



## **CANSAI CANADA**

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# **Specification of Cansai Battery Charger**

**MODEL : CS2402 SR**

**24V / 1A LEAD ACID BATTERY CHARGER**



## General

The CS2404SR charger is a fully automatic high frequency switch mode 3 – stage battery charger with constant current , constant voltage and float voltage. It is a double - insulated battery charger.

The Cansai battery charger can charge any gel, glass-matt, sealed and wet lead acid batteries.

### 1. Main product specification

Max. output power	Input voltage	Output voltage	Output current range	Voltage tolerance
29W	90~264Vac	+29.0+/-0.2Vdc	0.9A-1.1A	+/-0.2V

### 2. Environmental condition

No.	Item	Technical specification	Remark
1	Humidity	5~95%	With packing in box
2	Altitude	≤3000m	Work normally
3	Cooling	The battery charger is cooled by convectional cooling.	Working under full load

### 3. Electrical characteristics

#### 3.1 Input characteristics

No.	Item	Technical specification	Remark
1	Input voltage range	90~264Vac	
2	AC input voltage frequency	47~63Hz	
3	Max input current	0.50A	Vin=120Vac, rated load

#### 3.2 Output characteristics

No.	Item	Technical specification	Remark
1	Fast charge voltage	29.0+/-0.2Vdc	
2	Floating voltage	27.4Vdc	
3	Constant current	1.0A	

4	Switching current	0.2A	
5	Power efficiency	≥75%	At 120Vac & 230Vac rated input voltage

### 3.3 Protection features

- a) Short- circuit protection.
- b) Reverse polarity protection.
- c) Over- voltage protection.
- d) Over-current protection.
- e) Output DC not present when AC is plugged and battery not connected (trigger charger).
- f) No current drain (when output is connected to battery, and there is no current flow from battery if AC is off).

### 3.4 Charging indicator

No.	Item	Status	Remark
1	Power on	LED: Green Flashing	Constant current
2	Charging	LED: Green Flashing	Constant voltage
3	Fully charged	LED: Green (Non- flashing)	Float voltage

Note: When charger is not connected to battery with AC On, the Green LED will light up.

## 4. Safety & EMC

No.	Item	Standard ( or test condition )	Remark
1	Electric strength test	Input-output 1500Vac/10mA/1min	No breakdown
2	Isolation resistance	Input-ground ≥10Mohm@500Vdc	
		Output-ground ≥10Mohm@500Vdc	
3	Leakage current	<10.0mA	At Vin 120Vac & 230Vac, 50-60 Hz.
4	Safety	CE, UL, cUL listed	
5	EMC	EN55022:1998+A1:2000+A2:2003 EN55024:1998+A1:2001+A2:2003 (EN61000-4-2:1995+A1:1998+A2:2001 EN61000-4-3:2002 EN6100-4-4:1995+A1:2000+A2:2001 EN61000-4-5:1995+A1:2000 EN61000-4-6:2001 EN61000-4-11:2001)	
6	LVD	EN60335-1:2002+EN60335-2-29:2002	

## 5.Environmental testing requirements

No.	Item	Technical specification	Remark
1	High temperature ambient operating	+45°C	Features ok

2	Low temperature ambient operating	-10°C	Features ok
3	High temperature storage	+70°C	Work normally after recovery under normal temperature for 2hours
4	Low temperature storage	-40°C	Work normally after recovery under normal temperature for 2hours
5	Random vibration	20Hz to 2000Hz 3Grms 20hours per axis	
6	Repetitive shock	40g peak 3 orthogonal axes, 3+ and 3- in each axis, 11ms pulse width	
7	Thermal shock	-35°C to 75°C, < 3min transition, 2.5hours dwell, 200cycle	
8	Drop test	BS EN60068-2-32:1993 TEST ED: free fall appendix B	

## 5. Mechanical characteristics

5.1 Outline dimension: L\*W\*H=115\*47\*30mm

5.2 Input AC cord: Direct wired US AC plug / Europe AC plug / UK AC plug / Others: optional; 1.0 m length

5.3 Output DC wire: Red (+ve ) & black (-ve ), 1.0 m length without connector (optional).

5.4 Weight: About 300 gm. ( 0.66 lb.)

## 6. Packing, transportation & storage

6.1 Packing:

Well packed and protected in a cardboard carton box .

6.2 Transportation:

Suitable for transportation by truck, ship and plane, the products should be shielded from sunshine and rain, and loaded and unloaded carefully.

6.3 Storage:

Products should be stored in an enclosed package when not in use. Storage temperature should be -40~70°C and relative humidity 5~95%. In the warehouse, there should not be harmful gas, inflammable, explosive products, and corrosive chemical products, and strong mechanical vibration, shock and strong magnetic field force. The packed box should be above ground at least 20cm height, and 50cm away from wall, thermal source, and vent. Under this requirement, the product has 2 years of storage period, and should be rechecked when not in use for over 2 years.

## 7. Reliability requirements

7.1 MTBF(standard, environmental temperature, load requirement)  $\geq 50K$  power on hours at tested value; testing condition: 25°C ambient temperature and at 80% of full load.

7.2 All chargers are burnt-in at an average DC load for a minimum of 4 hours with power on continuously.

## 8. Charger wiring

8.1 DC Red wire : +ve

8.2 DC Black wire : -ve

8.3 Green wire : Inhibit

The charger has a third Green output wire which provides inhibit signal to the vehicle's controller so that the controller stops the equipment from moving when the charger is plugged to an AC source.

The inhibit signal is an open circuit output with low inhibit function ( voltage between +ve and inhibit wire around 27.1V and -ve and inhibit wire around 1.1mV ).

For on-board applications (internal charger ), the inhibit signal is needed only when the AC power is ON, so when the charger is plugged to an AC source, the equipment is inhibited from moving ( the signal becomes "ground" ) and when the charger is not connected to the AC power, the inhibit signal is "not ground " ( floats ), so the equipment can move.

## 9. Label

All Cansai chargers come with a label which clearly indicates the model name, input, output, LED charging indication, cautions and safety approvals.

## 10. Meet RoHS requirements

All Cansai chargers are RoHs – compliant ( optional ) as per the requirements of the Directive of European Council. The RoHs –compliant charger will be supplied subject to customer's requirement.

## 11. Charging Curve:

See separate attachment.

Note : This Specification is subject to change without notice

