



Convenience Store Automation



Convenience Store Automation Overview

In order for convenience stores to remain competitive, it is necessary to take advantage of technologies that reduce operating expenses. In the past, the store manager monitored lighting, HVAC and refrigeration systems and placed all related service calls. Now, and even more in the future, it is important to automate these systems, improving operating efficiencies and allowing store personnel to focus on customer service. That is why many leading convenience store operators in the U.S. and abroad have turned to Emerson for increased operating efficiencies and significant energy savings.

Remote accessibility enables chains to manage the operation of multiple locations and minimize unnecessary service calls. Emerson's facility management system allows access to remote locations from centralized management facilities, providing the ability to adjust temperature set points, modify lighting schedules, send and receive alarm notifications, view real-time product and store temperatures, and perform system diagnostics.

Recognizing the need for a cost-effective, flexible system, Emerson Climate Technologies has developed the E2 CX convenience store control system. The E2 CX provides a range of features and benefits that usually provide a simple payback of less than 18 months. In new store installations, applications can be cost neutral when compared to the cost of installing less precise electro-mechanical components required to operate refrigeration, HVAC

equipment and lighting systems. The E2 CX is equipped with advanced algorithms that optimally control the equipment connected to it. These capabilities provide significant day-in day-out savings over traditional mechanical control methods.



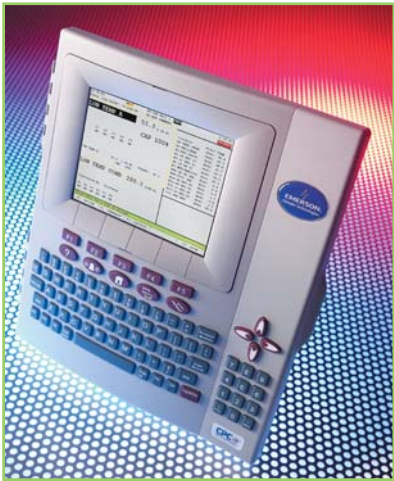
Advantages of Emerson's E2 CX System:

- **Reduces energy costs by 10% or more**
- **Improves operating efficiency and reliability by replacing electromechanical controls**
- **Protects food quality and minimizes shrinkage**
- **Minimizes lost sales due to warm product temperatures, by providing high temperature and equipment failure alarms**
- **Reduces maintenance costs by enabling remote access and troubleshooting**
- **Integrates with Emerson's ProAct® Service Center for 24 x 7 x 365 monitoring and maintenance dispatch**

The E2 CX

Designed specifically for convenience stores, the E2 CX replaces existing electro-mechanical controls with a more cost-effective electronic control system. The system was designed specifically for ease of use. Since the equipment comes with preprogrammed with industry default data, setup and programming time is greatly reduced when compared to older mechanical controls that required hours of adjustments by technicians to set valves and thermostats properly.

The E2 CX system has been designed and built with flexibility in mind. Developed from the most advanced algorithms in the retail industry, the E2 CX has the ability to meet the control requirements of the most complex C-Store equipment and systems. Should special conditions or applications arise, a complete line of I/O boards and peripheral devices are able to accommodate them. Integrating the unit into your store's design is made even easier with a custom panel, designed in Emerson's own custom panel shop, or by using an integrated electrical package from your electrical distribution panel supplier.



Better control and management of store systems helps you minimize operating expenses, increase equipment life, and reduce down time for:

- **Store Lighting**
- **HVAC systems**
- **Reach-in Coolers**
- **Freezers**
- **Anti-Condensate Heaters**
- **Fuel Dispensers**
- **Irrigation Systems**
- **Car Washes**
- **Other Key Equipment and Systems**

Facility and Energy Management System - Annual Estimated Energy Savings

Average Monthly Energy Cost (Per Site)	Estimated Savings Over 1 Year (Per Site)
\$3,400	\$4,080
\$3,100	\$3,720
\$2,900	\$3,480
\$2,700	\$3,240
\$2,500	\$3,000



Energy Savings Energy Savings Energy Savings

Lighting Control

"Use schedules and custom programs to effectively control lighting loads while minimizing power peaks."

Lighting can be approximately 1/3 of a convenience store's electrical consumption. Inadvertent operation of exterior lighting for just one additional hour per day can cost nearly \$900 per year—a very visible drain on your stores' profits. As energy costs increase, accurate control of lighting can significantly reduce your overall power bill. The lighting loads associated with case lights, parking lot lights and signage represent a substantial cost for convenience store operators. The CX is able to control canopy lights, cooler lighting, interior lights and exterior signage loads via a schedule, a light lever sensor, or a combination of both.



HVAC Control

"Maintain your store's environment while minimizing energy usage"

Accurate control of HVAC equipment significantly affects several areas of convenience store operation. High store temperatures cause product shrinkage and loss of valuable chocolate and sugar based products. High temperatures also increase the refrigeration cooling load, requiring equipment to operate continuously. Moreover, high store temperatures typically do not provide a pleasant shopping experience for patrons. By employing an integrated control system, you can provide a comfortable store environment while still reducing energy costs.

The E2 CX gives you the ability to control and operate up to four HVAC units from a single controller. These units can range from simple cooling only units to complete heating and cooling split systems or single package systems with multiple stages of heating and cooling. These systems can also incorporate night setback programs to minimize the operational cost of HVAC equipment by reducing run times and energy consumption.



Refrigeration Control

"Maintain optimum product temperatures and improve equipment life."

Refrigeration systems may account for up to 40% of the electrical usage in a convenience store. As sales of prepared food become more important to the convenience store industry, and more refrigerated cases are added to store prototypes, this cost will only rise. With energy costs on the rise, the ability to control and maintain refrigeration temperatures, monitor door closures, and maintain defrost times is more critical than ever before.

Energy Savings Energy Savings Energy Savings

Glass Door Anti-Condensate Control

"Minimize power loads for increased energy savings"

One of the largest untapped opportunities for reducing power consumption in a convenience store is the precise control of heaters contained in glass front cooler doors. The E2 CX provides proven patented algorithms to precisely control the electrical power to heated cooler doors. This allows you to maintain the merchandising quality of glass doors while reducing their operational cost. In a typical installation with anti-condensate heat controls, OFF times can go from 0% to 40% or more. This is equivalent to turning the heaters off for almost 5 months a year while maintaining the merchandising quality of the doors, saving over \$280 per year in medium and large store formats!



"The E2 CX provides complete control of lighting, HVAC, refrigeration, and irrigation systems, in addition to monitoring fuel systems."



Fuel Systems

"Control fuel systems for enhanced safety and reduced maintenance costs"

The E2 CX enables operators to remotely power cycle fuel dispensers any time a dispenser goes offline. Field research shows that a simple power restores normal functionality in up to 35% of cases. For a even a small station with four dispensers and one avoided service call per dispenser per month, this could save an operator over \$3,500 per year in maintenance costs!

Irrigation Control

"Integrate irrigation systems to reduce equipment costs"

As a facility controller, the E2 CX controls multi-zone irrigation systems. Using its advanced scheduling capabilities and overrides, the E2 may control odd/even or day-of-week watering schedules with rain sensor overrides. This eliminates the need to purchase additional irrigation controllers, saving retailers money.

Equipment Monitoring

Remote Communication

"Communicate anytime, from anywhere"

Today, more than ever, remote communications provides several benefits to retailers:

- Change setpoints, or broadcast them across your enterprise
- Manage lighting and HVAC schedules
- Troubleshoot store issues without a service call
- Receive alarm information nearly instantly
- Develop energy benchmarks and measure performance against them to pinpoint under-performing stores.

Site Monitoring

"Around-the-clock monitoring ensures prompt issue identification"

Emerson's ProAct Service Center assists you by providing a state-of-the-art call center for 24/7 monitoring and service dispatch. Our trained technicians assist you with set point verification, remote alarm investigation, and remote resolution if possible. With site monitoring, technicians will track alarms and notify the appropriate personnel through a protocol of alarm escalations. This escalation process allows us to dispatch the appropriate contractors at the appropriate time, per your specific preferences. Whether the alarm is a

critical refrigeration alarm or a plumbing issue, Emerson Climate Technologies is ready to take action to correct the problem. At the end of every month, Emerson Climate Technologies can even generate site and enterprise reports that you can use to drive costs out of your operation by identifying sites with the most alarms or highest energy usage.



Leasing Leasing Leasing

We Can Help

There's one thing certain in today's business market - technology changes at breakneck speed. However, to be successful, you've got to keep pace with the rapid evolution of technology, and do so within budgetary constraints.

World Class Financing

Our financing programs help you meet your objectives with financial solutions designed to match your organization's project financing and equipment leasing needs.

The Advantages

Our mission is to provide world-class financing coverage for our customers. We're here to help make your capital equipment purchases affordable. We know the intricacies of financing technology and sophisticated equipment. And, unlike banks and other lending facilities, we are experienced at designing custom-tailored financing solutions.

- Convenient, single-source financing for all related costs
- Master leases for simplified add-ons and upgrades
- Bundled financing and billing
- Technology protection against obsolescence
- Attractive rates
- Multinational financing
- Flexible end-of-term options

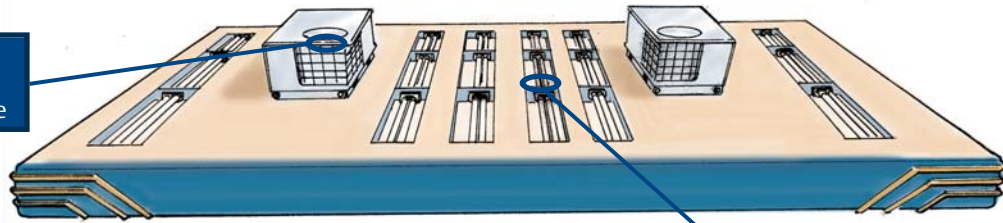
Regardless of which product you choose, you receive:

- Competitive access to capital
- An account team that understands the unique needs of your environment
- Low monthly payments
- Flexibility to deal with capital budget limitations



System Highlights

Maintains store HVAC environment while minimizing energy usage



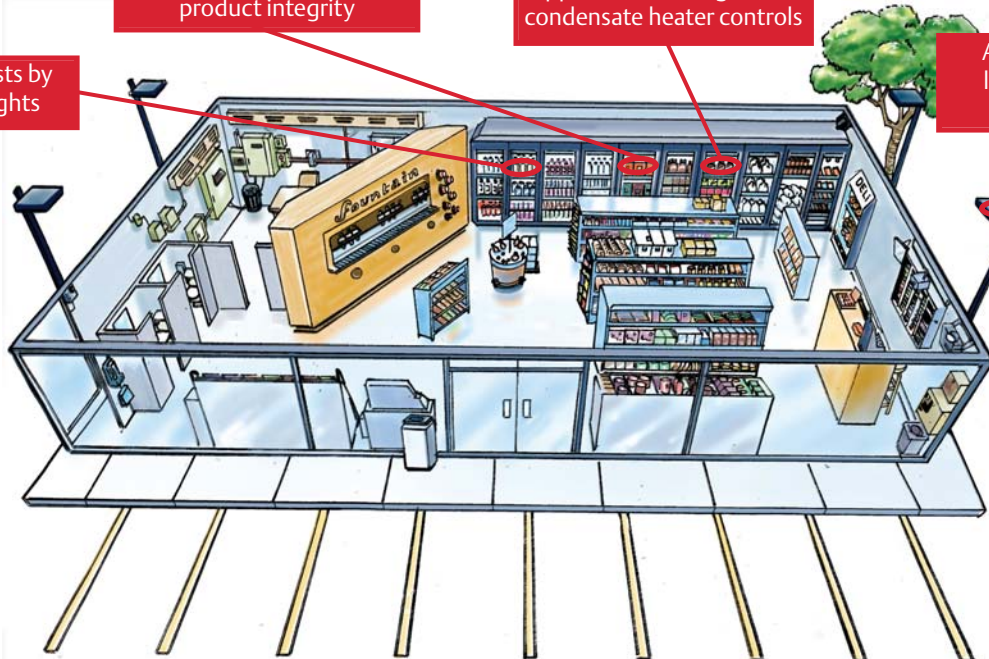
Operates store lighting for maximum savings

Maintains optimum product temperatures for enhanced product integrity

Minimizes power usage while preserving product appearance through anti-condensate heater controls

Reduces energy costs by controlling case lights

Activates parking lot lights when needed, where needed

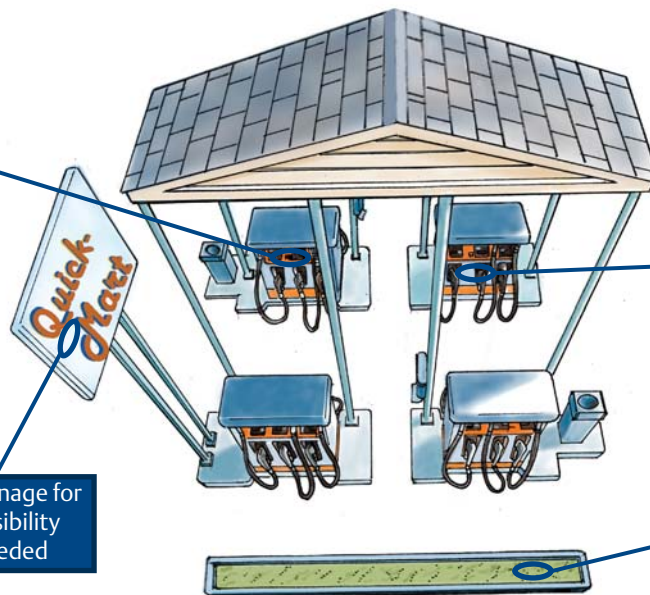


Power cycles fuel dispensers, reducing service calls

Turns off fuel dispensers automatically for added safety

Turns on signage for greater visibility when needed

Integrates irrigation systems, eliminating additional controls



E2 CX System Specifications

System Control and Monitoring Capabilities

Refrigeration Units	48
Defrost Control	•
AHUs/RTUs Control Capabilities	16
Humidity Control	•
Night Setback and Warmup	•
Lighting Control via Photocell and/or Schedules	•
Dispenser Error Code Monitoring and Alarming	•
Car Wash Monitoring	•
Irrigation Control via rain gauge	•

System Inputs and Outputs

Maximum Inputs Per System	246 Universal
Maximum Outputs per System	128 Relays

Programming Options

Windows® Based Remote Software	•
Front Panel (menu driven)	•

Communication Options

Ethernet	•
Modem	•
Direct	•

User Interface Design

Keys available on Interface	Full Qwerty Keyboard
TFT Color Screen	•

Memory and Data Logging

Memory Available for Additional Control Strategies	•
Data Points for Logging	8000 (Nearly 3 months of storage for typical store configuration)
Utility Logs	•
Password Protection	•
Non-volatile Memory	•

Alarm Capabilities

Alarm Storage	200 Unique Events
Alarm Dial-Out	•
Remote Annunciation	•
Remote Monitoring	•

Dimensions and Power Specifications

Size	13" H x 12" W x 3.66" D
Supply Voltage	24 VAC
Alarm Contact Rating	240 VAC, Pilot

Global Reach Global Reach Global Reach



With a global presence spanning 150 countries, Emerson is positioned with the infrastructure, knowledge and experience to provide integrated product solutions around the world.

With each Emerson brand in an industry leading position, Emerson is the one company emerging economies can go to for all their infrastructure solutions, including: process automation, plant optimization, telecommunications infrastructure, reliable network power, climate control, and more. Additionally, established companies looking to develop overseas industry benefit from the geographic and capability advantages of Emerson.

As we continue to invest in our global development, we are better able to serve our customers, as well as enhance Emerson's position as a company of extraordinary financial promise for our shareholders.

Retail Solutions operates sales offices throughout the world. Contact any one of our offices for more information about our products or services.

Emerson Climate Technologies

Emerson Climate Technologies is the leading manufacturer of HVAC and refrigeration components in the world, delivering comprehensive solutions for temperature-critical applications across numerous industrial and residential applications.

Emerson Climate Technologies offers its broad range of customers access to the most sophisticated climate control technology available. Our products are used throughout the world in commercial and transport refrigeration, as well as residential and commercial air conditioning.

Our commercial refrigeration products help ensure the integrity of our food supply by keeping food products at safe temperatures as they move from the farmer's field to our kitchen table. Our air conditioning products make the environment we live and work in comfortable and environmentally safe.

EmersonClimate.com

Emerson Climate Technologies divisions:

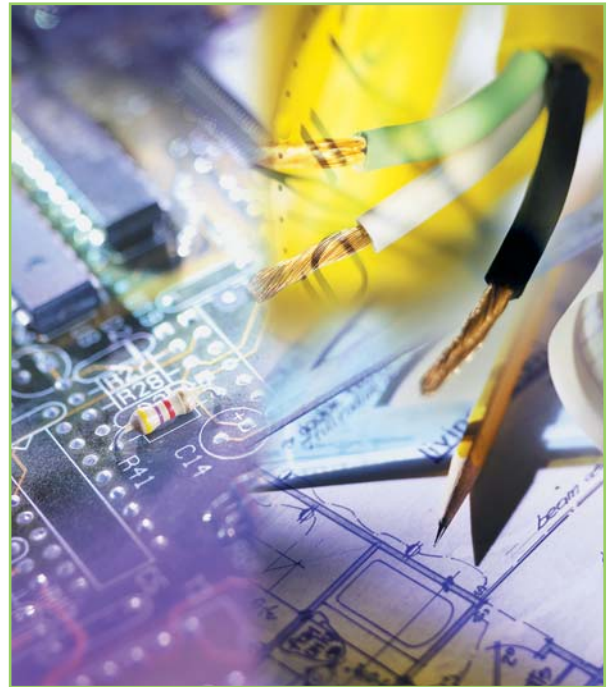
- Air Comfort Products
- Emerson Retail Services
- Computer Process Controls
- Fusite
- Design Services Network
- HAC Motors
- Emerson Climate Technologies, Inc.
- Emerson Flow Controls
- Therm-O-Disc, Inc.
- Emerson Power Transmission
- White-Rodgers

Company Overviews

Emerson Climate Technologies Retail Solutions

Retail Solutions has over 20 years of experience designing and manufacturing leading refrigeration and HVAC control systems for the world's leading retailers. With over 25,000 installed locations around the world, we take pride in providing accurate and reliable energy management, temperature control, and comfortable store environments while reducing operating costs for many of the leading supermarket, retail, and convenience store operators.

Retail Solutions is at the forefront of developing new trends in monitoring systems by focusing on integrating technologies such as wireless sensing devices, web based information systems, and advanced monitoring algorithms. Our ongoing research and development efforts allow us to continue to offer convenience stores enhanced control systems and leading edge technologies. As a business



partner, we are passionate about delivering the most advanced, cost effective solutions to effectively and efficiently service our customers.

As a part of Emerson, Retail Solutions brings our customers the opportunity to integrate many more services and products offered by the Emerson Climate Technologies group of companies. From monitoring to selecting energy saving products, Retail Solutions brings you new levels of operating efficiency, and assists you in continuously reducing your operating costs from year to year. Contact your Retail Solutions sales representative to learn how you can start improving your performance by calling 770-631-2165.

EmersonRetailSolutions.com



Integrated Facility Management System



Store/Canopy Lighting



HVAC Systems



Refrigeration Systems



Monitoring Car Wash Systems



Monitor Fuel Systems



Optional Enterprise Data Aggregation for Decision Analysis Call/Center Support



1640 Airport Road NW, Suite 104, Kennesaw, GA 30144
770-425-2724
EmersonRetailSolutions.com



2003CPC-69 R3 (10/08) Emerson is a trademark of Emerson Electric Co. © 2003 Emerson Climate Technologies, Inc. All rights reserved. Printed in the USA

EMERSON. CONSIDER IT SOLVED.™