

# THERMORING

## Smart Energy-Saving Thermostat

Tri Cascade's THERMORING® Model 10ze is a cloud based smart energy-saving device that captures a user-friendly traditional thermostat control design. This remote location controllable 4 sensor device takes advantage of the most current Cloud and Smart technologies available. THERMORING "learns" and remembers your favorite environment scenarios, saves energy when you are away, and let's you control with voice or phone app from anywhere in the world. Saving energy and saving you money.



- Device control from anywhere
- Pre-programmed energy saving settings
- Auto Scheduling and "Learning" Capable
- Integrates with smart devices
- Motion, Temperature, Humidity, and Ambient Light sensors
- Outdoor weather information

### SMART

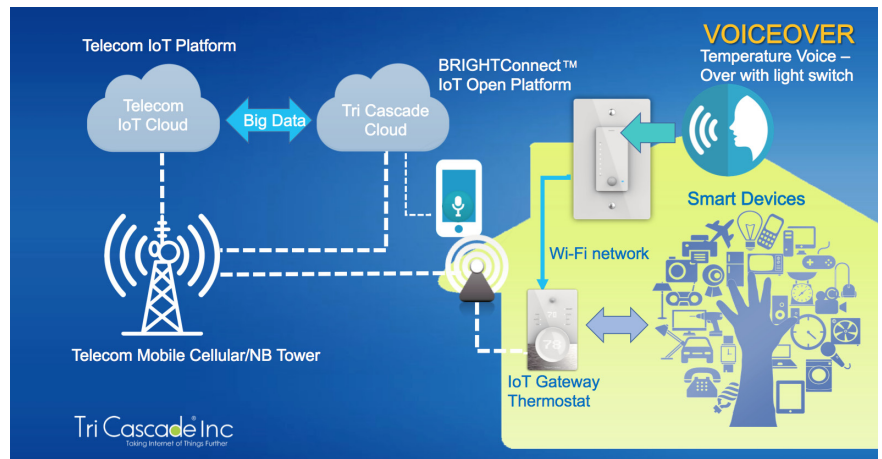
Built-in machine "learning" algorithms on the Cloud help THERMORING® setup optimum energy-efficient temperatures. When THERMORING®'s "Motion Sensor" detects body temperature, the device display is automatically activated and the current house temperature viewable by those in the room. Conversely THERMORING idles in energy conservation mode when no body temperature is detected after 30 seconds.

### ANYWHERE

IOT 2-way Messaging is enabled when the THERMORING® is paired with Tri Cascade's BRIGHT Connect APP integrating seamlessly with both Amazon Alexa and Google Home. This device-to-cloud connection allows real-time readings such as current temperature and humidity. The App can receive notifications providing instant feedback on current conditions. The user can then send commands to alter the environmental controls from anywhere in the world.



**BRIGHT** Connect APP



# SPECIFICATIONS

## Platform Specifications

### Processor

High performance low power 32 bits ARM Cortex-M0 processor.

### Main Display

4 pieces 8x8 dot matrix white color LED display to assemble a 16x16 dot matrix display inside the rotary knob. It shows current temperature in door and out door by internet enabled (from weather website)

### Sub Display

A 8x8 dot matrix white color LED display to show the target temperature from 60F ~ 99F.

### Capacity Touch button

There are 6 touch buttons with LED indicator to provide FAN control, AUTO and ON, plus System Mode selection, COOL, HEAT, OFF, and SMART.

FAN control, AUTO means to control the FAN automatically by processor, ON means to force the FAN ON.

System Mode selection, COOL means to cool down the temperature, HEAT means to heat up the temperature, OFF means to turn off thermostat control, SMART means to enable auto learning control.

### Rotary Encoder Ring

A ring knob for user to rotate for temperature number setting, it will show on sub display area.

### Sensor

ThermoRing provides four sensors, they are temperature, humidity, ambient light sensor and PIR sensor which used to detect the environment for ThermoRing operation.

### Storage

There is an EEPROM storage to save the device information, control parameters, schedule timing table, and internet settings.

### I/O Interface

There are 5 relays at least to control Heat, Cool and Fan. In general, there are 8 relays. The following diagram shows the general thermostat wiring.

### Communication

ThermoRing provides Wi-Fi function to connect internet, also there is a specify cloud service for ThermoRing.

### Power

Using HVAC 24Vac or external 12Vdc power adaptor to power on ThermoRing. If external power adaptor existed, switch to use external power adaptor.

### Mechanism

TBD

### Working Temperature

0 °C ~ 40 °C

### Storage Temperature

-10 °C ~ 50 °C

### Certification

Need to pass FCC/CE and obey ROHS.

## Feature Specifications

### Features

Auto-Schedule in local	Yes
Home/Sleep/Away Assist	Yes
Advanced Fan Control	Yes
Exception Temperature Notify	Yes
Weather Conditions	Yes
Energy Optimize	Yes

### Temperature Control

Heating Stages	2
Cooling Stages	2
Temperature Swing	+/- 1° F

### Sensors

Weather Conditions	Internet
Humidity Sensor	Up to 95% RH
Temperature Sensor	32° to 104°F (0° to 40°C)
Motion Sensor	PIR
Ambient Light Sensor	1 to 10,000 Lux

### Networking

Connectivity Technology	2.4GHz wireless
Wireless Protocol	802.11b/g/n
Connectivity	Phone or tablet with iOS 8 or later, or Android 4 or later

### Internet of Things (IoT)

Intelligent Assistant Compatible	Alexa, Google Home
Voice Controlled	Indirect

### Setup

Type	Wall mountable
Included Accessories	Mounting Kit
Mounting screws and labels	Yes
Installation Guide	Yes

### Service & Support

2 years warranty	Yes
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