

# Honeywell

## McDonald's HEMS II

### End User Operations Manual



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## Overview

### McDonald's HEMS II Energy Management Control System & User Interface

The McDonald's HEMS II energy management and control system runs on a WEB -201™ (Java Application Control Engine). The WEB -201 is a compact, embedded controller/server platform. It combines integrated control, supervision, data logging, alarming, scheduling and network management functions with Internet connectivity and web serving capabilities in a small, compact platform. The WEB -201 makes it possible to control and manage external devices over your local network or the Internet and present real-time information to users in web-based graphical views.

The HEMS II system is complete in a 36" X 24" X 4" stainless steel panel with a local touch screen operator interface display. All system set points and changes can be made from this local display. With internet access provided to the HEMS II, all information and set points are available remotely from any PC browser interface.

The system is designed to monitor and/or control the following items:

- (3) Roof Top Mounted HVAC Units.
- Freezer/Cooler Temperatures and associated Door Opened/Closed status.
- Outdoor air temperature.
- HVAC Unit Space Temperatures, Discharge Air (supply) Temperatures and Room Temperature Set Points.
- Electrical Demand and Electrical Consumption.
- Parking Lot Lights, Exterior Signage Lights, Customer (Dining Area) Lights.
- Employee/Kitchen Lights and Play Place Lights (if present).
- Outdoor Light Level from a Photocell.

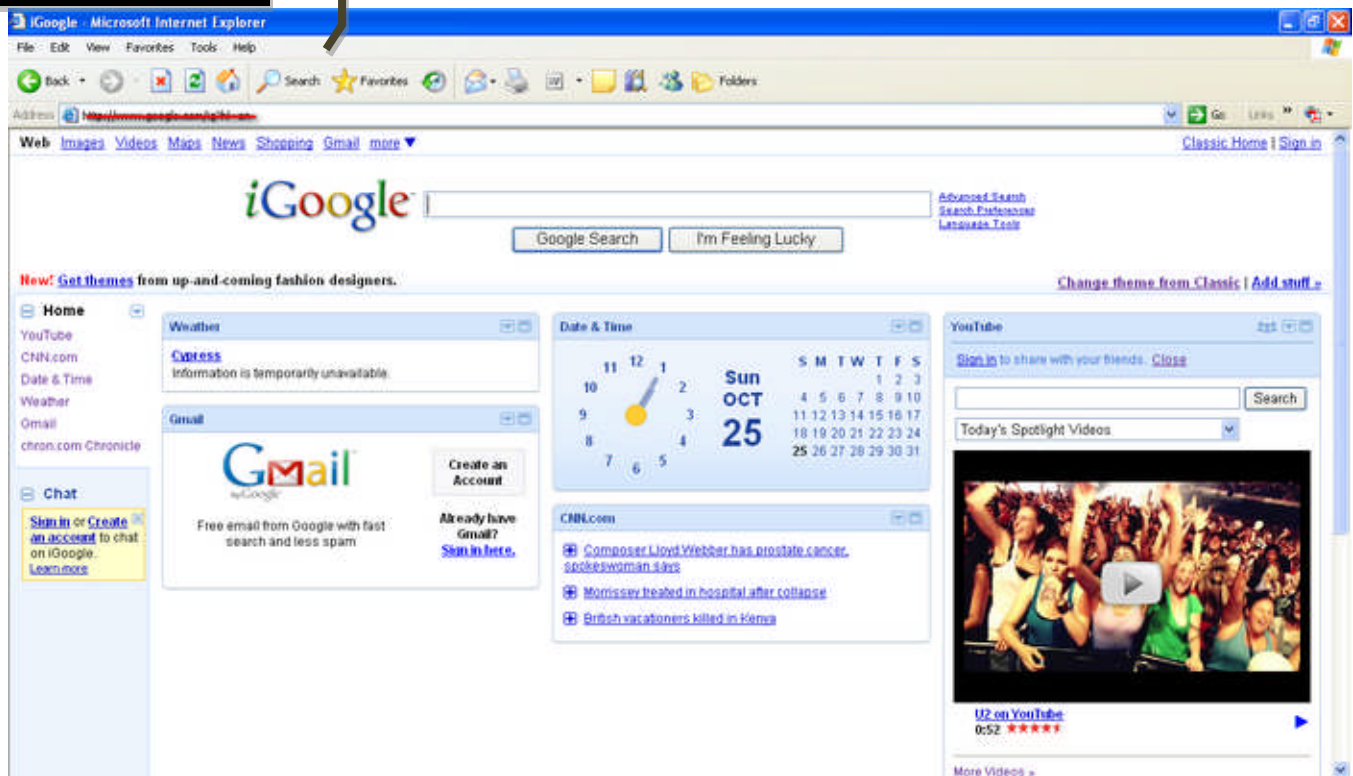
Your installed system may have additional points of control or monitoring that are not covered or included in this document.

Additional points could be:

- Drive through heater control.
- Kitchen equipment monitoring.
- Interface to your security system for status.
- Water heater control.
- Additional Roof Top Mounted HVAC/Units.
- Bulk CO2 levels near beverage and CO2 storage tanks.
- Or additional monitoring & control points that have been customized for your facility.

## Navigation to Login Page from Local or Remote Personal Computer location

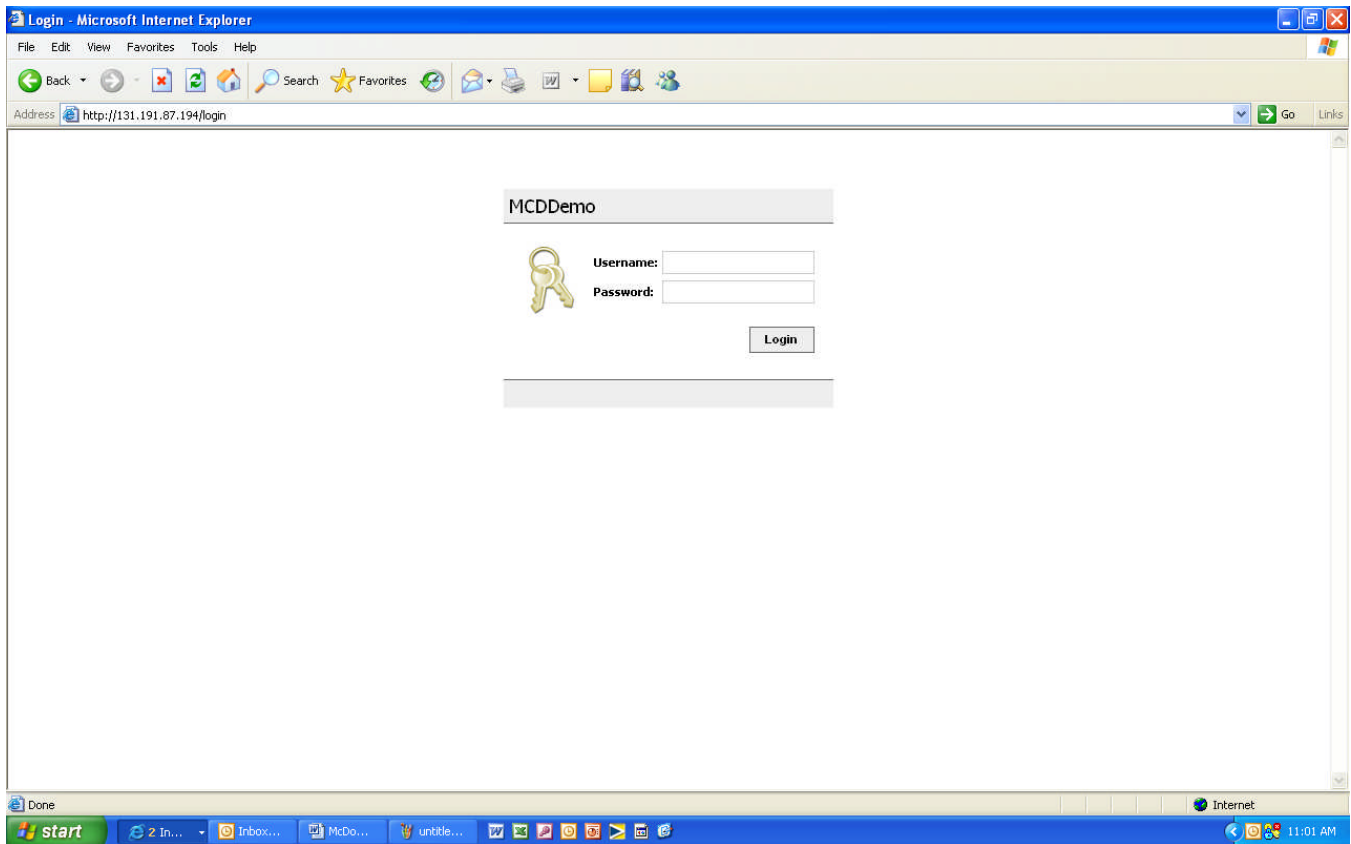
Open internet browser and enter store IP address here:



**To begin: First open your internet browser and enter the WEBs Unit IP address in the "address bar". The WEBs Unit IP address will be furnished to you by the installer of the system. Additionally, you may consider installing a short cut icon on your personal computer Desk Top that will direct you to the IP address of your system.**

## Navigation to Login Page from Local or Remote Personal Computer location

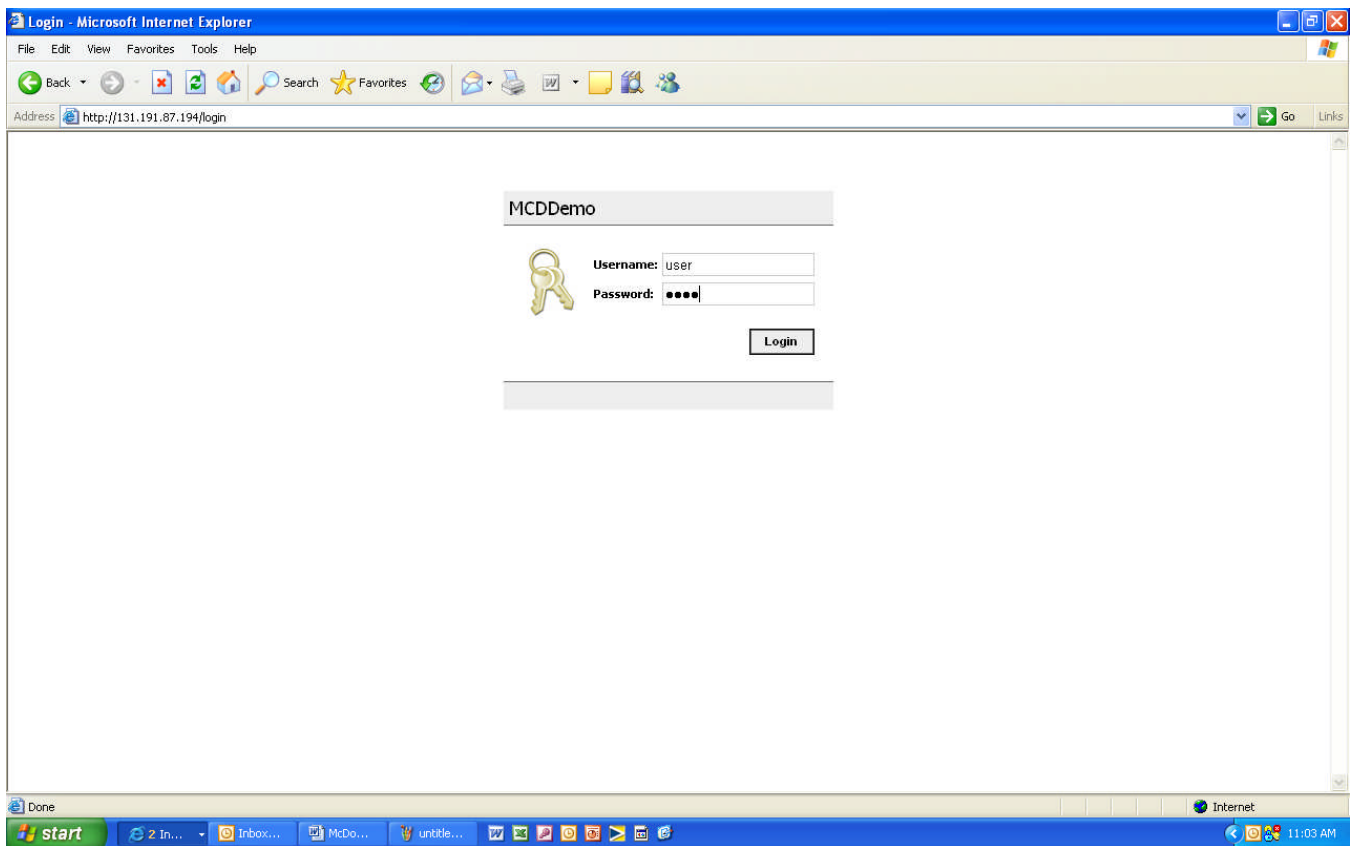
### Login Page



The Login Page is where you enter your username (user) and password (pass). Then click the login icon. Please wait until the booting process completely loads, once it does, it will automatically route you to the Home Page. Note that the first time you access your system from any browser it could take several minutes to load the Home Page. Subsequent access to the system, from the same Personal Computer will load the Home Page must faster.

**Below is the default Login Page from the Local Touch Screen located on the front of panel after unit has been powered “ON” or after the blank screen has been touched and unit returns to normal operation mode from power saving standby mode.**

## **Login Page**



**The Login Page will be automatically populated with the Username & Password. Touch the Login icon once and the system will automatically route you to the Home Page.**

# Home Page

**McDonald's Anywhere, USA**

**General Info** 15-Feb-10 2:31 PM EST  
OSA Temp **36 °F** [Operating Instructions](#)

**HVAC UNITS**

**Kitchen Area**  
Rm Temp: 67 °F Fan:   
Occupied Setpoints:  Auto  On  
Heat STPt: 70 °F Schedule:   
Cool STPt: 72 °F

**Dining Area**  
Rm Temp: 70 °F Fan:   
Occupied Setpoints:  Auto  On  
Heat STPt: 70 °F Schedule:   
Cool STPt: 72 °F

**Playplace Area**  
Rm Temp: 67 °F Fan:   
Occupied Setpoints:  Auto  On  
Heat STPt: 70 °F Schedule:   
Cool STPt: 72 °F

**Electrical Demand and Consumption**

Peak Demand: 0 Kw  
Demand Setpoint: 87 Kw  
Energy Demand Limiting: **Inactive**

KWH Monthly: 0 kW-hr  
KWH Yearly: 253 kW-hr

**Lighting**

	Auto	On	Schedule
Parking Lot	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Signage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Employee	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Customer	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Playplace	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Photocell Parking:  On  
Photocell Signage:  On

**Alarms/Monitor**

Freezer	<input checked="" type="checkbox"/>	-21 °F	<b>Door Opened</b>
Cooler	<input checked="" type="checkbox"/>	33 °F	<b>Door Opened</b>
CO2	<input checked="" type="checkbox"/>	15 PPM	Normal

[Alarm Silence](#)

**Honeywell**

The Home Page will display your systems current conditions with any active alarms.

## Home Page – continued

The screenshot shows a web-based control interface for a McDonald's store. The browser window title is 'Home'. The interface is titled 'McDonalds Anywhere, USA' and displays the following information:

- General Info:** OSA Temp 36 °F (highlighted in cyan), 15-Feb-10 2:31 PM EST, and an 'Operating Instructions' button.
- HVAC UNITS:** Three areas are listed: Kitchen Area, Dining Area, and Playplace Area. Each area shows 'Rm Temp' (67 °F), 'Occupied Setpoints' (Auto/On), 'Heat STPt' (70 °F), and 'Cool STPt' (72 °F). Each area also has a 'Fan' control and a 'Schedule' icon.
- Electrical Demand and Consumption:** Three gauges show 'Peak Demand' (0 Kw), 'KWH Monthly' (0 kW-hr), and 'KWH Yearly' (253 kW-hr). A 'Demand Setpoint' is set to 87 Kw. 'Energy Demand Limiting' is 'Inactive'.
- Lighting:** A 'Schedule' table for various areas: Parking Lot, Signage, Employee, Customer, and Playplace. Each area has 'Auto', 'On', and 'Schedule' controls. Below are 'Photocell Parking' and 'Photocell Signage' controls, both set to 'On'.
- Alarms/Monitor:** A table showing 'Freezer' (-21 °F, Door Opened), 'Cooler' (33 °F, Door Opened), and 'CO2' (15 PPM, Normal). An 'Alarm Silence' button is present.

The Honeywell logo is visible in the bottom right corner of the interface.

This area of Home Page shows the following:

1. Your store number and physical location.
2. Current outside air temperature. By touching or clicking on the CYAN colored area you will be directed to a trend log of accumulated outside temperature data. See page 18 of this document for more information on this.
3. Current time and date in the control system.
4. By touching or clicking on “Operating Instructions” icon you will be presented with a complete description and use of each section of displays and completed system electrical drawings and written sequence of operations. See pages 20-27 and 28-37 of this document for more information on this.



## Home Page – continued

**McDonald's Anywhere, USA**

**General Info** 15-Feb-10 2:31 PM EST  
OSA Temp 36 °F Operating Instructions

**HVAC UNITS**

**Kitchen Area**  
Rm Temp 67 °F Fan On  
Occupied Setpoints Auto On  
Heat StPt 70 °F Schedule  
Cool StPt 72 °F

**Dining Area**  
Rm Temp 70 °F Fan On  
Occupied Setpoints Auto On  
Heat StPt 70 °F Schedule  
Cool StPt 72 °F

**Playplace Area**  
Rm Temp 67 °F Fan On  
Occupied Setpoints Auto On  
Heat StPt 70 °F Schedule  
Cool StPt 72 °F

**Electrical Demand and Consumption**

Peak Demand 0 Kw  
Demand Setpoint 87 Kw  
Energy Demand Limiting: Inactive

KWH Monthly 0 kW-hr  
KWH Yearly 253 kW-hr

**Lighting**

Schedule  
Parking Lot Auto On  
Signage Auto On  
Employee Auto On  
Customer Auto On  
Playplace Auto On  
Photocell Parking On  
Photocell Signage On

**Alarms/Monitor**

Freezer -21 °F Door Opened  
Cooler 33 °F Door Opened  
CO2 15 PPM Normal

Alarm Silence

**Honeywell**

This area of Home Page shows the following:

1. Current electrical peak demand and current electrical (KWH) consumption for the current month and current year. By touching or clicking on any CYAN colored area you will be directed to a trend log of accumulated electrical data. See page 18 of this document for more information on this.
2. Current electrical demand set point. See page 19 of this document for more information this.
3. Energy Demand Limiting: When active the box will say Active and the background will be RED. When Inactive the box will say Inactive and the background will be YELLOW. When Active the temperature set points for all HVAC Units will be automatically raised 3°F (when in cooling mode) or lowered 3°F (when in heating mode). HVAC Units automatically switch between Cooling/Heating modes to maintain room temperatures. Active condition exists when current electrical demand is within 2.5% of electrical demand set point.
4. By touching or clicking on Electrical icon you will be directed to another page for set point adjustments. See page 19 of this document for more information on this.

## Home Page – continued

The screenshot displays the Honeywell HEMS II Home Page interface. At the top, it shows the McDonald's logo and 'Anywhere, USA'. The 'General Info' section includes the date and time (15-Feb-10 2:31 PM EST) and the OSA Temp (36 °F). The 'HVAC UNITS' section is organized into three areas: Kitchen Area, Dining Area, and Playplace Area. Each area has controls for Room Temp, Fan, Occupied Setpoints, Heat SIPT, and Cool SIPT. The 'Electrical' section shows Peak Demand (0 Kw), Demand Setpoint (87 Kw), and Energy Demand Limiting (Inactive). The 'Demand and Consumption' section shows KWH Monthly (0 kW-hr) and KWH Yearly (253 kW-hr). The 'Lighting' section has controls for Parking Lot, Signage, Employee, Customer, and Playplace, each with Auto, On, and Schedule options. The 'Alarms/Monitor' section shows Freezer at -21 °F (Door Opened), Cooler at 33 °F (Door Opened), and CO2 at 15 PPM (Normal). An 'Alarm Silence' button is highlighted with a red arrow.

This area of Home Page shows the following:

1. Current freezer and cooler temperatures. By touching or clicking on any numeric value you will be directed to a trend log of accumulated freezer or cooler temperature data. See page 18 of this document for more information on this. RED bullet light (next to Freezer or Cooler) indicates an alarm condition. No alarm condition and the light will be GREEN. If freezer temperature is 25°F or greater for 5 minutes or more an alarm condition will exist. If cooler temperature is 42°F or greater for 5 minutes or more and alarm condition will exist. When in an alarm condition an internal panel alarm horn will sound continuously. Pressing the Alarm Silence icon causes the internal alarm horn to stop temporarily, yet will start up again if alarm condition exists after another 5 minutes.
2. Current status of freezer and cooler doors. RED bullet light (next to Freezer or Cooler) indicates an alarm condition. No alarm condition and the light will be GREEN. With freezer or cooler doors closed the nomenclature to the right will indicate Door Closed with a gray background color. With freezer or cooler doors open for more than 5 continuous minutes the nomenclature will read Door Opened with a RED background and the internal panel alarm horn will sound continuously. Pressing the Alarm Silence icon causes the internal alarm horn to stop temporarily, yet will start up again if alarm condition exists after another 5 minutes.
3. Current bulk CO2 reading in parts per million (PPM). RED bullet light (next to CO2) indicates an alarm condition. GREEN indicates unit is OK. When in alarm condition for more than five minutes (CO2 reading at 15,000 PPM or greater) an internal panel alarm horn will sound continuously and the NORMAL nomenclature to the right will change to ALARM with a RED background color. Pressing the Alarm Silence icon causes the internal alarm horn to stop temporarily, yet will start up again if alarm condition exists after another 5 minutes. CO2 point information and alarming is an option for the HEMS II panel and may or may not be included with your system based on what was ordered.

## Home Page – continued

The screenshot shows a web-based control interface for a McDonald's location. The top navigation bar includes standard browser icons and a menu (File, Edit, View, Favorites, Tools, Help). The main content area is titled "McDonald's Anywhere, USA" and "General Info" (15-Feb-10 2:31 PM EST). It features a "General Info" section with "OSA Temp 36 °F" and "Operating Instructions". The "HVAC UNITS" section is divided into three areas: Kitchen Area, Dining Area, and Playplace Area, each with "Rm Temp", "Occupied Setpoints", "Heat STPt", and "Cool STPt" controls. The "Electrical Demand and Consumption" section shows three gauges: "Peak Demand 0 Kw", "KWH Monthly 0 kW-hr", and "KWH Yearly 253 kW-hr", along with a "Demand Setpoint 87 Kw" and "Energy Demand Limiting: Inactive". The "Lighting" section lists five zones: Parking Lot, Signage, Employee, Customer, and Playplace, each with "Auto", "On", and "Schedule" controls. Below these are "Photocell Parking" and "Photocell Signage" controls. The "Alarms/Monitor" section shows "Freezer -21 °F Door Opened", "Cooler 33 °F Door Opened", and "CO2 15 PPM Normal". A red arrow points to the "Lighting" section. The "Honeywell" logo is in the bottom right corner.

### This area of Home Page shows the following:

1. Current Lighting controls. RED bullet lights next to a lighting zone name indicates the lighting zone is commanded OFF by the associated time of day schedule or photocell. GREEN indicates the lighting zone is commanded ON by the associated time of day schedule or photocell. The photocells and their set points are only associated with Parking Lot and Signage lighting zones.
2. By touching or clicking on **Lighting** icon you will be directed to another page for photocell set point adjustments. See page 19 of this document for more information on this.
3. Each individual lighting zone has a separate AUTO or ON icon. By touching or clicking on the AUTO icon, that icon will turn GREEN and the associated lighting zone will start and stop based on a time of day schedule. By touching or clicking on the ON icon that lighting zone will be on continuously.
4. Photocell for Parking and Signage indicate ON when outdoor light level is below the set point for each lighting zone and OFF when outdoor light level is higher than the set point for each lighting zone. See page 19 of this document for more information on this.
5. There is a separate time of day schedule associated with each lighting zone. Touching or clicking on the associated schedule icon and you will be automatically routed to another page for schedule adjustments. See pages 14-17 of this document for more information on this.
6. Schedule icons that show three people (in color) indicate that the schedule is currently in the Occupied Mode of operations. Schedule icons that show three people (in ghost white) indicate that the schedule is currently in the Unoccupied Mode of operation.

## Home Page – continued

The screenshot displays the Honeywell HEMS II interface for a McDonald's location. The top navigation bar includes standard browser controls and a menu (File, Edit, View, Favorites, Tools, Help). The main content area is titled "McDonald's Anywhere, USA" and "General Info" (15-Feb-10 2:31 PM EST). The "OSA Temp" is 36 °F, and there is a link for "Operating Instructions".

The "HVAC UNITS" section is divided into three areas:

- Kitchen Area:** Rm Temp 67 °F, Fan (Green), Occupied Setpoints (Green), Heat SIPT 70 °F, Cool SIPT 72 °F, Schedule icon (3 people).
- Dining Area:** Rm Temp 70 °F, Fan (Green), Occupied Setpoints (Green), Heat SIPT 70 °F, Cool SIPT 72 °F, Schedule icon (3 people).
- Playplace Area:** Rm Temp 67 °F, Fan (Green), Occupied Setpoints (Green), Heat SIPT 70 °F, Cool SIPT 72 °F, Schedule icon (3 people).

Three red arrows point to the "Kitchen Area", "Dining Area", and "Playplace Area" headers.

The "Electrical Demand and Consumption" section features three gauges: Peak Demand (0 Kw), KWH Monthly (0 kW-hr), and KWH Yearly (253 kW-hr). A "Demand Setpoint" is 87 Kw, and "Energy Demand Limiting" is Inactive.

The "Lighting" section includes a "Schedule" table:

Area	Status	Mode	Schedule
Parking Lot	Green	Auto	On
Signage	Green	Auto	On
Employee	Green	Auto	On
Customer	Green	Auto	On
Playplace	Green	Auto	On

Additional lighting controls: Photocell Parking (On), Photocell Signage (On).

The "Alarms/Monitor" section shows:

- Freezer: -21 °F, Door Opened (Red)
- Cooler: 33 °F, Door Opened (Red)
- CO2: 15 PPM, Normal (Green)

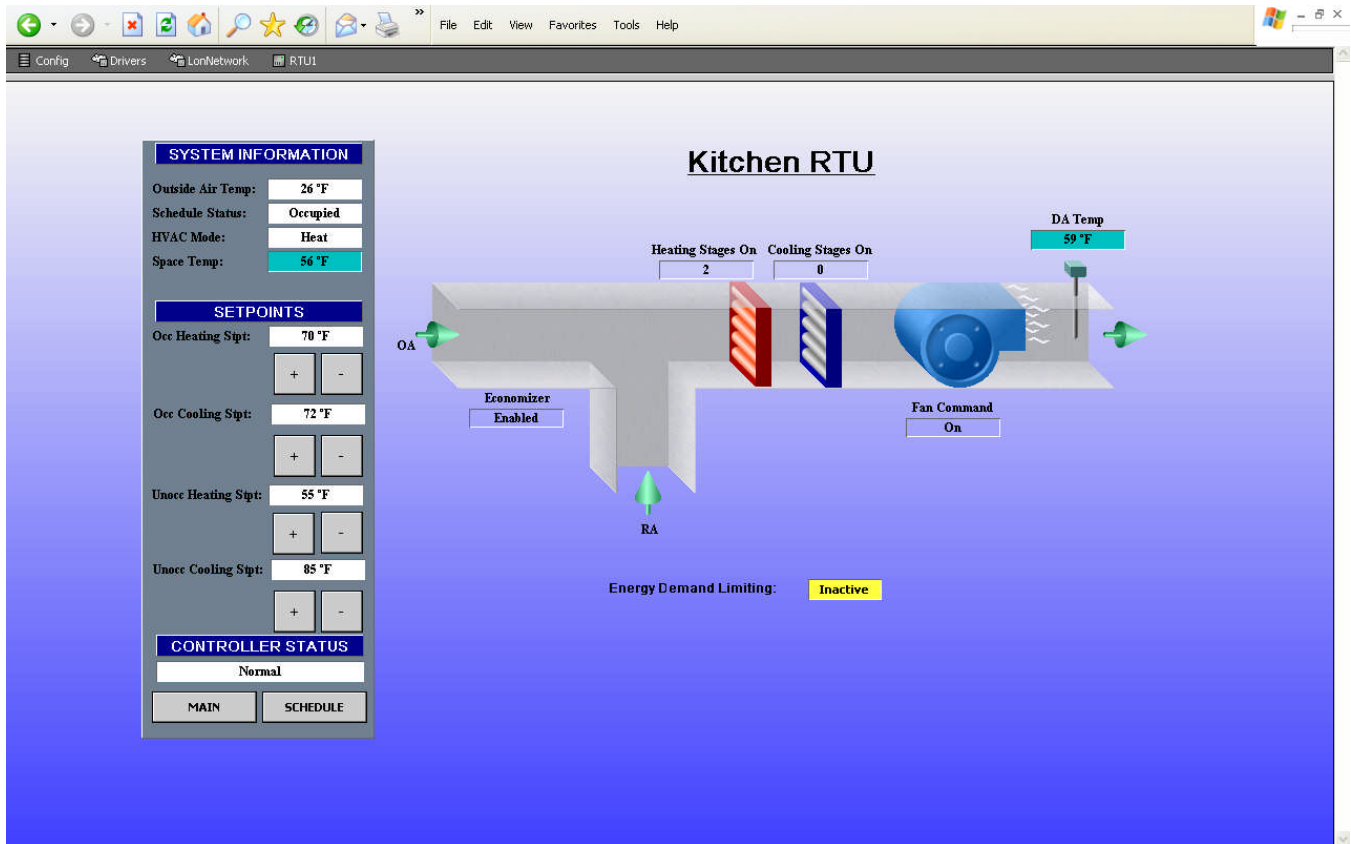
An "Alarm Silence" button is located at the bottom of the Alarms/Monitor section.

The Honeywell logo is displayed in the bottom right corner.

### This area of Home Page shows the following:

1. Current HVAC Units. RED bullet lights next to FAN indicate the HVAC Unit is commanded OFF by the associated time of day schedule. GREEN indicates the HVAC Unit is commanded ON by the associated time of day schedule.
2. By touching or clicking on Kitchen Area, Dining Area or Playplace Area icons you will be directed to another page for additional information and set point adjustments. See page 13 of this document for more information on this.
3. Each individual HVAC Unit has a separate AUTO or ON icon. By touching or clicking on the AUTO icon, that icon will turn GREEN and the associated HVAC Unit will start and stop based on a time of day schedule. By touching or clicking on the ON icon that HVAC Unit will be on continuously.
4. There is a separate time of day schedule associated with each HVAC Unit. Touch or Click on the associated schedule icon and you will be automatically routed to another page for schedule adjustments. See page 14-17 of this document for more information on this.
5. Schedule icons that show three people (in color) indicate that the schedule is currently in the Occupied Mode of operations. Schedule icons that show three people (in ghost white) indicate that the schedule is currently in the Unoccupied Mode of operation.
6. Each HVAC Unit shows the current Room Temperature and current Heating and Cooling set points. These set points are adjustable. Refer to page 13 of this document to make adjustments.

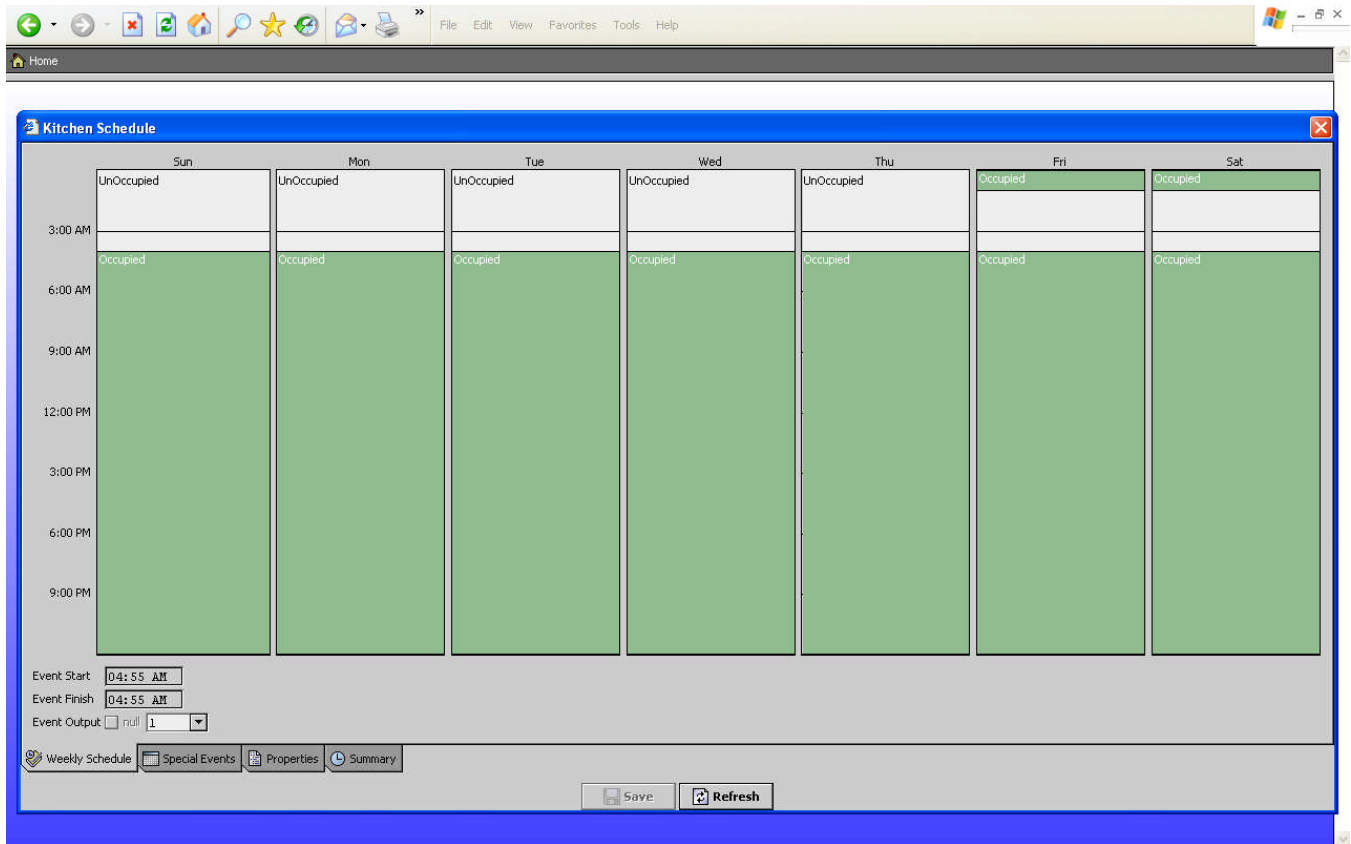
# HVAC Units



This area of HVAC Unit page shows the following:

1. Each HVAC Unit has a page similar to above associated with it. The current view is that of the Kitchen HVAC Unit (Kitchen RTU – Roof Top Unit).
2. On the left side is the system information section that indicates current Outdoor Air Temperature, Schedule Status (Occupied or Unoccupied), Current HVAC Mode of Heat or Cool (this mode changes automatically based on space temperature verses space temperature set point), Current Space Temperature, Occupied Heating Set Point and associated raise and lower buttons, Occupied Cooling Set Point and associated raise and lower buttons, Unoccupied Heating Set Point and associated raise and lower buttons, Unoccupied Cooling Set Point and associated raise and lower buttons, Status of HVAC Unit controller and icons to return to Main (Home Page) or the associated Schedule for the selected HVAC Unit.
3. This graphic also shows the commanded status of the Economizer (Enabled or Disabled), Unit Fan (On or Off) and number of Heating (1-4) or Cooling Stages (1-4) commanded ON. Additionally the current Discharge Air (supply air to area served by the HVAC Unit) Temperature and state of Electrical Demand Limiting (Inactive or Active) are shown.
4. By touching or clicking on the CYAN colored background area of the Space Temperature or Discharge Air temperature you will be directed to a trend log of values for these points.
5. **Energy Demand Limiting:** When Active the box will say Active and the background will be RED. When Inactive the box will say Inactive and the background will be YELLOW. When Active the temperature set points for the HVAC Unit will be automatically raised 3°F (when in Cooling Mode) or lowered 3°F (when in Heating Mode). HVAC Units automatically switch between Cooling/Heating Modes to maintain room temperatures. Active condition exists when current electrical demand is within 2.5% of electrical demand set point.
6. The Occupied Cooling set point must ALWAYS be set 2-3°F higher than the Occupied Heating set point, otherwise a set point conflict will occur and the Controller Status indication will show ALARM state.

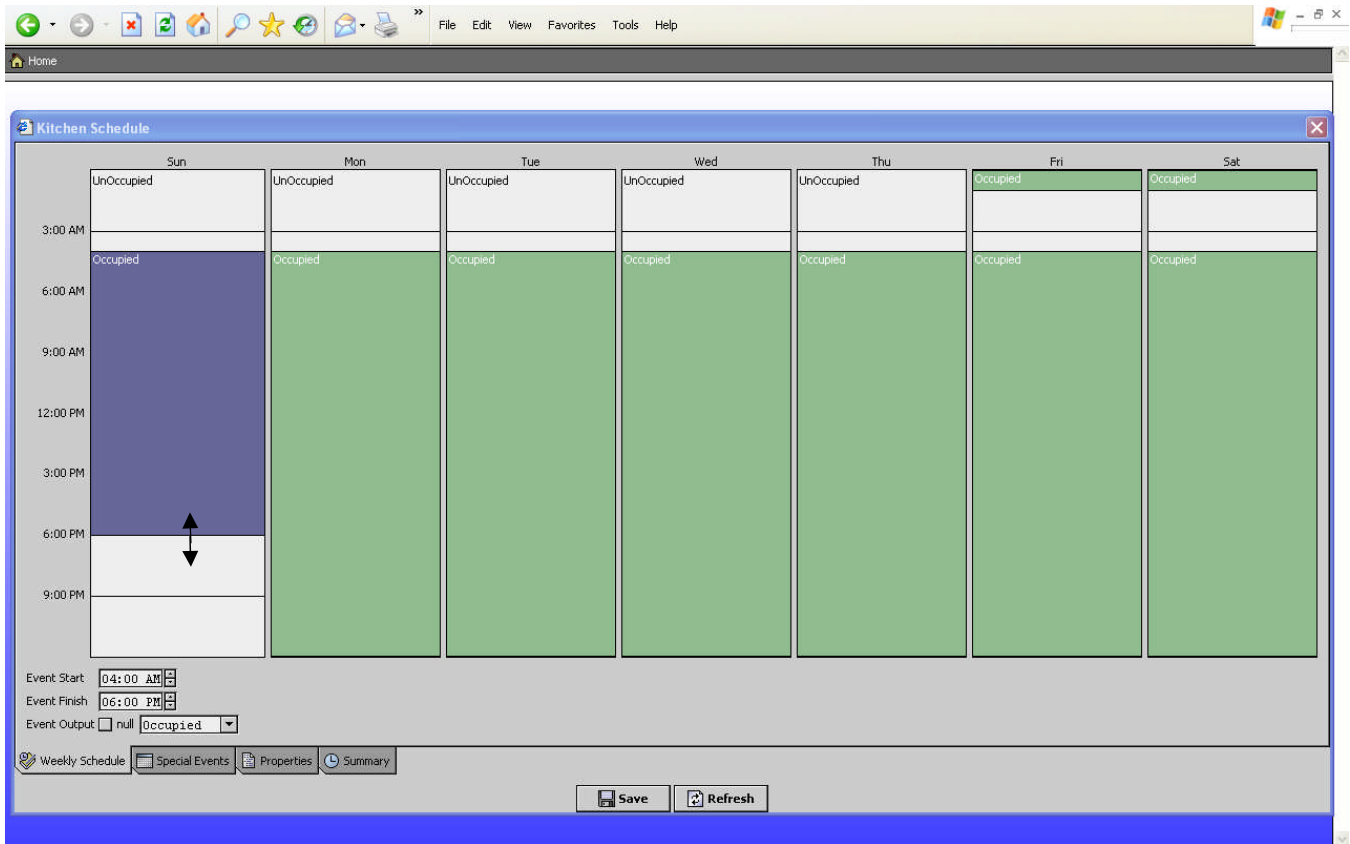
# Time of Day Schedules & Holidays for HVAC Units and Lighting Zones



**By touching or clicking on any HVAC Unit or Lighting Zone Schedule icon from the Home Page you will see the following:**

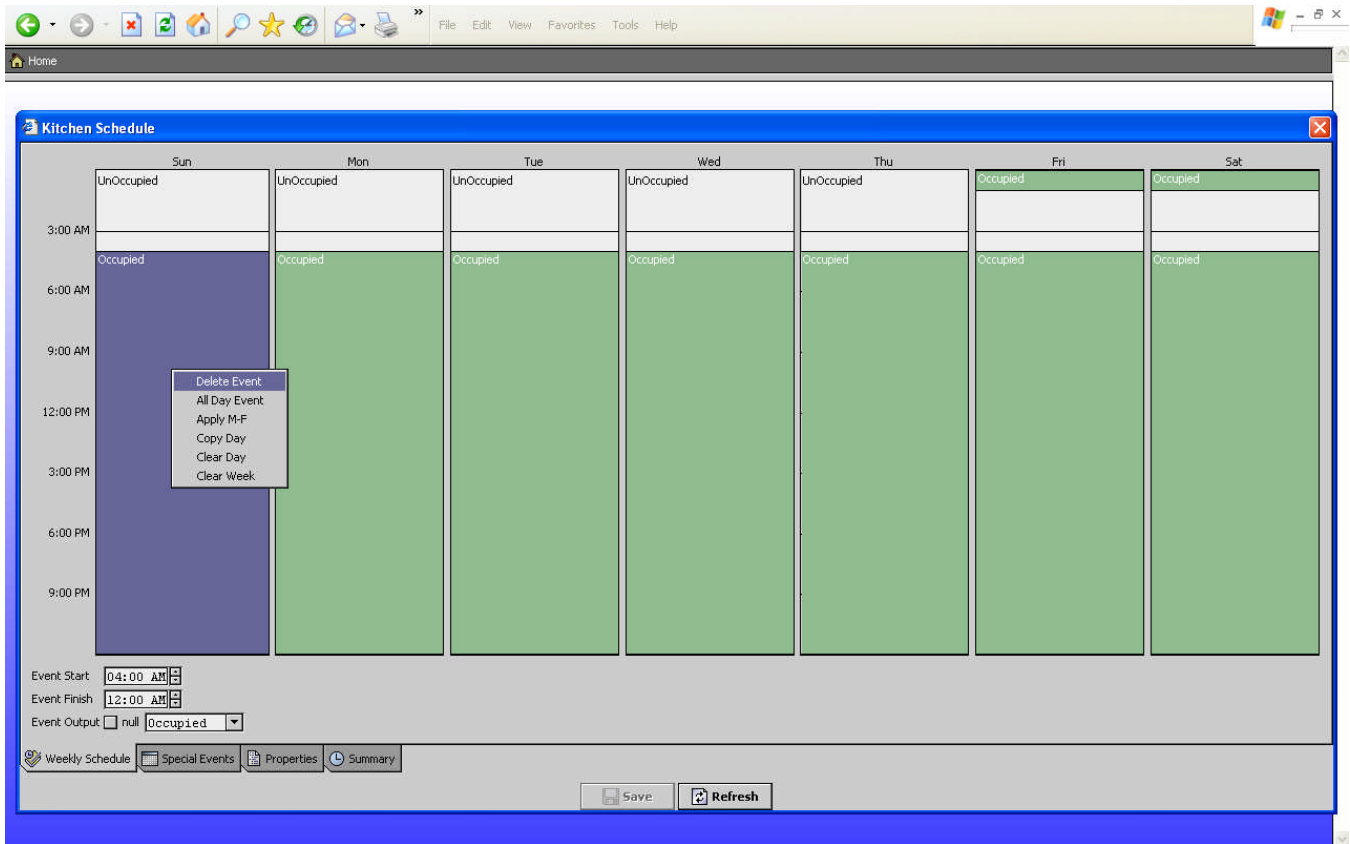
1. Each HVAC Unit and Lighting Zone has a separate and distinctive time of day schedule associated with it.
2. In this case you are looking at the Kitchen HVAC Unit schedule. The green areas indicate the Occupied Schedule and the gray areas indicate an Unoccupied Schedule. In this case the Kitchen unit is set to the Occupied Mode of operation from 4am to 12am Monday through Friday and on Saturdays and Sundays the Occupied Mode of operations is from 4am to 1am the next day. Otherwise the unit is in the Unoccupied Mode of operation. In Occupied Mode of operation the HVAC fan runs continuously to maintain room or area Occupied temperature set points. In the Unoccupied Mode the fan, heating and cooling stages all cycle to maintain Unoccupied temperature set points. See additional sections of this document for more information on this.
3. Adjustments are easily made. See next page.
4. For stores where the dining room is closed and yet the drive through is open 24 hours you will want to touch or click on the ON icon from the Home Page Schedule icon associated with the Dining Room HVAC Unit. This will keep the HVAC Unit fan operating continuously for make up air to your hood exhaust system.

## Time of Day Schedules & Holidays for HVAC Units and Lighting Zones - continued



1. By touching or left clicking your mouse on any green area of the schedule that section will then turn blue and you can edit it.
2. Notice that Monday was touched or clicked on and the background color changed to blue for editing.
3. You can drag your finger or mouse (double arrow) to a new Occupied start and/or stop time. In the case above the start was retained at 4am and the stop time has now been set to 6pm. The same adjustments for any day can also be made by using the up and down arrow keys in the lower left hand corner of screen.

# Time of Day Schedules & Holidays for HVAC Units and Lighting Zones- continued



1. By touching and holding your finger on any green area of the schedule or right clicking your mouse that section will then turn blue and you are presented with a drop down selection where you can: Delete the Event, Make an All Day Event, Apply the Schedule to M-F, Copy the Day to the next Day, Clear the Day or Clear the Week. This is very intuitive and easy to understand after just a few minutes.

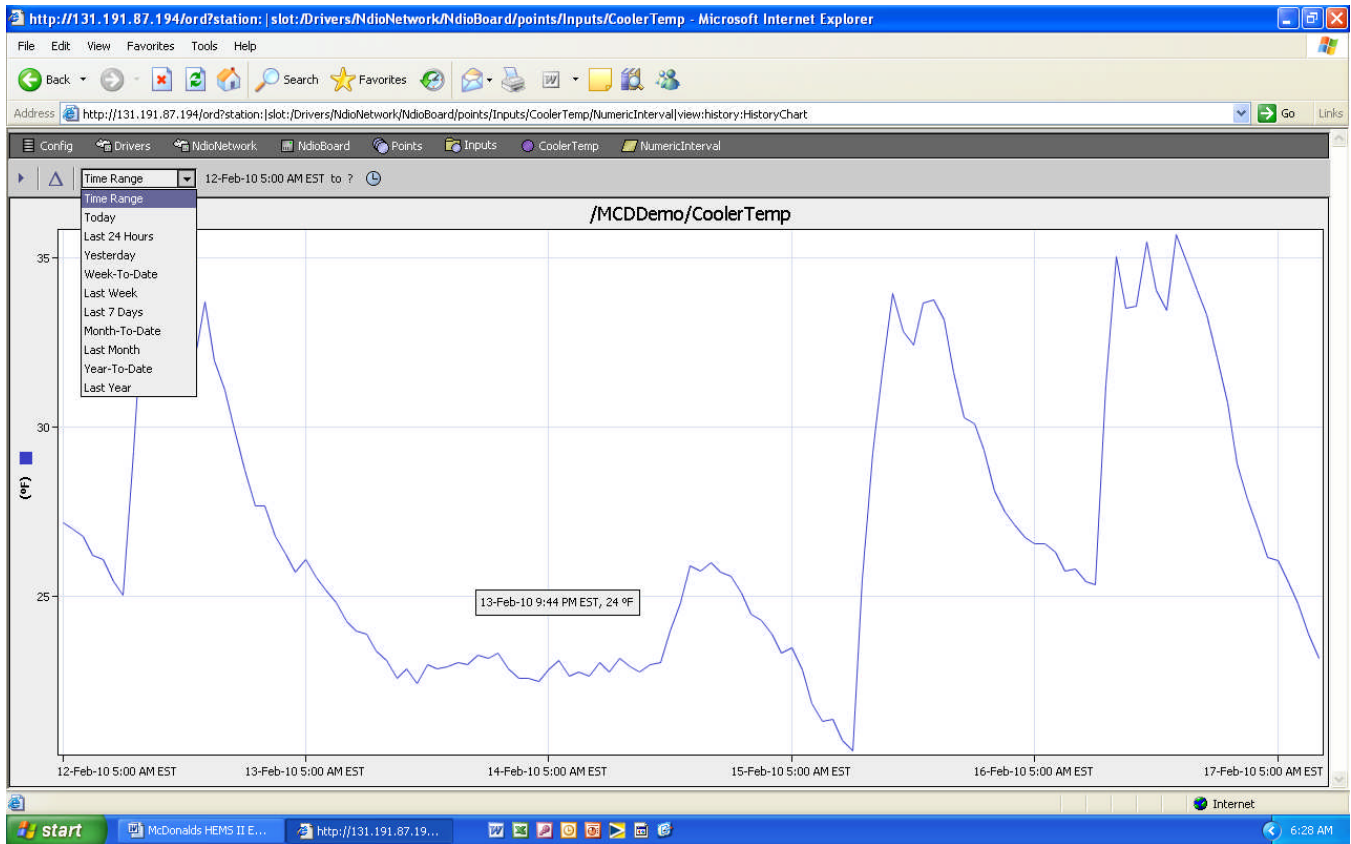


# Time of Day Schedules & Holidays for HVAC Units and Lighting Zones- continued

The screenshot displays a web application titled "Kitchen Schedule". At the top, there is a navigation bar with buttons for "Prev Page", "Prev Month", "Today", "Next Month", and "Next Page". Below this, six calendar grids are shown for the months of Oct 2010, Nov 2010, Dec 2010, Jan 2011, Feb 2011, and Mar 2011. The date December 25, 2010, is highlighted in green in the Dec 2010 calendar. Below the calendars, there is a table with two columns: "Name" and "Summary". The table contains one entry: "Event" with "Date: Sat 25 Dec 2010". To the right of the table is a vertical timeline from 3:00 AM to 9:00 PM, with a blue bar indicating the event period. At the bottom right, there are input fields for "Event Start" (12:00 AM), "Event Finish" (12:00 AM), and "Event Output" (UnOccupied). At the bottom left, there are tabs for "Weekly Schedule", "Special Events", "Properties", and "Summary". At the bottom center, there are "Save" and "Refresh" buttons.

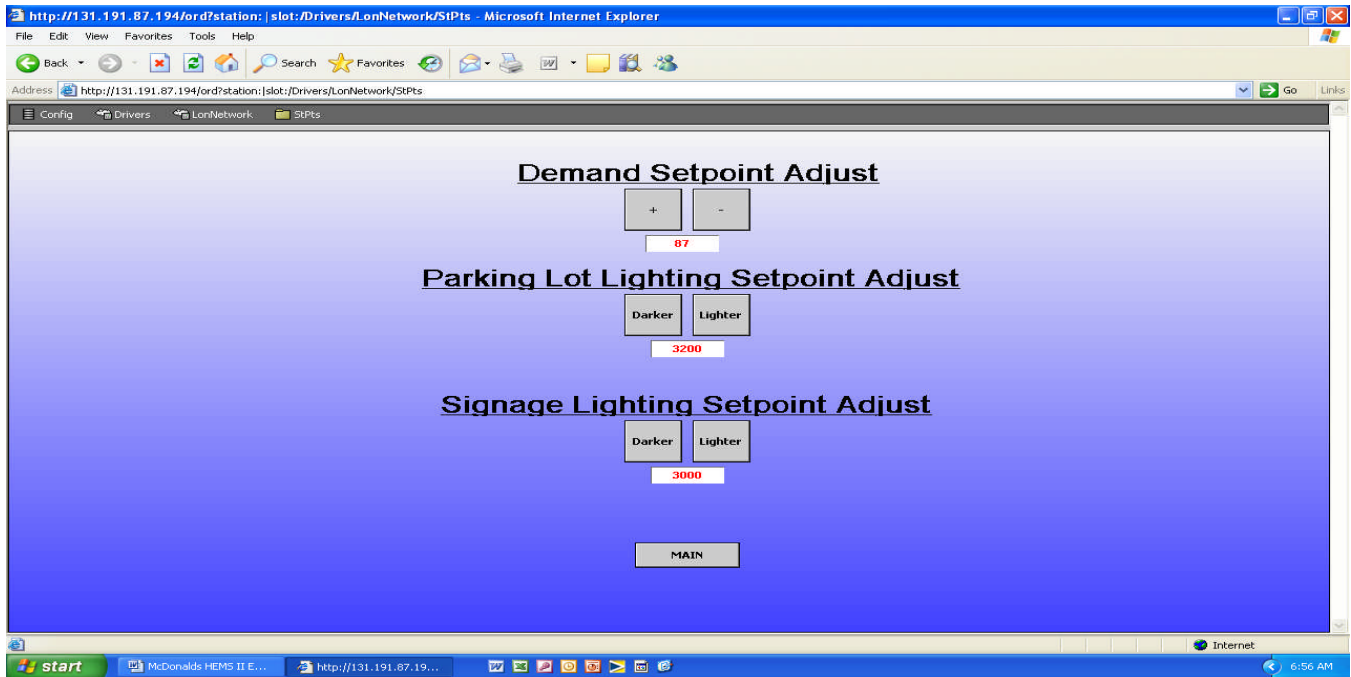
1. By touching or clicking on the Special Events tab at the bottom left of the screen to can add and edit special events. The example above shows that on Sat December 25<sup>th</sup> of 2010 (Christmas) the schedule has been set to Unoccupied for the complete day.
2. It is very easy and intuitive to add special events or holidays for any unit or lighting zone that has a schedule associated with it. Additionally, just like indicated on previous pages use your finger or mouse to adjust the time of day for these events, either in the box in the lower right hand corner or through the up/down arrow keys in the lower right hand corner.

# Data Logging and Trended Points



1. The following points are all selectable from the Home and/or HVAC Unit graphic pages by touching or clicking on the numeric value ( CYAN background color) shown for each: OSA Temperature (Outside Air Temperature), Peak Electrical Demand, KWH Monthly (monthly electrical consumption), KWH Yearly (yearly electrical consumption), Freezer (temperature), Cooler (temperature), Space Temp (space temperature for each area of building) and DA Temp (discharge or supply air temperature from each HVAC Unit).
2. The information above shows the Cooler temperature as an example. Note that in the upper left hand corner a time range can be selected from a drop down menu. You can elect to review the trend information by specifying a certain time range or values for Today, Last 24 Hours, Yesterday, Week-to-Date, Last Week, Last 7 days, Month-to-Date, Last Month, Year-To-Date (data may not be available for this time period) and Last Year (data may not be available for this time period). See item 5 below.
3. You can also place your finger or mouse at any point on the graphic line to see what an exact value was and the exact date and time that value was recorded.
4. Note that each point is trended or logged every 60 minutes, 24 hours per day, 365 days per year. The exception is Peak Demand which is recorded every 15 minutes, 24 hours per day, 365 days per year and KWH Monthly and KWH Yearly which are continuously recorded.
5. Also note that the WEBS controller has a limited amount of internal memory for holding and retaining logged or trended values. When this internal memory is full, older data values are overwritten by new recorded values. With this in mind you may not able to read data values from a long time ago. Typically the WEBS unit will retain the last 7-30 days of trended or logged data for each point. Honeywell offers a service that automatically retrieves and retains long term trended or logged data for you, as long as, a continuous internet connection to the WEBS unit is available. Consult with your Honeywell salesperson on the costs associated with additional service.

# Electrical Demand Limiting and Lighting Photocell Adjustments



1. You reach this page by touching or clicking on the Lighting or Electrical icons on the Home page.
2. Demand set point is easily adjusted by touching or clicking on the plus or minus keys above. For retrofit sites a review of your past 12 months of utility bills will allow for a determination of what this value should be. Consult with your Honeywell sales person or local electrical utilities representative to help you make this initial setting. For new construction projects it may take 6 months to a year before this value can be accurately set based on a review of your utility bills. Once set there should be no need for further adjustment, unless there is a change in the way the utility company bills or charges you. When actual electrical demand is within 2.5% of the setting above the temperature set points for the HVAC unit will be automatically raised 3° (when in cooling mode) or lowered 3° (when in heating mode). HVAC units automatically switch between Cooling/Heating modes to maintain room temperatures.
3. Parking Lot Lighting and Signage Lighting controls operate the same, but each has a separate adjustable “turn on” set point based on outdoor light levels as sensed by one common outdoor photocell. Typically the values above are set at 3450; this has proven to be a good setting for lighting to turn on based on outdoor light levels. You may want your signage to turn on earlier than parking lot lights that is why there is a separate darker/lighter adjustment for each. Touching or clicking on darker or lighter will adjust the start point for each. Parking and Signage each have a separate (adjustable) time of day schedule associated with them. See icons on Home page and refer to Time of Day Schedules & Holidays section of this document for adjustments to these schedules. The Parking or Signage lights will start based on outdoor light level and adjustments above. In a non 24 hour store the associated schedule is used to enable or shut lights off when the store is closed and employees are all gone, no matter what the light level is outside. An Example may be as follows: Your employees show up for work at 4am – parking lot lights turn on by time of day schedule. At 5am your drive through opens – signage lights turn on by time of day schedule. When outdoor light level is high enough say at 6am the parking lot lights shut off by the photocell set point. As outdoor light level increases maybe the signage should shut off by the photocell set point (but it does not have to). As light level decreases late in the day or evening the parking and signage lights come back on by photocell. Store closes at Midnight and signage shuts off on schedule. Employees leave at 1am after clean up, parking lot lights and employee lights shut off by schedule.

# Embedded Touch Screen Operating Instructions

**McDonald's Anywhere, USA**  
**General Info** 02-Feb-10 4:48 PM EST  
 OSA Temp 36 °F Operating Instructions

**HVAC UNITS**

**Kitchen Area**  
 Rm Temp 66 °F Fan   
 Occupied Setpoints Auto On  
 Heat STPt 70 °F Schedule  
 Cool STPt 73 °F

**Dining Area**  
 Rm Temp 68 °F Fan   
 Occupied Setpoints Auto On  
 Heat STPt 70 °F Schedule  
 Cool STPt 73 °F

**Playplace Area**  
 Rm Temp 66 °F Fan   
 Occupied Setpoints Auto On  
 Heat STPt 70 °F Schedule  
 Cool STPt 73 °F

**Electrical Demand**  
 Peak Demand 0 Kw  
 Demand Setpoint 83 Kw  
 Energy Demand Limiting: Inactive

**Lighting**

	Auto	On	Schedule
Parking Lot	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Signage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Employee	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Customer	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Playplace	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Photocell Parking		<input type="checkbox"/>	
Photocell Signage		<input type="checkbox"/>	

**Panel Operation Guide**

**Table of Contents**

- Page One: General Info and HVAC
- Page Two: Electrical Demand and Consumption
- Page Three: Lighting
- Page Four: Electrical and Lighting Setpoint Adjust
- Page Five: Alarms
- Page Six: Schedule Pop-Up
- Page Seven: RTU System Information

**Field Installation Diagrams**

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- Page 2 of 10
- Page 3 of 10
- Page 4 of 10
- Page 5 of 10
- Page 6 of 10
- Page 7 of 10
- Page 8 of 10
- Page 9 of 10
- Page 10 of 10

**SOUND ENERGY SYSTEMS** For Service Contact  
 Sound Energy Systems  
 253-475-3525

# Embedded Touch Screen Operating Instructions

The screenshot shows a touch screen interface for a McDonald's HVAC system. The interface is divided into several sections: General Info, HVAC UNITS, Electrical Demand, and Lighting. The HVAC UNITS section is further divided into Kitchen Area, Dining Area, and Playplace Area. Each area has controls for Room Temperature, Occupied Setpoints, Heat Setpoint (STPT), and Cool Setpoint (STPT). There are also fan status indicators and schedule icons. The Electrical Demand section shows Peak Demand and Demand Setpoint gauges. The Lighting section shows controls for Parking Lot, Signage, Employee, Customer, and Playplace areas, with options for Auto and On modes. A Photocell Packing and Photocell Signage section is also present.

**McDonald's Anywhere, USA**  
**General Info** 02-Feb-10 4:48 PM EST  
 OSA Temp 36 °F Operating Instructions

**HVAC UNITS**

**Kitchen Area**  
 Rm Temp 66 °F Fan (Green icon)  
 Occupied Setpoints Auto On  
 Heat STPT 70 °F Schedule  
 Cool STPT 73 °F

**Dining Area**  
 Rm Temp 68 °F Fan (Green icon)  
 Occupied Setpoints Auto On  
 Heat STPT 70 °F Schedule  
 Cool STPT 73 °F

**Playplace Area**  
 Rm Temp 66 °F Fan (Green icon)  
 Occupied Setpoints Auto On  
 Heat STPT 70 °F Schedule  
 Cool STPT 73 °F

**Electrical Demand**  
 Peak Demand 0 Kw  
 Demand Setpoint 83 Kw  
 Energy Demand Limiting: Inactive  
 KWH Month 0 kwh

**Lighting**

**Schedule**

Parking Lot	Auto	On	[Schedule Icon]
Signage	Auto	On	[Schedule Icon]
Employee	Auto	On	[Schedule Icon]
Customer	Auto	On	[Schedule Icon]
Playplace	Auto	On	[Schedule Icon]

Photocell Packing On  
 Photocell Signage On

**SOUND ENERGY SYSTEMS**  
 For Service Contact  
 Sound Energy Systems  
 253-475-3525

**Operating Instructions**

- Outside air temperature display.
- Display of each areas current room temperature, temperature setpoint.
- Occupied Heating Setpoint.
- Occupied Cooling Setpoint.
- Fan running when icon is green, when icon is red the fan is off.
- Schedule icon when associated Air Handler is Occupied.
- "Auto": Air Handler follows schedule. "On": Air Handler runs indefinitely regardless of schedule.

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# Embedded Touch Screen Operating Instructions

The screenshot shows a Honeywell HEMS II touch screen interface. The main display is titled "Electrical Demand and Consumption" and features three gauges: "Peak Demand" (0 Kw), "KWH Monthly" (0 kw-hr), and "KWH Yearly" (253 kw-hr). Below these gauges is a "Demand Setpoint" of 88 Kw and an "Energy Demand Limiting" status of "Inactive". The interface is divided into three sections: "Electrical Demand and Consumption", "Lighting", and "Alarms/Monitor".

**Lighting Section:**

Area	Mode	Schedule	Icon
Parking Lot	Auto	On	Lighting icon
Signage	Auto	On	Lighting icon
Employee	Auto	On	Lighting icon
Customer	Auto	On	Lighting icon
Playplace	Auto	On	Lighting icon
Photocell Parking	On		
Photocell Signage	On		

**Alarms/Monitor Section:**

Freezer	-21 °F	Door Opened
Cooler	33 °F	Door Opened
CO2	15 PPM	Normal

**Instructions and Callouts:**

- To access Electrical Setpoint Adjust, click here.
- Peak Demand: Peak Electrical consumption within a 15 minute window.
- Text fields with cyan backgrounds are linked to the associated history, click to display.
- KWH Monthly: Total accumulation for the current month.
- KWH Yearly: Total accumulation for the current year.
- Status of Energy Demand Limiting program. When program is active Heating and Cooling Setpoints are in override to maximize energy savings.

**Navigation:**

- Table of Contents
- Next Page
- Previous Page

**System Information:**

- Done
- Unknown Zone

# Embedded Touch Screen Operating Instructions

Schedule icon when associated Lighting Zone is Unoccupied.

To access Outside Light Level Adjust, click here.

Schedule icon when associated Lighting Zone is Occupied.

Lights are on when icon is green, when icon is red the lights are off.

“Auto”: Lighting Zone follows schedule. “On”: Lighting Zone is on indefinitely regardless of schedule.

Photocell is on when ambient light level darkens.

Table of Contents  
Next Page  
Previous Page

**Electrical Demand and Consumption**

Peak Demand: 0 Kw  
Demand Setpoint: 83 Kw  
Energy Demand Limiting: Inactive

KWH Monthly: 0 kw-hr  
KWH Yearly: 253 kw-hr

**Lighting**

Zone	Mode	Status	Schedule
Parking Lot	Auto	On	Lighting icon
Signage	Auto	On	Lighting icon
Employee	Auto	On	Lighting icon
Customer	Auto	On	Lighting icon
Playplace	Auto	On	Lighting icon

Photocell Parking: On  
Photocell Signage: On

**Alarms/Monitor**

Freezer	-21 °F	Door Opened
Cooler	33 °F	Door Opened
CO2	15 PPM	Normal

Alarm Silence

Honeywell

# Embedded Touch Screen Operating Instructions

Use plus or minus buttons to adjust setpoint.

**Demand Setpoint Adjust**

+ -

83

**Parking Lot Lighting Setpoint Adjust**

Darker Lighter

3280

**Signage Lighting Setpoint Adjust**

Darker Lighter

3070

MAIN

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Previous Page

Done Unknown Zone



# Embedded Touch Screen Operating Instructions

The screenshot shows a Honeywell HEMS II touch screen interface. The interface is divided into several sections: **Electrical Demand and Consumption**, **Lighting**, and **Alarms/Monitor**. The **Electrical Demand and Consumption** section includes three gauges for Peak Demand (0 Kw), KWH Monthly (0 kw-hr), and KWH Yearly (253 kw-hr). Below these gauges, the Demand Setpoint is 83 Kw and Energy Demand Limiting is Inactive. The **Lighting** section has a table for scheduling various areas, and the **Alarms/Monitor** section shows active alarms for Freezer and Cooler, and a CO2 level. A white callout box on the left contains instructions about alarm status and the Alarm Silence button.

TEST

ctions

ESTIMATE

6 / 18

61%

Find

### Electrical Demand and Consumption

Peak Demand: 0 Kw  
Demand Setpoint: 83 Kw  
Energy Demand Limiting: Inactive

KWH Monthly: 0 kw-hr

KWH Yearly: 253 kw-hr

### Lighting

Area	Mode	Schedule	On
Parking Lot	Auto	On	Lighting Icon
Signage	Auto	On	Lighting Icon
Employee	Auto	On	Lighting Icon
Customer	Auto	On	Lighting Icon
Playplace	Auto	On	Lighting Icon

Photocell Parking: On  
Photocell Signage: On

### Alarms/Monitor

Freezer	-21 °F	Door Opened
Cooler	33 °F	Door Opened
CO2	15 PPM	Normal

Alarm Silence

**Honeywell**

Table of Contents  
Next Page  
Previous Page

Done

Unknown Zone

Status of monitored point in alarm, icon is green in normal condition.

Alarm Silence disables audible alarm horn for one hour.

# Embedded Touch Screen Operating Instructions

The screenshot shows a web-based HVAC schedule editor. The interface includes a browser window with a menu bar (File, Edit, Go To, Favorites, Help) and a toolbar. The main content area is titled "HVAC Schedule" and features a weekly grid. The grid has columns for days of the week (Sun to Sat) and rows for time slots (3:00 AM, 6:00 AM, 9:00 AM, 12:00 PM, 3:00 PM, 6:00 PM, 9:00 PM). The "UnOccupied" status is shown in white, and "Occupied" status is shown in green. Green blocks are present from 6:00 AM to 6:00 PM on Monday through Saturday. Below the grid, there are input fields for "Event Start" (10:42 AM), "Event Finish" (10:42 AM), and "Event Output" (1). At the bottom of the editor are "Save" and "Refresh" buttons. To the right of the editor, a white box contains instructional text with arrows pointing to specific parts of the interface.

HVAC schedule editor, use tabs at top left to change views.

Green blocks mark the Occupied settings.

Click and drag to expand the green area to change occupied times.

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# Embedded Touch Screen Operating Instructions

**SYSTEM INFORMATION**

Outside Air Temp: 39 °F  
 Schedule Status: Occupied  
 HVAC Mode: Cool  
 Space Temp: 71 °F

**SETPOINTS**

Occ Heating Spt: 70 °F  
 Occ Cooling Spt: 73 °F  
 Unocc Heating Spt: 55 °F  
 Unocc Cooling Spt: 85 °F

**CONTROLLER STATUS**

Normal

MAIN SCHEDULE

**DINING RTL**

Heating Stages On: 0 Cooling Stages On: 0

Economizer Enabled

RA

ENERGY DEMAND LIMITING: Inactive

Text fields with cyan backgrounds are linked to the associated history, click to display.

Use plus or minus buttons to adjust setpoint.

Controller status, will show the alarm condition of the associated HVAC controller.

Use the "Main" and "Schedule" buttons to navigate between views.

Note: Occupied Heating Setpoint must be at least three degrees below Occupied Cooling Setpoint.

Note: Unoccupied Heating Setpoint must remain below Occupied Heating Setpoint.

Note: Unoccupied Cooling Setpoint must remain above Occupied Cooling Setpoint.

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 Previous Page

Done Unknown Zone

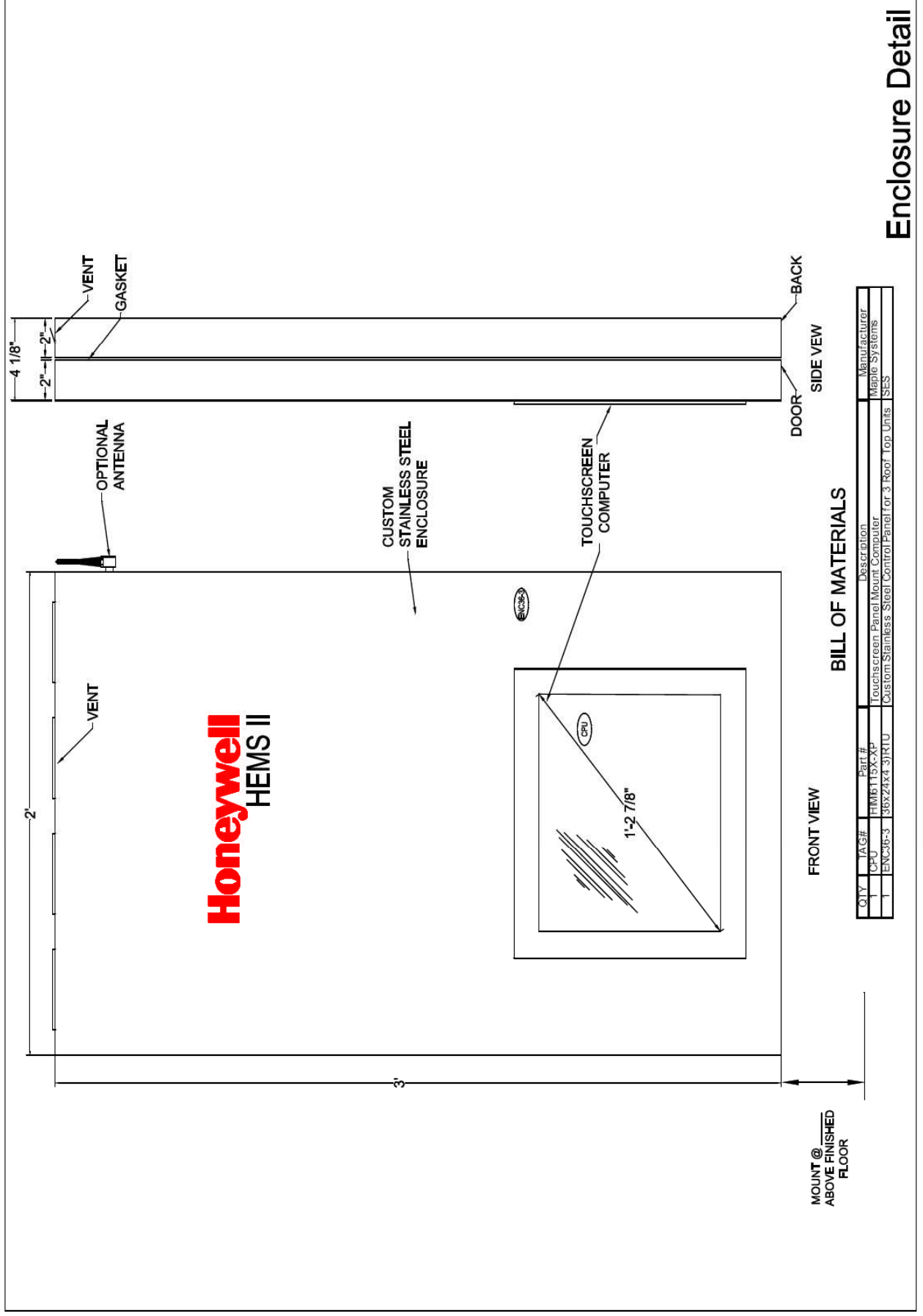


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Title  
 McDonald's Restaurant  
 for  
 Honeywell  
 Energy Management System II  
 Control Panel  
 Field Installation Diagrams  
 Engineered By:  
 Graham Wilson  
 Checked By:

Drawn By:  
 Graham Wilson  
 REVISIONS  
 NO. | DATE | DESCRIPTION

Date 10/7/2009  
 File Name eh2  
 Job No. 958-  
 Page No. 2 of 10



**BILL OF MATERIALS**

QTY	JAG#	Part #	Description	Manufacturer
1		HMM6115X-XP	Touchscreen Panel Mount Computer	Maple Systems
1	ENC36-3	36x24x4-31RTU	Custom Stainless Steel Control Panel for 3' Roof Top Units	SES

**Enclosure Detail**



**SYSTEM ARCHITECTURE**

THE EMCS SYSTEM ARCHITECTURE CONSISTS OF A NEW CPU OPERATING ON WINDOWS XP-PRO PLATFORM, A NEW WEB-201, (JAVA APPLICATION CONTROL ENGINE) NETWORK AREA CONTROLLER (NAC) PROVIDING INTEGRATED CONTROL, SUPERVISION AND NETWORK MANAGEMENT OF THE HONEYWELL LONMARK/LONWORKS™ "OPEN SYSTEM" CONTROLLERS, COMMUNICATING USING THE ECHELON™ LONTALK™ PROTOCOL ON A 78KB FT/L LOCAL AREA NETWORK.

THE WEB-201 IS A MEMBER OF THE WEBS AX SUITE OF JAVA BASED CONTROLLER/SERVER PRODUCTS, WHICH ARE DESIGNED TO INTEGRATE A VARIETY OF DEVICES AND PROTOCOLS INTO UNIFIED, DISTRIBUTED SYSTEMS.

WEBS AX PRODUCTS ARE POWERED BY NIAGARA AX FRAMEWORK. NIAGARA SUPPORTS A WIDE RANGE OF PROTOCOLS INCLUDING LONWORKS, BACnet, MODbus and INTERNET STANDARDS.

THE WEB-201 CONTROLLER SERVES DATA AND GRAPHICAL DISPLAYS TO A STANDARD WEB BROWSER VIA AN ETHERNET LAN OR REMOTELY OVER THE INTERNET OR (OPTIONAL DIAL-UP CELLULAR MODEM).

**DOOR CONTACTS**

THE FREEZER AND COOLER DOORS ARE MONITORED AND ALARMED. (OPTIONS): MEN'S RESTROOM, AND WOMEN'S RESTROOM DOORS ARE MONITORED AND ALARMED.

**DOMESTIC HOT WATER HEATER (OPTION)**

THE WATER HEATER IS ENABLED AND DISABLED BY A TIME SCHEDULE.

**MONITORING POINTS**

THE FREEZER AND COOLER TEMPERATURES ARE MONITORED AND ALARMED. THE OUTSIDE AIR TEMPERATURE IS MONITORED. 2 KITCHEN EQUIPMENT MONITORING POINTS ARE PROVIDED (OPTION).

**LIGHTING CONTROL**

INTERIOR LIGHTING: THE CUSTOMER'S, EMPLOYEE'S AND PLAYLAND LIGHTS ARE CONTROLLED BY TIME SCHEDULE.

**EXTERIOR LIGHTING:**

SIGNAGE AND PARKING LOT LIGHTS ARE CONTROLLED BY TIME SCHEDULE AND AN INDIVIDUAL OUTDOOR PHOTO CELL SETPOINT ONE FOR EACH ZONE.

**LIGHTING CONTROL (POWERLINK G3 OPTION)**

WITH THE SQUARE D POWERLINK G3 LIGHTING CONTROL PANEL OPTION, THE SEQUENCE OF CONTROL REMAINS THE SAME FOR THE INTERIOR AND EXTERIOR LIGHTING.

POWERLINK G3 INTERFACE OPTIONS: OPTION 1 IS 5 DIGITAL INPUTS, INTERFACE OPTION 2 IS VIA MODBUS COMMUNICATION.

**LIGHTING CONTROL (CONTACTOR OPTION)**

WITH THE LIGHTING CONTACTOR OPTION, THE SEQUENCE OF CONTROL REMAINS THE SAME FOR THE INTERIOR AND EXTERIOR LIGHTING.

LIGHTING CONTROL CONTACTORS ARE NOT FURNISHED AS PART OF THE HEMS II PRODUCT PANEL. CONTACTORS MUST BE FURNISHED AND INSTALLED BY THE INSTALLING HEMS II CONTRACTOR OR OTHERS.

**POWER MONITORING (OPTION)**

THE ELECTRICAL POWER IS MONITORED AND LOGGED.

**LOAD SHEDDING:**

AT THE OWNER'S DISCRETION, POWER CONSUMPTION LEVELS CAN BE SET TO SHED POWER LOAD BY INCREASING THE DEADBAND OF THE VENTILATION SYSTEMS' HEATING AND COOLING TEMPERATURE SETPOINTS BY 3°F. WHEN THE LOAD IS WITHIN 2.5% OF THE SETPOINT, OPTIONAL DOMESTIC HOT WATER AND THE DRIVE THRU HEATER ARE DISABLED WHEN THE LOAD IS WITHIN 2.5% OF SETPOINT.

**DRIVE THRU HEATER (OPTION)**

THE HEATER IS ENABLED AND DISABLED BY A TIME SCHEDULE.

**CO2 GAS MONITORING AND ALARM SYSTEM (OPTION)**

**STARTUP:**

THE START UP SEQUENCE WILL VERIFY THE STROBE/ALARM AND CO2 SENSOR ARE WIRED CORRECTLY. WHEN POWER IS APPLIED TO THE SYSTEM, APPROXIMATELY 15 SECONDS AFTER POWER IS APPLIED OR THE TEST BUTTON ON THE POWER SUPPLY IS PRESSED, THE HORN WILL SOUND FOR ABOUT 2 SECONDS AND THE STROBE WILL CONTINUE TO FLASH FOR 5 - 10 SECONDS. MAKE SURE GREEN LED ON THE SENSOR IS LIT. CHECK WIRING AND POWER IF THIS DOES NOT OCCUR AS DESCRIBED.

**NORMAL OPERATION:**

THE PURPOSE OF THE CO2 ALARM SYSTEM IS TO ACTIVATE A WARNING TO BUILDING OCCUPANTS WHEN THE CO2 LEVEL IN A SPACE WHERE TANKS OR BULK CO2 IS STORED APPROACHES A HARMFUL LEVEL.

THE CO2 SENSOR WILL CLOSE A RELAY WHEN 15,000 PPM CO2 IS SENSED. THE STROBE/ALARM WILL FLASH WITH A WHITE LIGHT AT ~30 FLASHES PER MINUTE.

TWO ADDITIONAL RELAYS WILL CLOSE WHEN THE CO2 LEVEL HAS REACHED 30,000 PPM. THE SECOND RELAY ACTIVATES THE AUDIBLE ALARM. THE THIRD RELAY IS DEDICATED TWO-WIRE DRY CONTACT (BLUE AND GREEN WIRES). THIS THIRD RELAY CAN BE CONNECTED TO THE FIRE ALARM SYSTEM AT THE DISCRETION OF THE OWNER.

THE CO2 SENSOR'S LINEAR 0-5VDC (0-30,000 PPM CO2) SIGNAL IS MONITORED THE DDC SYSTEM.

WHEN CO2 LEVELS DECREASE OR POWER IS REMOVED, THE RELAYS WILL OPEN AND THE AUDIBLE AND FLASHING ALARMS WILL STOP.

THE CO2 SENSOR HAS A SOLID ON GREEN LED WHEN POWER IS SUPPLIED TO THE SENSOR.

**FIELD ADJUSTMENTS:**

THE SYSTEM IS NOT FIELD ADJUSTABLE.

**CHECKOUT AND TROUBLE SHOOTING:**

**IMPORTANT:**

TEST SYSTEM MONTHLY BY DEPRESSING THE PUSH BUTTON ON THE POWER SUPPLY TO MAKE SURE SYSTEM HAS NOT BEEN TAMPERED WITH AND IS OPERATING NORMALLY.

ONCE PER MONTH, TEST THE SYSTEM BY PRESSING THE PUSH BUTTON ON THE POWER SUPPLY TO RESET THE POWER. APPROXIMATELY 15 SECONDS AFTER POWER IS APPLIED OR THE TEST BUTTON ON THE POWER SUPPLY IS PRESSED, THE HORN WILL SOUND FOR ABOUT 2 SECONDS AND THE STROBE WILL CONTINUE TO FLASH FOR 5 - 10 SECONDS. MAKE SURE GREEN LED ON THE SENSOR IS LIT. THE SYSTEM IS WORKING PROPERLY. CHECK WIRING AND POWER IF THIS DOES NOT OCCUR AS DESCRIBED.

THE CO2 SENSOR HAS AN AUTOMATIC BACKGROUND CALIBRATION. IF THE BACKGROUND CALIBRATION DRIFTS FROM THE FACTORY CALIBRATION BY 3,000 PPM, THE STROBELIGHT WILL FLASH 10 SECONDS EVERY MINUTE. IF THIS OCCURS IT COULD INDICATE A SLOW LEAK IN CO2 EQUIPMENT. VENTILATE THE SPACE. REPLACE THE SENSOR AND CHECK FOR SLOW LEAKS IN THE CO2 EQUIPMENT. REPLACE ANY LEAKING EQUIPMENT.

IMPORTANT STROBE WILL FLASH FOR 10 SECONDS EVERY MINUTE WHEN OUT OF CALIBRATION AND SENSOR NEEDS TO BE REPLACED.

IF THE FLASHING REPEATS AFTER A PERIOD OF A FEW MONTHS WITH A REPLACEMENT SENSOR, THERE IS POSSIBLY A SLOW LEAK IN THE CO2 EQUIPMENT. INVESTIGATE THE LEAK AND REPLACE THE LEAKING EQUIPMENT.

USE OF A POWER SUPPLY OTHER THAN THAT SUPPLIED WITH THE SYSTEM OR THE REPLACEMENT 50016095-001 POWER SUPPLY WILL NOT PERMIT PROPER OPERATION OF THE SYSTEM.

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Title  
for  
Honeywell  
Energy Management System II  
Control Panel  
Field Installation Diagrams

Engineered By:  
Graham Wilson  
Checked By:

Drawn By:  
Graham Wilson  
Revisions

NO.	DATE	DESCRIPTION

Date  
10/7/2009  
File Name  
eh13  
Job No.  
958-  
Page No.  
3 of 10

**Sequence of Operation**



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Title  
McDonald's Restaurant  
for  
Honeywell  
Energy Management System III  
Control Panel  
Field Installation Diagrams

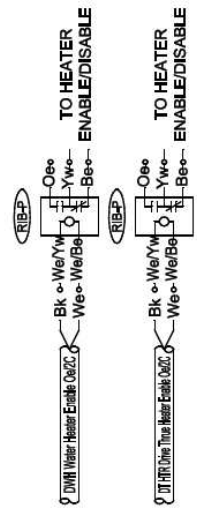
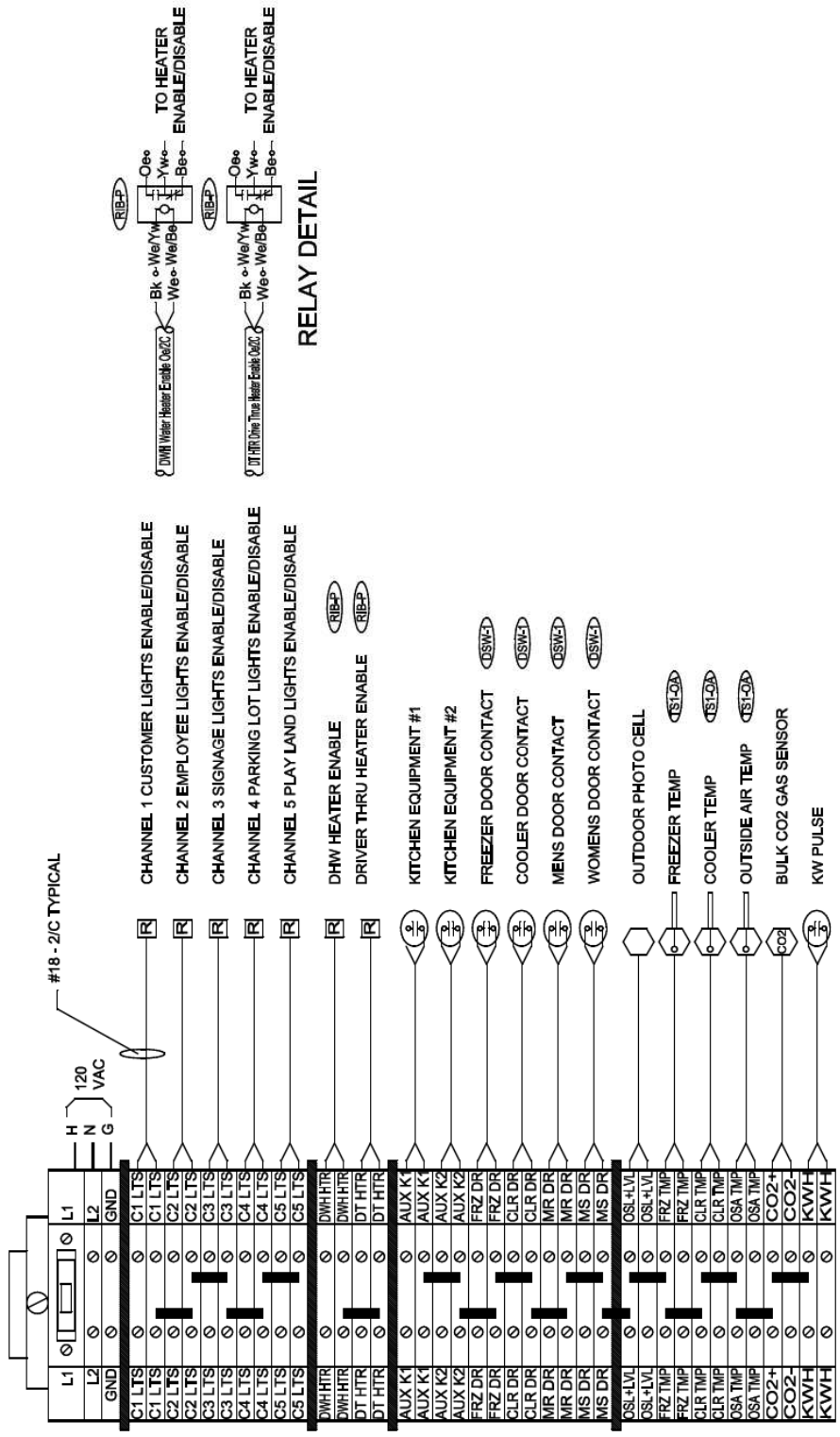
Engineered By:  
Graham Wilson  
Checked By:

Drawn By:  
Graham Wilson

Revisions

NO.	DATE	DESCRIPTION

Date 10/17/2009  
File Name  
Job No. 958-  
Page No. 5 of 10



**BILL OF MATERIALS**

QTY	TAG#	Part #	Description	Manufacturer
2	RIB-P	RIB240TB	Relay In a Box 120vac/1 HP @ 120vac/24 vac/dc coil	Functional Devices
4	OSW-1	2505A	Door Switch w/Stainless Steel Armored Cable	GE
1	PCR-1	PSR-1	Photo Cell Resistor (1.5K-1M/9-100FC)	Kele
3	TST-0A	TE-205-F-7	Outside Air Sensor (10k ohm Thermistor) w/air Shield	Mamac

**Miscellaneous Terminal Strip Wiring Diagram**

TERMINAL STRIP CONTINUOUS ON NEXT PAGE

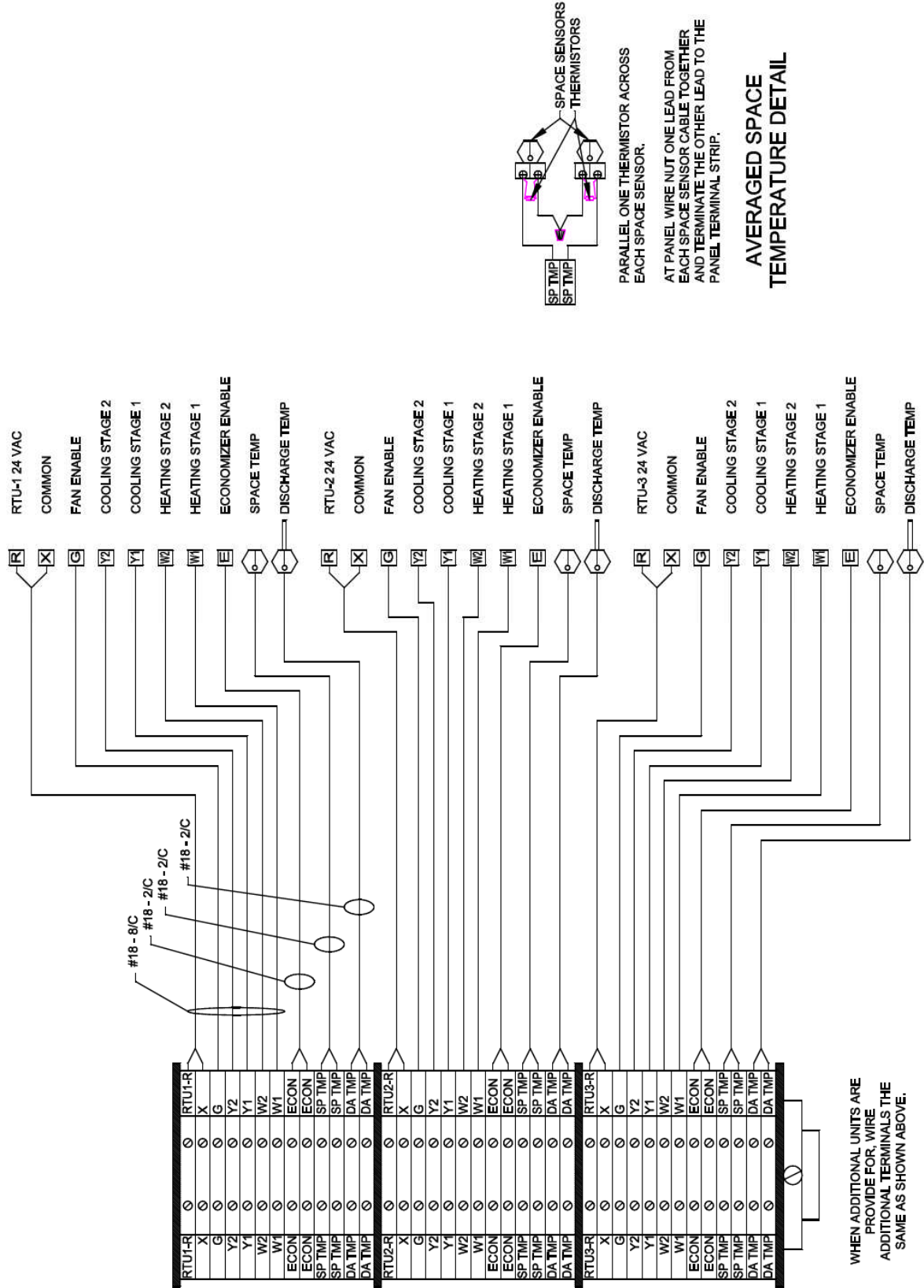


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**Title**  
McDonald's Restaurant  
for Honeywell Energy Management System II Control Panel Field Installation Diagrams  
**Engineered By:** Graham Wilson  
**Checked By:**  
**Drawn By:** Graham Wilson  
**Revisions**

NO.	DATE	DESCRIPTION

**Date** 10/7/2009  
**File Name** sht6  
**Job No.** 958-  
**Page No.** 6 of 10



## Roof Top Unit Terminal Strip Wiring Diagram

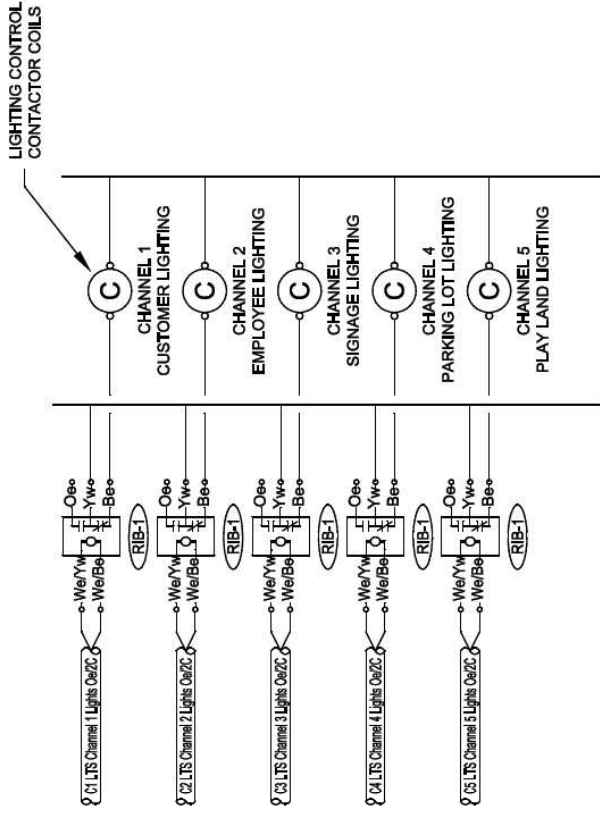
**AVERAGED SPACE TEMPERATURE DETAIL**

PARALLEL ONE THERMISTOR ACROSS EACH SPACE SENSOR.  
AT PANEL WIRE NUT ONE LEAD FROM EACH SPACE SENSOR CABLE TOGETHER AND TERMINATE THE OTHER LEAD TO THE PANEL TERMINAL STRIP.

WHEN ADDITIONAL UNITS ARE PROVIDED FOR, WIRE ADDITIONAL TERMINALS THE SAME AS SHOWN ABOVE.

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Title  
 for McDonald's Restaurant  
 Honeywell Energy Management System II Control Panel  
 Field Installation Diagrams  
 Engineered By:  
 Graham Wilson  
 Checked By:  
 Graham Wilson  
 Drawn By:  
 Graham Wilson  
 REVISIONS  
 NO. DATE DESCRIPTION  
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 Date 10/7/2009  
 File Name sh7  
 Job No. 958-  
 Page No. 7 of 10



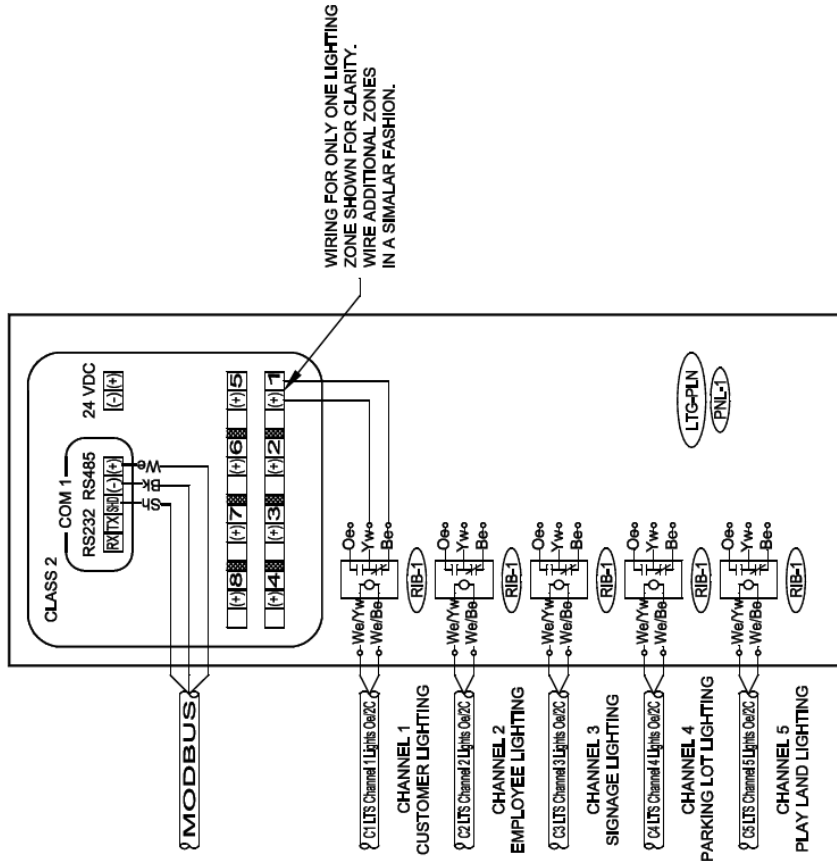
**OPTIONAL STANDARD CONTACTOR LIGHTING CONTROL PANEL**

**NOTE:**  
 OPTION 3  
 5 RELAYS ARE PROVIDED AS PART OF THE HEMS III PANEL PRODUCT FOR CONTROL STANDARD LIGHTING CONTACTORS. EACH RELAY IS PROVIDED WITH A MANUAL AN HOA SWITCH FOR LOCAL OVERRIDE CONTROL.  
 LIGHTING CONTROL CONTACTORS (4 POLES 30 AMP) ARE NOT FURNISHED AS PART OF THE HEMS II PRODUCT PANEL AND MUST BE FURNISHED AND INSTALLED BY THE INSTALLING HEMS II CONTRACTOR OR OTHERS.

**BILL OF MATERIALS**

QTY	TAG#	Part #	Description	Manufacturer
5	RIB-1	RIB10C	Relay in a Box (10amp @120vac) 24vac/dc coil SPDT	Functional Devices
1	LIG-PLN	NP-12SBL G3	Lighting Panel Board 12 Space	Square D

**Lighting Control Options**



**OPTIONAL SQUARE D POWERLINK G3 LIGHTING CONTROL PANEL**

**NOTE:**  
 OPTION 1  
 5 RELAY INPUTS TO SQUARE "D" POWERLINE LIGHTING  
 OPTION 2  
 MODBUS COMMUNICATIONS TO SQUARE "D" POWERLINE LIGHTING CONTROL PANEL

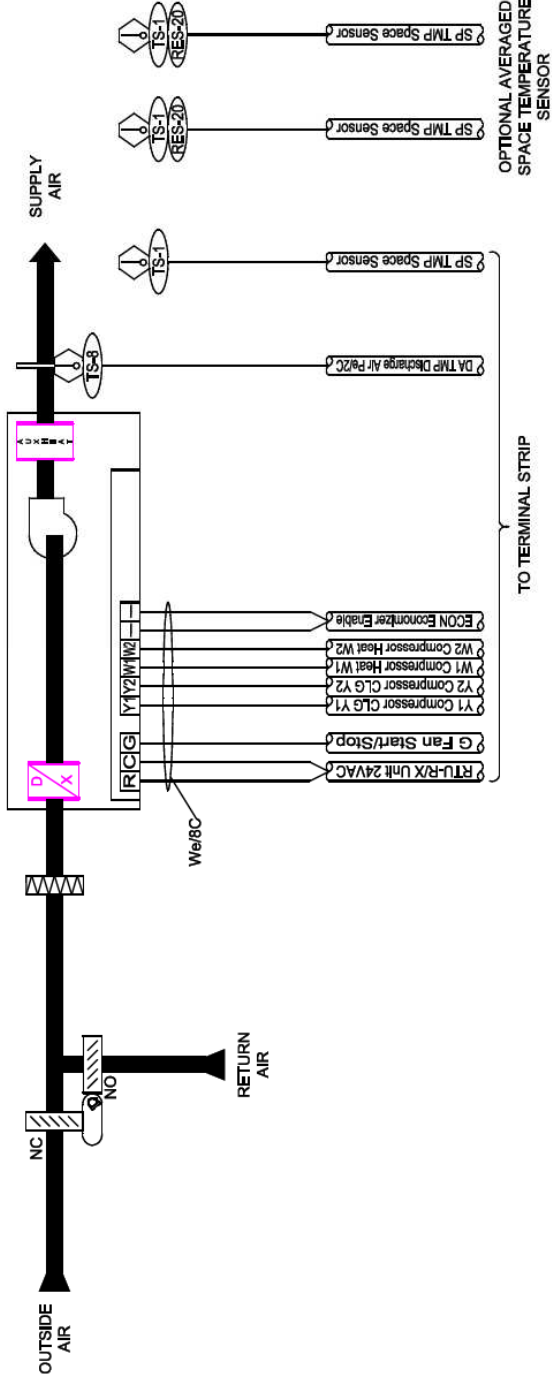
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Title  
McDonald's Restaurant  
for  
Honeywell Energy Management System II Control Panel  
Field Installation Diagrams  
Engineered By:  
Graham Wilson  
Checked By:  
Graham Wilson  
Drawn By:  
Graham Wilson

Revisions  
NO. DATE DESCRIPTION

NO.	DATE	DESCRIPTION

Date 10/7/2009  
File Name SHTS  
Job No. 958-  
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### SYSTEM DIAGRAM

SPACE TEMPERATURE SETPOINTS  
OCCUPIED HTG 70°F  
OCCUPIED CLG 75°F  
UNOCCUPIED HTG 65°F  
UNOCCUPIED CLG 85°F

MOUNT ROOM SENSORS @ EXISTING THERMOSTAT LOCATION, REUSE EXISTING CABLE FOR SPACE SENSOR AND COMMUNICATIONS WIRE TO NEW CONTROLLER MOUNTED IN THE UNIT.

FOR NEW INSTALLATION MOUNT ROOM SENSORS 60" AFF @ THERMOSTAT LOCATIONS SHOWN ON MECHANICAL DRAWINGS.

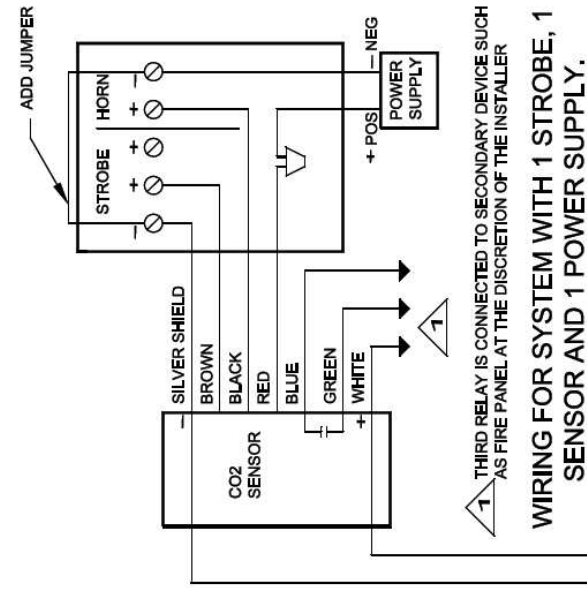
### BILL OF MATERIALS

QTY	TAG#	Part #	Description	Manufacturer
3	TS-1	IR21	Room sensor (20k ohm Thermistor)	Honeywell
3	TS-6	C7041B 2013	Duct Sensor (20K ohm Thermistor) 6" Probe	Honeywell
	RES-20	834-NIC203	Resistor (20k ohm Thermistor)	Mouser

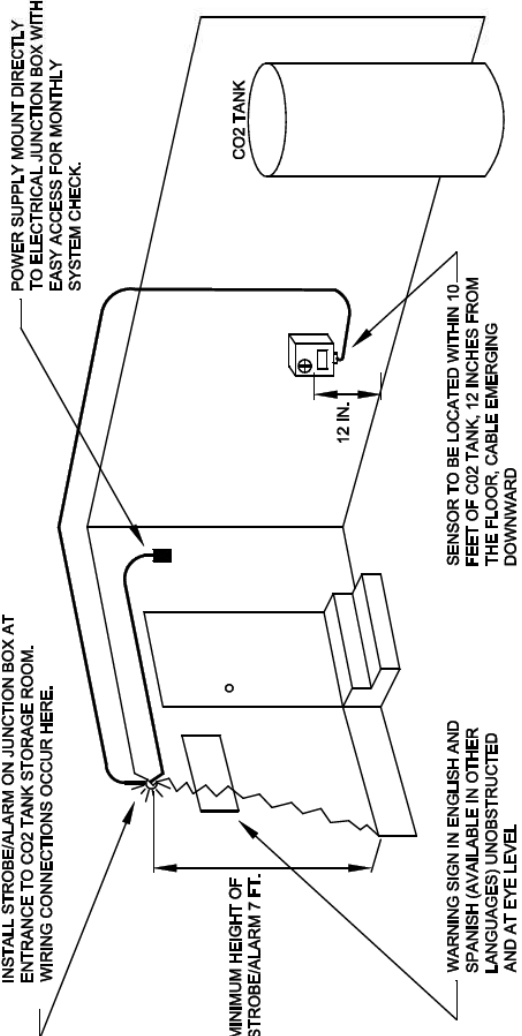
### Rooftop Unit System Diagrams

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 for: Honeywell Energy Management System II Control Panel  
 Field Installation Diagrams  
 Engineered By: Graham Wilson  
 Checked By:  
 Drawn By: Graham Wilson  
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 File Name: sh19  
 Job No.: 958-  
 Page No.: 9 of 10



SEE SHEET 9 FOR DDC CONNECTION



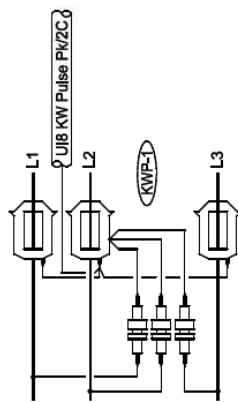
### LOCATION OF CO2 SYSTEM COMPONENTS.

### WIRE COLOR CODE FOR CO2 SENSOR

Wire Color	Function	rating
Red	12 Vdc +/-10%	
Shield (Bare Silver)	GROUND	
White	0-5 Vdc for 0-30,000 ppm CO2 to Honeywell Energy Management System	
Brown	12 Vdc output at 15,000 ppm CO2	1A at 24 Vdc
Black	12 Vdc output at 30,000 ppm CO2	2A at 30 Vdc
Green Blue	Dry contact (potential free) (between Green and Blue wires) at 30,000 ppm CO2	2A at 30 Vdc

### WIRE COLOR CODE FOR POWER SUPPLY

Wire Color	Function	rating
Black	Power Supply - Primary	
Black	120/240 Vac Common	
Red	120/240 Vac Hot	
Black	Power Supply - Secondary	
Black	12 Vdc + Positive	
Red	- Negative	

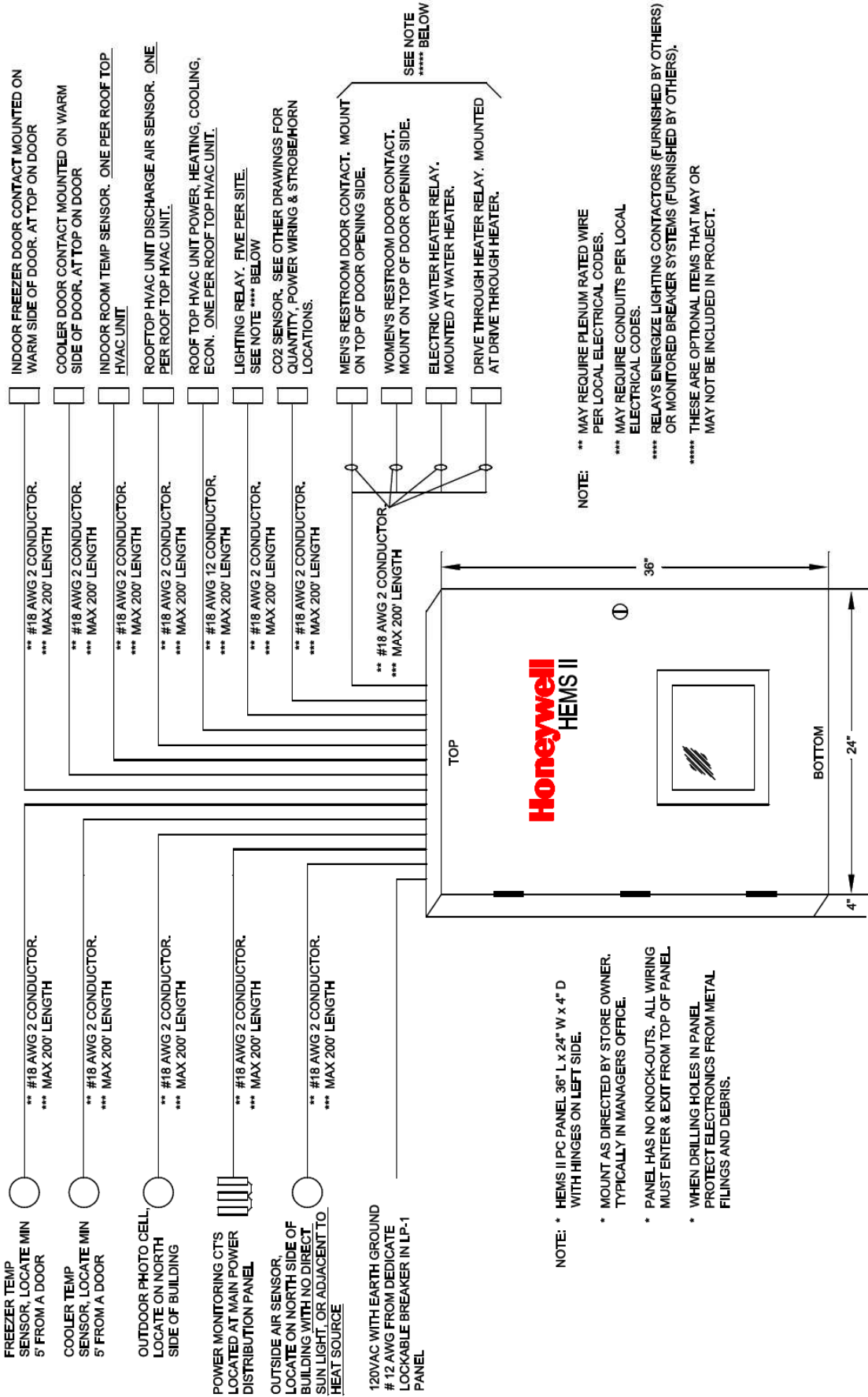


POWER MONITORING DETAIL  
 CT SIZE TO BE FIELD VERIFIED

### BILL OF MATERIALS

QTY	TAG#	Part #	Description	Manufacturer
1	DD2	Y 2230A 11U5	CO2 Gas Monitor and Alarm System	Honeywell
1	KWP-1	H8053-2400-4	Power Monitor 3 CT 2400amp Pulse Output	Vers Industries

## Optional CO2 System, Power Monitoring, & Drive Thru Heater Details



FREEZER TEMP SENSOR, LOCATE MIN 5' FROM A DOOR  
 \*\* #18 AWG 2 CONDUCTOR.  
 \*\*\* MAX 200' LENGTH

COOLER TEMP SENSOR, LOCATE MIN 5' FROM A DOOR  
 \*\* #18 AWG 2 CONDUCTOR.  
 \*\*\* MAX 200' LENGTH

OUTDOOR PHOTO CELL, LOCATE ON NORTH SIDE OF BUILDING  
 \*\* #18 AWG 2 CONDUCTOR.  
 \*\*\* MAX 200' LENGTH

POWER MONITORING CTS LOCATED AT MAIN POWER DISTRIBUTION PANEL  
 \*\* #18 AWG 2 CONDUCTOR.  
 \*\*\* MAX 200' LENGTH

OUTSIDE AIR SENSOR, LOCATE ON NORTH SIDE OF BUILDING WITH NO DIRECT SUN LIGHT, OR ADJACENT TO HEAT SOURCE  
 \*\* #18 AWG 2 CONDUCTOR.  
 \*\*\* MAX 200' LENGTH

120VAC WITH EARTH GROUND # 12 AWG FROM DEDICATE LOCKABLE BREAKER IN LP-1 PANEL

INDOOR FREEZER DOOR CONTACT MOUNTED ON WARM SIDE OF DOOR. AT TOP ON DOOR  
 \*\* #18 AWG 2 CONDUCTOR.  
 \*\*\* MAX 200' LENGTH

COOLER DOOR CONTACT MOUNTED ON WARM SIDE OF DOOR, AT TOP ON DOOR  
 \*\* #18 AWG 2 CONDUCTOR.  
 \*\*\* MAX 200' LENGTH

INDOOR ROOM TEMP SENSOR, ONE PER ROOF TOP HVAC UNIT  
 \*\* #18 AWG 2 CONDUCTOR.  
 \*\*\* MAX 200' LENGTH

ROOFTOP HVAC UNIT DISCHARGE AIR SENSOR, ONE PER ROOF TOP HVAC UNIT.  
 \*\* #18 AWG 2 CONDUCTOR.  
 \*\*\* MAX 200' LENGTH

ROOF TOP HVAC UNIT POWER, HEATING, COOLING, ECON. ONE PER ROOF TOP HVAC UNIT.  
 \*\* #18 AWG 12 CONDUCTOR.  
 \*\*\* MAX 200' LENGTH

LIGHTING RELAY, FIVE PER SITE.  
 SEE NOTE \*\*\*\* BELOW

CO2 SENSOR, SEE OTHER DRAWINGS FOR QUANTITY, POWER WIRING & STROBE/HORN LOCATIONS.  
 \*\* #18 AWG 2 CONDUCTOR.  
 \*\*\* MAX 200' LENGTH

MEN'S RESTROOM DOOR CONTACT, MOUNT ON TOP OF DOOR OPENING SIDE.  
 \*\* #18 AWG 2 CONDUCTOR.  
 \*\*\* MAX 200' LENGTH

WOMEN'S RESTROOM DOOR CONTACT, MOUNT ON TOP OF DOOR OPENING SIDE.  
 \*\* #18 AWG 2 CONDUCTOR.  
 \*\*\* MAX 200' LENGTH

ELECTRIC WATER HEATER RELAY, MOUNTED AT WATER HEATER.  
 \*\* #18 AWG 2 CONDUCTOR.  
 \*\*\* MAX 200' LENGTH

DRIVE THROUGH HEATER RELAY, MOUNTED AT DRIVE THROUGH HEATER.  
 \*\* #18 AWG 2 CONDUCTOR.  
 \*\*\* MAX 200' LENGTH

NOTE: \* HEMS II PG PANEL 36" L x 24" W x 4" D WITH HINGES ON LEFT SIDE.

\* MOUNT AS DIRECTED BY STORE OWNER, TYPICALLY IN MANAGERS OFFICE.

\* PANEL HAS NO KNOCK-OUTS, ALL WIRING MUST ENTER & EXIT FROM TOP OF PANEL.

\* WHEN DRILLING HOLES IN PANEL PROTECT ELECTRONICS FROM METAL FILINGS AND DEBRIS.

NOTE: \*\* MAY REQUIRE PLENUM RATED WIRE PER LOCAL ELECTRICAL CODES.

\*\*\* MAY REQUIRE CONDUITS PER LOCAL ELECTRICAL CODES.

\*\*\*\* RELAYS ENERGIZE LIGHTING CONTACTORS (FURNISHED BY OTHERS) OR MONITORED BREAKER SYSTEMS (FURNISHED BY OTHERS).

\*\*\*\*\* THESE ARE OPTIONAL ITEMS THAT MAY OR MAY NOT BE INCLUDED IN PROJECT.

SEE NOTE \*\*\*\*\* BELOW

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## System Architecture