GE Digital Energy

Match lite

Uninterruptible Power Supply
500 VA

Manufactured by:

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USER MANUAL

Match lite

Uninterruptible Power Supply
500 VA

Please read these instructions carefully before installation and start-up of the Match lite UPS. Keep this manual in a safe place for future reference.

CONTENTS

1 - Introduction

1.1 Introduction

The **GE (General Electric) Digital Energy Match lite UPS**, an uninterruptible power supply, protects your equipment from all forms of power interference, including complete power failures.

1.2 Safety Rules

- **CAUTION:** RISK OF ELECTRICAL SHOCK. The UPS contains batteries. The appliance outlets may be electrically live, even when the UPS is disconnected from the mains.
- The UPS contains potentially hazardous voltages. Do not open the UPS, there are no user serviceable parts inside.
- Apart from battery replacement, all maintenance and service work should be performed by qualified service personnel.
- Always isolate the UPS from the mains during battery replacement.

1.3 Transport / Storage

- No liability can be accepted for any transport damage when the equipment is shipped in non-original packaging.
- Before storing, charge the batteries for at least 24 hours.
- Store the UPS in a dry location, storage temperature must be within -20 +45 °C. If the unit is stored for a period exceeding 3 months, optimal battery lifetime is obtained if the storage temperature does not exceed 25°C. Be sure that the UPS is switched off, and that no cable is connected to the interface port.
- If the unit is stored for a period exceeding 3 months, the batteries must be recharged periodically. Connect the unit to a wall outlet for a period of approx. 48 hours, minimum every 3 months.

2 - Installation

The shipping box contains a Match lite UPS, a power cord, a computer interface cable and this manual. After unpacking, inspect the UPS for damage. If you find any damage please immediately notify the carrier and place of purchase.

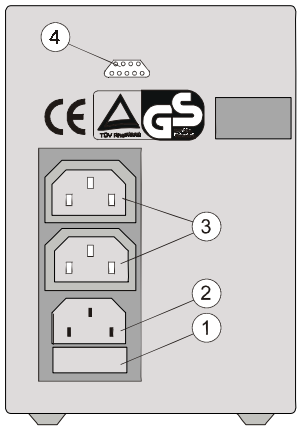
IMPORTANT:
Before making any connection and switching on the Match lite UPS, please check the following conditions:

- your mains supply is 220 - 240 Volts and 50 or 60 Hz, and
- the total power demand of the connected equipment does not exceed the rated output power of the Match lite UPS (indicated on the rear panel).

2.1 Installation Rules

- The UPS is intended to be used in normal domestic and office situations.
- Protect the UPS, according to the wiring rules, with a 16A D-type fuse.
- The UPS must be powered from a single phase grounded wall outlet. Do not use extension cords.
- Avoid locations that are excessively humid, near water, near heat sources or in direct sunlight.
- The ambient temperature should not exceed 40°C. Optimal battery lifetime is obtained if the ambient temperature does not exceed 30°C.
- It is important that ventilation air can move freely around and through the unit. Do not block the air vents.
- Do not plug appliances such as electric heaters, toasters and vacuum cleaners into the UPS. The UPS output can be used only for electronic loads such as computers and telecommunications equipment.
- Be careful when connecting laser printers: be sure that the demanded power does not exceed the capacity of the UPS.

2.2 Installation Procedure



1. Switch off your computer, and unplug it from the socket-outlet.

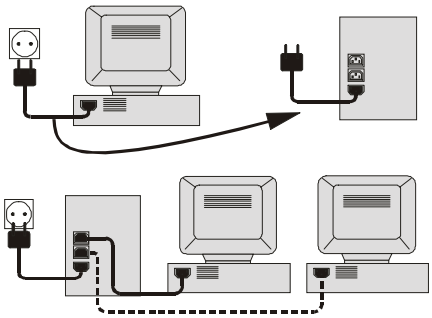
2. Disconnect the power cord from the computer (rating 250Vac/10A) and connect this cord to the male input socket (2) at the rear of the UPS.

3. Using the output cord provided, connect the computer to the appliance outlets (3) of the unit.

4. Connect the mains cord of the UPS to a working, grounded AC wall socket outlet. The green LED 'LINE' will blink now: mains power is available and the batteries are charging.
   Probably LED 'BAT' blinks; the LED goes out as soon as the batteries have been charged.

5. For best results, allow the UPS to recharge the batteries during a period of approx. 10 hours. It is acceptable to use the UPS without first charging the battery, but the runtime may be reduced.

6. For advanced communication possibilities, the RS232 interface port (4) can be connected to a computer system. See chapter 4.



3 - Operation

3.1 Start-up

3.1.1 Start-up, mains available

1. Press keypad 'ON/TEST' for 2 seconds
   LED 'LINE' (already blinking) will illuminate continuously now.
2. The equipment connected to the UPS can now be switched on.

3.1.2 Start-up, mains not available

If the mains input is absent (power cord not connected, or mains failure):

1. Press keypad 'ON/TEST' for 4 seconds until LED 'BAT' illuminates.
   The UPS operates on battery: it discharges the batteries.

3.2 Use: Normal Operation

3.2.1 Normal operation conditions:

- the mains supply is present,
- the UPS is on,
- the load does not exceed the capacity of the UPS and
- the operating temperature is below alarm level.

AVR (Automatic Voltage Regulation):
If the quality of the incoming mains is poor, the AVR boosts a low incoming voltage or reduces a high one. The load receives a voltage within the normal range (see chapter 7).

3.2.2 Self test (UPS operation and battery condition)

During normal operation, press keypad 'ON/TEST' for 1 second.
If the battery does not pass the self test, a 'replace battery' alarm is given. See 3.3.
In case of a system failure the output voltage can be lost. It is therefore recommended to switch off the load before performing a self test. See chapter 6.

3.2.3 Switching off

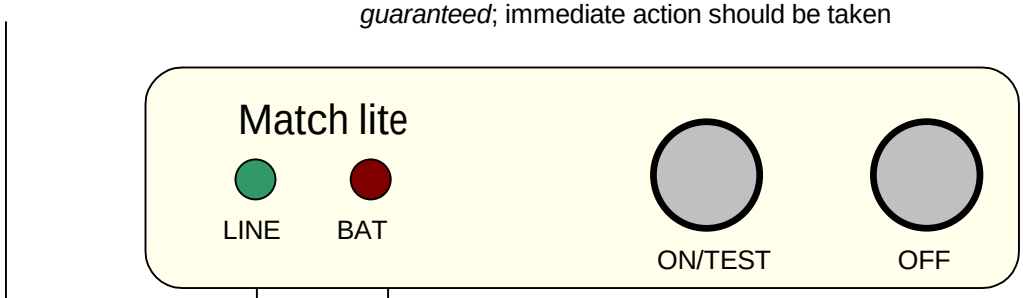
Press keypad 'OFF' for 2 seconds.
If electric isolation is required, unplug the power cord from the wall outlet.

3.3 Use: Status and Alarm Indications

o = status indications — the operating mode

! = low priority alarms — abnormal operating situations

!! = high priority alarms — situations in which *the actual output voltage of the UPS is no longer guaranteed*; immediate action should be taken



	Situation	LINE	BAT	buzzer
o	**Charger on** (3.3.1)	- - - - - 1x/s.		
o	**Normal operation** (3.3.2)	———		
!	**On battery** (3.3.3)		———	- - - - - 1x/4s.*
!!	**Battery low** (3.3.4)		- - - - - 1x/s.	- - - - - 1x/s.
!	**Replace battery** (3.3.5)	———	- - - - - 1x/30s.	- - - - - 1x/30s.
!!	**Overload** (3.3.6)	———		———
o	**Shutdown** (3.3.7)	- - - - - 1x/s.		

Operating modes and corresponding indications, see 3.3.1. – 3.3.7.

- - - - = intermitting
——— = continuous
* = resetable: press button 'ON/TEST' briefly.
Only the current alarm is muted; a next alarm re-activates the buzzer.
A buzzer reset does not affect the computer interface alarm.

3.3.1 Charger on
The batteries are charging.

3.3.2 Normal operation
See 3.2.1.

3.3.3 On battery
The UPS uses the energy stored in the batteries: see chapter 7 ‘Batteries - autonomy’.
The UPS will shutdown
- after the batteries have been discharged (automatic restart), or
- if keypad 'OFF' is pressed for >2 seconds (manual restart required) or
- if a 'UPS shutdown' command is given by the computer (manual restart required).

3.3.4 Battery low (end of autonomy)
The batteries are nearly discharged. Controlled shutdown of your computer equipment should be completed within 1 minute.

3.3.5 Replace battery
The battery is bad. Perform the self-test again to confirm the ‘replace battery’ condition. The alarm only goes out after the next self-test: if the battery has either been sufficiently charged (discharged battery) or replaced by a new one (worn out battery). See also 5.3.

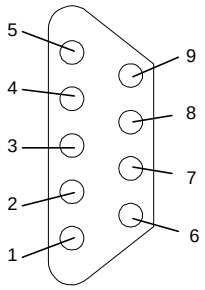
3.3.6 Overload
The demanded power of the equipment exceeds the UPS's rated output power. If overload persists during battery operation, the UPS will turn off the output voltage.

3.3.7 Shutdown
The UPS has received a shutdown command from the computer through the RS232 interface port. This is normally done to preserve battery capacity after a controlled shutdown of the protected computer in case of a mains failure.

4 - Communication

The RS232 port is a plug-in interface port (9-pin, Sub-D, male) which enables advanced communication between the UPS and the computer. Use UPS software for unattended operation of workstations, power quality related data logging, shutdown notification and control, auto-restart, diagnostics, and battery conservation features.
We strongly recommend to use only original GE Digital Energy software in combination with the RS232 interface port.

Pin #	Function
1	GND
2	RXD
3	TXD
4	GND
5	GND
6	GND
7	GND
8	GND
9	GND



5 - Maintenance

5.1 General

The Match lite UPS is virtually maintenance free: take care of proper environmental conditions and keep air inlets-outlets free of dust. Please read 2.1.

5.2 Fuses

If the AC input fuse (1) is defect, be sure it is replaced by a compatible fuse from the same make and type, e.g. ceramic fuse 3.15Amp slow blow, 1000Amp breaking capacity at 250Vac.

5.3 Batteries

5.3.1 General

The service life of the battery is up to 6 years.
As a healthy battery is critical to the UPS, keypad 'ON/TEST' allows a battery test. When the condition of the battery is critical, a *'replace battery'* alarm will be generated (see 3.3). Charge the batteries for at least 10 hours, switch the UPS off and back on, and perform a self-test. If the alarm persists replace the batteries as soon as possible.

5.3.2 Battery replacement

- Warning: first read the safety rules in section 1.2.
- When replacing the batteries, use the same number and voltage(V)/capacity(Ah).
- Proper disposal or recycling of the batteries is required. Refer to your local codes for disposal requirements.
- Never dispose of batteries in a fire: they may explode.
- Do not open or mutilate batteries: their contents (electrolyte) may be extremely toxic. If exposed to electrolyte, wash immediately with plenty of water.
- Avoid charging in a sealed container.
- Never short circuit batteries. When working with batteries, remove watches, rings or other metal objects, and only use insulated tools.

Battery replacement procedure

1 remove UPS front panel (two screws on bottom side)
2 remove battery cover plate (four screws)
3 pull out battery, disconnect the battery wires
4 connect the new battery (black -, red +); small sparks can occur, this is normal
5 reinstall the new battery, do not pinch or clamp the wires
6 reinstall battery cover plate and UPS front panel.

6 - Troubleshooting

Whenever a malfunction occurs, first check external factors (e.g connections, temperature, humidity or load) to determine whether the problem is caused by the unit itself or by its environment. Subsequently check the input fuse: it may be blown. If so: replace the fuse (see 5.2) and be sure that the UPS is not overloaded.
The following chart is a simple troubleshooting checklist only. If the suggested solution does not succeed, or if the information is insufficient to solve the problem, please contact your dealer or consult www.gedigitalenergy.com.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Blown input fuse	Output overload	Reduce load, replace fuse
	System failure	Please contact your dealer or consult www.gedigitalenergy.com
No output voltage during self test (3.2.2)	System failure	Please contact your dealer or consult www.gedigitalenergy.com
Only battery start possible, LED 'LINE' blinks	Blown input fuse	See above
UPS will not switch on, LED 'LINE' blinks	UPS is in programmed shutdown mode	Normal situation
UPS will not switch on nor off	Computer interface problem	Disconnect interface. If this solves the problem, check interface cable and attached computer.
UPS will not switch on, LEDs 'LINE' and 'BAT' blink	Software configuration error	Disconnect mains, press 'OFF' during 2 seconds to reset the internal processor.
UPS operates on battery though mains is present	Blown input fuse	See above
	Very high, low or distorted mains voltage	Check mains voltage, contact qualified electrician
Continuously sounding buzzer mains present	UPS overload	Reduce load
Continuously sounding buzzer mains *not* present	UPS overload or short circuited in battery mode	Disconnect mains, press 'OFF' during 2 seconds to reset the internal processor.
UPS does not provide the expected back-up time, no alarm 'replace battery'	Weak battery: recent outage or worn out battery	Charge the battery. If the battery is near the end of its service life, consider replacing the battery even if the 'replace battery' alarm is not yet active.
Blinking LED 'BAT', intermitting buzzer	Quick Battery Test just after installation or mains failure	Allow the UPS to recharge the batteries
	Weak battery	Read 5.3

7 - Specifications

MATCH lite model	**:**	**500**

Ratings

Voltage Amperes (VA), with computer type load	:	500
Watts (W) with resistive load	:	300

Input

AC input voltage	:	220 - 240 V
AC input voltage window	:	165 - 275 V, mains operation
Maximum AC input voltage	:	350V (above 275V battery operation)
Minimum start-up AC voltage	:	187 V (at any load)
Input frequency	:	50 Hz or 60 Hz
Input frequency range	:	nominal ± 5 %
No-load power consumption, normal operation	:	typically 12W
AC input current (A)	:	2.8
AC input fuse (A)	:	3.15

Output

AC output voltage	:	230 V (suitable for 220-240 V loads)
AC output voltage tolerance	:	nominal ± 5% (before battery low)
Output frequency	:	50Hz or 60Hz (autosensing)
Output frequency in case of battery start	:	last detected frequency (off factory 50 Hz)
Output frequency stability	:	< ± 0.1Hz (battery operation)
Output waveform	:	step sine wave
Power factor	:	0.6 (0.7 at 90% load)
Transfer time	:	typical 4 ms., max 10 ms.
Buck/Boost voltage regulation	:	at 165-275 V input voltage: output voltage 190-254V

Batteries (ratings given for 25°C)

Nominal voltage (Vdc)	:	12
Number x capacity (Ah) of batteries	:	1x7
Type	:	12V, sealed lead acid, maintenance free
Service life	:	up to 6 years (depending on use)
Recharge current	:	0.5 A
Battery recharge time for 90% capacity (hours, approximation)	:	3

Autonomy: runtime in minutes at typical load (75%)	:	7
VA / Watts		
100/ 60		42
300/180		10
500/300		4

General

Weight (kg)	:	7.4
Dimensions (hxwxd, mm)	:	150x102x300
Enclosure / protection	:	steel-plastic / IP20

Environment

Safety	:	EN 50091-1-1
Electromagnetic compatibility	:	EN 50091-2
Ambient temperature	:	-10 to +40°C;
Sound at 1 meter	:	< 35 dB(A)
Maximum relative humidity	:	95% (non-condensing)