Introducing the Single-Phase Frigitek®

The Frigitek is an innovative product, designed to save energy used in walk-in refrigerators and freezers. Tests in actual operating refrigerators show that it can save at least 20 percent, and as much as 45 percent of the operating cost of the refrigerator.

The Frigitek functions by sensing the operational status of the cooling system, and controlling the speed of the evaporator fans. It has been determined that the evaporator fan motors contribute a significant amount of heat inside the refrigerated space. By operating the fans at a low speed when no cooling is called for, and at high speed only when the system is actively cooling the refrigerator, much less heat is introduced into the refrigerator. This results in a significant saving in evaporator fan motor power, while the reduction in fan motor heat generated causes the refrigeration system to operate less, saving additional energy at the compressor.

The Single-Phase Frigitek operates over a wide range of input voltages, from 115 VAC to 460 VAC. Although it is factory-set for optimum savings, the fan speed may be adjusted in the field, if necessary for proper operation in special installations. It is **not** a variable-frequency drive (VFD).

The Single-Phase Frigitek is designed to be easily installed with new refrigerators or freezers, or to be retrofit onto existing units. Installation typically takes about an hour, and can be done by any competent electrician or refrigeration technician. The Frigitek is usually mounted on the side wall of the evaporator case, or on the wall of the refrigerator.

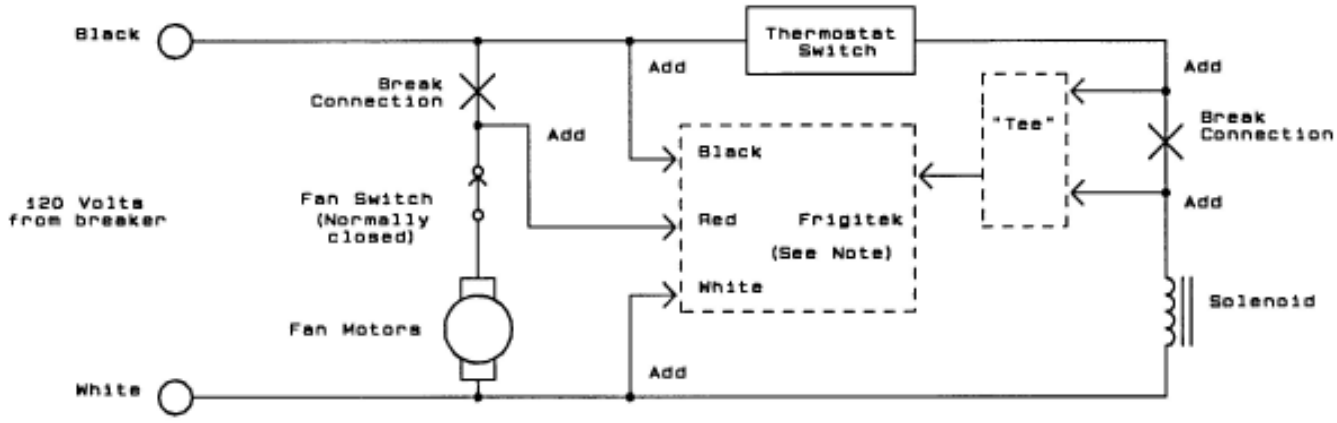
In addition to its energy saving qualities, the Frigitek also has some intrinsic advantages. The low speed of the fans results in lower evaporation from sensitive stored foods, and the lower noise levels contribute to worker efficiency, and a more pleasant workspace.

The Single-Phase Frigitek is patented – U.S Patent Number 6,397,612.

For more information, please contact Energy Control Equipment, Inc, at 877-522-6924 (toll free), or visit our Web site, at www.frigitek.com. International customers, call +831-768-8848.

Single Phase Frigitek® Technical Description

The Single-Phase Frigitek consists of two major components: a Controller, and a “Tee” sensor. A typical system configuration is shown.



The **Frigitek Controller** is normally mounted on the front wall of the evaporator, with the wiring connected inside the evaporator case. Three wires connect the Frigitek controller into the evaporator fan circuit. The black and white wires are wired to the input power connections, and the red wire connects to the fans. The Frigitek commands the fans into high or low speed, and indicates the status of the system. A “Bypass” switch allows the operator to temporarily lock the system into high speed mode, if desired.

The **“Tee” Sensor** monitors current flow in the thermostat / solenoid valve circuit, and sends a low-voltage signal to the Controller whenever the valve is open (system cooling). It is usually installed near the solenoid valve and has a low-voltage cable which connects to the Frigitek controller.

An optional Temperature Differential Sensor ("TDS") is available for use in installations where it is difficult or inconvenient to access the thermostat/solenoid circuit, or where a solenoid is not used. The TDS is a stand-alone sensor, and does not require any connection into existing power wiring. A low-voltage cable connects to the Frigitek.

Frigiteks are also provided with an **Ice Sensor** (two for higher-powered units), which is used to determine if the evaporator has a buildup of ice. If ice is detected, the fans are operated at high speed until the ice is dissipated. The ice sensor is not used for freezer installations.

Up to three Frigiteks may be connected to one Tee Sensor, for use in refrigerators where one solenoid valve controls more than one evaporator. .

The “Tee” sensor, the "TDS" Sensor and the Ice Sensor interconnect cables are low-voltage cables, and require no conduit. The highest voltage in these cables is 12 volts.

Single-Phase Frigitek® Specifications

Controller Unit
Voltage – 115, 208-240, 460 VAC
Current – 5A to 25A
Size – 7" wide, 4.5" high, 2.5" deep
Weight – 2.5 Lbs
Mounting – Evaporator case or refrigerator wall.

Frigitek Controller

"Tee" Sensor
Sensor Input Voltage – 120 / 240 VAC
Sensor Input Current – .02A – 2.0A
Output Voltage – 300 mV, nominal
Size – 5.5" x 3" x 1.5"
Weight – 8 Oz
Mounting – Junction box, Solenoid Valve or Thermostat
Cabling – 2-wire, low voltage

"TDS"Sensor
Sensor Power – 12 VDC (supplied by Controller)
Sensor Input Current – .01A
Output Voltage – 0V / 12V
Size – 5.5" x 3" x 1.5"
Weight – 8 Oz
Mounting – Inside evaporator case
Cabling – 3-wire, low voltage

Tee Sensor
(with solenoid valve)

Options
Wall Mount – allows mounting the Frigitek on a wall.
System Monitor – A contact closure output from the Controller which allows a facility computer system to monitor the operation of the Frigitek.

Agency Approvals
ETL Testing Laboratories (ETL) (conforms to UL)
Canadian Standards Association (CSA
Conformité Européene (CE)
Verband der Elektrotechnik, Elektronik und Informationstechnik (VDE)