

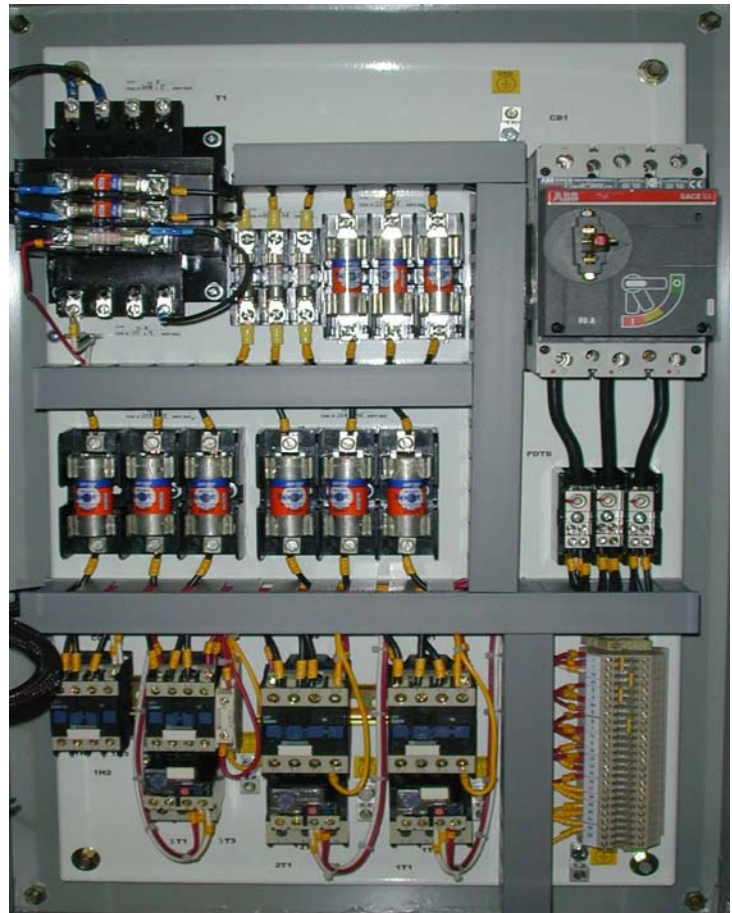
# Cooling Tower Control Panels

*Engineered and manufactured to meet the unique needs of a specific application.*

[View Cooling Tower Reference Guide](#)

RAM manufactures a specialized offering of motor control panels that are specifically designed for the operation of cooling towers. These unitized control panels are engineered and manufactured to meet the unique needs of a specific application. The use of these panels makes installation easier, less costly, and ensures greater reliability of the cooling tower system.

RAM's complete product offerings include simplex, duplex, or triplex controllers wired complete with a full array of control products for fans, pumps, sumps, heater loads, and auxiliary devices.



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# Starters

## Standard Specifications

Control panel shall be furnished in NEMA 4 watertight enclosure suitable for outdoor service. A main circuit breaker with lockable external operating handle shall be furnished. The breaker shall be sized to handle the controller load in accordance with the National Electrical Code.

Cooling tower controller shall contain starting and protective equipment for all fans, pumps, or pan heaters as specified. A 120V control circuit transformer complete with primary and secondary fusing shall be provided for low voltage operation of the control components specified in the cooling tower controller.

Each motor starter furnished in the cooling tower control panel shall be provided with individual branch motor circuit protection; properly sized motor controllers capable of starting, stopping, and interrupting the locked-rotor current of each motor; and be provided with individual motor overload protection. A Hand-Off Auto selector switch shall be provided for each motor starter.

If Pan Heater option is required, an Off-Auto selector switch shall be included in the control panel for each heater. Field terminals for remote control of the pan heater shall also be included.

Field wiring terminals shall also be provided for any vibration or level switches as required.

Certified drawings shall be provided showing all power and control wiring. An enclosure layout and a bill of materials shall be furnished with each control panel.

Cooling tower control panel shall be provided with UL and/or CSA label when requested at order entry.



## Types

(Standard and Custom)

- 1/2 HP - 75 HP
- 208V - 575V
- Custom Panels to 600 HP
- Combination Circuit Breaker
- Combination Fusible or Non-Fusible

## Benefits

- Single Point Power Connection
  - Simplifies Installation
  - Reduces Installation Costs
  - Reduces Installation Time
- Complete Panel Wiring Diagrams
  - Easier to Wire
  - Easier to Understand How System Operates
  - Easier to Troubleshoot
- Pre-Engineered for Specific Job Requirements
  - Reduces Errors in Selection of Control Equipment
  - Ensures Better System Reliability

## Options

- Pushbuttons
- Pilot Lights
- Transformers

## Features

- Main Disconnects: C/B, N/F, or fusible single or two-speed motor starters for cooling tower fans and pumps, contactors for pan heaters, terminal blocks, and a large selection of control accessories all prewired with system control drawing.
- Maximum UL/CSA horsepower ratings
- Compact space saving design
- Overload relay protection: All starters have Class 10 adjustable overload relay protection as standard. These overload relays include three self-contained heater elements, alarm circuit auxiliary contact, ambient compensation, and single phase protection.

## Typical control panels include a variety of the following components:

- Main Circuit Breakers
- Main Non-Fusible Switches
- Main Fusible Switches
- Full-Voltage, Non-Reversing Starters
- 2-Speed, 2-Winding Starters
- 2-Speed, 1-Winding Starters
- Pan Heater Contactors
- Control Power Transformers
- Branch Fuse Circuits
- Branch Circuit Breakers
- Selector Switches
- Pushbuttons
- Pilot Lights
- Ammeters & Voltmeters
- Elapsed Time Meters
- Timers & Relays
- Space Heaters & Thermostats
- Time Clocks
- Switches & Receptacles
- Temperature Controllers

## Optional Wiring Circuits

- Damper Controller Circuit Without Temperature Controller
- Capacity Damper Controller Circuit with Temperature Controller
- Electronic Water Level Control Circuit
- Thermostat Fan Control Circuit
- External Vibration Switch Circuit
- 1200 Watt Capacity Remote Heat Tape Circuit
- Steam or Hot Water Solenoid Valve Circuit
- Pan Freeze Protection Circuit

# Variable Frequency Drives

## Description

RAM produces a specialized offering of motor control panels that are specifically designed for the operation of cooling towers. These unitized control panels are engineered and manufactured to meet the unique needs of a specific application. The use of these panels makes installation easier, less costly, and ensures greater reliability of the cooling tower system.

RAM's complete product offerings are wired complete with a full array of control products for fans, pumps, sumps, heater loads, and auxiliary devices.

## Benefits

- Easy to use intuitive keypad
- Modbus, Johnson N2, Siemens FLN (standard)
- BACnet, LonWorks (optional)
- Single Point Power Connection
  - Simplifies Installation
  - Reduces Installation Costs
  - Reduces Installation Time
- Complete Panel Wiring Diagrams
  - Easier to Wire
  - Easier to Understand How System Operates
  - Easier to Troubleshoot
- Pre-Engineered for Specific Job Requirements
  - Reduces Errors in Selection of Control Equipment
  - Ensures Better System Reliability

## Features

Typical VFD control panels are available with a wide variety of the following components:

- Variable Frequency Drives
- Main Fused Disconnect or Circuit Breaker
- VFD Service Disconnect
- Full-Voltage, 2 Contactor Bypass Starters
- Control Power Transformers
- Basin Pan Heater Contactors
- Fluid Cooler Spray Pump Starter
- Damper Control
- Water Temperature Controllers
- Mechanical Vibration Cut-Out Switch
- Branch Circuit Protection for Auxiliary Devices
- Selector Switches:
  - VFD
  - OFF
  - BYPASS
- Pilot Lights:
  - POWER ON
  - VFD ON
  - BYPASS ON
- Space Heaters and Thermostats
- NEMA UL Type 3R Outdoor Enclosure
  - 10°C to 40°C (+14-104°F)
- 1-100 HP 208/230 VAC
- 1-150 HP 460/575 VAC
- 200-550 HP available by request
- UL Listed



## Standard Specifications

Control panel shall be furnished in NEMA UL Type 3R enclosure suitable for outdoor service. A main fused disconnect with lockable external operating handle shall be furnished. The disconnect shall be sized to handle the controller load in accordance with the National Electrical Code.

Cooling tower controller shall contain VFD, starters, and protective equipment for all fans, pumps, or pan heaters as specified. A 120V control circuit transformer complete with primary and secondary fusing shall be provided for low voltage operation of the control components specified in the cooling tower controller.

Each motor starter furnished in the cooling tower control panel shall be provided with individual branch motor circuit protection; properly sized motor controllers capable of starting, stopping, and interrupting the locked-rotor current of each motor; and be provided with individual motor overload protection. A Hand-Off Auto selector switch shall be provided for each motor starter.

VFD shall be supplied for continuous variable speed control of fan or pump motors as specified. A VFD input service switch and 2 contactor full voltage bypass starter are available.

If Pan Heater option is required, an Off-Auto selector switch shall be included in the control panel for each heater contactor. Field terminals for remote control of the pan heater shall also be included.

Field wiring terminals shall also be provided for any vibration or level switches as required.

Certified drawings shall be provided showing all power and control wiring. An enclosure layout and a bill of materials shall be furnished with each control panel.

Cooling tower control panel shall be provided with U.L. and/or CSA label when requested at order entry.