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# Standby Battery System Manual: V1.2

# SBS User Manual

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## Revision History

Version	Modifications	Date
1.0	Original issue.	19/07/01
1.1	First Revisions	26/09/01
1.2	Add connection details	4/2/03

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### DISCLAIMER

This manual contains information that is correct to the best of Audix Systems knowledge. It is intended to be a guide and should be used as such. It should not be considered as a sole source of technical instruction, replacing good technical judgement, since all possible situations cannot be anticipated. If there are any doubts as to exact installation, configuration and/or use, call Audix Systems at +44 (0)1799 540888

**ACKNOWLEDGEMENTS**  
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## 1

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## 2 Product Description

### Models Covered

This user manual covers the following equipment

- SBS241 – 1 x 24Hour Battery Pack
- SBS242 – 2 x 24Hour Battery Pack
- SBS481 – 1 x 48Hour Battery Pack

The SBS Standby Battery System are primarily designed for use with Voice Alarm Systems requiring battery Backup to comply with BS 5839 pt 8.

The SBS Standby Battery System features;

- Standby battery units are designed to provide a self-contained 24V DC supply that can be exactly tailored to provide the standby supply capability required
- They are provided in standard 19" rack frames and three standard capacities, each in a 3U chassis
- Upto 4 Individually fused protected outputs for amplifiers are available on each battery unit
- Dual 24AH battery units incorporate 2 separate chargers
- 48AH battery units maintain similar performance with a double capacity charger unit

## 3 SBS Operating instructions

### 3.1 Battery Charger Characteristics

The battery charger voltage characteristics are designed to compensate for the temperature of the batteries, in accordance with the battery manufacturers recommendations. This is in order to achieve maximum life in standby operation.

### 3.2 Two-Step Charging

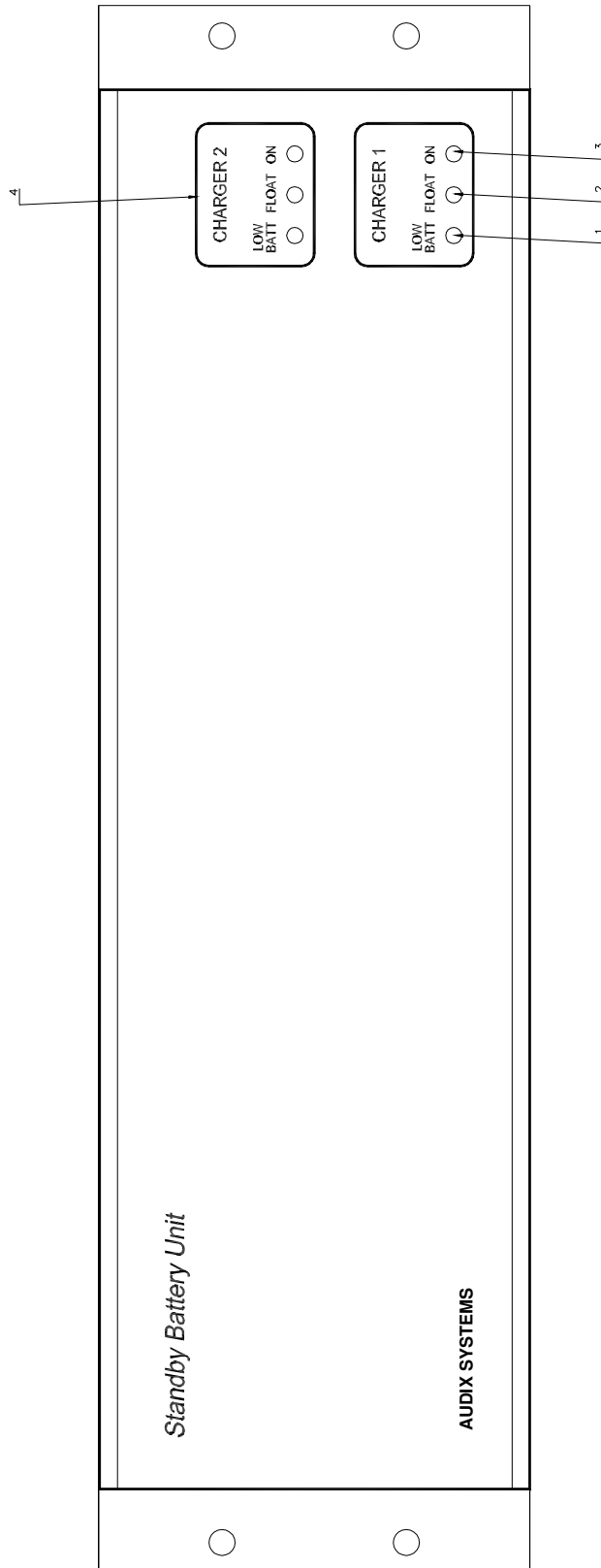
The battery charger fitted in the battery unit has a two step charging characteristic for speedier recovery from a discharged state

The charger normally maintains the optimum battery condition in FLOAT mode, however if demand is made on the battery, such that the voltage falls then the charger will switch to BULK CHARGE mode.

Battery voltage increases as charge is restored to at least 85%. When the charger returns to FLOAT mode.

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## SBS Overview



### LEGEND

1. Low Battery LED fault indicator
2. Battery Float voltage fault indicator
3. Battery ON indicator
4. Space for Charger 2 indicators (not used)

### SPECIFICATION

1. 19 inch x 3U rack mounted battery/charger unit.  
Finished in black semi-gloss powder coat with white lettering and red Audix logos.
2. Status indicators:  
All power and system healthy indicators will be GREEN LEDs  
All fault indicators will be AMBER LEDs
3. Labelling:  
All battery packs will be labelled using black engraved labels with white lettering permanently glued to the front of the unit

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## 3.3 Charger Performance

For a battery starting from 100% discharge at a nominal 20C, the bulk charger rate will restore 85% charge after 14 hours

Following the transition to float charge mode, the restoration to 100% typically takes a further 9.6 hours this better the requirement of BS5839 for 85% in 24 hours.

## 3.4 BS5839 Fault Monitoring

To provide central identification of Mains, Charger and Battery power supply faults, the Battery standby units are fully integrated with the Fault Monitoring System.

The units interface directly with the Fault monitoring System via its associated units, where local LED indications are situated

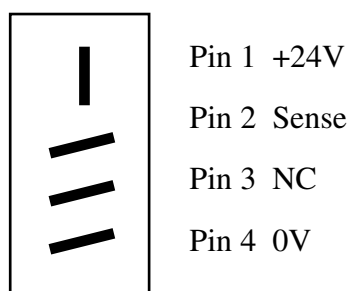
Battery Failure, (disconnection or low voltage) is indicated by yellow LED  
Charger failure is indicated by yellow LED

There are also local monitoring circuits with the battery unit

Charger operating (mains on) is indicated by a green LED  
A second green LED shows when the charger is operating in FLOAT mode  
Direct indication of low battery voltage is provided by a yellow LED. This is primarily for use during routine maintenance procedures.

## 3.5 Connection Details

The DC connectors are located on the rear of battery packs, Alpha matrices, amplifiers, FMS frames and noise sensing systems. The "Sense" line is connected to the Sense input of the backed-up unit (either Matrix or Amplifier) and is used by the fault monitoring system to indicate charger and battery faults.



**Battery, Alpha, Amp and FMS battery terminations  
(Female chassis socket on battery pack, male chassis plug on other  
equipment)**

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## 4 Specifications.

Power supply voltage range	20 – 35V d.c..
Supply current (max. inrush)	500mA
Supply current (typical)	110mA @ 24V
Weight	
SBS241	19.0Kg
SBS242	36.5kg
SBS481	36.2kg
Operating temperature range	0 – 40°C
Max Humidity	85% non-condensing
EMC operating environment (As defined by EN50081-1, EN50082-1)	Domestic, Commercial, Light Industrial.
Manufactured to Safety Standard	EN60065:1998

## 5 SAFETY CONSIDERATIONS

**Only a qualified and trained electronics engineer should be permitted to make any type of adjustment or repair to the Public Address System.**

A number of safety factors should be considered before attempting to maintain or repair the Public Address and Voice Alarm system.

Lead acid batteries have an excellent safety record. However if mistreated or misapplied they can present a possible hazard.  
The following notes are to aid ALL Service and Commissioning engineers.

### **Electrical Safety - Risk.**

Sealed batteries rely on the interaction between sulphuric acid and various lead compounds to provide electrical energy. These active materials are retained within the plastic cell jar and plastic lid which normally prevent any human contact with the cell contents once the batteries leave the factory. However the cell active materials are toxic and corrosive ! Exposure to them should be avoided. The electrolyte contained within them is sulphuric acid in concentrations strong enough to cause burns.

### **DO!**

In case of cell rupture, leaking electrolyte, or other problems that result in **SKIN OR EYE EXPOSURE TO ELECTROLYTE:**

**IMMEDIATELY FLUSH WITH COPIOUS AMOUNTS OF WATER.**

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In case of contact with skin, consult a doctor if burning persists.

If eye exposure occurs. **FLUSH WITH WATER FOR 15 MINUTES** and get someone to call a doctor for you.

## Shorting Precautions – Risk.

Because of its low internal resistance, the sealed lead-acid cell can provide exceptionally high currents. Since the battery terminals are more than often upright and exposed, short circuits are best prevented by good housekeeping practises as summarised below:

### **REMEMBER - DC CURRENTS ARE DANGEROUS**

## Precautions

- Whenever possible, keep at least one terminal insulated with a removable cap.
- When working with lead acid batteries, always remove rings, watches with metal bands, necklaces or other metallic items that might accidentally complete the circuit.
- Never place a battery in a draw, metallic disposable container or other receptacle in such a manner that it might tip over and short circuit against the walls or it might short circuit against other metallic contents.
- Do not use uninsulated tools when working with batteries.
- When wiring batteries, beware of the strong affinity for the loose end of the wire to the opposite terminal to the one being wired. They sometimes insist on a close relationship !
- Never lay any conducting metal part on top of a battery or place the battery terminal in contact with a metal surface.

## Shipping and Storage

Where possible insulate tabs to prevent contact.  
Use proper packaging materials.  
Package so as prevent movement or tipping over..

## Lifting - Risk

Batteries are heavy and when installed in Audix equipment can exceed 24 kilos. For weights above this, lifting aids should be used. They can also be in a damaged condition during maintenance or repair which when removed might cause chemical contact to be made.

In the light of this remember:

Lifting of weights below 24 Kilos, observe the following elementary rules:

- Stop and think - plan the lift. Do you need help ? Is the area or path free of obstructions? Is the battery in a state whereby you require PPE ?
- How are you going to transport the battery ?



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- get a firm grip - keep your arms inside the boundary formed by your legs.
- don't jerk
- move the feet - don't twist the body
- keep close to the load.
- Above all , **AVOID MANUAL HANDLING IF YOU BELIEVE THERE IS A RISK OF INJURY.**

## **Disposing of batteries**

Ensure used batteries are disposed of in the correct manner in accordance with local regulations.

## **Reporting of incidences and accidents**

All incidences and accidents should be reported as per the Audix Health and Safety Policy.

## **PPE**

Personal Protective equipment such as heavy duty gloves, aprons, boots etc. are provided to all Service / Commissioning personnel. Use when appropriate.