SDCS Series Intelligent Dehumidifier Specification

Zhuzhou Sanda Electronic Manufacturing Co. Ltd

Catalog

1. Product Introduction

SDCS intelligent dehumidifier dopts semiconductor cooling dehumidifying mode, under the effect of the fan, initiative make the moist air which in the confined spaces inhaled to the dehumidified air-duct, after through the semiconductor cooling mechanism, the moisture of the air condenses into the water, and then discharge from cabinet through the drain line, can achieve a good dehumidifying effect. By reducing the moisture content of the air, the relative humidity and absolute humidity decreases at the same time while hardly increasing the temperature ,will not bring any negative affect caused by the temperature difference, radically eliminated and reduced the occurrence of accidents ,it also will not speed up the aging of the components inside the cabinet and the cabinet itself due to high temperatures, smart dehumidifier changed the passive prevent condensation mode to an active guidance condensation mode, effectively prevent the aging of the equipment inside the cabinet, reducing the dielectric strength, the second terminal breakdown, material mildew ,rust steel structure and other security risks, ensure the grid's safe operation.

Inside equipment caused condensing creepage, flashover accident, generally occurs in the following situations: Firstly, the area of high humidity, large changes of weather temperature, the bottom of the switchgear was humid, and even have cable trench water; Secondly, some switchgear is in the basement, with high humidity, the inside temperature of the cabinet, especially the temperature close to the ground is under ambient temperature; Thirdly, some equipment is in a temporary outage state, the ambient temperature inside the electrical cabinet is lower than the surrounding environment temperature, it's easy to cause moisture condensation on the surface, in this case, once it transmitted the power and put into operation, the accident will ensued. To ensure the safe operation of the grid system, the long life ,safe and effective use of the electrical equipment ,the grid system proposed the higher requirements of inside cabinet moisture-proof and condensation.

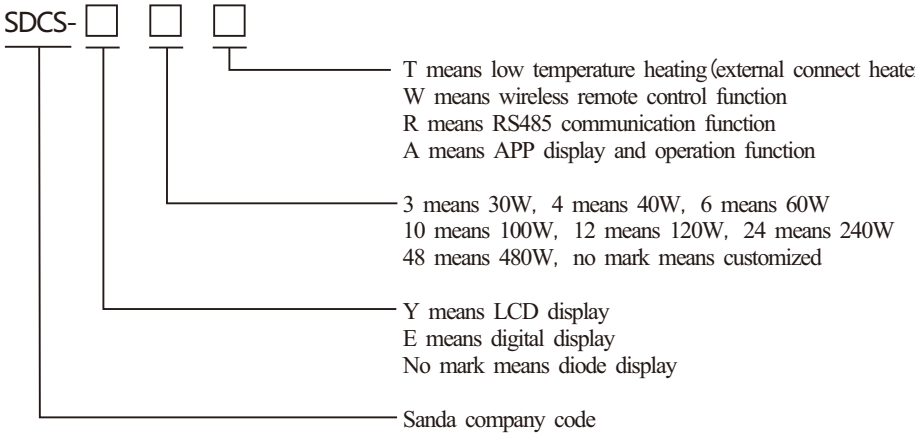
2. The Application

2.1. GIS control cabinet, high and low voltage control cabinet, low voltage switchgear, ring main unit, outdoor terminal box, mechanical control cabinet, box-type substation, dry-type substation electrical equipment;

2.2. integrated circuits, silicon crystal, liquid crystal devices, ceramic devices, resistive and capacitive components, active components, connectors, SMD devices, CPU, computer boards' moisture-proof storage.

2.3. physical and chemical instruments, laboratory materials and insulation materials' moisture-proof management , chemicals, pharmaceuticals, food, fiber and biological agents' moisture-proof storage.

3. Model Definition



Product Ordering Example:

If you need dehumidifier with 60W power, digital display, with external heater function and RS485 communication function, the model number: SDCS-E6TR.

4. Features

4.1. Small size, light weight, simple and easy to install;

4.2. Automatic operation and manual dehumidifying function switching, temperature start value and dehumidifying start value is adjustable;

4.3. Dehumidifying duct actively condensate ,exhaust gas, heating and lower humidity, effectively achieved the comprehensive treatment of the electrical cabinet confined space's dehumidifier moisture.

4.4. Humidity and temperature sensor is real-time sampling during 24 hour, and will automatically incorporated condensate,when exceeds the setting start value.

4.5. Humidity and temperature setting with memory function, will not disappear by power on and power off ;

4.6. Fault display function, can quickly find out the point of failure to ensure the normal operation;

4.7. Using special moisture-proof element, the shell is made of aluminum alloy structure to ensure the normal work in a wet environment;

4.8. The use of shield isolation technology, meets the GB / T17626-2008 Level 3 standards, ensure to work in a strong electromagnetic field;

4.9. Moisture condensation pipeline, can discharge the condensated water outside of the cabinet, and also can collect outside of the cabinet by using liquid storage bags .

4.10. Models with "T" has a heating function, when it detected low ambient temperature in the cabinet , the internal fan and dehumidifying apparatus PTC heater starts to work.

4.11. Models with "W" has a wireless remote control function, the wireless transmission distance is

2000 meters (under open test conditions).

4.12. Models with "S" has RS485 communication function, mailing address adjustable; remote control to adjust the operating parameters and fault reporting functions.

5.Features

5.1. Temperature and humidity monitoring and display functions, dehumidifiying / low temperature threshold can be set;

5.2. Can quickly reduce the inside humidity of the switchgear, water is directly discharged outside of the cabinet;

5.3. Low output contacts: one passive contact output;

5.4. Dehumidifying control mode: manual / automatic;

5.5. The communication function and dehumidifying failure alarm function;

6. Technical Parameters

Data Name	Technical Data	Data Name	Data Name
Working power	AC220V	Dehumidifying efficiency	450ml/day(under the working conditions of 60W 35℃RH=80%)
Heating power	50～500W	Dehumidifying temperature	5℃～45℃
Power	30W, 40W, 60W	Working temperature	-25℃～85℃
Humidity detection range	20%RH～98%RH	Temperature detection range	-25℃～125℃
Dehumidifying start value	45%RH～98%RH (Default setting65%RH)	Temperature start value	1℃～55℃ (Default setting8℃)
Humidity measuring accuracy	±3%RH	Temperature measuring accuracy	±0.5℃
Display method	Double 3-digit display	Display Resolution	0.1
Shell material	Aluminum Alloy	Dimensions	115×67×210mm
Net Weight	1.8kg	Drain line	Silica gel D10mm、L1.5m

7. Working Principle

SDCS intelligent dehumidifier is composed by power supply, air supply system, semiconductor refrigeration, temperature and humidity measurement and control circuit, heating circuit, the wireless module and drain line .

7.1. The dehumidifying principle

When the moist air is sucked through the fan, it will flow through the special designed air duct, firstly flow through the semiconductor cooler,then cooling and condensate, the cooler's condensation will dropped to the flume under the force of gravity, then flows outside the cabinet through the aqueduct. after full cycling dehumidifying within the set start value, make the inside air humidity drops below the dew point knot, to complete the moisture condensation heating process. Meanwhile, the intelligent dehumidifier's signal acquisition sensor is external, can accurately capture real humidity of the cabinet, ensure the intelligent dehumidifier in the cabinet early start dehumidifying when reached the condensation condition.

7.2. Low temperature heating function

When the cabinet temperature is below the set start value, dehumidifier start the internal heater circuits (external heater, the power can be accessed 50 ~ 500W), until the cabinet temperature rises to the set start value over 5 ℃, heater circuits stop working.

7.3. Wireless remote control function

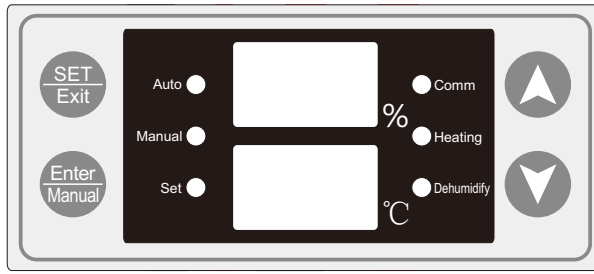
When dehumidifier with wireless control function received the data of master room , after analyzed the data, it will reply the data to the master room immediately, wireless communications up to 200 meters.

7.4. RS485 communication function

When dehumidifier with RS485 communication function received the data of the host computer, after analyzed the data,it will reply the data to the host computer immediately, a master station can connected maximum 200 sets (PC end recommend to connect a 120 ohm load resistance between A and B).

8. Display Description

When power on, the dehumidifier entered the self-test condition, after the self-test is completed, the upper row digital tube display humidity , the lower row digital tube display temperature



9. Operating Instructions

9.1. Manual / automatic mode: When the dehumidifier operating is under automatic mode, "Auto" indicator light, "Manual" indicator off, press the "confirm / Manual" button for one time, Auto" indicator off "Manual" indicator light, and the device starts dehumidifier module, then press the" OK / manual "button

again, the dehumidifier automatically converted to automatic mode, when the dehumidifier module exit manual operation state and press the " OK / manual "key again, the dehumidifier apparatus start manual heating module, after press the" confirm / manual "button the dehumidifier apparatus automatically converted to automatic mode.

9.2. Setting parameters mode: When powered on, after the dehumidifier self-test, it automatically enter the automatic mode, double digital display the current humidity and temperature values. Press the "Set / Exit" button to set the dehumidifying start value, dehumidifying off value, heating value, and wireless communications address.

9.2.1 Setting humidity start value : When the dehumidifier is under normal working state (when double row LED display the current temperature and humidity values, it's the normal state), press "Set / Exit" button, dehumidifier apparatus entered the setting state, the upper row LED display P1 (when the upper row LED display P1, the lower row display the humidity start value; when the upper row LED display P2, the lower row display the humidity off value; when the upper row LED display P3, the lower row display the temperature start value;), press "OK / manual" button, the lower row LED numbers are flashing, then press the "up" or "down" button to modify the start value of humidity; modification completed ,press "OK / manual" button to save, the numbers stop flashing, humidity start value modifying finished.

9.2.2 Setting humidity off value: When the dehumidifier is under normal working state (when double LED row display the current temperature and humidity values,it's the normal state), press "Set / Exit" button, dehumidifier apparatus entered the setting state, press "up "or" down "button until the LED display P2 (when the upper row LED display P1, the lower row display the humidity start value; when the upper row LED display P2, the lower row display the humidity-off value; when the upper row LED display P3, the lower row display the temperature start value;), press "OK / manual" button, the lower row LED number is flashing, then press the "up" or "down " button to modify the start value of humidity; after modified, press" OK / manual "button to save, the numbers stop flashing; humidity off value modifying finished.

9.2.3 Setting temperature start value: When the dehumidifier is under normal working state (when double row LED display the current temperature and humidity values, it's the normal state), press "Set / Exit" button, dehumidifier apparatus entered the setting state, press "up" or "down" button until the LED display P3 (when the upper digital display P1, the lower row display the humidity start value; when the upper row LED display P2, the lower row display the value of the humidity off value; when the upper row LED display P3, the lower row display the value of the temperature start value; when display P4, it display the host's communication address; when display P5, it means coolers stopped the cooling action value;), press "OK / manual "button, the lower row LED number is flashing, then press the" up "or" down "buttons to modify the value of the temperature off value; after modified, press" OK / manual "button to save, numbers stop flashing; temperature start value modifying finished.

9.2.4 Setting communication address: When the dehumidifier is in working properly state (the current

temperature and humidity values displayed by the double LED is the normal state), press "Set / Exit", dehumidifying apparatus entered setting state, press "up" or "down" button until the digital display P3 (when the upper row LED display P1, the lower row display the value of the humidity start value; when the upper row LED display P2, the lower row display the value of the humidity off value; when the upper row LED display P3, represents the lower row display the temperature start value; when display P4, it means the host's communication address; when display P5, it means coolers stopped the cooling action value;), press "OK / manual" button, the lower row LED number flashes, then press the "up" or "down" button to modify the communication address; after modified, press "OK / manual" button to save, digital numbers stop flashing; the temperature start value modifying finished.

9.2.5 Chilling plate stop cooling action value: Press the "OK / Manual" button, the lower LED row number is flashing, then press the "up" or "down" button to modify the value; After modified, press "OK / Manual" button to save, LED number stop flashing; the temperature start value modifying set. (Note: The cooling operation value is use 10 as a reference value, it means 10 represents 0 degrees stop the cooling, 11 represents +1 degrees, 9 represents -1 degree.)

Note: Chilling plate temperature correction value, when the normal boot screen display the temperature and humidity , press the up "and" down "button at the same time, to enter the setup flashes screen, set method is the same as above.

9.3 Remote control: When dehumidifier received the wireless data from master room, communication indicator will flash; about the details of the remote controller please view the wireless remote control software manual.

9.4. RS485 Communications: When dehumidifier received the data from the host computer, the communication light will flash; the details of the communication protocol please check the attachment.

10. Installation

10.1. Using M5 screws or 5mm rivets to fix, the dehumidifier must be upright while installing, outlet facing down;

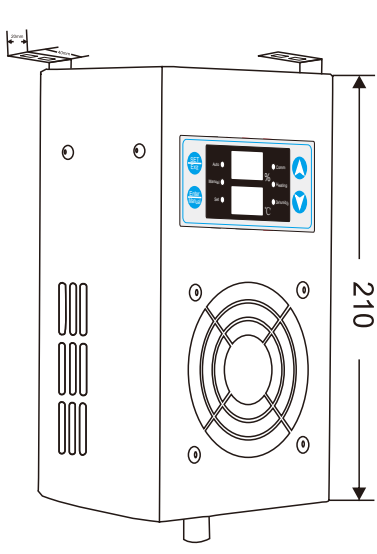
10.2. Ensure there is a over 5 cm space between the front of dehumidifier and other devices, to ensure the wind is out of the positive fan outlet.

10.3. Connect one end of the outlet pipe into the dehumidifier’s delivery port, with clamp fixing, keep the middle of the outlet pipe smooth, it can not be wrapped in order to facilitate drainage. The other end leads to the outside of the cabinet.

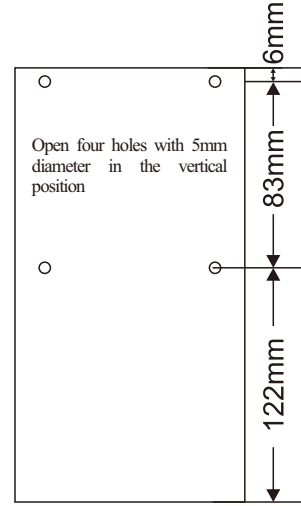
10.4. Connect the power supply terminals L / N to AC230V power supply (see wiring diagram).

10.5. Connect one of the heater's foot to the load L and connect the other foot to the power supply's N foot.

11. Installation Diagram

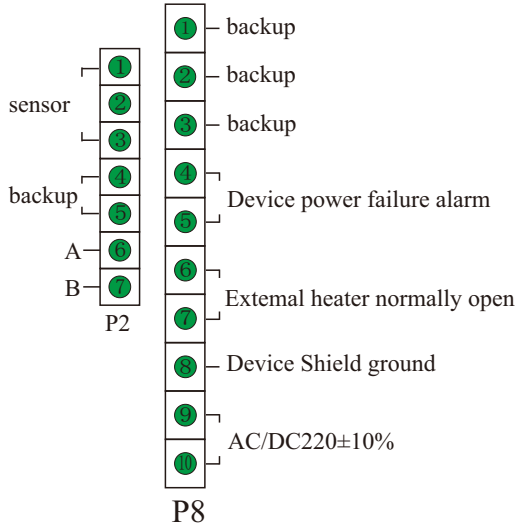


Dimensions：210X115X67(mm)



Wall-mounted installation hole diagram

12. Wiring Diagram



13. Quality Assurance

From the date when the products was delivered, we provide a three-year warranty. During the warranty period, due to the product quality causes damage of the product, our company provide free renewal service, if the products damaged due to improper use and other reasons, not because of the product quality problems , or more than product quality guarantee period, our company provide life-long service and maintenance, only charged the fee of the parts (if need on-site technical guidance it will be charged)

14. Packing List

	Packing list	
1	SDCS series intelligent dehumidifier	1 pcs
2	Product specification	1 pcs
3	Product certificate	1 pcs
4	High temperature resistant silicone drain pipe	1 pcs/2m
5	Drain pipe clamp	1 pcs
6	Mounting brackets and screws	1 set

Attach: Communication Protocol

The device uses MODBUS (RTU mode) communication protocol, RS-485 communication, the baud rate is 9600bps, 1 start bit, 8 data bits, no parity, 1 stop bit, it means 1-byte data have 10 bits. When the device delivery out from the factory, the station number set as 01, the user can re-set according to the real conditions.

1. The master queries temperature and humidity values

Master check real-time harmonics value downlink packet format (8 bytes)							
Device station number	Function code	Starting address		Data length(words number)		CRC16 check code	
Add	03H	00H	00H	00H	06H	High 8-bite	Low 8-bite

Device reply (11 bytes)										
Device station number	Function code	Data length (number of bytes)	Data						CRC16 check code	
Add.	03H	06H	Humidity high 8-byte	Humidity low 8-byte	Temperature high 8-byte	Temperature low 8-byte	Current state	Heating relay status	High 8-byte	Low 8-byte

Instruction: The main station issue this packets can read the current real-time temperature and humidity.

For example: Main station issue: 01 03 00 00 00 06 45 CA

Slave reply: 01 03 06 53 02 0D 01 00 00 BA 07

Note: The temperature and humidity's end-term represents decimals, when it is negative temperature, the highest position of the 16-bit temperature is 1.

Eg: -10.1 ℃ expressed as 1,000,000,001,100,101

2.The master queries setting parameter data

Master check real-time harmonics value downlink packet format (8 bytes)							
Device station number	Function code	Starting address		Data length (words number)		CRC16 check code	
Add	04H	00H	01H	00H	06H	High 8- bite	Low 8- bite

Device reply (11 bytes)										
Device station number	Function code	Data length (number of bytes)	Data						CRC16 check code	
Add.	04H	06H	Humidity start value	Humidity stop value	Temperature start value (heating)	Current dehumidification status	Heating relay status	Spare	High 8- bite	Low 8- bite

Instruction: The main station issue this packets can read the current real-time setting parameter data.

For example: Main station issue: 01 04 00 01 00 06 C8 21

Slave reply: 01 04 06 41 2D 05 01 01 00 88 92 00

Heating relay output state (01 means closure, 00 means normally open)

The packet format send by master		
1	Add	Device address
2	2 010	Command byte
3	Starting address	00
4		
5	Register number	00
6	Humidity start value	0x40
7	Humidity stop value	0x2a
8	Temperature start value	0x05
9	Spare value	0x0a
10	Spare value	0x0a
11	CRC	CRC high
12	CRC	CRC low

3.The master station issue to change the parameter data

Instruction: The master issued this packet can change the dehumidifier's parameter.

For example: Main station issue ： 01 10 00 00 00 06 06 40 2A 05 0A 0A 0A D0 97

Slave reply： 01 10 00 00 00 06 06 F2 8A

The packet standard: Humidity start value set to: 64% RH

Humidity stop value set to : 42% RH

Temperature start value set to: 5 ℃

Note: The alternate register must filled in 0X0A, or it may lead to device failure.

4. The host issue manually start dehumidifying, dehumidifying automatically .

Device station number	Function code	Register address		Set value		CRC check code	
Add.	06h	00	01	00	01(01 means manual dehumidifying 00 means automatic dehumidifying)	High 8-byte	Low 8-byte

The packet format issued by master:

Instruction: The master issued this packet means manually start dehumidifying.

Main station issue: 01 06 00 01 00 01 CA 19

Slave reply: 01 06 00 01 00 01 CA 19

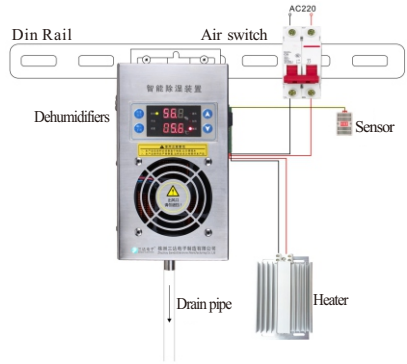
5. Attention

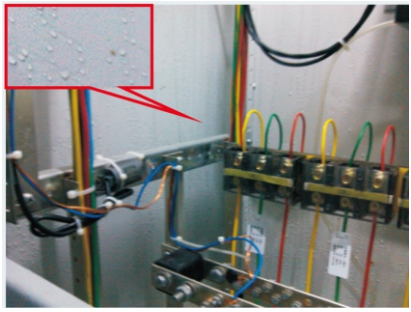
● It is recommended that the 485 MODBUS frame rate which connected to the device is not more than 3 / sec.

● It is recommended that a communication Bus only can connect our company's product.

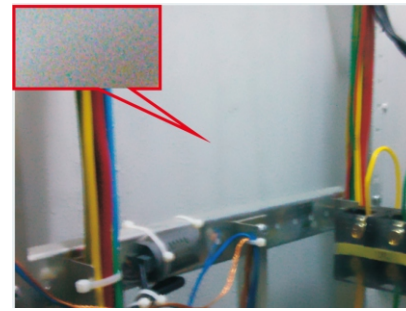
● If you want to change the device station number, it is recommended to stop the background communication.

Intelligent dehumidifier installation diagram





Before dehumidifying the water drops on the cabinet significantly



After dehumidifying there is no water drops on the cabinet

Field installation schematic diagram

Field installation schematic diagram

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