

# Digital Temperature Controller

## FC150A3 (76x34mm)



### A Description

TC150A3 series digital temperature controllers provide panel mount, temperature display, audible alarm, relay control, start-up delay and feature programmable set points, fault self-diagnosis, differentials and calibration. Applications for use include heating, cooling, refrigeration, HVAC, food service, medical and industrial equipment.

### B Features

Powerful function and easy use:

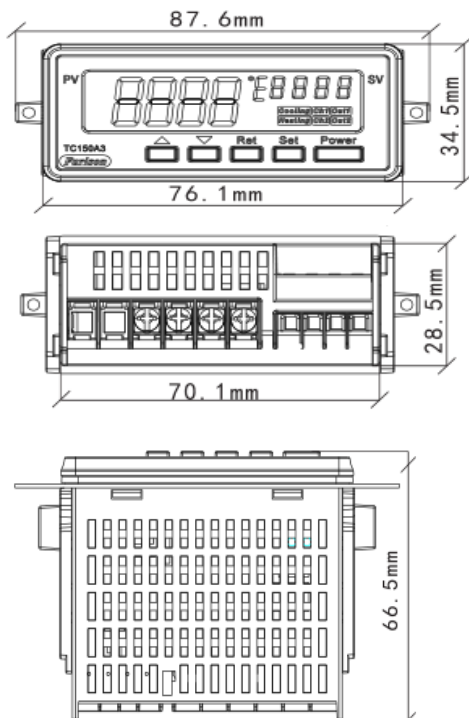
1. Membrane touch-pad programming
2. 0.65" high white, green and yellow LCD display
3. Programmable set point(s) and differential(s)
4. Panel mount enclosure
5. Start-up delay function
6. Current Temperature and set values display
7. LCD relay status indicator
8. Easy programming via LCD display prompts
9. Tamper resistant programmable set point limit
10. Fault self-diagnosis and alarm functionality
11. 100-240V voltage input, universally applicable.

### C Specification

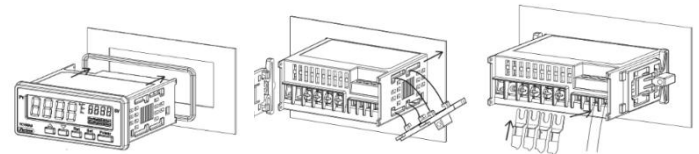
- 1) Rated Power Supply: 100 ~ 240VAC±10%, 50 / 60Hz.
- 2) Storage Environment: -20~60°C/-4~140°F(25~85%RH without condensation or icing).
- 3) Working Environment: -10~55°C/14~131°F(25~85%RH without condensation or icing).
- 4) Measuring Temperature Range: -40~150°C/-40~302°F.
- 5) Control Temperature Range: -40~150°C/ -40~302°F.
- 6) Resolution: 1°C/°F.
- 7) Accuracy: ±1°C/±2°F.
- 8) Input Type: One way NTC Sensor.
- 9) Output type: 1 way mechanical relay output (Normally open : 20A/250VAC) Life up to 100 thousand times, Can be directly used for 1HP compressor,
- 9) Power Consumption: Less than 3W.
- 10) Waterproof Level: IP64.

### D Dimensions ,installation and disassembly

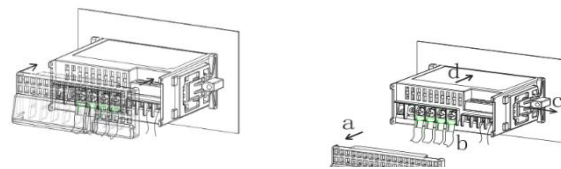
Product appearance size



### Installation

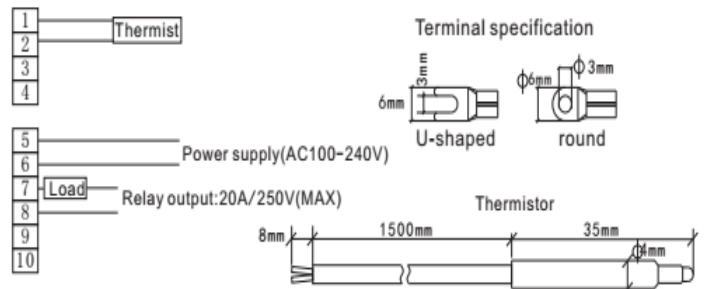


1. Put the waterproof rubber pad into the device before installation.
2. Holding the fasteners while push it inside
3. 1&2 connectors for NTC cable, 5&6 for input power cords.



4. Cover the rear cover up to finish the installation.
5. Disassembly method: Remove the rear cover and loose the screws to get rid of the connecting wires; unlock the fasteners at both sides to push the controller outside.

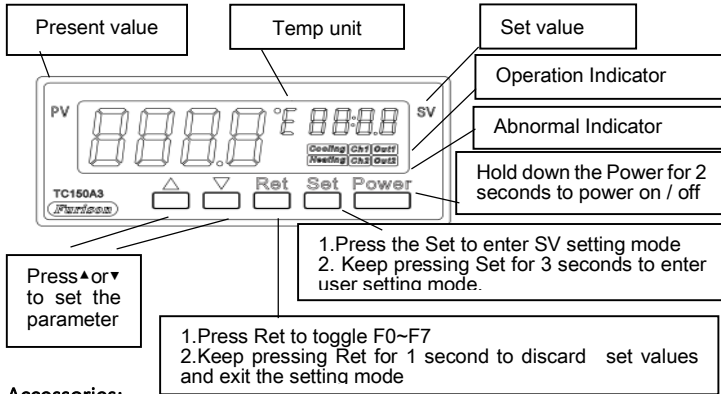
### External wiring diagram



### Precautions

- 1) Make sure that the terminals are properly connected, and the unnecessary Leave unconnected.
- 2) Use this product within the rated power supply and load range, otherwise it may cause damage to the product.
- 3) The product should be stored and used within the rated temperature and humidity, otherwise it may cause damage to the sensor.
- 4) To prevent high frequency interference, the NTC cable can not be bundled with the input cable or output cord in parallel; it should be separated from them.
- 5) Can not let the sheet metal, scrap or other conductive objects came out of installation into the product, otherwise it may cause electric shock, fire, or failure.
- 6) Do not touch the terminal when the power is turned on, otherwise it would cause electric shock.
- 7) Do not disassemble, modify or repair the product, otherwise it may cause product damage.
- 8) Do not use this product anywhere with flammable and explosive gas, otherwise, otherwise it may cause personal injury.

## Main interface and function



### Accessories:

- 1.Sensor ( 1.5m )
- 2.Fastener(2 pcs )
3. Rear Cover
- 4.Waterproof Rubber Pad (should be replaced every 5 years)

### Function Description:

#### 1 Refrigeration mode:

When the temperature is sensed more than controlling temperature minus return difference, the relay will be opened and the compressor turned on to begin the cooling process.

When the temperature is sensed less than or equal to the controlling temperature minus return difference, the relay will be disconnected, and the compressor stops the cooling process.

To protect the compressor, the machine should be stopped longer than delay time before it got restarted.

#### 2 Heating mode:

When the temperature is sensed less than the controlling temperature minus return difference, the relay will be opened and the heating process begins.

When the temperature is sensed more than or equal to the controlling temperature minus return difference, the relay will be disconnected, and the heating processes stop.

#### 3 Adjusting mode:

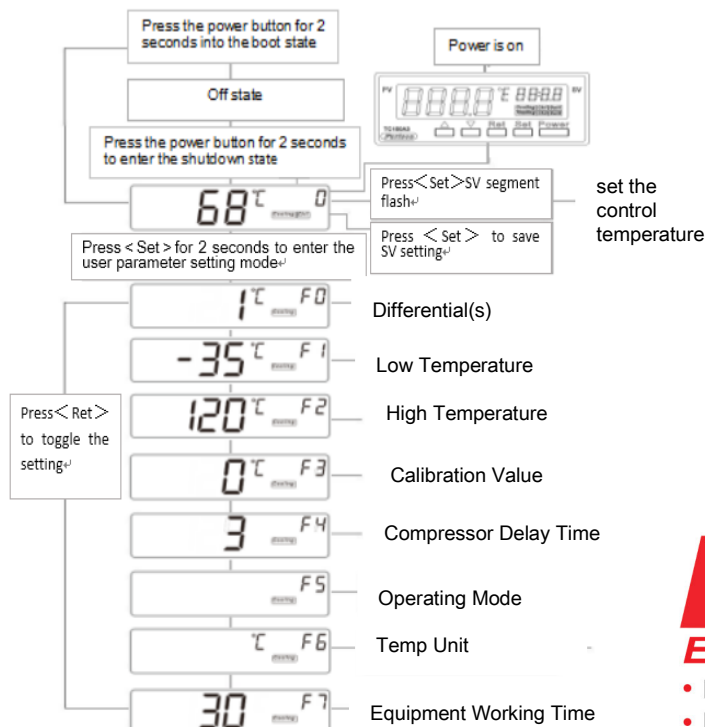
In case the NTC sensor get short circuit or the sensed temperature go beyond 150°C/302°F, the main interface display "HHH"; and the relay will be closed for 15 minutes.

In case the NTC sensor get open circuit or the temperature is sensed less than -40°C/-40°F, the main interface display "LLL", and the relay will be closed for 15 minutes.

#### 4 Fault Self-Diagnosis functions:

When the equipment has been working for more than the set time, the buzzer would be alarming. In this case, the equipment would probably have some problems.

### Programming diagram



## E Interface, accessories, function, menu

Parameter	Function	Setting range	Default value
SV	Set Values	Parameter F1~F2	0°C
F0	Differential(S)	1 ~ 10°C/2 ~ 18°F	1°C
F1	Low Temperature	-40°C/-40°F~ Low Temperature	-35°C
F2	High Temperature	High Temperature ~150°C/302°F	120°C
F3	calibration value	-10 ~ 10°C/-18 ~ 18 °F	0°C
F4	Compressor Delay Time	1~10 minutes	3 minutes
F5	Operating Mode	Cooling/Heating	Cooling
F6	Temperature Unit	°C/°F	°C
F7	Equipment working time	0~150 minutes	30 minutes

### ※ Note: Programming instruction:

Press <Set> button once, buzzer will beep once, then press Arrow buttons to set the SV value, press Set button again to save the values.

Keep pressing <Set> button for 3 seconds, buzzer will beep twice, then press Ret button to toggle from F0~F7, press Arrow buttons to set the each value respectively and finally press Set button to save values and exit the setting mode. Keep pressing Ret for one second, Buzzer beep once, set values won't be saved and controller will exit the setting mode.

Press <Set> + <Ret> buttons, buzzer will beep twice, default values will be restored.

If buttons leave untouched in 15 seconds, set values will be saved automatically and controller exit programming mode.

## F Product models

Model	Measuring Range	Sensor Type	Event Input	Output Type	Load Type
TC150 A3	-40 ~ 150°C /-40 ~ 302 °F	1 way NTC	NO	1 way 20A relay	Compressor
TC150 A3A	-40 ~ 150°C /-40 ~ 302 °F	1 way NTC	NO	1 way 16A relay	Compressor
TC150 A3B	-40 ~ 150°C /-40 ~ 302 °F	1 way NTC	1 way door magnetic switch	1 way 16A relay 1 way 5A relay	Compressor Illumination
TC150 A3C	-40 ~ 150°C /-40 ~ 302 °F	1 way NTC	1 way door magnetic switch	1 way 16A relay 1 way 5A relay	Compressor Fan
TC150 A3D	-40 ~ 150°C /-40 ~ 302 °F	1 way NTC	1 way door magnetic switch	1 way 16A relay 2 way 5A relay	Compressor Illumination Fan

## G Customization and improvement

We also customize for customers if they need such services. Our company specializes in the design and manufacture of AC current switch, transducer and electric temperature controller, etc.

## H After-sales services

Our digital temperature controllers are covered by five years warranty under normal and proper use.

## I Company information

**Fastron**  
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