

HUSSMANN®



P/N 3047754_B

April 2018

AK-CC 210

CONTROLLER
RETROFIT

REPLACEMENT FOR
SAFENET III CONTROLLERS

Q1SSM4S, Q1SSM6S, Q1SSM8S
Q2SSM4S, Q2SSM6S, Q2SSM8S
Q3SSM4S, Q3SSM6S, Q3SSM8S
Q3SS6S

⚠ WARNING

— LOCK OUT / TAG OUT —

To avoid serious injury or death from electrical shock, always disconnect the electrical power at the main disconnect when servicing or replacing any electrical component. This includes, but is not limited to, such items as doors, lights, fans, heaters, and controllers.

INSTRUCTION RETROFIT CONT Q CASES

RETROFIT PARTS CONTROL AK-CC 210

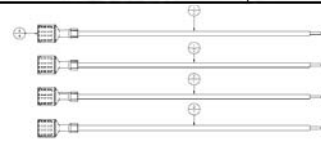
VOLTAGE: 115V

Q1	Q2	Q3
Q1SSM4S,Q1SSM6S	Q2SSM4S	Q3SSM4S



0523087 CTRL AKCC210 115V/60HZ
(P/N includes sensors)

ITEM	DESCRIPTION	COLOR	QTY
1	CABLE GA. 14 LENGHT 5 IN	BLACK	2
2	CABLE GA. 14 LENGHT 5 IN	WHITE	1
3	CABLE GA. 14 LENGHT 5 IN	BLUE	1
4	TERMINAL 3-520107-2		4



3040982 HARNESS-CONT ADAPTER 115V

P/N 3046539
SFW 3046552

P/N 3046547

3046547 - LABEL-CONT DANFOSS 115V Q1 (PASTED ON THE CONTROL)

3046552 - LABEL-PRMTR DANFOSS Q1

RETROFIT ASSY Q1 P/N: 3046539

P/N 3046534
SFW 3046549

P/N 3046542

3046542 - LABEL-CONT DANFOSS 115V Q2 (PASTED ON THE CONTROL)

3046549 - LABEL-PRMTR DANFOSS Q2

RETROFIT ASSY Q2 P/N: 3046534

P/N 3046537
SFW 3046551

P/N 3046545

3046545 - LABEL-CONT DANFOSS 115V Q3 (PASTED ON THE CONTROL)

3046551 - LABEL-PRMTR DANFOSS Q3

RETROFIT ASSY Q3 P/N: 3046537

INSTALLATION TOOL LIST

- Phillips-head screw driver
- Wire cutters
- Silicone sealant
- Cable ties

RETROFIT PARTS CONTROL AK-CC 210

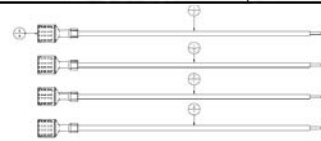
VOLTAGE: 230V

Q1	Q2	Q3
Q1SSM8S	Q2SSM6S, Q2SSM8S	Q3SSM6S, Q3SSM8S, Q3SS6S



0524077 CTRL AKCC210 230V/60HZ
(P/N includes sensors)

ITEM	DESCRIPTION	COLOR	QTY
1	CABLE GA. 14 LENGHT 5 IN	BLACK	2
2	CABLE GA. 14 LENGHT 5 IN	WHITE	1
3	CABLE GA. 14 LENGHT 5 IN	BLUE	1
4	TERMINAL 3-520107-2		4



3032985 HARNESS-CONTROLLER ADAPTER

P/N 3046540
SFW 3046552

P/N 3046548

3046548 - LABEL-CONT
DANFOSS 220V Q1 (PASTED
ON THE CONTROL)

3046552 - LABEL-PRMTR
DANFOSS Q1

RETROFIT ASSY Q1 P/N: 3046540

P/N 3046535
SFW 3046549

P/N 3046543

3046543 - LABEL-CONT
DANFOSS 220V Q2 (PASTED
ON THE CONTROL)

3046549 - LABEL-PRMTR
DANFOSS Q2

RETROFIT ASSY Q1 P/N: 3046535

P/N 3046538
SFW 3046551

P/N 3046546

3046546 - LABEL-CONT
DANFOSS 220V Q3 (PASTED
ON THE CONTROL)

3046551 - LABEL-PRMTR
DANFOSS Q3

RETROFIT ASSY Q1 P/N: 3046538

INSTALLATION TOOL LIST

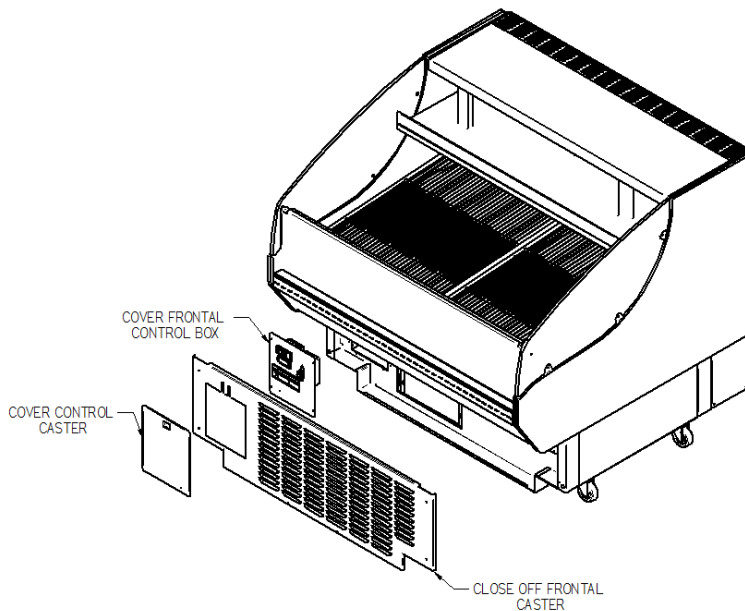
- Phillips-head screw driver
- Wire cutters
- Silicone sealant
- Cable ties

REPLACING CONTROLLER

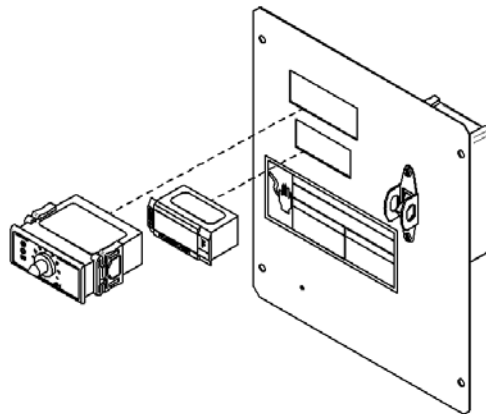
The AK-CC 210 Controller is pre-programmed for this application. However, we recommend verifying the program by confirming the correct set-point. The setpoint verification procedure is on the page 8.

1. Disconnect all power from the case !!!

2 . Remove the cover control caster, close off frontal caster & the cover frontal control box, to have access to remove the Safenet III control.



3 . Disconnect from control and display Safenet III harness and sensors and remove them from the cover frontal control box.



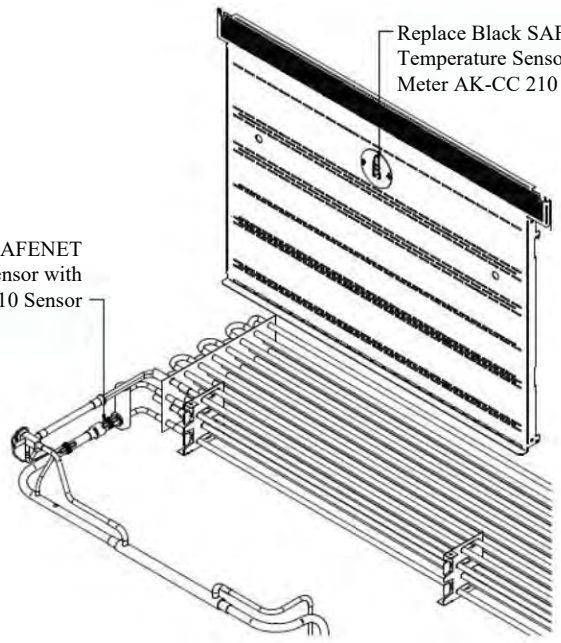
3. Replace sensors.

Note: The existing sensors are NOT compatible with the AK-CC 210 Control and must be replaced with the sensors provided in the retrofit kit.

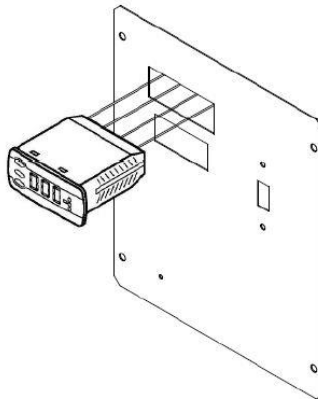
DO NOT SPLICE SENSOR WIRES !!

Replace Yellow SAFENET Defrost Termination Sensor with 1.5 Meter AK-CC 210 Sensor

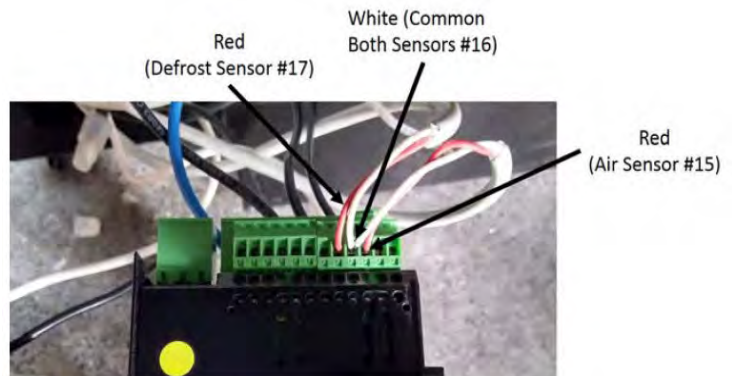
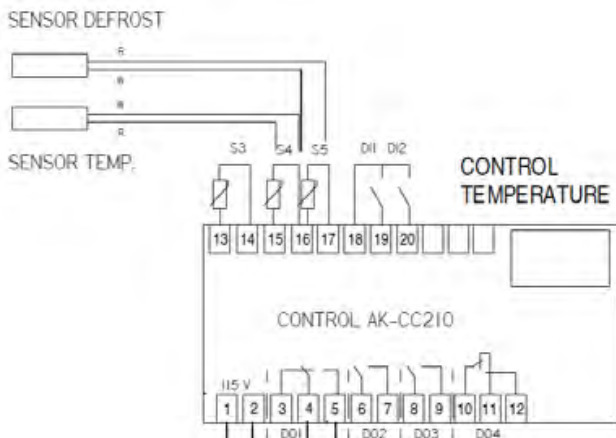
Replace Black SAFENET Temperature Sensor with 3.5 Meter AK-CC 210 Sensor



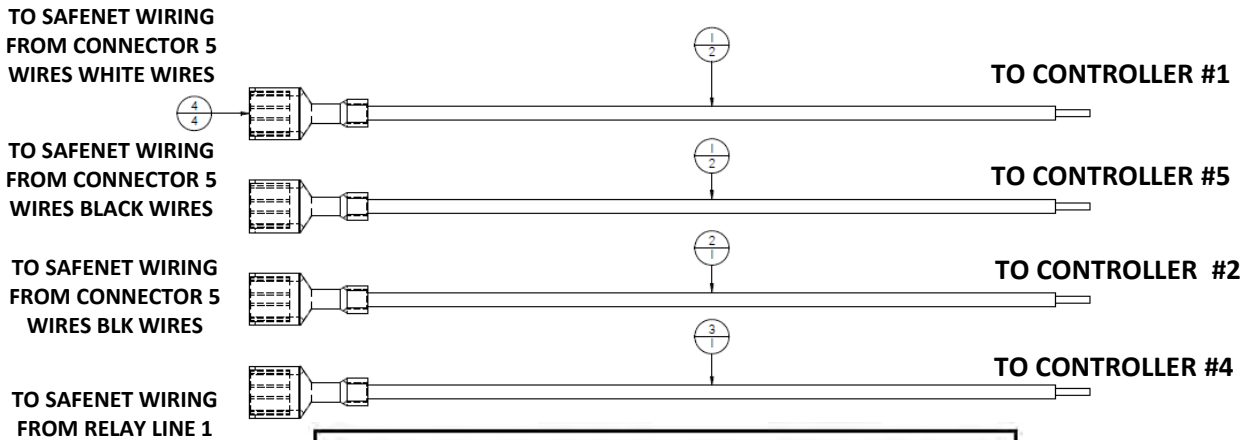
4. Insert new Danfoss controller to electrical box cover.



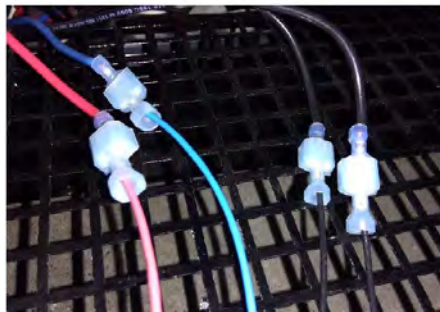
5. Sensors to Controller connections.



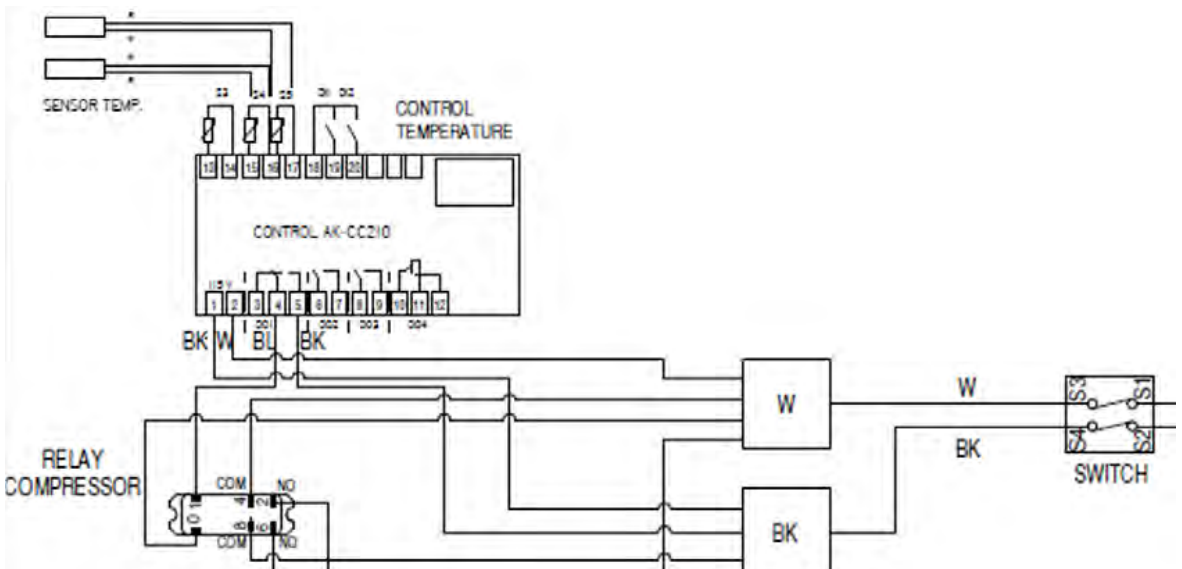
6. Connect Danfoss Controller Harness P/N 3032985 to Safenet Wiring



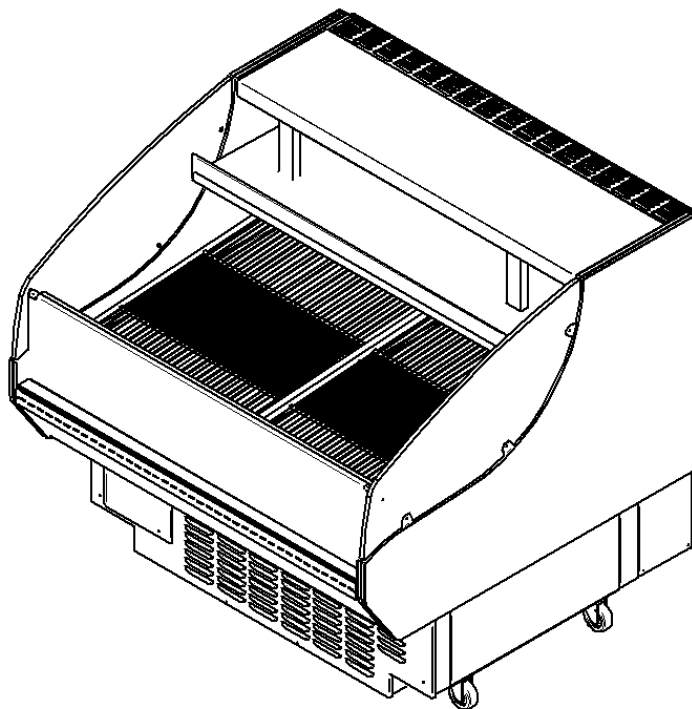
ITEM	DESCRIPTION	COLOR	QTY
1	CABLE GA. 14 LENGHT 5 IN	BLACK	2
2	CABLE GA. 14 LENGHT 5 IN	RED	1
3	CABLE GA. 14 LENGHT 5 IN	BLUE	1
4	TERMINAL 3-520107-2		4



7. Verify Blue wire connection to the relay line #1.



7. Close control box and reinstall the Closeoff frontal caster and Cover control caster.



START UP

The new controller is preprogrammed and should not require adjustments. You are now ready to start the unit and verify the set-points.

- Apply power to the unit (Fans should start immediately and compressor should start in a few seconds).
- Confirm the setpoint by following “Set temperature “steps”. The preprogrammed setpoint is 23.2°F for Q1 cases, 22 °F for Q2 cases & 21°F for Q3 cases.

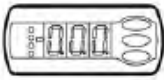
To see Parameters info please refer to document P/N 3046552 for Q1 cases, 3046549 for Q2 cases, 3046551 for Q3 cases.

- Go to “Light emitting diodes” and verify if the display is not showing alarms.

Operation

Display

The values will be shown with three digits, and with a setting you can determine whether the temperature are to be shown in °C or in °F.



Light-emitting diodes (LED) on front panel

HACCP = HACCP function is active

The other LED's on the front panel will light up when the belong- ing relay is activated.



- = Refrigeration
- = Defrost
- = Fan running

The light-emitting diodes will flash when there is an alarm.

In this situation you can download the error code to the display and cancel/sign for the alarm by giving the top knob a brief push.

The Buttons

When you want to change a setting, the upper and the lower buttons will give you a higher or lower value depending on the button you are pushing. But before you change the value, you must have access to the menu. You obtain this by pushing the upper button for a couple of seconds - you will then enter the column with parameter codes. Find the parameter code you want to change and push the middle buttons until value for the parameter is shown. When you have changed the value, save the new value by once more pushing the middle button.

Examples

Set menu

1. Push the upper button until a parameter r01 is shown
2. Push the upper or the lower button and find that parameter you want to change
3. Push the middle button until the parameter value is shown
4. Push the upper or the lower button and select the new value
5. Push the middle button again to freeze the value.

Cutout alarm relay / receipt alarm/see alarm code

- Push short the upper button

If there are several alarm codes they are found in a rolling stack. Push the uppermost or lowermost button to scan the rolling stack.

Set temperature

1. Push the middle button until the temperature value is shown
2. Push the upper or the lower button and select the new value
3. Push the middle button again to conclude the setting.

Reading the temperature at defrost sensor

- Push short the lower button

Manual start or stop of a defrost

- Push the lower button for four seconds. (Though not for application 4).

Defrost

During defrost a -d- is shown in the display. This view will continue up till 15 min. after the cooling has resumed.

However the view of -d- will be discontinued if:

- The temperature is suitable within the 15 minutes
- The regulation is stopped with "Main Switch"
- A high temperature alarm appears

Alarms

The controller can give alarm in different situations. When there is an alarm all the light-emitting diodes (LED) will flash on the controller front panel, and the alarm relay will cut in.

Upper alarm limit

Here you set when the alarm for high temperature is to start. The limit value is set in °C (absolute value). The limit value will be raised during night operation. The value is the same as the one set for night setback, but will only be raised if the value is positive.

The limit value will also be raised in connection with reference displacement r39.

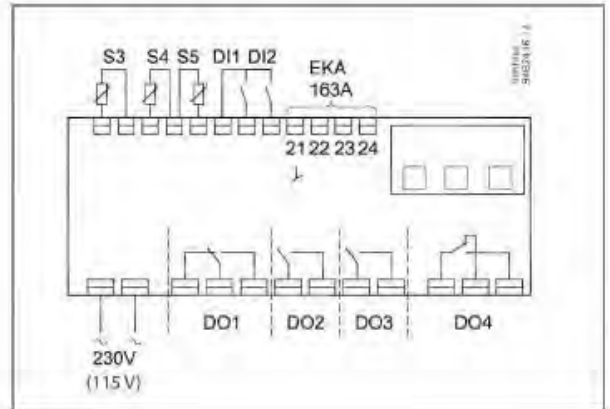
Lower alarm limit

Here you set when the alarm for low temperature is to start. The limit value is set in °C (absolute value). The limit value will also be raised in connection with reference displacement r39.

Signal to the alarm thermostat

Here you have to define the ratio between the sensors which the alarm thermostat has to use. S3, S4 or a combination of the two. With setting 0% only S3 is used. With 100% only S4 is used.

Connections



Sensors

S3 and S4 are thermostat sensors.

A setting determines whether S3 or S4 or both of them are to be used.

S5 is a defrost sensor and is used if defrost has to be stopped based on temperature.

Digital On/Off signals

A cut-in input will activate a function. The possible functions are described in menus o02 and o37.

External display

Connection of display type EKA 163A (EKA 164A).

Relays

The general uses are mentioned here. See also page 6 where the different applications are shown.

- DO1: Refrigeration. The relay will cut in when the controller demands refrigeration
- DO2: Defrost. The relay will cut in when defrost is in progress

DO3: For either fans or refrigeration 2

Fans: The relay will cut in when the fans have to operate
Refrigeration 2: The relay will cut in when refrigeration step 2 has to be cut in

DO4: For either alarm, rail heat, light or hotgas defrost

Alarm: Cf. diagram. The relay is cut in during normal operation and cuts out in alarm situations and when the controller is dead (de-energised)

Rail heat: The relay cuts in when rail heat is to operate

Light: The relay cuts in when the light has to be switched on
Hotgas defrost: See diagram. The relay will cut out when defrost has to be done

Data communication

The controller is available in several versions where data communication can be carried out with one of the following systems: MOD-bus or LON-RS485.

If data communication is used, it is important that the installation of the data communication cable is performed correctly.

See separate literature No. RC8AC...

Electric noise

Cables for sensors, DI inputs and data communication **must** be kept separate from other electric cables:

- Use separate cable trays
- Keep a distance between cables of at least 10 cm
- Long cables at the DI input should be avoided

CONTROL DATA

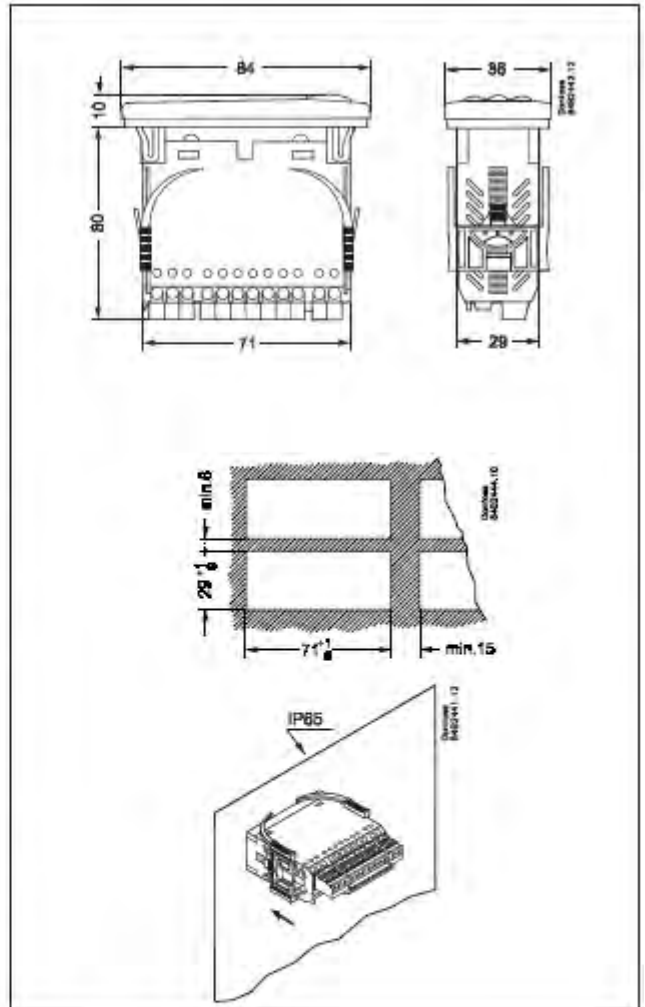
Data

Supply voltage	230V a.c. +10/-15 % 2.5 VA, 50/60 Hz		
Sensors 3 pcs off either	Pt 1000 or PTC 1000 or NTC-M2020 (5000 ohm / 25°C)		
Accuracy	Measuring range	-60 to +99°C	
	Controller	±1 K below -35°C ±0.5 K between -35 to +25°C ±1 K above +25°C	
	Pt 1000 sensor	±0.3 K at 0°C ±0.005 K per grad	
Display	LED, 3-digits		
External display	EKA 163A		
Digital inputs	Signal from contact functions Requirements to contacts: Gold plating Cable length must be max. 15 m Use auxiliary relays when the cable is longer		
Electrical connection cable	Max. 1,5 mm ² multi-core cable		
Relays*		CE (250 V a.c.)	UL *** (240 V a.c.)
	DO1. Refrigeration	8 (6) A	10 A Resistive 5FLA, 30LRA
	DO2. Defrost	8 (6) A	10 A Resistive 5FLA, 30LRA
	DO3. Fan	6 (3) A	6 A Resistive 3FLA, 18LRA 131 VA Pilot duty
	DO4. Alarm	4 (1) A Min. 100 mA**	4 A Resistive 131 VA Pilot duty
Environments	0 to +55°C, During operations		
	-40 to +70°C, During transport		
	20 - 80% Rh, not condensed No shock influence / vibrations		
Density	IP 65 from front. Buttons and packing are imbedded in the front.		
Escapement reserve for the clock	4 hours		
Approvals	EU Low Voltage Directive and EMC demands re CE-marking complied with LVD tested acc. EN 60730-1 and EN 60730-2-9, A1, A2 EMC tested acc. EN61000-6-3 and EN 61000-6-2		

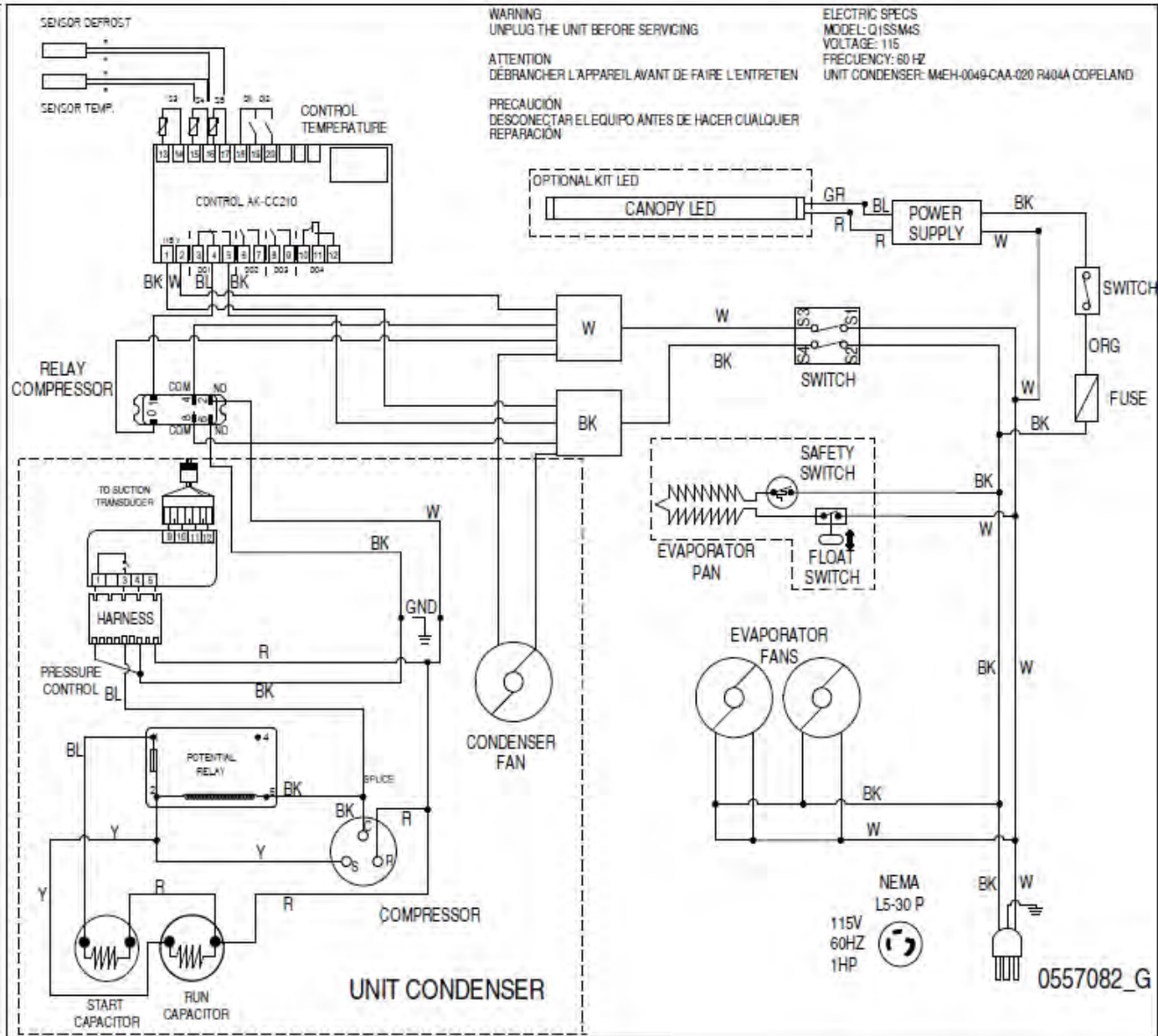
* DO1 and DO2 are 16 A relays. The mentioned 8 A can be increased up to 10 A, when the ambient temperature is kept below 50°C. DO3 and DO4 are 8 A relays. Max. load must be kept.
** Gold plating ensures make function with small contact loads
*** UL-approval based on 30000 couplings.

Capacitive load

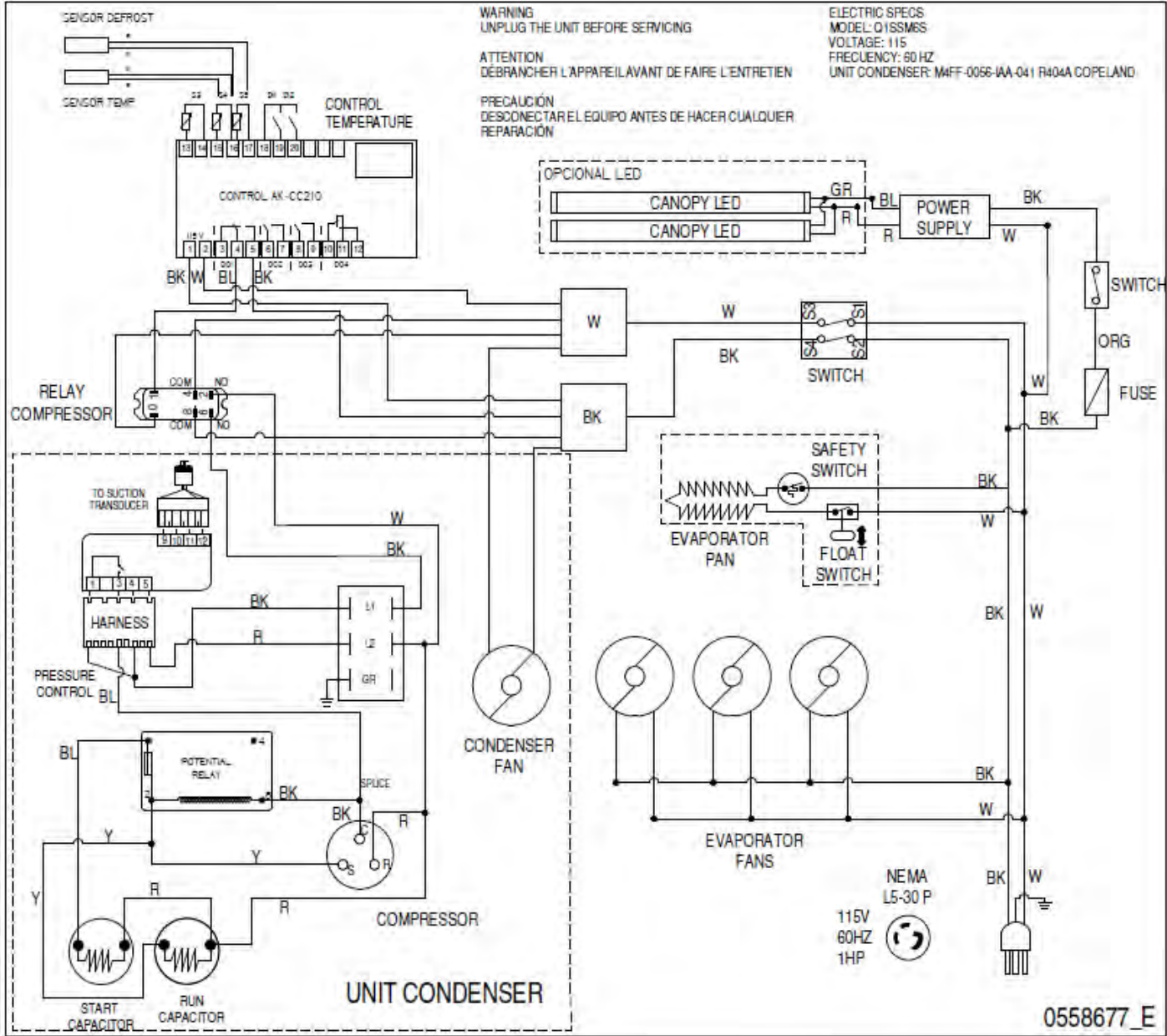
The relays cannot be used for the direct connection of capacitive loads such as LEDs and on/off control of EC motors.
All loads with a switch mode power supply must be connected with a suitable contactor or similar.



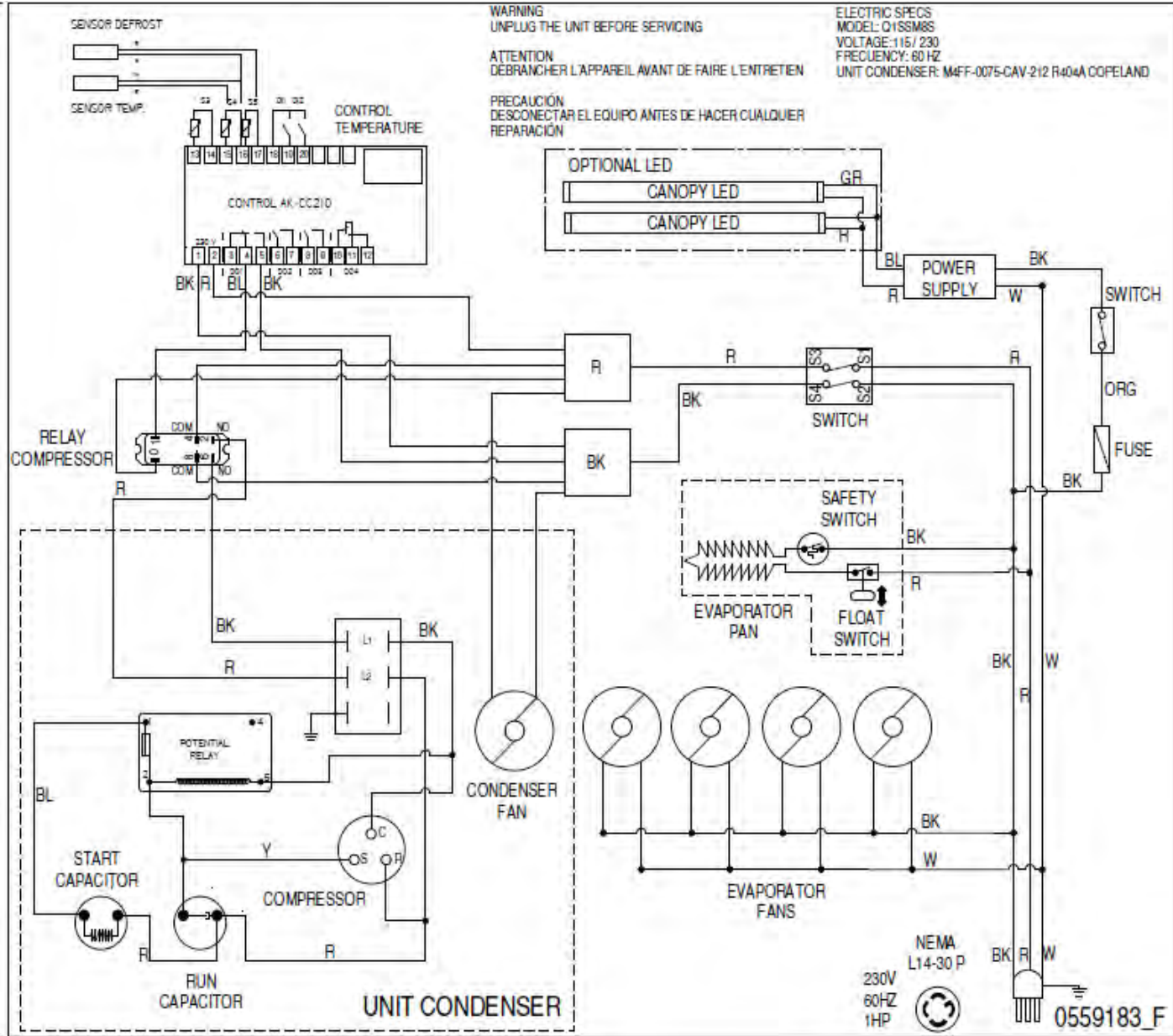
Wiring Diagram Q1SSM4S



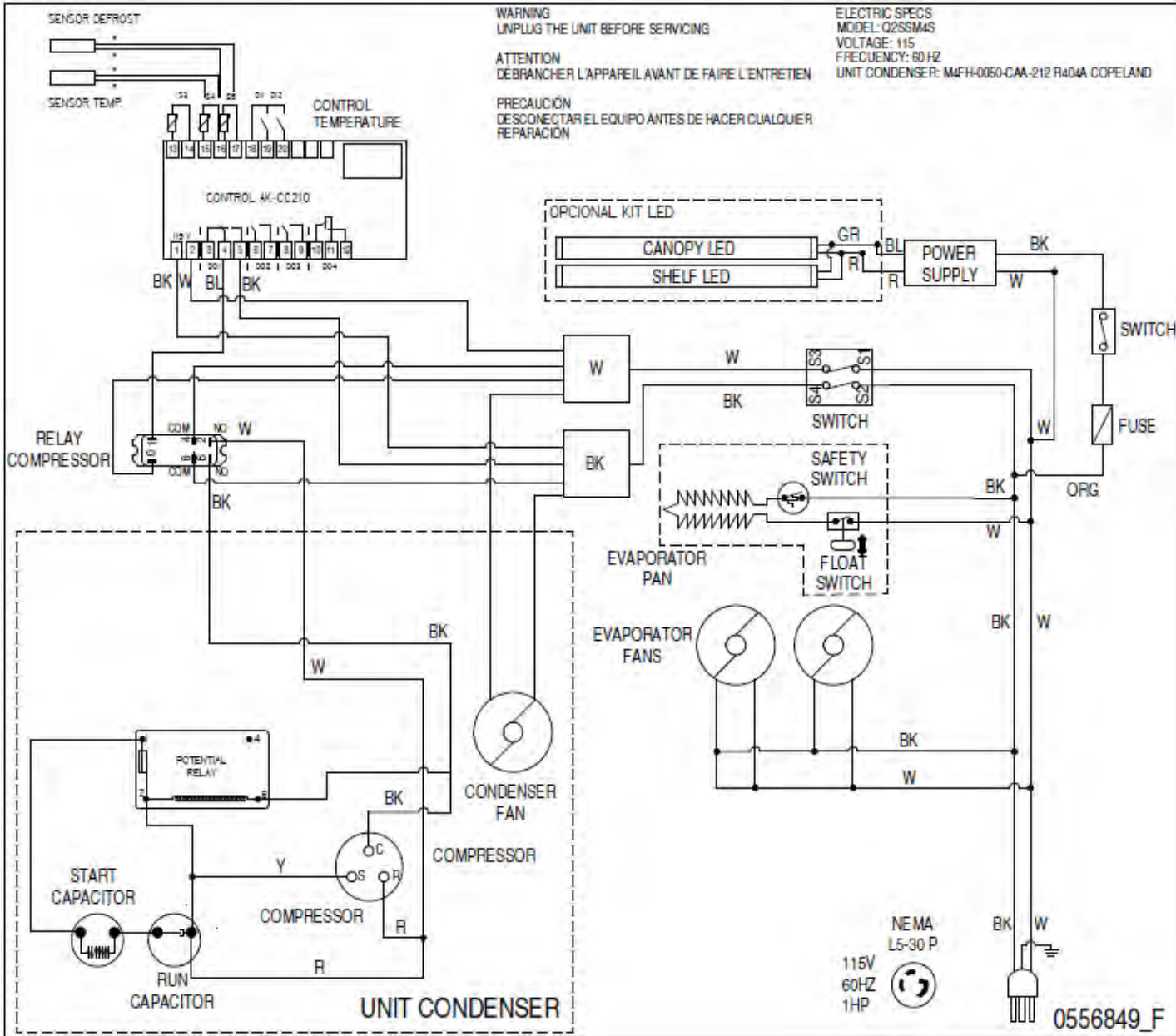
Wiring Diagram Q1SSM6S



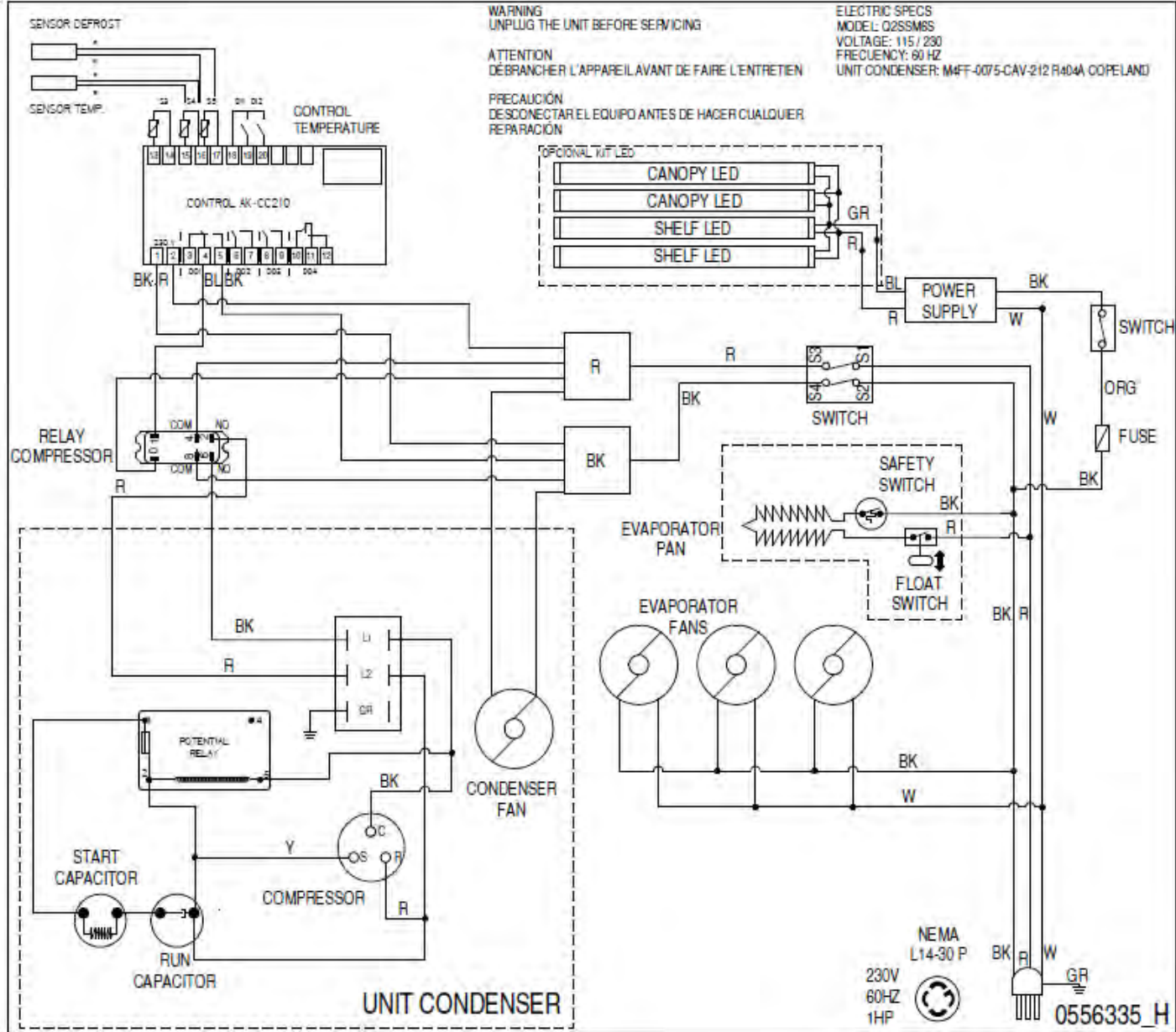
Wiring Diagram Q1SSM8S



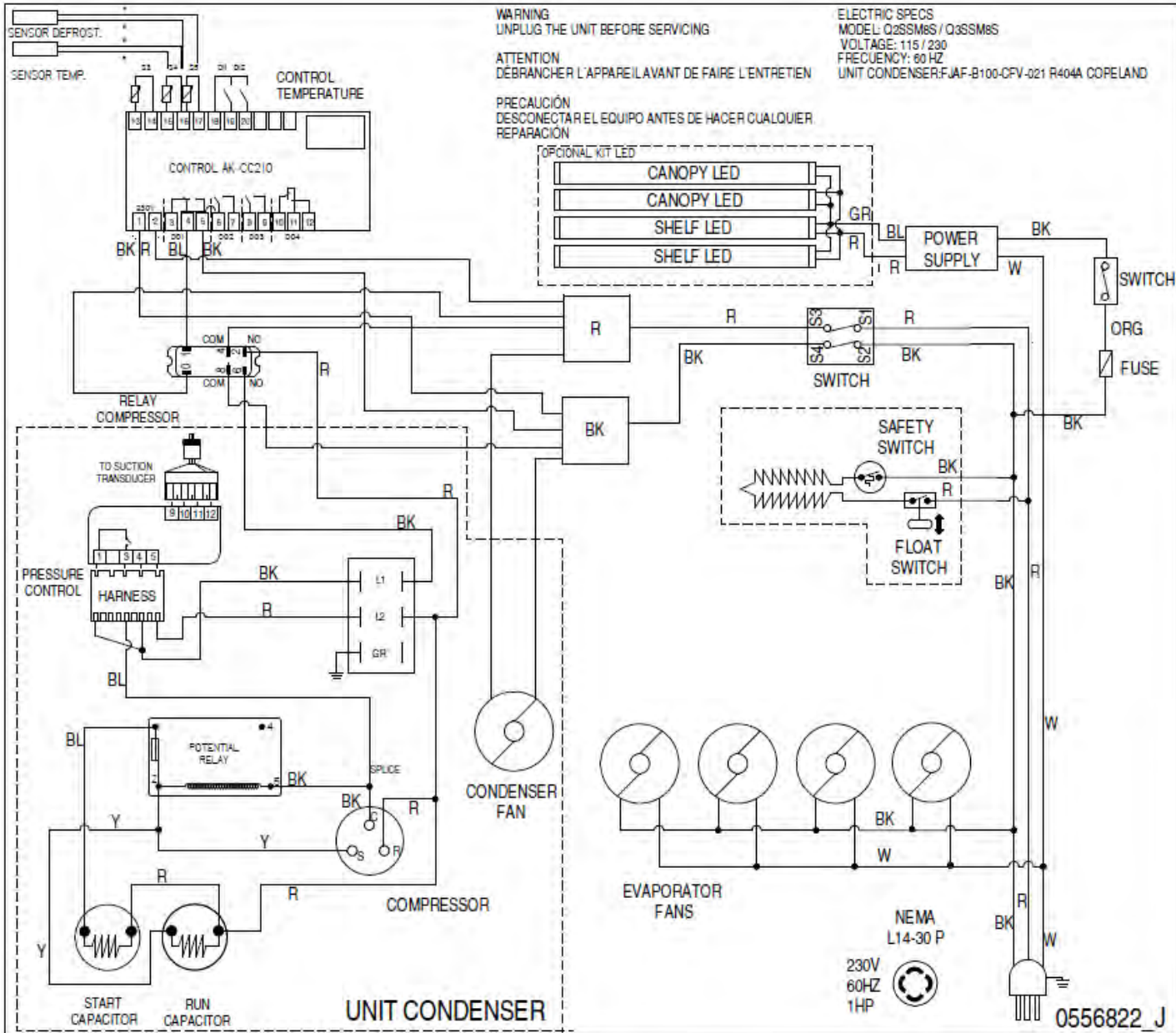
Wiring Diagram Q2SSM4S



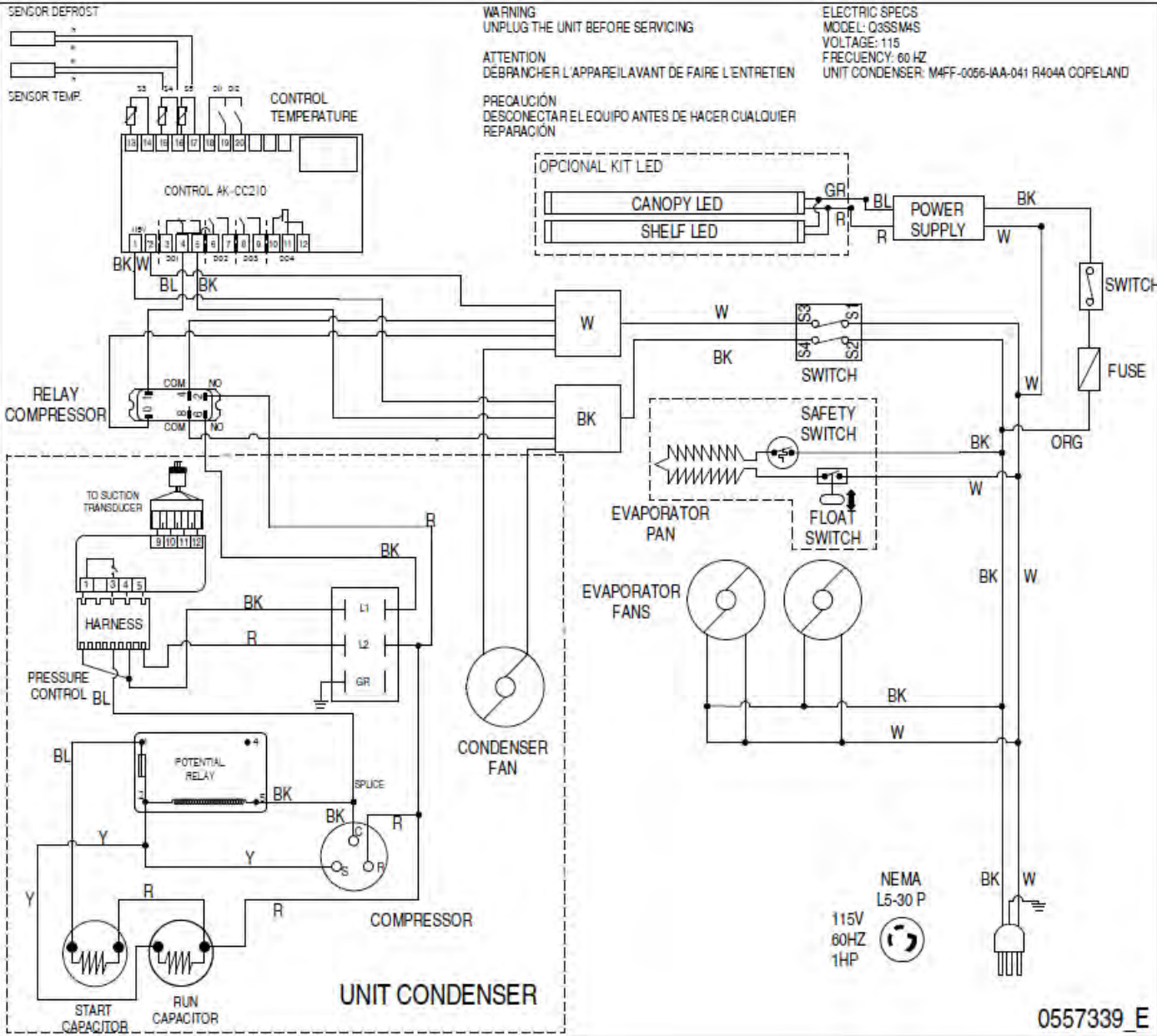
Wiring Diagram Q2SSM6S



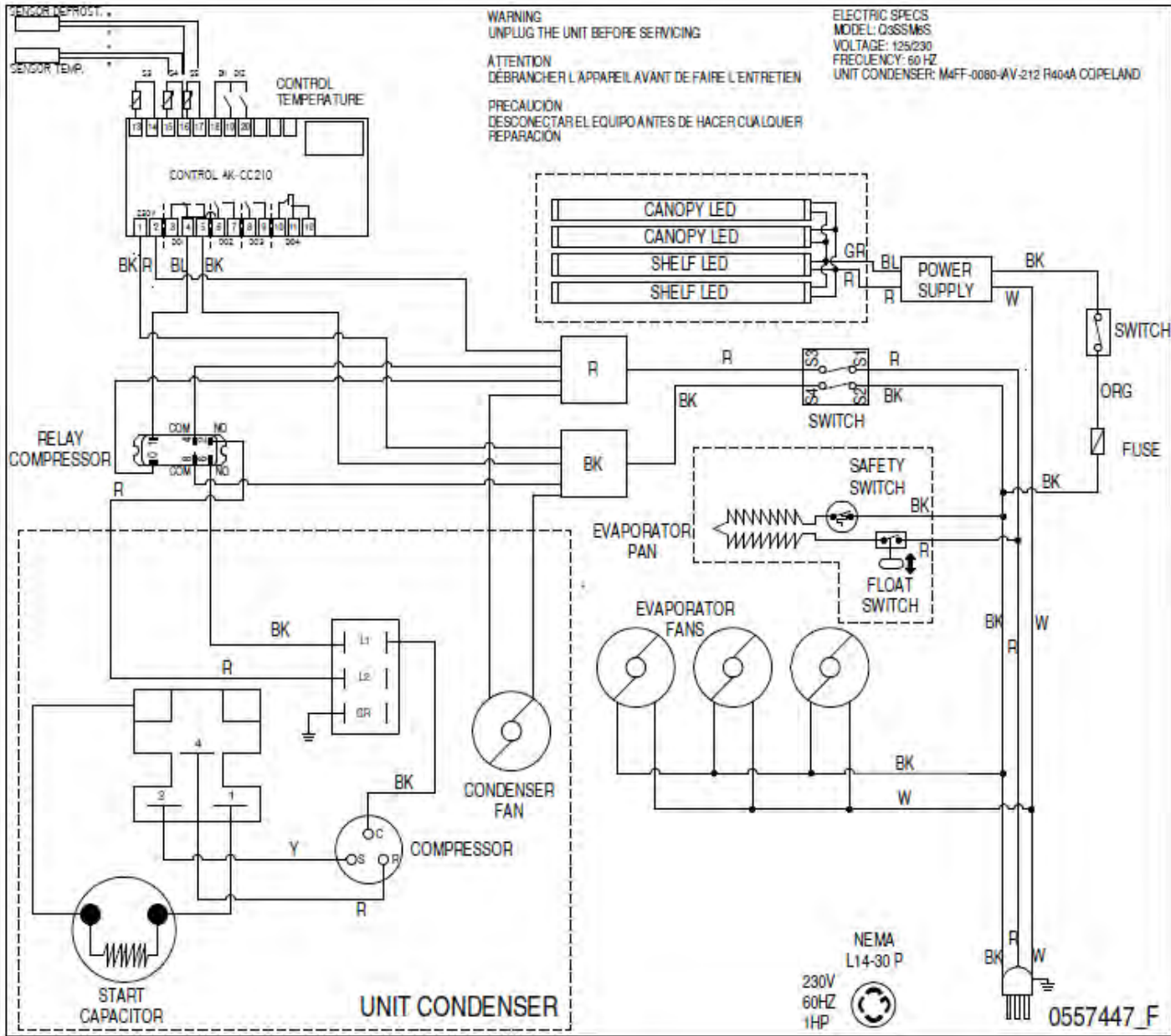
Wiring Diagram Q2SSM8S



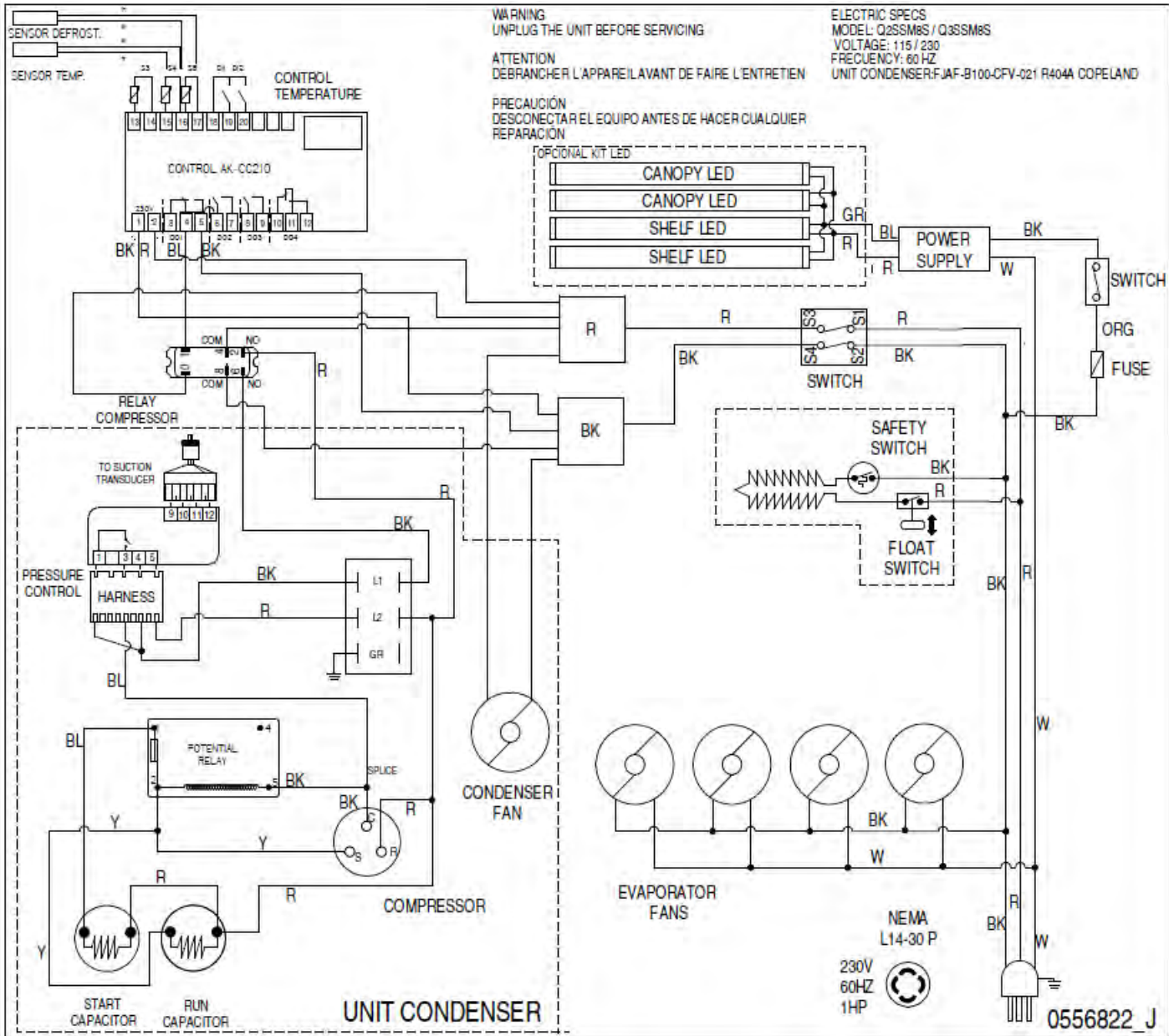
Wiring Diagram Q3SSM4S



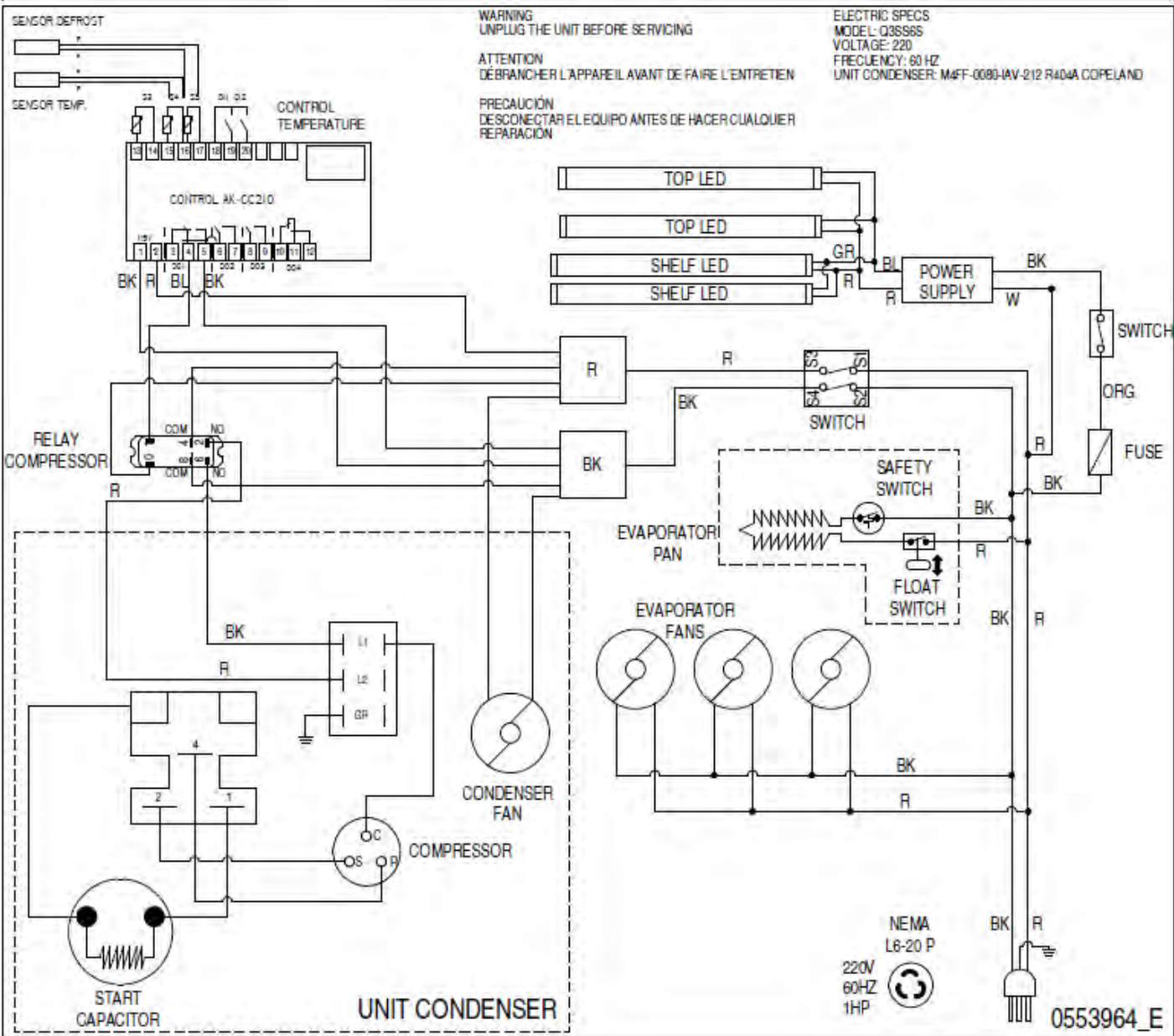
Wiring Diagram Q3SSM6S



Wiring Diagram Q3SSM8S



Wiring Diagram Q3SS6S





HUSSMANN[®]

**To obtain warranty information
or other support, contact your
Hussmann representative.
Please include the model and
serial number of the product.**

Hussmann Corporation, Corporate Headquarters: Bridgeton, Missouri, U.S.A. 63044-2483 01 October 2012