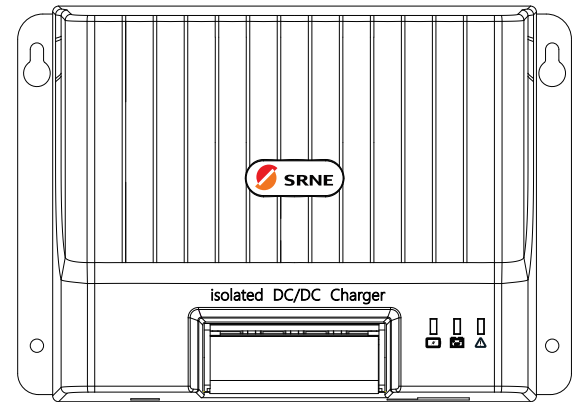


SR-DCI12 Series Isolation Controller

User Manual



Dear users:

Thank you for choosing our products!

Safety Instruction

- 1. Since the applicable voltage of some controller models exceeds the safety voltage of human body, please read the manual carefully before operation and operate the controller only when the safety operation training is completed.
 - 2. Since no part is required to be maintained or repaired inside the controller, please do not disassemble and repair the controller.
 - 3. Please install the controller indoors, and keep water away from the controller.
 - 4. Since the cooling fin will be very hot during operation, please install the controller in a well-ventilated place.
 - 5. Please install a suitable fuse or circuit breaker outside the controller.
 - 6. Be sure to disconnect the wiring on input and output sides before installing and adjusting the wiring of the controller.
 - 7. After installation, check whether all lines are tightly connected to avoid the danger of heat accumulation due to loose connections.
- Warning:** Indicating dangerous operation, and safety preparation is required before operating..
- Attention:** Indicating destructive operation.
- Tips:** Indicating suggestions and tips to the operator.

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1. Product Introduction

1.1 Product overview

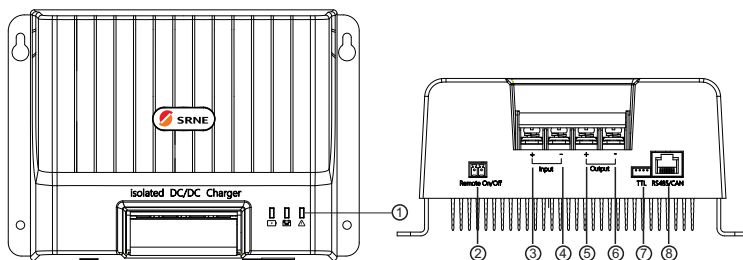
The DCI12 series isolation controller can provide electrical isolation between circuits to prevent interference among current, voltage, and signal. It can improve the stability and reliability of the system.

With charging mode and power mode, the controller can charge the battery and supply power to the load.

1.2 Product features

- ◆ It is suitable for the isolated power supply system.
- ◆ There are optional modes including the charging mode and power mode.
- ◆ Under the charging mode, it supports multiple battery types such as the sealed battery, gel battery, flooded battery, lithium battery, and custom battery.
- ◆ The output voltage is adjustable.
- ◆ Input overvoltage and input undervoltage can be adjusted.
- ◆ It is applied with automatic derating while charging in high temperature.
- ◆ It owns built-in Bluetooth communication, which can monitor and set parameters through the mobile APP.
- ◆ It supports TTL, RS485, and CAN (RVC Protocol) communication.
- ◆ With the IP43 grade of protection, the controller can ensure reliable and efficient operation in various working conditions.

1.3 Appearance and interfaces



S/N	Name
①	Status indicator
②	Remote On/Off interface
③	Input (+)
④	Input (-)
⑤	Output (+)
⑥	Output (-)
⑦	TTL communication interface
⑧	Rj45 interface (RS485, CAN)

2. Product Applications

2.1 Specification and parameter

Parameter	Parameter Value	
Model	SR-DCI12-1230	SR-DCI12-2415
Charging mode		
Input voltage range	10~16V	
Input startup voltage	13.2V	
Input stop voltage	12.5V	
Battery type	Sealed, gel, flooded, lithium iron phosphate, and custom battery(can be set on the APP)	
Output system voltage	12V	24V
Rated charging current	30A	15A
Power mode		
Input voltage range	10~16V	
Input startup voltage	12.5V	
Input stop voltage	12.0V	
Nominal output voltage	12.2V	24.4V
Output voltage range	10~16V	20~32V
Rated output current	30A	15A
Protection function	Internal overtemperature protection, input low voltage protection, input overvoltage protection, output overvoltage protection, output overload protection, and output short circuit protection	
Communication function	Bluetooth, TTL, RS485, and CAN (RV-C)	
Static power consumption	≤60mA	
Remote On/Off	√	
Maximum conversion efficiency	90%	
Protection level	IP43	
Ambient temperature	-35°C~65°C	
Cooling mode	Natural heat dissipation	
Dimension	187*133.6*83.9mm	
Weight	1400g	

2.2 Default parameters of battery type

Battery parameters						
Battery type	Sealed lead-acid battery SLD (default)	Gel lead-acid battery GEL	Flooded lead-acid battery FLD	Lithium battery LI	Custom lead-acid battery USE	Custom battery USE default
Voltage setting						
Overvoltage disconnect voltage	16.0V	16.0V	16.0V	16.0V	10.0~16.0V	16.0V
Equalizing voltage	14.6V	--	14.8V	--	10.0~16.0V	14.6V
Boost voltage	14.4V	14.2V	14.6V	14.4V	10.0~16.0V	14.4V
Floating voltage	13.8V	13.8V	13.8V	--	10.0~16.0V	13.8V
Boost reconnect voltage	13.2V	13.2V	13.2V	13.2V	10.0~16.0V	13.2V
Under-voltage alarming voltage	12.0V	12.0V	12.0V	12.0V	10.0~16.0V	12.0V
Equalizing charging interval	30days	--	30days	--	0~255days	30days
Equalizing charging duration	120min	--	120min	--	0~600min	120min
Boost charging duration	120min	120min	120min	--	10~600min	120min
Note: ① : The above values are the parameters of the system at 25°C/12V. If it is the system of 24V, relevant voltage points shall be automatically multiplied by 2.						

2.3 Definition and description of indicator lights

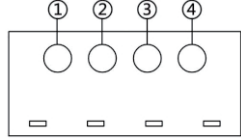
Indicator icon	Definition of indicator light	Indicating color	Indicating method	Description
	Charging icon	Green	Slow flash	Boost charging
			Single flash	Floating charging
			Fast flash	Equalizing charging
			Double flash	Current-limited charging
			Off	Not in charging
	Power mode icon	Yellow	Normally on	Output under power mode
			Off	No output
	Battery type icon	Red	Normally on	FLD
		Yellow		GEL
		Green		SLD
		Blue		LFP12
		Purple		LFP24
		White		USER
	Fault indicator	Red	Normally on	Fault
			Off	Normal

2.4 TTL communication

Users can use the Modbus protocol for controller data monitoring, parameter setting, and other operation through this port.

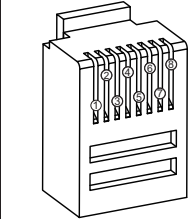
The interface is defined as follows:

1) Default: 9,600 bps, 8, 1, None

 TTL-COM	S/N	Definition
	①	VCC: communication power output 10V±2V, 100mA
	②	RX: controller data receiving end
	③	TX: controller data transmitting end
	④	GND

2.5 RS485 communication and CAN

2.5.1 RJ45 interface definition

	S/N	Definition
	①	CAN_L
	②	CAN_H
	③	NC
	④	NC
	⑤	Power ground/signal ground
	⑥	D-
	⑦	D+
	⑧	Positive terminal

Note: NC represents an empty pin, which means that the pin is not connected.

2.5.2 RS485 communication

1) Default: 9,600 bps, 8, 1, None

2) Interface type: RJ45, communication power supply output specification: 5V/100mA

2.5.3 CAN communication

1) Baud rate: 250 kbps

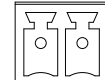
2) RV-C Protocol

2.6 Bluetooth communication

Bluetooth 4.0 module is integrated into the controller, therefore, users can use the mobile APP for data monitoring, settings, etc. You can scan the following QR code to download the APP:



2.7 Remote On/Off

Remote On/Off diagram	Switch state	Equipment operation state
 Remote On/Off	Open	No operation
	Short circuit	Normal operation

3. Fault Alarm

Fault state	Description
Output overvoltage	Under the output overvoltage protection, stop charging
Input low voltage	The input voltage is too low, stop output
Input overvoltage	The input voltage is too high, stop output
High temperature protection	As the equipment temperature is too high, enter the derating output. If the temperature is higher than the high temperature protection value, turn off output
Output overload	Because of the output overload, stop output
Output short circuit	After the short circuit of the output terminal, it can restore automatically for the first 6 times; Clear the fault for the 7th time: 1. Clear the fault in APP manually; 2. Wait for 24 hours, and then it recovers automatically; 3. Restart the controller after power failure.

4. Common Problems and Solutions

Phenomenon	Troubleshooting
The indicator light is not on	Check whether the input side is connected correctly, and whether the Remote On/Off is short-circuited correctly
There is no output on the output side	Use the APP to check whether the output is prohibited, whether the input voltage is too low, whether the controller is overtemperature, whether the charging mode is adopted and the battery is disconnected, and whether there is short circuit, excessive power, etc.
Charging power does not reach the rated value	Check whether there is overtemperature current limit, and whether the maximum output current value set by APP is lower than the rated output current.

5. Product Installation

5.1 Installation precautions

- ◆ Be careful when installing battery. Wear protective goggles when installing a flooded lead-acid battery. Once in contact with the battery acid, rinse with water immediately.
- ◆ Stay away from metal objects to prevent battery short-circuit.
- ◆ Ensure the ambient environment is well ventilated, because the battery may produce acid gas when charging.
- ◆ Stay away from sparks since the battery may produce combustible gases.
- ◆ During outdoor installation, avoid direct sunlight and rainwater infiltration.
- ◆ As false connections and corroded cables may cause extreme heat to melt the cable insulation, burn surrounding materials and even cause a fire, ensure that the connections are tightened, and that the cables are fixed with ties to avoid loose connections due to shaking of cable on the move.
- ◆ The battery terminals on the controller can be connected either to a single battery or a battery pack. The subsequent instructions are for a single battery in this Manual, but they are also applicable to systems with a battery pack.
- ◆ When operating, pay attention to using insulating tools, and ensure that hands are dry.
- ◆ Follow the safety recommendations of the battery manufacturer.
- ◆ Select the system connection wire with a current density of no less than 5A/mm².
- ◆ Ground the ground terminal of the controller, and prohibit the output side from being co-grounded with the another output side.
- ◆ When installing the battery, do not reverse the connection between input and output sides, which may cause irreversible damage.

5.2 Installation steps

Step 1: Select an installation location

Do not install the controller in a place with direct sunlight, high temperature, or where water can easily enter, and make sure the controller is well ventilated.

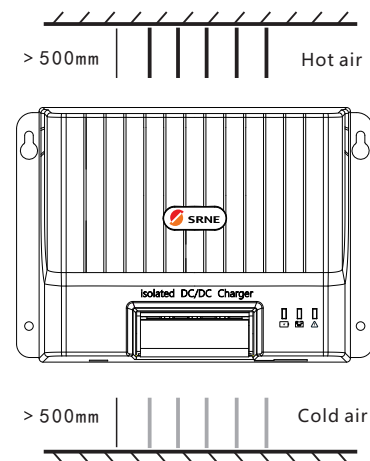
Step 2: Fix suspension screws

Mark the mounting position according to the mounting dimensions of the controller, drill two mounting holes of suitable size at the two marks and fix the screws on the two mounting holes.

Step 3: Fix the controller

Align the controller fixing holes with the two pre-fixed screws to hang the controller up, and then fix the two screws below.

Step 4: Open the front cover of the controller, wire, and then close the front cover.



6. System Maintenance

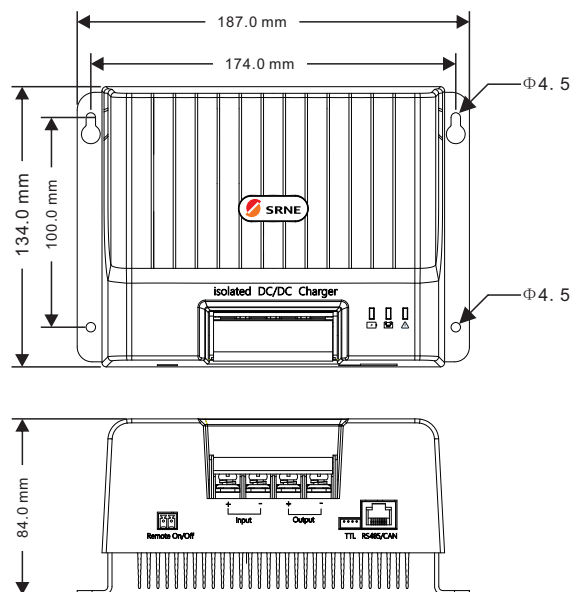
In order to maintain the optimal operating performance of the controller for a long time, it is recommended that the following items are regularly checked.

- ◆ Make sure that the airflow around the controller is not blocked.
- ◆ Take corrective actions timely after any fault or error is found.
- ◆ Check whether there is corrosion, insulation damage, high temperature or burning/discoloring at terminals, case distortion, etc., and repair or replace timely if any.
- ◆ Check whether there is any exposed or broken wire or wire with poor insulation, and repair or replace timely if any.
- ◆ Check whether there is dirt, nesting insects, or corrosion, and clean timely if any.

Warning: Danger of electric shock! Before carrying out checks or operations above, make sure that all power supplies for the controller are disconnected!

Any non-professional personnel is prohibited from carrying out such operations.

7. Product Dimension



Product model : SR-DCI12-1230/SR-DCI12-2415

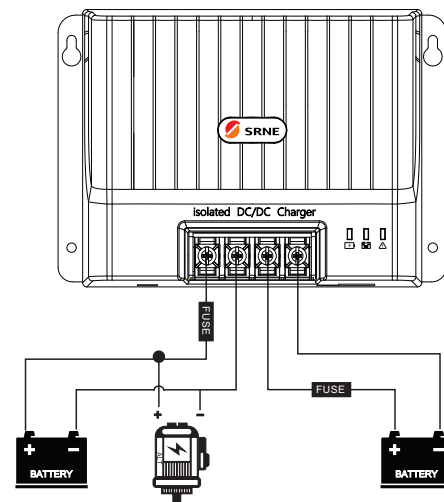
Product dimensions : 187*134*84mm

Mounting hole spacing : 174*100mm

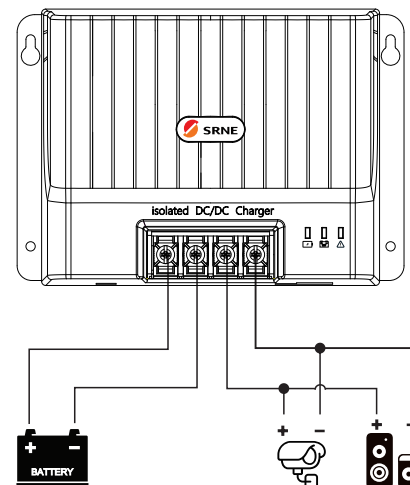
Fixing hole position : $\phi 4.5$ mm

8. System Wiring Diagram

8.1 Charging mode wiring diagram



8.2 Power mode wiring diagram



Note: Do not connect the input negative electrode with the output negative electrode; otherwise, the isolation characteristic will be lost!