

## Evaporative Cooling Control

Model: ECC-1

### Control solenoids, water pumps, and fans for evaporative cooling systems

The Evaporative Cooling Control has six relays you can program to control a combination of sprinkler solenoids, pumps, and/or single-speed fans. The control monitors temperatures and efficiently and effectively controls evaporative cooling cycles according to your programmed settings. The LCD displays status and setting information and the four-button keypad allows you to easily scroll through information and program the control.

### Active time settings and optional high humidity bypass

Active time settings allow you to program sprinkling or misting to occur only during a certain time of day. With an optional humidity sensor, you can program the Evaporative Cooling Control to bypass the soaking or misting portion of the cycle when humidity levels are too high.

### Features

- Two automatic operation modes:
  - **Soaker Mode** for direct evaporative cooling
  - **Mister/Fogger Mode** for indirect cooling
- Temperature-based duty cycle operation, programmable range: 32 to 113°F (0 to 45°C)
- Active/inactive time programming
- Optional humidity monitoring with high humidity bypass
- Manual control mode for testing equipment
- Information logging and display
  - High and low temperatures for the current and previous day
  - Total relay ON durations for the current and previous day
- Six relays for controlling sprinkler solenoids, water pumps, or single-speed fans
- Alarm relay that indicates power failures, probe damage, or high/low temperatures
- Temperature probe; 30 feet, extendable to 500
- LCD display and status lights
- Four-button keypad
- Real-time clock
- Power-failure settings protection
- NEMA 4X enclosure (corrosion resistant, water resistant, and fire retardant)
- CSA approval
- Limited warranty (2 years)

### Electrical ratings

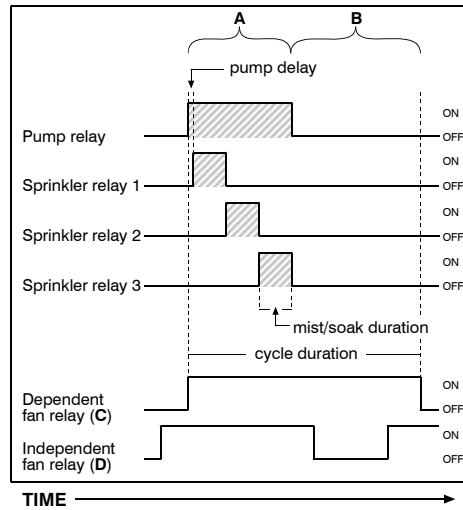
- **Power** 120/230 VAC, 50/60 Hz
- **Fuse** 250 V, 1 A fast-acting glass
- **Power relays** 10 A at 120/230 VAC, general-purpose (resistive)  
1/3 HP at 120 VAC, 1/2 HP at 230 VAC  
360 W tungsten at 120 VAC  
250 VA at 120 VAC for pilot-duty use
- **Alarm relay** 0.4 A at 125 VAC ; 2 A at 30 VDC, resistive load  
0.2 A at 125 VAC; 1 A at 30 VDC, inductive load



## About evaporative cooling

There are two types of evaporative cooling: **direct** and **indirect**. Both can be used in mechanically or naturally ventilated buildings. A typical evaporative cooling system contains three main components: sprinklers (or misters/foggers), fans (in mechanically ventilated systems), and a control system.

The process of operating the sprinklers (soakers/misters/foggers) is called a **soak duration** or **mist duration**, depending on the mode. The process of operating all sprinklers in sequence for their durations and then evaporating the moisture is called a **cycle**.



- A** This is the 'soaking' or 'misting' portion of the cooling cycle. During this portion, the pump and/or sprinklers are operating.
- B** This is the 'evaporative' portion of the cooling cycle. During this portion, the pump and sprinklers are OFF. Any dependent fans are ON.
- C** A dependent fan relay operates according to the cooling cycle, not according to a temperature set point. The fan is ON when the cooling cycle is active.
- D** An independent fan relay operates according to its temperature set point, not according to a cooling cycle. The fan is ON when the temperature is above its set point.

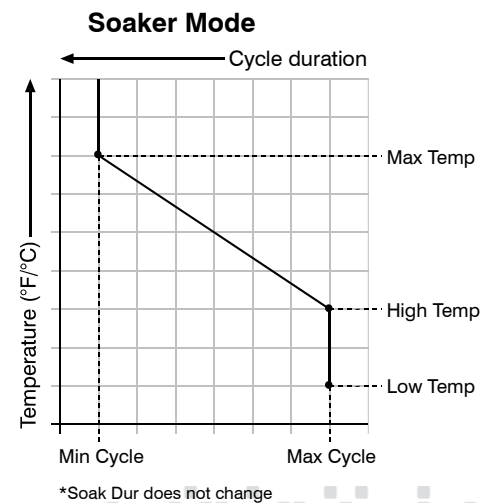
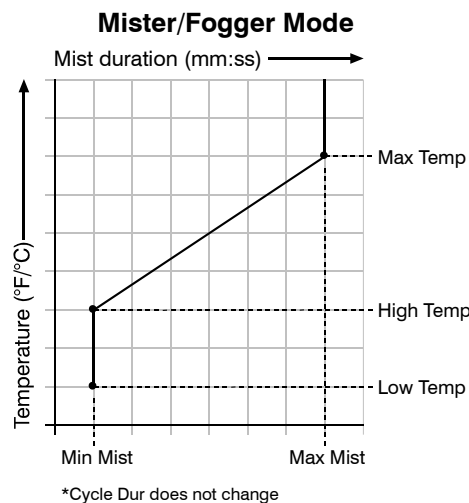
**Direct evaporative cooling** is achieved by evaporating water from the surface of an object, such as the hide of an animal. Using dairy or swine as an example, sprinklers shower the animals long enough to wet the hides. Air being drawn across the backs of the animals causes evaporation. The energy/heat required to evaporate the water cools the animals.

**Indirect evaporative cooling** is achieved by evaporating water vapor in the air. Water vapor is placed in the air by misters or foggers. As the tiny water droplets evaporate, they remove heat from the air. Indirect evaporative cooling is commonly used in greenhouses, but can also be used in livestock buildings or poultry houses.

## Two modes of operation: Mister/Fogger Mode and Soaker Mode

In **Mister/Fogger Mode**, the cycle duration stays the same, but the mist duration automatically changes according to temperature. As the temperature increases from **High Temp** to **Max Temp**, the mist duration increases proportionally from **Min Mist** to **Max Mist**.

In **Soaker Mode**, the soak duration stays the same, but the cycle duration automatically changes according to temperature. As the temperature increases from **High Temp** to **Max Temp**, the cycle duration decreases proportionally from **Max Cycle** to **Min Cycle**. As the cycle duration decreases, soaking frequency increases and soaking occurs more often.



## Available options

- **Humidity sensor** – for monitoring humidity
- **Temperature probe** – a second probe for controlling fans independently of cycles or zones