



Specification of Battery Charger CIL12-50

**14.6V/50A**

**14.6V / 50A Li Iron/Li Polymer  
BATTERY CHARGER**



## 1. General

Battery Charger CIL12-50 260×175×90mm can work normally under 14.6Vdc/50A and with reverse polarity protection.

## 2. Main product specification

Max. output power	Input voltage	Output voltage	Combined regulation	Output current	Combined regulation
1100W	230Vac	14.6V+/-0.2Vdc	+/-0.2V	50A	+/-5A

## 3. Environmental condition

No.	Item	Technical specification	Remark
1	Humidity	5~95%	With package
2	Altitude	≤3000m	Work normally

## 4. Electrical characteristics

### 4.1. Input characteristic:

No.	Item	Technical specification	Remark
1	Rated input voltage	230Vac	230Vac
2	Input voltage range	180 ~ 240Vac	
3	AC input voltage frequency	50~60 Hz	

### 4.2. Output characteristic or charge stages:

No.	Item	Technical specification	Remark
1	CC (constant current)	≤14.6Vdc, 50A	
2	CV (constant voltage)	14.6Vdc, 50A↓	
3	Float stage	Sin	
4	Power efficiency	≥85%	Vin=230Vac, rated load

#### 4.3. Protection characteristics:

No.	Item	Technical specification	Remark
1	Over voltage protection	Yes	
2	Software over voltage protection	The charger software limits the maximum output voltage to a level suitable for the connected battery system.	
3	Thermal protection	Yes	
4	Current limiting protection	Yes	At CC mode
5	Short circuit protection	Short circuit protection should be automatically recovery after remove the condition.	
6	Reverse polarity protection	When output wires are reversely connected to the battery the charger will not operate and will work normally when DC wires are correctly connected.	

#### 4.4. Charging indicator:

No.	Item	Status	Remark
1	Power on	LED1: Red	
2	Charging	LED2: Red	
3	Fully charged	LED2: Green	
4	Charging Voltage Display	Yes	
5	Charging Current Display	Yes	

#### 5. 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		
3	Leakage current		<3.5Ma	Vin=264Vac
4	LVD		EN60335-1:2002+EN60335-2-29:2002	

Remark: Discrimination A- Function OK under technical requirement range;

Discrimination R- Physical damage or failure of equipment are not allowed, but damage of protection device (fuse) caused by interference signal of outside is allowed, and the whole equipment can work normally after replacement of protection device and reset of running parameter.

## 6. Environmental testing requirements:

No.	Item	Technical specification	Remark
1	High temperature ambient operating	+40°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 2 hours
4	Low temperature storage	-40°C	Work normally after recovery under normal temperature for 2 hours
5	Random vibration	20Hz to 2000Hz 3Grms 20 hours 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	

## 7. Mechanical characteristic:

Shell material: Aluminum.

Outline dimension: L\*W\*H=260×175×90 mm.

Input socket: meets IEC standard.

AC wires: 1.5m length.

DC wire: 1.5m length.

Net Weight: 4.5Kg.

## 8. Package, transportation & storage

### 8.1. Package:

There is product name, model, name of manufacturer, safety approval, serial number, User Manual and packing list in the package box.

### 8.2. Transportation:

Suit for transportation by truck, the products should be shielded by tent from sunshine, and loaded and unloaded carefully.

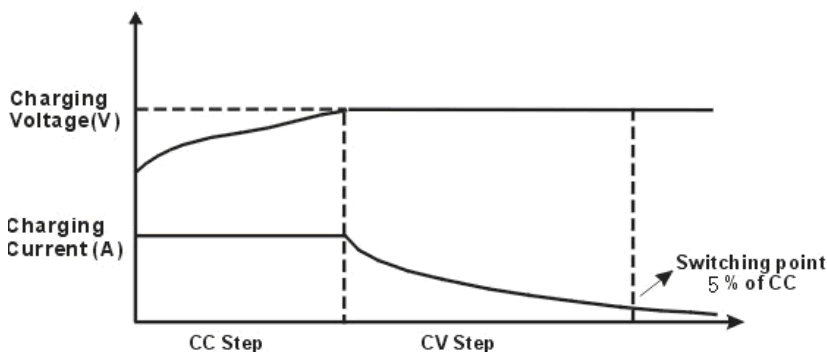
### 8.3. Storage :

Products should be stored in package box when it is not used. And warehouse temperature should be  $-40\sim 70^{\circ}\text{C}$ , and relative humidity is  $5\sim 95\%$ . 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 affection. The package box should be above ground at least 20cm height, and 50cm away from wall, thermal source, and vent. Under this requirement, product has 2 years of storage period, and should be rechecked when over 2 years.

## 9. Reliability requirements:

MTBF (standard, environmental temperature, load requirement)  $\geq 50\text{K}$  hours; testing condition:  $25^{\circ}\text{C}$ , full load, testing proved value.

## 10. Charging Curve:





## Specification of Battery Charger CIL24-25

**29.2V/25A**

### **29.2V / 25A Li Iron/Li Polymer BATTERY CHARGER**



## 1. General

Battery Charger CIL24-25 270×135×70mm can work normally under 29.2Vdc/25A and with reverse polarity protection.

## 2. Main product specification

Max. output power	Input voltage	Output voltage	Combined regulation	Output current	Combined regulation
900W	220Vac	29.2V+/-0.2Vdc	+/-0.2V	25A	+/-0.2A

## 3. Environmental condition

No.	Item	Technical specification	Remark
1	Humidity	5~95%	With package
2	Altitude	≤3000m	Work normally

## 4. Electrical characteristics

### 4.1. Input characteristic:

No.	Item	Technical specification	Remark
1	Rated input voltage	220Vac	220Vac
2	Input voltage range	180-240Vac	
3	AC input voltage frequency	50~60 Hz	

### 4.2. Output characteristic or charge stages:

No.	Item	Technical specification	Remark
1	CC (constant current)	≤29.2Vdc, 25A	
2	CV (constant voltage)	29.2Vdc, 25A↓	
3	Float stage	Sin	
4	Power efficiency	≥85%	Vin=230Vac, rated load

### 4.3. Protection characteristics:

No.	Item	Technical specification	Remark
1	Over voltage protection	Yes	
2	Software over voltage protection	The charger software limits the maximum output voltage to a level suitable for the connected battery system.	
3	Thermal protection	Yes	
4	Current limiting protection	Yes	At CC mode
5	Short circuit protection	Short circuit protection should be automatically recovery after remove the condition.	
6	Reverse polarity protection	When output wires are reversely connected to the battery the charger will not operate and will work normally when DC wires are correctly connected.	

### 4.4. Charging indicator:

No.	Item	Status	Remark
1	Power on	LED1: Red	
2	Charging	LED2: Red	
3	Fully charged	LED2: Green	
4	Charging Voltage Display	No	
5	Charging Current Display	No	

## 5. 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	$\geq 10\text{Mohm}@500\text{Vdc}$	
		Output-ground	$\geq 10\text{Mohm}@500\text{Vdc}$	
3	Leakage current		$< 3.5\text{mA}$	Vin=264Vac
4	LVD		EN60335-1:2002+EN60335-2-29:2002	



**Remark:**

Discrimination A- Function OK under technical requirement range;

Discrimination R- Physical damage or failure of equipment are not allowed, but damage of protection device (fuse) caused by interference signal of outside is allowed, and the whole equipment can work normally after replacement of protection device and reset of running parameter.

**6. Environmental testing requirements**

No.	Item	Technical specification	Remark
1	High temperature ambient operating	+40°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 2 hours
4	Low temperature storage	-40°C	Work normally after recovery under normal temperature for 2 hours
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	

**7. Mechanical characteristic:**

Shell material: Aluminum

Outline dimension: L\*W\*H=270×135×70mm

Input socket: meets IEC standard

AC wires: 1.5m length

DC wire: 1.5m length

Net Weight: 3.0Kg.

## 8. Package, transportation & storage

### 8.1. Package:

There is product name, model, name of manufacturer, safety approval, serial number, User Manual and packing list in the package box.

### 8.2. Transportation:

Suit for transportation by truck, the products should be shielded by tent from sunshine, and loaded and unloaded carefully.

### 8.3. Storage:

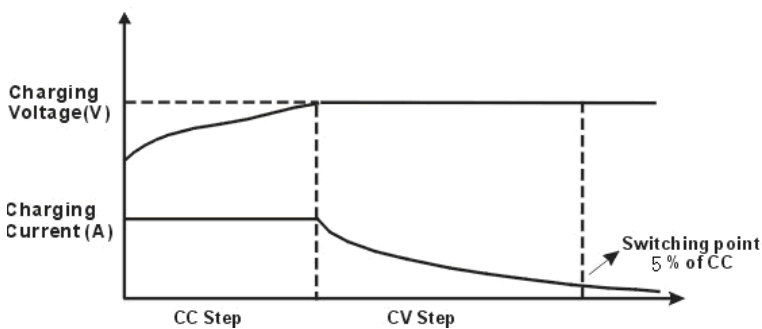
Products should be stored in package box when it is not used. And warehouse temperature should be  $-40\sim 70^{\circ}\text{C}$ , and relative humidity is  $5\sim 95\%$ . In the warehouse, there should not be harmful gas, inflammable, explosive products, and corrosive chemical products, and strong mechanical vibration, shock and strong magnetic field affection. The package box should be above ground at least 20cm height, and 50cm away from wall, thermal source, and vent. Under this requirement, product has 2 years of storage period, and should be rechecked when over 2 years.

## 9. Reliability requirements

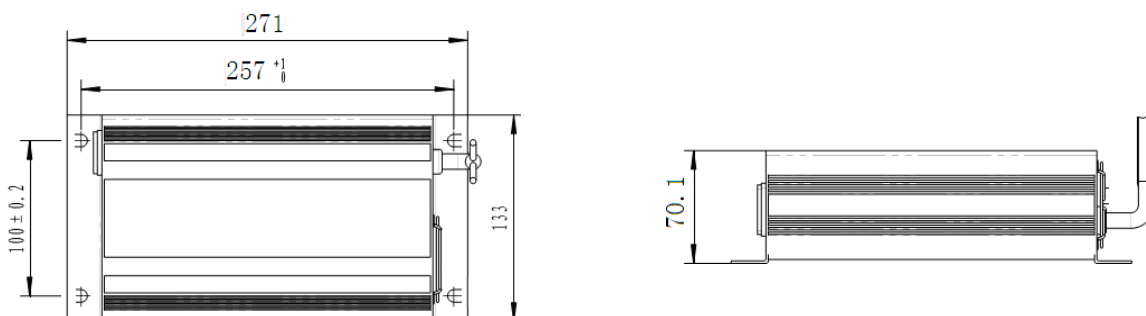
MTBF (standard, environmental temperature, load requirement)  $\geq 50\text{K}$  hours;

testing condition:  $25^{\circ}\text{C}$ , full load, testing proved value.

## 10. Charging Curve



Installation size diagram:





## Specification of Battery Charger CIL48-50

### **LITHIUM BATTERY CHARGER (Aluminum enclosure)**



## 1. General

The series CIL48-50, 410\*292\*174 mm. aluminum shell charger with reverse polarity protection function.

## 2. Main product specification

Model		59.4V50A
Max output voltage	Lithium	59.4V
Output current		50A±5%
Battery Specifications		8
Max. output power		2970W
Input voltage		180-260Vac

## 3. Environmental condition

No.	Item	Technical specification	Remark
1	Humidity	5~95%	With package
2	Altitude	≤3000m	Work normally

## 4. Electrical characteristics

### 4.1 Input characteristic:

No.	Item	Technical specification	Remark
1	Rated input voltage	220Vac	
2	Input voltage range	180-260Vac	
3	AC input voltage frequency	50~60 Hz	

#### 4.2. Output characteristic or charge stages:

No.	Item	Technical specification	Remark
1	Nominal voltage	48V	
2	(Vout)	59.4V	
	CC (constant current)	$\leq V_{out}$	
		50A	
3	CV (constant voltage)	$V_{out}, 50A \downarrow$	
4	Transition Current	$V_{out}, 5A \rightarrow 0$	5%CC
5	Power efficiency	$\geq 86\%$	$V_{in}=220V_{ac}$ , rated load

#### 4.3. Protection characteristics:

No.	Item	Technical specification	Remark
1	Software over voltage protection	The charger output voltage does not exceed set the maximum charging voltage of the battery.	
2	Thermal protection	Aluminum shell the inside temperature $> 65^{\circ}C$ , Automatic Shutdown Transformer temperature $> 110^{\circ}C$ , Automatic Shutdown	
3	Current limiting protection	The charger output current does not exceed a set battery charge current.	At CC mode
4	Short circuit protection	Short circuit protection should be automatically recovery after remove the condition.	
5	Reverse polarity protection	When output wires are reversely connected to the battery the charger will not operate and will work normally when DC wires are correctly connected.	

#### 4.4. Charging indicator:

No.	Item	Status	Remark
1	Power on	LED1: Red LED2: Green	
2	Charging	LED1: Red LED2: Red	
3	Fully charged	LED1: Red LED2: Green	
4	Charging Voltage Display	Yes	
5	Charging Current Display	Yes	

### 5. Safety & EMC

No.	Item		Standard (or test condition)	Remark
1	Electric strength test	Input-output	1500Vac/1min≤10mA	No breakdown
2	Isolation resistance	Input-ground	≥10Mohm@500Vdc	
		Output-ground	≥10Mohm@500Vdc	
3	Leakage current		<3.5mA	
4	Safety		CE	
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	

#### Remark:

Discrimination A- Function OK under technical requirement range.

Discrimination R- Physical damage or failure of equipment are not allowed, but damage of protection device (fuse) caused by interference signal of outside is allowed, and the whole equipment can work normally after replacement of protection device and reset of running parameter.

## 6. Environmental testing requirements

No.	Item	Technical specification	Remark
1	High environmental temperature ambient operating	+40°C	Features OK
2	Low environmental temperature ambient operating	-10°C	Features OK
3	High temperature storage	+70°C	Work normally after recovery under normal temperature for 2 hours
4	Low temperature storage	-40°C	Work normally after recovery under normal temperature for 2 hours
5	Random vibration	20Hz to 500Hz Acceleration 0.49	
6	Repetitive shock	10Hz to 60Hz Amplitude 0.38	
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	

## 7. Mechanical characteristic:

Shell material: Aluminum.

Outline dimension: L\*W\*H=410\*292\*174 mm.

Input socket: meets IEC standard.

AC wires: 1.5m length.

DC wire: 1.5m length.

Net Weight: 18Kg.

## 8. Package, transportation & storage

### 8.1. Package:

There is product name, model, name of manufacturer, safety approval, serial number, User Manual and packinglist in the package box.

### 8.2. Transportation:

Suit for transportation by truck, the products should be Placed in cool dry place, and loaded and unloaded carefully.

### 8.3. Storage:

Products should be stored in package box when it is not used. And Warehouse extreme temperatures should be  $-40 \sim 70 \text{ }^{\circ}\text{C}$ , the normal temperature  $-20 \sim 50 \text{ }^{\circ}\text{C}$ , and relative humidity is  $5\sim 95\%$ . 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 affection. The package box should be above ground at least 20cm height, and 50cm away from wall, thermal source, and vent. Under this requirement, product has 2 years of storage period, and should be rechecked when over 2 years.

## 9. Reliability requirements

MTBF (standard, environmental temperature, load requirement)  $\geq 50\text{K}$  hours; testing condition:  $25^{\circ}\text{C}$ , full load, testing proved value.

## 10. Charging Curve

