

FDM Series

SKOPE Food Display Cabinet

Integral models: FDM900i/1200i/1500i



Model FDM1200i

Integral models: FDM900i/1200i/1500i
SKOPE Food Display Cabinet
User Manual

MAN2056O
Rev 2.1 Jan. 2023

© 2008 SKOPE Industries Limited. All rights reserved.

SKOPE Industries Limited reserves the right to alter specifications without notice.

SKOPE® is a registered trademark of SKOPE Industries Limited.
SKOPE INDUSTRIES LIMITED

Head Office
PO Box 1091, Christchurch
New Zealand
A.B.N. 73 374 418 306
AU: 1800 121 535
NZ: 0800 947 5673
E-mail: skope@skope.com
Website: www.skope.com

Trademark Infringement

The SKOPE trademark on this product is infringed if the owner, for the time being, does any of the following:

- Applies the trade mark to the product after its state, condition, get-up or packaging has been altered in any manner
- Alters, removes (including part removal) or obliterates (including part obliteration) the trade mark on the product
- Applies any other trade mark to the product
- Adds to the product any written material that is likely to damage the reputation of the trade mark

Notice of the above contractual obligations passes to:

- Successors or assignees of the buyer
- Future owners of the product

Contents

1 Installation

Safety First	4
Introduction	5
Operation	5
Helpful Tips	5
Positioning the Cabinet	5
Cabinet Location	5
Installation Guidelines	5
Power Cord	5
Ventilation	6
Shelving	6
Adjusting the Shelves	7
Locking Castors	8
Loading Product	8

2 Operation

Start-up	9
Refrigeration Unit	9
Cabinet Lighting	9
Electronic Controller	9
Electronic Controller	9
Overview	9
CAREL ir33	10
Faceplate	10
Temperature Setpoint	11
Controller Alarms	11
CAREL S4 EVO	12
Overview	12
Faceplate	12
Lights	13
Temperature Setpoint	13
Messages and Alarms	14

3 Servicing

Isolating Electrics	15
Cleaning	15
Cabinet	15
Condenser Coil	17
Lighting	18
Ceiling Light	18
Shelf Light	18
Troubleshooting	19

1 Installation

Safety First When using any electrical appliance, always observe safety precautions. Read these instructions carefully and keep them for future reference.

- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Supervise children, to ensure that they do not play with this appliance.
- Do **not** use this appliance for other than its intended use.
- Do **not** cover the grilles or block the entry or exhaust of airflow by placing objects up against the refrigeration unit.
- Do **not** probe any opening.
- Do **not** overload the power supply.
- Only use this appliance with voltage specified on the rating label.
- Ensure adequate ventilation of the SKOPE refrigeration unit.
- Regulations require that all electrical work be carried out by authorised persons. For your own safety, and that of others, ensure this is done.
- If the supply cord is damaged, it must be replaced by a SKOPE-authorised service agent, or similarly qualified person, in order to avoid a hazard.
- If the refrigeration unit needs to be installed or removed from the cabinet, ensure all necessary safety precautions are observed.
- If this appliance needs to be disposed of, contact SKOPE Industries for information regarding disposal of the appliance.

Caution

Always isolate the cabinet from the power supply before attempting any maintenance.

Introduction

Thank you for choosing a SKOPE Food Display Cabinet. To ensure you get the most out of your product, please read these instructions before installing and plugging in the cabinet.

Operation Although this fridge is very energy efficient, further reduction in power consumption can be achieved by turning off the lighting and refrigeration unit when not required.

Table 1: Powersaving options

Level	Action
1	Requires no adjustment. Simply plug in the cabinet for significant power savings.
2	Turn the cabinet interior lights off.
3	Turn the refrigeration unit off (non-perishable product only).
4	Turn the cabinet interior lights and refrigeration unit off.

The cabinet interior lights and refrigeration unit can each be turned off separately using the switches beside the electronic controller (see “Refrigeration Unit” on page 9).

Helpful Tips Below are some helpful tips on how to reduce power consumption and service costs:

1. Turn the cabinet’s interior lights off when lighting is not required.
2. Turn the refrigeration unit off when the cabinet is being used only for display purposes (not being used for perishable product).
3. Ensure good ventilation of the refrigeration unit by installing the cabinet in an area away from heated appliances (ovens) and away from direct sunlight (see “Positioning the Cabinet” on page 5).
4. Ensure the sliding doors are opened for the minimum amount of time. Encourage staff and customers to make their selection before opening the doors.
5. Ensure the condenser is kept clean. Check the condenser is clean every month. See page 17 for instructions on cleaning the condenser coil.

Positioning the Cabinet

Cabinet Location When positioning the Food Display Cabinet avoid direct sunlight and warm draughts. Do not position the cabinet where it will be affected by hot air from adjacent equipment, as this will compromise the airflow and performance.

The cabinet must be positioned on a level surface for the sliding doors to shut and seal correctly, and to prevent the condensate tray from overflowing.

Installation Guidelines The Climatic Class for the Food Display Cabinet is “4”. This means the Food Display Cabinet is suitable to operate in an ambient temperature (at place of installation) of 30°C at 55% humidity. The cabinet is designed to operate in a maximum ambient of 32°C at 70% humidity but will generally use less power when installed in a cooler location.

When installing the Food Display Cabinet:

- Avoid direct sunlight and warm draughts.
- Ensure the cabinet is positioned on a level surface so the sliding doors shut and seal correctly, and to prevent the condensate tray from overflowing.
- Do not overload the power supply (see the rating label inside the cabinet for power supply and current draw).

Power Cord The Food Display Cabinet is supplied with a 1.8 m flexible power cord fitted with a 3-pin plug, which exits out the rear of the cabinet. Before final positioning of the cabinet, pull the power cord out, and connect it to the mains power supply.

Ventilation Adequate ventilation is essential. For the Food Display Cabinet to operate efficiently you must make sure that there is adequate ventilation around the refrigeration unit.

- Do **not** cover the rear ventilation panel or block the entry or exhaust of airflow by placing objects up against the refrigeration unit.
- Do **not** block the air vent slots around the bottom of the glass. These air vents are used to keep the glass clear of condensation.

Important

For efficient operation of the Food Display Cabinet, it is essential that adequate ventilation be provided around the refrigeration unit.



Shelving

The Food Display Cabinet is supplied with pre-installed shelving and lighting. The shelving consists of two levels of angled adjustable shelves and one bottom level of stainless steel trays. The adjustable shelves can be positioned either horizontal or angled down 5°. The shelving is designed to be easily removed from the cabinet for ease of cleaning.

Before initial operation, remove the plastic ties holding the shelving and lighting which will allow you to adjust the shelf angles.

Adjusting the Shelves

Procedure 1: To adjust the shelves

1. Remove both sliding rear doors by lifting each door up and pulling out at the bottom.



2. Cut the plastic ties that hold the shelves in position during transit and remove the shelves from the cabinet. When refitting the wire shelves ensure the bottom rail on each shelf sits against the rear support. This prevents the shelves sliding backwards.



3. Remove the shelf rear support panels and shelf lighting panels by lifting up off the shelf brackets. The lighting panels have power cables connected to the cabinet, limiting how far they can be pulled out from the cabinet.



4. Position the shelf brackets at the required angle. The support brackets can be positioned either horizontally or angled down 5°.

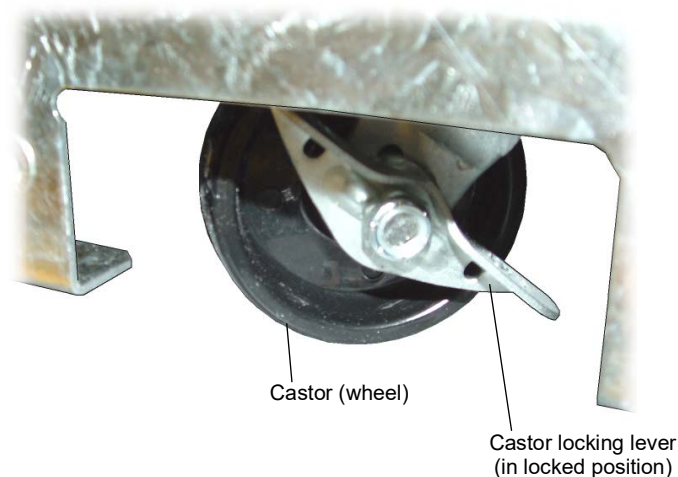


5. Refit the shelf support panels, light panels and wire shelves. Refit the sliding doors by lifting each door up into the top track and placing onto the bottom track.



Locking Castors

After positioning the cabinet, lock both rear castors (wheels) to prevent the cabinet from moving.



Procedure 2: To access the rear castors

1. Remove the ventilation panel from the rear of the cabinet by undoing the two bottom screws.
 2. Push the locking lever firmly down on both rear castors.
 3. Refit the ventilation panel after locking the castors.
-
-

Loading Product

Leave the Food Display Cabinet running for 30 minutes before loading with product. When loading the cabinet shelves with product:

- Allow air space around all the product, to ensure even cooling and efficient operation of the cabinet.
- Leave air space of at least 75 mm above product loaded on the top shelf.
- Do not allow product to hang over the rear of the shelves as this could prevent the sliding doors from shutting properly.
- Do not exceed a maximum loading of 20 kg per shelf.
- Remove some product if the shelves are flexing or bending.

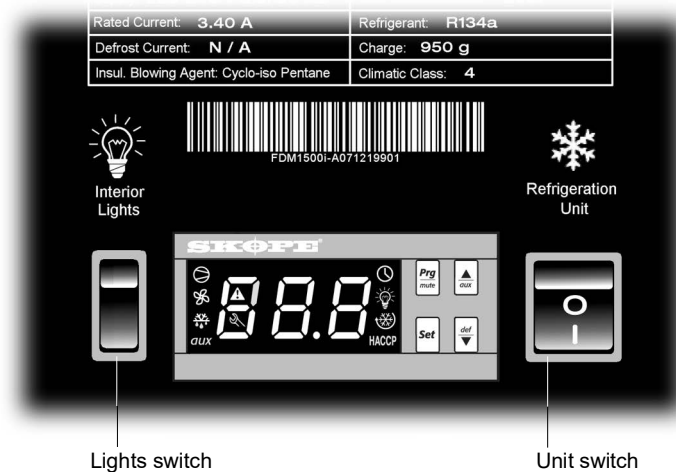
2 Operation

Start-up

Plug the cabinet into the power supply and check operation of the refrigeration unit, cabinet lighting and electronic controller.

Refrigeration Unit The compressor and condenser fans should all operate within two minutes from the time the cabinet is plugged in. You can verify this by listening for the compressor switching on and checking for air movement out of the air vent slots around the bottom of the glass. The compressor and condenser fans should switch off and on, depending on the cabinet's temperature.

The "Unit" switch (on the right hand side of the controller) turns the refrigeration unit off (O) and on (I). Do not turn the refrigeration unit off unless the cabinet is being used for display purposes only (no perishable product).



Cabinet Lighting All three interior lights will operate continuously unless they are manually switched off using the Lights switch on the left hand side of the controller. The cabinet fluorescent lights will require a period of time to stabilise following the start-up.

Electronic Controller At the initial start-up, the electronic controller will display the current cabinet temperature (see "Electronic Controller" below).

Electronic Controller

Overview Depending on the date of manufacture, the cabinet will be fitted with a SKOPE customised CAREL ir33 controller (before January 2023) or a SKOPE customised CAREL S4 EVO controller (after January 2022). Check the label on top of the controller to verify the controller type.

The electronic controller controls and displays the cabinet temperature. It uses a temperature probe to collect data and runs cabinet accordingly. The electronic controller is programmed and usually requires no initial setup or additional programming. SKOPE does not recommend changing the settings unless necessary.

CAREL ir33

Faceplate

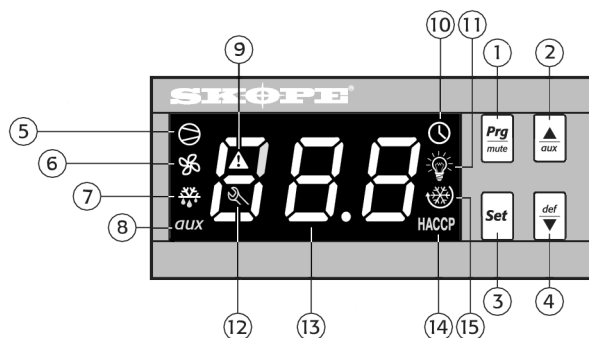


Table 2: CAREL ir33 keypad

Item	Key	Function
1	Prg mute	Prg / mute: To start programme sets, press for 5 seconds. Mutes the audible alarm (buzzer) and deactivates the alarm relay.
2	▲ aux	UP / aux: To scroll settings UP (in programme mode).
3	Set	Set: If pressed for more than 2 seconds, it displays and/or enables you to change the temperature setpoint (see page 11).
4	▼ def	DOWN / def: To scroll settings DOWN (in programme mode).

Table 3: CAREL ir33 icons

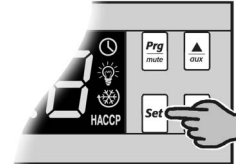
Item	Icon	Function
5		COMPRESSOR: On when the compressor and condenser fan starts. Flashes when the compressor starting is temporarily delayed.
6		FAN: On when the internal cabinet fans are activated. Flashes when the fans' starting is temporarily delayed.
7		DEFROST: On when the defrost is activated. Flashes when the defrost starting is temporarily delayed due to procedures in progress.
8	aux	AUX: n.a.
9		ALARM: Flashes in the event of alarms.
10		CLOCK: n.a.
11		LIGHT: On when the cabinet lighting is activated.
12		SERVICE: Flashes in the event of malfunctions.
13		DISPLAY: Shows the cabinet temperature.
14	HACCP	HACCP: n.a.
15		CONTINUOUS CYCLE: n.a.

Temperature Setpoint The cabinet’s temperature setpoint is set at the factory to 1.0°C. If necessary the standard setting can be adjusted between 1.0°C and 5°C.

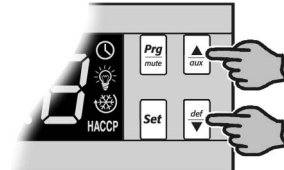
SKOPE does not recommend changing the setpoint unless it is absolutely necessary, and then only by small increments at a time.

Procedure 3: To view and adjust the CAREL ir33 temperature setpoint

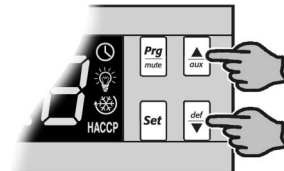
1. To view the setpoint:
Press and hold the **Set** key for 2 seconds, until the setpoint value flashes.



2. To adjust the setpoint:
Press either the $\frac{\blacktriangle}{aux}$ or $\frac{\blacktriangledown}{def}$ keys to display the required setpoint value.



3. Press the **Set** key again to assign the new setpoint value. If you do not do this within 60 seconds, changes will be lost and you will need to repeat the procedure.









Controller Alarms

Table 4: CAREL ir33 controller alarms

Code	Display icon	Alarm description	Initial action	Final action
	Flashing	Product HIGH temperature alarm	<ol style="list-style-type: none"> 1. Check the cabinet product loading to ensure ventilation slots are not blocked and that product does not overhang the shelves. 2. Ensure the cabinet is installed with good refrigeration unit ventilation. 	If the alarm persists, contact SKOPE.
	Flashing	Product LOW temperature alarm	<ol style="list-style-type: none"> 3. Check and clean the condenser coil (see page 16). 4. To reset the alarm, unplug cabinet from the power supply for 1 minute then reconnect to power supply. 	
	Flashing	Refrigeration system high temperature pre-warning	<ol style="list-style-type: none"> 1. Clean the condenser coil (see page 16). 2. Check refrigeration ventilation. Ensure there is adequate ventilation around the refrigeration unit (see page 7). 	
	Flashing	Refrigeration system high temperature shutdown	<ol style="list-style-type: none"> 3. Ensure the cabinet is installed in a suitable environment (see page 6). 4. To reset the alarm, unplug cabinet from the power supply for 1 minute then reconnect to power supply. 	

Table 4: CAREL ir33 controller alarms (continued)

Code	Display icon	Alarm description	Initial action	Final action
E0	Flashing 	Ambient probe fault	To reset the alarm, unplug cabinet from the power supply for 1 minute then reconnect to power supply.	If the alarm persists, contact SKOPE.
E1	Flashing 	Evaporator probe fault		
E2	Flashing 	Condenser probe fault		
E d1	None	Defrost over-time limit		
E t c	Flashing 	Real-time clock fault		
E E	Flashing 	Controller E prom error		
E F	Flashing 	Controller E prom error		
d F b	None	Start defrost request	None	None
d F E	None	End defrost request		

CAREL S4 EVO

Overview The CAREL S4 EVO electronic controller is visible through a cut-out in the cabinet’s front panel.

CAUTION
The electronic controller must only be adjusted by an authorised service agent.

To achieve energy efficient operation, the electronic controller uses temperature probes to control and display the cabinet’s temperature, collect data, indicate temperature alarms, and force a defrost cycle when required.

Faceplate Because the electronic controller plays such an important role, it’s helpful to know the parts of the faceplate you may use.

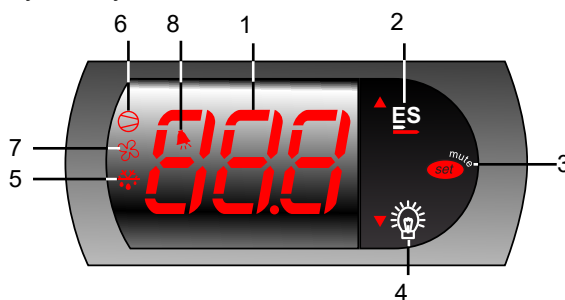










Table 5: CAREL S4 EVO faceplate



No.	Item	Description
1		Digital display of cabinet temperature or messages. The temperature is what the sensor inside the cabinet detects, and not necessarily the product temperature. However, they may be very close, depending on how the controller is set to sense temperature.
2		Up: Button. Used for programming.
3		Mute (set): Button. Press to mute the alarm. Press and hold to access parameters.
4		Light (down): Button. Press to switch the cabinet interior light on and off.
5		Defrost: Indicator. On when the defrost is activated. Flashes when activating the defrost is temporarily delayed due to other procedures in progress.
6		Compressor: Indicator. On when the compressor and condenser fan starts. Flashes when activating the compressor is temporarily delayed.
7		Fan: Indicator. On when the internal cabinet fans are activated. Flashes when activating the fans is temporarily delayed.
8		Alarm: Indicator. On when the alarm is signalled.

Lights Press the Lights button on the electronic controller faceplate to manually switch the cabinet light on and off.

Temperature Setpoint The temperature setpoint is set at the factory to 2.0°C, and can be adjusted between 1.0°C and 3.5°C for other specialist applications if required.

SKOPE does not recommend changing the setpoint unless it is absolutely necessary, and then only by small increments at a time.

Procedure 4: To view and adjust the temperature setpoint for the CAREL S4 EVO

1. Press and hold the **set** button for 3 seconds until **PS** is shown on the display, indicating entry into the controller settings menu. 
2. Press the **up** or **down** button to scroll through the menu until **St** is shown on the display. 
3. Press the **set** button.
The current setpoint value shows on the display.
4. Press the **up** or **down** button to increase or decrease the setpoint value to the required temperature.
5. Press the **set** button to temporarily save the setpoint value.
6. Press and hold the **set** button for 3 seconds to permanently save the setpoint value and exit the controller settings menu.

Messages and Alarms The following tables explains the messages and alarms that the electronic controller displays.

Table 6: CAREL S4 EVO messages

Display	Description
20	The cabinet is in "Normal" mode and the electronic controller displays the temperature.
--	The cabinet's internal temperature is above 13°C.
CCP	The cabinet is in cold climate protection (CCP) mode. The cabinet enters CCP mode if the room's ambient temperature gets too cold. The lights remain on and cannot be switched off.

Table 7: CAREL S4 EVO alarms

Display	Description	
E0	Probe fault. An alarm sounds. Contact a service agent.	
E1		
E2		
L0	Low temperature alarm. An alarm sounds. The temperature inside the cabinet is too cold. The controller will automatically reset the alarm once the temperature inside the cabinet rises.	
H1	High temperature alarm. An alarm sounds. The temperature inside the cabinet is too warm. The controller will automatically reset the alarm once the temperature inside the cabinet drops.	
cht	Refrigeration system high temperature Pre-warning (auto reset)	<ol style="list-style-type: none"> 1. Check the cabinet's ventilation and ensure that it is installed in a suitable environment. 2. To reset the "CHt" alarm, unplug the cabinet from the power supply for 1 minute, then reconnect to power supply. 3. If the alarm persists, contact a service agent.
[CHt	Refrigeration system high temperature Shutdown (manual reset)	
ELO	Low voltage alarm. An alarm sounds. The mains voltage is low. The controller switches off the compressor. The controller will automatically reset the alarm once the mains voltage rises.	
EH1	High voltage alarm. An alarm sounds. The mains voltage is high. The controller switches off the compressor. The controller will automatically reset the alarm once the mains voltage drops.	
EE	Electronic controller fault. Contact a service agent.	
EF		

3 Servicing

Isolating Electrics

The cabinet must be isolated from the mains power supply before attempting any cleaning or maintenance. To isolate the cabinet, unplug the power cord plug from the mains power supply socket.

Cleaning

When necessary, you can wipe the interior and exterior of the cabinet with a damp cloth. The sliding doors, wire shelves, shelf support panels, shelf lighting and floor panels can all be removed from the cabinet for ease of cleaning.

Caution

Isolate the cabinet from the mains power supply before attempting any cleaning or maintenance.

Cabinet

Procedure 5: To clean the cabinet

1. Isolate the cabinet from the mains power supply (see above).



2. Remove the sliding doors from the cabinet by lifting each door up and pulling out at the bottom. To refit the doors, lift each door up into the top track and place onto the bottom track.



3. Lift the wire shelves out of the cabinet for cleaning. When refitting the wire shelves, ensure the bottom rail on each wire shelf sits against the rear support. This prevents the shelves sliding backwards.



4. Remove the shelf rear support panels and shelf lighting from the cabinet by lifting up, off the shelf brackets. The power supply cable will remain attached to the lighting panels.

Procedure 5: To clean the cabinet (continued)

5. Remove the shelf brackets by lifting up at the front and pulling out from the cabinet.



6. Remove the floor panels from the cabinet by lifting each panel up. The floor of the cabinet can now be accessed for cleaning.

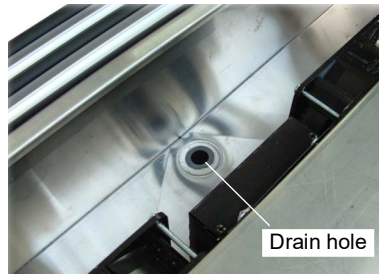
Warning: Be careful not to touch the exposed evaporator coil fins as they are very sharp and damage easily.



7. Lift out both door guide bottom runners for cleaning.



8. Check and clean the evaporator drain regularly to prevent blockage. To access the drain hole, remove the rear floor panel from inside the cabinet. If using water to clear the drain, take care not to overflow the condensate tray.



9. Check the evaporator drain tube for blockages.
- To access the drain tube, remove the ventilation panel from the rear of the cabinet by undoing the two bottom screws and unhooking from the cabinet.
 - To clear the drain tube, pull the drain tube out from the cabinet and drain the water into a bucket.



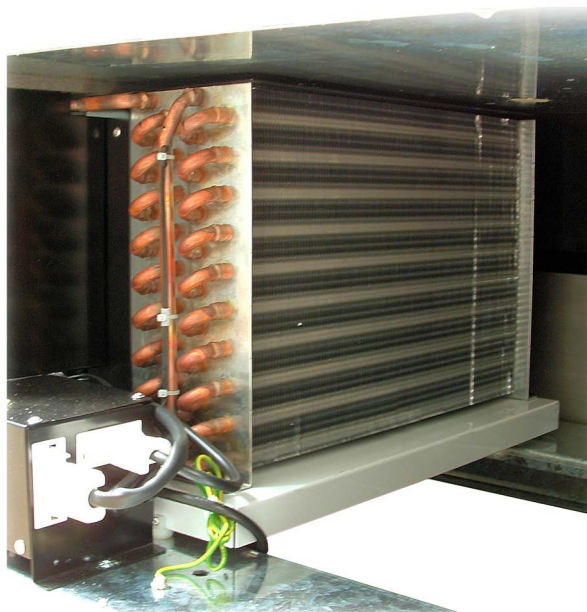
Condenser Coil The condenser coil **must** be kept clean for reliable operation and to minimise power consumption (a blocked condenser can double power consumption).

To ensure trouble-free performance, the brush the condenser coil clean once a month. If the electronic controller display flashes “cht”, clean the condenser coil immediately.

Over time, dust may accumulate within the condenser that cannot be removed with a brush. If this occurs, contact SKOPE to arrange for a SKOPE Authorised Service Agent to clean the condenser with compressed air.

Important
If the electronic controller flashes “cht” the condenser coil must be cleaned immediately.

The condenser coil is located inside the refrigeration unit compartment at the bottom of the cabinet.



Caution
Disconnect the cabinet from the mains power supply before cleaning the condenser coil.

Procedure 6: To access the condenser coil

1. Disconnect the cabinet from the mains power supply.
2. Remove the ventilation panel from the rear of the cabinet by undoing the two bottom screws.
3. Be careful when cleaning the coil fins as they are very sharp.
4. Make sure you refit the ventilation panel.

Lighting

The Food Display Cabinet is fitted with three fluorescent tube interior lights. One light is located in the ceiling of the cabinet. The other lights are located underneath the front of each shelf.

Table 8: Fluorescent tube specifications

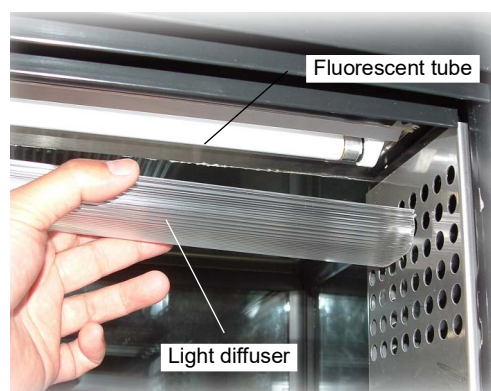
Model	Fluorescent tube specifications
FDM900i	14 Watt T5 fluorescent tube (Ø16mm x 550mm) Warm White 830
FDM1200i	21 Watt T5 fluorescent tube (Ø16mm x 850mm) Warm White 830
FDM1500i	28 Watt T5 fluorescent tube (Ø16mm x 1150mm) Warm White 830

Ceiling Light

Procedure 7: To replace the ceiling light

1. Disconnect the cabinet from the mains power supply.

2. Remove the light diffuser, by compressing one end of the diffuser until it disengages from the housing.



3. Revolve the tube until the pin position allows withdrawal, then remove the fluorescent tube.
4. When refitting the diffuser, engage the back section into the housing and then compress and snap the front section of diffuser back into place working along the full length of the light.

Shelf Light

Procedure 8: To replace a shelf light

1. Remove both sliding rear doors by lifting each door up and pulling out at the bottom.



2. Remove the wire shelves (see page 15)

3. Lift the light assembly panel up off both shelf end supports and remove from the cabinet. The power supply cable will remain attached.



Procedure 8: To replace a shelf light (continued)

4. Remove the light diffuser, by compressing one end of the diffuser until it disengages from the housing.



5. Revolve the tube until the pin position allows withdrawal, then remove the fluorescent tube.
6. When refitting the diffuser, engage the back section into the housing and then compress and snap the front section of diffuser back into place working along the full length of the light.

Troubleshooting

Table 9: Troubleshooting

Problem	Possible cause	Repair
Cabinet not operating and no controller display	<ul style="list-style-type: none"> • Loss of power supply. 	<ul style="list-style-type: none"> • Check mains power supply.
Cabinet lights not operating	<ul style="list-style-type: none"> • Blown cabinet fuse. • Failed fluorescent tube. • Lights are manually turned off. • Controller alarm. 	<ul style="list-style-type: none"> • Requires technical repair by a SKOPE Authorised Service Agent. • Check fluorescent tubes (see page 18). • Switch the lights on (see page 9). • Determine cause and eliminate (see page 9).
Power consumption is higher than expected	<ul style="list-style-type: none"> • Unit operating too hot. • Cabinet doors are opened excessively. 	<ul style="list-style-type: none"> • Clean condenser (see page 17). • Ensure the chiller is installed with good ventilation around the refrigeration unit (see page 6). • Keep doors open for minimum time.
Product is too warm and spoiling	<ul style="list-style-type: none"> • Restricted cabinet airflow. • Temperature setpoint is too warm. 	<ul style="list-style-type: none"> • Ensure product is not blocking cabinet airflow slots. • Adjust setpoint (see page 9).
Warm cabinet temperatures, and/or compressor operating for long periods (more than 1 hour)	<ul style="list-style-type: none"> • Blocked condenser. • Poor refrigeration unit ventilation. 	<ul style="list-style-type: none"> • Clean condenser (see page 17). • Ensure the cabinet is installed with good ventilation round the refrigeration unit (see page 6).

SKOPE Contacts

SKOPE Industries Limited

ABN: 73 374 418 306

AU: 1800 121 535

NZ: 0800 947 5673

skope@skope.com

www.skope.com