

NATIONAL REFRIGERATION

PROGRAM SPECIFICATIONS AND OPERATING INSTRUCTIONS

1079817

SmartVap™ Electronically Controlled System

Model: (Part # 1090200)

Electrical Power: 115/1/60, 208-230/1/60

Electronic Room Thermostat & Defrost Control



Factory Settings:

This Defrost/Temperature control has been COMPLETELY pre-set at the factory for Electric Defrost mode. Room temperature default factory setting is -10°F . Simply re-adjust if different room temperature setting is required. If desired, clock can be set to display the current time (24 hour mode). It is recommended to retain all other factory settings initially, and re-adjust accordingly later, if required.

Also refer to control wiring diagrams on following pages.

Note: After power - up, allow 15 seconds for display to activate

Electric Defrost Mode Program

Default DISPLAY shows actual room (zone) temperature:

Display shows:	Range:
"-10°F"	-45°F to 99°F

Note: To gain access to control buttons, pry up cover (use slot at bottom of cover)

"Time" Button Functions

To view TIME settings (in sequence listed below), push and release the "Time" button

To adjust settings, hold down the "Time" button while pushing "Up" or "Down" buttons.

Function	Display Shows:	Adjustment Range:	Factory Default Setting:
24 hour time of day	"24:00"	00:00 to 24:00	NA
Number of defrosts per day (24 hrs)	"nd / 04"	nd01 to 12	nd / 04
First defrost start time	"def 01 / 09:00"	00:00 to 24:00	09:00
Maximum defrost duration	"defd / 35"	1 min. to 2 hours	35 min.



“Temp” Button Functions

To view TEMP settings (in sequence listed below), push and release the “Temp” button. To adjust settings, hold down the “Temp” button while pushing “Up” or “Down” buttons.

Function	Display Shows:	Adjustment Range:	Factory Default Setting:
Temp (zone) set point cut -in	“SP° / -10°F”	-40 to 99°F	-10°F
Temp (zone) set point differential*	“dif° / 04°F”	2 to 25°F	4°F*
Temp (evap) actual temperature	“Evap” / actual °F	NA	NA
Fan delay temp (fans cut-in) set point	“Fd° / 25°F”	15 to 30°F	25°F
Defrost termination temp cut -in set point	“dt° / 55°F”	40 to 70°F	55°F

* CAUTION: “Cut-Out” = “Cut-In” - “Diff”

Increasing this factory dif° value will result in longer compressor running times and colder room temperature. Decreasing this factory dif° value will result in short compressor running on/off cycles.

“Man. Def” (Manual Defrost) Button Function

This will immediately START a manual defrost cycle if in refrigeration mode. If already in a defrost cycle, this will stop the defrost cycle if pushed a second time. This will not affect or override any normal defrost programming.

TESTING NOTE: The defrost cycle will not start if the EVAP sensor temperature is at a temperature higher than that of the Defrost Termination Set point (55°F). The evaporator must be at a colder temperature.

Push and hold button for at least 5 seconds to activate. Do not push this button on and off without waiting at least 5 seconds between periods.

Loss of Power

In event of loss of power, all programmed settings will remain as those at time of power loss. Clock time will remain at time of power loss (similar to

a conventional defrost clock). When power is restored, wait at least 15 seconds for display to indicate the Zone temperature (default display)

Restore Original Factory Default Settings

To restore unit to original factory default settings:

- Push “Up” and “Down” buttons simultaneously and hold for at least 5 seconds until display “Ed” steadily appears (1 second).
- Release Buttons.

The clock is now programmed for factory settings on Electric Defrost mode.

For Air Defrost (Ad):

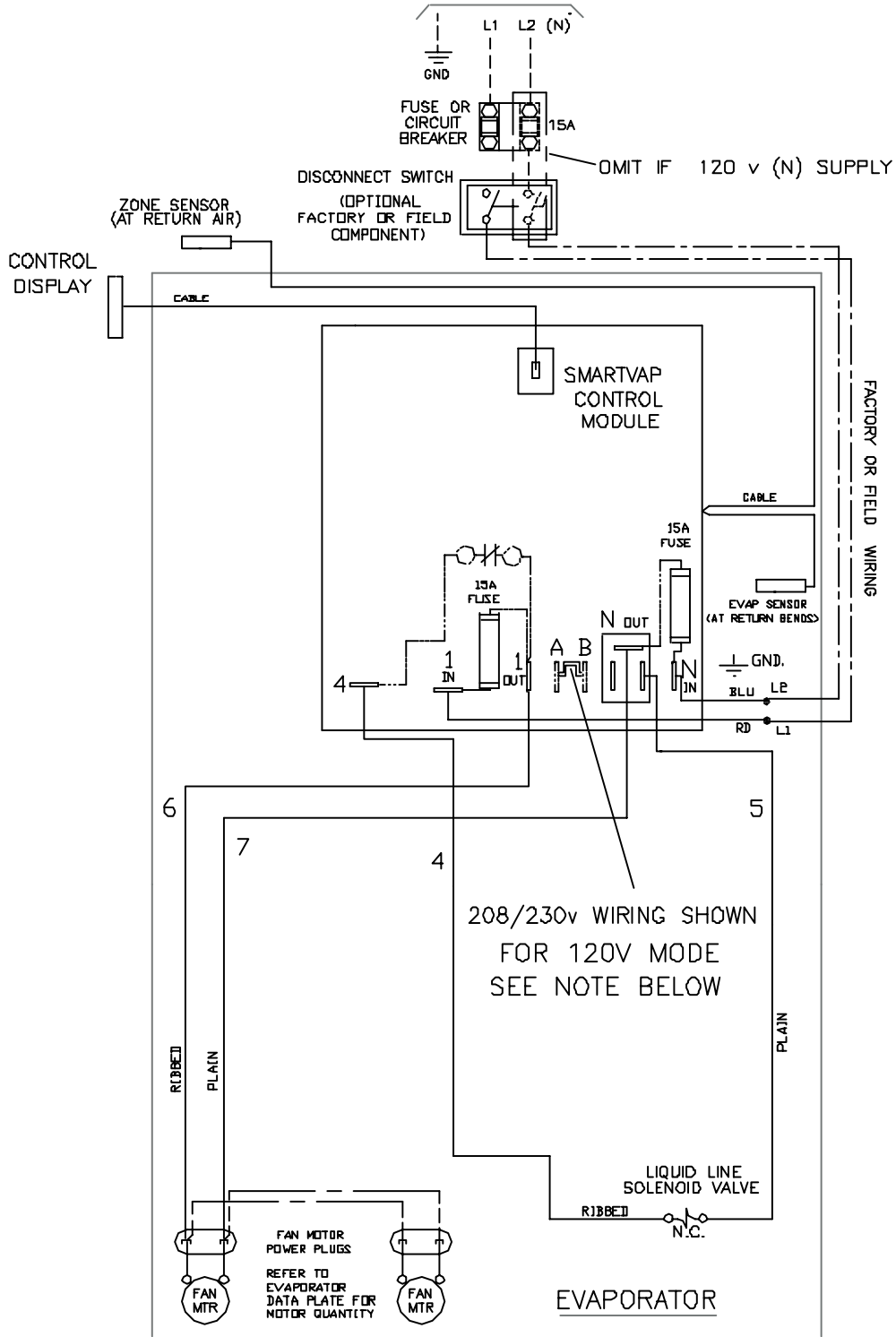
- Push “Up” and “Down” buttons simultaneously and hold for at least 10 seconds until display “Ad” appears (after “Ed” disappears).
- Release Buttons.

The clock is now programmed for factory settings on Air Defrost mode.

LOW PROFILE AIR DEFROST SMARTVAP EVAPORATOR

USING MAX 15A OVERCURRENT PROTECTION

REFER TO EVAPORATOR NAMEPLATE FOR ELECTRICAL REQUIREMENTS



120V NOTE:

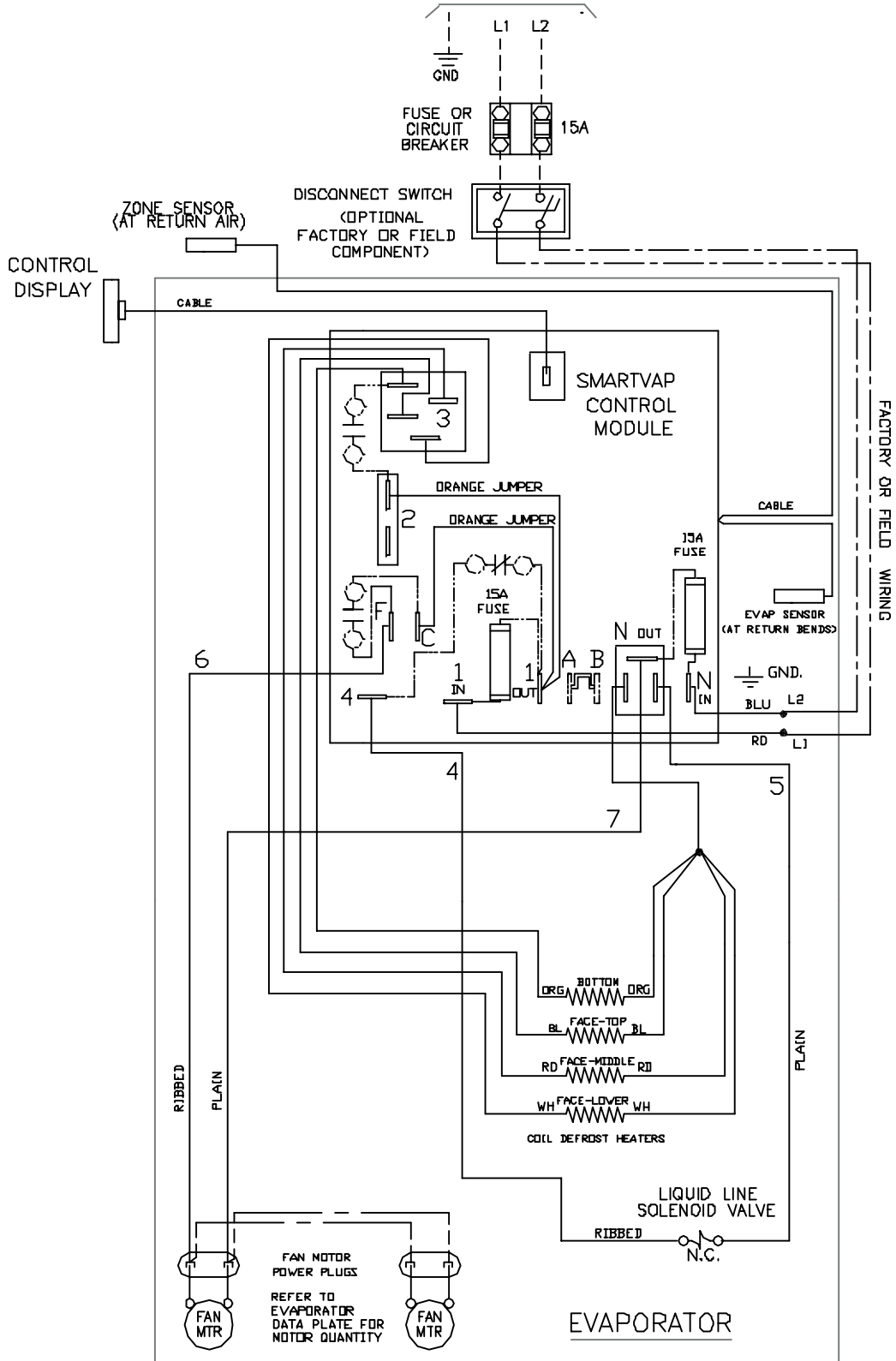
FOR 120V OPERATION : METAL JUMPER IS CUT BETWEEN 'A' AND 'B'
 TERMINAL 'A' IS WIRED TO TERMINAL '1 OUT',
 TERMINAL 'B' IS WIRED TO TERMINAL 'N OUT',

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LOW PROFILE 1-2 FAN ELECTRIC DEFROST SMARTVAP EVAPORATOR

USING MAX 15A HEATER OVERCURRENT PROTECTION

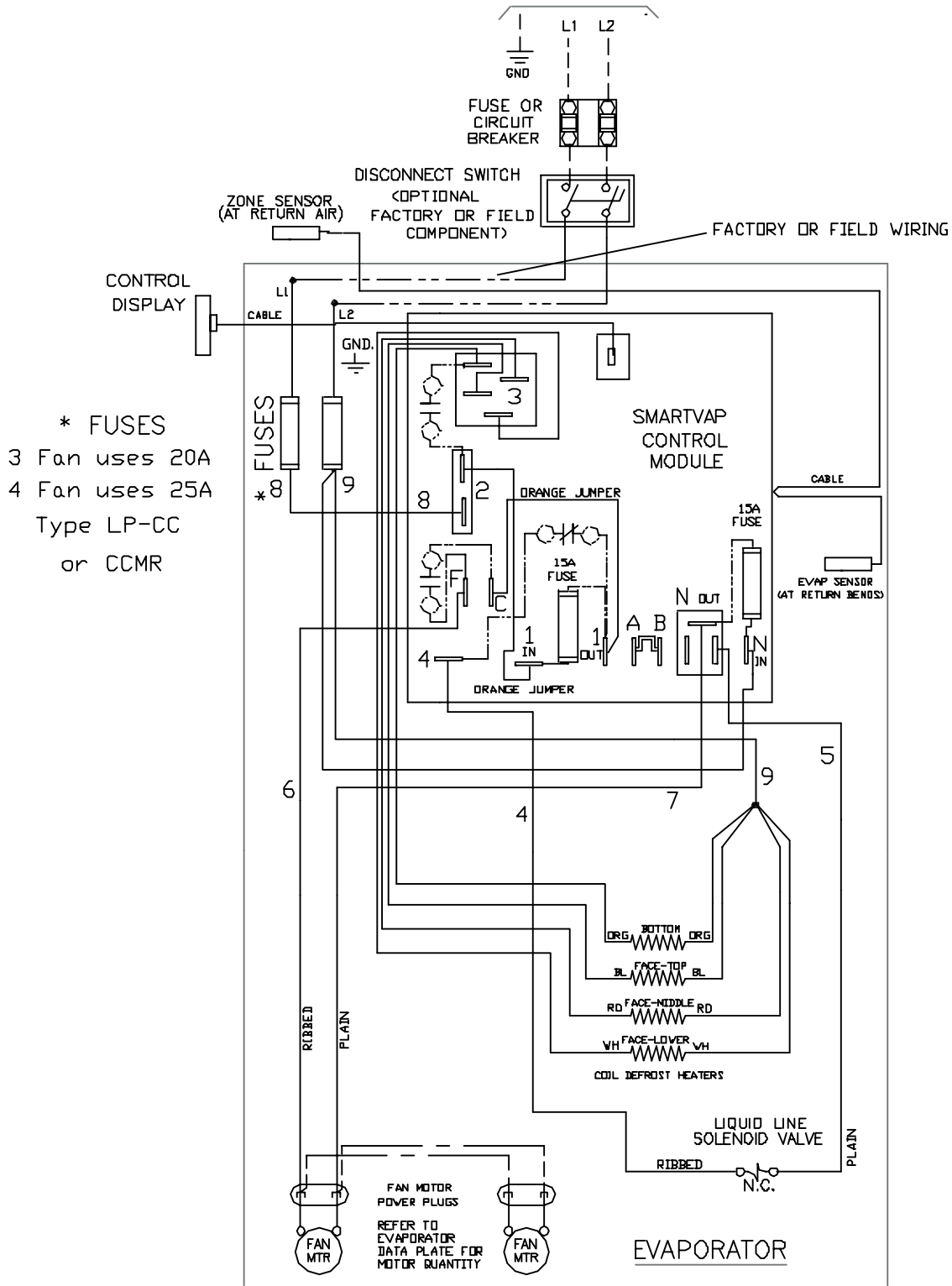
REFER TO EVAPORATOR NAMEPLATE FOR ELECTRICAL REQUIREMENTS



1080182 LIT 11/04

LOW PROFILE 3-4 FAN ELECTRIC DEFROST SMARTVAP EVAPORATOR

SINGLE EVAPORATOR WITHOUT DEFROST HEATER CONTACTOR
USING MAX 20A (3 FAN) AND 25A(4 FAN) HEATER OVERCURRENT PROTECTION



1080183 LIT 11/04

Troubleshooting Guide

WARNING: These guidelines are intended only for qualified service personnel familiar with troubleshooting procedures and high voltage.

Problem	Possible Solutions
<p>SmartVap™ control display does not power up and display zone temperature</p>	<ol style="list-style-type: none"> 1. Check for voltage (200 to 240V) at 1 IN and N IN (see wiring schematic for terminal locations)— If NONE, check for voltage at field connections L1 and L2 or back at main panel service entrance. (Note: 3 and 4 Fan models have inline 20 or 25A fuses (type LPCC or CCMR). Reject type fuse MUST be used and inserted with smaller diameter end into holder, large diameter in cap. If fuse(s) are blown, check/repair wiring for short before replacing fuse(s).— If all above VOLTAGE OK, check voltage at 1 OUT and N OUT. If NONE then check both 15A ceramic fuses. If fuse(s) are blown check for wiring short before replacing fuse(s). (250V Rated Type ABC or MDA 15A must be used). 2. If above voltage OK, then check phone cord and cable connection at module end. (Ensure cable is snapped in) CAUTION: KEEP FINGERS AWAY FROM POTENTIAL VOLTAGE (terminal 3) when checking. 3. Push and hold “Up” and “Down” Display buttons together for 5 — 10 seconds. This will re-boot & reprogram the electronic clock to factory settings. Ensure “Ed” mode (Electric Defrost) is selected. 4. Contact Factory
<p>Evaporator fans do not start (Display OK and powers up)</p>	<ol style="list-style-type: none"> 1. Check to see if display indicates “Defrost” mode (Yellow LED on). Evaporator fans are designed to be shut off during defrost and after a defrost cycle fans will not re-start until temperature reaches 25°F at “evap” sensor. 2. Check connection of orange jumper from C to 1 OUT. Check voltage at C and N OUT <ul style="list-style-type: none"> — If NONE, see fuse checks above on “Display” troubleshooting — If OK, check voltage at F and N OUT, If OK check fan wiring and voltage at plug (motor end). 3. Check fan delay temperature setting (Factory pre-set at 25°F) and re-adjust higher if required. 4. If fan delay setting is OK, check sensor at rear of unit cooler in return air stream (top left hand side -in front of fins) Is it tagged “ZONE”? If tagged “Evap”, switch sensor locations. (Move “Evap” sensor to correct location at return bends.) 5. Contact Factory

Problem	Possible Solutions
<p>Refrigeration cycle will not start (Display OK and powers up)</p>	<p>1. Green LED light (indicates demand for refrigeration) must be on. Box temperature must be higher than set point temperature. Check display Temp Setting for "SP".</p> <p>2. Liquid line solenoid must be energized. Check solenoid coil with small screwdriver to confirm there is magnetic force. If no force, check voltage at terminal 4 and N OUT, check solenoid coil wire splices in conduit box.</p> <p>3. Check, with gauges, condensing unit low-pressure control setting. Is it adjusted low enough to cut-in?</p> <p>4. Contact Factory</p>
<p>Defrost heaters do not energize (Display OK and powers up)</p>	<p>1. Yellow LED light (indicates defrost cycle mode) must be on. Defrost cycle will not start if "evap" sensor is above 55°F. Ensure refrigeration mode has run long enough to reduce "evap" sensor temperature below 55 °F</p> <p>2. Check for Voltage between terminal 3 and 1 IN. Check all heater wire spade connections, splice connections and jumper connections.</p> <p>3. Contact Factory</p>
<p>Poor Refrigeration / Defrosting Performance / Drain Pan Ice Up Problems</p>	<p>1. Refer to regular Evaporator or Condensing Unit instruction manual troubleshooting sections.</p> <p>2. Contact Factory</p>

Contact the factory or your local Sales Representative for further information or assistance.

NOTES

PROJECT INFORMATION

System	
Model Number	Date of Start-Up
Serial Number	Service Contractor
Refrigerant	Phone
Electrical Supply	Fax

NATIONAL REFRIGERATION & AIR CONDITIONING CANADA CORP.

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