

1 ENERGY MANAGEMENT SYSTEM REQUIREMENTS

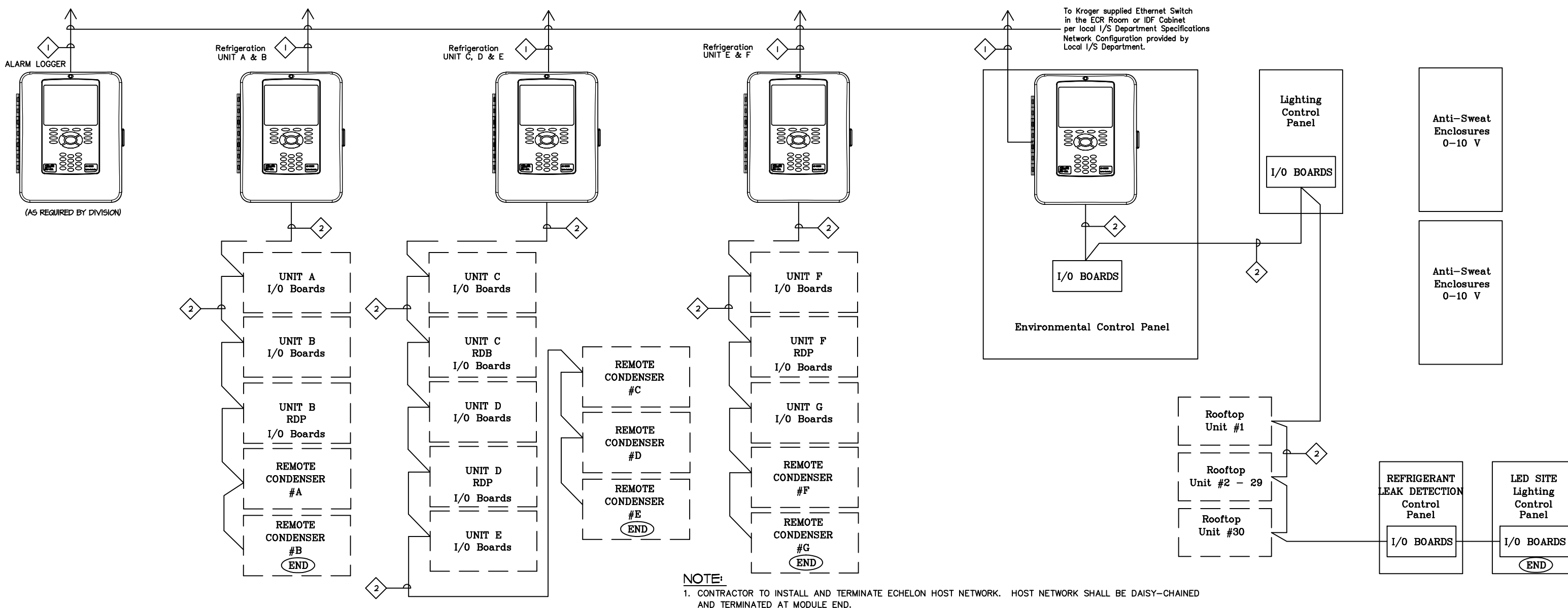
SCALE: NONE

REFRIGERANT LEAK DETECTION			
Kroger Item #	Description	Supplier Part ID	Qty
K-0005955	AK2 Enclosure for 1 row of 4 full size Modules Includes Power Supply and 1AK2 Comm Module 13x30x5	AK2108	1
K-0005947	AK2 Module Type AK2-XM 205A (BAI/BDQ)	08020010	2
K-0005980	150 VA Wall Mount Control Transformer - 24V	55-168	1
K-0052368	Bacharach 16CH HGM M2, 5x 1,000' Tubing, 10 High Flow Fittings, 2 & 3 way splitter connections with line end filter assembly, Machine room binder with technical bulletins and parts guide (Includes Filter Ends)	3015-KIT	1
K-0052369	4-20v Interface Card (Danfoss compatible)	3015-5152	1
K-0052371	Washdown J-box for filter ends.	3015-5748	4
K-0052370	Tubing- 1,000' roll (Not for NHS)	TG100	EXTRA IF REQ'D
K-0052372	Line End Filter Assembly (Includes Filter & tubing connection)	3015-3420	1
K-0052397	TYPE BLUE HORN STROBE MTWPB-2475W-NW	BLUE HORN STROBE	1 FOR OFFICES, 1 NEAR LDU, 1 PER MECH ROOM, 1 PER BOX (CODE MAY REQUIRE 2 PER BOX, INSIDE AND OUTSIDE)
LIGHTING CONTACTOR CONTROL			
Kroger Item #	Description	Supplier Part ID	Qty
K-0005936	Lighting Control Kit (includes: Enclosure w/ power supply ~One (1) RDO, Two (2) BA/BDQ w/ comm module and indoor photocell (photo-mas), overrided timer and terminal blocks)	08022595XKT	1
K-0005980	150 VA Wall Mount Control Transformer - 24V	55-168	1
LIGHTING DIMMING CONTROL			
Kroger Item #	Description	Supplier Part ID	Qty
K-0005955	AK2 Enclosure for 1 row of 4 full size Modules Includes Power Supply and 1AK2 Comm Module 13x30x5	AK2108	1
K-0005947	AK2 Module Type AK2-XM 205A (BAI/BDQ)	08020010	1
K-0023514	Danfoss AK-XM 103A, Control, Ext. Module, 4A/14AD	08020032	1
K-0037729	AK2 Light Ballast Dimmer Driver board (Boards signal to drive multiple ballasts)	08020270	2
K-0005980	150 VA Wall Mount Control Transformer - 24V	55-168	1
BUILDING CONTROL			
Kroger Item #	Description	Supplier Part ID	Qty
K-0005935	Environmental Control Kit (includes: AK2-SC255 Building Controller mounted on 22x28x6 enclosure w/ power supply & comm module, RDO, 8RO/BAI combo, outdoor humidistat / photocell / temp sensor, indoor temp sensor, V02 board)	08022590KT	1
K-0005981	AK2-SC255 Box V04/TYP2 / Alarm Logger	08022030	1 (IF REQ'D BY DIVISION)
K-0005967	Humidity sensor w/ indoor Temp. Sensor (Old Part Number EMH33-1)	08022171	2
K-0037731	Zone Temperature Sensor (Temp sensor on cover plate - for HVAC room temperature)	ZTP-2	1 PER RTU
K-0022867	Danfoss CO2 detector	LD002	2
K-0046573	AKS 21W Boiler Temp Probe (fits well with 1/2 NPT)	084N0032	1
K-0052690	AKA 222 Modbus repeater	08482240	3 TYP. (CASE CONTROL ONLY. NEEDED IF MORE THAN 32 CASE CONTROLLERS ON A COMM LOOP.)
K-0005978	No Sweet unit - 16 circuits	C20125416	2 (NOT NEEDED W/ CASE CONTROLS)
K-0005963	Box Temperature Probe Assembly	BXP2	1 PER BOX (NOT NEEDED W/ CASE CONTROLS)
K-0007856	DANFOSS only: Misc. Controls Equipment (per quote); Note: Quote No. must appear on PO.	PER QUOTE	USE FOR DANFOSS COMMISSIONING (CASE CONTROL STORES ONLY)

KEY NOTE	DESCRIPTION	WIRE TYPE ALL WIRING - PLENUM RATED
HAUX CONNECTION	BELDEN #100A #24-8 CATEGORY-SE CABLE OR APPROVED EQUAL	
ECHOLON NETWORK	HWY CITY #25000-9 #22-2 (UNSHIELDED, THISTED CABLE OR APPROVED EQUAL	
ANALOG / DIGITAL TEMPERATURE SENSOR / INPUT	BELDEN #02760 #8-2 SHIELDED CABLE OR APPROVED EQUAL	
DEPROST TERMINATION SENSOR	BELDEN #02760 #8-2 SHIELDED CABLE OR APPROVED EQUAL	
RELATIVE HUMIDITY/TEMP SENSOR	BELDEN #02460 #8-4 SHIELDED CABLE OR APPROVED EQUAL	
LIGHT LEVEL SENSOR / CO2 SENSOR	BELDEN #02460 #8-4 SHIELDED CABLE OR APPROVED EQUAL	
LIGHTING CONTROL	#14 THISTED PAIR PER LIGHTING CONTACTOR	
REFRIGERATION SOLENOID VALVE	#14 THISTED PAIR	
HVAC STAGING CONTROL	2-#8-10 MULTI-CONDUCTOR CABLE	
UNIT HEATER CONTROL	#14 THISTED PAIR	
LINE VOLTAGE IN CONDUIT	PER NEC 4 MANUFACTURER'S GUIDELINES	
0 - 10V SIGNAL	BELDEN #02760 #8-2 SHIELDED CABLE OR APPROVED EQUAL	
DRIVE HEALTHY	BELDEN #02760 #8-2 SHIELDED CABLE OR APPROVED EQUAL	
DRIVE ENABLE	BELDEN #02460 #8-4 SHIELDED CABLE OR APPROVED EQUAL	
REFRIGERATION TRANSDUCER	BELDEN #02460 #8-4 SHIELDED CABLE OR APPROVED EQUAL	

3 ENERGY MANAGEMENT WIRING SCHEDULE

SCALE: NONE



NOTE:  
1. CONTRACTOR TO INSTALL AND TERMINATE ECHOLON HOST NETWORK. HOST NETWORK SHALL BE DASHY-CHAINED AND TERMINATED AT MIDDLE END.

6 GENERAL SYMBOLS

SCALE: NONE

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
DA	REFRIGERATION CIRCUIT DESIGNATION	DA	DOOR ALARM
△	DEPROST TERMINATION THERMOSTAT	ITS	IMMERSABLE TEMPERATURE SENSOR
◇	WIRING KEY NOTE SYMBOL	25	(2) INTERNAL RTU HEATED AIR TEMPERATURE SENSORS
P	ANALOG TEMPERATURE SENSOR	F	AIR FLOW / SAIL PROTECTING SWITCH
Q	ANALOG ZONE TEMPERATURE SENSOR (HVAC)	CO	(1) COMPRESSOR PROOF
RS	ANALOG TEMPERATURE / RELATIVE HUMIDITY SENSOR	CP	(2) COMPRESSOR PROOFS
LLS	INDOOR LIGHT LEVEL SENSOR	SS	SUCTON STOP SOUNDED
△(RS)LLS	ANALOG TEMPERATURE / OUTSIDE HUMIDITY / OUTDOOR LIGHT LEVEL	EPN	EVAPORATOR PRESSURE REGULATOR
LP	REFRIGERANT LEAK DETECTION FILTER DEVICE	BP	BOX TEMPERATURE PROBE
PH	PHASE MONITOR	HA	HUMID AIR TEMP SENSOR
CS	SMOKE DETECTOR	MO	MOMENTARY OVER RIDE BUTTON
LI	CLEAN POWER FIELD INSTALLED BY EC	HO	HORN / STROBE UNIT
CO	CO2 SENSOR		

- THE CONTROLS INSTALLER SHALL BE RESPONSIBLE FOR SUPERVISING THE COMPLETE INSTALLATION OF THE ENERGY MANAGEMENT SYSTEM (EMS). THIS SHALL INCLUDE, BUT NOT BE LIMITED TO THE START-UP, TUNING AND PROGRAMMING ADJUSTMENT OF THE ENTIRE DANFOSS CONTROL SYSTEM INCLUDING REFRIGERATION, HVAC AND LIGHTING CONTROL.
- THE CONTROLS INSTALLER SHALL PROVIDE ALL COORDINATION BETWEEN THE VARIOUS TRADES INCLUDING REFRIGERATION, HVAC AND ELECTRICAL TO ENSURE THAT ALL EQUIPMENT IS PROPERLY CONTROLLED AND THAT ALL CONTROL POINTS HAVE BEEN APPROPRIATELY LOCATED. THIS SHALL INCLUDE VERIFYING ALL HVAC EQUIPMENT TO BE CONTROLLED VERIFYING ALL STAGES OF HEATING, COOLING, HEAT RECLAIM TWO SPEED FANS, ETC. AND ENSURING THAT ADEQUATE SENSORS HAVE BEEN SUPPLIED TO ENABLE PROPER CONTROL OF SAME.
- UPON COMPLETION OF THE EMS INSTALLATION, THE CONTROLS INSTALLER SHALL PROVIDE ACCURATE AND COMPLETE AS-BUILT DOCUMENTATION TO THE OWNER AND THE ENGINEER. THIS DOCUMENTATION MUST INCLUDE AN 8'0" x 11' PLAN INDICATING THE LOCATIONS OF ALL OF THE PROBES, SENSORS, RELAYS, REMOTE I/O BOARDS, CONTROLLERS AND REFRIGERANT LEAK SENSORS FOR THE ENTIRE EMS INSTALLATION INCLUDING REFRIGERATION, HVAC AND LIGHTING. THE EMS-C MUST ENSURE THAT ALL HVAC SYSTEMS ARE OPERATING CORRECTLY AND PROVIDE ANY FINE TUNING OF THE SYSTEM THAT IS REQUIRED.
- ONCE THE EMS CONTROL SYSTEM HAS BEEN INSTALLED AND THE HVAC SYSTEMS ARE READY TO BE BROUGHT ON LINE, THE HVAC-C MUST PROVIDE THE NECESSARY SUPERVISION FOR START-UP OF THE CONTROL SYSTEM AND COORDINATE START-UP WITH CONTROLS INSTALLER OR SITE. THE HVAC-C MUST ENSURE THAT ALL THE HVAC SYSTEMS ARE OPERATING CORRECTLY AND PROVIDE ANY FINE TUNING OF THE SYSTEM THAT IS REQUIRED.
- THIS DRAWING IS DIAGNOSTIC IN NATURE AND IS INTENDED TO CONVEY INSTALLATION REQUIREMENTS REGARDING THE ENERGY MANAGEMENT CONTROL SYSTEM. THIS DRAWING IS NOT TO BE USED FOR CLARIFICATION PURPOSES ONLY, DO NOT SCALE. REFER TO RESPONSIBILITY CHARTS FOR FINAL EQUIPMENT AND INSTALLATION REQUIREMENTS.
- REFRIGERATION CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ENERGY MANAGEMENT ISSUES REGARDING REFRIGERATED CASES, EVAPORATOR COILS, REFRIGERATION CONDENSERS, PREP ROOM REFRIGERATION, COMPRESSOR BACKS AND HOT WATER RECLAIM. IT SHALL BE THE RESPONSIBILITY OF THE REFRIGERATION CONTRACTOR TO ENSURE A FULLY OPERATIONAL SYSTEM. REFER TO DETAIL K2 THIS SHEET FOR MORE INFORMATION REGARDING REFRIGERATION REQUIREMENTS.
- REFER TO REFRIGERATION LEGENDS FOR INFORMATION REGARDING FIXTURES, WALK-IN COOLERS/FREEZERS, EVAPORATORS, CONDENSERS AND RECLAIM REQUIREMENTS.
- REFER TO DANFOSS INSTRUCTION MANUALS FOR INFORMATION REGARDING CONTROL COMPONENTS (I.E. INPUT / OUTPUT BOARDS, ELECTRICAL REQUIREMENTS, ETC.)

- FOR REFERENCE ONLY -  
CONSTRUCTION GUIDELINES

2 TAKE-OFF SHEET

SCALE: NONE

4 I/O NETWORK DETAIL

SCALE: NONE

7 ENERGY MANAGEMENT NOTES

SCALE: NONE

BIDS AND PERMITS 12/13/2023  
Issued for: 80% OWNER REVIEW 10/28/2023

PROPOSED MINOR INTERIOR REMODEL FOR:

**Kroger**

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ENERGY MGMT RISER AND NOTES

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