



# Lumity™ E3 Supervisory Control

Product Spotlight Webinar  
April 15, 2021

# Product Spotlight Webinar

## Introducing the E3: The Next Generation in Supervisory Controls

### Lumity™ E3 Supervisory Control

Thursday, April 15<sup>th</sup>  
2 p.m. EDT / 11 a.m. PDT



#### Attendees will learn:

- New features and functionalities of our Lumity supervisory control platform
- How our Lumity supervisory control software brings all of Emerson's supervisory control devices under one software interface
- Why the E3 controller was designed as a true drop-in replacement of the E2
- How to gain instant visibility to all key systems, faults, statuses and alarms
- How our Lumity supervisory control platform enables control of critical systems with advanced refrigeration algorithms, building control strategies and network connectivity

## Presenters:



**Katrina Krites**  
Marketing and Business Development  
Manager, Food Retail  
**Emerson**



**Sam Smith**  
Director of Product Management,  
Digital Solutions  
**Emerson**

# Agenda

**Katrina Krites**

Solution Overview

**Katrina Krites**

Value Drivers and Case Studies

**Sam Smith**

Product Features

**Sam Smith / Katrina Krites**

Site Aggregator and Peer Networks

**Katrina Krites**

Support Services

# Key Messages

- The Lumity supervisory control software platform is the foundation of the E3 and site supervisor controllers.
  - Any software enhancements are available in both platforms.
- The Lumity E3 controller can be part of a centralized or distributed control network.
- The E3 controller is the same form factor as E2.
  - **Identical** wiring holes, mounting points and vents
  - Enclosure fits into existing panel cut-out
- MultiFlex boards and IONet devices are backward compatible to E3 and site supervisor.
- The benefits of change:
  - Faster speed and higher levels of processing capabilities
  - More connectivity to upstream devices and off-site connectivity
  - User-friendly and intuitive (from navigation, setup and troubleshooting) with customizable views

# Solution Overview

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# LUMITY™

Providing innovative products and software solutions for each step of the temperature-sensitive supply chain that empower our customers to protect the quality and safety of medicines, vaccines and food.



# Lumity Digital Building Solution Portfolio

Food Retail

Foodservice

ProAct™  
Services

Connect+

Data  
Management



Food Monitoring

Emerson



Cargo Oversight

APIs



Transformative Wave



INSIGHTS THROUGH DATA

Controls and  
Electronics



System Controls



Rack Controls

Case Controls



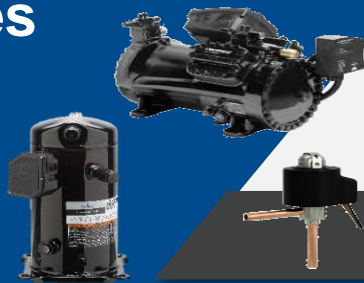
Electronic Controls



Integrated and Optimized  
Solutions

PLUG-AND-PLAY INTEGRATED SOLUTIONS

Devices



Scroll  
Compressors

Reciprocating  
Compressors



Condensing  
Units

Industrial  
Compressor Units



Temperature Monitoring  
Devices



Pressing



Cold Chain

# Lumity Supervisory Control Platform is Comprised of Common Software With Multiple Hardware Embodiments

## Software

Lumity supervisory control software is the same for E3 and site supervisor controllers.



## Hardware



Lumity Site Supervisor



Lumity E3 Supervisory Control



Lumity Supervisory Control Accessories



# Lumity Supervisory Control Platform Provides Flexibility to Meet Diverse Application Needs



Site Supervisor



E3 Supervisory Control

New Store

Remodel

E2 Service Replacement

- Cost flexibility
- Ideal for space-constrained areas
- Flexible display
- Flexible mounting

Not Ideal

- Built-in display
- Flexible to add additional display
- Form factor replacement for E2
  - Same:
    - Grounding
    - Mounting
    - Communication
    - Power connection
    - Software features

# E2 Typically Installed Within Panels



# E3 Controller is a Drop-in Replacement for the E2 Product



- **True E2 Drop-in Replacement**
  - **Identical** wiring holes, mounting points and vents
  - Enclosure fits into existing panel cut-out
- **Updated Integrated Display**
  - **Larger 10"** capacitive color touch-screen
  - User-friendly interface with on-screen keyboard
- **Equivalent COM Port Configuration and Power Connections**
  - **Total of four COM ports** for connected devices with two isolated COM ports
  - Easily swap out an E2 with no need for rewiring
- **Fully Backward Compatible With MultiFlex and IONet Boards**

# Supervisory Control Capabilities



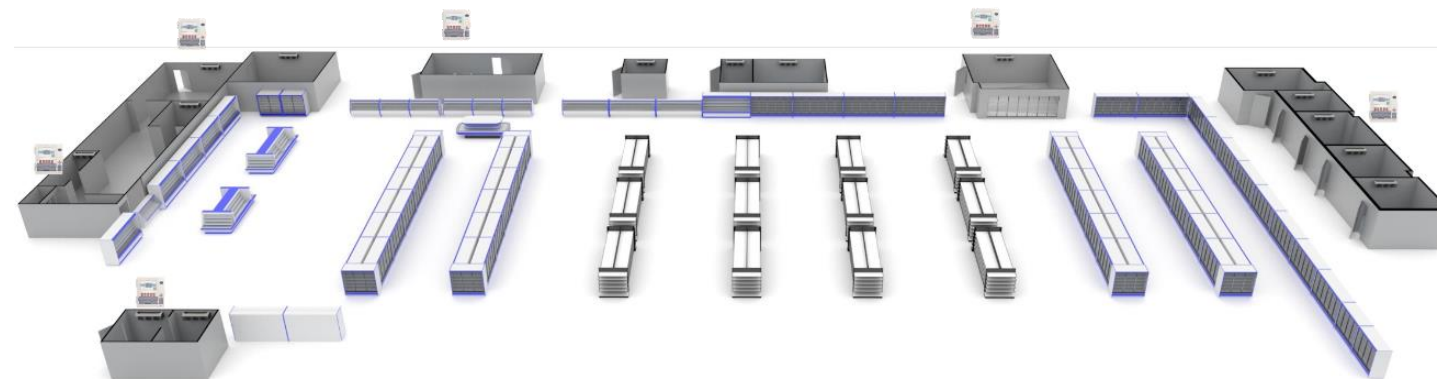
**Building Controller (BX)**



**Refrigeration Control (RX)**

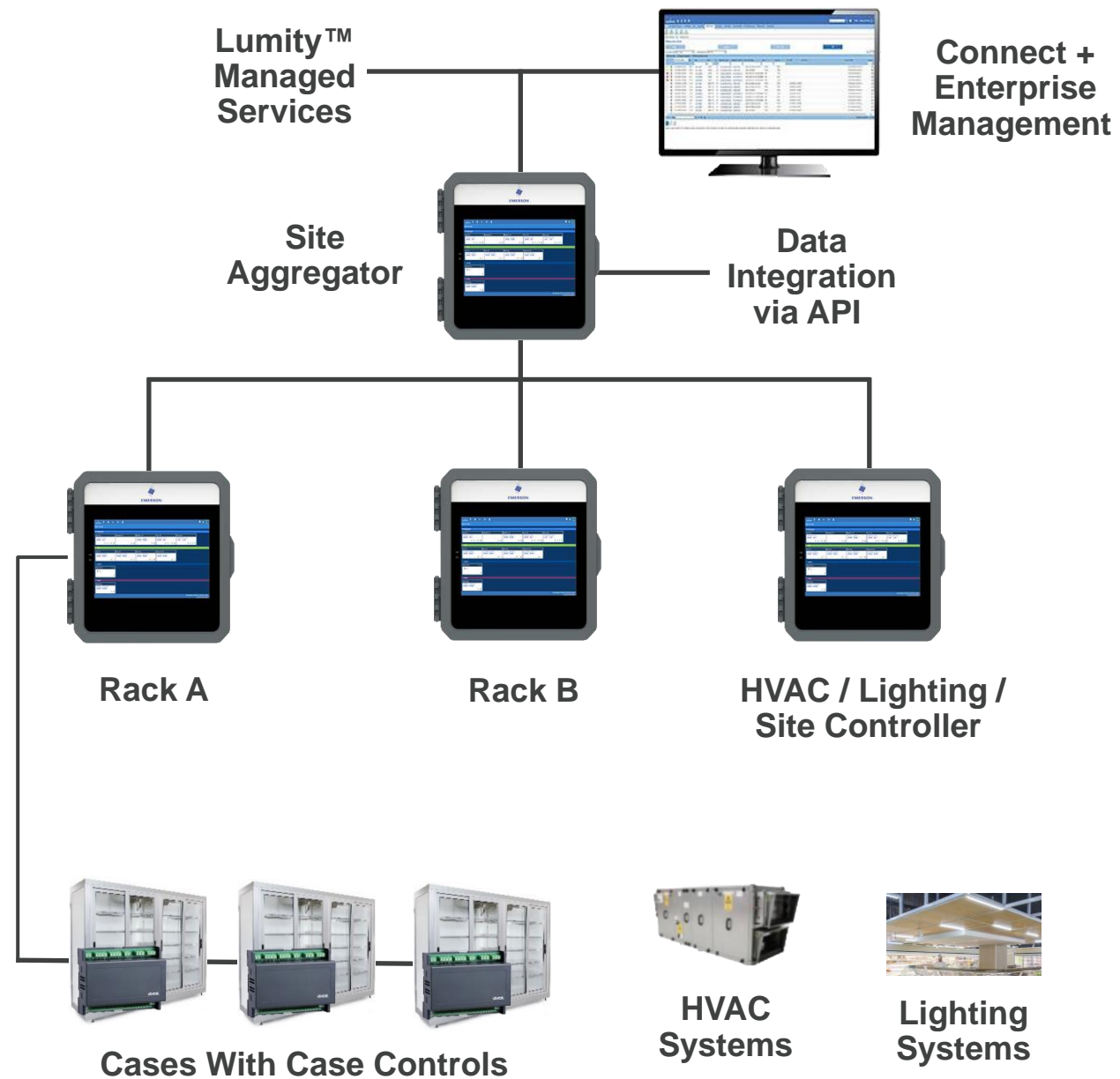


**Combined Building and Refrigeration Control (CX)**

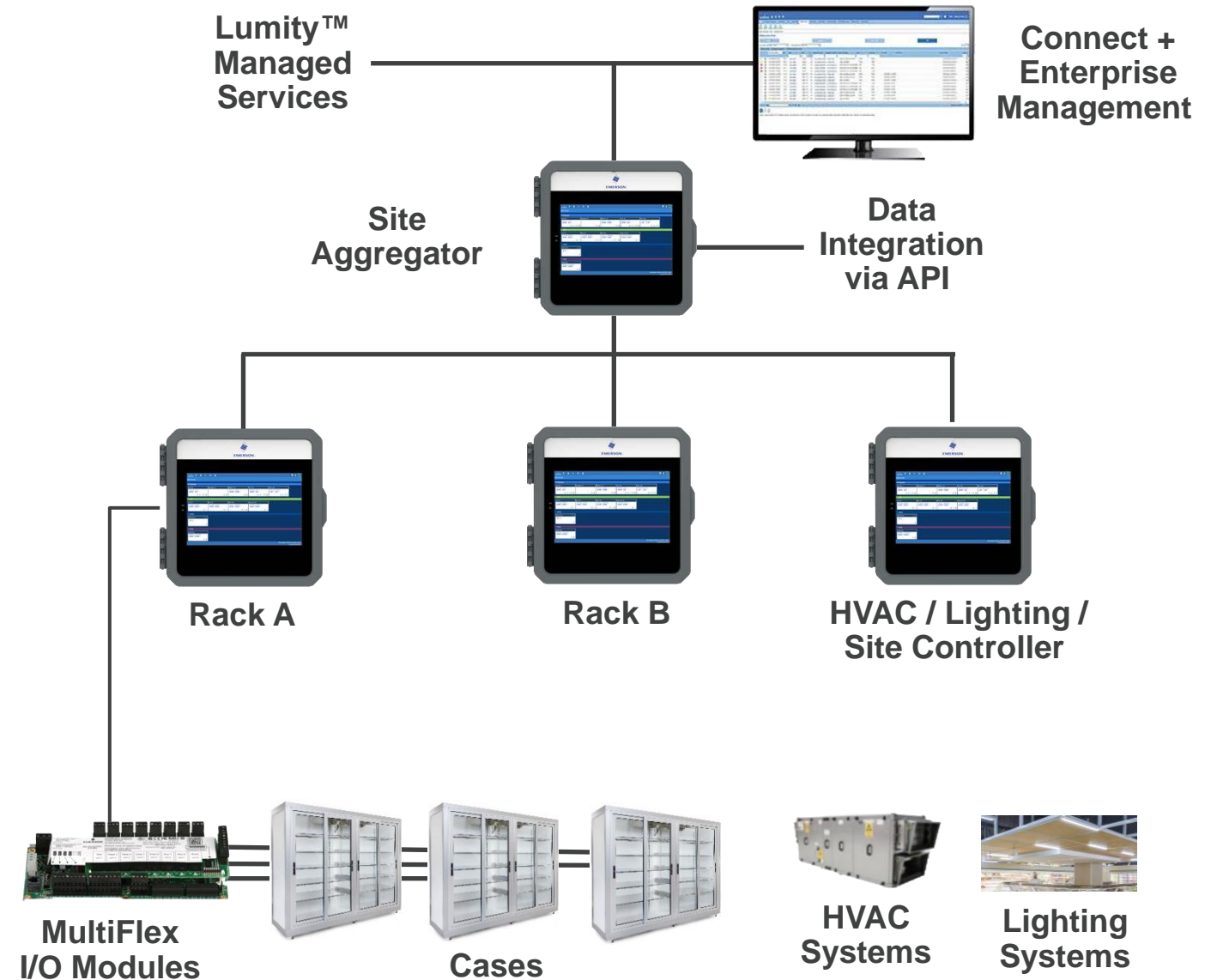


**Site Aggregator**

# Distributed Control Architecture



# Centralized Control Architecture



# Customer Values and Case Studies

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# Benefits of E3 Controller per Customer Values

## OEMs



**value applied cost,  
minimal inventory  
and fast troubleshooting**

## Contractors



**value ease of use and quick  
troubleshooting**

## End Users



**value efficiency, visibility  
and actionability**

	OEM	Contractor	End User
<b>Backward Compatibility</b>	✓	✓	✓
<b>Remote Access</b>	✓	✓	✓
<b>Customizable Graphs</b>	✓	✓	✓
<b>Smart Alarms</b>		✓	✓
<b>Intuitive Navigation</b>	✓	✓	✓
<b>Scalable</b>	✓		✓
<b>Data Accessibility and Integration</b>	✓	✓	✓
<b>Control</b>		Wizards/prompts combiners + advanced control	Power Monitor for optimal control
<b>Other Benefits</b>	Ease of use and integration	Minimal training required, same form factor as E2, Site Aggregator	Floor plans for store layout, graphic scheduling, data integration into larger ecosystem



# North Eastern Refrigeration Contractor



## Problem:

Supermarket chain wants to upgrade aging out controllers and software with new modern controls with web-based access.

## Solution:

Replace aging RMCCs with Lumity Supervisory Control Platform.



*“I am very pleased with how much easier it is to train my people and customers on this new system. I will buy it just based on the new user interface and how well it works on mobile phones and tablets. This is what I have been waiting for. **We will be using this platform going forward on all of our installations.**”*

# St. Cloud Refrigeration



## Problem:

Calumet Colosseum needs significant upgrades and new control system for an NHL preseason game.

## Solution:

Provide easy-to-use interface with remote capabilities from a mobile device.



*"The NHL rep responsible for the ice was very impressed with the easy access to the software and the ability to change the system setpoints from his phone and receive a text if there was an issue. Many times, I saw him check the temps and pressures on the chiller with his phone. Needless to say, I am really happy that we were able to make such a positive impression with the NHL."*

# Product Features

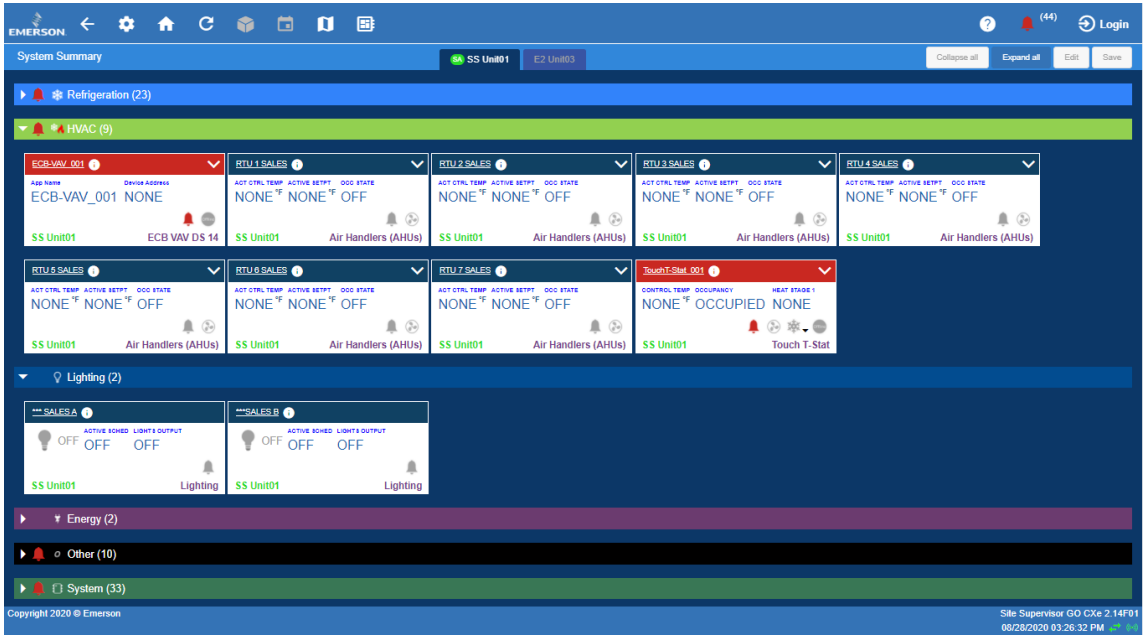
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# Lumity Supervisory Control Software Overview

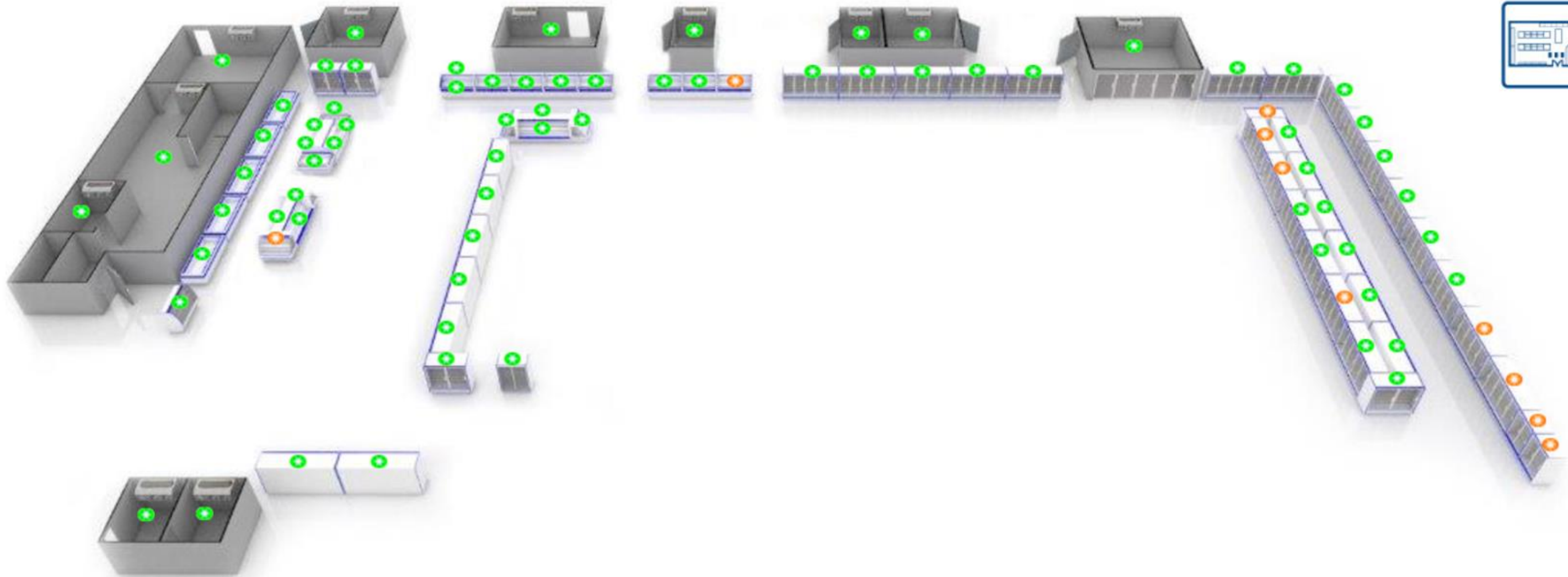
## A Simplified and Intuitive User Interface

- Intuitive Navigation:** Easy to use with no special training for day-to-day operation. Familiar processes, icon-based navigation and common toolbar.
- Priority Actions:** Highlights the information needed for action and resolution. Priority alerts are visible in red for easy recognition, visibility and action.
- Fast Response:** Store managers and technicians can act quickly, with detailed information available instantly in convenient drill-down screens.
- Mobile-Optimized:** Access and operate from anywhere. In addition to the integrated touch-screen display, authorized users can access the system on all types of mobile devices.
- Secure Data:** Options to manage locally, on your network or through ProAct Services.

							
<b>Refrigeration</b>		Extends food life and quality while saving energy with optimum temperature control					
<b>Lighting</b>		Enhances shopping environment by balancing all indoor and outdoor lighting types in concert with natural light					
<b>Heating/AC</b>		Delivers maximum HVAC performance, uptime, savings and system flexibility					
<b>Energy</b>		Captures energy savings and enables advanced sustainability benefits					
<b>Other Systems</b>		Integrates with extended equipment, including kitchen, ice/beverage, water heating and more					
<b>Alarms</b>		Quickly identifies out-of-range operating conditions and provides fast alarm access and resolution					
<b>Scheduling</b>		Easy, intuitive, flexible scheduling meet daily, seasonal and special store requirements					



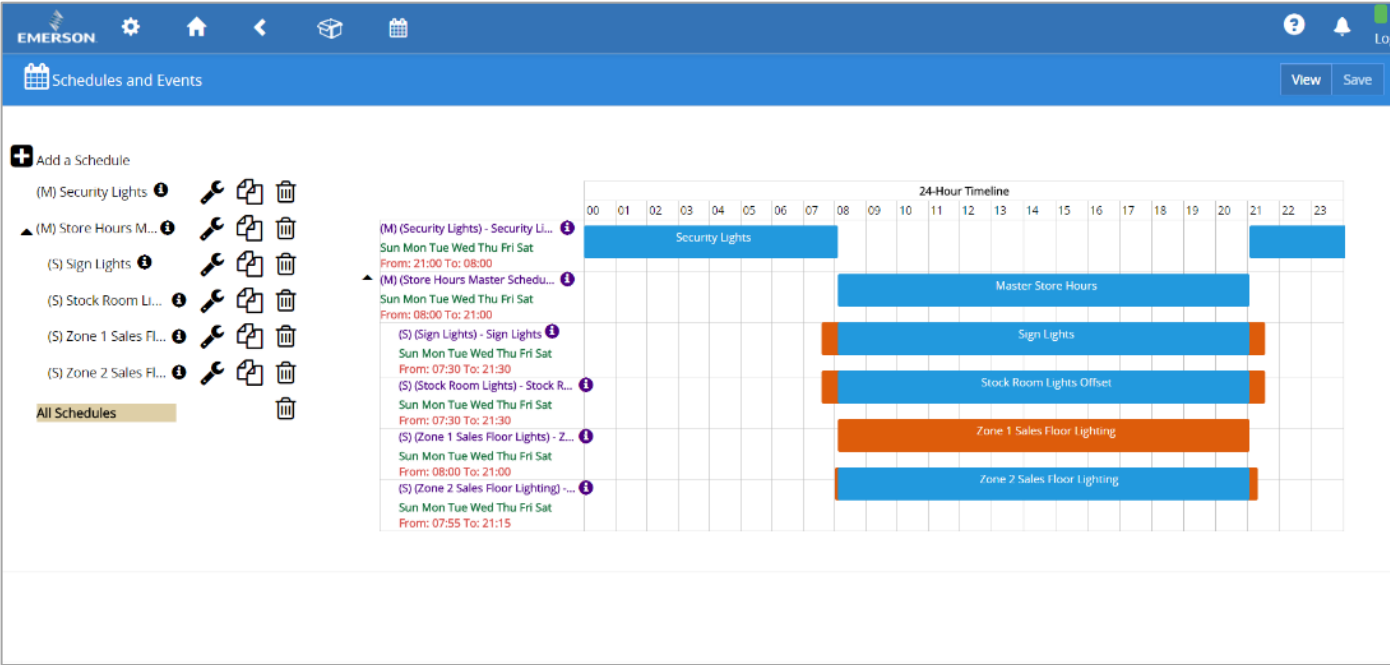
# Floor Plans



# Graphic Scheduling and Inventory Setup

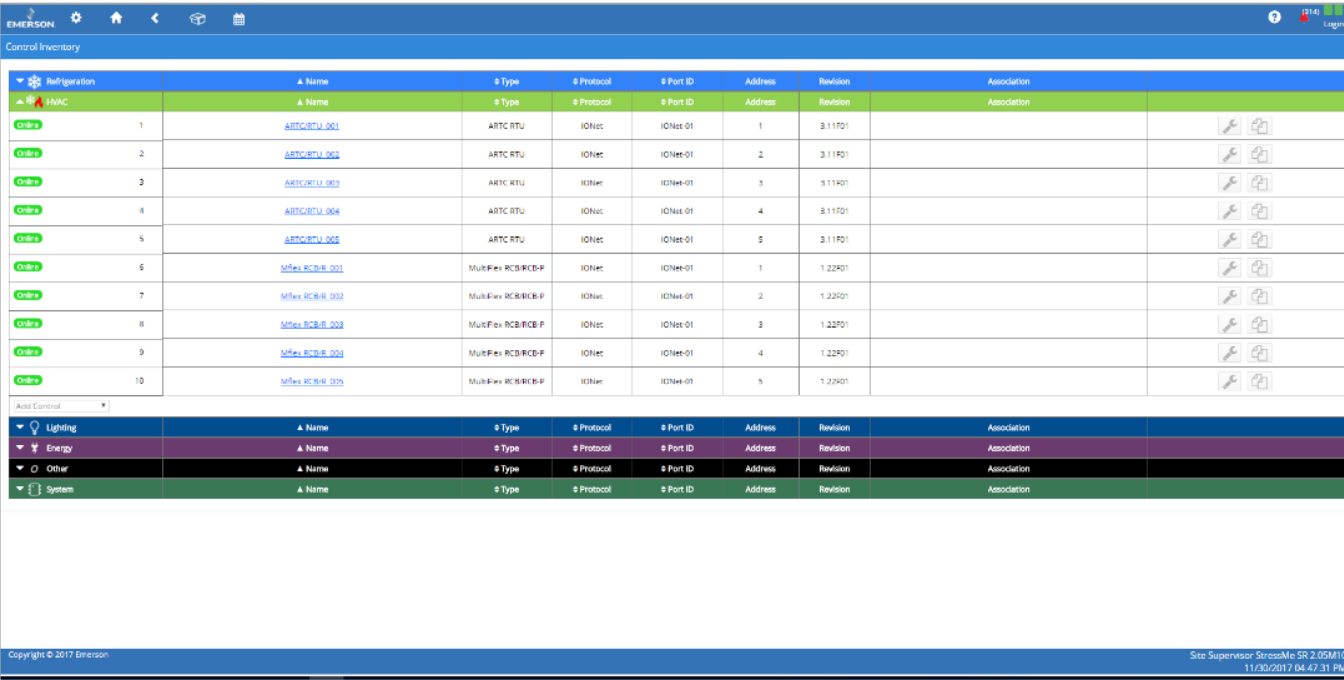
## Graphical Schedule

Quickly see and understand schedules and events with the graphical scheduler. Create, edit, duplicate and delete schedules in one convenient place. Scheduled events appear as visual bars.



## Control Inventory Setup

Add, remove, duplicate and rename applications, configure com ports, set device addresses, view network status, and make associations in one convenient place.



# Faster Troubleshooting via Smart Alarms and Custom Graphing

## Smart Alarms

Provides high-level explanation, possible causes and suggested actions to take. Can enter custom user-defined messages.

The screenshot shows the Emerson Smart Alarms interface. On the left, a table lists active alarms with columns for Description, Type, Time Occurred, Age, Unit Number, Unit Name, Device Type, Status, and Originator. A modal window titled 'Non-Critical Alarm 1 of 1' is open, displaying the following details:

Details	
<b>Explanation</b>	You are receiving this alarm because your condenser fan has cycled more than the recommended times per time period
<b>Possible Causes</b>	<ol style="list-style-type: none"> <li>1. Failed temperature sensor.</li> <li>2. Improper temperature sensor location.</li> <li>3. Improper pressure transducer connection.</li> <li>4. Extreme ambient conditions.</li> <li>5. High pressure discharge valve malfunction.</li> <li>6. PID not properly tuned.</li> <li>7. Capacity cannot meet load.</li> </ol>
<b>Suggested Actions</b>	<ol style="list-style-type: none"> <li>1. Check temperature sensor for proper operation and placement.</li> <li>2. Check pressure probe for proper operation.</li> <li>3. Check valve setpoint for appropriate ambient conditions.</li> <li>4. Check high pressure valve for proper operation.</li> <li>5. Check PID related parameters for proper configuration.</li> <li>6. Check unit sizing for proper load capacity.</li> </ol>
<b>User Defined Message</b>	
<b>Type</b>	Non-Critical
<b>Time Occurred</b>	01/01/2021 10:12:12 PM
<b>Age</b>	6d 17h 44m
<b>Unit Number</b>	1
<b>Unit Name</b>	Market
<b>Device Type</b>	SS
<b>Originator</b>	Condenser A:PRES CTRL IN Condenser A:TEMP CTRL IN Ex. Fan. 001:Cycle number

## Graphical System Status

Monitor system status and performance visually with graph-based reports that identify historical patterns, trends and issues.

The screenshot shows the Emerson Graphical System Status interface for '+23 R507 SUC'. The dashboard includes a table of system parameters:

SUCTION PRESS	54.15 PSI
CUR PRESS SETPT	58.00 PSI
STAGES ACTIVE	2
TOTAL STAGES	6
PERCENT USED	37.31 %
RACK FAIL	OFF
COMP 1	OFF
COMP 2	OFF
COMP 3	ON
COMP 4	OFF
COMP 5	ON
COMP 6	OFF

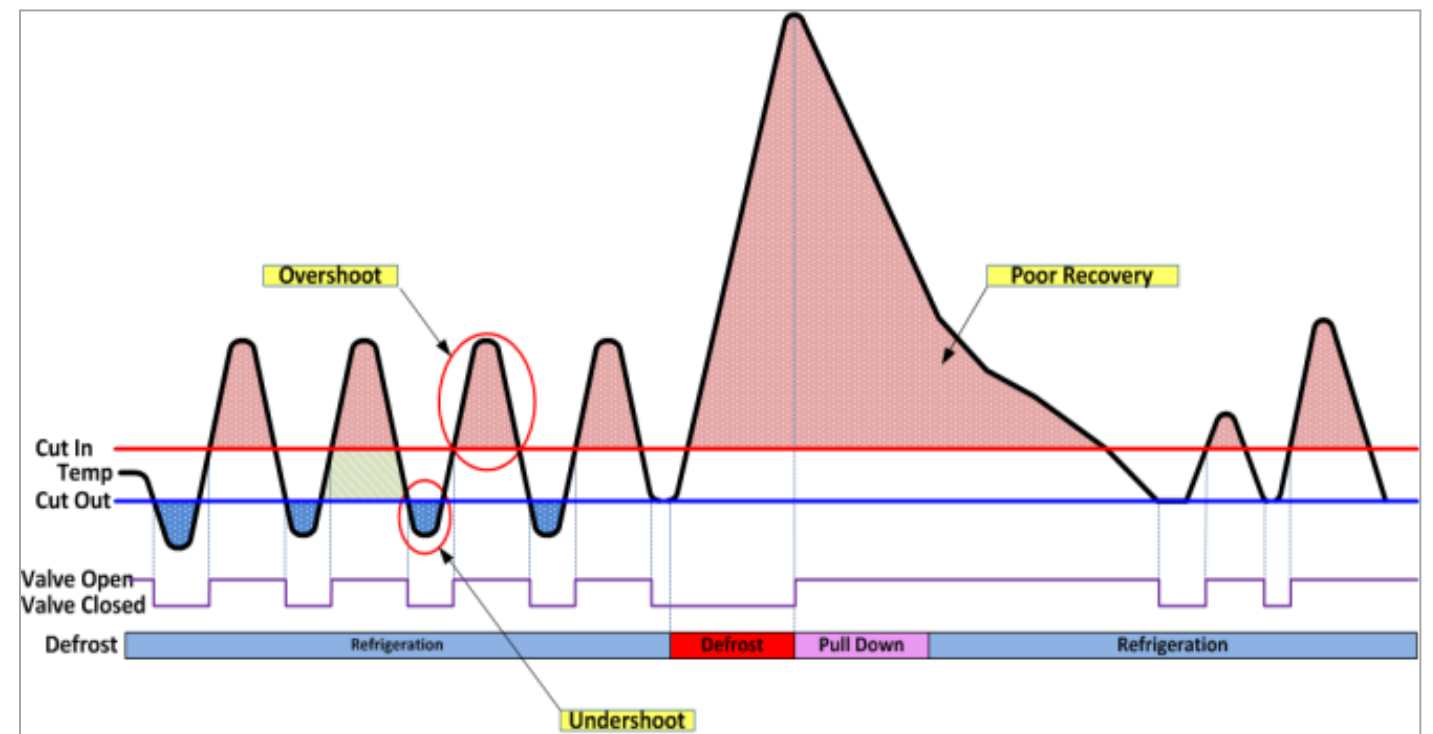
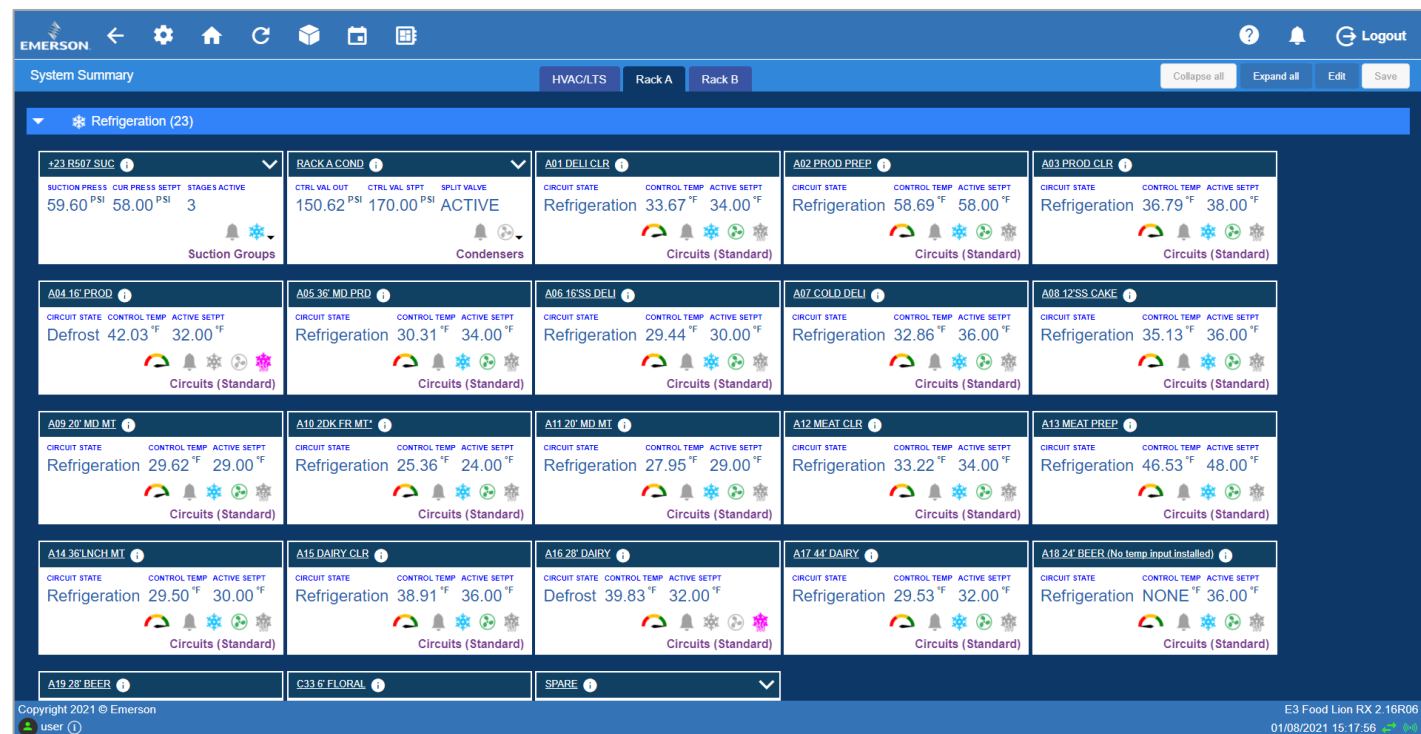
Below the table are four historical performance graphs showing trends over time (06:00:00 to 12:00:00 on 01/08/2021):

- PERCENT USED [%] (Base Log):** Shows a fluctuating trend around 44.78%.
- SUCTION PRESS [PSI] (Base Log):** Shows pressure fluctuations between 50.00 and 60.00 PSI.
- COMP 1 (Base Log):** Shows a binary ON/OFF status.
- COMP 2 (Base Log):** Shows a binary ON/OFF status.
- COMP 3 (Base Log):** Shows a binary ON/OFF status.
- COMP 4 (Base Log):** Shows a binary ON/OFF status.

**Benefit: Faster Troubleshooting, Saving Time**

# Performance Meter: A Simple Way to Recognize Site Performance

Case performance rolls up into circuit performance. Graph or download performance data for detailed analysis. Up to 13 months of performance history for seasonal performance comparison is available.





# Peer Network and Site Aggregator

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# Visibility to Peer Controllers on the Network

The screenshot displays the Emerson system monitoring interface. At the top, there is a navigation bar with the Emerson logo, a home icon, a refresh icon, a cube icon, a calendar icon, a document icon, a help icon, a notification bell with '(50)', and a 'Logout' button. Below this is a 'System Summary' bar with tabs for 'SA E3-1', 'E2-Unit1', 'E3-1', and 'SS-1'. There are also buttons for 'Collapse all', 'Expand all', 'Edit', and 'Save'.

The main content area is titled 'Refrigeration (46)' and contains a grid of 16 unit cards. Each card displays the following information:

- Unit Name:** A-25 R407A, A1 FROZEN FOOD, A2 ICE CREAM, A3 FF END CAP, A4 FZN SEAFOOD, A5 ICE MACHINE, A6 SEAFOOD FZR, A7 GROCERY FZR, B15 MEAT CLR, B16 BULK CLR, COMP A1, COMP A2, B15 MEAT CLR, B16 BULK CLR, XCM25D 13\_001, XCM25D 13\_002.
- Control Temp:** NONE °F, NONE °F, NONE °F, NONE °F, NONE °F, NONE °F, NONE °F, NONE °F, NONE °F, NONE °F, NONE °F, NONE °F, NONE °F, NONE °F, NONE °F, NONE °F.
- Active Setpoint:** 3, -5.01 °F, -11.99 °F, -11.99 °F, -5.01 °F, -5.01 °F, -9.99 °F, 32.00 °F, 34.00 °F, NONE OFF, NONE OFF, 32.00 °F, 34.00 °F, NONE °F, NONE °F, NONE °F, NONE °F.
- Other Data:** SUCTION PRES (NONE PSI), CUR PRES (8.00 PSI), STAGES (3), DISCH TEMP OUT (NONE °F), ALARM OUT (NONE), COMP RUN OUT (OFF).
- Icons:** A color-coded bar (green, yellow, red), a bell icon, a snowflake icon, a fan icon, and a gear icon.
- Unit Type:** Enhanced Suction, Circuits (Standard), or Discus.

At the bottom left, it says 'Copyright 2020 © Emerson' and 'user'. At the bottom right, it shows 'E3 Ent1 SA 2.14F01' and '09/18/2020 03:31:46 PM'.

# Visibility to Peer Controllers on the Network

The screenshot displays the Emerson E2 Terminal Mode interface. At the top, the Emerson logo is on the left, and navigation icons (back, settings, home, refresh, cube, calendar, book, list) are in the center. On the right, there are help, notification (50), and Logout icons.

The main interface is titled "E2 Terminal Mode" and shows the following data:

- System Info:** 09-18-20, RX-400 Unit 3, 16:21:18, \*ALARM\*
- EN SUC GRP001 NONE [22.00]:**
  - State: CAP 100%
  - S1 ON
- CONDENSER001 NONE [200.0]:**
  - Controlled By: Discharge
  - Status: Fan(s) On
  - F1 ON
- Circuits State Temp:**

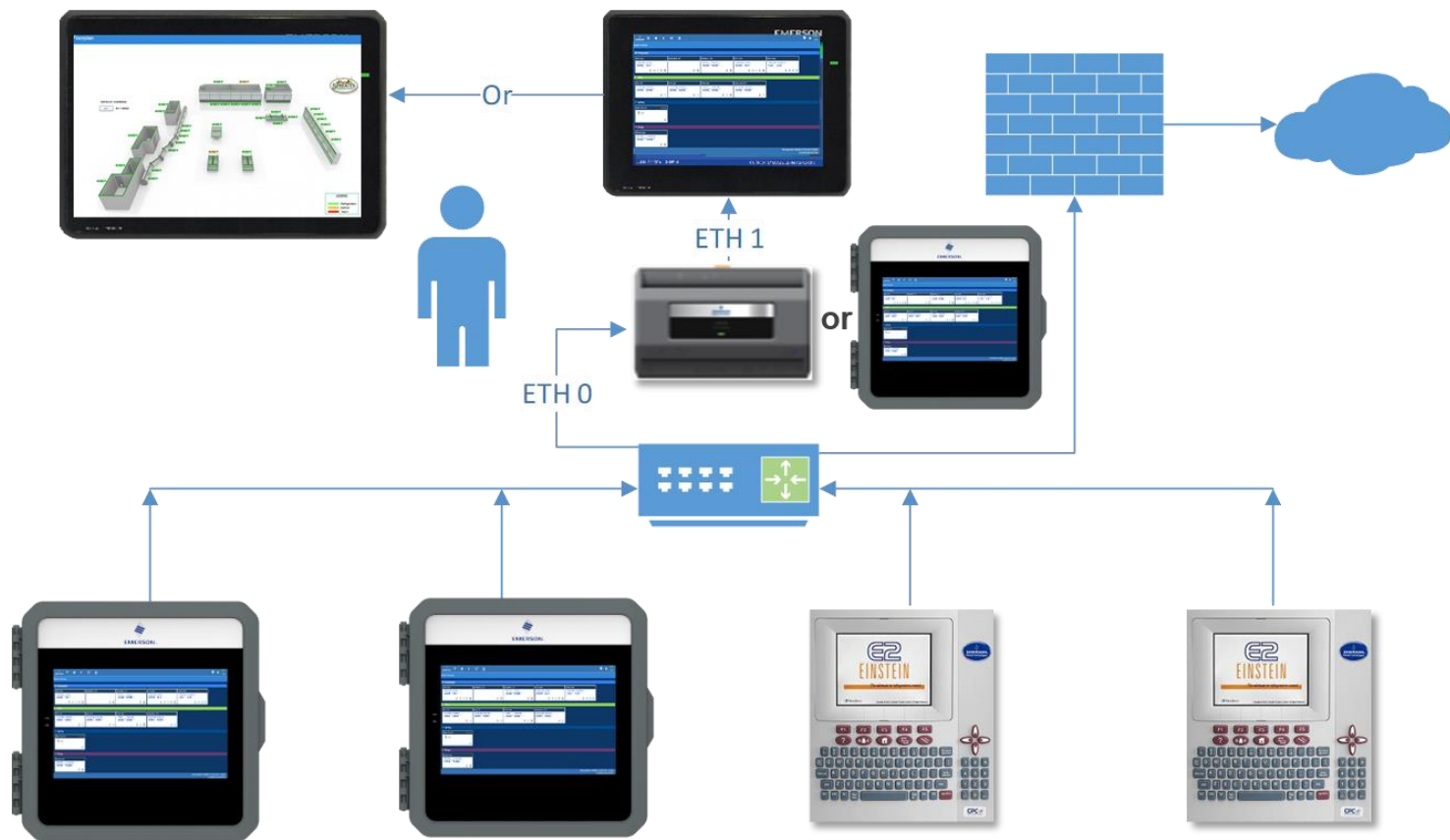
STD	CIRCUIT	Refr	State	Temp
STD	CIRCUIT001	.Refr	NONE	NONE
STD	CIRCUIT002	.Refr	NONE	NONE
STD	CIRCUIT003	.Refr	NONE	NONE
STD	CIRCUIT004	.Refr	NONE	NONE
STD	CIRCUIT005	.Refr	NONE	NONE
STD	CIRCUIT006	.Refr	NONE	NONE
STD	CIRCUIT007	.Refr	NONE	NONE
STD	CIRCUIT008	.Refr	NONE	NONE
STD	CIRCUIT009	.Refr	NONE	NONE
STD	CIRCUIT010	.Refr	NONE	NONE
- ADVISORY SUMMARY:**
  - Fails: 3
  - Alarms: 1
  - Notices: 29
- NETWORK OVERVIEW:** MODBUS-1
- E2 Unit03:** Rev 4.09F04, English-US

At the bottom, there are function keys: F1: SUCTION, F2: CONDENSER, F3: CIRCUITS, F4: SENSORS, F5: SETUP. A "Press enter for a list of actions." prompt is visible. The interface also includes a virtual keypad with arrow keys, numbers 0-9, and function keys like Prev, Next, Y, N, PgDn, PgUp, Enter, and Log In/Out.

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# New Site Aggregator Model Aggregates Store Assets Into a Single Floor Plan

## Site Aggregator Typical Network

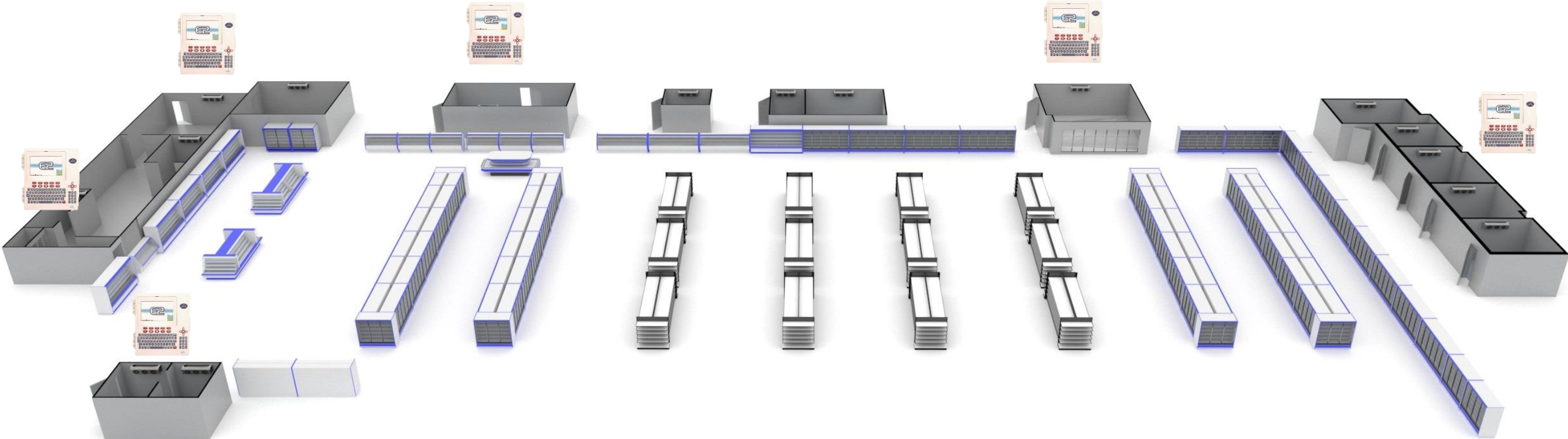


## Benefits

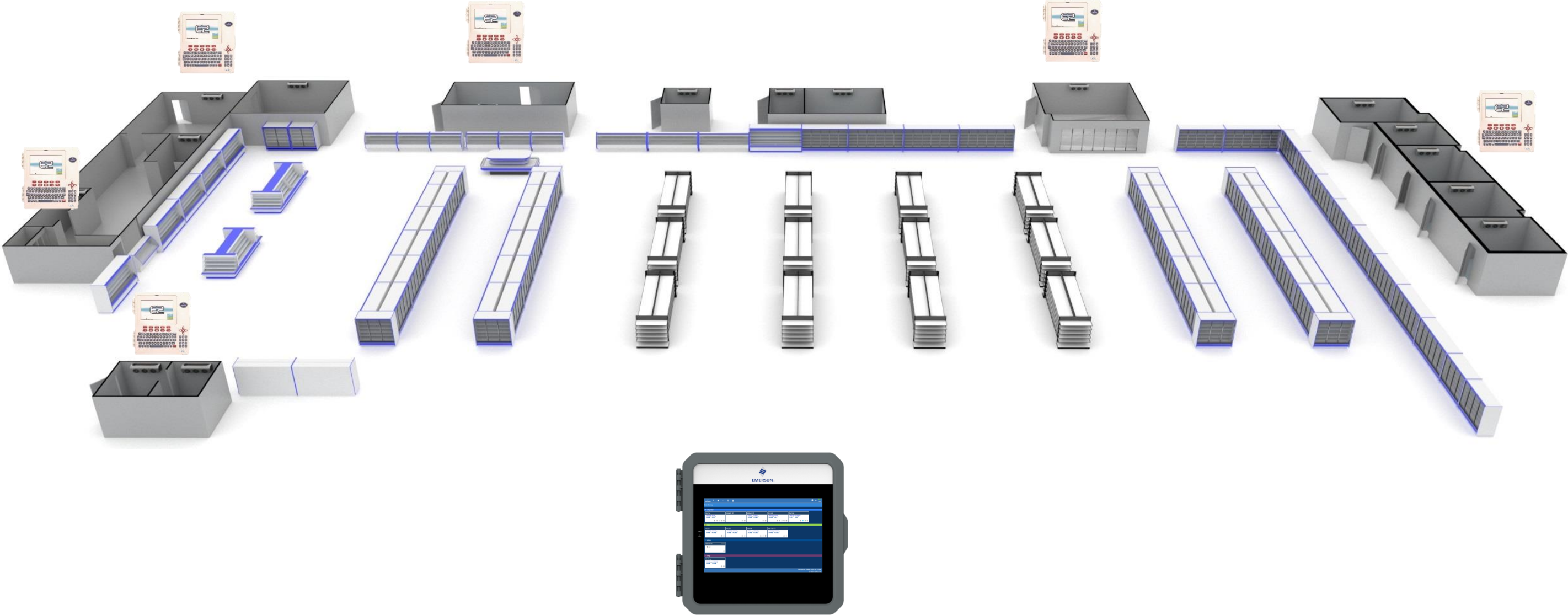
- Add to existing sites to coordinate across controllers (no need to remove E2s)
- Compatible with existing E2 and I/O boards
- Added security updates quarterly
- Mobile-ready, tablet, phone or PC
- Web access gateway to all controllers
- No additional software needed
- Aggregates E2 data into one custom view or floorplan
- Alarm Annunciator gathers all site alarms
- Email and text alarms
- E2 terminal navigation

**Making Contractor Life Easier. Access All Control Devices From One Convenient Location.**

# Traditional Supermarket With 4-6 Supervisory Controls

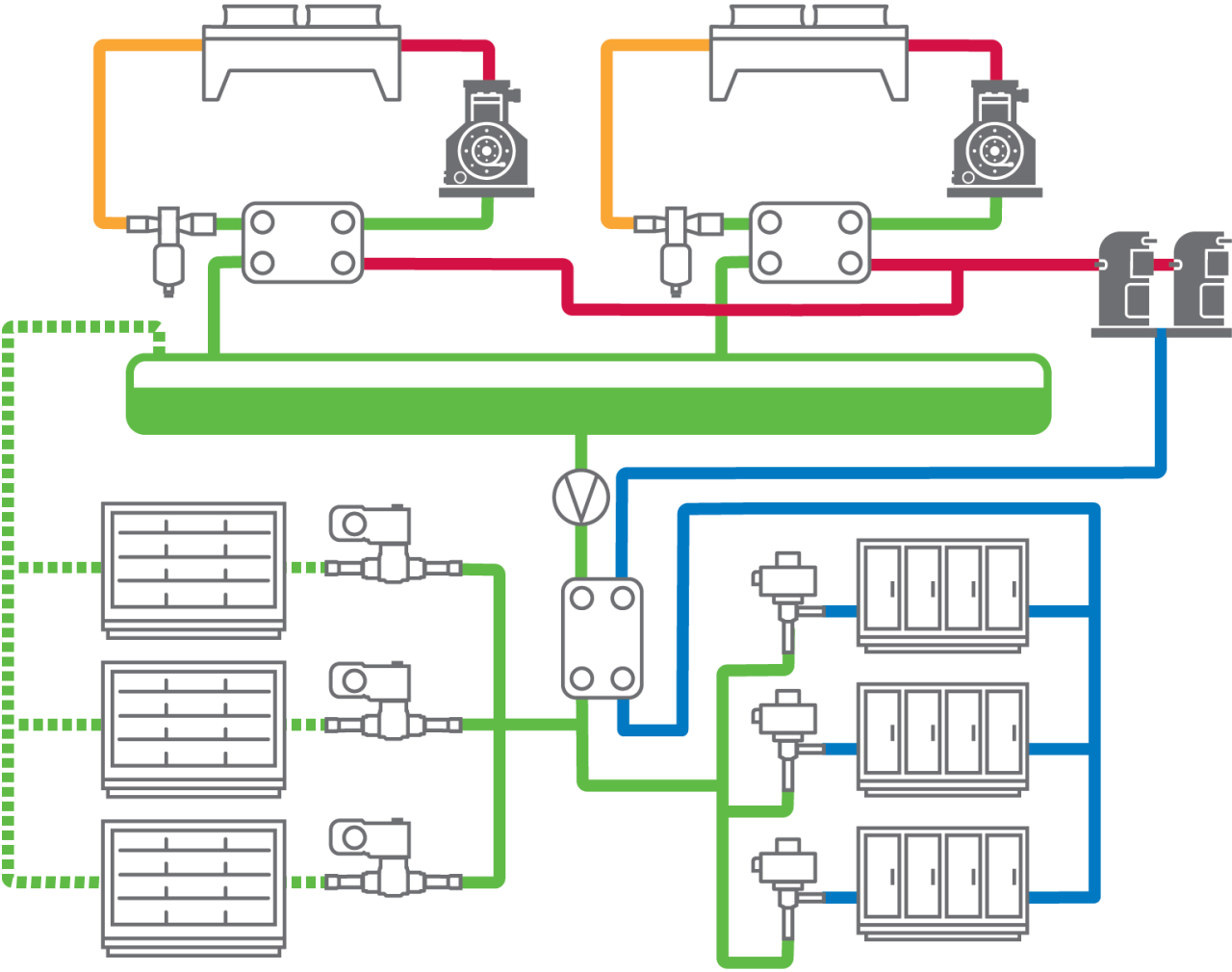


# Site Aggregation Allows Visibility and Control From a Central Point



# Site Aggregator Supporting Texas Retailer During Ice Storm

## Store Technology Profile



*“We were able to coordinate our efforts from one location across our site, saving time and labor on-site.”*



# Support Services

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# Technical Support Materials

## Conversion Tool

**Using the E2 setpoint conversion tool when retrofitting E2 with supervisory or E3 controllers: Using UltraSite32™ version 5.10 and above**

Technical Bulletin

When retrofitting E2 with supervisory controllers, a backup/restore process should be performed on the E2 controller. The supervisory controller will run the same devices and applications as the E2, but instead of manually entering the information, the setpoints and configurations can be automatically converted from the E2 to the supervisory controller using UltraSite.

The conversion tool can be expected to convert 80% or more of your E2 backup file. The conversion process will take between 10 to 20 minutes depending on the complexity of the backup file. You must do a side-by-side comparison of the E2 backup file and the newly converted Supervisor file to verify there are no errors. It will be necessary to review all setpoints and alarms for consistency in addition to the error log report and restore comparison log (see **Figure 13**) that is generated at the end of the conversion process to ensure your new system will run properly.

Licensed features and 3rd-party integrations *will not convert* if your new controller does not have the licenses or features installed.

Note that some complex schedules and Flex Combiners may not be converted.

If you feel there is something that should have been converted but did not, or if there is an error that shows a setpoint or parameter did not convert correctly, please contact Emerson Technical Support.

**Step 1: Set up Supervisor in UltraSite**

- Log into UltraSite as user/pass.
- Add Supervisor as a Site (right-click **Directory** and click **Add Site**).

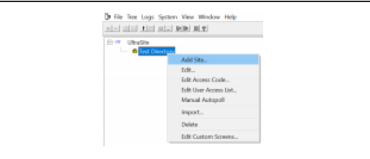



Figure 1 - Click Add Site


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## Supervisor Controller Manual


**Lumity™ Supervisory Control Platform Installation and Operation Manual**



Site Supervisor

E3

LUMITY  
 Version 2.16F02  
 026-1803 Rev 0



## E3 Controller Quick Setup Guide

**E3 Controller Quick Setup Guide**

The E3 (PIN 860-1300) is a system that combines energy management with the ability to monitor various facility systems and provide alerts when there are issues that need attention. This system provides HVAC control, Refrigeration System Monitoring and Control, as well as Lighting Control. In addition, the E3 can monitor and report energy consumption and take action to reduce the energy demand during peak periods. This can have a direct impact on utility bills by reducing total energy costs. E3 ensures that the HVAC and lighting systems are on and off at the appropriate times. This ability to monitor store conditions can potentially minimize energy consumption.




Figure 1 - E3 Front View

**Technical Specifications**

<b>* Operating Temperature</b>	-40°F to 113°F (-40°C to 45°C) <small>* Refer to UL60730-1 standard</small>
<b>Operating Humidity</b>	5% - 95% RH non-condensing at 90°F
<b>Storage Humidity</b>	5% - 100% RH
<b>24 VAC</b>	24 VAC ±20%, 50/60 Hz, Class 2
<b>Dimensions</b>	12" Lx 12.5" W x 3.75" H*
<b>4 RS485 ports</b>	COMM 1 - RS485 Com 2 A and B COMM 2 - RS485 Com 6 (isolated) COMM 3 - RS485 Com 7 (isolated) COMM 4 - RS485 Com 4 A and B
<b>2 Ethernet ports</b>	ETH 0, ETH 1
<b>2 USB ports</b>	[2], [3]


Table 1 - Technical Specifications

**Wiring**

- Connect the RS485 Communication wire to the terminal block headers as shown. The Cables are numbered 1 through 4.
- Connect the 2-pin 7.5mm power connector and Ground wire as shown.
- Connect the other end of the power cable to one of the 80VA transformers.
- Plug the 80VA Transformers into a 120VAC outlet.
- Turn the power switch ON (up position). The unit should boot up to the home screen.

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## Site Supervisor Quick Setup Guide

**Site Supervisor Controller Quick Setup Guide**

The Site Supervisor is a system that combines energy management with the ability to monitor various facility systems and provide alerts when there are issues that need attention. This system provides HVAC control, Refrigeration System Monitoring and Control, as well as Lighting Control. In addition, the Site Supervisor can monitor and report energy consumption and take action to reduce the energy demand during peak periods. This can have a direct impact on utility bills by reducing total energy costs. Site Supervisor ensures that the HVAC and lighting systems are on and off at the appropriate times. This ability to monitor store conditions can potentially minimize energy consumption.

For a copy of the full Site Supervisor Guide (PIN 026-1800), visit the Site Supervisor page on the Emerson website: <http://climate.emerson.com/en-us/products/controls-monitoring-systems/facility-controls-electronics/facility-and-system-controls/site-supervisor-facility-control> to download or contact Emerson Electronics and Solutions Customer Service at 770-425-2724.




Figure 1 - Site Supervisor

**Ethernet Connection**

- ETH1 is designed to be used for directly connecting to laptop, PC, or optional touchscreen with a CAT5 network cable.
- The default IP for ETH1 is 192.168.1.250.
- The optional Site Supervisor Display touchscreen default IP is 192.168.1.200 and will connect automatically to the Site Supervisor when plugged into ETH1. *It is recommended that you do not change these defaults.*
- ETH0 should be reserved for the secure network connections: store or corporate networks. Ask your network administrator for the correct network IP address for ETH0.
- ETH0 and ETH1 are physically separated for added security. Directly connecting to ETH1 will not access the secure network connection on ETH0.




Figure 2 - Site Supervisor ETH 1 Ports





Figure 3 - Site Supervisor ETH 0 Port

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**Thank you!**

**Questions?**

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