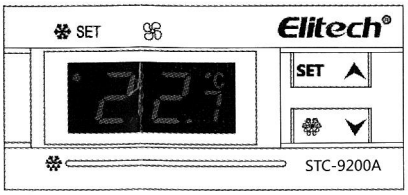
STC-9200A Temperature Controller

1.Product overview

STC-9200A is a universal-type temperature controller. It includes two channels of temperature sensors at maximum for adjusting cabinet temperature and controlling defrost. Support defrost sensor, defrost relay, fan relay and copy card.

2.Operation and display panel



3. Specification

Mounting size: 71 * 29 (mm) Product size: 78.5 * 34.5 * 82 (mm)

4.Technical parameters

1) Temperature measuring range: -50°C~99°C or -50°F~99°F (Only when sensor calibration value is set to 0.)
2) Temperature resolution: 0.1°C/°F(cabinet sensor), 1°C/°F (evaporator sensor)
3) Temperature accuracy: ±1°C (-40°C~50°C); ±2°C(50°C~70°C); ±3°C (others); or ±2°F (-40°F~99°F); ±6°F (others)
4) Temperature control range: -50°C/°F~99°C/°F
5) Power supply: 220±10%(VAC)、50/60HZ;
6) Overall power consumption: <3w
7) Output capacity:
   Refrigeration: 8A/Defrost: 8A/ Fan: 8A
8) Ambient temperature: 0°C~55°C
9) Storage temperature: -25°C~75°C, relative humidity: 20%~85% (non-condensing)

5. Indicator status

Indicator	Symbol	Status	Meaning
Set	**set**	On	Set parameters
		Off	Measuring & controlling
		Flash	Check temperature setting
Refrigeration	❄	On	Refrigerating runs.
		Off	Refrigeration stops.
		Flash	Refrigeration delays.
Defrost	❄	On	Defrosting runs/Drip starts.
		Off	Drip stops.
		Flash	Defrost delays.
Fan		On	Fan starts.
		Off	Fan stops.
		Flash	Fan delays starting after defrost.
Temperature unit	℃	On	℃ is selected as current temperature unit.
Temperature unit	•	On	℉ is not selected as current temperature unit.

6. Parameter list

Menu	Function	Setting range	Default
St	Temperature set-point	Lower temperature set-point ~ Upper temperature set-point	-5
Hy	Control hystersis	0.1~10℃ 1~25℉	2
LS	Lower temperature set-point	-50℃~St -50℉~St	-20
US	Upper temperature set-point	St~99℃ St~99℉	20
ot	Cabinet sensor calibration	-9.9~9.9℃ -20~20℉	0
AC	Delay time to prevent frequent start	0~50 min	3
td	Defrost mode	EL: Electric heating defrost in: Hot gas defrost	EL
dE	Defrost stop temperature	-50~90℃ -50~90℉	10
id	Defrost cycle	0~99 hour	6
Md	Max defrost duration	1~99 min	30
dF	Panel display during defrosting	rt: Cabinet temperature ¡t: Cabinet temperature when defrost starts St: Temperature set-point dF: dF	rt
dt	Dripping time after defrost	0~99 min 0: Disabled	2
FC	Fan running mode	Cn: Fan starts and stops simultaneously with refrigeration, and stops during defrost. on: Fan keeps running, and stops during defrost. Cy: Fan starts and stops simultaneously with refrigeration, and runs during defrost. oy: Fan keeps running.	Cn
FS	Fan stop temperature	-50~90℃	0℃
AU	Upper alarm limit	(AL+1)~99℃ (AL+1)~99℉	99
AL	Lower alarm limit	-50℃~(AU-1) -50℉~(AU-1)	-50
Ad	Alarm delay	0~99 min	15

Note①: After Celsius/ Fahrenheit switch, the user needs adjusting the value of other related parameter items to ensure the configuration correct.
Note①: The default parameters in the manual are subject to change without notice

7. Buttons

7.1 Button names and functions

Button	Function	Action	Indicator
Set	View temperature set-point	Press and release	set is Flash.
	Adjust temperature set-point	Press and hold for 2 sec	set is on.
	Save temperature set-point and exit setting	Press it and the controller responds.	set is off.
	Switch between parameter item and value in parameter setting status	Press it and the controller responds.	set is on.
Set+▼	Enter parameter settings	Press and hold for 3 sec	set is on.
Set+▲	Exit parameter settings	Press it and the controller responds.	set is off.
	Reset parameter	Press and hold for 3 sec	If it succeeds, the panel displays "rst"
▲	View previous parameter item or decrease parameter value	Press it and the controller responds.	set is on.
	Upload parameters to the copy card	Press and hold for 1 sec	If it succeeds, the panel displays "uP"; if it fails, the panel displays "Er";
▼	View next parameter item or increase parameter value	Press it and the controller responds.	set is on.
	Download parameters from the copy card	Press and hold for 1 sec	If it succeeds, the panel displays "do"; if it fails, the panel displays "Er"; if copy card parameter is inconsistent with controller model, the panel displays "EP".
❄	View evaporator sensor temperature	Press it and the controller responds.	The panel displays evaporator temperature
	Start manual defrost	Press and hold for 2 sec	❄ is on.

7.2 Operation of buttons

View temperature set-point:

Press and release Set button, the panel displays temperature set-point and the indicator set lights.

Press Set or wait 15 seconds without pressing any button to return to normal display.

Modify temperature set-point:

Press and hold Set button 2 seconds, the panel displays temperature set-point and indicator set lights.

Press ▲ or ▼ to modify the set-point in 15 seconds.

Press Set or wait 15 seconds without pressing any button to save the new set-point.

Modify parameter value:

Modify user layer parameter (layer 1 Pr1)

Press and hold Set and ▼ 3 seconds to enter the user layer menu, the indicator set lights.

Select parameter item and press Set again to display its value.

Press ▲ or ▼ to modify the value.

Press Set to confirm the value and display next parameter item.

Press Set and ▲ or wait 15 seconds without pressing any button to save the new value and exit.

Modify hidden layer parameter (layer 2 Pr2)

(In hidden layer, all the parameter items can be viewed (Pr1, Pr2).)

Press and hold Set and ▼ 3 seconds to enter the menu, user layer, the indicator set lights.

Press and hold Set and ▼ 7 seconds, the panel displays L2; release the two buttons, it displays Hy, indicating entering hidden layer.

Select parameter item and press Set again to display its value.
Press ▲ or ▼ to modify the value.
Press Set to confirm the value and display next parameter item.
Press Set and ▲ or wait 15 seconds without pressing any button to save the new value and exit.
Note: If there is no parameter item in Pr1, the panel will display "nP" after entering Pr1; press and hold Set and ▼ until L2 is displayed to enter Pr2.
Move parameter item from Pr2 to Pr1 (i.e. reverse movement)
In Pr2, press Set and ▼ to move parameter item between Pr2 and Pr1.
In the movement process, the decimal point turns off to indicate the parameter item is moved to Pr1, and the decimal point lights to indicate the parameter item is only visible in Pr2.
Lock/Unlock buttons
Press and hold ▲ and ▼ more than 3 seconds, the panel displays "oF" and buttons are locked. Parameters cannot be adjusted, defrost cannot be started or stopped manually.
Press and hold ▲ and ▼ more than 3 seconds, the panel displays "on" and buttons are unlocked.
Parameter reset
Press and hold set and ▲ more than 3 seconds, the panel displays "rst", indicating a successful parameter reset. Each parameter is reset to the value downloaded to the controller by copy card.
Manual defrost
In non-setting status, press ❄ to view current temperature measured by evaporator sensor (when evaporator sensor is enabled and normal). Press and hold ❄ 2 seconds to force defrost to start.

8. Copy card

Upload (copy the parameters in the controller to copy card)
Use buttons to set parameters.
Insert copy card, press ▲ until the panel displays "uP".
Remove copy card after 3 seconds and then power on the controller again.
Download (copy the parameters in copy card to the controller)
Insert copy card, press ▼ until the panel displays "do".
Remove copy card and power on the controller again after 3 seconds.
Note: The display of "Er" indicates programming failure. Check whether the copy card is connected and repeat the above operation.
The display of "EP" indicates that the data in the copy card is not consistent with the controller model and programming fails. Please use correct copy card or upload data to the copy card again. Then repeat the above operation.
(★ Please keep a stable power supply and effective connection of copy card in the process. Do not remove the copy card before completely finishing the operation.)

9. Control output

Refrigeration:
In normal status:
Refrigeration starts when cabinet temperature > temperature set-point + control hystersis (Hy), and delay time to prevent frequent start (AC) elapses.
Refrigeration stops when the cabinet temperature ≤ temperature set-point.
Refrigeration starts when the controller is energized for the first time, output delay after being energized (od) elapses, cabinet temperature > temperature set-point + Hy.
In case of cabinet sensor fault:
Refrigeration/heating runs in cycle per the set start and stop time. Wherein,
When Cy=0 and Cn=0, refrigeration stops.
When Cy=0 and Cn≠0, refrigeration stops.
When Cn=0 and Cy≠0, refrigeration starts.

Defrost:

1) id=0, defrost is disabled.

2) id≠0, not in defrost status:

① When evaporator sensor is enabled (P2=y), and the temperature of evaporator sensor > defrost stop temperature (dE), defrost cannot start.

② When evaporator sensor is enabled (P2=y), and the temperature of evaporator sensor < defrost stop temperature (dE), or evaporator sensor is disabled (P2=n), defrost starts under any one of the following conditions:

a. When defrost cycle (id) elapses, defrost starts.

b. Press ❄ 2 seconds to start defrosting.

Defrost delay (dd) elapses, defrost outputs.

3) During defrosting (defrost stops under any one of the following conditions):

① P2=y, and the temperature of evaporator sensor > defrost stop temperature (dE), defrost stops.

② When the Max defrost time (Md) elapses, defrost stops.

4) It starts dripping after defrost. Refrigeration is disabled in dripping time (dt), during which drips generated in defrost are drained. After dripping time elapses, refrigeration cycles.

Note: In defrost process, the panel displays:

dF=rt: Cabinet temperature

dF=it: Cabinet temperature when defrost starts

dF=St: Temperature set-point

dF=dF: dF

Defrost mode / System status	Electric heating defrost	Hot gas defrost
Refrigeration outputs.	Compressor is on.	Compressor is on.
	Electrical heating is off.	Four-way valve is off.
Defrost delays.	Compressor is off.	Compressor is off.
	Electrical heating is off.	Four-way valve is on.
Defrost outputs.	Compressor is off.	Compressor is on.
	Electrical heating is on.	Four-way valve is on.
Drip after defrost.	Compressor is off.	Compressor is off.
	Electrical heating is off.	Four-way valve is on.

Fan

Fan running mode:

FC=cn: Fan starts and stops simultaneously with refrigeration, and stops during defrost.

FC=on: Fan keeps running, and stops during defrost.

FC=cy: Fan starts and stops simultaneously with refrigeration, and runs during defrost.

FC=oy: Fan keeps running.

When FC=cn or on, fan can run again after fan start delay after defrost (Fd) elapses.

If P2=y and the temperature of evaporator sensor > fan stop temperature (FS), fan stops.

Fault alarm

The panel displays "P1" or "P2" in case of sensor fault. After the fault is removed, alarm will automatically reset.

Over cabinet temperature limit alarm:

When cabinet temperature > upper alarm limit (AU), alarm delay (Ad) and alarm delay after startup (dA) elapse, the panel will display HA; when cabinet temperature < AU, alarm will be removed.

When cabinet temperature < lower alarm limit (AL), Ad and dA elapse, the panel will display LA; when cabinet temperature >AL, alarm will be removed.

Code	Cause	Output status
P1	Cabinet sensor fault	Compressor runs per parameters "Cy" and "Cn".
P2	Evaporator sensor fault	Defrost runs per parameters "id" and "Md".
HA	High cabinet temperature alarm	Output does not change.
LA	Low cabinet temperature alarm	Output does not change.
nP	Evaporator sensor is disabled, but the measured temperature value of evaporator sensor is selected to show.	Output does not change.
Er	Programming failure of copy card	Output does not change.
Ep	The data in copy card is inconsistent with the controller model, so programming fails.	
rst	Successful reset	

10. Safety rules

★Danger:

1) Do distinguish the ports of sensor lead, power line and relays. Please do not connect lines wrong. The relay cannot be overloaded.

2) Wiring requires disconnection of power supply first.

★ Warning:

The controller is forbidden to be used in water or too humid environment, high temperature, strong electromagnetic interference or strong corrosion environment.

★Notice:

1) The power voltage must be in accordance with the voltage labeled on the controller. Please ensure the stability of power voltage.

2) Suggest to keep suitable distance between sensor lead and power line to avoid possible interference.

3) In installing evaporator sensor, the sensor should be placed closely to the copper pipe 5 cm to the evaporator inlet. Please ensure the sensor keeps good contact with the copper pipe.

4) Remove the sensor by slightly plugging out its end downwards.