

**QC 11 & QC 600  
Blast Chiller  
&  
BQCF 40 Chill / Freeze  
Bakery Cabinet**



**SERVICE MANUAL**



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## **Introduction.**

### **Cook Chill Operation.**

Blast chilling is a process to reduce the temperature of cooked food by swiftly arresting the cooking process, locking in its colour, flavour, texture and nutritional value. Department of health guidelines state that to safely blast chill food the temperature must be reduced from +70°C to +3°C within 90 minutes.

Pre Chill ensures the correct cabinet temperature in the unit before chilling commences therefore improving the chilling performance.

### **Program 1**

#### **Soft Chilling.**

Soft chilling is the process of rapid but gentle chilling of food.

This cycle brings down the food temperature to +3°C in no more than 90 minutes without the air or food temperature going below +2°C.

This prevents large ice crystals forming therefore maintaining the texture, consistency and appearance of food such as vegetables, rice, pasta, custard and fruit with no dehydration or cell damage.

### **Program 2**

#### **Hard Chilling Time.**

Hard chilling is the process of general purpose chilling using time.

This cycle brings down the food temperature to +3°C in no more than 90 minutes and is ideal for chilling meat pies, lasagne, pasta and individually portioned meals. The air temperature for this process goes down to -15°C for the first 70 minutes of the cycle, to extract the maximum amount of heat from the product quickly. The air temperature then increases to +2°C for the final 30 minutes of the time to reduce surface damage and ensure quality.

### **Program 3**

#### **Hard Chill +**

This program is for specialist chilling only and not recommended for normal use.

### **Program 4**

#### **Hard Chilling Temperature.**

Hard chilling is the process of general purpose chilling using the food probe.

This cycle brings down the food temperature to +3°C in no more than 90 minutes and is ideal for chilling meat pies, lasagne, pasta and individually portioned meals. The air temperature for this process goes down to -15°C for the first 70% of the cycle, to extract the maximum amount of heat from the product quickly. The air temperature then increases to +2°C for the final 30% of the time to reduce surface damage and ensure quality.

### **Longer Term Storage – ‘Hold’ Mode (Conservation)**

Upon the completion of the blast chilling cycle the controller will automatically enter the ‘Hold’ mode. This will either be because the selection set time has elapsed or the product core temperature has been achieved. When the hold period commences an alarm will sound for a period denoted in the service operating parameters.

The controller will determine the temperature to be maintained during the hold phase based on the chilling or freezing cycle that has been completed. If a soft or hard chill has taken place the controller will maintain an air temperature of 2°C, if a freeze program is completed the air temperature of -21°C will be maintained.

The hold mode is principally intended as a temporary storage facility offering the operator flexibility until the product can be unloaded into a longer term storage units at the correct storage temperature. On occasion this hold period may become extended to operate overnight or to provide emergency refrigeration backup. In such instances defrosting would automatically occur as necessary.

## **Model Details.**

### **Cabinet Blast Chiller & Freezers.**

Controls located in the unit cover.

All of the cabinet range incorporate a bottom mounted refrigeration systems with the evaporator located on the back wall. The refrigerant used is R404a.

Door operated fan switches stop the fans when the door is opened.

QC11, QC 600 all 230/1/50Hz 13amp.

QC11: Economy Blast Chiller, 11kg capacity with three GN1/1 shelves.

QC 600: Economy Blast Chiller, 40kg capacity

BQF 40: Bakery Quick Freeze,

## QC 11, QC 600 & BQCF 40 Blast Chill Operating Instructions.

### Operation

When mains electrical power is first applied to the controller it will carry out a self-test function - - - for approximately 3 seconds, after this the cabinet air temperature will be displayed.

To start, select the program required by pressing the program mode button (1, 2, 3,4), the LED for that mode will illuminate, press and hold start key  for three seconds to start the program. The display will show the program time.

The compressor may pause before starting at the start of a cycle to prevent short cycling of the condensing system and is normal.

When the time or temperature is achieved the machine will go in to the Hold mode with the sounding of an alarm.

To stop the cycle press and hold the start key  for 2 seconds, the cycle will be terminated.

### Manual Defrost.

When the blast chiller is in hold press the defrost key  and hold for 2 seconds to start the defrost.

When defrost is complete the machine will revert to the hold temperature.

Program Mode	Program Type	Program Time	Air Temperature	Chill Temperature	Hold Temperature
					
 	SOFT	90	90 minutes @ +2°C	N/A	+3°C
 	HARD	90	70 minutes @ -15°C 20 minutes @ +2°C	N/A	+3°C
 	HARD +	240	240 minutes @ -15°C	N/A	+3°C
 	HARD		75% @ -15°C 25% @ +3°C	75% @ -6°C 25% @ +2°C	+3°C

**IMPORTANT.** Please note: Program 3 is for specialist markets only and not for normal use.

### Introduction

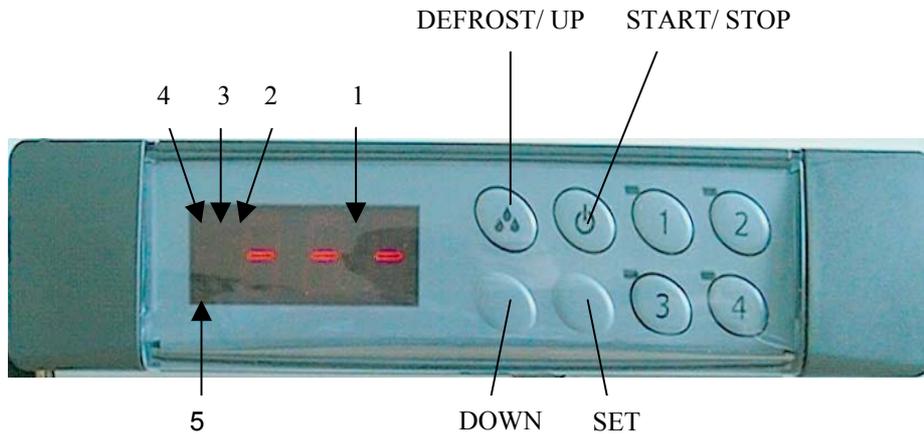
There are four main programmes that you will need to use your Blast Chiller.

-  **Soft Chill-** for the safe chilling of delicate products.
-  **Hard Chill Time** - For general purpose chilling based on time.
-  **Hard Chill +/-.** This program is for specialist chilling only and is not recommended for normal use.
-  **Hard Chill Temperature** - For general purpose chilling using the food probe.

### Guide for Blast Chilling

Food Type	Includes	Blast Chill Programme required
Meat	Beef, pork, lamb, poultry & mince	2 or 4
Fish	Fried, poached or baked – haddock, plaice, salmon, cod fillets etc	1
Prepared dishes	Stews & casseroles, lasagne, risotto, shepherds pie	2 or 4
Vegetables & Pulses	Steamed or roasted veg, rice and potatoes etc.	1
Fruit	Stewed and cooked fruits.	1
Bakery	Cakes	2 or 4
Bakery	Pastries	2 or 4
Desserts	Fruit Based desserts & egg based flans.	1
Desserts	Sponge puddings and dense desserts such as cheesecake.	2 or 4

## Controller operating instructions



**Display Set Point:** Press the SET key whilst in the HOLD Mode will display the set point for 5 seconds.

**Modify Set Point:** Press and hold the SET key for 2 seconds. The SET point will be displayed and the LED's of the first and third digits will blink. To change the value, press the UP key to increase the value or the DOWN key to decrease. To store the new value either press the SET key or wait for the controller to return to displaying air temperature.

**Manual Defrost:** Press and hold the DEFROST/UP  key for 2 seconds to initiate a manual defrost.

**Starting the cycle:** Press and hold the START/STOP  key for 3 seconds.

### **Temporarily Stopping the Cycle:**

Press and release the START/STOP  key.

The condensing system will stop and the message "Stb" will be displayed.

To restart the cycle press and release the START/STOP  key for the cycle to continue from the point it was interrupted. Alternatively the cycle will restart automatically after the time set in parameter PAU (see parameter list on page ).

**Stopping the Cycle:** Press and hold the START/STOP  until the display shows "End", the buzzer will sound and the unit will enter the stand by mode.

### **LED's and there meanings**

A series of LED's, number 1 to 4, on the front panel are used to indicate certain functions controlled by the controller. There functions are listed below.

LED	Mode	Function
1	Illuminated	Compressor Enabled
1	Flashing	Programming Phase (flashing with LED 2).
1	Flashing	Anti Short Cycle Enabled
2	Illuminated	Fan/s Enabled
2	Flashing	Programming Phase (flashing with LED 1).
2	Flashing	Activation Delay Active
3	Illuminated	Defrost Active
3	Flashing	Drip Time Active
4	Illuminated	Freezing Cycle or Hold Mode Active
4	Flashing	Instrument Temporarily Stopped
5	Illuminated	Alarm Signalling

5	Illuminated	When in program Pr2 indicates the parameter is also present in
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**Program function and operation.**

Each of the programs is divided into 3 phases of operation.

- Phase 1: Hard Chill.
- Phase 2: Soft Chill.
- Phase 3: Freezing Cycle.

For each phase there are 3 parameters.

**IS1 (iS2, iS3):** operation controlled by the Food Probe.

**RS1 (rS2, rS3):** set point for the room Temperature Probe for each phase.

**Pd1 (Pd2, Pd3):** The maximum time duration for each phase.

**Hds:** hold phase set point at the end of the whole cycle.

There are also 2 parameters relating to defrost.

These are **dbC** = Defrost Before cycle, **dbH** = defrost before hold (at the end of the cycle).

**Cycle Parameter Definitions.**

<u>Parameter</u>	<u>Range</u>	<u>Minimum</u>	<u>Description</u>
<b>dbc:</b>	yes/ no	-----	Defrost before cycle
<b>First Phase</b>			
<b>iS1</b>	50 to + 50°C	1°C or 1°F	Food Probe Set Point (when the temperature measured by the food probe reaches this value the first phase is ended).
<b>rS1</b>	50 to + 50°C	1°C or 1°F	Air Temperature Set Point (prevents the air temperature going to low during the first phase).
<b>Pd1</b>	OFF to 4.0 hours	10 minutes	Maximum Time For The First Phase
<b>Second Phase</b>			
<b>iS2</b>	50 to + 50°C	1°C or 1°F	Food Probe Set Point (when the temperature measured by the food probe reaches this value the second phase is ended).
<b>rS2</b>	50 to + 50°C	1°C or 1°F	Air Temperature Set Point (prevents the air temperature going to low during the first phase).
<b>Pd2</b>	OFF to 4.0 hours	10 minutes	Maximum Time For The Second Phase
<b>Third Phase</b>			
<b>iS3</b>	50 to + 50°C	1°C or 1°F	Food Probe Set Point (when the temperature measured by the food probe reaches this value the whole cycle is ended).
<b>rS2</b>	50 to + 50°C	1°C or 1°F	Air Temperature Set Point (prevents the air temperature going to low during the third phase).
<b>Pd3</b>	OFF to 4.0 hours	10 minutes	Maximum Time For The Third Phase.
<b>dbH</b>	yes/ no	-----	Defrost before the hold phase
<b>HdS</b>	50 to + 50°C or OFF	1°C or 1°F	Set Point OF The Hold Phase. If set to OFF the hold Phase is disabled.

**Important Note: If the duration time phase is set to OFF the corresponding phase is disabled.**

**E.G. If Pd3 = OFF the third phase of the cycle is not active.**

**Cycle Parameter Access**

To access the cycle parameters Press and Hold the Set and Down buttons for 2 seconds.

The display will show “Prb” press the down button and scroll through until you get to “FCY” cycle management.

Press Set “Cy1” will be displayed, press the down button to scroll through the submenu to select the required cycle parameters. Once selected press the set key to access the cycle parameters.

**QC 11 Cycle Parameters.**



**Soft Chill-** for the safe chilling of delicate products. (Cy1)

dbC = no	iS1 = -10°C	iS2 = 5°C	iS3 = 3°C	dbH = no
	rS1 = 2°C	rS2 = -2°C	rS3 = -2°C	HdS = 3°C
	Pd1 = 1.3 hours	Pd2 = OFF	Pd3 = OFF	



2

**Hard Chill Time** - For general purpose chilling based on time. (Cy2)

dbC = no	iS1 = -15°C	iS2 = 2°C	iS3 = -18°C	dbH = no
	rS1 = -15°C	rS2 = 2°C	rS3 = -30°C	HdS = 3°C
	Pd1 = 1.1hours	Pd2 = 0.2 hours	Pd3= OFF	

3

**Hard Chill +/-**. This program is for specialist chilling only and is not recommended for normal use. (Cy3)

dbC = no	iS1 = -15°C	iS2 = -18C	iS3 = -18°C	dbH = no
	rS1 = -15°C	rS2 = -30°C	rS3 = -15°C	HdS = 3°C
	Pd1 = 4 hours	Pd2 = OFF	Pd3 = OFF	

4

**Hard Chill Temperature** - For general purpose chilling using the food probe. (Cy4)

dbC = no	iS1 = -6°C	iS2 = 3°C	iS3 = -18°C	dbH = no
	rS1 = -15°C	rS2 = 2°C	RS3 = -30°C	HdS = 3°C
	Pd1 = 1.1 hours	Pd2 = 0.2	Pd3 = OFF	

**QC 60 Cycle Parameters.**

1

**Soft Chill-** for the safe chilling of delicate products. (Cy1)

dbC = no	iS1 = -10°C	iS2 = 5°C	iS3 = 3°C	dbH = no
	rS1 = 2°C	rS2 = -2°C	rS3 = -2°C	HdS = 3°C
	Pd1 = 1.3 hours	Pd2 = OFF	Pd3 = OFF	

2

**Hard Chill Time** - For general purpose chilling based on time. (Cy2)

dbC = no	iS1 = -15°C	iS2 = 2°C	iS3 = -18°C	dbH = no
	rS1 = -15°C	rS2 = 2°C	rS3 = -30°C	HdS = 3°C
	Pd1 = 1.1hours	Pd2 = 0.2 hours	Pd3= OFF	

3

**Hard Chill +/-**. This program is for specialist chilling only and is not recommended for normal use. (Cy3)

dbC = no	iS1 = -15°C	iS2 = -18C	iS3 = -18°C	dbH = no
	rS1 = -15°C	rS2 = -30°C	rS3 = -15°C	HdS = 3°C
	Pd1 = 4 hours	Pd2 = OFF	Pd3 = OFF	

4

**Hard Chill Temperature** - For general purpose chilling using the food probe. (Cy4)

dbC = no	iS1 = -6°C	iS2 = 3°C	iS3 = -18°C	dbH = no
	rS1 = -15°C	rS2 = 2°C	RS3 = -30°C	HdS = 3°C
	Pd1 = 1.1 hours	Pd2 = 0.2	Pd3 = OFF	

**BQCF 40 Cycle Parameters.**

1

**Soft Chill-** for the safe chilling of delicate products. (Cy1)

dbC = no	iS1 = -10°C	iS2 = 5°C	iS3 = 3°C	dbH = no
	rS1 = 2°C	rS2 = -2°C	rS3 = -2°C	HdS = 3°C
	Pd1 = 1.3 hours	Pd2 = OFF	Pd3 = OFF	

2

**Hard Chill Time** - For general purpose chilling based on time. (Cy2)

dbC = no	iS1 = -15°C	iS2 = 2°C	iS3 = -18°C	dbH = no
	rS1 = -15°C	rS2 = 2°C	rS3 = -30°C	HdS = 3°C
	Pd1 = 1.1hours	Pd2 = 0.2 hours	Pd3= OFF	



**Hard Chill +/-.** This program is for specialist chilling only and is not recommended for normal use. (Cy3)

dbC = no	iS1 = -6°C	iS2 = 3°C	iS3 = -18°C	dbH = no
	rS1 = -15°C	rS2 = 2°C	rS3 = -30°C	HdS = 3°C
	Pd1 = 1.1 hours	Pd2 = 0.2	Pd3 = OFF	



**Hard Chill Temperature -** For general purpose chilling using the food probe. (Cy4)

dbC = no	iS1 = -6°C	iS2 = 3°C	iS3 = -18°C	dbH = no
	rS1 = -15°C	rS2 = 2°C	RS3 = -30°C	HdS = 3°C
	Pd1 = 1.1 hours	Pd2 = 0.2	Pd3 = OFF	

## Function Menu

To access the cycle parameters Press and Hold the Set and Down buttons for 2 seconds. The display will show “Prb”.

### **Prb: Probe Display.**

Allows the probe temperatures to be displayed for ten seconds.

- **rPr:** Displays temperature measured by the AIR probe.
- **Epr:** Displays temperature measured by the EVAPORATOR probe.
- **IPr:** Displays temperature measured by the FOOD probe.

Press SET to display the reading of the selected probe, press SET with the reading displayed returns to the probe labels.

### **Probe Fault Identification.**

**rPF** = AIR probe fault.

**EPF** = EVAPORATOR probe fault.

**iPF** = Food probe fault.

### **Pr1: User Parameters.**

Includes all user accessible parameters. If no parameters are present in the menu “Pr2” will be displayed.

### **Pr2: Installer Parameters.**

Includes all the instrument parameters (at installer level). It can only be accessed using the security code. On entering the parameters it is possible to modify all parameters and add or remove parameters from “Pr1” (user level) by pressing “SET” + “UP”. When a parameter is enabled at user level, LED 5 (Alarm LED) is on.

### **Fcy: Cycle Managent.**

The Fcy menu contains the Cy1, Cy2, Cy3 and Cy4 sub menus. Each of the sub menus should be set to the Standard Cycle Parameters as detailed on pages 6 and 7.

### **Sto: Cycle Length.**

The “Sto” menu records the real length of a cycle and the real length of each single phase. It contains the following sub menu:

**tCy:** Cycle Duration. **tP1:** First Phase Duration. **tP2:** Second Phase Duration. **tP3:** Third Phase Duration.

### **rtC: Clock Managent.**

Real time clock parameters.

**SEC:** Seconds (00 to 59).

**Min:** Minutes (00 to 59).

**Hou:** Hours (1 to 24).

**7dY:** Day of the week (**Mon** = Monday. **tue** = Tuesday. **Wed** = Wednesday. **Thu** = Thursday. **Fri** = Friday. **Sat** = Saturday. **Sun:** Sunday)

**dAY:** Day of the Month (1 to 31).

**Mon:** Number of the month (1 to 12).

**YEA:** Year (0 to 99).

### **Alr: Alarms Display.**

This function displays any alarm messages.

### **Prt: Printer Management.**

Contains the parameters for the management of the printer.

**PrP:** Printer presence. (Yes or no) Enables or disables the printer.

**ItP:** Printing interval. (0.0 to 30.0). Sets the print interval.

**PbP:** Print probe selection. (**iP:** only the food probe selected. **rP:** only the air probe selected. **irP:** Food and Air probe selected. **irE:** All probes selected).

**PtH:** (yes or no) Enables or disables the printing during the holding phase.

**tSt:** Starts the controller self test function.

**Out:** Exit from the menu.

### Parameter Access and modification

To access the parameters firstly enter the function menu by pressing the “**SET**” and “**DOWN**” keys for 3 seconds. Scroll through the labels and select “**PR2**”, press the “**SET**” key. “**PAS**” label flashes for a few second followed by “**0 \_ \_**” with the zero flashing. The access code is ‘321’.

Use the “**UP**” or “**DOWN**” key to input the first number of the security code in the flashing section, confirm by pressing “**SET**”.

Repeat the operation for the second and third digits.

If the security code is correct “**Hy**” will be displayed.

NOTE: if no key is pressed for 15 seconds the controller reverts to displaying the room temperature.

### Parameter Settings

Lab	Description	Default	QC 11	QC 600	BQCF 40
<b>Regulation</b>					
<b>Hy</b>	differential	3	3	3	3
<b>AC</b>	Anti-short cycle delay	2	2	2	2
<b>1c2</b>	Second compressor configuration	0	0	0	0
<b>rPO</b>	Thermostat probe calibration	0	0	0	0
<b>EPP</b>	Evaporator probe presence	YES	NO	YES	YES
<b>EPO</b>	Evaporator probe calibration	0	0	0	0
<b>iPP</b>	Insert probe presence	YES	YES	YES	YES
<b>iPO</b>	Insert probe calibration	0	0	0	0
<b>CF</b>	Temperature measurement unit	°C	°C	°C	°C
<b>rES</b>	Resolution (for °C):	IN	IN	IN	IN
<b>PAU</b>	Time of stand by	1	1	1	1
<b>PFt</b>	Maximum acceptable duration of power failure	2	2	2	2
<b>iPd</b>	Temperature difference for the automatic recognition of the insert probe	3	3	3	3
<b>iPt</b>	Time delay for the automatic recognition of the insert probe	60	60	60	60
<b>Con</b>	Compressor ON time with faulty probe	15	15	15	15
<b>COF</b>	Compressor OFF time with faulty probe	10	10	10	10
<b>diC</b>	Digital input operating mode	dor	dor	dor	Dor
<b>diP</b>	Digital input polarity	OP	OP	OP	OP
<b>did</b>	Digital input delay	5	5	5	5
<b>OAC</b>	Auxiliary output configuration	AL	AL	AL	AL
<b>OAP</b>	Auxiliary output polarity	OP	CL	CL	CL
<b>OAt</b>	AUX output timer	60	60	60	60
<b>OAS</b>	Set point for AUX output	0	0	0	0
<b>OAH</b>	Differential for AUX output	2	2	2	2
<b>OAi</b>	Probe selection for the AUX output	rP	rP	rP	rP
<b>Defrost</b>					
<b>tdF</b>	Defrost type	in	in	in	In
<b>dPO</b>	Defrost before holding cycle	YES	YES	YES	YES
<b>IdF</b>	Interval between defrost cycles	6.0	6.0	6.0	6.0
<b>dtE</b>	Defrost termination temperature	20	20	20	20
<b>MdF</b>	Maximum length for defrost	20	20	20	20
<b>dFd</b>	Temperature displayed during defrost	rt	rt	rt	Rt
<b>Fdt</b>	Drip time	1	1	1	1
<b>Fans</b>					
<b>FnC</b>	Fan operating mode	c n	O Y	O Y	O Y
<b>FSt</b>	Fan stop temperature	30	30	30	30
<b>AFH</b>	Differential for the stop temperature and for the alarm	2	2	2	2
<b>Fnd</b>	Fan delay after defrost	2	2	2	2

Alarm					
<b>ALU</b>	MAXIMUM temperature alarm	30	30	30	30
<b>ALL</b>	Minimum temperature alarm	30	30	30	30
<b>ALd</b>	Temperature alarm delay	60	60	60	60
<b>EdA</b>	Alarm delay after defrost	30	30	30	30
<b>tbA</b>	Silencing alarm relay	YES	YES	YES	YES
Others					
<b>Ad1</b>	Address 1 for RS485:	0	0	0	0
<b>Ad2</b>	Address 2 for RS485	1	1	1	1
<b>Lod</b>	Local display	nr	nr	nr	nr
<b>rEd</b>	Remote display	iP	iP	iP	IP
<b>LOC</b>	Keypad LOCK	no	no	no	No
<b>PAS</b>	Security code set up	321	321	321	321
<b>tPb</b>	Type of probe	ntc	ntc	ntc	Ntc
<b>rEL</b>	Release code (readable only)	1,0	1.0	1.0	1.0
<b>Ptb</b>	Parameter code (readable only)	--	--	--	--

## Parameter Definitions

### REGULATION

**Hy Intervention differential for set point:** (0,1 ÷ 12,0 /0,1°C/1°F), always positive. Compressor cut IN is Set Point Plus Differential (Hy). Compressor cut OUT is when the temperature reaches the set point.

**AC Anti-short cycle delay:** (0÷30 min) minimum interval between the compressor stop and the following restart.

**1c2 Second compressor setting: (enabled only if OAC=C2)**

The fourth relay work as second compressor if OAC=Co2.

Second compressor operates on set + OAS. (whit set= set loaded during the current phase). It starts oAt min. after the first compressor

The following table shows how it works:

	Cycle	Holding
<b>1c2=0</b>	C1 ON; C2 On	C1 on; C2 On
<b>1c2=1</b>	C1 on; C2 On	C1 on C2 off
<b>1c2=2</b>	C1 on; C2 off	C1 on; C2 On
<b>1c2=3</b>	C1 on; C2 off	C1 off; C2 On

**rPO Thermostat probe calibration** (-12,0 ÷ 12,0; res. 0,1 °C /1°F)

**EPP Evaporator probe presence (not present in the XB350C):** (no / YES) **no:** not present (timed defrost); **YES:** present (end defrost )

**EPO Evaporator probe calibration (not present in the XB350C):** (-12,0 ÷ 12,0; res. 0,1 °C /1°F)

**iPP Insert probe presence** (no / YES) **no:** not present; **YES:** present.

**iPO Insert probe calibration** (-12,0 ÷ 12,0; res. 0,1 °C /1°F)

**CF Temperature measurement unit:** °C =Celsius; °F =Fahrenheit

**rES Resolution (for °C):** **in:** integer; **de:** with decimal point

**PAU Time of stand by:** (0 ÷ 60min) after this time the controller restart the cycle

**Pft Maximum acceptable duration of power failure:** (0 ÷ 250 min) if power failure duration is less than PFT, the cycle restarts from the same point at which it was stopped otherwise the cycle restarts from the beginning of the current phase.

**iPd Temperature difference for the automatic recognition of the insert probe:** (0 ÷ 30; ris.1 °C/1°F) if the difference of temperature between the insert probe and the thermostat probe is less than iPd, the selected cycle is made by time.

**iPt Time delay for the automatic recognition of the insert probe:** (0÷255sec, with 0 only timed cycles are done) time between the start of a cycle and the comparison of the temperature of the thermostat probe and the insert probe to recognising if the insert probe is used.

**Con Compressor ON time with faulty probe:** (0÷ 255 min) time during which the compressor is active in case of faulty thermostat probe. With CON=0 compressor is always OFF

**COF Compressor OFF time with faulty probe:** (0÷255 min) time during which the compressor is off in case of faulty thermostat probe. With COF=0 compressor is always active

**diC Digital input operating mode** (EAL, bAL, dor)

**EAL:** external alarm; **bAL:** serious alarm; **dor:** door open function

**diP: digital input polarity:** (OP÷CL)select if the digital input is activated by opening or closing the contact. OP= opening; CL=closing

**did: digital input delay** (0÷255 min) delay between digital input activation and his signalling for configurable or door opened alarm.

**NOTE:** with diC=EAL did has to be different from zero.

**OAC: AUX output configuration:** (AL, Li, UL, Ip, AA, rE, dF, C2)

**AL:** alarm output; **Li:** light of the cabinet; **UL:** for the ultra-violet light (It is actionable only when the controller is in OFF position); **Ip:** to extract the insert probe (It is actionable only when the controller is in OFF position); **AA:** anti - condensation; **rE:** the IV relay works as a thermostat, with direct action (cooling) (OAH>0), and inverse actions (heating) (OAH<0); **dF:** the IV relay is activated during the defrost, at the end of the defrost it remains ON for the OAt time; **C2:** second compressor. See 1c2 parameter for different settings.

**OAP AUX output polarity (OP ÷ CL)** **OP**= normally open; if it is ON the terminals 6-8 are closed. **CL**= normally closed; if it is ON the terminals 6-7 are closed.

**OAt AUX output timer:** (0÷255 min) time in which the AUX output stays ON. It is enabled when OAC = Li or UL or Ip or AA or dF.

**OAS Set point for AUX output** (-50÷50; ris.1 °C/ 1°F)

**OAH Differential for AUX output:** (-12.0÷12,0; ris.0,1°C/1°F, always ≠0) Intervention differential for the set point of the auxiliary, with OAH<0 the action is for heating, with OAH>0 it is for cooling. **COOLING:** AUX cut IN is OAS Plus Differential (OAH>0). AUX cut OUT is when the temperature reaches the set point OAS.

**HEATING:** AUX cut IN is OAS Plus Differential (OAH<0). AUX cut OUT is when the temperature reaches the set point OAS.

**Oai Probe selection for the AUX output (rP, EP, iP)** rP = thermostat probe, EP = evaporator probe; iP = insert probe

## DEFROST

**tdF Defrost type (not present in the XB350C):** (rE= electrical heater; in = hot gas).

**dPO Defrost before the holding:** no= no defrost; **YES**= defrost at the start of a holding cycle.

**IdF Interval between defrost cycles:** (0.1÷ 24.0; res. 10 min) Determines the time interval between the beginning of two defrost cycles. (with 0.0 the defrost is disabled)

**dtE Defrost termination temperature (not present in the XB350C):** (-50÷50 °C/°F) Sets the temperature measured by the evaporator probe, which terminates the defrost.

**MdF Maximum length for defrost:** (0÷255 min) When EPP = no (timed defrost) it sets the defrost duration, when EPP = YES (defrost termination based on temperature) it sets the maximum length for defrost.

**dFd Temperature displayed during defrost:** (rt , it, SEt, dEF) **rt:** real temperature; **it:** temperature at the start of defrost; **SEt:** set point; **dEF:** "dEF" message

**Fdt Drip time (not present in the XB350C):** (0 ÷ 60 min) Time interval between reaching defrost termination temperature and the restoring of the controllers' normal operation. This time allows the evaporator to eliminate water drops that might have formed during defrost.

## FANS

**FnC Fans operating mode during the holding phase:**

**C-n**= runs with the compressor, OFF during defrost; **o-n** = continuous mode, OFF during defrost; **C-Y** = runs with the compressor, ON during defrost; **o-Y** = continuous mode, ON during defrost;

**FSt Fan stop temperature:** (-50÷50°C/°F; res. 1°C/1°F) if the temperature, detected by the evaporator probe is above FSt fans are stopped. It serves to avoid blowing warm air around the room.

**AFH Differential for the stop temperature and for the alarm** (0.1 ÷ 25.0 °C; ris.0.1°C/1°F) Fans carry on working when the temperature reaches the FSt-AFH value, the temperature alarm recovers when the temperature is AFH degrees below the alarm set.

**Fnd Fan delay after defrost:** (0 ÷ 255 min) The time interval between end of defrost and evaporator fans start.

## ALARM

**ALU MAXIMUM temperature alarm:** (1 ÷ 50 °C/°F) When the "SET+ALU" temperature is reached the alarm is enabled, (possibly after the "Ald" delay time).

**ALL Minimum temperature alarm:** (1÷50°C/1°F) When the "SET-ALL" temperature is reached the alarm is enabled, (possibly after the "Ald" delay time).

**ALd Temperature alarm delay:** (0÷255 min) time interval between the detection of an alarm condition and alarm signalling.

**EdA Temperature alarm delay at the end of defrost:** (0 ÷ 255 min) Time interval between the detection of the temperature alarm condition at the end of defrost and alarm signalling.

**tbA Silencing alarm relay:** (Yes= silencing buzzer and alarm relay, no= only buzzer silencing).

## OTHER

**Ad1 Address 1 for RS485:** (0 ÷ 94)

**Ad2 Address 2 for RS485** (0 ÷ 94)

**Lod: Local display: (rP, EP, iP, nr)** Select which probe is displayed by the instrument. **rP:** Thermostat probe. **EP:** Evaporator probe. **iP:** Insert probe, **nr:** During a temperature cycle the insert probe is displayed, during the holding phase the room probe is displayed. If the cycle is made by time the time remaining is displayed (in minutes).

**rEd Remote display: (rP, EP, Ip)** select which probe is displayed by the XR REP. **rP:** thermostat probe; **EP:** evaporator probe; **iP:** insert probe.

**Loc Set point of the holding phase lock** (no - YES) It locks the set point of the holding phase.

**PAS Security code set up:** (0 ÷ 999)

**tPb** Type of probe: it displays the probe used (NTC or PTC) (readable only)

**rEL** Release code (readable only)

**Ptb** Parameter code (readable only)

### Printer Management

The instrument XB570L can drive the **serial printer** XB05PR by means of the RS232 output. So temperatures measured during a freezing cycle can be printed.

The internal Real Time clock of the instrument provides time reference.

The “Prt” functions manages the printer by means of the following parameters:

**Prt:** printer presence: (Yes/no) it enables or disables the printer.

**iP:** printing interval: (0.0÷30.0 min).

**PbP: which probe has to be printed:** (**iP:** Only the insert probe; **rP:** Only the thermostat probe; **irP:** Insert and thermostat probes; **irE:** All the probes.

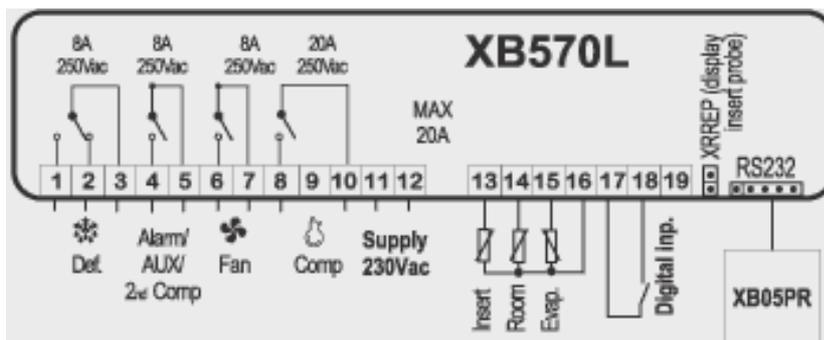
**PtH:** Printing during the holding phase (yES, no) **yES** = Printing enabled during the holding phase; **no** = Printing disabled during the holding phase.

**NOTE:** Although the controller is capable of several features ie. HACCP recording and output, it is intentional by Foster that these have not been developed to maintain the simplicity of operation for the end user. Therefore these features are not offered or supported.

### Alarm Signals

Mess.	Cause	Outputs
“EE”	Data or memory failure	Alarm output ON; Other outputs unchanged
“rPF”	Thermostat Probe failure	Alarm output ON; Compressor output according to parameters “CO <sub>n</sub> ” and “CO <sub>F</sub> ”
“EPF”	Evaporator Probe failure	Alarm output ON; Defrost termination is timed; No temperature control on fans.
“iPF”	Insert probe failure	Alarm output ON; Other outputs unchanged; The cycle is made by time
“rtC”	Real Time Clock data lost	Alarm output ON; Other outputs unchanged;
“rtF”	Real Time Clock failure	Alarm output ON; Other outputs unchanged; The date and the duration of the cycle are not available.
“HA”	Maximum temperature alarm	Alarm output ON; Other outputs unchanged.
“LA”	Minimum temperature alarm	Alarm output ON; Other outputs unchanged.
“FF”	Fast freezing interrupted by short power failure	Alarm output ON; The freezing cycle restart from the same point at which was interrupted.
“PFA”	Fast freezing interrupted by long power failure	Alarm output ON; The freezing cycle restart from the current phase.
“OCF”	Max duration of the cycle is expired	Alarm output ON; Other outputs unchanged. In any case the cycle ends when the final temperature is reached
“EA”	External alarm	Alarm output ON; Other outputs unchanged.
“CA”	Serious external alarm	Alarm output ON; Other outputs OFF.
“dA”	Door open alarm	Alarm output ON; Other outputs unchanged.

### Controller Electrical Connections



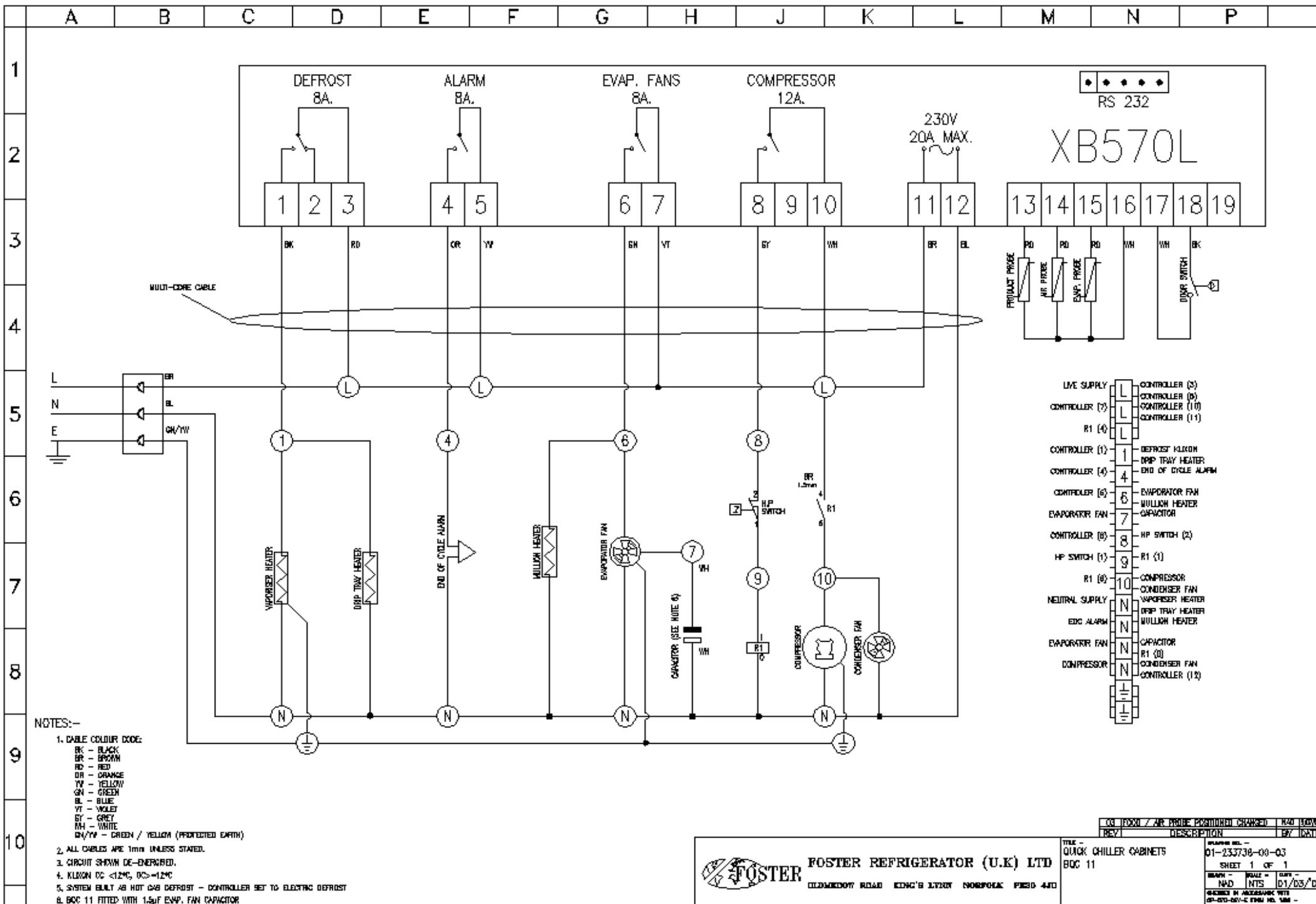
## Technical Data

	QC11	QC600	BQF 40
Nominal Chilling Capacity	11Kg	40Kg	
Duty @ -15°C	830w	1031w	
Fans	1	2	
Defrost Load	N/A	N/A	
Evaporating Temperature	-15°C	-15°C	
Refrigerant Control	TEV	TEV	
Refrigerant	R404a	R404a	
Refrigerant Quantity	1000g	TBA	
Electrical Supply	230/1/50 – 13amp	230/1/50 – 13amp	
Total Heat Rejection	1500w	2080w	

## Wiring Diagram Numbers

Model	Wiring Diagram Number	Fuse Rating
QC 11	01-233728	13 Amp
QC 600	01-233729	13 Amp
BQCsF 40		13 Amp

# QC 11 Wiring Diagram



- NOTES:-**
- CABLE COLOUR CODE:  
BK - BLACK  
BR - BROWN  
RD - RED  
OR - ORANGE  
YV - YELLOW  
GN - GREEN  
BL - BLUE  
VT - VIOLET  
BY - GREY  
WH - WHITE  
GN/YV - GREEN / YELLOW (PROTECTED EARTH)
  - ALL CABLES ARE 1mm UNLESS STATED.
  - CIRCUIT SHOWN DE-ENERGISED.
  - KILN ON <12°C, OFF >12°C.
  - SYSTEM BUILT AS HOT GAS DEFROST - CONTROLLER SET TO ELECTRIC DEFROST
  - QC 11 FITTED WITH 1.5µF EVAP. FAN CAPACITOR

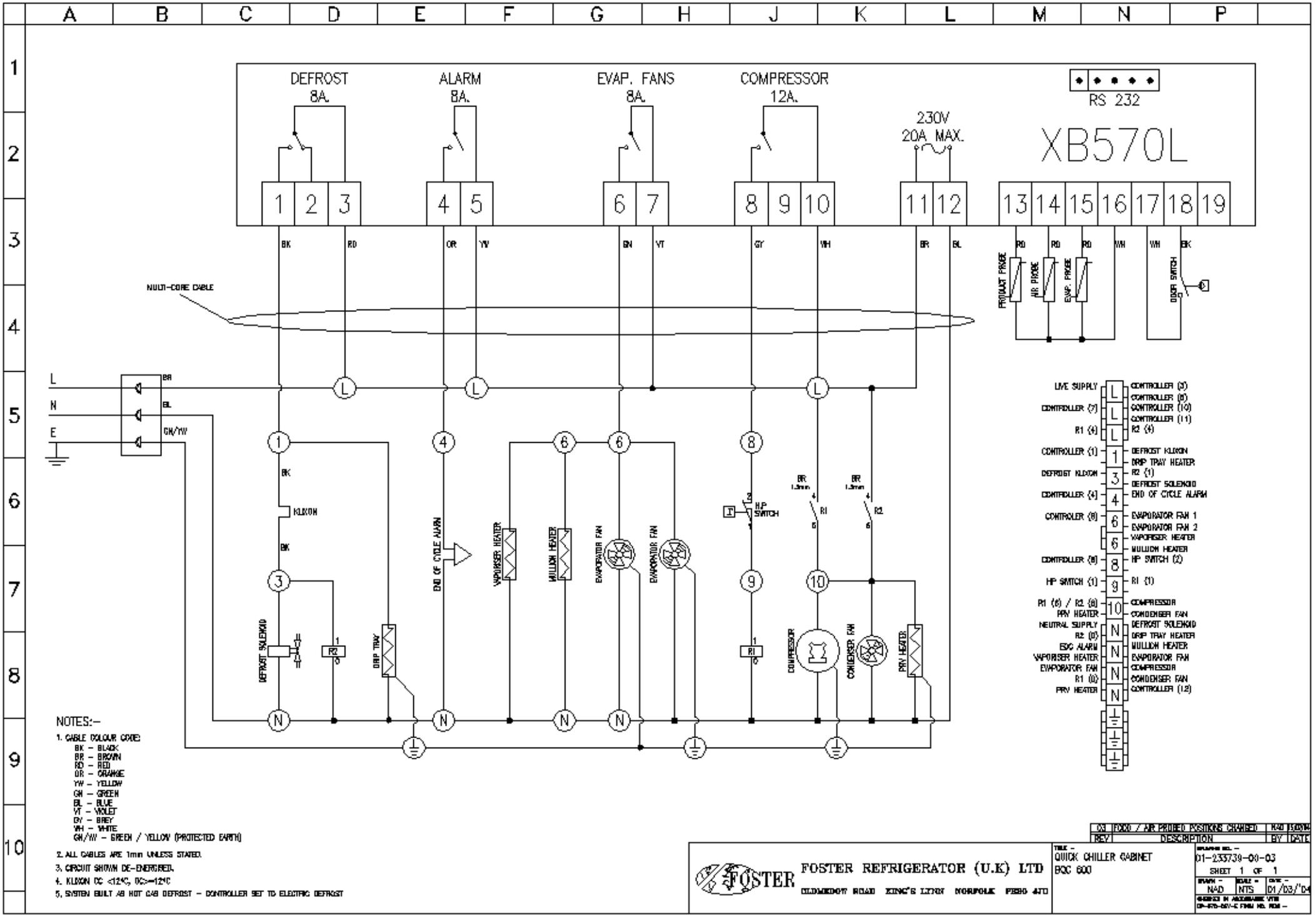
LIVE SUPPLY	L	CONTROLLER (3)
	L	CONTROLLER (6)
	L	CONTROLLER (10)
	L	CONTROLLER (11)
R1 (4)	L	
CONTROLLER (1)	1	DEFROST KILN
	1	DRP TRAY HEATER
CONTROLLER (4)	4	END OF CYCLE ALARM
CONTROLLER (6)	6	EVAPORATOR FAN
EVAPORATOR FAN	7	MULLAN HEATER
	7	CAPACITOR
CONTROLLER (8)	8	HP SWITCH (2)
HP SWITCH (1)	9	R1 (1)
R1 (6)	10	COMPRESSOR
	10	CONDENSER FAN
NEUTRAL SUPPLY	N	VAPORISER HEATER
	N	DRP TRAY HEATER
	N	MULLAN HEATER
EVAPORATOR FAN	N	CAPACITOR
	N	R1 (2)
COMPRESSOR	N	CONDENSER FAN
	N	CONTROLLER (12)

**FOSTER REFRIGERATOR (U.K.) LTD**  
 OLDHAMKNOX ROAD, EDING'S LYTH, NORWICH, NORFOLK, NR2 4JD

QUICK CHILLER CABINETS  
 BOC 11

REVISED BY: -  
 01-233738-00-Q3  
 SHEET 1 OF 1  
 DRAWN - RAJ  
 INTS - D1/03/04  
 CHECKED BY: ANANDKANTH  
 01-233738-00-Q3

# QC 600 Wiring Diagram



BY	DATE	DESCRIPTION	BY	DATE
DA	10/02	W/ AIR PROBE POSITIONS CHANGED	NAD	15/04/04

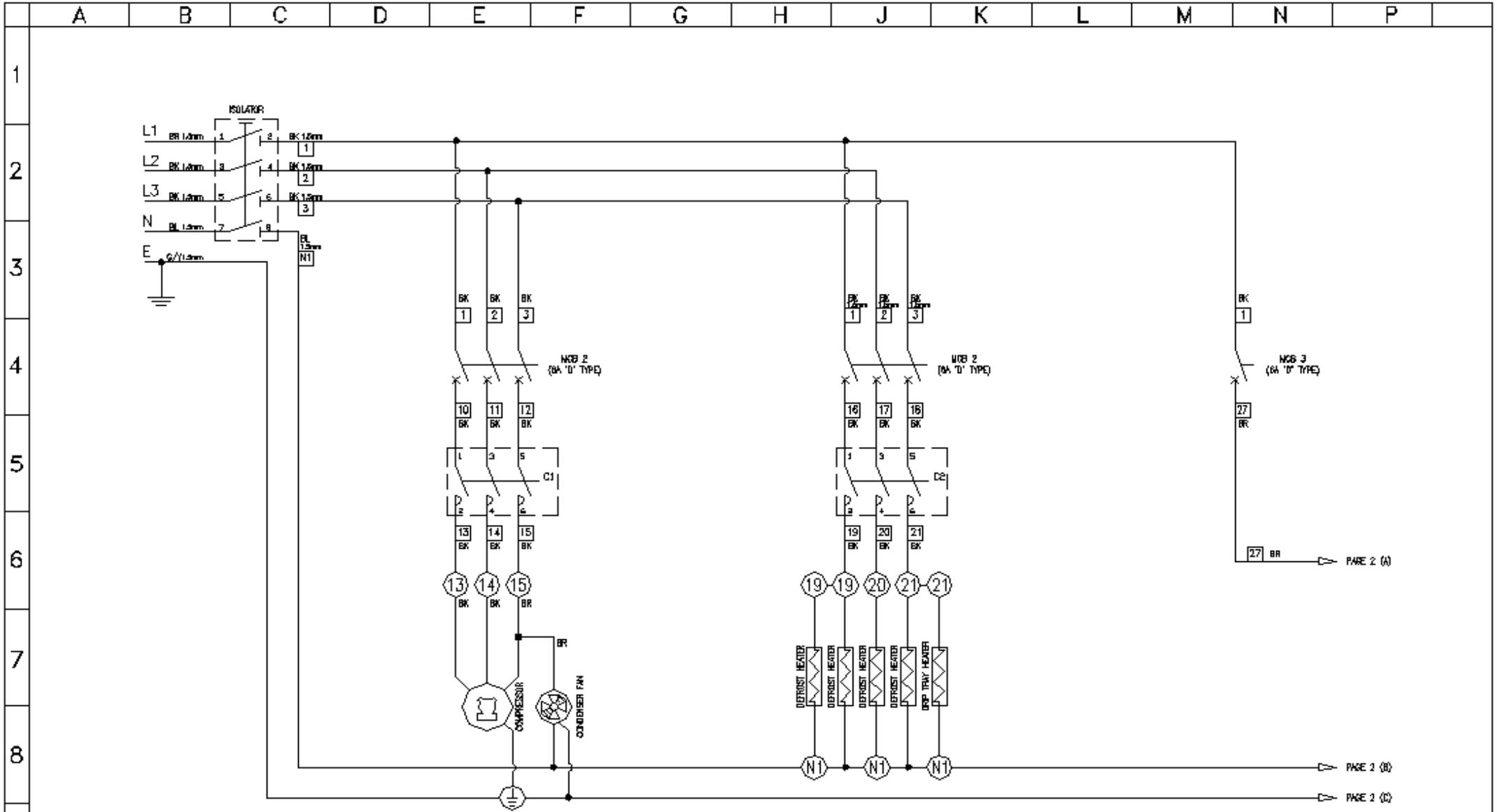
**FOSTER** FOSTER REFRIGERATOR (U.K.) LTD  
 OLDWICKHAY ROAD KING'S LITTON NORFOLK PE30 4TD

QUICK CHILLER CABINET  
 BCC 600

01-233739-00-03  
 SHEET 1 OF 1

DATE: 01/03/04  
 DRAWN: NAD  
 CHECKED: NTS  
 DESIGNED BY: NAD  
 DATE: 01/03/04

# BQCF 40 Wiring Diagram. Sheet 1 of 2



**NOTES:-**

1. CABLE COLOUR CODE  
 BR - BROWN  
 BL - BLUE  
 G/Y - GREEN/YELLOW (EARTH)  
 BK - BLACK  
 WH - WHITE  
 RD - RED  
 OC - ORANGE
2. ALL CABLES ARE 1mm UNLESS STATED.
3. CIRCUIT SHOWN DE-ENERGISED.
4. MAXIMUM OC <12% DC=12%.

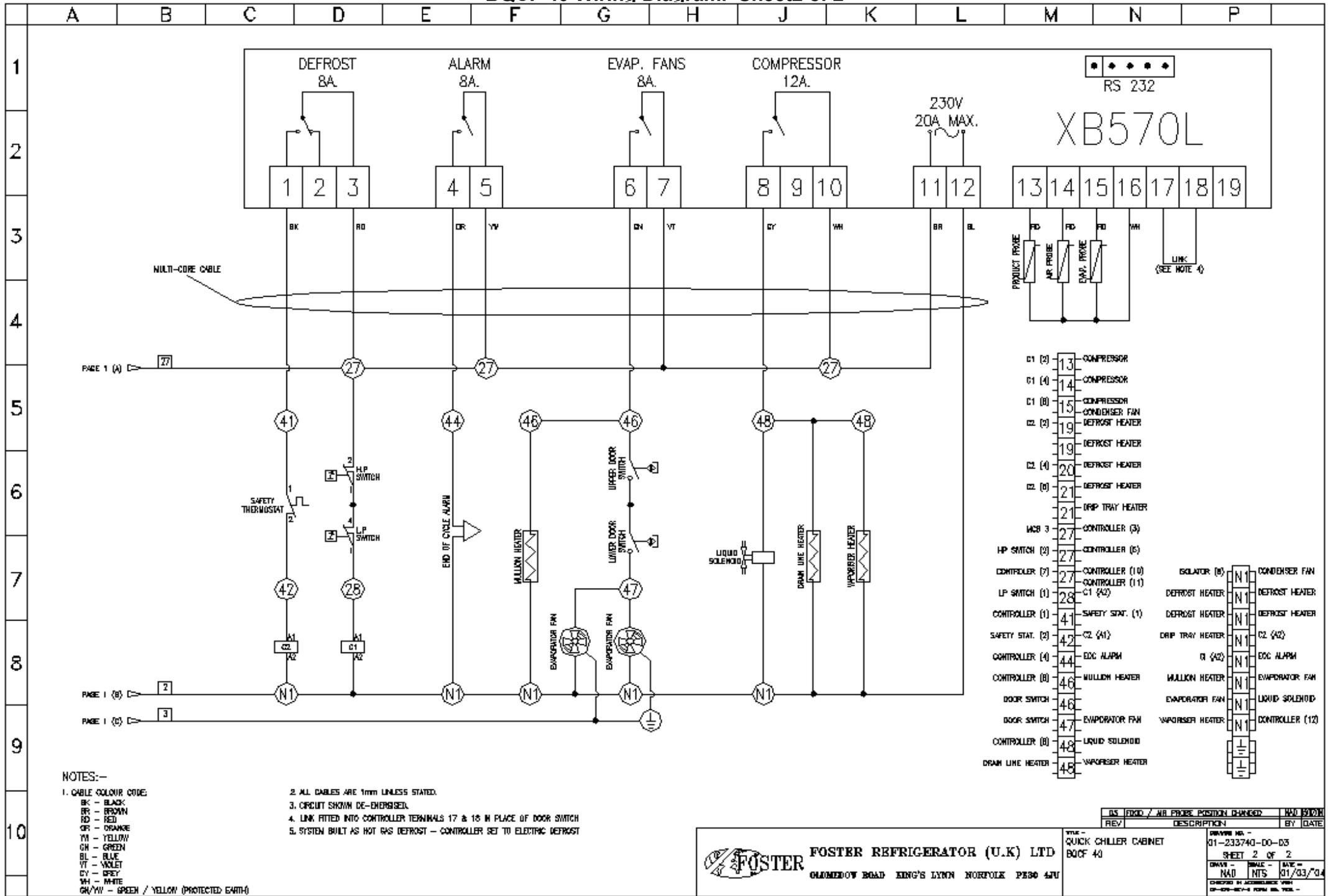
REV	DESCRIPTION	BY DATE
01	FOR FOOD / AIR FROST POSITION SHOWN	TWO 08/01

**FOSTER REFRIGERATOR (U.K) LTD**  
 OLDMOROV ROAD KING'S LYNN NORFOLK PE30 4JD

TITLE - QUICK CHILLER CABINET BQCF 40		DRAWING NO. - 01-233740-00-03 SHEET 1 OF 2
DRAWN - NAD	SCALE - NTS	DATE - 01/03/04
CHECKED BY ACCRANCE WITH 01-03-002-1 FROM PL. 108		

PAGE 2 (A)  
 PAGE 2 (B)  
 PAGE 2 (C)

# BQCF 40 Wiring Diagram. Sheet 2 of 2



C1 (2)	13	COMPRESSOR
C1 (4)	14	COMPRESSOR
C1 (8)	15	COMPRESSOR
C2 (2)	19	CONDENSER FAN
C2 (4)	19	DEFROST HEATER
C2 (6)	20	DEFROST HEATER
	21	DEFROST HEATER
	21	DRIP TRAY HEATER
MCB 3	27	CONTROLLER (3)
HP SWITCH (2)	27	CONTROLLER (5)
CONTROLLER (7)	27	CONTROLLER (10)
LP SWITCH (1)	28	CONTROLLER (11)
CONTROLLER (1)	41	C1 (4)
SAFETY STAT. (2)	42	C2 (4)
CONTROLLER (4)	44	C2 (4)
CONTROLLER (8)	46	C1 (4)
DOOR SWITCH	46	C1 (4)
DOOR SWITCH	47	C1 (4)
CONTROLLER (8)	48	C1 (4)
DRAIN LINE HEATER	48	C1 (4)

ISOLATOR (6)	N1	CONDENSER FAN
DEFROST HEATER	N1	DEFROST HEATER
DEFROST HEATER	N1	DEFROST HEATER
DRIP TRAY HEATER	N1	C2 (4)
C1 (4)	N1	EDC ALARM
MULLION HEATER	N1	EVAPORATOR FAN
EVAPORATOR FAN	N1	EVAPORATOR FAN
LIQUID SOLENOID	N1	LIQUID SOLENOID
WAPROSER HEATER	N1	WAPROSER HEATER
CONTROLLER (12)	N1	CONTROLLER (12)



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