage	90V
Inverter shut down due to low input voltage	40V
Inverter shut down due to high input voltage	60V
Inverter output voltage	120V
Inverter output volt frequency	60Hz
Inverter output power limit	100%
Inverter ON/OFF	ON
Priority	Battery mode

System Parameters

LCD brightness value	45
Language	English
Password	0000

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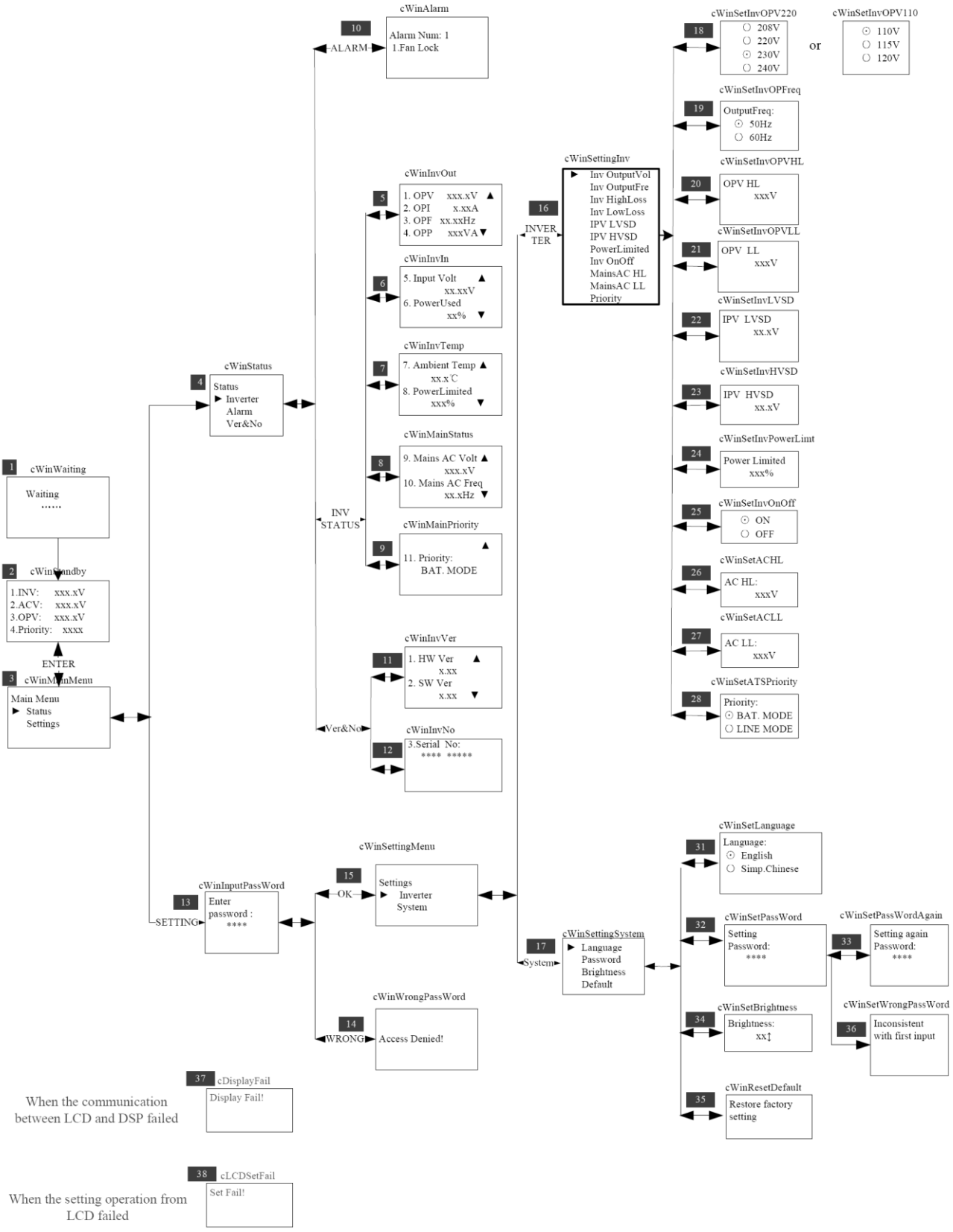

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Powering Business Worldwide

EQUIPMENT INCIDENT REPORT

Please enter as much information as you can. Send the completed form, together with the item for repair to your nearest authorized service agent. NOTE: Only one fault to be recorded per form.

For further information contact your local Eaton dc product supplier or Eaton (see contact details on page 29). Or email: CustomerServiceNZ@eaton.com

Date: _____

Customer Information

Company: _____

Postal Address: _____

_____

Return Address: _____
(Not PO Box)
_____

Telephone: _____ Fax: _____ Email: _____

Contact Name: _____

Location of Failure

Product code: _____ Serial number: _____ Document number: _____

System type installed in: _____ Serial number: _____

Site name or location: _____

Fault discovered

☐ Delivery ☐ Unpacking ☐ Installation
☐ Initial test ☐ Operation after _____ years ☐ Other _____

Failure source

☐ Design ☐ Manufacturing ☐ Documentation
☐ Transportation ☐ Installation ☐ Handling
☐ _____

Effect on system operation ☐ None ☐ Minor ☐ Major ☐ _____

INFORMATION (fault details, circumstances, consequences, actions)

_____

_____

_____

_____

_____

Internal use only.

Reference No: _____ RMA: _____ NCR: _____ Signature: _____ Date: _____

INFORMATION continued (fault details, circumstances, consequences, actions)

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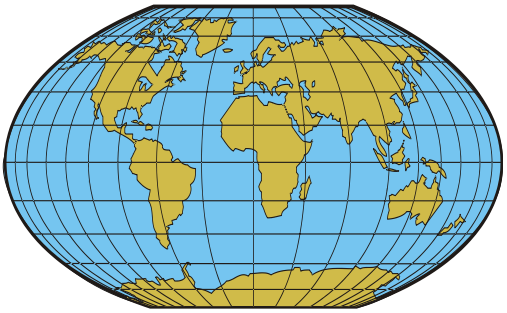
Worldwide Support

For product information and a complete listing of worldwide sales offices, visit Eaton's website at: **www.eaton.com/telecompower** or email: **DCinfo@eaton.com**

For technical support contact either your local Eaton dc product representative, the closest office from the following list, telephone **(+64) 3 343-7448,** or email **CustomerServiceNZ@eaton.com**



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United States of America (Toll Free):	1-800-843-9433 - option 2 - option 7

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