CONTROLLED THAW CABINET WITH SURF NAVIGATION CT70-B

FOSTER

REFRIGERATOR

Service Manual

Contents

Environmental Management Policy for Service Manuals and Duets.

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 clients 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, 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 to storm drains, foul drain, 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.

Cabinet description

304 Stainless Steel interior and exterior finish
The cabinet provides a 70kgs capacity
Thaw food safely from -18/-21ºC to +1/+4ºC
Thaw cycle takes approximately 7 hours based on maximum capacity and 25mm product thickness (thicker products will take longer)
Overnight storage hold facility, so thawed food is ready for use when you want to use it
Stainless steel dished base with drain facility for easy cleaning
Thaw cabinets alternate between circulating gentle heat and refrigeration, via special air ducting and fans, ensuring an even, speedy and safe thaw
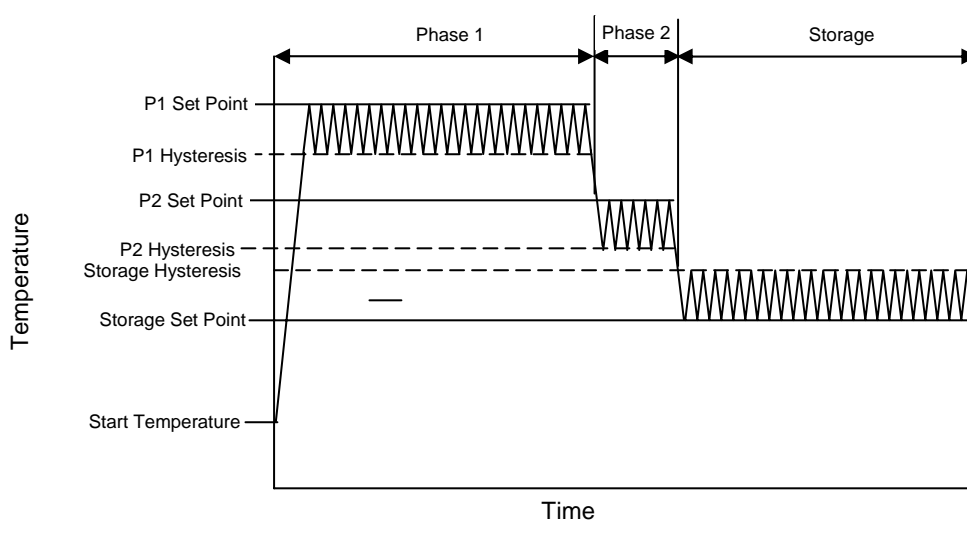
<u>Operation</u>

Upon starting the selected Thaw cycle the controller will increase the internal air temperature in a controlled manner throughout the time period determined by the Phase 1 time and temperature parameters e.g. programme 1= default time setting 5hours 30 minutes, default temperature setting +10ºC. On reaching the cabinet air temperature of +10ºC the controller will cycle between heat and refrigeration relative to the phase 1 parameter settings.

This will be followed by the second timed period, Phase 2, which will lower the cabinet temperature to avoid any surface damage to the product. Default time setting 1 hour, default temperature setting + 7 ºC. On reaching the cabinet air temperature of +7ºC the controller will cycle between heat and refrigeration relative to the phase 2 parameter settings. **NOTE:** This phase is **not** used by KFC, see separate parameter list.

Finally on completion of the phase 2 time period the controller will enter an indefinite period holding the cabinet temperature at + 1 ºC to + 4 ºC. Refrigeration only.
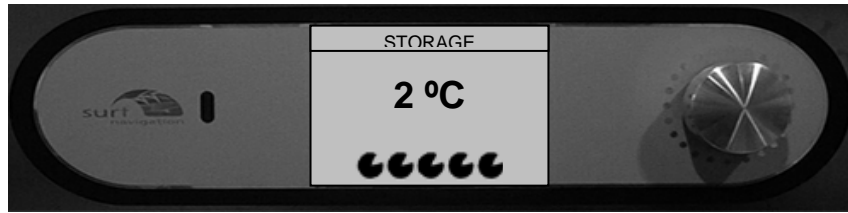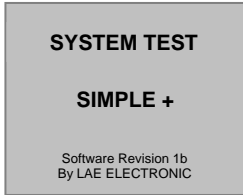
Double Thaw Phase Cycle

Single Thaw Phase Cycle KFC Only
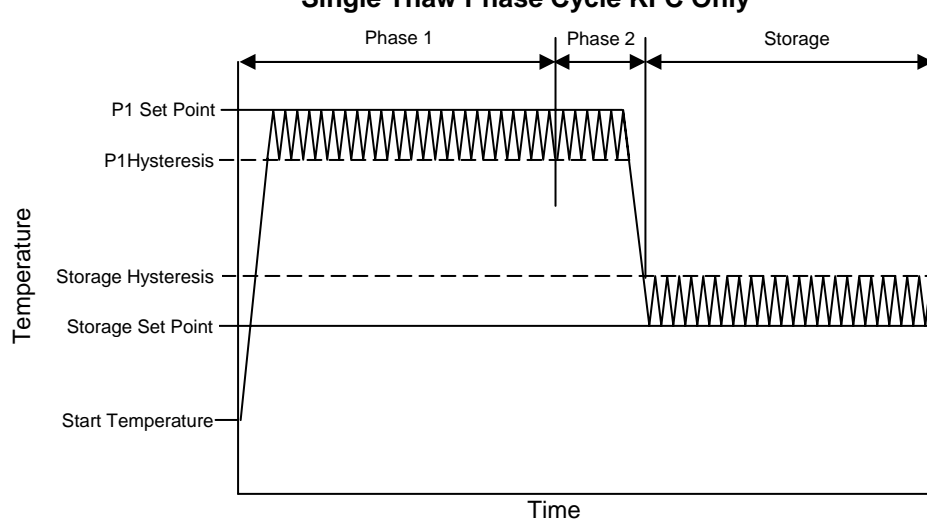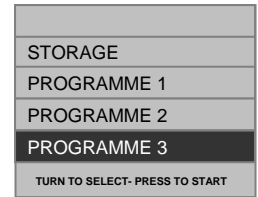
Thaw Operators Guide with SURF Navigation Control

Standard Operation

SYSTEM TEST

SIMPLE +

Software Revision 1b
By LAE ELECTRONIC
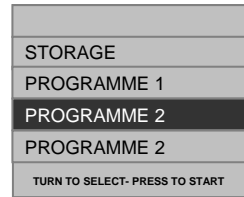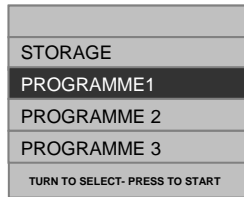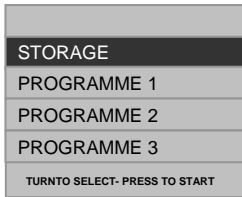
When mains electrical power is first applied to the controller it will carry out a self-test function, for approximately 3 seconds. During this period the display will show.

On completion of the self test, the controller will revert to the last chill program that was run (STORAGE, Programme 1, Programme 2, Programme 3).

STORAGE
PROGRAMME 1
PROGRAMME 2
PROGRAMME 3
TURNTO SELECT- PRESS TO START

STORAGE
PROGRAMME1
PROGRAMME 2
PROGRAMME 3
TURN TO SELECT- PRESS TO START

STORAGE
PROGRAMME 1
PROGRAMME 2
PROGRAMME 2
TURN TO SELECT- PRESS TO START

STORAGE
PROGRAMME 1
PROGRAMME 2
PROGRAMME 3
TURN TO SELECT- PRESS TO START

The examples show the programmes available. To change the program, rotate the dial either clockwise or anticlockwise to select the program you require.
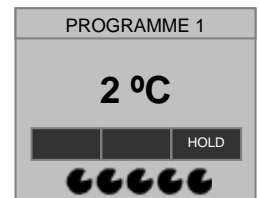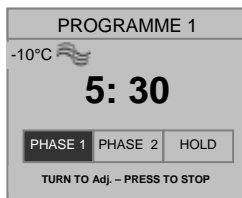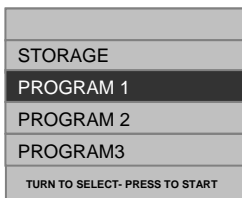
For example select Programme 1and press the dial. The programme starts with the screen second from the left being displayed for one minute. During this period the time can be adjusted by a limited amount if required, rotate the dial clockwise to increase or anti clockwise to decrease.
NOTE: For KFC models it is not recommended to alter the time.

After one minute the display will change to show the screen in the middle showing the time remaining plus the cabinet temperature displayed in the left hand corner of the display.

With one hour remaining on the programme the display will change to show the screen second from the right displaying time and temperature.

On completion of the programme the display will change to display the screen on the right indicating temperature has been achieved and will hold the temperature at plus 2ºC until the dial is pressed for 2 seconds terminating the programme.

STORAGE
PROGRAM 1
PROGRAM 2
PROGRAM3
TURN TO SELECT- PRESS TO START

PROGRAMME 1
-10°C
5: 30
PHASE 1 PHASE 2 HOLD
TURN TO Adj. – PRESS TO STOP

PROGRAMME 1
2°C
5: 30
PHASE 1 PHASE 2 HOLD

PROGRAMME 1
2°C
59: 59
PHASE 2 HOLD

PROGRAMME 1
2 ºC
HOLD

If a programme is not run for 20 minutes the display will change to show the controller in 'sleep' mode.

The 'sleep' mode will be maintained until the dial is pressed, rotated or the door opened when the display will revert to showing the 'User Menu'.

Door Open Alarm

If the door is opened during a programme or storage phase the evaporator fan will stop and screen will change, see below.

```
┌─────────────────────────┐
│      PROGRAMME 1         │
│ ≈ 2°C                    │
│       5: 30              │
│ ┌──────┬───────┬──────┐  │
│ │PHASE 1│PHASE 2│ HOLD │  │
│ └──────┴───────┴──────┘  │
│       Door Open          │
└─────────────────────────┘
```

After 1 minute the condensing unit will stop, if the door is left open for more than 5 minutes the alarm will sound. The alarm can be cancelled by closing the door

Defrost.

Defrosting is only activated during the Storage mode.
The interval between defrosts is 6 hours, this means that over a twenty four hour period, whilst in the storage mode, it will defrost 4 times.

## Alarms and Warning

High Temperature Alarm

The alarm will sound and high temperature alarm will be displayed if the storage temperature rises too high for to long.
Causes for this alarm could be:
Is the airflow restricted? Does the condenser filter require cleaning?
Is the evaporator fan running?
If the problem persists call your Foster Authorised Service Company.

HIGH TEMPERATURE
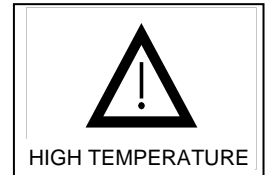
Power Fail:

The alarm will sound in the event of power failure to the machine.
If the power is off for less than five minutes the unit will re-start on the resumption of the power supply without affecting the selected cycle.
If the power is off for longer than five minutes the controller will enter the storage mode on the resumption of the power.
To re-start press and release the dial, the screen will return to the hold screen. Press and hold the dial for two seconds the display returns to the program selection.

POWER FAILURE

Air Probe:

If this alarm occurs the programme will stop with the screen displayed left. The alarm will sound and can be cancelled by pressing and releasing the dial or it will stop after a set period but resound again after a pre-set time. The controller will automatically enter the storage phase until the cycle is stopped but it will not be possible to start further cycles until your Foster Authorised Service Company has rectified the fault.

AIR PROBE

SERVICE SETTINGS

Service settings access

Whilst in the program selection screen press and hold the dial for 2 seconds, the information screen will be displayed continue pressing the dial for a further 2 seconds to display the 'SERVICE MENU'. LANGUAGE will be highlighted.

SERVICE	
LANGUAGE	ENG
DIAGNOSTICS	1-COMP
FOOTPRINT	
CODE	0
Press 2 seconds for Exit	

Changing Text Language.

With LANGUAGE highlighted, press and release the dial, 'ENG' (English) will be highlighted.
Note: English is the only language available for this controller.

Settings and Parameters

Passcode.

Rotate the dial until you reach 'PASSCODE', below left, press and release the dial to highlight the code, below right. Rotate the dial until you reach the code '131'. Once achieved press and release the dial to acknowledge.

SERVICE			SERVICE	
LANGUAGE	ENG		LANGUAGE	ENG
DIAGNOSTICS	1-COMP		DIAGNOSTICS	1-COMP
FOOTPRINT			FOOTPRINT	
CODE	0		CODE	131
Press 2 seconds for Exit			Press 2 seconds for Exit	

Profiles.

You are now in the program profiles. The controller has 5 operating programs – STORAGE, Program 1, Program 2, Program 3, Program 4.

These programs are all available depending upon which of the profiles are selected, see below.

	Storage	Program 1	Program 2	Program 3	Program 4
SIMPLE	X	✓	✓	✓	X
SIMPLE +	✓	✓	✓	✓	X
STANDARD	X	✓	✓	✓	✓
STANDARD +	✓	✓	✓	✓	✓

X = DISABLED   ✓ = ENABLED

To change the profile, rotate the dial to select program, press and release the dial to accept the change. The 3 chevrons in the box opposite the selected program confirm the change.
The default operating profile is 'STANDARD+'.
The table identifies which programs are available from the profile selected.

SERVICE	
STANDARD	
STANDARD +	⟫⟫
EXPRESS	
EXPRESS +	
THAW	
THAW +	
Press 2 seconds for Exit	

Parameter Access.

From the profile screen once the selection has been made press and release the dial to access the parameter list. The screen will display the parameters as shown in the screen below left. To access the system parameters rotate the dial anticlockwise see below right.

	STANDARD +
STORAGE	
MANUAL PROVE 1	
MANUAL PROVE 2	
MANUAL PROVE 3	
ADPR 1	
MANUAL THAW 1	
MANUAL THAW 2	
MANUAL THAW 3	
Press 2 seconds for Exit	

	STANDARD +
AUTOMATIC THAW	
SYSTEM	
Press 2 seconds for Exit	

Selection is made by pressing and releasing the dial.
The table below contains the complete parameter list and includes the selectable range and default values.

PARAMETERS

PARAMETER	DESCRIPTION	VALUE	MINIMUM	MAXIMUM	STANDARD DEFAULT SETTINGS		KFC
	STORAGE						
PO1	Air Temperature	°C	-25	25	2		2
	PROGRAM 1						
PO2	P1 Temperature Default	°C	0	45	8		8
PO3	P1 Time Default	MINUTES	PO4	PO5	270		330
PO4	P1 Time Minimum	MINUTES	0	900	60		330
PO5	P1 Time Maximum	MINUTES	0	900	600		330
PO6	P2 Temperature Default	°C	0	45	6		6
PO7	P2 Time Default	MINUTES	PO8	PO9	60		0
PO8	P2 Time Minimum	MINUTES	0	900	60		0
PO9	P2 Time Maximum	MINUTES	0	900	60		0
	PROGRAM 2						
P10	P1 Temperature Default	°C	0	45	8		8
P11	P1 Time Default	MINUTES	P12	P13	330		420
P12	P1 Time Minimum	MINUTES	0	900	60		420
P13	P1 Time Maximum	MINUTES	0	900	600		420
P14	P2 Temperature Default	°C	0	45	6		6
P15	P2 Time Default	MINUTES	P16	P17	60		0
P16	P2 Time Minimum	MINUTES	0	900	60		0
P17	P2 Time Maximum	MINUTES	0	900	60		0
	PROGRAM 3						
P18	P1 Temperature Default	°C	0	45	8		8
P19	P1 Time Default	MINUTES	P20	P21	540		540
P20	P1 Time Minimum	MINUTES	0	900	60		540
P21	P1 Time Maximum	MINUTES	0	900	60		540
P22	P2 Temperature Default	°C	0	45	6		6
P23	P2 Time Default	MINUTES	P24	P25	60		0
P24	P2 Time Minimum	MINUTES	0	900	60		0
P25	P2 Time Maximum	MINUTES	0	900	60		0
	PROGRAM 4						
P26	P1 Temperature Default	°C	0	45	9		9
P27	P1 Time Default	MINUTES	P28	P29	720		0
P28	P1 Time Minimum	MINUTES	0	900	60		0
P29	P1 Time Maximum	MINUTES	0	900	900		0
P30	P2 Temperature Default	°C	0	45	6		6
P31	P2 Time Default	MINUTES	P32	P33	0		0
P32	P2 Time Minimum	MINUTES	0	900	60		0
P33	P2 Time Maximum	MINUTES	0	900	60		0
	SYSTEM						
P34	P1 Heat Hysteresis	°K	-20	-2	-2		-2
P35	P2 Heat Hysteresis	°K	-20	-2	-2		-2
P36	Storage Hysteresis	°K	2	20	3		3

P37	Short Cycle Delay	MINUTES	0	30	2		2
P38	Thaw Fan OP.	FUNCTION	CYCLE/AUTO/ON		ON		ON
P39	Storage Fan OP.	FUNCTION	CYCLE/AUTO/ON		AUTO		ON
P40	Defrost Type	FUNCTION	OFF/ELE/GAS		OFF		OFF
P41	Defrost Per Day	INTEGER	0	24	4		4
P42	Defrost End Time	MINUTES	1	60	20		20
P43	Defrost End Temperature	°C	0	50	20		20
P44	Drain Time	MINUTES	0	30	1		1
P45	Fan Delay Temperature	°C	-15	15	5		5
P46	Duty Cycle	10x%	0	10	6		6
P47	Compressor Rest Time	MINUTES	0	30	1		1
P48	Door Switch 1	FUNCTION	NO	YES	YES		YES
P49	Door Stop	MINUTES	0	30	1		1
P50	Door Alarm Delay	MINUTES	0	30	5		5
P51	High Temperature Alarm	°K	0	50	10		10
P52	High Alarm Delay	MINUTES	0	120	30		30
P53	Alarm Time	SECONDS	0	120	20		20
P54	Alarm Repeat Interval	MINUTES	0	480	0		0
P55	Alarm Buzzer	FUNCTION	NO	YES	NO		NO
P56	Evaporator Probe Enable	FUNCTION	NO	YES	YES		YES
P57	Air Probe Offset	°K	-15	15	0		0
P58	Evaporator Probe Offset	°K	-15	15	0		0
P59	Contrast	INTEGER	0	100	50		50
P60	Address	INTEGER	1	255	1		1

NOTE: On early version of this model the P39 'Storage Fan OP' was set to 'AUTO' the setting should be changed to 'ON'.
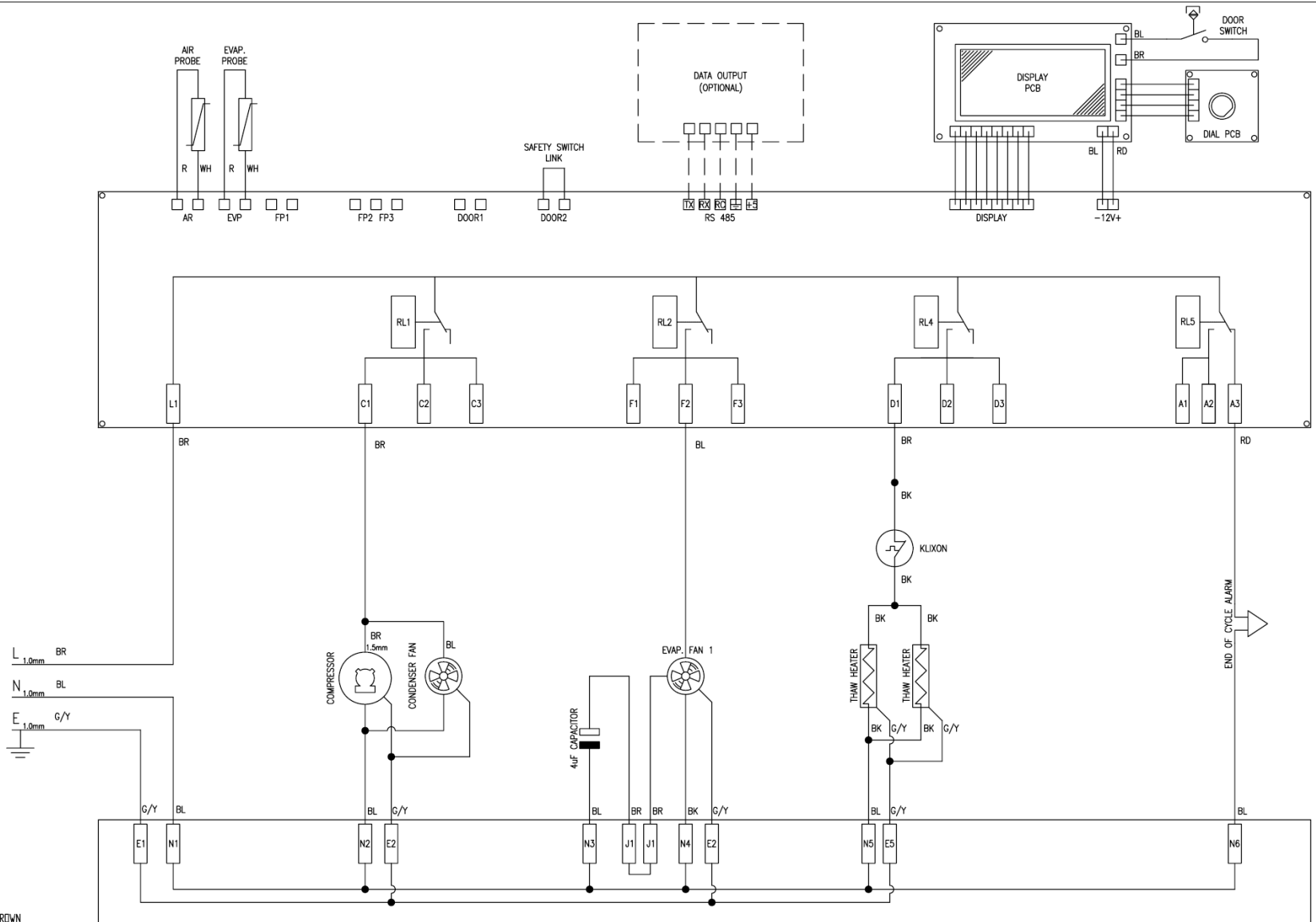
Probes

Air and Evaporator Probes

The air and evaporator probes, type 2K NTC, are the same and are identified as T1 Air Probe and T2 Evaporator Probe. These are the thermistor type and are fully enclosed to make it completely waterproof and resilient to temperature variation within the limits of rapid cycling. The probe is capable of measuring temperature in excess of -30°C and 50°C with 1°K accuracy at 1°C and no more than 2°K at the upper and lower temperature ranges.

Probe temperature resistance values

°C	K ohm	°C	K ohm	°C	K ohm	°C	K ohm	°C	K ohm
-40	44.657	-5	7.198	30	1.651	65	0.497	100	0.189
-35	33.505	0	5.716	35	1.371	70	0.426	105	0.166
-30	25.388	5	4.571	40	1.143	75	0.367	110	0.142
-25	19.402	10	3.682	45	0.958	80	0.318	115	0.125
-20	14.961	15	2.987	50	0.807	85	0.276	120	0.111
-15	11.644	20	2.437	55	0.683	90	0.24	125	0.099
-10	8.133	25	2	60	0.582	95	0.21		

CT70B Wiring Diagram

Foster European Operations

France
Foster Refrigerator France SA
Tel: (33) 01 34 30 22 22. Fax: (33) 01 30 37 68 74.
Email: commercial@fosterfrance.com

Germany
Foster Refrigerator Gmbh,
Tel: (49) 781 990 7840. Fax (49) 781 990 7844.
Email: info@foster-gmbh.de

Foster Refrigerator
Oldmedow Road
Kings Lynn
Norfolk
PE30 4JU

Tel: 01553 691122
Fax: 01553 691447
Website: www.fosterrefrigerator.co.uk
Email: sales@foster-uk.com

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