



# SCHUMACHER® AUTOMATIC SMART BATTERY CHARGER & MAINTAINER 15A/10A 12V/24V

MODEL NO: SPI1224S



# Model: SPI1224S

## INTELLIGENT SPEED CHARGE BATTERY CHARGER

### OWNER'S MANUAL

#### Markings and symbols



Read manual before using.



Warning



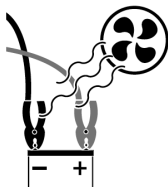
Caution, risk of electric shock.



Do not expose to rain.



For indoor use only.

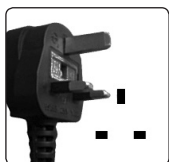


Use in a well-ventilated area.



Keep away from sparks and flame – battery could emit explosive gases.

#### Plug type



Type G

**WARNING:** READ THE ENTIRE MANUAL BEFORE USING THIS PRODUCT. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH.

**IMPORTANT: READ AND SAVE THIS SAFETY AND INSTRUCTION MANUAL.**

**SAVE THESE INSTRUCTIONS** – This manual will show you how to use your charger safely and effectively. Please read, understand and follow these instructions and precautions carefully, as this manual contains important safety and operating instructions. The safety messages used throughout this manual contain a signal word, a message and an icon.

The signal word indicates the level of the hazard in a situation.

**DANGER:** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury to the operator or bystanders.

**WARNING:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to the operator or bystanders.

**CAUTION:** Indicates a potentially hazardous situation which, if not avoided, could result in moderate or minor injury to the operator or bystanders.

**IMPORTANT:** Indicates a potentially hazardous situation which, if not avoided, could result in damage to the equipment or vehicle or property damage.

# 1. IMPORTANT SAFETY INSTRUCTIONS – SAVE THESE INSTRUCTIONS.

This manual contains important safety and operating instructions.



## RISK OF ELECTRIC SHOCK OR FIRE.

**1.1** Read the entire manual before using this product. Failure to do so could result in serious injury or death.

**1.2** Children should be supervised to ensure that they do not play with the appliance. This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they

have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

- 1.3** This charger is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning the use of the charger by a person responsible for their safety. Children should be supervised to ensure they do not play with the charger.
- 1.4** Do not expose the charger to rain or snow.
- 1.5** Use only recommended attachments. Use of an attachment not recommended may result in a risk of fire, electric shock or injury to persons or damage to property.
- 1.6** To reduce the risk of damage to the electric plug or cord, pull by the plug rather than the cord when disconnecting the charger.
- 1.7** An extension cord should not be used unless absolutely necessary. Use of an improper extension cord could result in a risk of fire and electric shock. If an extension cord must be used, make sure:
- That the pins on the plug of the extension cord are the same number, size and shape as those of the plug on the charger.
  - That the extension cord is properly wired and in good electrical condition.
  - That the wire size is large enough for the AC ampere rating of the charger as specified in section 8.
- 1.8** To reduce the risk of electric shock, unplug the charger from the outlet before attempting any maintenance or cleaning. Simply turning off the controls will not reduce this risk.
- 1.9** Do not operate the charger with a damaged cord or plug. If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- 1.10** Do not operate the charger if it has received a sharp blow, been dropped or otherwise damaged in any way; take it to a qualified service person.
- 1.11** Do not disassemble the charger; take it to a qualified service person when service or repair is required. Incorrect reassembly may result in a risk of fire or electric shock.

## RISK OF EXPLOSIVE GASES.

- 1.12** WORKING IN THE VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT YOU FOLLOW THE INSTRUCTIONS EACH TIME YOU USE THE CHARGER.



**1.13.** To reduce the risk of a battery explosion, follow these instructions and those published by the battery manufacturer and the manufacturer of any equipment you intend to use in the vicinity of the battery. Review the cautionary markings on these products and on the engine.

**1.14.** This charger employs parts, such as switches and circuit breakers, that tend to produce arcs and sparks. If used in a garage, locate this charger 18 inches (46 cm) or more above floor level.

**WARNING:** Do not use with non-rechargeable batteries.

Use only with lead-acid rechargeable batteries.

**IMPORTANT:** Do not start the vehicle with the charger connected to the AC outlet, or it may damage the charger and your vehicle.

## 2. PERSONAL PRECAUTIONS



### RISK OF EXPLOSIVE GASES.

- 2.1 NEVER smoke or allow a spark or flame in the vicinity of a battery or engine.
- 2.2 Remove personal metal items such as rings, bracelets, necklaces and watches when working with a lead-acid or lithium ion battery. These batteries can produce a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.
- 2.3 Be extra cautious, to reduce the risk of dropping a metal tool onto the battery. It might spark or short-circuit the battery or other electrical part that may cause an explosion.
- 2.4 Use this charger for charging 12V lead-acid, calcium, gel and AGM-type rechargeable batteries with rated capacities of 40-230Ah, and 24V lead-acid, calcium, gel and AGM-type rechargeable batteries with rated capacities of 60-230Ah. It is not intended to supply power to a low voltage electrical system other than in a starter-motor application. Do not use this battery charger for charging dry-cell batteries that are commonly used with home appliances or lithium ion batteries used in cell phones, laptops, power tools, etc. These batteries may burst and cause injury to persons and damage to property.
- 2.5 NEVER charge a frozen battery.
- 2.6 Consider having someone nearby to come to your aid when you work near a lead-acid battery.
- 2.7 Have plenty of fresh water and soap nearby, in case battery acid contacts your skin, clothing or eyes.
- 2.8 Wear complete eye and body protection, including safety goggles and protective clothing. Avoid touching your eyes while working near the battery.
- 2.9 If battery acid contacts your skin or clothing, immediately wash the area with soap and water. If acid enters your eye, immediately flood the eye with cold running water for at least 10 minutes and get medical attention right away.
- 2.10 If battery acid is accidentally swallowed, drink milk, the whites of eggs or water. DO NOT induce vomiting. Seek medical attention immediately.

## 3. PREPARING TO CHARGE



### RISK OF CONTACT WITH BATTERY ACID. BATTERY ACID IS A HIGHLY CORROSIVE SULFURIC ACID.

- 3.1 If it is necessary to remove the battery from the vehicle to charge it, always remove the grounded terminal first. Make sure all of the accessories in the vehicle are off, to prevent arcing.
- 3.2 Be sure the area around the battery is well ventilated while the battery is being charged.
- 3.3 Clean the battery terminals before charging the battery. During cleaning, keep airborne corrosion from coming into contact with your eyes, nose and mouth. Use baking soda and water to neutralize the battery acid and help eliminate airborne corrosion. Do not touch your eyes, nose or mouth.
- 3.4 Add distilled water to each cell until the battery acid reaches the level specified by the battery manufacturer. Do not overfill. For a battery without removable cell caps, such as valve regulated lead acid batteries (VRLA), carefully follow the manufacturer's recharging instructions.
- 3.5 Read, understand and follow all instructions for the charger, battery, vehicle and any equipment used near the battery and charger. Study all of the battery manufacturer's specific precautions while charging and recommended rates of charge.
- 3.6 Determine the voltage of the battery by referring to the vehicle owner's manual and make sure that the output voltage selector switch is set to the correct voltage. If the charger has an adjustable charge rate, charge the battery in the lowest rate first.
- 3.7 Make sure that the charger cable clips make tight connections.

## 4. CHARGER LOCATION



### RISK OF EXPLOSION AND CONTACT WITH BATTERY ACID.

4.1 Locate the charger as far away from the battery as the DC cables permit.

4.2 Never place the charger directly above the battery being charged; gases from the battery will corrode and damage the charger.

4.3 Do not set the battery on top of the charger.

4.4 Never allow battery acid to drip onto the charger when reading the electrolyte specific gravity or filling the battery.

4.5 Do not operate the charger in a closed-in area or restrict the ventilation in any way.

## 5. DC CONNECTION PRECAUTIONS

5.1 Connect and disconnect the DC output connectors only after removing the AC plug from the electrical outlet. Never allow the connectors to touch each other.

5.2 Attach the connectors to the battery and chassis, as indicated in sections 6 and 7.

## 6. FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN THE VEHICLE.



### A SPARK NEAR THE BATTERY MAY CAUSE A BATTERY EXPLOSION. TO REDUCE THE RISK OF A SPARK NEAR THE BATTERY:

**IMPORTANT:** Do not start the vehicle with the charger connected to the AC outlet, or it may damage the charger and your vehicle.

- 6.1 Position the AC and DC cables to reduce the risk of damage by the bonnet, door and moving or hot engine parts. **NOTE:** If it is necessary to close the bonnet during the charging process, ensure that the bonnet does not touch the metal part of the battery connectors or cut the insulation of the cables.
- 6.2 Stay clear of fan blades, belts, pulleys and other parts that can cause injury.
- 6.3 Check the polarity of the battery posts. The POSITIVE (POS, P, +) battery post usually has a larger diameter than the NEGATIVE (NEG, N, -) post.
- 6.4 Determine which post of the battery is grounded (connected) to the chassis. The battery terminal not connected to the chassis has to be connected first. The other connection is to be made to the chassis, remote from the battery and fuel line. See steps 6.5 and 6.6. The battery charger is then to be connected to the supply mains. The connection to the supply mains is to be in accordance with the national wiring rules.
- 6.5 For a negative-grounded vehicle, connect the POSITIVE (RED) connector from the battery charger to the POSITIVE (POS, P, +) ungrounded post of the battery. Connect the NEGATIVE (BLACK) connector to the vehicle chassis or engine block away from the battery. Do not connect the connector to the carburetor, fuel lines or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.
- 6.6 For a positive-grounded vehicle, connect the NEGATIVE (BLACK) connector from the battery charger to the NEGATIVE (NEG, N, -) ungrounded post of the battery. Connect the POSITIVE (RED) connector to the vehicle chassis or engine block away from the battery. Do not connect the connector to the carburetor, fuel lines or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.
- 6.7 Connect charger AC supply cord to electrical outlet.
- 6.8 After charging, disconnect the battery charger from the supply mains. Then remove the chassis connection and then the battery connection.
- 6.9 See *Operating Instructions* for length of charge information.

## 7. FOLLOW THESE STEPS WHEN BATTERY IS OUTSIDE OF THE VEHICLE.



**A SPARK NEAR THE BATTERY MAY CAUSE A BATTERY EXPLOSION. TO REDUCE THE RISK OF A SPARK NEAR THE BATTERY:**

**7.1** Check the polarity of the battery posts. The POSITIVE (POS, P, +) battery post usually has a

larger diameter than the NEGATIVE (NEG, N, -) post.

- 7.2** Attach at least a 24-inch (61 cm) long 7 AWG (10 mm<sup>2</sup>) insulated battery cable to the NEGATIVE (NEG, N, -) battery post.
- 7.3** Connect the POSITIVE (RED) charger connector to the POSITIVE (POS, P, +) post of the battery.
- 7.4** Position yourself and the free end of the cable you previously attached to the NEGATIVE (NEG, N, -) battery post as far away from the battery as possible – then connect the NEGATIVE (BLACK) charger connector to the free end of the cable.
- 7.5** Do not face the battery when making the final connection.
- 7.6** Connect charger AC supply cord to electrical outlet.
- 7.7** When disconnecting the charger, always do so in the reverse order of the connecting procedure and break the first connection while as far away from the battery as practical.
- 7.8** A marine (boat) battery must be removed and charged on shore. To charge it onboard requires equipment specially designed for marine use.

## 8. GROUNDING AND AC POWER CORD CONNECTIONS



### RISK OF ELECTRIC SHOCK OR FIRE.

**8.1** This battery charger is for use on a nominal 230V, 50Hz circuit. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances. The

plug pins must fit the receptacle (outlet). Do not use with an ungrounded system

- 8.2 DANGER:** Never alter the AC cord or plug provided – if it does not fit the outlet, have a proper outlet installed by a qualified electrician. An improper connection can result in a risk of an electric shock or electrocution.

### 8.3 USING AN EXTENSION CORD

The use of an extension cord is not recommended. If you must use an extension cord, follow these guidelines:

- Pins on plug of extension cord must be the same number, size, and shape as those of plug on charger.
- Ensure that the extension cord is properly wired and in good electrical condition.
- Wire size must be large enough for the AC ampere rating of charger.

Recommended minimum AWG size for extension cord:

- 100 feet (30.5 meters) long or less – use an 16 gauge (1.31 mm<sup>2</sup>) extension cord.
- Over 100 feet (30.5 meters) long – use a 14 gauge (2.08 mm<sup>2</sup>) extension cord.

## 9. ASSEMBLY INSTRUCTIONS

Remove all cord wraps and uncoil the cables prior to using the battery charger.

## 10. FEATURES



1. Digital display
2. Hook attachment
3. Voltage/Recondition button
4. Charging status LED indicator
5. Battery clamps
6. AC Power cord

## 11. CONTROL PANEL

### DIGITAL DISPLAY

The digital display indicates the status of the battery and charger. See *Display Messages* for a complete list of messages.

### VOLTAGE/RECONDITION BUTTON

The digital display will show the battery's percentage of charge. Press the button once to select voltage for 12V Battery Charge or 24V Battery Charge. Double click button to select Recondition mode.

### LED INDICATOR

**GREEN LED solid (CHARGING):** The charger is connected and is charging a battery.

**GREEN LED pulsing (CHARGED/MAINTAINING):** The battery is fully charged and the charger is in Maintain Mode.

**GREEN LED flashing:** The charge has aborted. (See *Aborted Charge* section.)

**NOTE:** See *Operating Instructions* for a complete description of the charger modes.

## 12. OPERATING INSTRUCTIONS

**WARNING:** This battery charger must be properly assembled in accordance with the assembly instructions before it is used.

The charger does not have an ON/OFF switch. The On and Off commands are controlled by plugging the SPI1224S into an AC electrical wall outlet only after the battery connections have been made.

**IMPORTANT:** Do not start the vehicle with the charger connected to the AC outlet, or it may damage the charger and your vehicle.

### BATTERY INFORMATION

This charger can charge 12-celled lead-acid batteries with rated capacities of 60-230 Ah or 6-celled lead-acid batteries with rated capacities of 40-230 Ah.

**NOTE:** This charger is equipped with an auto-start feature. Current will not be supplied to the battery clamps until a battery is properly connected. The clamps will not spark if touched together.

**See instructions for charging a battery inside a vehicle (Section 6) or outside of the vehicle (Section 7).**

### CHARGING

1. Ensure that all of the charger components are in place and in good working condition.



2. Connect the battery, following the precautions listed in sections 6 and 7.
3. Connect the AC power following the precautions listed in section 8.
4. After AC is connected, display will show **SELECT CHARGE MODE**. Press button once to enter 12V charge mode, press button once again to enter 24V charge mode. When charging starts, the **GREEN LED** will be solid, and the display will show **ANALYZING 12V BATTERY** or **ANALYZING 24V BATTERY** while the charger determines that the battery is properly connected and the condition of the battery.
5. When the battery is fully charged, the **GREEN LED** will pulse.
6. When charging is complete, disconnect the AC cord from the supply mains, remove the clamp from the vehicle's chassis, and then remove the clamp from the battery terminal.

### RECONDITION

1. Ensure that all of the charger components are in place and in good working condition.
2. Connect the battery, following the precautions listed in sections 6 and 7.
3. Connect the AC power following the precautions listed in section 8.
4. After AC is connected, display will show **SELECT CHARGE MODE**. Press button once to enter 12V charge mode first, then double click button to enter 12V Recondition mode. Press button once again to enter 24V charge mode. When charge starts, the display will show **RECONDITION TIME REMAINING XXX MINUTES**. If the recondition is successful, the display will show **RECONDITION SUCCESSFUL - START NORMAL CHARGING**. If the recondition is unsuccessful, the display will show **CHARGE ABORTED-BAD BATTERY**, and the **GREEN LED** will flash.
5. When the battery is fully charged, the **GREEN LED** will pulse.
6. When charging is complete, disconnect the AC cord from the supply mains, remove the clamp from the vehicle's chassis, and then remove the clamp from the battery terminal.

### BATTERY CONNECTION INDICATOR

If the charger does not detect a properly connected battery, charging will not start and the digital display will show one of these messages:

**12V-CONNECT CLAMPS- PRESS FOR 24V-DOUBLE FOR RECONDITION**

**12V-RECONDITION CHARGE-PRESS FOR 24V-DOUBLE FOR REGULAR**

**24V-CONNECT CLAMPS- PRESS FOR 12V-DOUBLE FOR RECONDITION**

**24V-RECONDITION CHARGE-PRESS FOR 12V-DOUBLE FOR REGULAR**

Make sure the charger is connected to the battery and the connection points are clean and making a good connection. If the display shows **WARNING-CLAMPS REVERSED**, unplug the charger from the AC outlet, reverse the connections at the battery, and then plug the charger back in.

**BATTERY CHARGING TIMES** CCA = COLD CRANKING AMPS    AH = AMP HOUR

APPLICATION	BATTERY SIZE	CHARGING TIME (hours)			
		6A	10A	12A	15A
POWERSPORTS ↓	6 Ah	2	1.5	NOT RECOMMENDED	
	32Ah	5	4		
AUTOMOTIVE ↓	300 CCA	4	3	2	1.5
	1000 CCA	10	7	5.5	4
MARINE ↓	50 Ah	5	3.5	2.5	2
	230 Ah	19	11.5	9.5	7.5

Times are based on a 50% discharged battery and may change, depending on age and condition of battery.



## **AUTOMATIC CHARGING MODE**

When an Automatic Charge is performed, the charger switches to the Maintain Mode automatically after the battery is charged. For a battery with a starting voltage under 1 volt, use a manual charger to pre-charge the battery for five minutes, to get additional voltage into the battery.

## **ABORTED CHARGE**

If charging cannot be completed normally, charging will abort. When charging aborts, the charger's output is shut off, the **GREEN LED** will flash, and the display will show **CHARGE ABORTED-BAD BATTERY**. Do not continue attempting to charge this battery. Check the battery and replace, if necessary.

## **CHARGE COMPLETION AND MAINTAIN MODE (FLOAT MODE MONITORING)**

Charge completion is indicated by the pulsing **GREEN LED** and the digital display showing **FULLY CHARGED-AUTO MAINTAINING**. This indicates the charger has switched to the Maintain Mode of operation. In this mode, the charger keeps the battery fully charged by delivering a small current when necessary. **NOTE:** If the charger has to provide its maximum maintain current for a continuous 12 hour period, it will go into Abort Mode (see *Aborted Charge* section). This is usually caused by a drain on the battery, or the battery could be bad. Make sure there are no loads on the battery. If there are, remove them. If there are none, have the battery checked or replaced.

## **MAINTAINING A BATTERY**

The SPI1224S maintains 12V and 24V batteries, keeping them at full charge. **It is not recommended for industrial applications.**

**NOTE:** The maintain mode technology allows you to safely charge and maintain a healthy battery for extended periods of time. However, problems with the battery, electrical problems in the vehicle, improper connections or other unanticipated conditions could cause excessive current draws. As such, occasionally monitoring your battery and the charging process is recommended.

## **FAN**

Your charger is equipped with a fan. It is normal for the fan to run while the charger is charging. Keep the area near the charger free of obstructions, to allow the fan to operate efficiently.

## **13. DISPLAY MESSAGES**

**SELECT CHARGE MODE** (No LED lit) – Waiting for user to select battery type. If no button pressed, charger will enter 12V charge mode after 10 minutes.

**12V-REGULAR CHARGE-PRESS FOR 24V-DOUBLE FOR RECONDITION** (No LED lit) – Charging will begin for 12V battery. Press again to change to 24V battery type, double click button to change to 12V Recondition mode.

**12V-CONNECT CLAMPS-PRESS FOR 24V-DOUBLE FOR RECONDITION** (No LED lit) – No battery connected. Press again to change to 24V battery type, double click button to change to 12V Recondition mode.

**12V-RECONDITION CHARGE-PRESS FOR 24V-DOUBLE FOR REGULAR** (No LED lit) – 12V battery Recondition mode charge will start after battery is connected. Press again to change to 24V battery Recondition mode, double click button to change to 12V charge mode.

**24V-REGULAR CHARGE-PRESS FOR 12V-DOUBLE FOR RECONDITION** (No LED lit) – Charging will begin for 24V battery. Press again to change to 12V battery type, double click button to change to 24V Recondition mode.

**24V-CONNECT CLAMPS-PRESS FOR 12V-DOUBLE FOR RECONDITION** (No LED lit) – No battery connected. Press again to change to 12V battery type, double click button to change to 24V Recondition mode.

**24V-RECONDITION CHARGE-PRESS FOR 12V-DOUBLE FOR REGULAR** (No LED lit) – 24V battery Recondition mode charge will start after battery is connected. Press again to change to 12V battery Recondition mode, double click button to change to 24V charge mode.

**RECONDITION TIME REMAINING XXX MINUTES** – Recondition mode has started. The remaining time on the display counts down from 180 minutes.

**RECONDITION SUCCESSFUL-START NORMAL CHARGING** – Shows on display for 60 seconds after a successful Recondition.

**WARNING-CLAMPS REVERSED** (No LED lit) – The output clamps are connected backwards to a battery.

**ANALYZING 12V BATTERY** (Green LED lit) – Plugged into the AC outlet, and when first correctly connected to 12V battery at 12V charge mode.

**ANALYZING 24V BATTERY** (Green LED lit) – Plugged into the AC outlet, and when first correctly connected to 24V battery at 24V charge mode.

**CHARGING 12V – xx%** (Green LED lit) – Plugged into the AC outlet and correctly connected to a discharged 12V battery at 12V charge mode.

**CHARGING 24V – xx%** (Green LED lit) – Plugged into the AC outlet and correctly connected to a discharged 24V battery at 24V charge mode.

**FULLY CHARGED-AUTO MAINTAINING** (Green LED pulsing) – Plugged into the AC outlet and correctly connected to a fully charged battery.

**CHARGE ABORTED-BAD BATTERY** (Green LED flashing) –

Circumstances that could cause an Abort situation during charging:

- The battery is severely sulfated or has a shorted cell and can't reach a full charge.
- The battery is too large or there is a bank of batteries and it doesn't reach full charge within a set time period.

Circumstances that could cause an Abort situation during maintain:

- The battery is severely sulfated or has a weak cell and will not hold a charge.
- There is a large draw on the battery and the charger has to supply its maximum maintain current for a 12 hour period to keep the battery at full charge.
- Recondition mode is unsuccessful.

**BATTERY DISCONNECTED** (No LED lit) – After charging has begun, the charger has lost its connection to the battery.

**OFF** (No LED lit) – During the charge process or Recondition process, press the button once to stop the charge or recondition. The display will show **OFF** and then **SELECT CHARGE MODE**.

## 14. MAINTENANCE INSTRUCTIONS

- 14.1** Cleaning and user maintenance should not be done by children without supervision.
- 14.2** After use and before performing maintenance, unplug and disconnect the battery charger (see sections 6, 7 and 8).
- 14.3** Use a dry cloth to wipe all battery corrosion and other dirt or oil from the battery connectors, cords, and the charger case.
- 14.4** Ensure that all of the charger components are in place and in good working condition, for example, the plastic boots on the battery clips.
- 14.5** Servicing does not require opening the unit, as there are no user-serviceable parts.
- 14.6** All other servicing should be performed by qualified service personnel.
- 14.7** If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons, in order to avoid a hazard.

## 15. MOVING AND STORAGE INSTRUCTIONS

- 15.1** Store the charger unplugged, in an upright position. The cord will still conduct electricity until it is unplugged from the outlet.
- 15.2** Store inside, in a cool, dry place.
- 15.3** Do not store the connectors clipped together, on or around metal, or clipped to cables.
- 15.4** If the charger is moved around the shop or transported to another location, take care to avoid/prevent damage to the cords, connectors and charger. Failure to do so could result in personal injury or property damage.

## 16. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Battery connectors do not spark when touched together.	The charger is equipped with an auto-start feature. It will not supply current to the battery connectors until a battery is properly connected. The connectors will not spark if touched together.	No problem; this is a normal condition.
The charger will not turn on when properly connected.	AC outlet is dead.  Poor electrical connection.	Check for open fuse or circuit breaker supplying AC outlet.  Check power cord and extension cord for loose fitting plug.
Green LED is lit and the display shows <b>ANALYZING 12V BATTERY</b> or <b>ANALYZING 24V BATTERY</b> .	The charger needs to check the condition of the battery.	The green LED will be lit when the charger is checking the condition of the battery. This is normal.
Green LED is flashing and the display shows <b>CHARGE ABORTED-BAD BATTERY</b> .	The battery is too large for the charger.  The battery voltage is still below 20V after 2 hours of charging (24V charge mode), or below 10V after two hours of charging (12V charge mode).	You need a charger with a higher amp rate.  Have the battery checked.
The display shows one of these messages: <b>12V-CONNECT CLAMPS-PRESS FOR 24V-DOUBLE FOR RECONDITION</b> <b>12V-RECONDITION CHARGE-PRESS FOR 24V-DOUBLE FOR REGULAR</b> <b>24V-CONNECT CLAMPS- PRESS FOR 12V-DOUBLE FOR RECONDITION</b> <b>24V-RECONDITION CHARGE-PRESS FOR 12V-DOUBLE FOR REGULAR</b>	The clamps are not making a good connection.	Check for poor connection at battery and frame.

## 17. SPECIFICATIONS

Model No:	SPI1224S
Output:	12/24V
Output Charge:	15A/10A
Battery Range:	40-230Ah Lead Acid
Cable Length:	1.9mtr
Supply:	230V
Weight:	3.1kg
IP Rating:	20

### ENVIRONMENT PROTECTION



Recycle unwanted materials instead of disposing of them as waste. All tools, accessories and packaging should be sorted, taken to a recycling centre and disposed of in a manner which is compatible with the environment. When the product becomes completely unserviceable and requires disposal, drain any fluids (if applicable) into approved containers and dispose of the product and fluids according to local regulations.

### WEEE REGULATIONS



Dispose of this product at the end of its working life in compliance with the EU Directive on Waste Electrical and Electronic Equipment (WEEE). When the product is no longer required, it must be disposed of in an environmentally protective way. Contact your local solid waste authority for recycling information.

**Note:** It is our policy to continually improve products and as such we reserve the right to alter data, specifications and component parts without prior notice.

**Important:** No Liability is accepted for incorrect use of this product.

**Warranty:** Guarantee is two years from purchase date, proof of which is required for any claim.

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