Electrical installation requirements

Care should be taken to separate the power and signal cables to prevent electrical interference and possible damage due to inadvertent connection.

The power outputs are fitted with suppressors to protect against electrical interference when switching off solenoid valves or contactors. It is therefore essential to observe the output polarity. The line voltage should be connected to the terminals marked LN1 and LN2 and the switched loads to LD1 and LD2.

Use of Maintenance unit

The controller can be checked and the operation adjusted using a JTL portable maintenance unit which plugs into the controller. Each item of information has an item number. The more important items are listed in the tables overleaf.

Examples:

To read item 21 press: [ITEM] [2] [1] [ENTER]

To set item 30 to -20.0 press:

[ITEM] [3] [0] [ENTER] [SET] [−] [2] [0] [0] [ENTER]

To correct errors press: [CANCEL]

To select next or previous items press: [+] and [−]

Initial commissioning and bitswitch settings

The controller has 4 sets of data built in to its program for use during commissioning. These can be accessed by setting the bitswitches as shown in the table overleaf and then setting item 9 to 1. This will load into the controller a suitable set of data for the selected type of case. Adjustments should then be made as necessary. The range over which the settings can be adjusted is also defined by the bitswitch setting.

If a JTL communications network is connected to the controller then the unit number should be set on item 1.

Temperature display

The temperature displayed is computed from the air on and air off temperatures. A factor is used to proportion the air off and air on temperatures.

Control strategy

The air off temperature is controlled to a computed setpoint shown on item 28. If the temperature falls below this setpoint the liquid valve is closed. There is a deadband of ± 0.2 C.

The computed air off temperature setpoint is calculated by comparing the displayed temperature with the cabinet temperature setpoint. The computed setpoint is raised or lowered depending on whether the cabinet temperature is below or above the cabinet temperature setpoint.

The computed air off setpoint cannot go below the value set on item 31.
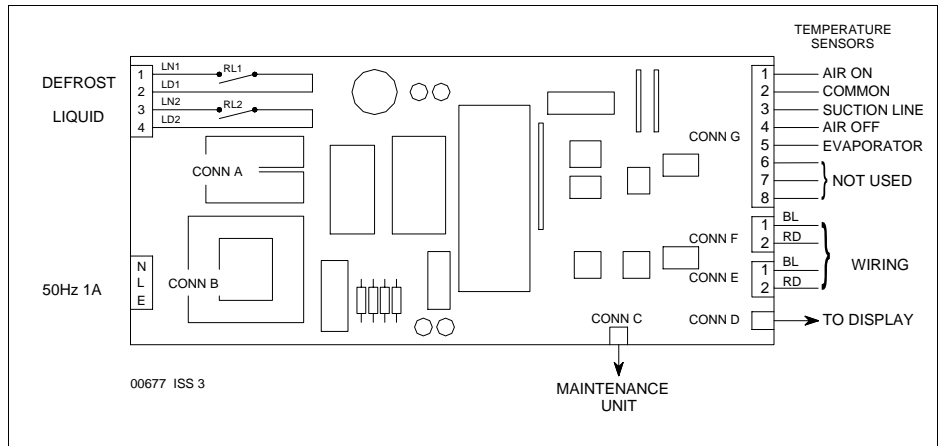
Defrost

The defrost sequence can be initiated in 2 ways. It can be deduced from the suction temperature or by the JTL communications network.

There is a choice of 2 methods of defrost operation, termination or control, using item 75. In termination mode the defrost output is energised during defrost recovery period and at any time when the termination temperature is exceeded. In control mode the defrost output is energised during the defrost period.
When defrost is detected the display will show "dEF ". When the termination temperature or time is reached the display will show "dEFr".

NOTE No defrost can be detected within 3 hours of the previous defrost.

The liquid solenoid is left open during suction initiated defrost and closed during other types of defrost. For network initiated defrost a time delay can be applied (item 49) after defrost before the liquid valve is reopened.

Alarms

The cabinet and air off temperatures are monitored continually. The temperatures are averaged over the period set on item 47. If either of the average temperatures exceeds the alarm level then an alarm is given which is shown on the display and available, for remote indication, on the JTL alarm system.

High temperature alarms are cancelled during defrost and defrost recovery.

ADJUSTABLE PARAMETERS				EC, ECRB, ECCN, ECLS
Item	Function	Range	Units	Bitswitch settings
1	Unit number	0.1 to 899.9		4321
30	Cabinet temperature setpoint	-30 to +10	°C	xxCC Frozen food
31	Air off temperature setpoint	-39 to +5	°C	xxCO Ice cream
32	Overtemperature tolerance	0 to +10	°C	xxOC Chillers
33	Cabinet temperature factor	20 to 80		xxOO Produce
36-39	Probe selections	0=off 1=on		
45	Suction or comms initiated	0=comms 1=suction		where
47	Alarm averaging time	00:30 to 03:00	hr:mn	C = closed
48	Compressor starts/hour	unlimited/10/15/20		O = open
49	Refrigeration delay after defrost	00:00 to 00:10	hr:mn	x = don't care
50	Defrost termination temp (air off)	0 to +20	°C	
57	Defrost termination time	00:05 to 00:40	hr:mn	closed = dot visible
58	Defrost initiation temp (suction)	-5 to +20	°C	
69	Number of defrosts expected	0 to 6		
75	Defrost control mode	0=termination 1=control		
102	Temperature sensor selection (ECCN only)	0=JTL 1=Elm		
103	Temperature sensor selection (ECRB only)	0=JTL 1=CDK		

OTHER USEFUL ITEMS			
Item	Function	Item	Function
20	Cabinet temperature	42	Duration of this defrost
21	Air on temperature	46	Communications defrost command
22	Air off temperature	70	Operating mode
23	Evaporator temperature	71	Defrost input state
24	Suction line temperature	72	Defrost output state
25	Superheat	73	Liquid valve output state
28	Effective air off setpoint	77	Forced defrost
40	Duration of last defrost	78	Forced refrigeration
41	Time since end of last defrost		