

# MTC-3000 Instruction

User Menu and Manager Menu. Temperature return difference set. Double sensors, defrosting controlled by temperature. Defrosting cycle is calculated by the compressor accumulative working time. Enforced refrigeration and defrosting, Temperature calibration, Alarm and quit, Compressor delay protection. MTC-3000 is universal.

## Specification and Technical parameters:

Product size: 97.5×50 (Unit: mm)  
 Mounting size: 91.5×45.5 (Unit: mm)  
 Environment temperature: 0℃~60℃  
 Relative humidity: 20%~85% (No condensate)

Main technical parameters:

Power supply: 220VAC ±10%  
 Power consumption: <5W  
 Temperature measuring and controlling range: -40℃~+50℃

Resolution: 0.1℃

Accuracy: ±1℃

Relay contact capacity: 10A/220VAC

Main Functions:

Temperature measuring, displaying and controlling  
 Return difference for Temperature controlling  
 Set the defrosting cycle and time. Defrosting controlled automatically

Defrosting cycle is calculated by the compressor accumulative working time

Set the defrosting-end temperature

Defrosting is dually controlled by time and temperature

Enforced refrigeration and defrosting

Compressor delay protection

Temperature calibration

Alarm when exceeding the temperature limits

## Descriptions of indicating lights:

Indicator	Light	Function
Compressor Indicator	Blink slowly	Compressor delay
	Light on	Compressor works normally
	Light off	Compressor stops working
Defrosting Indicator	Blink quickly	Compressor enforced refrigeration
	Light on	Auto defrosting
	Blink	Enforced defrosting
	Light off	Defrosting stops
Setting Indicator	Light on	On setting status
	Light off	Work normally

## Key Functions:

### Defrosting key:

When compressor and defrosting equipments stop or under the state of auto refrigeration, and the temperature detected by the defrosting sensor  $\leq$  Defrosting-end Temperature, press Defrosting key for 3 seconds or more to enter enforced defrosting state. Stop auto refrigeration before enforced defrosting. Under defrosting state, press Defrosting key for 3 seconds or more to quit Defrosting.

When compressor and defrosting equipments stop or under defrosting state and storage temperature higher than Set temperature, press Set key and Defrosting key together for 3 seconds or more into enforced refrigeration. Stop the defrosting before enforced refrigeration. Under refrigeration state, press Set key and Defrosting key together for 3 seconds or more to quit refrigeration.

### "▲" Key

Under menu setting state, press "▲" Key to change menu items; under parameters setting state, press "▲" Key to change the set parameter. Press once the parameter will add one unit. Under non-setting state, press "▲" Key to display defrosting sensor temperature and Return difference, each for 2 seconds and then display current storage temperature.

### "▼" Key

Under menu setting state, press "▼" Key to change menu items; under parameter setting state, press "▼" Key to change the set value. Press once the value will decrease one unit. Under non-setting state, when defrosting, press "▼" Key to display set temperature

and left defrosting time, each for 2 seconds and then display current storage temperature. Under non-defrosting state, press "▼" key to display set temperature and the time till next defrosting, each for 2 seconds and then display current storage temperature. When cancel defrosting function, press "▼" Key to display set temperature and "99"/"99" means to cancel defrosting function), each for 2 seconds and then display current storage temperature.

### Set Key

Press Set Key can enter or quit from setting states, can save the set value; Press Set Key and Defrosting Key together, can enter or quit enforced refrigeration state.

## Parameter Display and Set

### Parameter Display

Under non-setting state, press ▲ key to display the temperature of defrosting sensor and Return Difference, each for 2 seconds and then display current storage temperature.

Under non-setting state and defrosting state, press ▼ Key to display set temperature and left defrosting time, each for 2 seconds and then display current storage temperature. Under non-defrosting state, press ▼ Key to display set temperature and the time till next defrosting, each for 2 seconds and then display current temperature. When cancel defrosting function, press ▼ Key to display set temperature and "99" each for 2 seconds and then display current storage temperature.

### Parameter Set

Under non-setting state, press Set key for more than 3 seconds into User's Menu. Under non-setting state, press Set key for more than 10 seconds into Manager Menu. (The setting ways of the two menus are the same.) When enter into the menu, the setting indicating lights on, LED displays the setting menu items, press ▲ or ▼ Key to select the menu items.

Under menu-setting state, press Set key for less than 3 seconds into parameter setting state of selected menu. The indicating light on and LED displays the current menu set parameters.

Under parameter-setting state, press ▲ or ▼ Key to change the parameters. Press ▲ or ▼ Key for more than 2 seconds to fast change the parameters; Press Set Key (For less than 3 seconds) to save the parameter and quit parameter setting state into next menu item's setting.

Under setting state, Defrosting Key is not available.

Under any setting state, press Set Key for more than 3 seconds to save changed parameters and quit setting state.

Under setting state, no enter for 30 seconds, system will save current value and quit setting state.

## Main function instructions:

When Compressor meets a b c items simultaneously or meets a d e items simultaneously, the compressor turns to work:

- Compressor delay time  $\geq$  set delay time
- Storage temperature  $\geq$  set temperature +Return Difference
- Defrosting end
- Enforced refrigeration
- Storage temperature  $\geq$  set temperature

When meet any one of following requirements, compressor stops working:

- Storage temperature  $\leq$  set temperature
- Enforced refrigeration stop
- Defrosting start

When meet a b simultaneously or a c simultaneously, defrosting starts:

- Defrosting sensor's temperature < set defrosting-end temperature
- Compressor accumulative working time reaches the set defrosting cycle
- Enforced Defrosting start

When meet any one of following requirements, defrosting ends:

- Defrosting sensor's temperature  $\geq$  set defrosting-end temperature
  - Run out the set defrosting time
  - Enforced refrigeration start
- When defrosting time and defrosting cycle, either of them set "0" to cancel the defrosting function.

## Alarm Function

- Sensor error alarm:

After electrified, when storage temperature sensor error, LED blinks to display E1 with buzzer sound; when defrosting sensor error, LED displays E2 and current storage temperature alternately with buzzer

sound. When the two sensors error at the same time, LED displays E1 and E2 alternately with buzzer sound. When storage temperature sensor error user can also run or cancel the enforced refrigeration function, when defrosting sensor error user can also run or cancel enforced defrosting function.

b) Alarm when temperature exceeds the limit  
 Measuring temperature displays blinking with buzzer sound when storage temperature Temperature set value + Return difference + Value of Temperature exceeding setting limit or measuring temperature Temperature set value - Value of Temperature exceeding setting limit. When set the value of exceeding temperature limit as 20℃, alarm eliminates.

c) Alarm when exceeding measuring range:  
 Alarm with buzzer sound when storage sensor measuring temperature > +50℃ or < -40℃ and the LED will display "HH" or "LL"

d) Clear the alarming sound

Under alarming state, press any key to clear the alarming sound but no changes to the LED display.

## Manager Menu Setting range:

Item	Setting range	Default	Menu Display
Compressor delay	0~9 minutes	3 minutes	F3
Defrosting cycle	0~99 hours	6 hours	F4
Defrosting time	0~99 minutes	30 minutes	F5
Defrosting-end Temp.	0~35℃	10℃	F6
Alarm when exceeding the temperature limit	0~19℃ when 20℃ to cancel alarm	5℃	F7
Temperature calibration	-5~+5℃	0	F8

Note: If defrosting time or defrosting cycle sets 0, it will cancel defrosting function.

## Parameter setting range:

User Menu Setting item	Setting range	Default	Menu Display
Temperature set	-39~+49℃	-10℃	F1
Return difference set	1~15℃	3℃	F2

## Inspection before use and mounting requirements

Power supply must be the same as the power made on the products and ensure the power supply stably

Prohibit to use in water and humidity environment, prohibit to use under the environments of high temperature high electromagnetism interference and high corrosive.

Wires of sensor and power should be kept for a proper distance

Sensor wire power wire and interface of output relay must be distinguished strictly.

Prohibit to overload the relay.

Sensor should be kept away from the vent hole in order to exactly measure the storage temperature.

## Elementary Paradigm:

