



Project Name: \_\_\_\_\_ Notes/Comments: \_\_\_\_\_

Location: \_\_\_\_\_

Order Number: \_\_\_\_\_

Contractor: \_\_\_\_\_

Supplier: \_\_\_\_\_

Architect/Engineer: \_\_\_\_\_

**BENEFIT SUMMARY**

- Pre-programmed rack control options eliminate steps at setup
- Default settings carefully selected for complicated rack systems
- Smart Access communication capability quickly enables remote monitoring
- Eliminates unnecessary defrosts typically associated with timed based alternatives—reducing energy consumption and preserving product integrity
- Maximizes energy efficiency with less compressor run time resulting from shorter defrosts
- Reduces liability by eliminating ice buildup on floors
- Eliminates excessive temperature swings
- Alarm notification text/e-mail
- Remote monitoring & system control
- Includes seven days of room and coil temperatures
- Datalogging provides more than 30 days of system operation history
- Improved product integrity and reduced spoilage - elimination of unnecessary defrost cycles reduces freezer burn, and temperature spikes, which can degrade product quality
- For new equipment or upgrade of existing equipment
- Easily integrated with Building Energy Management Systems

**KE2 Evap for Rack Efficiency**

The pre-programmed rack control default options incorporated in the KE2 Evap for Rack Efficiency (KE2 Evap-RE) eliminate steps at setup and are carefully selected for complicated rack systems, with control for EEV, EEPRV or EHGBPVs. - **pn 21096**

**DESCRIPTION:**

Recent field tests have shown more than 20% energy savings when KE2 Evap RE control algorithms are used on a refrigeration system that is currently operating efficiently. Savings are realized by defrosting the evaporator only when needed, eliminating unnecessary defrosts by up to 87%.

Further savings are possible with the controller’s graphing, data logging and alarm alerts features. By reviewing the performance graphs of the controller, system issues are often identified, many of which correspond to inefficient performance. In cases where the KE2 Evap-RE was used to identify and correct system performance issues, energy improvements of up to 49% were realized. Additionally, the KE2 Evap-RE’s alarm alert feature sends notification of system issues via text or e-mail, allowing the issue to be corrected promptly and keeping the refrigeration system performing at optimum efficiency.

Another benefit of the KE2 Evap-RE controller is the reduction in ice build up on the evaporator, as well as walk-in walls, ceilings, floors and product. Eliminating the ice build up on the evaporator keeps it running at design conditions, this improves efficiency, while the reduction of ice on surfaces improves temperature consistency in the walk-in and eliminates potential safety issues.

The KE2 Evap-RE controller provides communication via the Internet, allowing access to the controller via smart phone, tablet or PC. Remote access allows user to change setpoints, monitor defrosts, check performance history and view real time system operation.



**SPECIFICATIONS:**

**Evaporator Controller - 1 per evaporator**

- Microprocessor driven controller that includes the following:
  1. (5) Analog Inputs
    - a. (4) Temperature Sensors
    - b. (1) Pressure Transducer
  2. (4) Relay Outputs
    - a. (1) 10 Amp (Inductive) Fan Relay
    - b. (1) 20 Amp (Resistive) Defrost Relay
    - c. (1) 3 Amp General Purpose (2 Amp Pilot Duty) Solenoid Relay
    - d. (1) 3 Amp General Purpose (2 Amp Pilot Duty) Auxiliary Relay
  3. (3) Programmable Digital Inputs
  4. (1) Ethernet Connection
  5. (1) Output 0-10V DC
  6. (1) Electric Expansion Valve Driver
- The microprocessor board shall be potted to protect it from moisture and allow it to be located within refrigerated environment. Operating Environment -40°F to 140°F
- The controller shall operate on 120V or 208V - 240V
- The controller shall have a 4 digit alphanumeric, scrolling LED display and operating status lights showing system conditions.

- The controller shall have a 6 push button user interface that provides full access to variables and setpoints.
- The microprocessor shall have onboard web server allowing system parameters to be monitored remotely utilizing standard TCP/IP protocols HTML and XML communication. Multiple controllers will have the ability to utilize TCP / IP communication to communicate with each other, providing the ability to sync compressor run/off and defrosts between multiple evaporators.
- The controller's microprocessor shall have the option of controlling evaporator fans the following ways:
  - a. Continuously
  - b. Cycle on room temperature and coil temperature
  - c. Cycle on with compressor
  - d. Title 24
- The controller's microprocessor shall have the option of selecting between the following defrost type:
  - a. Air
  - b. Electric
  - c. Hot Gas
- The controller's microprocessor shall have the option of selecting between defrost control method:
  - a. Demand defrost which initiates defrost on loss of evaporator efficiency and is terminated on temperature (or time if temperature is not achieved).
  - b. Time initiated defrost – terminated by temperature.
  - c. Runtime defrost which initiates defrost based on number of hours of compressor operation
- The controller shall include a 31 day rolling graph of the evaporator return air and coil temperatures.
- The controller shall have the ability to send alarm notifications via email or text message.
- The controller's microprocessor shall provide system protecting safeguards as follows:
  - a. Compressor over cycle protection
  - b. Fan over cycle protection
- The controller's microprocessor shall have the option of selecting between auxiliary relay types:
  - a. Alarm Relay
  - b. 2nd compressor relay
  - c. 2nd fan relay
  - d. 2nd defrost relay
  - e. 2 speed fan control
  - f. Light relay
  - g. Permanent defrost relay
- The controller shall have the option of data logging at 10 minute intervals for 31 days the following:
  - a. System Status
  - b. Suction Pressure
  - c. Suction Temperature
  - d. Saturated Temperature
  - e. Superheat
  - f. Valve % open
  - g. Room Temperature
  - h. Coil Temperature
  - i. Compressor Status
  - j. Fan Status
  - k. Defrost Status
  - l. Digital Input Status
  - m. Alarms
- Pressure Transducer
  - Input 0-5VDC
  - Pressure Range: 0 to 150 psia
  - Proof Pressure: 450 psi
  - Burst Pressure: 1500 psi
  - Operating Temperature: -40°F to 275°F
- Temperature Sensor
  - Operating Range -60°F to 150°F
  - Stainless steel housing
  - Moisture resistant package
  - 2KΩ@77°F

**DIMENSIONS -**

Inches

