



SDCS Series Intelligent dehumidifier specification

Zhuzhou Sanda Electronic Manufacturing Co, Ltd

Add: No. 502, Wulidun Industrial Development Zone, Liling City, Hunan, China

Tel : +86 731 8853 9799 Fax : +0086 731 8489 5666

Skype : +86 18874731668

<http://www.sandaenvicool.com/>

E-mail: sanda09@digitalmeter-suppliers.com

Zhuzhou Sanda Electronic Manufacturing Co. Ltd

Catalog

1. Product Introduction	1
2. The application	1
3. Model Definition	1
4. Product Features	2
5. Features.....	3
6. Technical Parameters.....	3
7. Working Principle.....	3
7.1 Dehumidification Principle.....	3
7.2 Low Temperature Heating Function.....	4
7.3 Wireless Remote Control Function.....	4
7.4 RS485 Communication Function	4
8. Display Description	4
9. Instructions	4
9.1 Manual/Automatic Mode	4
9.2 Setting Parameters Mode	5
9.3 Remote Control	6
9.4 485 Communication	6
10. Installation	6
11. Installation Diagram	7
12. Wiring Diagram	7
13. Quality Assurance	8
14. Packing List	8
Attach: Communication Protocol	8

1. Product Introduction

SDCS intelligent dehumidifier device adopts semiconductor cooling dehumidify 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 dehumidification 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 the high temperatures, smart dehumidifier device 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 switch gear 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

SDCS-

T means low temperature heating (external connect heater)
 W means wireless remote control function
 R means RS485 communication function
 A means APP display and operation function

3 means 30W, 4 means 40W, 6 means 60W
 10 means 100W, 12 means 120W, 24 means 240W
 48 means 480W, no mark means customized

Y means LCD display
 E means digital display
 No mark means diode display

Sanda company code

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 dehumidification function switching, temperature start value and dehumidification start value is adjustable;
- 4.3. Dehumidification 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).

5. Features

- 5.1. Temperature and humidity monitoring and display functions, dehumidification / 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. Dehumidification control mode: manual / automatic;
- 5.5. The communication function and dehumidify 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°C RH=80%)
Heating power	50~500W	Dehumidify temperature	5°C~45°C
Power	30W, 40W, 60W	Working temperature	-25°C~85°C
Humidity detection range	20%RH~98%RH	Temperature detection range	-25~125
Dehumidify start value	45%RH~98%RH (Default setting 65%RH)	Temperature start value	1~55 (Default setting 8)
Humidity measuring accuracy	±3%RH	Temperature measuring accuracy	±0.5
Display method	Double 3-digit display	Display Resolution	0.1
Shell material	Sheet metal	Dimensions	130×60×243mm
Net Weight	1.44kg	Drain line	Silica gel D10mm、L1.5m

7. Working principle

SD 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 dehumidify 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, dehumidifying device 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°C, heater circuits stop working.

7.3. Wireless remote control function

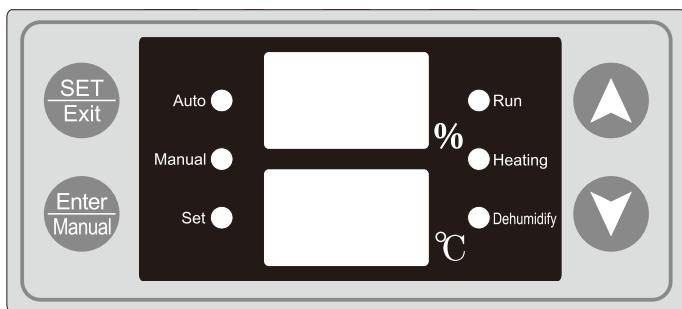
When dehumidifying device with wireless control function received the data of master room , after analyzed the data, it will reply the data to the master room immediately, wireless communications up to 200 meters.

7.4. RS485 communication function

When the dehumidifier device 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 device 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 unit operating is in 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 the power 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 Set humidity start value : when the dehumidifiers device 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, the upper row LED display P1 (when the upper row LED display P1, the lower row LED display the humidity start value; when the upper row LED display P2, the lower row LED display the humidity off value; when the upper row LED display P3, the lower row LED 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 dehumidifiers device 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 LED display the humidity start value; when the upper row LED display P2, the lower row LED display the humidity-off value; when the upper row LED display P3, the lower row LED 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 dehumidifiers device 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 LED display the humidity start value; when the upper row LED display P2, the lower row LED display the value of the humidity off value; when the upper row LED display P3, the lower row LED 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 temperature start value: When the dehumidifier is in normal working state (when double row LED display the current temperature and humidity values, it's the normal state), press "Set /Exit" key dehumidifier apparatus entered the setting state, press "up" or "down" key until the LEDdisplay P3 (when the upper row display P1, the lower row display the humidity start value; when theupper row display P2, the lower row display the humidity off value; when the upper row display P3, the lower row display 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 "key, the lower row LED is flashing, then press " up "or" down "key to modify the temperature off value; press" OK / manual "key to save the data, LED stop flashing; temperature start value modified. When P6 cooling temperature $\geq 65^{\circ}\text{C}$, it will start, if under 5°C of setted value it will stopped. When P3 heating temperature $\leq 5^{\circ}\text{C}$, it will start heating, if over 5°C of setted value it will stopped; P7 for choosing heating and cooling parameters, 00 means heating, 01 means cooling.

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 device 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. 485 Communications: when dehumidifier device 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 the M5 screws or 5mm rivets to fix. the dehumidifier device must be upright While installing, outlet facing down;

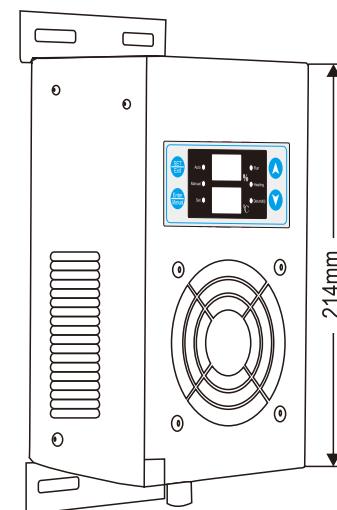
10.2. Ensure there is a over 5 cm space between the front of dehumidifier and other devices, to ensure the wind is out of the positive fan outlet.

10.3. Connect one end of the outlet pipe into the dehumidifier device'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.

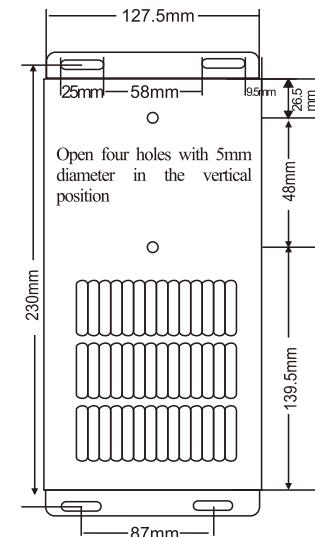
10.4. connect the power supply terminals L / N to AC230V power supply (see wiring diagram).

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

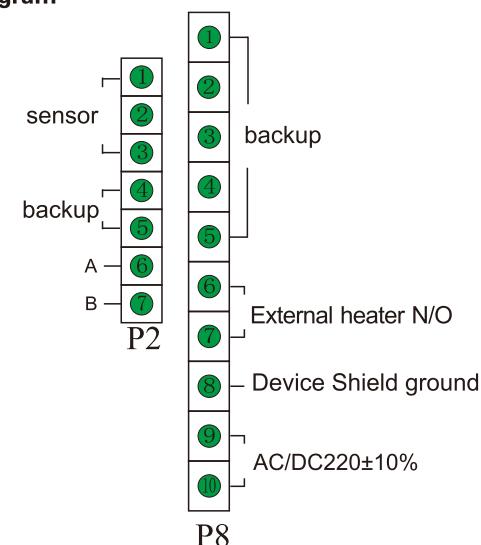


Dimensions : 130×60×243 (mm)



Wall-mounted installation hole diagram

12. Wiring Diagram



P8

13. Quality Assurance

From the data when the products was delivered , we provide a one-year warranty. During the warranty period, due to the product quality causes damage to 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 dehumidify device	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 way, 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-bit	Low 8-bit	
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

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-bit	Low 8-bit

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	Backup	High 8-bit	Low 8-bit

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	Backup value	0x0a
10	Backup 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 °C

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

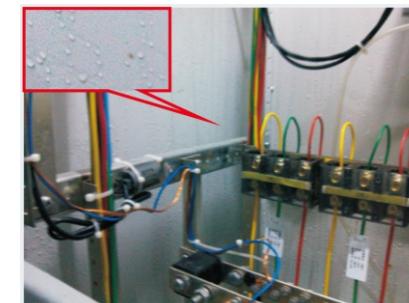
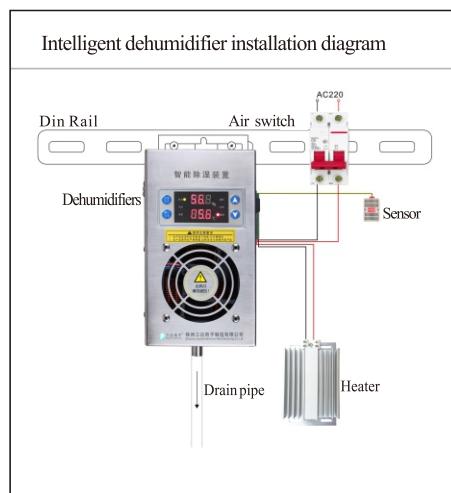
Slave reply: 01 06 00 01 00 01 CA 19

5. Attention

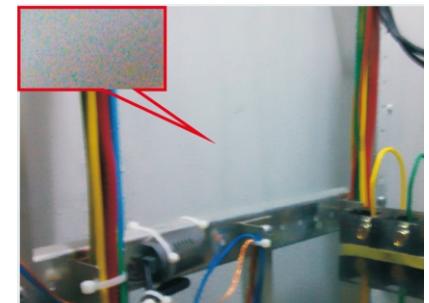
● It is recommended that the 485 MODBUS frame rate which connected to the device is not more than 3 / sec.

● 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.



Before dehumidification the water drops on the cabinet is significantly



After dehumidification there is no water drops on the cabinet



field installation schematic diagram



field installation schematic diagram