

### Features

- Modern Appearance
- Stylish rotary dial and touch key
- Large LCD with backlight
- Retention of temperature set-point upon power failure
- Unoccupied mode contact for energy saving purpose
- Window contact function for cut-off control outputs (only when on-off switch is activated)
- 3-wire floating and 0-10 VDC output available
- Dual-output model provides auto cooling/heating changeover with adjustable deadband or/and manual override
- PI Algorithm
- Remote sensor capability
- Output status indicator
- Seasonal changeover sensor availability
- Customizing availability

### Selectable Functions

- Selectable °C or °F temperature display
- Measured temperature off-set
- Selectable P-band and I-time
- Field selectable 1 to 5 K deadband for dual-output models
- Field adjustable high and low set point limit
- Field adjustable cooling and heating energy saving mode set points
- Selectable constant display of temperature between sensing or set-point

### Ordering

To order the TC24 Series thermostat, contact the nearest Cyrus' representative. Specify the desired product code number from product overviews.

### General

The TC24 Series Standalone LCD Digital Temperature Controller is designed for temperature control in industrial, commercial and residential environments. It features microprocessor-based control and a large LCD display with backlight. The controller provides various models for different applications; 3-wire floating or 0-10 VDC control outputs which combines a proportional plus integral (PI) control algorithm for precise and stable control under varying system capacity and load conditions.



### Product Overview

The TC24 Temperature Controllers are powered by 24 VAC with 5 basic models that cover all type of standalone temperature control applications. There are models for cooling only, heating only and heating/cooling AHU/PAU system integrate with 3-wire or 0-10 VDC input valve control. On-board high accuracy NTC sensor allows precision comfort control over occupied space area.

The TC24 can be surface mounted or secured to a standard European 75 x 75 x 35 mm electrical box. Two M3.5 mounting screws are included.

### Model TC24T1

The Model TC24T1 is a LCD temperature controller that is designed for cooling only or heating only heat exchange or distribution unit with 3-wire floating 24 VAC valve actuator application. Integral with touch-pad keys that allows authorized agents to change certain number of operation parameters. Simply turn the rotary dial that allows users to adjust the temperature set-point. All 24 VAC output by triac that can withstand max. of 20 VA.

## Product Overview

### Model TC24T2

The Model TC24T2 is a LCD temperature controller that is designed for cooling / heating heat exchange or distribution unit with 3-wire floating 24 VAC valve actuator application. Integral with touch-pad keys that allows authorized agents to change certain number of operation parameters. Simply turn the rotary dial that allows users to adjust the temperature set-point. All 24 VAC output by triac that can withstand max. of 20 VA.

### Model TC24A1

The Model TC24A1 is a LCD temperature controller that is designed for cooling only or heating only heat exchange or distribution unit with 0-10 VDC input valve actuator application. Integral with touch-pad keys that allows authorized agents to change certain number of operation parameters. Simply turn the rotary dial that allows users to adjust the temperature set-point.

### Model TC24A2

The Model TC24A2 is a LCD temperature controller that is designed for cooling / heating heat exchange or distribution unit with 0-10VDC input valve actuator application. Integral with touch-pad keys that allows authorized agents to change certain number of operation parameters. Simply turn the rotary dial that allows users to adjust the temperature set-point.

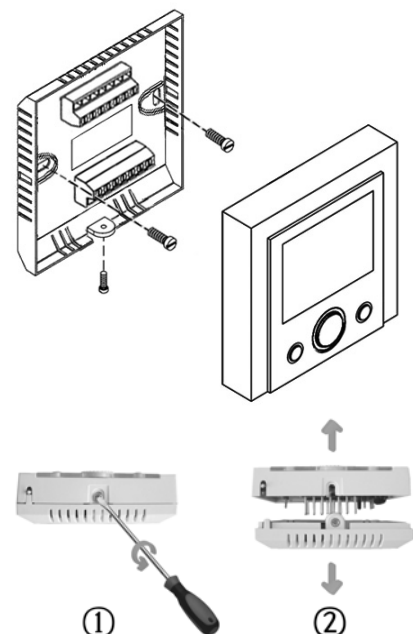
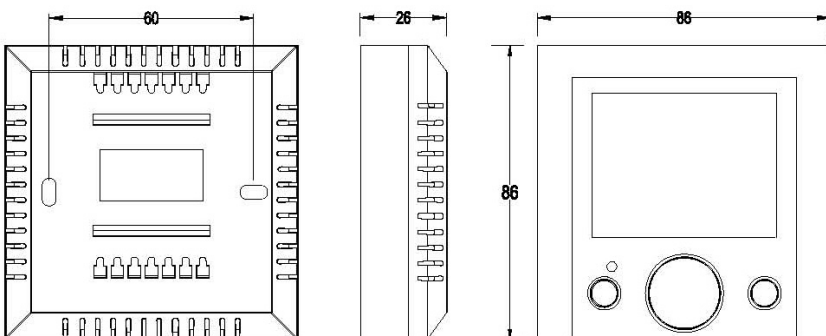
### Model TC24AH

The Model TC24AH is a LCD temperature controller that is designed for cooling / heating heat exchange or distribution unit with 0-10VDC cooling input valve actuator and 2-wire on-off heating control application. Integral with touch-pad keys that allows authorized agents to change certain number of operation parameters. Simply turn the rotary dial that allows users to adjust the temperature set-point. The 24 VAC output by triac that can withstand max. of 20 VA.

## Operation Notes

Temperature Display	LCD shows sensing temperature constantly except when temperature set point adjustment is being made
Backlight	The backlight will light up for 5 seconds when any button is pressed
Mode of operation	Press the system control key to enter into the desired operating mode: Cool-Heat-Auto-Off
Temperature Set-point	Increase or decrease temperature set point by turning the rotary dial
Unoccupied Mode (Energy-saving)	The energy saving mode is activated while "OCU" contact is in closure. In unoccupied mode, all buttons are locked and preset temperature set points are 26 °C and 16 °C for cooling and heating respectively.
Window Contact	Window contact closure turns off the controller and locks all buttons
Parameter setup menu	The thermostat allows authorized service agent to change the certain number of operating parameters, please refer to parameter setup manual for details.

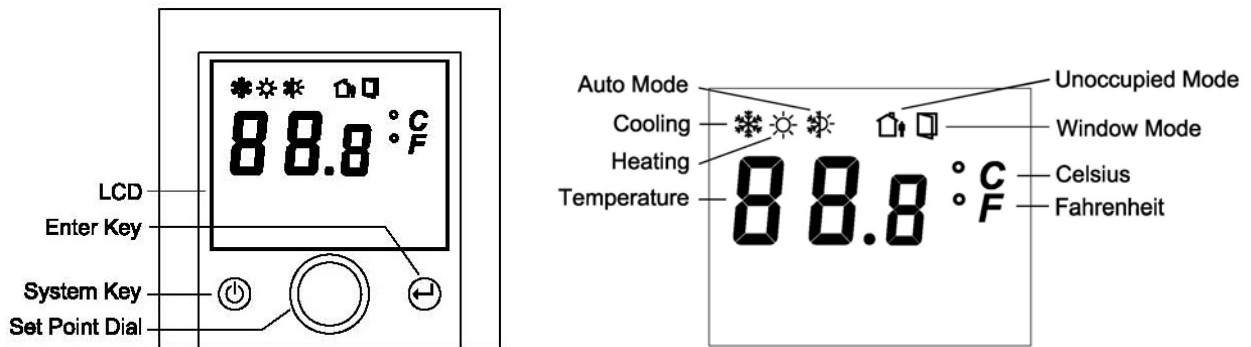
## Dimensions in mm



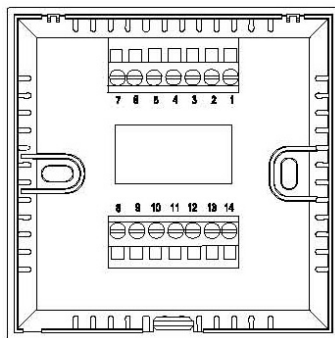
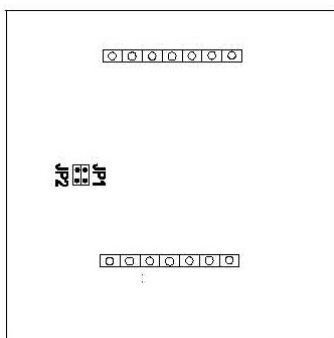
## Technical Specifications

Product Model	See TC24 Product Overviews
Power Requirements	24 V ±15% 50/60 Hz
Sensing Element	NTC thermistor, 10 kΩ@25°C
Temperature Display Range	0-40°C in 0.5 K increments: accuracy ±1 K
Temperature Set Point Range	5-40°C in 0.5 K increments, initial factory setting at 22°C
Deadband of Dual-Output Models	3 K (Adjustable 1 to 5 K in setup menu)
Offset of measured temperature	+2, +1, 0, -1 and -2 K (+2, +1, 0, -1 and -2 R) , factory setting 0
Proportional Band	Adjustable 1 to 10 K (2-10 R) in 1 K (1 R) increments, factory setting 5 K (5 R)
Integral Time	Adjustable 0 to 300 second (factory setting 60 seconds) = 0 means integral time being turned off.
Unoccupied & Window contacts	Input signal from external voltage-free contact
Electrical Ratings	20 VA @ 24 VAC for 3-wire floating models Minimum 50,000 Ω output impedance for 0-10 VDC models
Body Material	Self-extinguishing, molded ABS
Ambient/Storage Temperature Limits	0 to 50 °C / -30 to 50 °C, 10% to 90% RH non-condensing
Agency Approval	CE Mark compliant to EMC and low voltage directives
Shipping Weight	120 g
Dimensions	See Dimensions drawing in mm

## Display Control Unit and LCD Layout



## Wiring Terminals and Jumper Settings



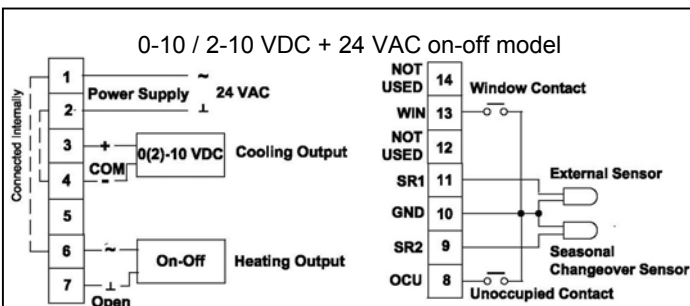
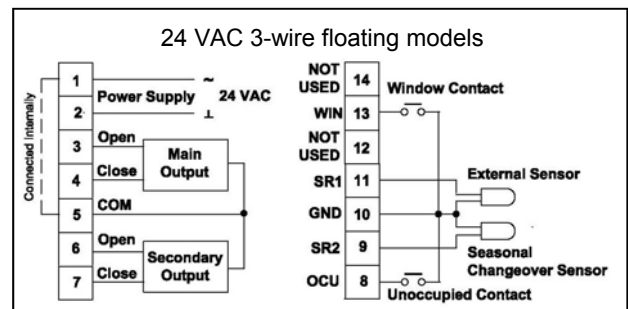
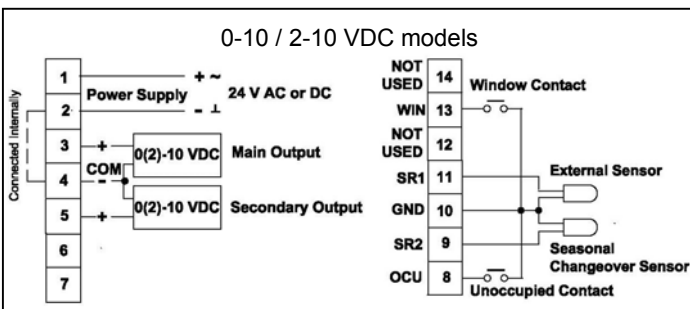
JUMPER SETTINGS		
	JUMPER IN OPEN POSITION	JUMPER IN CLOSED POSITION
JP1	With External Sensor	With Built-in Sensor
JP2	For 2-10 VDC Output	For 0-10 VDC Output

*Note: JP2 is available in 0-10 VDC/2-10 VDC output models only. Factory setting is 0-10 VDC.*

## Wiring Diagrams and Additional Application Notes

- For standard models, the controller is always turned on and in active operating mode when power supply is connected. For models with standby mode, the controller can be switched between standby and operating mode with the system switch key.
- When constant display of ambient temperature is selected, LCD displays ambient temperature constantly. Increase or decrease temperature set point by rotating the adjustment dial clockwise or counter-clockwise. During the dial rotation, the LCD shows the existing set point value. Will return to ambient temperature display when all control keys are passive for 5 seconds.
- On a single-output cool only or heat only unit, i.e. a unit with only main output being available, connecting a shunting wire between terminals SR2 and GND forces the unit to go into heating mode.
- On a single-output cool only or heat only unit, connecting a TE10-1 changeover sensor between terminals SR2 and GND will automatically switch the unit between cooling and heating mode. When the sensor temperature exceeds 30°C, the controller enters into heating mode.
- On a dual-output unit, the main output is always associated with the cooling controlled device and the secondary output with the heating controlled device.
- Remove jumper JP1 if external sensor is wired to SR1 and GND.
- Remove jumper JP2 if 2-10 VDC proportional output is required.
- The changeover sensor should be wrapped around the supply water pipe when associated with a water system.
- 22 or 24 AWG twisted shielded pair double-insulated cable is recommended as remote sensor wiring and its length must not exceed 25 m.
- Do not bundle and run power wiring and remote sensor wiring in the same conduit.
- Unoccupied contact closure activates unoccupied mode. In unoccupied mode, the factory temperature set points are 26 °C for cooling and 16 °C for heating.  
For 2-pipe models with auto seasonal changeover, the unoccupied cooling or heating mode is determined by the status of the SR2 seasonal changeover sensor and the valve output is activated according to the measured temperature.  
For 2-pipe models with manual seasonal changeover, the unoccupied cooling or heating status is determined by the last status of the occupied mode and the valve output is controlled according to the measured temperature.  
For 4-pipe models, the unoccupied cooling or heating mode is always determined by the measured temperature and valve output is also activated according to the measured temperature.
- For models with standby mode, unoccupied mode activation in operating mode only or in both standby and operating mode will be determined by activation setting in setup menu. For standard models without standby mode, unoccupied mode can always be activated whenever the unoccupied contact closes.
- Window contact closure forces the controller into standby model and closes all the valves.
- When using either or both of the external temperature and changeover sensors, run the wires away from any electric motors or power wiring. Failure to do so may result in poor thermostat performance due to electrical noise.

## Wiring Diagrams



**WARNING**  
Incorrect wiring connection may cause permanent equipment damages to the thermostat

The specification above are normal and conform to generally acceptable industry standard. Cyrus is not responsible for damages resulting from misapplication or misuse of its products.