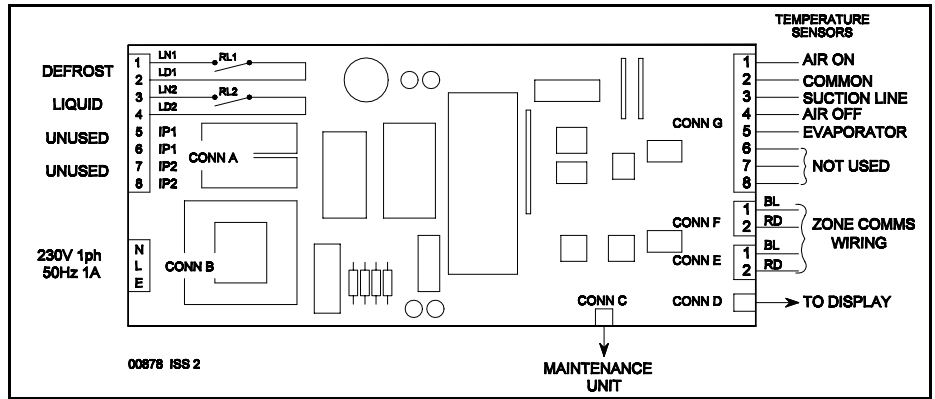


**Electrical installation requirements**

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 air off 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 is initiated by time. The controller has a

built in battery backed real time clock and a schedule of up to 6 defrosts a day. The defrost output is energised during the defrost period.

The defrost can be terminated on time or temperature, either the air off or evaporator temperature may be selected.

When defrost is detected the display will show "DEF ". When the termination temperature or time is reached the display will show "dEFr".

The liquid solenoid is closed during defrost.

**Alarms**

The cabinet and air off temperatures are monitored continually. The temperatures are averaged over a 60 minute period. 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				ECED
Item	Function	Range	Units	Bitswitch settings
1	Unit number	0.1 to 899.9		321
30	Cabinet temperature setpoint	-30 to +5	°C	xxCC Frozen food
31	Air off 2 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
35	Defrost termination selection	0=air off 1=evaporator		
36-39	Probe selections	0=off 1=on		where
48	Compressor starts/hour	unlimited/10/15/20		C = closed
50	Defrost termination temperature	0 to +20	°C	O = open
51-56	Defrost start times	00:01 to 23:59 (00:00 = off)	hr:mn	x = don't care
57	Defrost termination time	00:05 to 00:40	hr:mn	
102	Probe selection	0=Tempkey 1=Elm		closed = dot visible

OTHER USEFUL ITEMS			
Item	Function	Item	Function
20	Cabinet temperature (air on & air off 1)	40	Duration of last defrost
21	Air on temperature	41	Time since end of last defrost
22	Air off temperature	42	Duration of this defrost
23	Evaporator temperature	43	Time next defrost due
24	Suction line temperature	70	Operating mode
25	Superheat	72	Defrost output state
28	Computed air off setpoint	73	Liquid valve output state
		77	Forced defrost
		78	Forced refrigeration

Full operating manuals and item number information can be obtained from your supplier or JTL Systems.