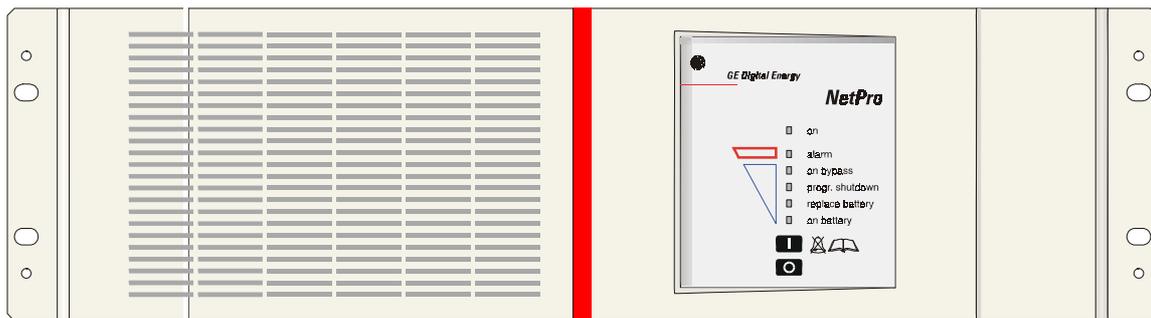




**GE Digital Energy**

# NetPro 19"

*Uninterruptible Power Supply*  
600 - 1500 VA



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# USER MANUAL

## NetPro 19"

Uninterruptible Power Supply  
600 - 1500 VA

Please read these instructions carefully before installation and start-up of the **NetPro 19"** UPS. Keep this manual in a safe place for future reference.

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## 1 - Introduction

### 1.1 Introduction

The **General Electric (GE) Digital Energy NetPro 19" UPS**, a truly on-line 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.



- All maintenance and service work, *except for replacement of the batteries*, should be performed by qualified service personnel.

### 1.3 Transport / Storage

- No liability can be accepted for any transport damage when the equipment is shipped in non-original packaging.
- During transport the battery drawer must either be removed or fixed with two screws at the rear side of the UPS (A, fig. 1).
- Store the UPS in a dry location with the batteries in a fully charged state. 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.
- If the unit is stored for an extended period of time, the batteries must be recharged periodically. Be sure that the battery drawer is connected to the UPS. Subsequently connect the unit to a wall outlet and recharge the batteries for 24 hours:
  - if the storage temperature is within -20 and +30°C: every 3 months,
  - if the storage temperature is within -20 and +45°C: every month.Please note that with completely discharged batteries the UPS will not start at all. External charging or replacement of the batteries will be necessary.

## 2 - Installation

The shipping box contains a **NetPro 19" UPS**, two IEC male-female power cords, a data cable, a CD ROM and this manual. Inspect the UPS for damage after unpacking. If any damage is present please immediately notify the carrier and place of purchase.

#### IMPORTANT:

Before making any connection and switching on the **NetPro 19" UPS**, please check the following conditions:

- your mains supply is 220 - 240 Volts and 50 Hz (if the mains frequency is 60Hz, the output frequency of the UPS can be changed, see section 3.4), and
- the total power demand of the connected equipment does not exceed the rated output power of the **NetPro 19" UPS** (indicated on the rating label).



#### WARNING

Connecting the UPS output to neutral or ground will result in a malfunctioning UPS.

### 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.
- Be careful when connecting laser printers: be sure that the demanded power does not exceed the capacity of the UPS.
- The sum of the leakage currents of the UPS and the connected loads should not exceed 3.5mA.



## 2.2 Installation Procedure

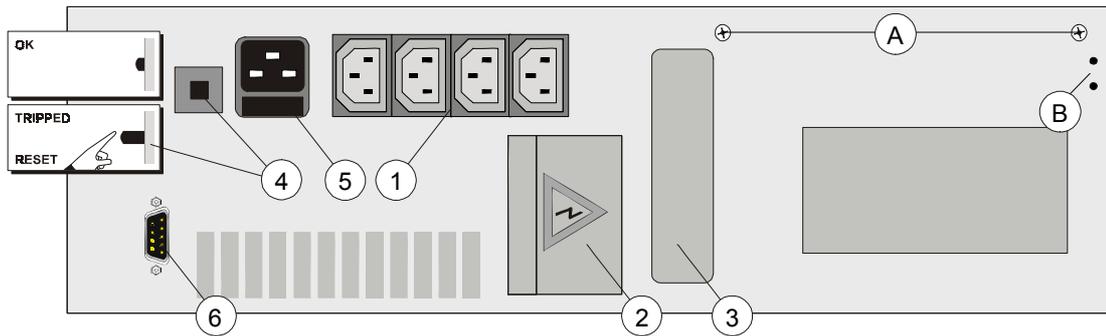


fig. 1

1. Remove the transport screws (A, fig. 1) and store them in the free holes (B, fig.1). Mount the **NetPro 19"** UPS in the 19" rack. The module must be supported by mounting rails, do not mount it by using the front brackets only. The front brackets allow mounting of handles (not included).
2. Make sure that the air vents in the side panels of the module are not blocked by the mounting rails or the side panels of the 19" rack.

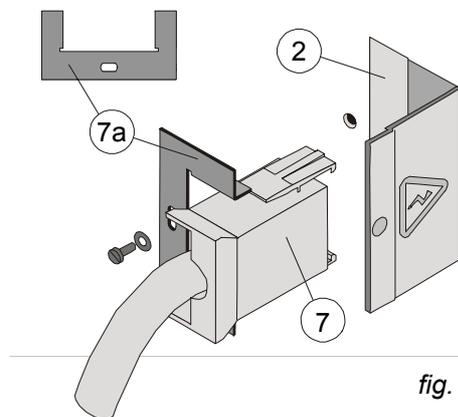


fig. 2

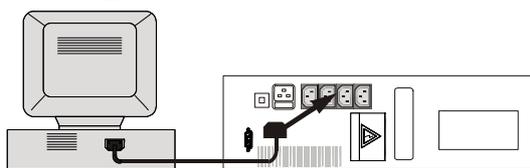


fig. 3

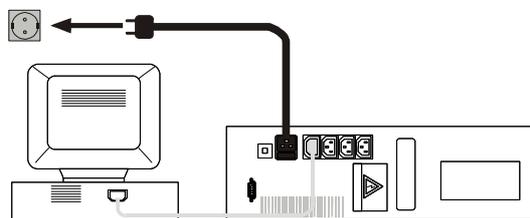


fig. 4

3. *1000VA model only:*  
Battery extension module(s) can be installed to increase the battery runtime. Connect the DC connector of the battery module (7, fig. 2) to the DC socket of the UPS (2, fig. 1/2). You will hear a click when the cable is properly installed. Block the DC connector: install the small locking plate (7a, fig. 2) that came with the battery module, and fasten it with the screw provided. Using the DC connector of the battery module (not shown) you can install a second, third, etc. module. See also section 5.1.
4. Switch off your computer, and unplug it from the socket-outlet.
5. Disconnect the power cord from the computer (rating 250Vac/10A) and connect this cord to the mains input socket (5, fig. 1) of the UPS. See fig. 4.
6. Using the output cord(s) provided, connect the computer(s) to the appliance outlet(s) (1, fig. 1) of the UPS. Spread the loads over the appliance outlets as equally as possible. If you use a distribution box to connect more than one appliance per outlet, please note that the maximum AC-current rating of each appliance outlet is 10Amps. See fig. 3.
7. Connect the mains cord of the UPS to a working, grounded AC wall socket outlet. See fig. 4. The green LED 'on' (8, fig. 6) will blink now: mains power is available and the batteries are charging. If the LED does not blink but illuminates continuously instead, press '0' for one second.
8. For best results, allow the UPS to recharge the batteries during a period of approx. 2 hours. It is acceptable to use the UPS without first charging the battery, but the runtime may be reduced.
9. For advanced communication possibilities, the RS232 interface port (6, fig. 1) can be connected to a computer system and/or optional interface cards (3, fig. 1) can be added. See chapter 4.



## 3 - Operation

Please refer to figure 6.

### 3.1 Start-up

#### 3.1.1 Start-up, mains available

- 1 Press keypad 'I' (14, fig. 6) briefly; LED 'on' (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 'I' until the buzzer sounds.  
The LEDs 'on' and 'on battery' (13, fig. 6) will illuminate. 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

#### 3.2.2 Load indication (fig. 5)

- 1 During normal operation, press keypad 'I' briefly.
- 2 Yellow LEDs will blink during 3 seconds, the number is load dependent (in case of overload LED 'alarm' (9, fig. 6) blinks as well).

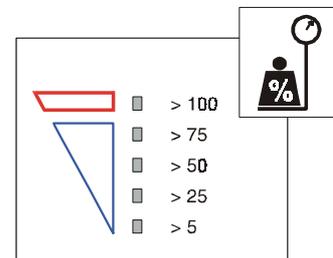


fig. 5

#### 3.2.3 Auto-off (no-load shutdown)

If this function is activated, the UPS will switch off during a mains failure when the load is less than 5% of the maximum load. In this way unnecessary discharging of the batteries is avoided. The unit will automatically turn on again when mains power is restored. The default setting of the no-load shutdown function is: activated. Changing of the setting is described in 3.4.

#### 3.2.4 Automatic bypass switch

The UPS is equipped with an automatic bypass switch. This switch automatically transfers the load to the mains if the UPS is unable to deliver the demanded output power due to overload or overtemperature. The UPS will switch back to normal operation when the overload has been removed or the temperature has dropped below alarm level.

If a power failure occurs during bypass operation, the UPS will switch to battery operation and eventually, when the batteries are depleted, output power is lost. If the UPS functions under overload or overtemperature conditions it may not be able to protect the load.

See also 3.3.6 and 3.4.

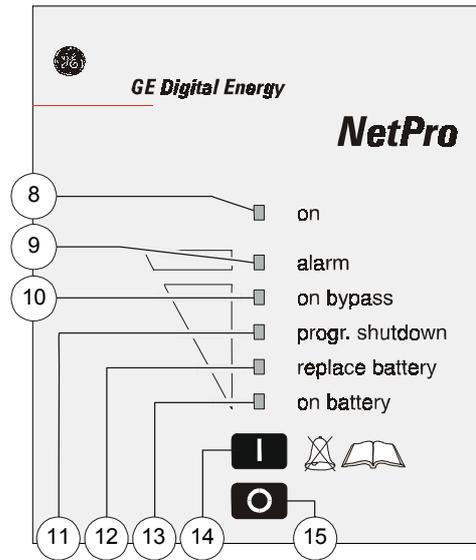
#### 3.2.5 Switching off

- 1 Press keypad '0' (15, fig. 6) for 1 second. If the UPS is switched off the output will always be absent for a few seconds to ensure that the connected equipment is able to reboot.
- 2 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		Indicators on front panel						
		on	alarm	on by-pass	progr. shutd.	repl. batt.	on batt.	buzzer*
o	Charger on (3.3.1)	-----		fig. 6				
o	Normal operation (3.3.2)	_____						
!	On battery (3.3.3)	_____					_____	----- 1x/8 s.
!!	Battery low (3.3.4)	_____	-----				_____	----- 1x/s.
!!	On bypass (3.3.5)	_____	-----	-----				----- 1x/s.
!	Bypass out of limits (3.3.6)	_____						----- 1x/8s.
!!	Overload (3.3.7)	_____	-----					----- 1x/s.
!!	High temperature (3.3.8)	_____	-----					----- 1x/s.
!	Replace battery (3.3.9)	_____				_____		
o	Progr. shutdown pending (3.3.10)	_____			-----			----- 1x/8s.
o	Progr. shutdown in progress (3.3.10)	-----			_____			

Operating modes and corresponding indications, see 3.3.1. – 3.3.10.

----- = intermitting

\_\_\_\_\_ = continuous

\* = resettable: press push button 'I' > 2 secs.



**3.3.1 Charger on**

The batteries are charging, see 2.2 step 7.

**3.3.2 On line: normal operation**

See 3.2.1.

**3.3.3 On battery**

The UPS uses the energy stored in the batteries: see chapter 7 'Batteries - runtime'.

The UPS will shutdown

- after the batteries have been discharged (automatic restart), or
- if keypad 'O' is pressed (restart via front panel required) or
- if a 'UPS shutdown' command is given by the computer (restart via front panel required).

**Runtime indication (fig. 7)**

During battery operation, press keypad 'I' briefly. The 4 yellow LEDs indicate during 3 seconds the remaining runtime for the actual load.

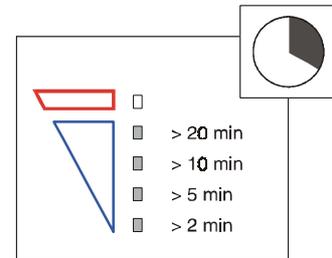


fig. 7

**3.3.4 Battery low (end of runtime)**

The batteries are nearly discharged: the remaining runtime is less than 2 minutes. Controlled shutdown of any computer equipment is absolutely necessary at this point.

If the UPS operates at 100% load, the shutdown procedure should be completed within 2 minutes after the 'battery low' alarm started. If only part of the output capacity of the UPS is used this period can be longer, with aged batteries this period can be shorter.

When the batteries are fully discharged, the UPS is no longer able to power the connected equipment.

**3.3.5 On bypass**

The bypass switch connected the load directly to the mains supply due to either overload or overtemperature.

If keypad 'I' is momentarily pressed, the 4 yellow LEDs function during 3 seconds as a load indication. See also 3.2.2. If 4 yellow LEDs *and* the red LED illuminate, bypass operation is caused by an *overload*. If only yellow LEDs illuminate (the red LED is off) during load indication, bypass operation is caused by *overtemperature*. Take appropriate measures: reduce load and/or temperature.

**3.3.6 Bypass out of limits**

The mains voltage or mains frequency are outside bypass input tolerance but inside UPS input tolerance (see chapter 7). Bypass operation is inhibited: if for whatever reason the UPS is not able to deliver the required output, output power is lost. If the input frequency is often out of tolerance – during which bypass operation is inhibited and an alarm is generated – it may be useful to disable the bypass function after which the unit operates as a UPS without automatic bypass switch. See 3.4.

**3.3.7 Overload**

The demanded power exceeds the normal capacity of the UPS. If keypad 'I' is momentarily pressed to obtain a load indication all yellow LEDs will blink, and the red LED will remain blinking. The alarm occurs when the load is > 100%. If the load exceeds 150% the UPS will immediately switch to bypass, assuming that the conditions for a transfer to bypass are fulfilled.

If an overload condition between 110-150% persists, the UPS will eventually also switch to bypass operation.

During an overload the UPS may automatically switch off within a few minutes (load dependent) and output power is lost:

- if a transfer to bypass is inhibited (see 3.3.6), or
- if the bypass function has been disabled (see 3.4), or
- if the UPS operates on battery (see 3.3.3).

To avoid these problems, be absolutely certain that the power demands of the protected equipment are within the limits of the UPS.



3.3.8 High temperature

The LED Indication is the same as during overload (see 3.3.7), but if keypad 'I' is momentarily pressed to obtain a load indication the red LED will go out.

Overtemperature can be caused by:

- extreme environmental temperature,
- lack of proper ventilation,
- overload situation.

Take appropriate measures; if the temperature is allowed to rise further the UPS will switch to bypass operation (if allowed). If bypass operation is inhibited, the unit will switch off and output power is lost.

3.3.9 Replace battery

Either the batteries are almost chemically worn out or the battery wiring, including the battery fuse, is faulty. If the batteries are aged, they must be replaced as soon as possible to ensure full protection for your equipment (see 6.2). Perhaps the 'replace battery' alarm occurs after a test which you started immediately after installation or after a power failure. In this case the alarm may be incorrect as the batteries have been (partly) discharged during transport or storage or during the power failure. Allow the UPS to recharge the batteries. See also 3.5.

3.3.10 Programmed shutdown

The UPS monitoring software allows you to program a 'sleep period' of the UPS by sending two commands to the UPS:

- shut down after # minutes (blinking LED), and subsequently:
- shut down during # hours (continuous LED).

During the 'sleep period' the UPS is not completely switched off as it has to keep track of the remaining sleep time. However, if a mains failure occurs during the sleep period and the battery capacity eventually drops below 80% of the normal capacity, the UPS will automatically switch off in order to save battery power. When the mains returns the UPS will start up automatically. The programmed sleep time however is lost.

The programmed shutdown in progress can be cancelled:

- press keypad 'I' for at least 5 seconds to cancel shutdown and switch UPS on.
- press keypad 'O' for at least 5 seconds to cancel shutdown and switch UPS off.

3.4 Use: Setup Mode

The setup mode can only be entered if the UPS is connected to a live wall outlet and switched off (LED 'on' blinks).

Press keypads 'O' and 'I' simultaneously. Press 'O' before 'I', otherwise the unit will be switched on. Three yellow LEDs can illuminate:

LED	indicating	LED is	
		on*	off
<input type="checkbox"/> 'on bypass'	: the bypass switch is	active	not active
<input type="checkbox"/> 'progr. shutdown'	: the no-load shutdown is	active	not active
<input type="checkbox"/> 'replace battery'	: the output frequency is	50 Hz	60Hz

\* = default

- 1 Scroll through the three functions with keypad 'I', the one selected blinks.
- 2 Toggle the setting of the selected function by pressing 'O' during approx 1 sec. (LED does not blink anymore)
- 3 Store the new settings and leave the setup mode by pressing 'O' and 'I' simultaneously.

NOTE: The unit can be used as a frequency converter: the input frequency range is 45-66Hz, the output frequency is selectable 50/60Hz. If the unit is used as a frequency converter, the bypass function is no longer available. As a result an audible alarm will be generated continuously (see 3.3.6). To avoid this, we advise to disable the bypass.



**WARNING:** Changing of the output frequency can cause severe damage of equipment connected to the appliance outputs of the UPS: Be sure that the new frequency is suitable for the connected equipment!



### 3.5 Battery Management

Maximum battery life and reliability are obtained by the following features:

- **Quick battery test**

The quick battery test checks whether the batteries and their wiring are healthy. If a quick battery test shows that the batteries are close to being worn out, a 'replace battery' alarm will be generated (see 3.3.9). The batteries must be replaced as soon as possible (see 6.2).

**Automatic battery test**

The **NetPro 19"** UPS conducts periodic automatic battery tests:

- 5 hours after manual switch-on
- 5 hours after return of mains following any power failure, and
- 30 days from the last battery test

**Manual battery test**

A quick battery test can be initiated manually through UPS software, via the RS232 Interface Port. For details please refer to the manual of your monitoring software.

NOTE: If the test is started manually immediately after installation or after a power failure, the UPS may generate a false 'replace battery' alarm as the batteries have been (partly) discharged during transport/storage or during the power failure.

- **Deep battery test**

A deep battery test, to be initiated through the UPS software via the RS232 port, checks the actual battery capacity in order to ensure accurate runtime prediction. During a deep battery test the batteries will be discharged until 'battery low' alarm level. Please note that immediately after a deep battery test the expected runtime is very short: allow the UPS to recharge its batteries. For details please refer to the manual of your UPS software.

- **Temperature compensated battery charging**

This feature adjusts the battery charge voltage to the ambient temperature. As a result poor charging of the batteries under low temperature conditions and overcharging of the batteries under high temperature conditions are avoided.

- **Load dependent battery-end-voltage**

The allowable final battery voltage depends on the discharge current: the higher the current, the lower the 'end-of-discharge' battery voltage. In this way maximum battery capacity is obtained without overdischarging. Overdischarging would result in shortened service life and failure to recover normal capacity.

- **Charger off at end of charge**

Only charging when necessary, increases battery lifetime.

- **Automatic boost charge**

This feature reduces the battery recharge time considerably: totally depleted batteries will be recharged to 90% in approx. 1.5 hours, provided that discharging took place at 100% load.

## 4 - Communication

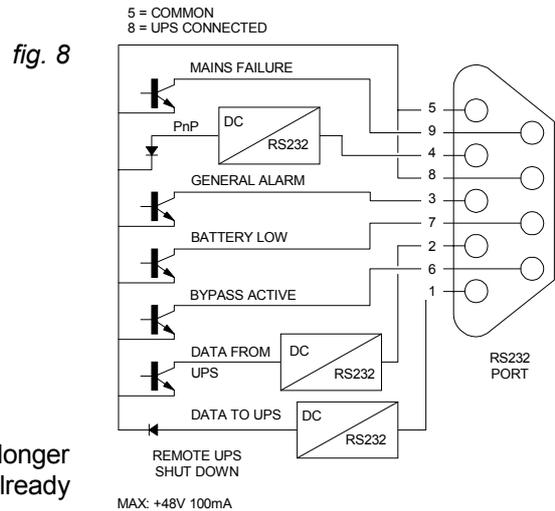
### 4.1 RS232 Port (fig. 8)

The RS 232 Port is a plug-in interface port (9-pin, Sub-D, male) which enables advanced communication between the UPS and the computer (UPS software required). The interface port is operative as soon as the mains power cord is plugged into a live wall outlet, even if the UPS is switched off. We strongly recommend to use only original **GE Digital Energy** software products in combination with the interface port.

Pin #	Function
1	RS232 input (UPS shutdown)
2	RS232 output
3	General alarm <sup>1)</sup>
4	Plug and Play
5	Common
6	Bypass active
7	Battery low
8	UPS connected
9	Mains failure

<sup>1)</sup> Active if the output voltage of the UPS is no longer guaranteed due to other circumstances than already indicated by pin 6-7-9:

- Output converter overload
- Overtemperature (pre-)alarm
- High charger voltage
- Bypass out of limits
- Inverter shutdown (due to inverter failure or batt. failure)



### 4.2 Relay Interface Card (option)

The card is equipped with potential free change-over contacts for the following alarms:

- mains failure
- general alarm
- battery low
- bypass active

For more information please refer to the user manual that comes with the interface card.

### 4.3 SNMP Interface Card (option)

This card allows the data interface to be connected directly to an Ethernet network.

For more information please refer to the user manual that comes with the interface card.



## 5 - Optional Features

Apart from the options described in 4.2 and 4.3 the following options are possible:

### 5.1 Extended Runtime (NetPro 19" 1000)

Extended runtime can be obtained by connecting a separate battery extension pack to the UPS. In this case the UPS must be informed about the new total battery capacity to allow a reliable recalculation of the available runtime (please contact your dealer). Dependent of the charge condition of the new batteries the new runtime calculations may temporarily be unreliable.

The additional batteries increase the recharging time for the unit, all other operational information is the same as for standard models. It is not allowed to connect an external charger to the UPS!

### 5.2 PowerFLAG SerVICe Box for Modem Connection

If you connect the PowerFLAG SerVICe Box between the communication port of the UPS and a modem, a programmed number can be dialed in case of a UPS alarm. It also allows service personnel to dial in and check the status of the UPS to perform remote diagnostics. This way service costs, specially in remote areas, can be reduced considerably.

## 6 - Maintenance

### 6.1 General

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

### 6.2 Batteries

#### 6.2.1 General

The service life of the battery is from 3 to 6 years, depending on the operating temperature and on the number of discharge cycles.

As a healthy battery is critical to the performance of the UPS, an automatic quick battery test is performed regularly to ensure failsafe operation (see section 3.5). When the condition of the battery is critical, a 'replace battery' alarm will be activated (see 3.3.9). Replace the batteries as soon as possible. See 6.6.2.

NOTE: under certain circumstances a *manual* battery test can result in a false alarm: please see 3.5 'quick battery test'.

#### 6.2.2 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:** see next page



### Battery replacement procedure

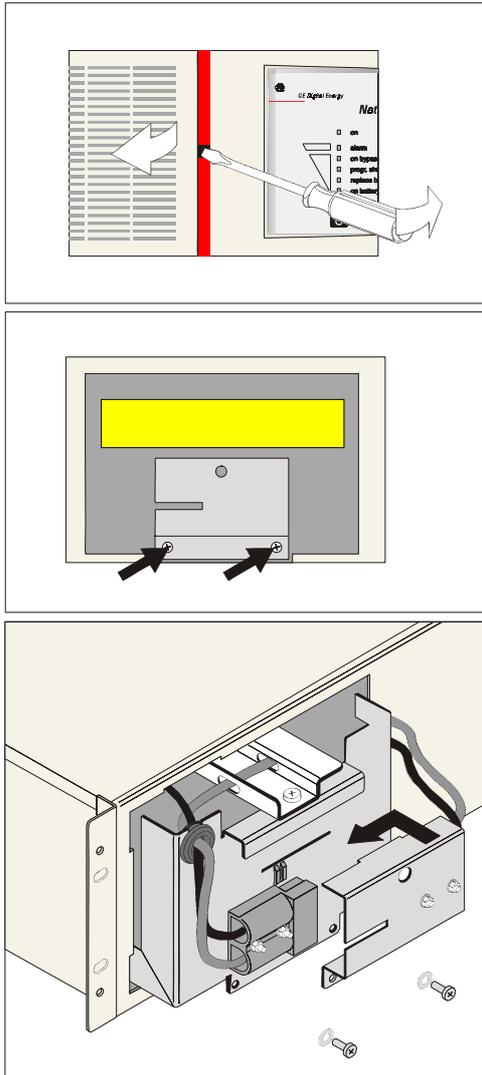


fig. 9

Refer to the label on the battery drawer.

1. Be sure that the transport screws (A, fig. 1) have been removed.
2. Remove the front panel of the battery compartment. Use a screw driver or pen as a lever.
3. Remove the two screws that hold the battery drawer.
4. Disconnect the DC connectors. Use a screwdriver as a lever.
5. Remove battery drawer. **Be careful, heavy weight!**
6. Remove clamp (two screws) and replace the batteries.
7. Reinstall battery clamp, do not pinch or clamp the wires.
8. Slide in the battery drawer.
9. Connect the DC connectors, a small spark is normal. Fasten the two screws.
10. Reinstall the front panel.



## 7 - 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 thermal circuit breaker: it may be tripped. If so: reset it (see 4, fig.1) 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](http://www.gedigitalenergy.com).

PROBLEM	POSSIBLE CAUSE	SOLUTION
Thermal Circuit Breaker (TCB) tripped	UPS overload	Reduce load, reset TCB (4, fig. 1)
	System failure	Contact your dealer or consult <a href="http://www.gedigitalenergy.com">www.gedigitalenergy.com</a> .
LED 'on bypass' blinks	Most probably an overload	See 3.3.7, reduce the load
	Overtemperature	See 3.3.8 Allow the UPS to cool down
UPS will not switch on (without using 'battery start') and the output has been off for a few secs. (see also 3.2.5)	Line cord not connected	Read 2.2 Connect line cord
	Dead wall socket outlet, or mains voltage out of limits	Contact qualified electrician
	UPS overtemperature	See 3.3.8 Allow UPS to cool down
	Tripped Thermal Circuit Breaker	See above
UPS will not switch on after installation, LED 'on' remains off	Batteries have been discharged too deep during transport and/or storage	Contact your dealer or consult <a href="http://www.gedigitalenergy.com">www.gedigitalenergy.com</a>
UPS switched off automatically	UPS overtemperature	See 3.3.8 Allow UPS to cool down
	Mains failure, battery discharged	Wait until mains returns
	Programmed shutdown in progress	See 3.3.10
	UPS received shut down command from computer during mains failure	Wait until mains returns
	The load is < 5% of the max. load and no mains power is present. (No-load shutdown function is active, see 3.2.3)	Wait until mains returns
LED 'replace battery' illuminates, buzzer is silent	Battery test just after installation or mains failure	Allow the UPS to recharge the batteries
	Battery test shows weak battery	Read 6.2, replace batteries



## 8 - Specifications

<b>NetPro 19" model</b>	:	<b>600</b>	<b>1000</b>	<b>1500</b>
<b>Ratings</b>				
Voltage Amperes (VA) with computer type load	:	600	1000	1500
Watts (W) with resistive load	:	360	600	900
Input thermal circuit breaker (A)	:	5	5	7
Input fuse (A)	:	8	8	10
<b>Input converter</b>				
AC input voltage	:	220 - 240 V		
AC input voltage range	:	100% load: 187 - 264 V 70% load: 120 - 264 V input >264 Vac: UPS switches to battery operation input >312 Vac: UPS shuts down, manual restart required		
Minimum start-up AC voltage	:	187 V (at any load)		
Input current waveform	:	sinusoidal conform or better than EN 61000-3-2 (IEC 555-2)		
Input current (A) at nom. inp. volt.	:	2.0	3.3	5.0
Input power factor	:	1		
Input frequency range	:	45 - 66 Hz		
Inrush current	:	none		
<b>Output converter</b>				
AC output voltage	:	230 V (suitable for 220 - 240 V loads)		
AC output voltage tolerance	:	± 2%		
Output frequency	:	50 or 60 Hz, front selectable		
Output frequency range	:	nominal ± 0.15% unless synchronized to the mains		
Output waveform	:	sine wave		
Harmonic distortion	:	< 2% (typical 1.5%) with linear load		
Power factor	:	0.6 (0.7 at 90% load)		
Crest factor (peak to RMS current)	:	suitable for loads with c.f. up to 6:1		
Capacity appliance outlets	:	max. 10 A per outlet		
<b>Bypass</b>				
AC input voltage range	:	195 - 264 V		
Frequency tracking rate	:	2 Hz/sec.		
Frequency tracking range	:	nominal ± 10%		
Phase difference	:	< 7°		
Typical transfer time, msec	:	4		
<b>Overload capability</b>				
Overload behaviour (battery operation)	:	Fully protected against overload and short circuits 110% during 5 minutes; 150% during 5 seconds		
Overload behaviour during bypass operation	:	depends on rating of thermal circuit breaker typical: 125% of TCB value for 200 seconds 200% of TCB value for 10 seconds 300% of TCB value for 4 seconds		
<b>Batteries (ratings given for 25°C)</b>				
Nominal voltage (Vdc)	:	24	36	48
Number of 7 Ah batteries	:	2	3	4
Type	:	sealed lead acid, maintenance free		
Service life	:	up to 6 years (depending on use)		
Recharge current	:	1.5 A		
Battery recharge time (batt. discharged at 100% load)	:	1.5 hours for 90% capacity, std battery		
Runtime in minutes at typical load (75%)	:	12	12	10
VA/Watts	:			
100/60	:	64	104	124
200/120	:	34	54	71
400/240	:	15	27	36
600/360	:	9	15	24
1000/600	:	-	9	12
1500/900	:	-	-	6
<b>General</b>				
Weight without battery drawer (kg)	:	14	14	14
Weight with battery drawer (kg)	:	19	22	24
Dimensions (h x w x d, mm)	:	133.5 (3HU) x 450 (19") x 440		
Depth required in 19" rack (mm)	:	420 (without connectors)		
Enclosure / protection	:	steel - plastic / IP20		
<b>Environment</b>				
Safety	:	EN 50091-1-1, EN 60950, IEC 950		
Electromagnetic compatibility	:	EN 50091-2		
Ambient temperature	:	-10 to +40°C		
Audible noise at 1 meter	:	< 45 dB(A), load and temperature dependent		
Max. relative humidity	:	95% (non-condensing)		