

Control Panel



EVAPORATOR CONTROL			
	Freezer Zone #1 AU 1 & 2	Freezer Zone #2 AU 3 & 4	Freezer Zone #3 AU 5 & 6
Actual Temperature	20.8 °F	20.2 °F	-17.8 °F
Temperature Setpoint	20.0 °F	20.0 °F	10.0 °F
Zone Status	Cooling	Defrosting 35:11:45	Saturated Fan off in 00:17:43
Defrost Status	Pending Defrost 13:24:20	Pump Down	Not Started
Liquid Run Time	14:45:00	00:00:00	00:00:00
Fan Cycling Status	Not Enabled	Not Enabled	Fan On (Cycling)

Evaporator Control

The Evaporator Control functions provide temperature monitoring and control for plant areas. Control outputs of the GForce™ panel direct the opening and closing of valve station solenoid or modulating valves and the starting and stopping or speed control of air unit fans, providing the cooling and defrost functions for each evaporator zone.

Features

- GForce™ panels can provide up to 80 configured evaporator zone control groups for control of valve stations and air unit fans.
- Zone control groups are factory-configured to provide monitoring of a zone temperature and control of fans and liquid, suction, soft hot gas, hot gas, bleed, and humidity control solenoid valves.
- All defrost cycle timers—pump down, soft hot gas, hot gas, bleed, and fan delay—are easily adjustable.
- All zones have temperature alarm differential set points above and below the current zone set point.

Benefits

- Various standard features that can be used to minimize energy usage:
- Zone defrost cycles can be initiated by liquid runtime set point, scheduler, or manual initiate.
- Zone defrost terminate on coil temperature or other condition is possible through optional factory configuration.
- Zone temperatures can be lowered during lower-cost energy periods and raised during peak energy periods.
- Ramping of zone temperatures is possible for controlling temperature pull down and temperature increase rates.
- Fan cycling feature can be enabled for stopping the fans when the zone temperature is at set point, another energy saving feature. Fans run periodically for several minutes to agitate the air in the room and to check the zone temperature.
- Automatically delayed startup of each zone stag-
- es the turning on of zone fans to avoid power spikes during power up.
- Defrost loops provide a means for avoiding simultaneous zone defrosts; if defrost is initiated for a second zone on a single loop, that zone's defrost cycle will be delayed until the first zone's defrost is terminated.
- Easily-adjusted zone probe assignment is especially useful for temporary re-assignment if a probe fails.
- Zone outputs may be controlled from GForce™ panel with processor or from a remote I/O GForce™ panel; remote I/O panel can be located closer to valve stations to minimize field wiring.
- An extremely flexible Energy Saving Scheduler is provided for initiating defrosts, changing/ramping zone temperature setpoints, enabling/disabling individual zones, and prohibiting individual zone defrosts; all entries are user-defined.



Enable	Type	Date/Time	Count Down	De
YES	Defrost	7:30 AM	15 Days	Zone 2
YES	Fan Cycle	10:00 AM	15 Days	Zone 2
YES	Defrost	9:30 PM	15 Days	Zone 2
YES	Fan Cycle	10:00 AM	15 Days	Zone 2
YES	Defrost	9:00 AM	15 Days	Zone 2
YES	Fan Cycle	10:00 AM	15 Days	Zone 2

Optional Features

- Factory configurable functions:
- Humidity control (Reheat function)
- Variable-speed air unit fan control
- KW limiting/load shedding
- Heating control—hot gas or electric
- Defrost termination by coil temperature sensor or other status
- Hand-Off-Auto toggle switches in zone output modules provide means for manual override.
- Fan isolation relays can be included in panel for zones with fan loads that exceed output module current capacity.
- Zone can be configured for Glycol air unit control.
- Defrost cycle can include a water-wash step.

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FES Controls. . .Delivering Tomorrow's Technology. . .*TODAY!*

- **Easy to Service**—Control parameters can be changed through the keypad as temperature setpoints or defrost setting requirements change. The internal components are the same as those used in the Micro IIE compressor panels.
- **Built-in Communications Capability**—Each control panel comes with an RS-232 communications port which may be used to communicate direct or via an FES ComMENT Network Card for plant-wide monitoring and control operations.
- **Easy To Upgrade**—You can add the advantages of micro-technology in steps since more zones can be added to a panel in the field. Additional panels can be added if the zone limit is exceeded or if a separate panel location is desired to reduce field wiring cost. With each upgrade, FES provides updated drawings to meet your PSM or other documentation requirements.

Hardware:

FES designs its own circuitry to ensure the demanding requirements of industrial refrigeration controls are met. FES Micro Control is the most reliable in the industry, offering features that keep FES on the competitive edge. Such as:

- **Field Replaceable I/O Modules**—I/O Modules are field replaceable, reducing downtime, maintenance and inventory costs.
- **Strain Gauge Transducers**—These transducers provide higher accuracy and better serviceability than the traditional style sensors.
- **Radio Frequency Immunity**—The control circuitry is designed to withstand radio interference where other controls fail. The all-metal Nema 4 enclosures shield electronics from radio frequency interference.
- **Non-Volatile Memory**—Setpoint memory retention is accomplished through the use of battery-backed RAM with a 10 year life.
- **UL/CSA Listing**—The standard UL listing, and optional CSA listing, ensures that FES meets the highest standards.
- **Protection in Hazardous Conditions**—Division 2, Air Purge and Nema 4X are available.
- **Wide Operating Temperature Range**—Designed to operate indoors or out, in demanding environments.
- **Flexible Power Supply**—The power supply operates on an input voltage range of 85-265 VAC at 50-60 Hz.
- **AC Line Noise Immunity**—The control circuitry is designed to withstand surges and voltage spikes from the AC line or generated by other devices, such as solenoids, relays, or motors, starters, etc.

Optional Features:

- Keypad lockout with key switch to prevent unauthorized access
- Manual Emergency Cool switches for each individual zone
- FES ComMENT/TELE-DATA network interface card

Specifications:

- Power requirements: 120 VAC, 60 Amp, 1 Phase, 60 Hz maximum
- Temperature Inputs: ICTD (Viewable in Degrees F or C)
- Pressure Transducer Inputs: 1-6 VDC or 4-20ma
- Humidity Sensor Inputs: 4-20ma
- Wall-mounted, NEMA 4 enclosure (Nema 4X optional)
- Display: 5 x 7 Dot matrix, alphanumeric, 20 characters for 4 lines, 2.6" x 6.2"
- Keypad: Numeric keypad with additional keys to operate screen schedules and displays
- Input/Output limits: 40 modules on base I/O rack, expandable to 160 I/O modules
- RS-232 Communication port for printer/modem/network interface to the microprocessor
- Operating Conditions: 0—95% relative humidity, +32°F to +122°F (0°C to +50°C) ambient temperature
- Size and Weight: 24"h x 45.75"w x 16.125"d, 150 pounds; expandable to 42"h x 45.75"w x 16.125"d, 250 pounds

Single Height Enclosure with 2 I/O Racks



Double Height Enclosure
with up to 4 I/O Racks