

## Micro-computer temperature controller descriptions of LTC-200

### [Specification]

- ◆ Housing : Self extinguishing ABS
- ◆ Panel size: 186.5mm(length)\*35.5mm(width)  
Space between control box installing hole: 123mm
- ◆ Frontal protection: IP65
- ◆ Operating environment:
  - ◇ operating temperature:  $-5^{\circ}\text{C} \sim +55^{\circ}\text{C}$
  - ◇ relative humidity: 20%~95%(No condensing)
- ◆ Main Parameters:
  - ◇ Power supply:  $220\text{VAC} \pm 10\%$  50~60Hz
  - ◇ Power consumption:  $< 5\text{W}$
  - ◇ Measuring range:  $-40^{\circ}\text{C} \sim +50^{\circ}\text{C}$
  - ◇ Distinguishing rate:  $1^{\circ}\text{C}$  Accuracy:  $\pm 1^{\circ}\text{C}$
  - ◇ Delayed protect time: 3min.
  - ◇ Temperature calibration:  $\pm 5^{\circ}\text{C}$
  - ◇ Defrosting cycle: 0~99 hours adjustable
  - ◇ Defrosting time: 0~99 minutes adjustable
  - ◇ Alarming adjustable range (temperature is above normal value):  $0^{\circ}\text{C} \sim 20^{\circ}\text{C}$
  - ◇ Alarming output: buzz+LED blinking
  - ◇ Compressor output contact capacity: 25A/240VAC
  - ◇ Defrosting output contact capacity: 10A/240VAC
  - ◇ Sensors: NTC probes, shielded lead

### [Descriptions of indicator light]

○	Defrosting indicator	Red light flashes	auto-defrosting
○	Refrigerant indicator light	Red light flashes	manual-defrosting
○	Setting indicator light	Red light flashes	auto-refrigerant
○		Red light flashes	delay to start up
○		Red light flashes	parameters and parameters setting state

### [Functions of key]

- ◆ Check the setting parameters
  - ◇ press [▲] key to display the upper limited temperature, 2s later the current temperature appears
  - ◇ press [▼] key to display the lower limited temperature, 2s later the current temperature appears
  - ◇ press [SET] key to display the defrosting cycle, defrosting time 2seconds respectively and then the current temperature appear
  - ◇ press [RST] key, futile
- ◆ Mode of parameter setting
  - ◇ Press [set] key for three seconds to enter the parameters selection mode, and setting indicator light shines. The parameters adjusted last time appear on the LED.
  - ◇ Press [▲] or [▼] key to select parameters (F1 ...F6). After the selection of parameters, press [set] key to display the corresponding parameter value.
  - ◇ Press [set], and [▲] (or [▼]) key at the same time to set parameters value. Press [▲] or [▼] key for longer time the value will increase or decrease rapidly.
  - ◇ Press [▲] or [▼] key to select the other parameters and repeat the above-mentioned steps to set.
  - ◇ Press [RST] key to confirm and exit when finished all parameters setting. Indicator light is extinguished. The value will be confirmed and stored automatically. The equipment exits automatically after 30s if no any operation.

### [Refrigeration, defrost and temperature calibration]

- ◆ Refrigeration and auto-defrost  
When the measuring temperature of sensor tip is higher than the upper limit refrigerant relay will connect and refrigerant compressor work.. When the measuring temperature of sensor tip is below the lower limit refrigerant relay will disconnect and stop the refrigerant compressor .  
When defrost cycle ends, defrost relay connects and defrost begins, when defrost time ends, defrost relay disconnects and defrost finished.
- ◆ Manual defrost  
When defrost cycle don't end and defrost is necessary, manual defrost function will be operated. Press [▼] key for more than three seconds to start manual defrost, defrost relay connects. Press for another three seconds will exit and defrost relay disconnects. If don't exit by manual, the defrost will continue until the defrost time ends. It will return to the state of temperature measuring and control when defrost is over.
- ◆ Defrost cancellation  
Set the defrost cycle or time to "0" to cancel defrost.
- ◆ Temperature calibration  
When there is difference between actual temperature and the measuring temperature of controller, temperature calibration function will work. Press [set] key for three seconds, and press [▲] or [▼] key until LED display F3. Press [set] and [▲] or [▼] key simultaneously to choose a appropriate value within the range of  $\pm 5^{\circ}\text{C}$ . Displayed value after calibration=displayed value before calibration + calibration value.

### [Delayed protection]

- ◆ When power on, if the measuring temperature is above the upper limit, refrigeration will begin after three minutes.
- ◆ The interval of connections of refrigerant relay is  $\geq$  three minutes when switched. If the measuring temperature is above the upper limit, refrigerant compressor will work immediately.

### [Alarm]

- ◆ Sensor tip failure alarm:  
When open circuit and short circuit occurs to sensor tip (non-connection with framework included), temperature controller will alarm and buzzer works, LED displays 44 and blinks. Press any key will eliminate alarm. Alarm will continue until failure disappears if no pressing of keys.
- ◆ Excessive temperature limit alarm:  
Alarm range for excessive temperature of controller is  $0\sim 20^{\circ}\text{C}$ . When sensor tip measuring value is  $\geq$  maximum value + setting alarm temperature or  $\leq$  minimum value - setting alarm temperature, temperature controller alarms, buzzer will sound and digital tube flashes. Press any key will cancel alarm, otherwise, alarm will continue until return to the temperature range if no operation.
- ◆ Excessive measuring range alarm:  
Measuring range of temperature controller is  $-40\sim +50^{\circ}\text{C}$ . Temperature  $\geq 50^{\circ}\text{C}$ , LED displays "HH"; temperature  $\leq -40^{\circ}\text{C}$ , LED displays "LL", buzzer doesn't sound.

### [Note]

- ◆ Fire and damage of controller may occur if refrigeration and defrost is overloaded than the output

connection capacity.

- ◆ Make sure that wire and connection point are connected in a stable way. Otherwise, reliability will reduce.
- ◆ Distinguish Power, Relay and Sensor when connection. Otherwise, controller will be damaged.

### [Parameters description]

code	function	setting range	default	unit	descriptions
F01	upper limit	-39~+50	-18	$^{\circ}\text{C}$	upper temperature controlling limit
F02	lower limit	-40~+49	-22	$^{\circ}\text{C}$	lower temperature controlling limit
F03	temperature calibration	-5~+5	0	$^{\circ}\text{C}$	calibrate measuring and actual temperature
F04	defrost cycle	0-99	6	hour	interval between two defrost
F05	defrost time	0-99	30	minute	period of defrost time
F06	alarm when over heat	0-20	10	$^{\circ}\text{C}$	alarm when temperature goes beyond the limit

