

Sentry UL Battery Charger OPERATION & MAINTENANCE GUIDE

THIS MANUAL REFERS TO THE FOLLOWING MODELS

SUL100 12V
SUL100 24V
SUL120 12V
SUL120 24V
ESUL100 12V
ESUL100 24V
ESUL120 12V
ESUL120 24V

For safe and correct use of the unit read the safety instructions which precede the operating instructions for the above units.



**THIS GUIDE CONTAINS 6 PAGES (including this one) IF ANY PAGES ARE MISSING -
CONTACT THE BATTERY CHARGER SUPPLIER OR MANUFACTURER**

IMPORTANT SAFETY INSTRUCTIONS - SAVE THESE INSTRUCTIONS - SAFETY INSTRUCTIONS

This manual contains important safety and operating instructions for models SUL100, SUL120, ESUL100 and ESUL120.

- Do not expose charger to rain or snow
- Use of an attachment not recommended or sold by the battery charger manufacturer may result in a risk of fire, electric shock, or injury to persons.
- Do not operate charger if it has received a sharp blow, been dropped, otherwise damaged in any way; return to supplier.
- Do not disassemble charger, return to supplier when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.

WARNING - RISK OF EXPLOSIVE GASES

WORKING IN VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION.

To reduce the risk of battery explosion, follow these instructions and those published by battery manufacturers and manufacturer of any equipment you intend to use in vicinity of the battery. Review cautionary marking on these products and on any attached equipment.

PERSONAL PRECAUTIONS

- (i) Someone should be within range of your voice or close enough to come to your aid when you work near a lead-acid battery.
- (ii) Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing or eyes.
- (iii) Wear complete eye protection and clothing protection. Avoid touching eyes while working near batteries.
- (iv) If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eyes, immediately flood eyes with running cold water for at least 10 minutes and get medical attention immediately.
- (v) NEVER smoke or allow a spark or flame in vicinity of battery.
- (vi) Be extra cautious to reduce risk of dropping a metal tool onto battery. It may spark or short-circuit the battery or other electrical part that may cause explosion.
- (vii) Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a lead-acid battery. A lead-acid battery can produce a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.
- (viii) Use charger only for charging batteries as stated on the charger. Do not use battery charger for charging dry-cell batteries that are commonly used with home appliances. These batteries may burst and cause injury to persons and damage to property.
- (ix) NEVER CHARGE A FROZEN BATTERY

PRIOR TO INSTALLATION / COMMISSIONING

- Clean battery terminals. Be careful to keep corrosion from coming in contact with eyes.
- Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. This helps purge excessive gas from cells. Do not overfill. For a battery without cell caps, carefully follow manufacturer's recharging instructions.
- Study all battery manufacturer's specific precautions such as removing or not removing cell caps while charging and recommended rates of charge.
- Determine voltage of battery by referring to engine manual and ensure matches charger's output voltage.

CHARGER LOCATION AND CONNECTION

- Never place charger directly above battery being charged, gases from battery will corrode and damage charger.
- Never allow battery acid to drip on charger when reading specific gravity or filling battery.
- Do not operate charger in a closed-in area or restrict ventilation in any way.
- The battery charger should be connected to a grounded, metal, permanent wiring system; or an equipment-grounding conductor should be run with circuit conductors not connected to equipment-grounding terminal on battery charger.
- Connections to battery charger should comply with all local codes and ordinances.
- SUL100 & SUL120 - These battery chargers should be installed so that they are not likely to be contacted by people.
- ESUL100 & ESUL120 - The AC wiring should be independent of the DC and alarm wiring. Use AWG#12 or larger wire for DC (charger to battery) leads. Use AWG#14 or larger for input and ground connections.

For safe and correct use of the unit follow the following steps, should you have any problems and the unit does not function as expected consult our troubleshooting guide at the end of these instructions.

- Visually inspect unit for any signs of damage, caused by transport or storage
- Mount charger as outlined above, paying attention to ambient temperature
- Ensure mains supply is isolated and connect observing the correct rated input voltage
- Ensure unit is earthed at the marked earth stud
- Check batteries in accordance with manufacturer guidelines
- Check charger is correct for battery type and voltage
- Connect unit to batteries, observing correct polarity and ensuring a secure and tight connection
- Switch on unit at mains supply

Sentry UL Battery Charger Installation Instructions

GENERAL INFORMATION

Please read the following information before installing. A visual inspection of this product for damage during shipping is recommended before installation. It is your responsibility to ensure that qualified mechanical and electrical technicians install this product. If in doubt, please contact your local Computronic representative.

WARNING

BEFORE BEGINNING INSTALLATION OF THIS PRODUCT

- Disconnect all electrical power to the charger
- Make sure the charger cannot operate during installation
- Follow all safety warnings of charger and battery manufacturers
- Read and follow all installation instructions

Description

The Sentry UL range provides automatic, current limited and voltage controlled charging of vented lead acid or NiCd batteries. The units may be used in a wide range of industrial charging applications, including standby engines, pumps and generators.

The charger is supplied in either an open frame construction, designed for surface mounting in an enclosed panel or as a wall mounted enclosure with charging indication via an ammeter. Each unit consists of a transformer, rectifier and thyristor control circuit. The control circuit ensures that the charger maintains a battery voltage at the pre-calibrated float level, while supplying any additional load current up to the specified maximum.

Auto Boost (Equalising) Operation

Auto boost operation provides an increased output voltage when batteries are below a preset point. Once the batteries have reached the boost voltage the charger reverts to its float voltage. This operation equalises the batteries, maximising battery life and capacity.

Boost Initiate Operation

The boost initiate switch forces the charger to enter an auto boost cycle (see above) even if battery voltage is above the preset point, once this operation is completed the charger returns to its float voltage.

Temperature Compensation

The remote temperature compensation provides control of the output voltage based upon temperature, as temperature increases the charging voltage is decreased at a negative coefficient of 3mV/°C/Cell.

Charge fail option

A self diagnostic 'charge fail' circuit and relay output is provided. The volt free relay de-energises in the event of a charging fault.

Electrical connection of the AC and DC supply and alarms are via spring-clamp terminals. (For more information on these terminals see Computronic Controls Product Change Ref: CCL PC Release 1 - April03)

Product Specification

Power Supply:

nominal operating voltages	120V Units 240V Units
permissible voltage variation	± 6% of nominal
nominal operating frequency	50/60Hz

DC Charge Output:

maximum current ADC	5	10
nominal voltage VDC	24	12

float / boost voltages

These are factory preset for specified batteries, typical settings are as follows: -

	Float Voltage	
	12V	24V
Vented Lead Acid	13.7V	27.2V
NiCad	14.1V	28.2V
	Boost Voltage	
	12V	24V
Vented Lead Acid	14.1V	28.2V
NiCad	14.6V	29.2V

Charge Fail Output:

relay type	volt free SPDT contacts relay de-energised on fault
contact rating	1A @ 30VDC (resistive load)

General:

transformer	Single Phase 50-60Hz Class 130
operating temperature	-10 to +55°C

OPEN FRAME MODELS

SUL 100	
dimensions	148mm/5.8"(L) x 110mm/4.3"(W) x 110mm/4.3"(H)
weight	2.6Kg / 5.525lbs
SUL 120	
dimensions	168mm/6.6"(L) x 110mm/4.3"(W) x 123mm/4.8"(H)
weight	6.4Kg / 13.6lbs

WALL MOUNTED ENCLOSURE MODELS

ESUL 100	
dimensions	281mm/11.1"(L) x 140mm/5.5"(W) x 115mm/4.5"(H)
weight	5.6Kg / 11.9lbs
ESUL 120	
dimensions	281mm/11.1"(L) x 140mm/5.5"(W) x 115mm/4.5"(H)
weight	9.4Kg / 19.98lbs
EMC emission / immunity	EN58801-2 / EN50082-2

GENERAL INFORMATION (ctd)

Current Limiting

The Sentry Battery Charger is current limited and will only output the rated current of the charger (see chart below)

SENTRY CURRENT RATINGS

MODEL	RATING
ESUL & SUL 100 12V	5A
ESUL & SUL 100 24V	3A
ESUL & SUL 120 12V	10A
ESUL & SUL 120 24V	5A

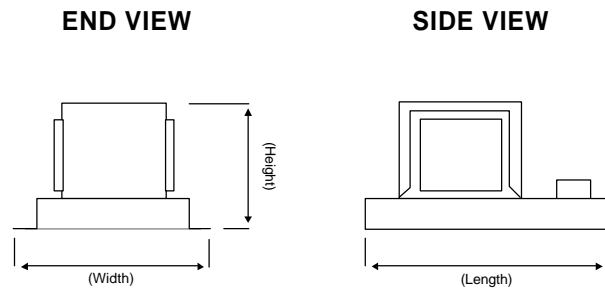
Battery Charged Condition

When charged the battery will only accept a charge to replace the losses within the battery (approx. 1mA per AH of battery). If there is a standing load (i.e. the panel controller etc) the charger will output the standing load plus the losses to the battery i.e. if a standing load of 1A is present with 50AH Vented Lead Acid batteries then charger will supply 1.05 amps.

A charged battery with open circuit terminals (i.e. no load connected) will always be higher than nominal battery voltage (i.e. 12.6 on a 12V lead acid battery)

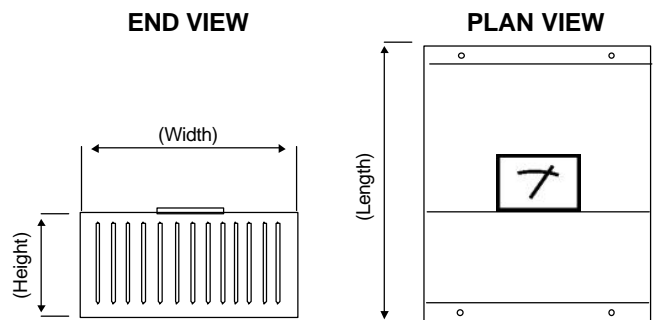
Dimensions

figure 1a - Open frame models



	L	W	H	Weight
SUL100	148mm 5.8"	110mm 4.3"	110mm 4.3"	2.6Kg 5.5lbs
SUL120	168mm 6.6"	110mm 4.3"	123mm 4.8"	6.4Kg 13.6lbs

figure 1b - Wall mounted enclosed models



	L	W	H	Weight
ESUL100	281mm 11.1"	140mm 5.5"	115mm 4.5"	5.6Kg 11.9lbs
ESUL120	281mm 11.1"	140mm 5.5"	115mm 4.5"	9.4Kg 19.9lbs

IMPORTANT ASSEMBLY INSTRUCTIONS - SAVE THESE INSTRUCTIONS

OPEN FRAME MODELS - SUL100 & SUL120

- The charger must be mounted as shown in Figure 2a.
- Four screws should be used to mount charger to panel. Ensure screws are tightened firmly as as not to become loose during normal use on engine.
- Adequate consideration should be given to ventilation for proper heat dissipation.

WALL MOUNTED ENCLOSURE MODELS - ESUL100 & ESUL120

- The charger must be mounted as shown in Figure 2b.
- The lower face is removed by unscrewing the four fixing screws. The face is removed by sliding the face backward, thereby releasing the "feet" from their fixing holes.
- Cable entry is via knock-outs on the side of the unit, these must be carefully removed from the enclosure sides.
- A suitable cable-gland (20mm/0.8" DIA) should be used to prevent damage to cables and stop unwanted entry into inner part of charger. See "Electrical Connection" for details of terminal connections.
- The lower face should be firmly screwed to the charger before use.
- Four screws should be used to mount charger to panel. Ensure screws are tightened firmly as as not to become loose during normal use on engine.
- Adequate consideration should be given to ventilation for proper heat dissipation.

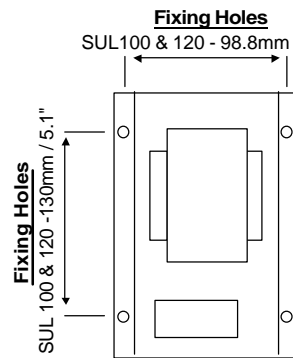


Figure 2a - open frame models

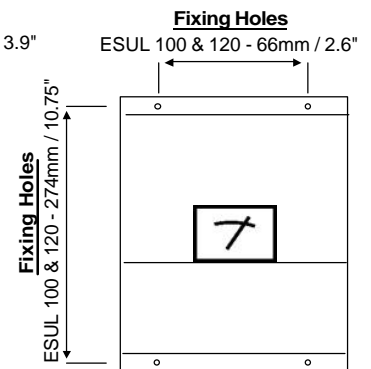


Figure 2b - wall mounted enclosure models



CAUTION: When handling chargers, care should be taken not to place excessive strain on either the protective aluminium back plate, PCB, transformer or connecting wires. Unit should be handled by aluminium chassis (open frame models) or steel enclosure (enclosed models).

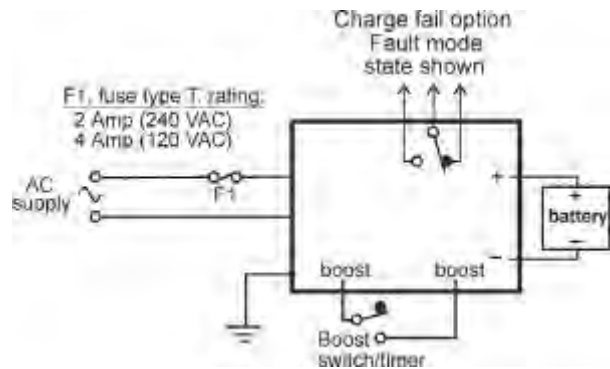
IMPORTANT OPERATING INSTRUCTIONS - SAVE THESE INSTRUCTIONS

Before operating the battery charger, ensure that the charger is assembled and installed as per the section listed in these instructions.

Terminal Connection Information

OUTPUT		INPUT		CHARGE FAIL				BOOST	
+	-	N	L	0	0	0	0	↓	↓

- Output:** To battery
CAUTION: Observe correct polarity
- Input:** AC supply
CAUTION: Observe correct voltage as stated on unit
- Charge Fail:** O.I. - Output Inhibit
(will prevent unit from showing charge fail in case of overvoltage from alternator)
Com - Common
N/O - Normally Open
N/C - Normally Closed
(See notes on connection of charge fail - see right)
- Boost:** Boost Initiate - Linking these two connectors will force the charger from into a single boost cycle of operation.
(Once the charger has completed a single boost cycle as outlined on page 1 of these instructions the charger returns to it's normal mode of operation)



Connection to Mains Supply:

Ensure supply is isolated before connection is made to charging unit
Ensure unit is properly earthed at earth stud on chargers metal chassis
CAUTION: Ensure correct AC voltage is supplied to unit, applying 230VAC on a 115VAC unit will destroy it and could cause serious personal injury.

Connection to Batteries:

Ensure mains supply is isolated before connecting charger to batteries
Ensure battery type and voltage are correct before connecting to batteries
WARNING: Charging either different voltage or type of batteries from stated type may result in damage to both the charging unit and/or batteries and could result in serious personal injury.

Disconnection of Batteries:

Ensure mains supply is isolated before disconnecting charger from batteries
WARNING: Disconnecting the batteries whilst mains supply is connected to the charger could result in a spark at battery terminals, this could ignite the hydrogen given off from the batteries.

Boost Initiate Connection:

The charger will be in it's normal mode of operation whilst the boost link is broken, upon connecting the two *boost initiate* terminals the charger will perform a single auto-boost cycle, whereby the charger outputs a higher voltage, once battery voltage has reached this point, the charger returns to it's normal float mode of operation.

Charge Fail Connection:

In a de-energised state the COM - N/C contact is alarmed. The relay energises on power up and changes state to COM - N/O. These contacts are volt-free contacts rated at 1A @ 30VDC.

Fuses:

The wall mounted enclosure models are fitted with internal mains input fuses at the stated ratings (see F1 in above), the open frame models must be fitted with an external mains fuse at ratings shown (see F1 in above). Before replacing any fuses, ensure charger is isolated from mains supply.



Stripped wire is introduced just before the clamping unit.



The clamp spring is pressed down and wire is introduced into the clamping unit immediately



The clamp spring is released - the conductor is automatically clamped

NB. All connections, including AC input and DC output are made via spring-clamp connections as outlined above.

All Sentry UL (SUL & ESUL) models are fitted with a self-resetting polyfuse on the dc output. If reverse polarity or short circuit faults are made, isolate supply, disconnect the outputs and allow fuse to self-reset. The charger can then be re-connected and switched back on. No replacement of output fuse should be necessary. If fuse fails to reset, the charger should be returned to supplier.

AUTOMATIC BATTERY CHARGER

The Sentry UL range is an automatic battery charger, if battery voltage falls below a preset voltage (10.2V on a 12V lead-acid battery) the charger will automatically enter an increased charging voltage state (boost). Once the batteries have reached this point, the charger will switch to it's normal "float" voltage. this prevents over-charge, which inturn prevents the battery from over-gassing and subsequently maximises battery life.

WARNING: The Sentry UL range is not USER SERVICEABLE. No attempt should be made to replace or repair the charger, any attempt to do so may invalidate any warranties and could cause serious personal harm or injury as well as damage to both the battery charger and any connected devices. In event of failure the charger should be returned to supplier.

ELECTRICAL CONNECTION



WARNING: DANGER OF INJURY OR DEATH. Before connection, disconnection or handling of SENTRY battery charger, ensure that all AC power supplies are isolated. Connection to or disconnection from live wiring can also cause damage to internal components.

TROUBLESHOOTING FLOWCHART

