

# Wizard

## Refrigeration Control System



**Evaporative Condenser Control  
(WCFC-EVAP)**

# Condenser Fan Control For Wet Bulb Control

## General

The *Wizard* Evaporative Condenser Control (WCFC-Evap) controls a small evaporative condenser with a multiple VFD or fixed speed Fans based upon the WetBulb conditions

The WCFC-Evap will sequence VFD fans based on a combination of the ambient temperature, humidity and liquid temperature. The WCFC-Evap will control up to 2 VFD fans for the WCFC-Evap-2AO and up to 4 VFD fans for the WCFC-Evap-4AO.

## Floating Liquid Line Temperature Setpoint

All control setpoints are calculated based on the ambient conditions. The WCFC-Evap calculates the liquid line temperature setpoint based upon the Wet-Bulb temperature plus a condenser offset temperature differential. See Below for details. The condenser offset temperature is adjustable from 10 - 25 deg F. The effect of this setting is the amount of subcooling the Condenser control will maintain and the inefficiencies of the unit. A lower offset value will tend to increase the amount of subcooling.

### Example:

**WetBulb Temperature = 70°F**

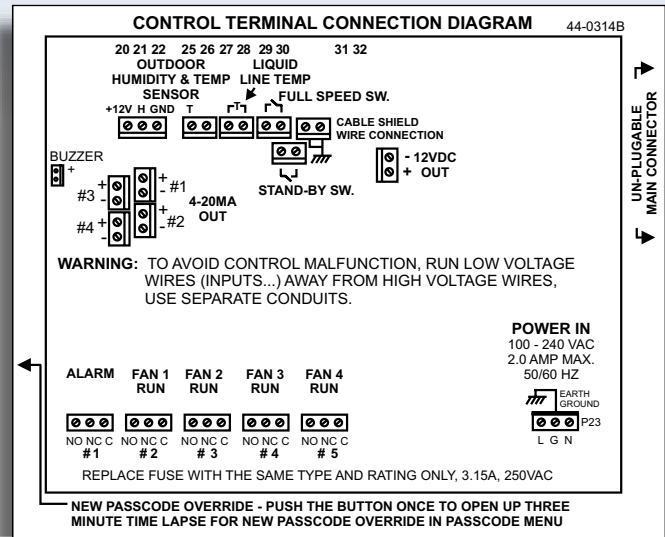
**Condenser Offset = 10°F**  
(User defined)

**Liquid Temp Control Set Point =**  
**70 + 10 = 80°F**

The range of the liquid temperature setpoint is 40 - 100 deg F. If the calculation method had a liquid temperature set point below 40 deg F, the WCFC-Evap will default to 40 deg F, and if the calculation exceeds 100 deg F, the WCFC-Evap will default to 100 deg F.

The fan is cycled according to the calculated setpoint. The VFD control circuits have two optimization setting depending upon the reaction capabilities of the condenser.

Slow (15 secs), Medium (10 secs), or Fast (15 secs) stepping adjustments  
Small, Medium or Large step changes.



## FULL SPEED SWITCH

The WCFC-Evap has an input to manually put the VFD fans into Full speed mode. The user connects a switch to this input to override programming if for any reason the system needs to react faster for a short period.

## STAND-BY SWITCH

The WCFC-Evap has an input to manually put the control into stand-by mode. The user connects a switch to this input to override programming if the system needs to be paused for service or repair.

## AMBIENT TEMPERATURE AND HUMIDITY SENSOR



The outdoor temperature and humidity sensor is able to offset control for the wet-bulb conditions using both inside temperature and outside temperature and humidity conditions. It allows for changes in humidity depending upon the time of year and will signal the control to run on a different set of parameters.

**HARDWARE SPECIFICATIONS:**  
**CONTROL SYSTEM**

**Control** Microprocessor based Program logic stored within non-volatile EPROM memory. Set points and system configuration stored within EEPROM. Menu driven controls with all operating sequences and control algorithms included. The control has non-volatile program memory and a capacitor backed clock in the event of power outage. All programmable options are installed via a "Yes" or "No" question.

**Keypad** Front panel accessible with 5 tactile key switches.  
Key assignments -- UP, DOWN, SELECT/ENTER, EXIT, ALARM RESET.

**Display** 2 x 16 character LCD Back Lighted Display.

**Power** Input -- 100-250 VAC, 50/60 HZ, 2.5 Amp.

**Housing** Metal Cabinet, NEMA 1, Enclosure  
ABS NEMA 4X Optional

**INPUTS** Liquid Line Temperature Sensor  
-- 2-wire thermistor, -40 to 150 °F  
Ambient Temperature Sensor  
-- 2-wire thermistor, -40 to 150 °F  
Humidity Sensor - 20 to 80 % RH  
System Standby Input  
Fan 100% input

**OUTPUTS Control Relays**  
Up to 5 total Relays - 1 Form C SPDT  
3.15 amp Slow Blow Fuse, 250 VAC  
Relay 1 - Alarm  
Relay 2 through 5 - Fixed Speed Fan  
Relay (Backup)

**LISTINGS** ETL, Conforms to UL Std. 3111-1  
Certified to CAN/CSA  
C22.2 Std. No. 1010.1



**ENCLOSURE OPTIONS**



**NEMA 1 Compliant Enclosure** - This enclosure is intended for indoor use only primarily to provide a degree of protection against contact with the enclosed equipment. The enclosure is not designed to provide protection from water or to be placed in a hazardous environment. Mount only in Pollution Level 2 environments, i.e.. Environmentally controlled offices, control rooms, or environmentally controlled machine rooms.

**DIMENSIONS** 7.25 x 8.0 x 3.2  
Inches (mm) (184 x 203 x 76)



**NEMA 4X Enclosure (IP67)** - This enclosure is intended for either indoor or outdoor use, 0 to 50 °C, to provide a degree of protection against corrosion, windblown dust and rain, splashing water, and hose directed water.

**DIMENSIONS** 12.3 x 15.0 x 8.2  
Inches (mm) (305 x 356 x 178)



# **GENESIS INTERNATIONAL, INC.**

1040 FOX CHASE INDUSTRIAL DR  
ARNOLD, MO 63010

EMAIL:MAIL@GENESIS-INTERNATIONAL.COM

TEL: 636-282-0011  
FAX:636-282-2722

WEB:WWW.GENESIS-INTERNATIONAL.COM