

SERVICE BULLETIN

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Title: Adjusting Controller parameters AC Series.

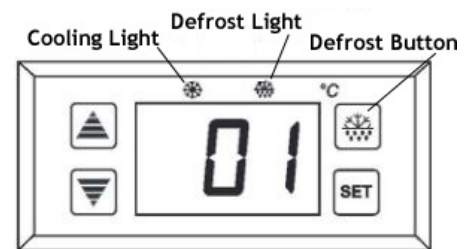
Models effected: AC720, AC1020, AC1590

Reason: Customer requirements may need lower temperatures than factory settings.

Factory Settings:

Temp: 5c

Parameter:	E1:	2 Min set temp
	E2:	8 max Set temp
	E3:	5 Differential
	E4:	3 Compressor start Delay
	E5:	0 Outside temp



Method:

Hold down the "SET" button for approx 7 seconds. "E1" will flash.

1. While "E1" is flashing use the left side up and down arrows to change the parameter settings.
2. Press the "Set" button again to move to "E2" and so forth through to "E5".

Parameter:	Recommended setting
E1: Lower Set point.	0 to 2
E2: High Set point	8
E3: Differential	3 to 4
E4: Compressor Start Delay	2
E5: Probe off set.	0

Note: Cabinet is not designed to be run at negative temperatures. To guarantee cyclic defrost the Lower set point + the Differential must be greater than 3 degrees..

Set the Operating Temperature

1. Press and hold the "SET" button. Until the display starts to flash.
2. While the display is flashing use the left side up and down arrows to display the correct temperature.
3. Press the "SET" button to store the temperature.

Manual Defrost

The Control features an automatic defrost. However, should the appliance require an additional defrost period press and hold the "Defrost" button for 6 seconds.

Automatic defrost cycles are every 6 hours and last 28 minutes (factory defaults).

To stop the Defrost press and hold the "Defrost" button for 6 seconds.

Note: If a manual defrost is started this resets the automatic defrost timer. During defrost periods the Defrost light is illuminated.

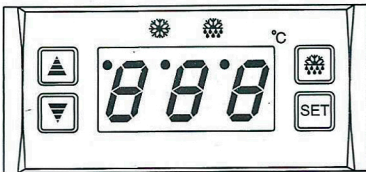
1.Features:

Thin waterproof design; An external transformer, which is easy to install; Control compressor ≤ 1HP; Display and control temperature; Forced stop the unit; Setting memory; Self-diagnosis.

2. Technical Parameters:

- 2.1 Power supply: 12V AC (one transformer could only be applied for one controller.)
- 2.2 Sensor: NTC 2-meter-long (regardless of plus or minus)
- 2.3 Temperature display range: -50 °C ~ +99 °C Accuracy: 1 °C
- 2.4 Temperature controlling range: -50 °C ~ +99 °C Default: 4°C
- 2.5 Appearance Size: (W) 77 mm × (H) 35 mm × (D) 30 mm
- 2.6 Installation hole size: (W) 71 mm × (H) 29 mm
- 2.7 Operating temperature: -10 °C ~ +60 °C
Relative humidity: 20%~90% (No condensate)
- 2.8 Relay capacity of compressor: 30A/250VAC (normally open)

3.Panel Instructions:



4.Operation and Parameters Instructions:

- 4.1 Controlling temperature calibration: Press **SET**, the screen flashes to display controlling temperature. Press **▲** or **▼** to calibrate and save the setting values, then press **SET** to exit and display the storage temperature; The unit will exit to display the storage temperature if no button operation in 10 sec.
- 4.2 Refrigeration indicators: Indicator light on: the unit is in refrigeration status; Indicator light off: the unit is in constant temperature status; Indicator light flashes: the unit is in compressor delay protection or stop to defrost status.
- 4.3 Defrosting indicators: Indicator light on: the unit is in defrosting status; Indicator light flashes: the unit is in the delay protection status after defrosting.
- 4.4 Manual start up/end defrosting: Press **SET** & **⊞** for more than 10 sec., the unit could start up / end defrosting status.
- 4.5 Parameter Setting:
 - ◆ Press **SET** for more than 6 sec. to enter parameter setting status, E1 flashes simultaneous;
 - ◆ Press **SET** again to choose the parameter, it displays E2, E3, E4, E5 and E1 in turn;
 - ◆ Press **▲** or **▼** to calibrate and save the setting values.
 - ◆ The unit will exit to display the temperature if no button operation in 10 sec.

Parameter	Function	Setting range	Default
E1	Min. controlling temperature	-50 °C ~ controlling temperature	-20 °C
E2	Max. controlling temperature	controlling temperature ~ +99 °C	8 °C
E3	Temperature difference	1 °C ~ 20 °C	5 °C
E4	Delay time for start up	0 ~ 10 min.	3 min.
E5	Sensor calibration	-10 °C ~ 10 °C	0 °C

4.6 Restore default:

Press **▲** + **▼** together for more than 10 sec., the screen display flashes. All parameters will restore to default values. The unit will exit to normal working status in 10 sec.

4.7 Parameter lock:

Press **▼** for more than 10 sec. the screen flashes 'OFF' to indicate the parameters has been locked. The parameters and controlling temperature could be only watched but not calibrated in the lock status. The screen flashes 'ON' to indicate unlocks the parameters. (Default is 'ON')

5.Function Instructions

5.1 Temperature controlling:

- ◆ Electrify the unit for more than the delay time, compressor starts up when the storage temperature is higher than the controlling temperature + temperature reference. When temperature is lower than the controlling temperature, compressor stops working.
- ◆ To protect compressor, To protect compressor, the stop time for compressor must be longer than the delay time (refer to E4) then the compressor could be start up again.
- 5.2 Timing defrosting.
 - ◆ The unit will stop to defrost automatic after running a period (refer to F2). The compressor stops to work and fan starts up, the unit will enter the temperature controlling status automatically when defrosting ending (refer to F1).
 - ◆ If F4=1, the screen displays the temperature of the point at the defrosting start; After the defrosting finishes, the storage temperature displays the delay time set by F6, the screen returns to display the normal temperature.
 - ◆ The defrost function will be cancelled when the defrosting cycle is 00.

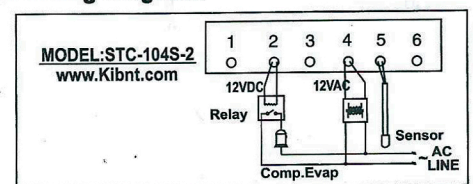
- ◆ In normal working status, and the value of F2 is not 0, press **SET** and **⊞** for more than 10 sec. to forced enter the defrost status. It'll running for the period set by F1 and exit to the normal working status automatically.
- ◆ Press **SET** and **▼** for more than 6 sec to enter the parameter setting status, the screen displays F1, press **SET** to display F2,F4 in turn. Press **▲** or **▼** to calibrate and save the setting values.
- ◆ The unit will exit to display the temperature if no button operation in 10 sec.

Parameter	Function	Setting range	Default
F1	Defrosting time	1 ~ 80 min.	28 min.
F2	Defrosting cycle	0 ~ 24 hour	6 hour
F4	Temperature display when defrosting	0: Normal temperature 1: Temperature when defrosting start.	1
F6	Temperature display lock after defrosting	1 ~ 30 min.	10 min.

5.3 Abnormal working status:

HHH: Probe of storage temperature sensor is in short circuit, or the temperature exceeds the Max temperature limit(>99°C)
LLL: Probe doesn't connect to the circuit or the temperature exceeds the Min temperature limit (<-50°C);
The unit will enter into timing status, and compressor will working 15min. and stop working for 45 min..

6. Wiring Diagram:



7. Warnings:

- 7.1 Strictly distinguish the sensor down-lead, power wire and output relay interface from one another, and prohibit wrong connections or overloading the relay. Ensure to keep the metal probe of sensor toward up.
- 7.2 Prohibit connecting the wire terminals without electricity cut-off. Prohibit using the machine under the environment of over damp, high temp., strong electromagnetism interference or strong corrosion.
- 7.3 The power supply should conform to the voltage value indicated in the instruction and keep the voltage stable.
- 7.4 To avoid the interference, the sensor down-lead and power wire should be kept a distance. The sensor should be installed away from the venthole to improve the measuring accuracy.

8. Accessories:

- 8.1 An external transformer
- 8.2 An external relays