SAFETY INSTRUCTIONS

AIM OF THIS MANUAL

This manual is designed for use by any skilled worker wishing to use NexSys® chargers for recharging NexSys batteries.
This manual provides details of:
- The chargers' functions.
- Any adjustments required and how to use the chargers.

When producing this manual, EnerSys® has aimed to provide its information in as simple and precise a manner as possible but cannot assume any responsibility for any misinterpretation. The owner of the equipment is required to retain this manual throughout the equipment's life and to pass it on to any purchaser in the event of its resale.
The manufacturer covers the guarantee in accordance with the local regulations (contact local sales organization).

Recommended use

This manual should be read through carefully before using the equipment and also read by anyone likely to use the equipment.
The equipment:
- Presents no obstacles to the free circulation of air through the air inlet and outlet but, nevertheless, should be cleaned of dust every six months by a qualified person.
- Must be used in conformance with its indicated level of protection and never come into contact with water.
- Must be used within the temperature limits stated in the technical characteristics.
- Must not be installed on surfaces subject to vibration (near to compressors, engines, motors).
- Must be installed so that the gases from the battery being charged, do not get sucked into the charger by its fan.

Operator safety

Take all necessary precautions when the equipment will be used in areas where there is the possible risk of an accident occurring. Ensure appropriate ventilation according to standard DIN EN 50272-3 to allow any gases released to escape. Never disconnect the battery while it is being charged.

ELECTRICAL SAFETY

The prevailing safety regulations must be observed. The system protection installed on the power supply to the charger must conform to the charger's electrical characteristics. The installation of a suitable circuit breaker is recommended. It is imperative to ensure that when fuses are being replaced only fuses of the specified type and of the correct are used. It is strictly forbidden to use inappropriate fuses or to short-circuit the fuse holders. This equipment conforms to Class 1 safety standards, which means that the appliance must be earthed and requires to be powered from an earthed supply.

Never open the equipment: High voltage could be still present even turning off the charger.
Any adjustment, maintenance or repairs to the equipment while it is open must only be carried out by an appropriately skilled person who is aware of the risks involved.

Contact one of the company's trained technicians if any problem is encountered when putting the charger into operation.
This equipment has been designed for indoor use. It is only designed to recharge lead/acid batteries on industrial premises. When the equipment becomes obsolete, the casings and the other internal components can be disposed of by specialist companies. Local legislation takes precedence over any instructions in this document and must be scrupulously observed (WEEE 2002/96 EC).

EnerSys reserves the right to make any improvements and/or modifications to the product described in this manual at any time and without prior notice and is not obliged under any circumstances whatsoever to update the contents of this manual nor the equipment concerned.
The equipment's production number must be supplied when requiring a service.

If the charger is to be stored before its use, it must be kept carefully sealed in its original packaging. It must be stored in a clean and dry location at a moderate temperature (-20°C to +40°C). Equipment stored at a temperature of less than 15°C must be brought progressively to operating temperature (over a period of 24 hours) to avoid any risk of condensation causing electrical faults (particularly short-circuits).

EC DECLARATION

CE EnerSys hereby declares that the chargers in the NexSys range covered by this declaration conform to the descriptions laid down in European Directives:

2014/30/EU:
DIN EN 61000-6-2, DIN EN 61000-6-4: Immunity and emissions limits for industrial electronics

2014/35/EU:
DIN EN 60950, DIN EN 60335 (Low Voltage Directive)

RoHS 2011/65/EC

PRESENTATION & USE

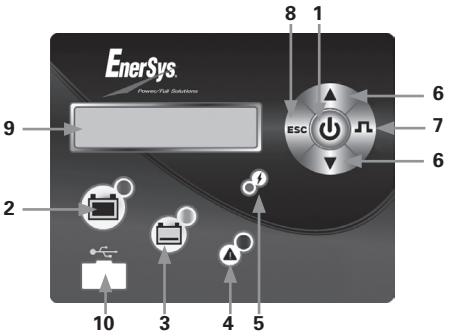
INTRODUCTION

The NexSys® range of chargers enable batteries to be recharged from the mains supply. The microprocessor control automatically recognizes the battery's voltage, capacity, state of charge, etc., providing optimum battery control from highly efficient analysis of its condition.

1ph	3ph
12V	
24V	24/36/48V
36/48V	72/80 V

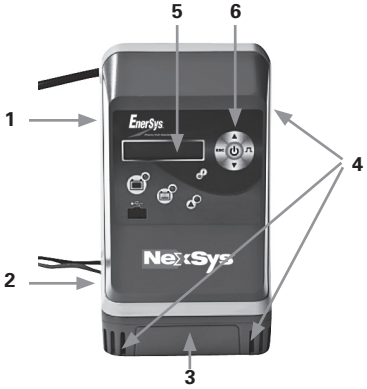
The desulphation, equalizing and refreshing charges are integrated.

FRONT PANEL



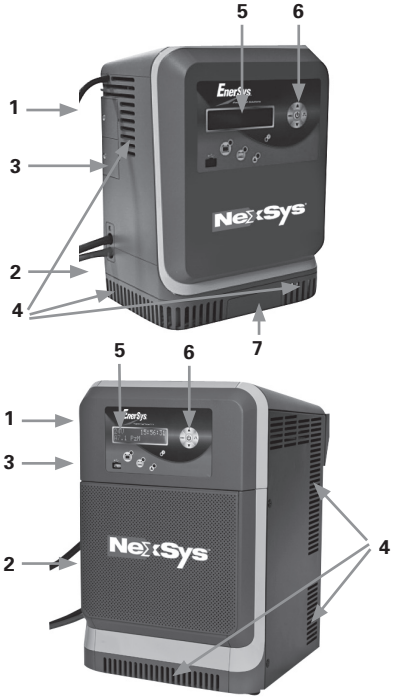
Ref	Button/LED	Function	Function
1	Start/Stop button	Start/Stop charge	Cancel value (press during 3s), select of active menu
2	Greed LED	Battery available	
3	Yellow LED	Battery in charge	
4	Red LED	Fault	
5	Blue LED	AC supply ON (light)	AC supply OFF (AC missing)
6	Arrows	Navigation buttons	Return to top of list (press for 2 sec)
7	Equalization button	Start an equalization	Access a sub menu
8	Esc	Access a sub menu	Close windows
9	LCD panel	Shows details (refer to LCD display par.)	
10	USB port	Download memories	Upload firmware

Single phase stand alone 1kW



Ref	Function
1	AC input cable
2	DC output cable
3	Cable holder
4	Ventilation openings
5	LCD panel
6	Navigation buttons

Phase 3 bay cabinet (2-3kW) & three phase



Ref	Function
1	AC input cable
2	DC output cable, only
3	Option port
4	Ventilation openings
5	LCD panel
6	Navigation buttons
7	Cable holder (only on single phase)

MECHANICAL INSTALLATION

The charger can be wall or floor mounted. If wall mounted, make sure that the surface is free of vibrations and the charger is mounted in a vertical position; if floor mounted, make sure that the surfaces are free of vibration, water, humidity.

You must avoid areas where the chargers may be splashed with water.
The charger must be held by 2 or 4 fixings suitable for the type of support. The drilling pattern varies according to the model of charger (please refer to the technical data sheet).

ELECTRICAL CONNECTION

To the mains supply
You may only connect to the 1-phase 230Vac or 3-phase 400Vac mains supply (depending on the type of the charger) by means of a standard socket and an appropriate circuit breaker (not supplied). The current consumption is shown on the charger's information plate.

To the battery
Polarity must be observed. Any reversal of polarity will blow the output fuse, prevent charging and cause DF2 fault code to be displayed. Please refer to the Fault messages codes.

Connection to battery
The charger must be connected to the battery by the cables supplied:
- The RED cable: to the battery's POSITIVE terminal.
- The BLACK cable: to the battery's NEGATIVE terminal.

Initiating charging

1. Connect the battery. If Default setting (autostart ON) then the charge will start automatically else press the Start/ Stop button.

The display will show 3 different screens alternating

Screen 1:

Line 1	Charge mode / charging profile / equal symbol (if selected) or no blocking fault
Line 2	Charging current / total voltage / Ah+

Screen 2:

Line 1	Charge mode / charging profile / equal symbol (if selected) or no blocking fault
Line 2	Charging current / voltage/cell / charging time

Screen 3:

Line 1	Charge mode / charging profile / equal symbol (if selected) or no blocking fault
Line 2	Charging current / % state of charge / estimated remaining time

Completion of charging

1. The LCD screen will give you the message of availability (AVAIL)
The battery is charged and ready to use.

2. STOP the charge and disconnect the battery.
To stop the charge press the Stop/Start button.
Never disconnect the battery during charge without stopping the charging process.
This could lead to dangerous sparks or to charger damage.

3. Completion of charging with equalization
Manual equalization only concerns vented lead/acid batteries. It will be initiated manually or automatically by switch. All other technologies will have an automatic preset equalization time.
To force manual equalization keep pressed the equalization button (right button) and contemporary click the On/Off (only charging profiles for flooded). If automatic then the screen will also show the following message:

- Equalization mode auto
- Days of the week (the symbol below indicates when the equailzation is programed (e.g. Saturday and Sunday)

- During equalization
- Line 1. mode equal
- Current / total voltage / remaining time

4. Completion of charging with Float
If the float function has been selected the screen will show The message floating:

- During equalization
- Line 1. mode floating
- Current / voltage per cell

5. Completion of charging without equalization
The green 'charging complete' light is illuminated and the message AVAIL is displayed. The display shows, in alternation:

- The charging time taken.

- Non-blocking faults if present

- The number of Ah recharged

LCD FAULT MESSAGES CODES

Fault	Cause	Remedial action
No display and blue LED off	No mains supply.	Check the power supply and the input fuse(s).
DF CURRENT	Appears before a DF1 fault is displayed.	
DF1*	Charger fault.	Check the power supply voltage.
DF2*	Charger fault.	Check that the battery is correctly connected (that the cables are not reversed) and check the output fuse.
DF3*	Unsuitable battery.	Battery voltage too high or too low. Connect the correct battery to the charger.
DF4	The battery has been discharged more than 80% of its capacity.	Charging continues.
DF5	Battery requires inspection.	Check the charging cables (cross-section too small), the terminals (oxidisation, not tight) and the battery (defective cells).
TH*	Thermal fault resulting in interruption of charging.	Check that the fan(s) is (are) working correctly and/or that the ambient temperature is not too high or whether there is poor natural ventilation to the charger.
MOD TH	Alternating with charge parameters - one or more modules in thermal fault - the charge process continues - the faulty module(s) is (are) displayed + red led flashing.	Check that the fan(s) is (are) working correctly and/or that the ambient temperature is not too high or whether there is poor natural ventilation to the charger. If all modules are in thermal fault then a TH* fault will follow.
MOD DFC	Alternating with charge parameters - one or more modules in DF1 fault - the charge process continues - the faulty module(s) is (are) displayed + red led flashing.	Check power supply. If all modules are in DF1 fault then a DF1* fault will follow.
DEF ID	Blocking fault - one or more modules are not compatible with the charger configuration (for example 24V charger with one 48V module). This can happen if the user replaces one module with another one with a different voltage setting.	Use correct module.

(*) A blocking fault preventing charging from continuing.
Please contact EnerSys® Service.