By Appointment to
Her Majesty Queen Elizabeth II
Suppliers of Commercial Refrigeration
Foster Refrigerator, King's Lynn

Blast Chillers & Freezers

Cabinet & Modular Models

FC1-11 Touchpad Controller

English

Original Service Manual

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ISO 9001 ISO 14001

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Service Manual Information:

The products and all information in this manual are subject to change without prior notice.
We assume by the information given that the person(s) working on these refrigeration units are fully trained and skilled in all aspects of their workings. Also that they will use the appropriate safety equipment and take or meet precautions where required.
The service manual does not cover information on every variation of this unit; neither does it cover the installation or every possible operating or maintenance instruction for the units.

Health & Safety Warnings and Information

Make sure the power supply is turned off before making any electrical repairs.

To minimise shock and fire hazards, please do not plug or unplug the unit with wet hands.

During maintenance and cleaning, please unplug the unit where required.

Care must be taken when handling or working on the unit as sharp edges may cause personal injury, we recommend the wearing of suitable PPE.

Ensure the correct moving and lifting procedures are used when relocating a unit.

Do NOT use abrasive cleaning products, only those that are recommended. Never scour any parts of the refrigerator. Scouring pads or chemicals may cause damage by scratching or dulling polished surface finishes.

Failure to keep the condenser clean may cause premature failure of the motor/compressor which will NOT be covered under warranty policy.

Do NOT touch the cold surfaces in the freezer compartment. Particularly when hands are damp or wet, skin may adhere to these extremely cold surfaces and cause frostbite.

Please ensure the appropriate use of safety aids or Personnel Protective Equipment (PPE) are used for you own safety.

Environmental Management Policy

Product Support and Installation Contractors.

Foster Refrigerator recognises that its activities, products and services can have an adverse impact upon the environment.
The organisation is committed to implementing systems and controls to manage, reduce and eliminate its adverse environmental impacts wherever possible, and has formulated an Environmental Policy outlining our core aims. A copy of the Environmental Policy is available to all contractors and suppliers upon request.
The organisation is committed to working with suppliers and contractors where their activities have the potential to impact upon the environment. To achieve the aims stated in the Environmental Policy we require that all suppliers and contractors operate in compliance with the law and are committed to best practice in environmental management.
Product Support and Installation contractors are required to:
1. Ensure that wherever possible waste is removed from the client's site, where arrangements are in place all waste should be returned to Foster Refrigerator's premises. In certain circumstances waste may be disposed of on the client's site; if permission is given, if the client has arrangements in place for the type of waste.

2. If arranging for the disposal of your waste, handle, store and dispose of it in such a way as to prevent its escape into the environment, harm to human health, and to ensure the compliance with the environmental law. Guidance is available from the Environment Agency on how to comply with the waste management 'duty of care'.

3. The following waste must be stored of separately from other wastes, as they are hazardous to the environment: refrigerants, polyurethane foam, and oils.

4. When arranging for disposal of waste, ensure a waste transfer note or consignment note is completed as appropriate. Ensure that all waste is correctly described on the waste note and include the appropriate six-digit code from the European Waste Catalogue. Your waste contractor or Foster can provide further information if necessary.

5. Ensure that all waste is removed by a registered waste carrier, a carrier in possession of a waste management licence, or a carrier holding an appropriate exemption. Ensure the person receiving the waste at its ultimate destination is in receipt of a waste management licence or valid exemption.

6. Handle and store refrigerants in such a way as to prevent their emission to atmosphere, and ensure they are disposed of safely and in accordance with environmental law.

7. Make arrangements to ensure all staff who handle refrigerants do so at a level of competence consistent with the City Guilds 2078 Handling Refrigerants qualification or equivalent qualification.

8. Ensure all liquid substances are securely stored to prevent leaks and spill, and are **not** disposed of into storm drains, foul drain, or surface water to soil.

Disposal Requirements

If not disposed of properly all refrigerators have components that can be harmful to the environment.
All old refrigerators must be disposed of by appropriately registered and licensed waste contractors, and in accordance with national laws and regulations.

General Electrical Safety

Foster Refrigerator recommends that the equipment is electrically connected via a Residual Current Device; such as a Residual Current Circuit Breaker (RCCB) type socket, or through a Residual Current Circuit Breaker with Overload Protection (RCBO) supplied circuit.

Start-Up and Operation

Initial Set Up

After unpacking clean and allow the cabinet to stand for 2 hours before turning on.

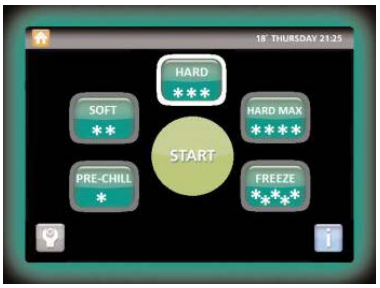
Ensure the cabinet is situated where neither hot nor cold air sources will affect its performance. Make sure that a minimum clearance of 150mm around the cabinet is available for ventilation and effective operation. There is no minimum clearance for above the cabinets. Connect the unit to a suitable mains power outlet and turn the supply on. Please note that the BCT38-18 will require a 16amp supply and the BFT38 and both 52kg models will require a 3 phase supply.

Do **not** plug or unplug the unit with wet hands.

Initialisation screen

After power is applied to the unit the controller display will show the initialisation screen. This will only show for a few minutes stating both 'Booting' and then displaying the software version at the bottom of the screen. When the controller has completed initialisation the screen will revert to the 'Home Screen'.

Home Screen



This is shown after initialisation and when no programmes are running. From this page a cycle can be launched. Select the cycle type by pressing the relevant cycle button and then press 'Start'. This page also shows the date, time and current air temperature and allows access to the 'Settings Home Screen' and 'Information' function.

What is Blast Chilling and Freezing? The Cycle Descriptions.

Blast Chilling is a process that reduces the temperature of cooked food quickly and safely by halting the cooking process; locking in its colour, flavour, texture and nutritional value. The Department of Health guideline states that to safely blast chill food its temperature must be reduced from +70°C to +3°C within 90 minutes.

When freezing food slowly, large ice crystals are created which can damage, dry out and break down the physical structure of the food leaving you with an unrecognisable product. The process of Blast Freezing reduces the products temperature quickly from +70°C to -18°C in no more than 240 minutes therefore meaning smaller crystals form and damage to product is less likely.

Pre Chill

This type of chill ensures that the cabinet's actual interior temperature is correct prior to a chill cycle. This cycle will run until either the cycle time has lapsed or the internal air temperature has been achieved (whichever occurs first). After this the controller will ensure the unit remains' in a 'Hold' mode until required to start a chill cycle. Performing this Pre Chill will also improve chilling performance.

Soft Chill

Normally this kind of cycle is used on delicate produce such as mousse, pastries, custards, fruits and vegetables. It's also suitable for fine or thin products.

The 'Soft Chill' cycle rapidly, but gently, reduces the product temperature to an even +3°C by controlling the air temperature to between +0.5°C and +3.5°C. The product should never go into a minus temperature range, if so damage will occur to the product in the form of texture, consistency, appearance or even dehydration. This cycle would ideally take no longer than 90 minutes to achieve, but this is dependent on the product type and load amount.

Hard Chill

This is more of a general purpose cycle. 'Hard chill' brings food temperature down to +3°C in no more than 90 minutes (depending on the product type and load). Ideally this is used for meat pies, lasagne, pasta, soups/stews and or individually portioned meals – products containing a higher fat content.

The air temperature is controlled between -20°C and +2°C in two phases. Firstly it will be reduce to -20°C for the first 80% of the cycle or until the product probe has been lowered significantly. This will extract the maximum amount of heat quickly from the product.
The air temperature is then increased to +1°C for the final section of the cycle. This time reduces surface damage and will ensure quality levels.

Hard Max Chill

The 'Hard Max' cycle is used to reduce the product temperature to around +3°C. The air temperature in this incidence is maintained at -20°C for the whole cycle. After either a pre-determined time or the product temperature has been achieved the air temperature is allowed to rise into the 'hold' value where the temperature is maintained until the cycle is stopped.
The average cycle time is 90 minutes but actual chill time is dependent on the product type or load. 'Hard Max' is normally used with packaged or specialist products

Freeze

By 'Shock Freezing' you change the state of the food into a frozen product and this enables a long term storage facility. To achieve this the cycle rapidly reduces the product temperature until a uniform -18°C is achieved. To enable this, the air temperature is maintained at around -35°C. This cycle normally runs for around 240 minutes; however the actual duration is dependent upon several factors:

- Product type
- Load
- Quantity
- How (if applicable) portions are organised
- The initial product temperature
- The type of storage container used

Long Term Storage or Hold Mode (Conservation)

When a chill cycle has completed; either by time lapsed or temperature of product, the controller will automatically enter a 'hold' mode. The display will show the 'End' screen and the EOC (End of Cycle) alarm will sound. After this there are three possible options available:

> **Press and hold the 'Stop' Button.**
As soon as the stop button has been pressed & held the EOC alarm will silence. While holding the button the display will show the stopping screen. If the button is not held until all three progression blocks have filled red then the 'End' screen will not display. If held correctly the filled blocks will disappear and the cycle will terminate, in turn displaying the 'Home' screen.

> **Press and Release the 'Mute' button.**
If you press the 'Mute' button the EOC alarm will silence and the display will show an active 'Hold' screen. This screen will have a green border and progress blocks which will fill at a rate of one per second.
The display will also show the competed hold time and the total cycle time at the top centre of the screen. The controller will maintain the hold mode indefinitely; allowing defrosts (although the EOC alarm will not sound again) until the stop button is pressed and held (as described above).

> **Do nothing.**
In this case the EOC will sound for a length of time (determined by the parameter EOC Max. Time) until going automatically into a 'Hold' screen. This 'Hold' screen will be as described above but with no alarm sounding and instead of a green boarder will show in red. Again the progress blocks will fill one per second but again in red.
This hold cycle will continue indefinitely; allowing defrosts, but the EOC will sound periodically as determined by the parameter 'EOC Rpt. Int' until the 'Stop' button is pressed and held (initiating the first instance described – the stopping screen).
During the hold mode the cycle parameter will determine the temperature, but generally the air temperature will be held at +2°C following a chill cycle and -21°C following a freeze.

Evaporator Fan Hold or Surface Protection.

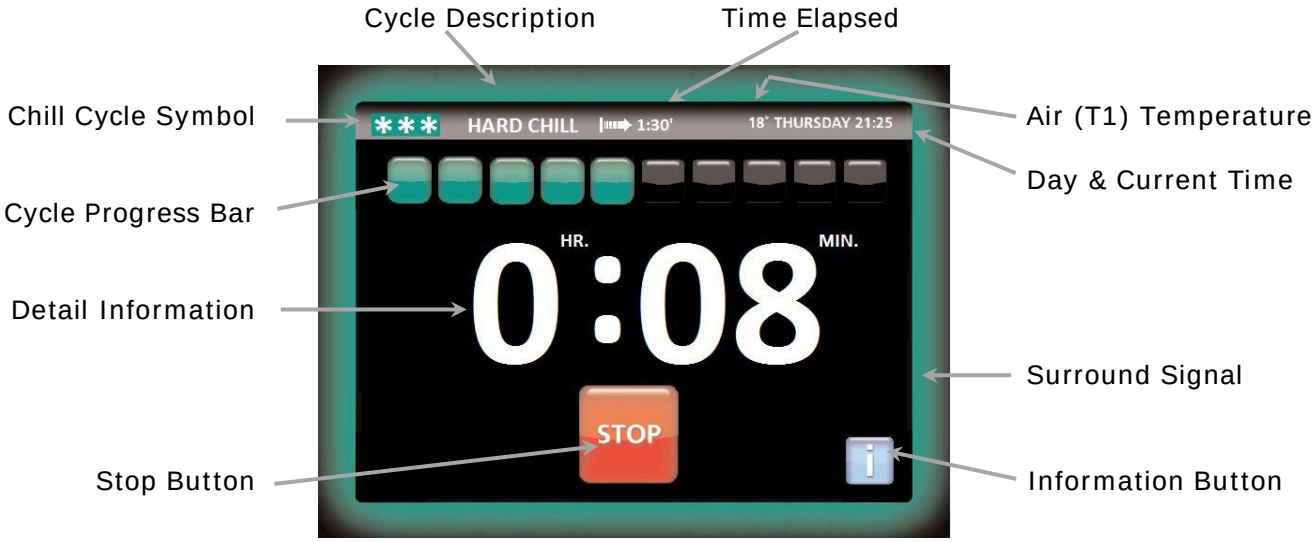
To rapidly remove heat from product these units achieve this with the combination of a powerful refrigeration system and evaporator fans. By moving large amounts of cool air around the product, which is actually cooler than the air temperature, causes a 'Wind Chill Effect'.
In some cases this can damage the product in the form of 'Frost Burn'. Product can show this in the form of discolouration, dehydration and or localised freezing. To prevent this a function called Surface Protection can be used. This function limits the evaporator fan usage during cycles and hold mode and in doing so slows the air speed at set times (as pre-determined or set by the operator within the operating parameters).

There are four modes which are determined by parameter 'Fan Hold Mode':

- ON – the evaporator fans run continuously in hold mode.
- CYCLE – the evaporator fans are switched in conjunction with the condensing system.
- AUTO – the evaporator fans run with the condensing system but additionally cycle in conjunction with parameters 'Time Fan Stop' (period the evaporator fans are stopped during the off cycle) and 'Time Fan Run' (period the evaporator fans run during the off cycle) in the off cycle.
- OFF – Evaporator fans are stopped in hold mode, operating in chill and defrost (as required) only.

This function requires no interference from the operator and will happen automatically within the required cycles.

Touchpad Display Icons



(Some icons or switches are only visible during adjustment, when activated by parameters or through operation/manual selection).

Buttons & Icons

	Home – When selected on any screen this will revert you to the home screen		Back - When pressed this will take you back to the previous screen
	Settings – This will take you into the 'Settings Menu' where changes can be made to the language, date, time etc.		Information – When pressed this will give a summary of what is currently happing with the unit

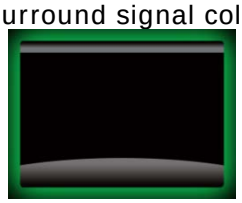
Screen Feedback Signal

When an icon or button is selected on screen a single beep will be heard to confirm the action requested.

Surround Signal Colour Coding

These four different screen surround signal colours represent the following:

Service or Maintenance Mode. User modification in progress.



Controller not operating or in Standby. User attention not required.

Process or system issue. User intervention required.

Chill cycle under way. User attention not required.

Guide to Blast Chilling

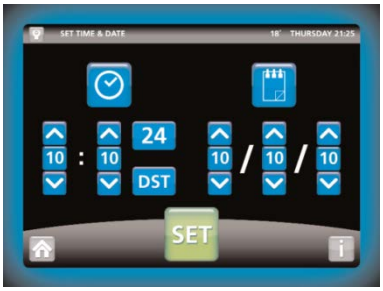
Food Type	Includes	Blast Chill Programme	Time to Chill (Mins)	Time to Shock Freeze (Mins)
Meat	Beef, pork, lamb, poultry & mince	Hard	40 – 90	60 – 240
Fish	Fried, poached or baked – haddock, plaice, salmon, cod fillets etc.	Soft	30 – 90	60 – 240
Prepared Dishes	Stews & casseroles, lasagne, risotto, shepherd's pie etc.	Hard	50 – 90	90 – 240
Vegetable & Pulses	Stewed or roasted veg, rice & potatoes etc.	Soft	30 – 90	60 – 240
Fruit	Stewed & cooked fruits.	Soft	60 – 90	60 – 240
Bakery	Cakes.	Hard	30 – 90	70 – 240
Delicate Bakery	Pastries.	Hard	60 – 90	50 – 240
Desserts	Fruit based desserts & egg based flans.	Soft	30 – 90	70 – 240
Other Desserts	Sponge puddings & dense desserts such as cheesecake.	Hard	30 – 90	70 – 240

(Note: All times listed should be used as a guide only, and will depend on type, size & quantity).

User Adjustment Modes

User Settings

The following three screen options can all be accessed by starting from the 'Home Screen' then by using the 'Settings Icon', select the 'Settings Home Screen'. From here you can then select the menu required:



Time/Date Setting

To amend the time or date, select the 'Set Time and Date' menu option which opens a new screen. From here, using the up and down arrows you can edit not only the time and date but also the format this shows in. Once you have finished modifying these settings press the set button to save the changes made. If this isn't pressed or the screen is left for roughly 1 minute no changes will be saved.

Languages (Only where available)

Select the languages menu and then the flag of the language you require the controller to display all further text in. If you don't set a specific language within 20 seconds the controller will revert to the home screen without making any changes. By selecting a flag the language displayed will change from that point onwards.

Manual Defrost
Select 'Defrost' from the menu page. This will initiate a manual defrost and the defrost screen will show with the time counting down until the end of cycle, displayed by progression blocks. These slowly fill with colour to show the cycle progress.

Other Defrost modes:
A defrost doesn't have to be activated manually, an automatic defrost function is also determined by parameter 'Def.Start Mode'. This can be active in five mode options:

- NONE – an automatic defrost is inhibited
- TM HOLD – the defrost interval clock is increased only during the 'Hold' phase.
- TM TOTAL – the defrost interval clock is increased during both 'Chill' and 'Hold' phases but only if any time spent in standby is less than or equal to parameter 'Chill Int.'
- FST HOLD – the defrost time clock is only increased in 'Hold' mode and when the conditions for frost accumulation exist (i.e. the coil temperature is less than 0°C).
- FST TTL – the defrost time clock is only increased when in Chill and Hold, and conditions for frost accumulation exist but only if time in standby is less than or equal to 'Chill Int.'

The time in which two defrosts (2 automatic or 1 automatic and 1 manual) can occur is determined by 'Def.Start' Mode' parameter 'Defrost Int.' (this is shown in hours).
'Chill Int' also indicates the minimum time period between the end and start of a time based defrosts.

There are three types of defrost allowed by parameter 'Def.Type':

- Timed Off Cycle (TIME) – using the evaporator fan(s) only for a pre-determined time period.
- Electric (ELEC) – using the electric rod heaters, the defrost relay is energised for the 'Max Def. Time' or until 'Def.End Temp' is achieved; whichever occurs first.
- Hot Gas (HOT GAS) – utilising 'hot gas' by running the compressor and energising the defrost relay together for 'MAX Def.Time' or until 'Def. End Temp' is achieved; whichever occurs first.

Stopping a Cycle or Function

When shown on screen you can press this button at any time you will be able to halt a cycle or function. This needs to be pressed and held until the progression blocks are filled. At this point it is safe to release the button and cancelation of any function will complete.
If this is released and or pressed briefly, without allowing the blocks to fill, will result in the function or cycle to continue.

Parameters

Service Settings Menu

Access to this menu is vital if you wish to adjust any parameter settings.
From the 'Home' screen select the 'Settings Icon' to enter the 'Service Settings' screen.
You will be prompted to enter a security code at this point. Using the up and down arrows enter 1 3 1 and select the 'Enter' button. If entered incorrectly the page will revert to the Home Page (likewise if nothing is entered for 20 seconds). You have now unlocked the controller to amend parameters.

Cycle Parameters

Parameters should not be changed unless you have an understanding of their purpose and the following instructions are fully understood.

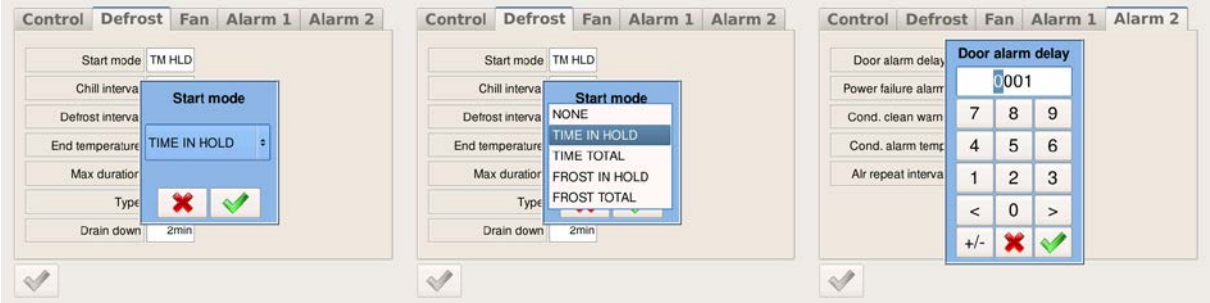
This 'Service Setting' screen allows access to all 5 chilling cycles, control and system parameter settings as well as the relay test facility.

To amend a ‘Cycle’ please do the following:

> Select the cycle requiring amendment

> Select the parameter you wish to change so a new mini screen pops up over the menu

> Using either the number pad displayed or the scroll menu select the change you wish to make and press the green tick to confirm the change. If you wish to leave this pop up without making a change press the red cross.

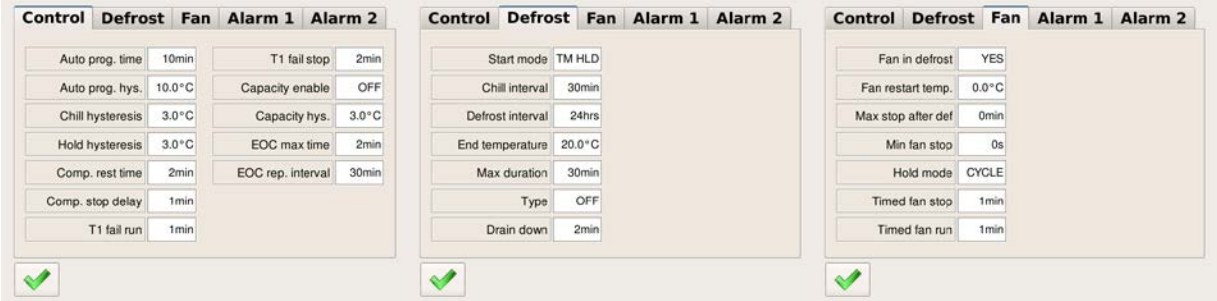


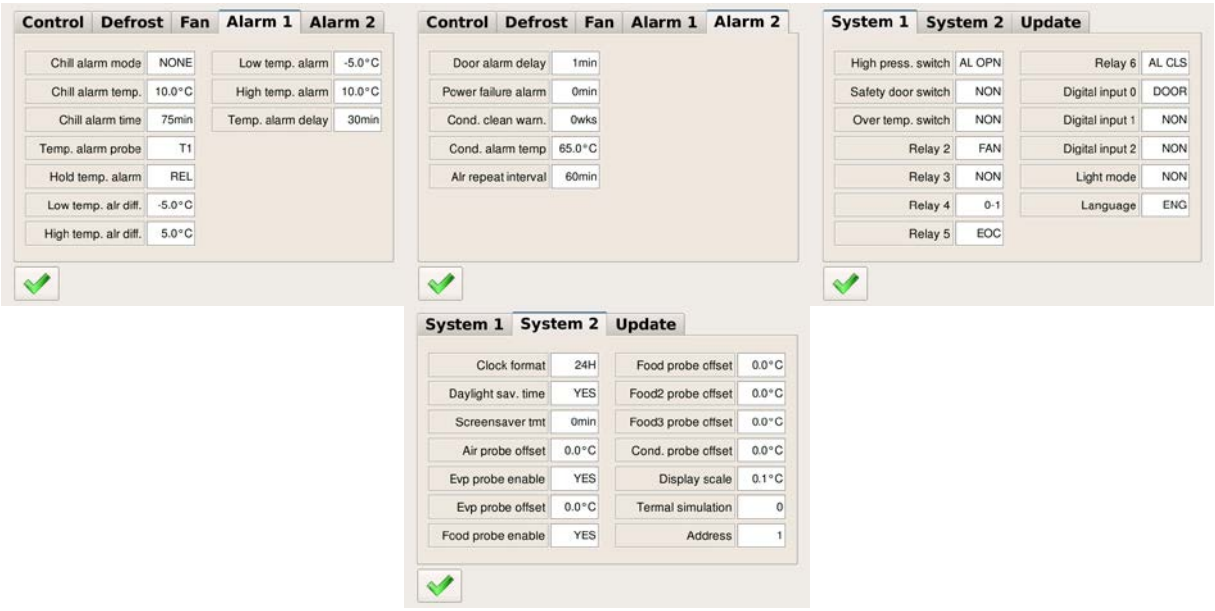
> When all changes have been made press the back button to revert to the ‘Service Setting’ screen.

If the green tick is not pressed or the screen is left for 20 seconds then the amendment will not be saved and the display will return to the home screen.

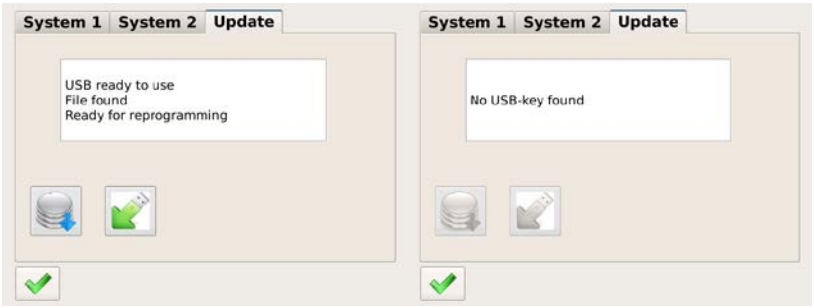
To amend ‘System’ and ‘Control’ parameters is very similar.
As before instead of selecting a cycle, press ‘System’ or ‘Control’ followed by the parameter that requires amending.
As shown above amend and save in the same way by confirming the change with the green tick button.
To select these parameters you may be required to use a stylus or pen (with the lid fitted) to carry out the changes accurately.

All parameters are shown as separate tabs/pages grouped as shown below:





These updates screens are only used when firmware updates are being carried out:



FC1-11 Default Blast Chill / Freeze Cycle Parameter Values

Section	Parameter	Range	Description	Unit	Default
Pre Chill	**Enabled**	NO or YES	'Pre Chill' program availability	Func.	YES
	Air Temperature	-50 to 120°	Air temperature set point during 'Pre Chill' phase.	°C	5.0
	Chill Duration	0 to 600 mins	Duration of 'Pre Chill' phase.	Min.	15
	Hold Temperature	-50 to 120°	Air temperature set point following completion of 'pre Chill' phase	°C	3.0
Soft Chill	**Enabled**	NO or YES	'Soft Chill' program availability	Func.	YES
	Air Temperature	-50 to 120°	Air temperature set point during 'Soft Chill' phase	°C	1.0
	Chill Duration	0 to 600 mins	Duration of 'Soft Chill' phase	Min.	90
	Chill Temperature	-50 to 120°	Temperature to be achieved by food insertion probe (T3), thus ending 'Soft Chill' phase.	°C	4.0
	Hold Temperature	-50 to 120°	Air temperature set point following completion of 'Soft Chill' phase	°C	3.0
Hard Chill	**Enabled**	NO or YES	'Hard Chill' program availability	Func.	YES
	Air Temp Stage1.	-50 to 120°	Air temperature set point during 'Hard Chill' 1st stage	°C	-15.0
	Air Temp Stage2.	-50 to 120°	Air temperature set point during 'Hard Chill' 2nd stage	°C	1.0
	Chill Duration	0 to 600 mins	Duration of 'Hard Chill' phase	Min.	90
	Chill Temperature	-50 to 120°	Temperature to be achieved by food insertion probe (T3), thus ending 'Hard Chill' phase	°C	4.0
	Hold Temperature	-50 to 120°	Air temperature set point following completion of 'Hard Chill' phase	°C	3.0
	Change Time	0 to 100%	Percentage of the 'Hard Chill' cycle time to elapse before the air temperature is lifted from 1st to 2nd stage (Air temp.1' to Air Temp.2') during timed chill.	%	80
	Change Temp.	-50 to 120°	Food insertion probe (T3) temperature to be achieved before the air temperature is lifted from 2st to 2nd stage (Air Temp.1 to Air Temp.2) during temperature chill	°C	15.0
Hard Max	**Enabled**	NO or YES	'Hard Max' program availability	Func.	YES
	Air Temperature	-50 to 120°	Air Temperature set point during 'Hard Max' phase	°C	-15.0
	Chill Duration	0 to 600 mins	Duration of 'Hard Max' phase	Min.	90
	Chill Temperature	-50 to 120°	Temperature to be achieved by food insertion probe (T3), thus ending 'Hard Max' phase	°C	4.0
	Hold Temperature	-50 to 120°	Air Temperature set point following completion of 'Hard Max' phase.	°C	3.0
Freeze	**Enabled**	NO or YES	'Shock Freeze' program availability	Func.	NO
	Air Temperature	-50 to 120°	Air Temperature set point during 'Shock Freeze' phase	°C	-30.0
	Chill Duration	0 to 720 mins	Duration of 'Shock Freeze' phase	Min.	240
	Insertion Probe	NO or YES	Determines if food insertion probe (T3) is enabled during 'Shock Freeze' phase (allowing temperature based chill cycle)	Func.	NO
	Chill Temperature	-50 to 120°	Temperature to be achieved by food insertion probe (T3), thus ending 'Shock Freeze' phase (if Insertion Probe = Yes)	°C	-21.0
	Hold Temperature	-50 to 120°	Air Temperature set point following completion of 'Shock Freeze' phase	°C	-21.0

FC1-11 Default Control, Defrost, Fan, Alarm 1 & Alarm 2 Parameter Values

Section	Para	Range	Description	Dim	Default
Control	**Auto Prog. Time**	0 to 120 min	Automatically determines chill cycle type (time or temp). If after 'Auto Prog Time', the 'T1' temp + 'Auto Prog Hys' ≥'T3' probe temp = time based chill. If 'T1' temp +'Auto Prog Hys' < 'T3' temp = temperature based chill cycle.	Min.	10
	Auto Prog. Hys	'0 to 50°	Automatically determines chill cycle type (time or temp). If after the 'Auto Prog Time', the 'T1' temp + 'Auto Prog Hys' ≥'T3' probe temp = time based chill. If 'T1' temp +'Auto Prog Hys' < 'T3' temp = temperature based chill cycle.	°K	10
	Chill Hysteresis	'0 to 50°	Differential value applied to temperature cycle during 'Chill' mode	°K	3
	Hold Hysteresis	'0 to 50°	Differential value applied to temperature cycle during ' Hold' mode	°K	3
	Comp. Rest Time	0 to 60 min	Minimum time between the compressor stopping and restarting based on 'T1' temperature	Min.	2
	Comp. Stop Dly	0 to 60 min	Compressors stop delay after door had been opened (When 'Digital I/P 0' = 'Door')	Min.	1
	T1 Fail Run	0 to 60 min	Upon failure of 'T1' probe – thermostat run time (If 'T1 Fail Run' = '0' compressor will remain be off with 'T1' probe fault).	Min.	1
	T1 Fail Stop	0 to 60 min	Upon failure of 'T1' probe – thermostat stop time (If 'T1 Fail Stop' = '0' and 'T1 Fail Run' ≥ '2' compressor will always be on with 'T1' probe fault).	Min.	2
	Capacity Enable		**Capacity Control Operation Mode:**	Func.	OFF
		OFF	Disables 'Capacity Control', regardless of program mode or temperature		
		AUTO	Enables 'Capacity Control' in both the 'Chill' & 'Hold' mode. Energises relay when 'T1' temperature less than or equal to cycle temperature set point + cycle hysteresis + Capacity Hys'		
		HOLD	'Capacity Control' only in 'hold' mode. Relay energised when 'T1' temperature less than or equal to cycle 'Hold' temperature set point + 'Hold hysteresis' + 'Capacity Hys'		
	Capacity Hys	'0 to 50°	Differential Value applied to determine Capacity Control operation	°K	3
	EOC Max Time	0 to 720 min	The time that End of Cycle (EOC) alarm sounds for before automatically muting when not acknowledged (If 'EOC Max Time' = '0' the EOC alarm will not automatically mute)	Min.	2
	EOC Rpt. Int.	0 to 720 min	Time between un-acknowledged EOC alarm being automatically muted and resounding. If 'EOC Rpt.Int' – '0' the alarm will not resound	Min.	30
Defrost	**Start Mode:**		**Defrost Mode Configuration:**	Func.	TM HOLD
		NONE (NONE)	Defrost is inhibited		
		TIME IN HOLD (TM HOLD)	Defrost interval clock is increased only during 'Hold' phase.		
		TIME TOTAL (TM TTL)	Defrost interval clock is increased during both 'Chill' and 'hold' phase but only if time in Standby ≤ 'Chill Int'.		
		FROST INHOLD (FST HOLD)	Defrost time clock is only increased when in Hold and conditions for frost accumulation exist.		

Defrost		FROST TOTAL (FST TTL)	Defrost time clock is only increased when in Chill and Hold, and conditions for frost accumulation exists but only if time in Standby ≤= 'Chill Int'.		
	Chill Interval	0 to 120 min	The minimum time period between ending one chill cycle and starting another to allow time based defrost (i.e. if time in 'Standby' more than 'Chill Int' defrost time clock resets).	Min.	30
	Defrost Interval	0 to 24 hrs.	The time interval between defrosts.	Hrs.	6
	End Temperature	0 to 120°	The temperature to be measured by evaporator (T2) probe required to terminate defrost.	°C	20
	Max Duration	0 to 120 min	The maximum length of time for a defrost period.	Min.	30
	Type:		**Defrost Type:**	Func.	OFF
		OFF CYCLE (OFF)	Defrost is performed using evaporator fans only for a pre-determined time period.		
		ELECTRIC (ELEC)	Defrost is performed using electric rod heaters – defrost relay (RL3) energised for Max Def. Time' or until 'Def. End Temp' is achieved (whichever occurs first).		
		HOT GAS (HOT GAS)	Defrost is performed using hot gas – compressor (RL1) & defrost relay (RL3) energised for 'Max Def. Time' or until 'Def. End Temp' is achieved *whichever occurs first).		
	Drain Down	0 to 120 min	Time period following a defrost to allow melt water to drain prior to recommencing cooling	Min.	2
Fan	**Fans In Defrost**	NO or YES	Determines whether the evaporator fan(s) run during the defrost period.	Flag	YES
	Fan Restart Temp	-50 to 120°	The temperature that the evaporator coil should reach (measured by T2) before restarting the evaporator fans (RL2) – subject to 'Max. Fan Stop'	°C	0
	Max Stop After Def	0 to 120 min	Maximum period evaporator fans are stopped following restarting condensing system after defrost	Min.	0
	Min. Fan Stop	0 to 120 sec.	Minimum period evaporator fans are stopped (following door opening etc.)	Sec.	0
	Hold Mode		**Evaporator Fan Operation in Hold Mode**	Func.	CYCLE
		ON	Evaporator fans run continuously in hold		
		CYCLE	Evaporator fans are switched in conjunction with the condensing system		
		AUTO	Evaporator fans run with condensing system but cycle in conjunction with 'Time Fan Run' in off cycle		
		OFF	Evaporator fans are stopped in hold mode, operating in chill and defrost (as required) only.		
	Time Fan Stop	0 to 120 min	In Hold mode, when 'Fan Hold Mode' = 'auto', the period the evaporator fan(s) is stopped during the off cycle	Min.	1
	Time Fan Run	0 to 120 min	In Hold mode, when 'Fan Mode' = 'auto', the period the evaporator fan(s) run during the off cycle.	Min.	1

Alarm 1	**Chill Alarm Mode**		**Air temperature alarm during Chill phase operation (in time chill only):**	Func.	NONE
		NONE (NONE)	Chill phase temperature alarm is inhibited		
		THRESHOLD (T'HOLD)	Alarm will sound if values set in 'Chill Alm Temp' not achieved within 'chill Alm Time'		
	Chill Alm Temp	-50 to 120°	Absolute chill phase with-in which 'Chill Alm Temp' has to be achieved	°C	10
	Chill Alm Time	0 to 480 min	Chill phase time period with-in 'Chill Alm Temp' has to be achieved	Min.	75
	Temp. Alm Probe		**Temperature alarm probe:**	Func.	T1
		T1	Air temperature probe used for alarm detection		
		T2	Evaporator temperature probe used for alarm detection (id 'Evp Prb Enable' = 'YES')		
		T3	Insertion probe used for alarm detection (if 'Food Prb Enable' = 'YES')		
	Hold Temp Alarm		**Temperature alarm during Hold configuration:**	Func.	REL
		NONE (NONE)	Hold temperature alarms are inhibited		
		RELATIVE (REL)	The values set in 'Low Diff Alm' & ;High Diff Alm' are applied to the Hold phase set point		
		ABSOLUTE (ABS)	The values set in 'Hold Low Alm' & ' Hold High Alm' are absolute values which are applied to the Hold phase set point		
	Low Temp Alm Diff	-50 to 0°	Hold phase low temperature alarm differential (only when 'hold Temp Alm' = 'REL'). With 'Low Diff Alm' = '0' the low temperature alarm is excluded	°K	-5
	High Temp Alm Diff	0 to 50°	Hold phase high temperature alarm differential (only when 'hold Temp Alm' = 'REL'). With 'High Diff Alm' = '0' the low temperature alarm is excluded	°K	5
	Low Temp Alm	-50 to 120°	Hold phase low temperature alarm (only when 'Hold Temp Alm' = 'ABS')	°C	-5
	High Temp Alm	-50 to 120°	Hold phase high temperature alarm (only when 'Hold Temp Alm' = 'ABS')	°C	10
	Temp. Alm Delay.	0 to 120 min	Delay before Hold phase alarm temperature warning	Min.	30
Alarm 2	**Door Alarm Delay**	0 to 120 min	Delay before door open alarm warning sound (when 'Digital I/P 0' = 'DOOR')	Min.	1
	Power Failure Alarm	0 to 120 min	Power failure alarm time (if Pwr Fail Alm' = '0' power failure alarm is disabled)	Min.	0
	Cond. Clean Warn.	0 to 52 Weeks	Condenser cleaning period. (With 'Cond Clean Warn' = '0' condenser cleaning alarm is disabled)	Wks	0
	Cond. Alarm Temp	-50 to 90°	Condenser alarm temperature (if 'Digital I/P1' = 'COND').	°C	65
	Alr Repeat Interval	0 to 720 min	Time between an alarm being muted and resounding (where condition still exists) If 'Alr Rpt Int' = '0' the alarm will not resound	Min.	60

FC1-11 Default System 1 and 2 Parameter Values

System 1	**High Press Switch**		**Action relating to high pressure switch operation:**	Func.	NON
		NOT USED (NON)	High pressure switch input disregarded		
		ALARM ON (HP ON ALM)	High pressure switch alarm activated when mains power applied (chill cycle continues)		
		ALARM OFF (HP OFF ALM)	High pressure switch alarm activated when mains power removed (chill cycle continues)		
		ALARM & STOP ON (HP ON STP)	High pressure switch alarm activated when mains power applied (chill cycle stops)		
		ALARM & STOP OFF (HP OFF STP)	High pressure switch alarm activated when mains power removed (chill cycle stops)		
	Safety Door Switch		**Action relating to Safety door switch operation:**	Func.	NON
		NOT USED (NON)	Safety door switch input disregarded		
		ALARM ON (SD ON ALM)	Safety door switch alarm activated when mains power applied (chill cycle continues)		
		ALARM OFF (SD OFF ALM)	Safety door switch alarm activated when mains power removed (chill cycle continues)		
		ALARM & STOP ON (SD ON STP)	Safety door switch alarm activated when mains power applied (chill cycle stops)		
		ALARM & STOP OFF (SD OFF STP)	Safety door switch alarm activated when mains power removed (chill cycle stops)		
	Over Temp Switch		**Action relating to over temperature switch operation:**	Func.	NON
		NOT USED (NON)	Over temperature switch input disregarded		
		ALARM ON (SD ON ALM)	Over temperature switch alarm activated when mains power applied (chill cycle continues)		
		ALARM OFF (SD OFF ALM)	Over temperature switch alarm activated when mains power removed (chill cycle continues)		
		ALARM & STOP ON (SD ON STP)	Over temperature switch alarm activated when mains power applied (chill cycle stops)		
		ALARM & STOP OFF (SD OFF STP)	Over temperature switch alarm activated when mains power removed (chill cycle stops)		
	Relay 2		**Relay 2 Operation (relay contacts open when mains power removed):**	Func.	FAN
		NOT USED (NON)	Output disabled (always off)		
		EVP FAN (FAN)	Control of evaporator fan output (subject to defrost and door switch functions)		
		DEFROST HEATER (DEF)	Control of defrost heater/solenoid		
		CAPACITY CONTROL (CAP)	Control of capacity output, subject to ‘unloading’ conditions		
		EOC ALARM (EOC)	Energises at end of cycle for indication		
		LIGHT (LIGHT)	Output enabled for light control		
		0-1 (0-1)	Contacts open/close with ‘Run/Standby’ mode		
		OPEN IN ALARM (AL OPN)	Contact open when an alarm condition occurs		
		CLOSED IN ALARM (AL CLS)	Contacts close when an alarm condition occurs		
		HOLD ALARM (HOLD)	Energises at end of Chill cycle to indicate ‘Hold’ mode. Fe-energised when in Standby or Chill		

System 1	**Relay 3**		**Relay 3 Operation (relay contacts open when mains power removed):**	Func.	DEF
		NOT USED (NON)	Output disabled (always off)		
		EVP FAN (FAN)	Control of evaporator fan output (subject to defrost and door switch functions)		
		DEFROST HEATER (DEF)	Control of defrost heater/solenoid		
		CAPACITY CONTROL (CAP)	Control of capacity output, subject to 'unloading' conditions		
		EOC ALARM (EOC)	Energises at end of cycle for indication		
		LIGHT (LIGHT)	Output enabled for light control		
		0-1 (0-1)	Contacts open/close with 'Run/Standby' mode		
		OPEN IN ALARM (AL OPN)	Contact open when an alarm condition occurs		
		CLOSED IN ALARM (AL CLS)	Contacts close when an alarm condition occurs		
		HOLD ALARM (HOLD)	Energises at end of Chill cycle to indicate 'Hold' mode. Fe-energised when in Standby or Chill		
	Relay 4		**Relay 4 Operation (relay contacts open when mains power removed):**	Func.	0/1
		NOT USED (NON)	Output disabled (always off)		
		EVP FAN (FAN)	Control of evaporator fan output (subject to defrost and door switch functions)		
		DEFROST HEATER (DEF)	Control of defrost heater/solenoid		
		CAPACITY CONTROL (CAP)	Control of capacity output, subject to 'unloading' conditions		
		EOC ALARM (EOC)	Energises at end of cycle for indication		
		LIGHT (LIGHT)	Output enabled for light control		
		0-1 (0-1)	Contacts open/close with 'Run/Standby' mode		
		OPEN IN ALARM (AL OPN)	Contact open when an alarm condition occurs		
		CLOSED IN ALARM (AL CLS)	Contacts close when an alarm condition occurs		
		HOLD ALARM (HOLD)	Energises at end of Chill cycle to indicate 'Hold' mode. Fe-energised when in Standby or Chill		
	Relay 5		**Relay 5 Operation (relay contacts open when mains power removed):**	Func.	EOC
		NOT USED (NON)	Output disabled (always off)		
		EVP FAN (FAN)	Control of evaporator fan output (subject to defrost and door switch functions)		
		DEFROST HEATER (DEF)	Control of defrost heater/solenoid		
		CAPACITY CONTROL (CAP)	Control of capacity output, subject to 'unloading' conditions		
		EOC ALARM (EOC)	Energises at end of cycle for indication		
		LIGHT (LIGHT)	Output enabled for light control		
		0-1 (0-1)	Contacts open/close with 'Run/Standby' mode		
		OPEN IN ALARM (AL OPN)	Contact open when an alarm condition occurs		
		CLOSED IN ALARM (AL CLS)	Contacts close when an alarm condition occurs		

System 1		HOLD ALARM (HOLD)	Energises at end of Chill cycle to indicate 'Hold' mode. Fe-energised when in Standby or Chill		
	Relay 6		**Relay 6 Operation:**	Func.	AL CLS
		NOT USED (NON)	Output disabled (always off)		
		EVP FAN (FAN)	Control of evaporator fan output (subject to defrost and door switch functions)		
		DEFROST HEATER (DEF)	Control of defrost heater/solenoid		
		CAPACITY CONTROL (CAP)	Control of capacity output, subject to 'unloading' conditions		
		EOC ALARM (EOC)	Energises at end of cycle for indication		
		LIGHT (LIGHT)	Output enabled for light control		
		0-1 (0-1)	Contacts open/close with 'Run/Standby' mode		
		OPEN IN ALARM (AL OPN)	Contact open when an alarm condition occurs		
		CLOSED IN ALARM (AL CLS)	Contacts close when an alarm condition occurs		
		HOLD ALARM (HOLD)	Energises at end of Chill cycle to indicate 'Hold' mode. Fe-energised when in Standby or Chill		
	Digital Input 0		**Configurable digital input 1 operation:**	Func.	DOOR
		NOT USED (NON)	Digital input not activated		
		DOOR SWITCH (DOOR)	Door switch input controlling evaporator fan operation		
		LIGHT SWITCH (LIGHT)	Light switch operation when 'Relay x' = 'Light'. See 'light Mode'		
		ALARM IF OPEN (AL OPN)	Alarm activated when contact opens		
		ALARM IF CLOSED (AL CLS)	Alarm activated when contact closes		
	Digital Input 1		**Configurable digital input 1 operation:**	Func.	NON
		NOT USED (NON)	Digital input not activated		
		DOOR SWITCH (DOOR)	Door switch input controlling evaporator fan operation		
		LIGHT SWITCH (LIGHT)	Light switch operation when 'Relay x' = 'Light'. See 'light Mode'		
		ALARM IF OPEN (AL OPN)	Alarm activated when contact opens		
		ALARM IF CLOSED (AL CLS)	Alarm activated when contact closes		
		FOOD PROBE2 (FOOD 2)	Food probe 3 operation – used for information / HACCP purposes only.		
		FOOD PROBE3 (FOOD 3)	Food probe 3 operation – used for information / HACCP purposes only.		
		CONDENSER (COND)	Condenser probe operation (chill cycles will only be time based)		
	Digital Input 2		**Configurable digital input 2 operation:**	Func.	NON
		NOT USED (NON)	Digital input not activated		
		DOOR SWITCH (DOOR)	Door switch input controlling evaporator fan operation		
		LIGHT SWITCH (LIGHT)	Light switch operation when 'Relay x' = 'Light'. See 'light Mode'		
		ALARM IF OPEN (AL OPN)	Alarm activated when contact opens		
		ALARM IF CLOSED (AL CLS)	Alarm activated when contact closes		

System 1		FOOD PROBE2 (FOOD 2)	Food probe 3 operation – used for information / HACCP purposes only.		
		FOOD PROBE3 (FOOD 3)	Food probe 3 operation – used for information / HACCP purposes only.		
		CONDENSER (COND)	Condenser probe operation (chill cycles will only be time based)		
	Light Mode		**Light Control Mode:**	Func.	NON
		Not Used (NON)	Light Control Mode disabled (always off)		
		DI Open (DI OPN)	Light output is switched on when door is opened (if 'Digital I/P 2' = 'LIGHT')		
		DI Closed (DI CLS)	Light output is switched on when door is closed (if 'Digital I/P 2' = 'LIGHT')		
		Door Open (DR OPN)	Light output is switched on when door is opened (if 'Digital I/P 2' = 'DOOR')		
		Door Closed (DR CLS)	Light output is switched on when door is closed (if 'Digital I/P 2' = 'DOOR')		
	Language	English (ENG)			ENG
		French (FRA)			
		German (ALL)			
		Italian (IT)			
System 2	**Clock Format**	12 or 24 hr.	Display/Setting format for the time clock.	Func.	24hr
	Daylight Sav. Time	NO or YES	Daylight Saving time adjustment on last Sunday in March (reverts lack last Sunday in October)	Func.	YES
	Screensaver tmt	0 to 120 min	Time before starting screensaver from Home page (with value 'Scn Svr Time' = '0' screensaver is not enabled and display remains constantly illuminated)	Min.	0
	Air Probe Offset	-9.9 to 9.9°	Air Temperature probe (T1) offset.	°K	0
	Evp. Probe Enable	NO or YES	Evaporator (T2) probe enabling (via T2 port)	Flag	YES
	Evp Probe Offset	-9.9 to 9.9°	Evaporator temperature probe (T2) offset (when 'Evp Prb Offset' = YES')	°K	0
	Food Probe Enable	NO or YES	Food insertion (T3) probe enabling (via T3 port)	Flag	YES
	Food Probe Offset	-9.9 to 9.9°	Food probe 1 offset (when 'Food Prb Enable' = 'YES')	°K	0
	Food 2 Probe Offset	-9.9 to 9.9°	Food Probe 2 offset (if 'Digital I/P1' = 'FOOD')	°K	0
	Food 3 Probe Offset	-9.9 to 9.9°	Food Probe 2 offset (if 'Digital I/P1' = 'FOOD3')	°K	0
	Cond. Probe Offset				
	Display Scale		**Readout scale:**	Func.	0.1°C
		0.1°C (0.1°C)	Range -50 to 120°C (0.1°C resolution within -9.9 to +9.9°c)		
		1°C (1°C)	Range -50 to 210°C		
		1°F (1°F)	Range -50 to 210°F		
	Thermal Simulation	0 to 100	Displayed temperature slowdown	Func.	0
	Address	1 to 255	FC1-11 address for PC/ FCOM/ DL28W communication	Flag	1

Individual Cabinet Chilling and Blast Chilling Parameter Values

Section	Parameter	Default	BCT15-7, BCT22-12, BCT38-18, BCT52-26 Integral	BCT15-7, BCT22-12, BCT38-18, BCT52-26 Remote	BFT15 BFT22 BFT38 BFT52 Integral	BFT15 BFT22 BFT38 BFT52 Remote	RBC20-60 Integral	RBC20-60 & BCCFT-RI Remote	MBCT75, MBCT100, MBCT150 & MBCT250 Remote	MBCFT75, MBCFT100, MBCFT150 & MBCFT250 Remote	MBFT150 Remote
			A	B	C	D	E	F	G	H	I
Pre Chill	Enabled	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
	Air Temperature	5	5	5	5	5	5	5	5	5	5
	Chill Duration	15	15	15	15	15	15	15	15	15	15
	Hold Temperature	3	3	3	3	3	3	3	3	3	3
Soft Chill	Enabled	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO
	Air Temperature	1	1	1	1	1	1	1	1	1	1
	Chill Duration	90	90	90	90	90	90	90	90	90	90
	Chill Temperature	4	4	4	4	4	4	4	4	4	4
	Hold Temperature	3	3	3	3	3	3	3	3	3	3
Hard Chill	Enabled	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO
	Air Temp Stage 1.	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15
	Air Temp Stage 2.	1	1	1	1	1	1	1	1	1	1
	Chill Duration	90	90	90	90	90	90	90	90	90	90
	Chill Temperature	4	4	4	4	4	4	4	4	4	4
	Hold Temperature	3	3	3	3	3	3	3	3	3	3
	Change Time	80	80	80	80	80	80	80	80	80	80
	Change Temp.	15	15	15	15	15	15	15	15	15	15
Hard Max	Enabled	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO
	Air Temperature	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15
	Chill Duration	90	90	90	90	90	90	90	90	90	90
	Chill Temperature	4	4	4	4	4	4	4	4	4	4
	Hold Temperature	3	3	3	3	3	3	3	3	3	3
Freeze	Enabled	NO	NO	NO	YES	YES	NO	NO	NO	YES	YES
	Air Temperature	-30	-30	-30	-30	-30	-30	-30	-30	-30	-30
	Chill Duration	240	240	240	240	240	240	240	240	240	240
	Insertion Probe	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	Chill Temperature	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	Hold Temperature	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21

FC1-11 Individual Model Control, Defrost, Fan, Alarms 1 & 2 Parameter Values

				A	B	C	D	E	F	G	H	I
Control Set Up	Control	Auto Prog. Time	10	10	10	10	10	10	10	10	10	10
		Auto Prog. Hys	10	10	10	10	10	10	10	10	10	10
		Chill Hysteresis	3	3	3	3	3	3	3	3	3	3
		Hold Hysteresis	3	3	3	3	3	3	3	3	3	3
		Comp. Rest Time	2	2	0	2	0	2	0	0	0	0
		Comp. Stop Dly	1	1	1	1	1	1	1	1	1	1
		T1 Fail Run	1	1	1	1	1	1	1	1	1	2
		T1 Fail Stop	2	2	2	2	2	2	2	2	2	1
		Capacity Enable	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
		Capacity Hys	3	3	3	3	3	3	3	3	3	3
		EOC Max Time	2	2	2	2	2	2	2	2	2	2
		EOC Rpt. Int.	30	30	30	30	30	30	30	30	30	30
	Defrost	Start Mode	TM HOLD	TM HOLD	TM HOLD	TM HOLD	TM HOLD	TM HOLD	TM HOLD	TM HOLD	TM HOLD	TM TTL
		Chill Interval	30	30	30	30	30	30	30	30	30	90
		Defrost Interval	24	6	6	6	6	6	6	6	6	6
		End Temperature	20	20	20	20	20	20	20	20	20	20
		Max Duration	30	30	30	30	30	30	30	30	30	30
		Type	OFF	OFF	OFF	ELE	ELE	OFF	OFF	OFF	ELE	ELE
		Drain Time	2	2	2	2	2	2	2	2	2	2
	Fan	Fans In Defrost	YES	YES	YES	NO	NO	YES	YES	YES	NO	NO
		Fan Restart Temp	0	0	0	0	0	0	0	0	0	0
		Max Stop After Def	0	0	0	0	0	0	0	0	0	5
		Min. Fan Stop	0	0	0	0	0	0	0	0	0	0
		Hold Mode	CYCLE	CYCLE	CYCLE	CYCLE	CYCLE	AUTO	AUTO	AUTO	AUTO	AUTO
		Time Fan Stop	1	1	1	1	1	1	1	1	1	1
		Time Fan Run	1	1	1	1	1	1	1	1	1	1
	Alarm 1	Chill Alarm Mode	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE	NONE
		Chill Alm Temp	10	10	10	10	10	10	10	10	10	10
		Chill Alm Time	75	75	75	75	75	75	75	75	75	75
		Temp. Alm Probe	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1
		Hold Temp Alarm	REL	REL	REL	REL	REL	REL	REL	REL	REL	REL
		Low Temp Alm Diff	-5	0	0	0	0	0	0	-5	-5	-5
		High Temp Alm Diff	5	5	5	5	5	5	5	5	5	5
		Low Temp Alm	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5
		High Temp Alm	10	10	10	10	10	10	10	10	10	10
		Temp. Alm Delay	30	30	30	30	30	30	30	30	30	30

				A	B	C	D	E	F	G	H	I
	Alarm 2	Door Alm. Delay	1	1	1	1	1	1	1	1	1	5
		Power Failure Alarm	0	0	0	0	0	0	0	0	0	0
		Cond. Clean Warn.	0	0	0	0	0	0	0	0	0	0
		Cond. Alarm Temp	65	65	65	65	65	65	65	65	65	65
		Alr Repeat Interval	60	60	60	60	60	60	60	60	60	60

FC1-11 Individual Model System 1 & 2 Parameter Values

				A	B	C	D	E	F	G	H	I
System Set Up	System 1	High Press. Switch	NON	NON	NON	NON	NON	AL OPN	NON	NON	NON	NON
		Safety Door Switch	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
		Over Temp. Switch	NON	NON	NON	NON	NON	NON	NON	NON	NON	ST OPN
		Relay 2	FAN	FAN	FAN	FAN	FAN	FAN	FAN	FAN	FAN	FAN
		Relay 3	DEF	NON	NON	DEF	DEF	NON	NON	NON	DEF	DEF
		Relay 4	0/1	0/1	0/1	0/1	0/1	CAP	NON	NON	NON	NON
		Relay 5	EOC	EOC	EOC	EOC	EOC	EOC	EOC	EOC	EOC	EOC
		Relay 6	AL CLS	AL CLS	AL CLS	AL CLS	AL CLS	AL CLS	AL CLS	AL CLS	AL CLS	NON
		Digital Input 0	NON	DOOR	DOOR	DOOR	DOOR	DOOR	DOOR	DOOR	DOOR	DOOR
		Digital Input 1	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
		Digital Input 2	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
		Light Mode	NON	NON	NON	NON	NON	NON	NON	NON	NON	NON
		Language	ENG	ENG	ENG	ENG	ENG	ENG	ENG	ENG	ENG	ENG
	System 2	Clock Format	24H	24H	24H	24H	24H	24H	24H	24H	24H	24H
		Daylight Sav. Time	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
		Screensaver Tmt	0	0	0	0	0	0	0	0	0	0
		Air Probe Offset	0	0	0	0	0	0	0	0	0	0
		Evp. Probe Enable	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
		Evp Probe Offset	0	0	0	0	0	0	0	0	0	0
		Food Probe Enable	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
		Food Probe Offset	0	0	0	0	0	0	0	0	0	0
		Food2 Probe Offset	0	0	0	0	0	0	0	0	0	0
		Food3 Probe Offset	0	0	0	0	0	0	0	0	0	0
		Cond. Probe Offset	0	0	0	0	0	0	0	0	0	0
		Display Scale	0.1ºC	0.1ºC	0.1ºC	0.1ºC	0.1ºC	0.1ºC	0.1ºC	0.1ºC	0.1ºC	0.1ºC
		Thermal Simulation	0	0	0	0	0	0	0	0	0	0
		Address	1	1	1	1	1	1	1	1	1	1

Yellow highlighted parameter values show a difference from the default controller setting

Manual Relay Test

This function is a useful tool that will aid engineers in basic service diagnostics. When 'Relay Test' is selected from the 'Service Settings' screen the engineer can select each individual relay to energise the linked part individually. During testing the relay selected will highlight the block in blue and unless manual switched off (by pressing the relay number again) will run for 2 minutes before de-energising.
More than one relay can be activated at a time.

To exit this menu press the 'Home' button and the display will revert to the 'Service Settings' Screen. If no buttons are pressed for more than 1 minute the display will automatically return to the 'home' screen.

Footprint Testing

This function is used to create a test sequence that is consistent, predictable and repeatable using automated 'built in' events or test programme.
To initiate a test sequence, carry out the following:

- From the 'Home' screen select and hold the  icon for 5 seconds, this will be confirmed by the controller beeping 5 times.
- The display will show as seen here:

- Below the wording 'FOOTPRINT TEST' the relays currently in action are represented by the numbered blocks.
- To the top of the page the information bar shows the cycle time that has lapsed along with the standard set up of the time, date and internal temperature.

As with any function the 'Footprint Test' can be cancelled by using the 'Stop' button as described before.

The Footprint Test Sequence:

Time(s)	Event No.	Description
t	1	Mains power on, no program running. From 'Home' page 'service' button is pressed and held for 5 seconds. Display changes to show 'Footprint Test' screen.
t+05	2	Relay 1 (condensing system) energised
t+10	3	Relay 1 (condensing system) de-energised.
t+15	4	Relay 2 (evaporator fans) energised
t+20	5	Relay 2 (evaporator fans) de-energised
t+25	6	Relay 3 (defrost heater) energised
t+30	7	Relay 3 (defrost heater) de-energised
t+35	8	Relay 4 (auxiliary heaters) energised
t+40	9	Relay 4 (auxiliary heaters) de-energised
t+45	10	Relay 5 (end of cycle alarm) energised
t+50	11	Relay 5 (end of cycle alarm) de-energised
t+55	12	Relay 6 (changeover alarm output) energised
t+60	13	Relay 6 (changeover alarm output) de-energised
t+65	14	Solid State Relay (spare) energised
t+70	15	Solid State Relay (spare) de-energised
t+75	16	'Cooling Phase' commences – Relays 1, 2 and 4 are energised. Temperature reduced and maintained in a 'normal' thermostatic operation (based on the prevailing parameter settings of the 'Hard Max' cycle).
	17	'Cooling Phase' lasts for a total of 300 seconds (5 minutes, providing multiple or partial cycles for the 'Chill Phase' period.
t+375	18	The 'Cooling Phase' ends. Relays 1, 2 and 4 are re-energised, Relay 5 is energised.
t+380	19	The Footprint Test Sequence ends. All relays de-energise. Controller display reverts to 'Home Page'.

Once complete the controller will revert back to the 'Home' screen, de-energising all of the output relays.

Technical Data for Blast Chiller Cabinets

	BCT15-7	BCT22-12	BCT38-18	BCT52-26 (Integral)	BCT52-26 (Remote)
Chilling Capacity (Kg)	15	22	38	52	52
Cooling Duty@ -15°C (Watts)	480	1130	2260	2420	
Number of Fans	1	1	1	2	2
Evaporating Temperature (°C)	-15	-15	-15	-15	-15
Refrigerant Control	TEV	TEV	TEV	TEV	TEV
Compressor	EMT 2130U	NEU 2168U	NEU 2168U	FH 2480Z	
Gas	R290	R290	R290	R452a	R452a
Gas Charge (Grams)	110	120	2 x 140	1800	
Power Consumption (Watts)	925	975	1525	3025	
Protection (Amps)	aM 8	aM 8	aM 10	aM 16	
Electrical Supply	230/1/50 13a	230/1/5013a	230/1/50 16a	230/1/50 16a	230/1/50 16a
Total Heat Rejection (Watts)	886	1746	3492	2337	

Technical Data for Blast Chiller Freezer Cabinets

	BFT15	BFT22	BFT38	BFT52 (Integral)	BFT52 (Remote)
Chilling & Freezing Capacity (Kg)	15	22	38	52	52
Cooling Duty@ -30°C (Watts)	570	1040	920	1860	
Number of Fans	1	1	1	2	2
Defrost Load (Amps)	1	1	1.5	1.5	1.5
Evaporating Temperature (°C)	-30	-30	-30	-30	-30
Refrigerant Control	TEV	TEV	TEV	TEV	TEV
Compressor	NEU 2168U	NJ 2212GK	FH2480Z	TAG 2516Z	
Gas	R290	R452a	R452a	R452a	R452a
Gas Charge (Grams)	120	1400	1800	3500	
Power Consumption (Watts)	950	1850	3050	5005	
Protection (Amps)	aM 8	aM 13	aM 16	aM 10	
Electrical Supply	230/1/50 13a	230/1/50 13a	230/1/50 16a per Phase	400/3/50 per Phase	400/3/50 per phase
Total Heat Rejection (Watts)	1746	983	1146	2066	

Technical Data for Modular Blast Chillers.

	MBCT75	MBCT100	MBCT150	MBCT250
Chilling Capacity (Kg)	75	100	150	250
Cooling Duty@ -15°C (kW)	7	8.5	11.5	21
Number of Fans	3	3	3	6
Fan Load (kW)	0.6	0.6	0.6	1.2
Defrost Load (kW)	0	0	0	0
Drain Connection (mm)	22	22	22	22
Evaporating Temperature (°C)	-15	-15	-15	-15
Refrigerant Control	TEV (MOP @ +10°C)	TEV (MOP @ +10°C)	TEV (MOP @ +10°C)	TEV (MOP @ +10°C)
Gas	R404a	R404a	R404a	R404a
Inlet Size (Inches)	½	½	½	TBS
Outlet Size (Inches)	1 1/8	1 1/8	1 1/8	TBS
Electrical Supply	230/1/50 – 13a	230/1/50 – 13a	230/1/50 – 13a	400/3/50 – 16a per Phase

Technical Data for Modular Blast Chiller Freezers.

	MBCFT75	MBCFT100	MBCFT150	MBCFT250
Chilling & Freezing Capacity (Kg)	75	100	150	250
Cooling Duty@ -30°C (kW)	6	6.4	9	18
Number of Fans	3	3	3	6
Fan Load (kW)	0.6	0.6	0.6	1.2
Defrost Load (kW)	4	4	4	8
Drain Connection (mm)	22	22	22	22
Evaporating Temperature (°C)	-30	-30	-30	-30
Refrigerant Control	TEV (MOP @ +10°C)	TEV (MOP @ +10°C)	TEV (MOP @ +10°C)	TEV (MOP @ +10°C)
Gas	R404a	R404a	R404a	R404a
Inlet Size (Inches)	½	½	½	½
Outlet Size (Inches)	1 1/8	1 1/8	1 1/8	1 1/8
Electrical Supply	230/1/50 – 13a	230/1/50 – 13a	230/1/50 – 13a	400/3/50 – 16a per Phase

Technical Data for Rational and Roll In Blast Chiller Cabinets

	BCCFTRI1
Chilling Capacity (Kg)	75
Freezing Capacity (Kg)	15
Cooling Duty@ -15°C (kW)	5.6
Number of Fans	4
Fan Load (kW)	0.5
Defrost Load (kW)	3.2
Drain Connection (mm)	22mm
Evaporating Temperature (°C)	-15
Gas	R404a
Inlet Size (Inches)	3/8”
Outlet Size (Inches)	1 1/8”
Electrical Supply	230/50/1 20A

	RBCT20-60	RBCT20-60R
Chilling Capacity (Kg)	60	60
Cooling Duty@ -15°C (Watts)	1870	-
Number of Fans	3	3
Evaporating Temperature (°C)	-15	-15
Refrigerant Control	TEV	TEV
Compressor	NJ9238GS	N/A
Gas	R404a	R404a
Gas Charge (Grams)		
System 1	1900	N/A
System 2	1900	N/A
Power Consumption (Watts)		
Current Consumption (Amps)		
Electrical Supply	400/3/50 – 16a	230/1/50 – 13a (Fans & Defrost)
Total Heat Rejection (Watts)	1961w	-
HP Switch Setting		

TEV = Thermostatic Expansion Valve

FC1-11 Technical Data

Power Supply
FD1-11
230Vac±10%,
50/60Hz, Operating 3.2W, Standby 0.9W
Relay Output
Compressor - 16(8) A 240Vac
Defrost - 16(4) A 240Vac
Evap. Fan - 16(4) A 240Vac
Auxiliary Loads 1 - 8(2) A 240Vac
Input
NTC 10KΩ@25°C

Measurement Range
-50…120°C, -55…240°F
-50 / -9.9…19.9 / 80°C (NTC 10K Only)

Measurement Accuracy
<0.5°C within the measurement range

CE (Reference norms)
EN60730-1; EN60730-2-9
EN55022 (Class B)
EN50082-1

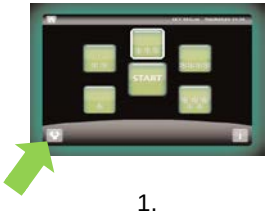
Modular Blast Chiller 3 Food Insertion Probes Configuration.

Modular units are fitted with 3 food insertion probes.
Food Probe 1 is used to control the blast chilling process, where-as Food Probes 2 and 3 are used for temperature reference only.
As part of the installation/commissioning process these probes are to be enabled through the control parameters by carefully following the process detailed below:

> Ensure that all three food probes are correctly connected in the control panel:
- Insertion Probe 1 (master) – terminals 84 and 85
- Insertion Probe 2 – terminals 90 and 91
- Insertion Probe 3 – terminals 89 and 90

Refer to the appropriate model wiring diagram for further connection information.

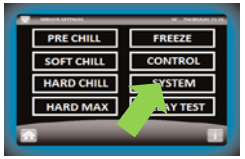
> On completion of electrical safety testing, operational and functional testing the parameters to enable probes 2 and 3 must be adjusted using the following procedure:



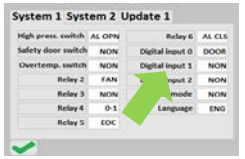
1.
Press and release the ‘Service’ icon.

2.
Press and release the ‘Service Settings’ icon.

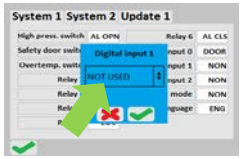
3.
Use up and down arrows to set Pass Code ’131’. Press and release the ‘Enter’ icon.



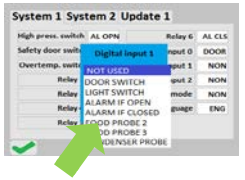
4.
Press and release the ‘SYSTEM’ icon.



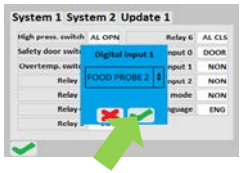
5.
Press and release the ‘Digital input 1’ box.



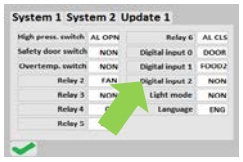
6.
Press and release the ‘NOT USED’ box.



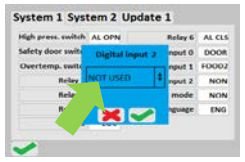
7.
Press and release ‘FOOD PROBE 2’ to select the option.



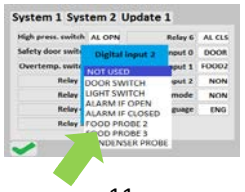
8.
Press and release the ‘tick’ icon to save the change.



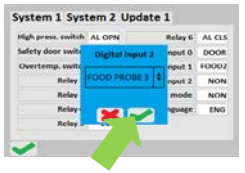
9.
Press and release the ‘Digital input 2’ box.



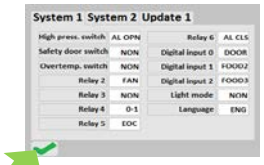
10.
Press and release the ‘NOT USED’ box.



11.
Press and release ‘FOOD PROBE 3’ to select the option.



12.
Press and release the ‘tick’ icon to save the change.



13.
Press and release the ‘tick’ icon to exit the ‘System’ screen.

14.
Press and release the ‘Home’ icon to exit the ‘Service Settings’ screen.

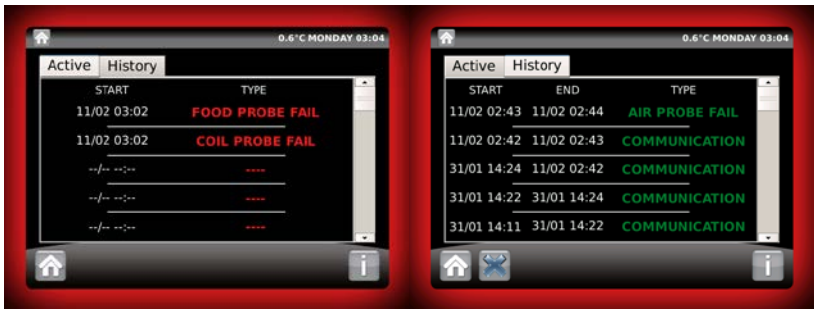
Should you require further assistance in relation to this configuration change contact Foster Product Support Dept. +44 (0) 843 216 8800.
For further probe information please refer to the Wiring Diagrams manual.

Troubleshooting

- **Alarms -** Each alarm that is displayed should be self-explanatory however by pressing the information icon will provide further details as to the cause and necessary action required.

If an alarm has been silenced than the home page will display a visual indicator as shown below:

To view this alarm and or the alarm history press the flashing red alarm bell (as seen above) or if the alarm has been rectified access this history screen by navigating through he 'Service Settings' Screen and selecting Alarms.



The controller will automatically store the last 20 alarms. Active alarms are those that need attention whereas history are those that have shown and been fixed. Currently the 'X' or delete button has no function.

Audible & Visual Alarms / Warnings	Possible Cause	Action / Solution To Rectify
	> Low Temperature Alarm Shows when the temperture; during a chill or hold is lower than the designated set point for a detrmined length of time.	> The cycle will continue during this alarm. Press and hold the 'Rest' button until the three progression blocks have filled red to cancel the audible alarm and return to the cycle screen. If the temperature rises sufficiently during the cycle the alarm will automatically cancel.
	> High Temperature Alarm Shows when the temperture; during hold is higher than the designated set point for a detrmined length of time.	> The cycle will continue during this alarm. Press and hold the 'Rest' button until the three progression blocks have filled red to cancel the audible alarm and return to the cycle screen. If the temperature reduces sufficiently during operation the alarm will automatically cancel.
	> Chill High Temperature Shows if the air temperature, during the chill phase, has not been reduced to the temperature and within the time scale set by the parameter.	> The cycle will continue during this alarm. Press and hold the 'Rest' button until the three progression blocks have filled red to cancel the audible alarm and return to the cycle screen. If the temperature reduces sufficiently during operation the alarm will automatically cancel.

	> Over Temperature Alarm Shows when the temperature rises too high and may become too dangerous for the cycle to continue.	> If 'DI5' is configured to do so, the cycle will halt and all relays will be de-energised. Pressing the 'Mute' button will silence the alarm and the warning will be reset when the controller senses the fault has been corrected. This will be evident as the screen will revert to the 'Home' screen and cycles will run again.
	> Condenser Clean Warning# This will show when enabled via the parameters and after the the time period determined by this has expired.	> Press the 'Reset' button until all three progression blocks are filled to silence the alarm, reset the warning clock and return to the 'Home' screen. Carry out cleaning regime on the condenser.
	> T1 Air Probe Failure This will only show when the probe has failed.	> The cycle will stop, although the controller will operate the condensing system and evaporator fans in conjunction with parameter settings. All relays will de-energise (except the alarm). Pressing the 'Mute' button will silence the alarm temporarily. Alternatively pressing and holding the button for 3 seconds will permanently silence the alarm. The controller will continue to operate on a 'Duty Cycle' (alternating the condensing system and evaporator fans) the error will show with the 'Stop' button. Carry out the stopping procedure to stop the 'Duty Cycle' and check and replace the air probe. The error will show until this fault is fixed, at which point the 'Home' screen will show.
	> T2 Evaporator/Coil Probe Failure# This will only show when the probe has failed.	> No defrost cycles (other than timed off cycles) will take place. Chill cycles will continue. Pressing the 'Mute' button will silence the alarm and return the display to the 'Cycle'/'Home' screen. The alarm will return unless the probe has been checked and or replaced before the time set within the parameters.
	> T3 Insertion/Food Probe Sensor Failure (T3, T4 or T5)# This will only show if the probe has failed.	> No chill based cycles will take place (other than timed chill cycles which will start and go straight into timed chill)). If this shows during a cycle the controller will go into a 'Hold' mode. Pressing the 'Mute' button will silence the alarm and return the display to the 'Home' screen. The alarm will return unless the probe has been checked and or replaced before the time set within the parameters
	> High Pressure Alarm# When the condensing system pressure increases to a level that is too high and it may become too dangerous for the cycle to continue.	> If 'DI3' is configured to do so, the cycle will halt and all relays will be de-energised. Pressing the 'Mute' button will silence the alarm and the warning will be reset when the controller senses the fault has been corrected. This will be evident as the screen will revert to the 'Home' screen and cycles will run again.

 *(Standard Warning)*  *(Fault Alarm)*  *(Safety Door Switch)*	> Door open alarm[#] Shown in two alarm forms: Standard Warning – states that the door is open (as sensed by the door switches). Fault Alarm – Shows once the door open time has lapsed, as dictated by parameters.	> Standard Warning Evaporator fans will have stopped but the condensing unit will still run. To cancel this warning close the door and the evaporator fans will restart. If after shutting the door the warning does not clear; or the door is left open for a period of time defined within parameters the condensing system will stop and will remain so until the door is closed or fault is rectified. > Fault Alarm After the warning process has passed and a time set by the parameters lapses again and the door still remains open, then an audible alarm will sound and the display will change to this red version. The alarm can be silenced by pressing the 'Mute' button but the alarm warning will remain. Shutting the door will cancel both the audible alarm and screen warning and the cycle will resume. > The safety door switch can be configured by parameter options (please see the parameters detail pages) if set to 'Alarm On' or 'Alarm Off' the display will alternate on a 2 second basis showing the operation screen and the Fault Alarm screen. If the alarm persists and the door is closed check and replace the door switch.
	> Power Failure Alarm[#] Shown after the mains power has been lost or temporarily removed during a cycle.	> When power is re-instated after a minimum set time period the cycle will continue without showing an alarm screen. If the time period is equal to or more than the value determined by the parameter set up the cycle will complete and continue into 'Hold' but the alarm screen and sound will show and alternate between this and the 'hold Screen. This is more of a notification to the operator. The alarm can be silenced and screen cancelled by pressing the 'Mute' button. We would recommend the contents of the unit are inspected. If the power is lost at a time other than during a cycle then when re-instated the controller will resume in its state before power loss. No alarm or warning will show if the parameter 'Pwr Fail Alm' is set to '0' as this disables the function.
	> Communication Alarm Shows when the display is unable to communicate with the PCB via the data cable.	> All relays will be de-energised, the display will however sound an internal alarm (…---…--- etc). Press the 'Mute' button to silence the alarm. Investigate the connection fault and when rectified the controller will reset the alarm and revert to the 'Home' page or run subsequent programs.
[#] *only displayed if applicable to model and enabled through parameters*		

- **Vapouriser Tray Overflowing** – This normally happens due to the cabinet being run for a prolonged length of time without being allowed to go into 'Hold' and or 'Defrost' mode.
  If the cabinet is not allowed to perform these functions after carrying out each chill cycle then the water collected will not disperse and result in an overflow.

- **Multiple Warning –** Should multiple alarms show this will be the order of importance they are shown:

Order	Alarms	Order	Warnings
1	Air temperature (T1) Probe Fault	**8**	Door Open Warning
2	Insertion (T3) Probe Failure	**9**	High Temperature Warning
3	High Pressure Alarm	**10**	Chill Temperature Warning
4	Power Failure Alarm	**11**	Low Temperature Warning
5	Over Temperature Alarm	**12**	Condenser Clean Warning
6	Safety Door Switch	**13**	Power Failure Warning
7	Evaporator Temperature (T2) Probe Fault	**14**	Condenser High Temperature Warning

Notes

Before calling your supplier please make sure that:
a) The plug has not come out of the socket and the mains power supply is on i.e. is the controller illuminated?
b) Check to see if the unit is in standby
c) The fuse for the cabinet is intact
d) The cabinet is positioned correctly – cold or warm air sources are not affecting the performance
e) The condenser is neither blocked nor dirty
f) The products are placed in the unit correctly
g) Defrost is not in progress or required
If the reason for the malfunction cannot be identified, disconnect the electrical supply to the unit and contact your supplier. When requesting a service call, please quote the model and serial number which can be found on the silver label located on the inside of the unit (starts E…….).

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