Multideck Display Cabinets

Slim 700, 900, 1200, 1500 & 1800 RF & NG Models
Pro 900, 1200, 1500 & 1800 RF & NG Models

AD2-28 Controller & RU33 Display

English

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ISO 9001   ISO 14001

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Contents

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.

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.

Multideck Cabinet Description

There are two ranges of Multideck – Slim & Pro. All the cabinets' primary use is to display food products. The Slim range has a small footprint with extra wide shelf depths so not to lose any storage space. The Pro differs in that it can hold a larger volume of food. Each is available with choice of a Night blind or Lockable Roller Shutter which in turn decides the side type – solid or glass panels. The cabinets are made of 304 Stainless Steel. All cabinet lighting is supplied in the form of LED strips.

Controller Display Functions and Buttons

Functions Icons

Temperature Display   Buttons/Switches

Icons and Buttons/Switches

Info/Set Point Button		Increase Button/ Lights On/Off	
Manual Defrost /Decrease Button		Exit/Stand-by Button	
Compressor Output		Alarm	
Fan Output		Defrost Output	
		Light Output	

Information Menu

t1	Instant Probe 1 Temperature	th1	Maximum Probe 1 Temperature Recorded
t2	Instant Probe 2 Temperature	tLo	Minimum Probe 1 Temperature Recorded
t3	Instant Probe 3 Temperature	Loc	Keypad State Lock

Start-Up and Operation

Initial Set Up & Start Up

After unpacking leave to stand for 60 minutes and clean before turning on (cleaning directions are supplied within this manual). Position the Multideck with care on a level, flat, solid surface area.

Avoid cold air from air conditioning units & direct sunlight as these factors will affect the units' performance.

Warm air is produced from the rear of the unit & for this reason please leave a breathing area around the unit as follows:

Gap Position	Gap Measurement	Relevant Models
Each Side of the Unit to Wall or next Unit.	10mm	Slim & Pro
Top of Unit to Ceiling (No Rear Ventilation)*	500mm	Slim & Pro
Top of Unit to Ceiling (With Rear Ventilation)	10mm	Slim & Pro
Rear of Units Wall Spacer to Wall	60mm	Slim
Rear of Units Wall Spacer to Wall	20mm	Pro

*When positioned into a recess or similar small area.

Insert the mains plug into the wall socket and switch on. Please do not plug or unplug the unit with wet hands. The Multideck will start automatically, displaying the actual internal temperature of the unit (area where product is displayed). All models are pre-set at +3° C to +5°C, so no adjustments are required.
Allow the Multideck to reach its normal operating temperature before loading.
With an interruption to the main power supply, the Multideck will re-start automatically after power is restored. The vaporiser tray (at the base of the unit) may overflow during a power cut but this is dependent on the length of time the power is off.

Standby

Pressing this button for 3 seconds will allow the unit to be turned on or put into standby.

User Adjustments Mode
Access to the menu and information displayed

- Press and immediately release button   .
- With button   or   select the data to be displayed.
- Press and button   to display the value
- To exit from the menu, press button or wait for 10 seconds.

Reset of THI, TLO, CND recordings

- With button   or   select the data to be reset
- Display the value with button   .
- While keeping button   pressed, use button   .

Set Point and Other Mode Adjustments

- Press button   for at least half a second to display the set point.
- By keeping   button pressed, use button   or   to set the desired value (adjustment is within the minimum SPL and the maximum SPH limit)
- When button   is released, the new value is stored.

Keypad Security Settings

- Press & release   then use   to select 'LOC'. Press and hold   to change from 'YES' to 'NO'. Leave for 10 seconds or briefly press to resume

- The keypad lock avoids undesired, potentially dangerous operations, which might be attempted when the controller is operating in a public place. In the INFO menu, set parameter LOC = YES to inhibit all functions of the buttons. To resume normal operation of the keypad, adjust setting so that LOC = NO.

Internal Light (where fitted)

When pressed and released this button will switch on and off the display lights. This function will work with the cabinet turned on or in standby mode.

Defrost

The Multideck automatically defrosts at regular time intervals, lasting a maximum of 20 minutes during which   will show. Defrost can be manually activated by pressing and holding

Automatic Defrost.
Defrost starts automatically as soon as the time set with parameter DFT has elapsed.
- **Time Defrost** With DFM = TIM defrost takes place at regular intervals when the timer reaches the value DFT. For example, with DFM = TIM and DFT = 04, defrost will take place every 4 hours.

Defrost type
Once defrost has started, compressor and defrost outputs are controlled according to parameter DTY. If FID =YES, the evaporator fans are active during defrost.

Defrost termination
The actual defrost duration is influenced by a sensor T2 and defrost termination parameter DTO. So if the sensor T2 measures the temperature DLI before the time DTO elapses, defrost will be terminated.

Resuming Thermostatic Cycle
When defrost is over, if DRN is greater than 0, all outputs will remain off the DRN minutes, in order for the ice to melt completely and the resulting water to drain. Also, as probe T2 is active (T2=YES), the fans will re-start when the evaporator gets to a temperature love than FDD; or after FTO minutes have elapsed.

Note: During a high pressure alarm, defrost is suspended. During defrost, high temperature alarm is bypassed.

AD2-28 Controller Connection Drawing
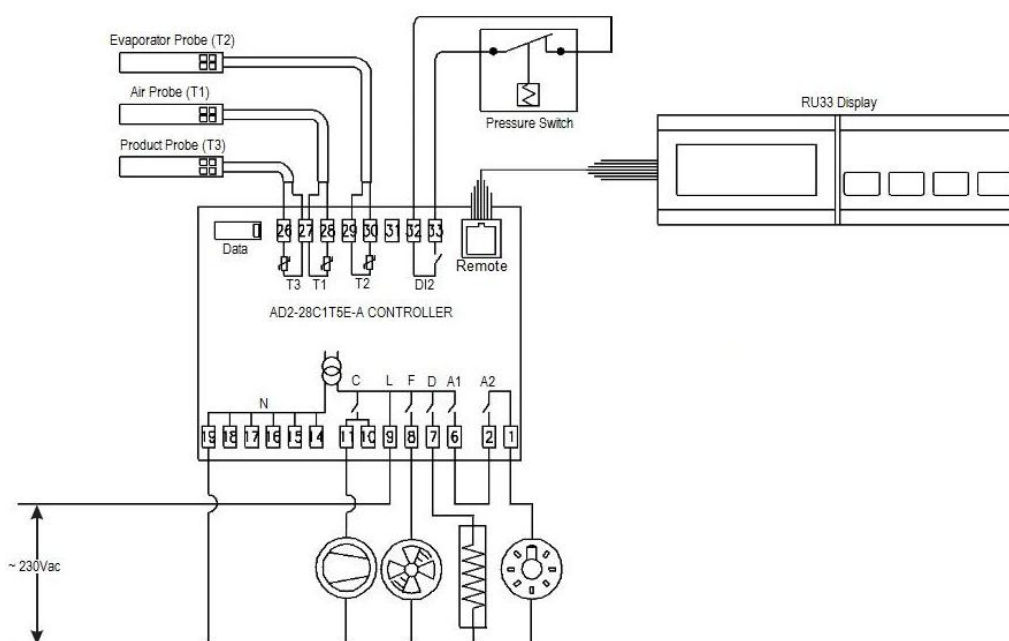
AD2-28 Technical Data

Power Supply		**Measurement Range**
230Vac±10%, 50/60Hz, 3W		-50 / -9.9…19.9 / 80°C (NTC 10K Only)
Relay Output		**Measurement Accuracy**
Compressor	16A Resistive 8 FLA 48 RLA	<0.5°C within the measurement range
Evap. Fan	8A Resistive 2 FLA 12 RLA	**Operating Conditions** -10…+50°C; 15%…80%r.H
Defrost	16A Resistive	**Controller Approvals**
Auxiliary Loads 1	7A Resistive	EN60730-1;
	7A Resistive	EN60730-2-9
		EN55022 (Class B)
Auxiliary Loads 2		EN50082-1
		SDFY2.SA32385
		UL60730-1
Input		
NTC 10KΩ@25°C		

Configuration of Parameters

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

- To get access to the parameter configuration menu, press ⏻ + ⓘ for 5 seconds
- With button ⌄ or ⌃ select the parameter to be modified.
- Press button ⓘ and hold briefly to display the value. On releasing the button the controller will then show the next parameter.
- By keeping button ⓘ pressed, use button ⌄ or ⌃ to set the desired value. On releasing the button the controller will store the amended value and then show the next parameter.
- To exit from the setup, press button ⏻ or wait for 30 seconds.

AD2-28 Controller Default & Model Specific Parameter Values

Parameter	Range		Description	Default AD2-28	All Models Including Starbucks (C0A)
SCL			**Readout Scale:**	2 °C	2 °C
	1°C		Range -50/-9.9…. 19.9/80°C (With INP = SN4 Only)		
	2°C		Range -50 …. 120°C		
	°F		Range -55 …. 240°F		
SPL	-50 … SPH		Minimum limit for SP setting	1	-2
SPH	SPL …120°		Maximum limit for SP setting	3	5
SP	SPL … SPH		Temperature set point to be achieved	1	1
C-H			**Temperature Control mode:**	REF	REF
	REF		Refrigeration		
	HEA		Heating		
HYS	1 … 10°		Off/On thermostat differential	4	3
CRT	0 … 30min		Compressor rest time	2	1
CT1	0 … 30min		Thermostat run time with faulty T1 probe. (CT1 = 0 output with faulty T1 will always be off)	6	6
CT2	0 … 30min		Thermostat off time with faulty T1 probe. (CT2=0 & CT1 =>0 output with faulty T1 will always be on)	4	2
CSD	0 … 30min		Compressor stop delay after door has been opened (Only if DS = YES)	1	1
DFM			**Defrost Start Mode:**	TIM	TIM
	NON		Defrost function is disabled		
	TIM		Regular time defrost		
	FRO		Defrost time elapses only in condition of frost accumulation		
DFT	0…99 Hours		Time interval between defrosts	6	4
DFB			**Defrost timer clock**	YES	YES
	YES		Following mains interruption, timer resumes count		
	NO		Following mains interruption, timer restarts from zero		
DLI	-50.. 120°		Defrost end temperature (Only if T2 = EPO)	20	10
DTO	1 … 120min		Maximum defrost duration	20	20
DTY			**Defrost Type:**	OFF	ELE
	OFF		Timed off cycle defrost (compressor and heater off)		
	ELE		Electric heater defrost (compressor off, heater on)		
	GAS		Hot gas defrost (compressor and heater on)		
DPD	0 … 240sec		Evaporator pump down. Timed pause at start of defrost	0	0
DRN	0 … 30min		Drain down period	2	1
DDM			**Defrost display mode:**	DEF	SP
	RT		Real (actual) air temperature		
	LT		Last temperature display before start of defrost		
	SP		The current set point value.		
	DEF		"DEF"		

DDY	0… 60 min	Defrost display delay period Time DDM is shown following defrost termination	10	10
FID		**Fans in defrost:**	YES	YES
	YES	Fans run during defrost		
	NO	Fans do not run during defrost		
FDD	-50 … 120°	Evaporator fan restart temperature following defrost (Only if T2 = EPO)	5	5
FTO	0…120 min	Maximum evaporator fan stop period following defrost	3	2
FCM		**Evaporator fan mode during thermostatic control:**	TIM	NON
	NON	Fan(s) run continuously		
	TMP	Temperature based control. When compressor is on, fans are on. When compressor is off, fans run as long as temperature difference Te-Ta > FDT. Fans on again with FDH		
	TIM	Time based control. When compressor is on, fans are on. When compressor is off, fans in accordance to parameters FT1, FT2 and FT3.		
FDT	-120 … 0°	Te-Ta difference for fans to turn off after compressor stopped. (Only if T2 = EPO and FCM = TMP)	-1	-1
FDH	1 … 120°	Temperature differential for evaporator fan restart. (Only if T2 = EPO and FCM = TMP)	3	3
FT1	0 … 180 Sec	Fan stop delay after compressor stop.	15	15
FT2	0 … 30min	Timed fan stop following FT1 (With FT2 = 0 the fans remain on all the time).	3	3
FT3	0 .. 30min	Timed fan run following FT2 (With FT3 = 0 and FT2 >0 the fans remain off all the time.	2	2
ATM		**Alarm threshold configuration:**	REL	REL
	NON	All temperature alarms are inhibited		
	ABS	The value set in ALA and AHA represent actual alarm set points		
	REL	The values set in ALR and AHR are alarm differentials which relate to SP and SP + HYS		
ALA	-50 … 120°	Low temperature alarm threshold	-2	-2
AHA	-50 … 120°	High temperature alarm threshold	8	8
ALR	-12 … 0°	Low temperature alarm differential (With ALR = 0 the low temperature alarm is excluded)	-5	-5
AHR	0 … 12°	High temperature alarm differential (With AHR = 0 the low temperature alarm is excluded)	5	8
ATI		**Alarm probe:**	T1	T3
	T1	Air temperature probe used for alarm detection		
	T2	Evaporator temperature probe used for alarm detection		
	T3	Third temperature probe used for alarm detection		
ATD	0… 120min	Delay before alarm temperature warning	90	90
ADO	0… 30min	Delay before door open alarm warning	8	8
AHM		**Operation in case of high condenser alarm (T3 = CND)**	NON	ALR
	NON	High condenser temperature alarm inhibited		
	ALR	Condenser warning – 'HC' displayed, alarm sounds		
	STP	As 'ALR' with compressor stopped and defrosts suspended		
AHT	-50 … 120°	Condenser alarm temperature (T3 = CND)	65	65
ACC	0…52 Weeks	Condenser cleaning period. (With ACC = 0 condenser cleaning is disabled)	0	0

		Switchover method to second parameter set:	HDD	NON
IISM	NON	Second parameter set is excluded		
	MAN	Second parameter set is activated/ deactivated by button ▲ M		
	HDD	Second parameter activated by 'heavy' usage		
	DI2	Second parameter set activated by D12 input (D12 = IISM)		
IISL	-50 . IISH	Minimum limit for IISP setting	1	1
IISH	IISL .. 120°	Maximum limit for IISP setting	1	1
IISP	IISP…IISH	Temperature set point to be achieved in 'Mode 2'	1	1
IIHY	1 … 10°	Off/On thermostat differential in 'Mode 2'	4	4
IIFC		**Evaporator fan mode during 'Mode 2' thermostatic control:**	NON	NON
	NON	Fans(s) run continuously		
	TMP	Temperature based control. When compressor is on, fans are on. When compressor is off, fans run as long as temperature difference Te-Ta>FDT. Fans on again with FDH		
	TIM	Time based control. When compressor is on, fans are on. When compressor is off, fans in accordance to parameters FT1, FT2 and FT3.		
HDS	1 … 5	Controller sensitivity for switch over between 'Modes' and 2. (1 = minimum, 5 = maximum)	3	3
IIDF	0 … 99hours	Time interval between defrosts in 'Mode 2'.	6	6
SB		**Standby button operation:**	YES	YES
	YES	Standby button enabled		
	NO	Standby button disabled		
DS		**Door switch operation (switch made when door closed):**	YES	NO
	YES	Door switch enabled		
	NO	Door switch disabled		
DI2		**Configuration digital input operation:**	NON	HPS
	NON	Digital input 2 not activated		
	HPS	High pressure alarm when contact opens		
	IISM	'Mode 2' parameters active when contact closes		
	RDS	Defrost initiated when contact closes		
	DSY	Defrost Synchronisation		
LSM		**Light control mode:**	NON	MAN
	NON	Light input is excluded		
	MAN	Light output operation is activated/deactivated by button ▲ M (With OA1 = LGT)		
	DOR	Light output is switched on when door is opened (With OA1 = LGT and DS = YES)		
OA1		**Auxiliary relay operation:**	0-1	LGT
	NON	Output disabled (always off)		
	0-1	Contacts open/close with standby/on mode		
	LGT	Output enabled for light control		
	2CU	Control of electric defrost of an auxiliary compressor		
	2EU	Control of an electric defrost of second evaporator		
	AL0	Contacts open when an alarm condition occurs		
	AL1	Contacts close when an alarm condition occurs		
		(Relay contacts open when in standby mode)		

		Auxiliary relay operation:		
OA2	NON	Output disabled (always off)	0-1	AL0
	0-1	Contacts open/close with standby/on mode		
	LGT	Output enabled for light control		
	2CU	Control of electric defrost of an auxiliary compressor		
	2EU	Control of an electric defrost of second evaporator		
	AL0	Contacts open when an alarm condition occurs		
	AL1	Contacts close when an alarm condition occurs		
		(Relay contacts open when in standby mode)		
2CD	0 … 120sec	AUXHILLARY Compressor Start Delay	0	0
INP		Temperature sensor(s) type:	SN4	SN4
	SN4	10k NTC type thermistor (red writing)		
	ST1	1k PTC type thermistor (Black Writing)		
OS1	-12.5...12.5°C	Air temperature probe (T1) offset.	0	0
T2		T2 Probe enabling:	NON	YES
	YES	T2 Probe enabled		
	NO	T2 probe disabled		
OS2	-12.5…12.5°C	T2 probe temperature offset	0	0
T3		T3 Probe function:	NON	DSP
	NON	T3 probe disabled		
	DSP	T3 temperature displayed		
	CND	Condenser temperature measurement		
	2EU	Second evaporator temperature measurement		
OS3	-12.5…12.5°C	T3 probe temperature offset	0	0
TLD	1 … 30min	Delay for min (TLO) and max. (THI) temperature logging	10	10
SIM	0 … 100	Display Slowdown	5	5
ADR	1… 255	AD2-28 address for PC communication	1	1

*Yellow denotes change from default controller setting

Air and Evaporator Probe Details / Diagram
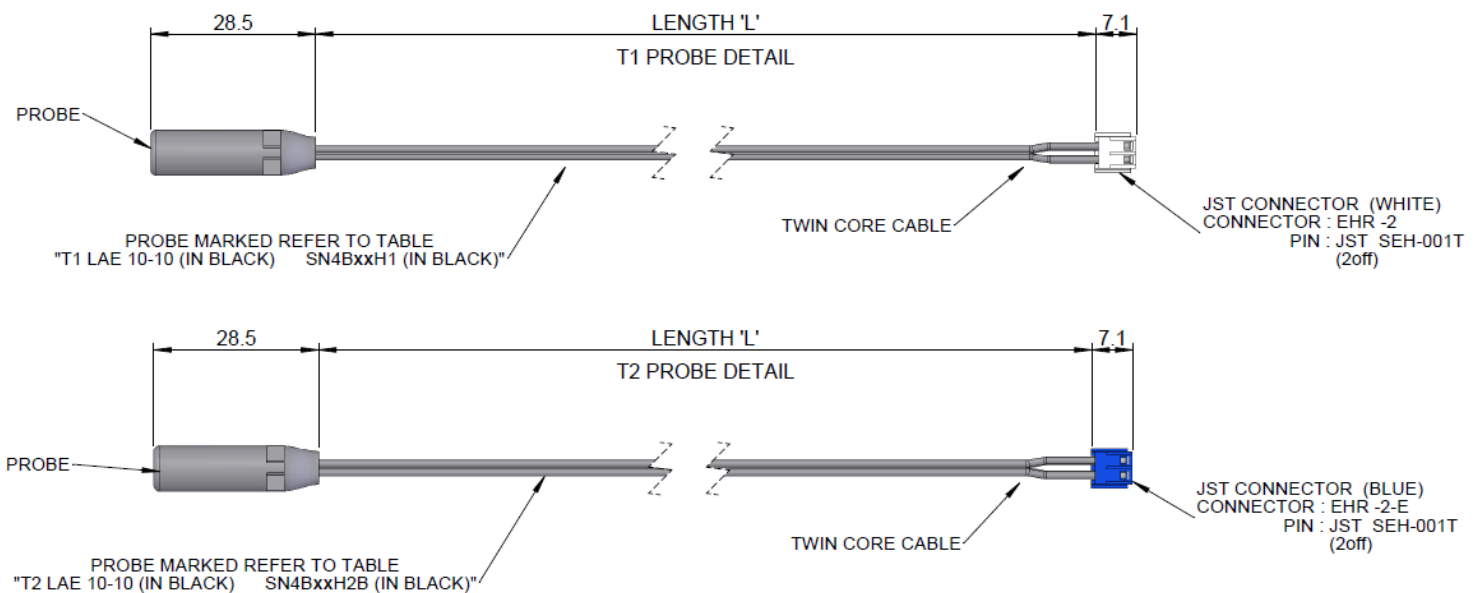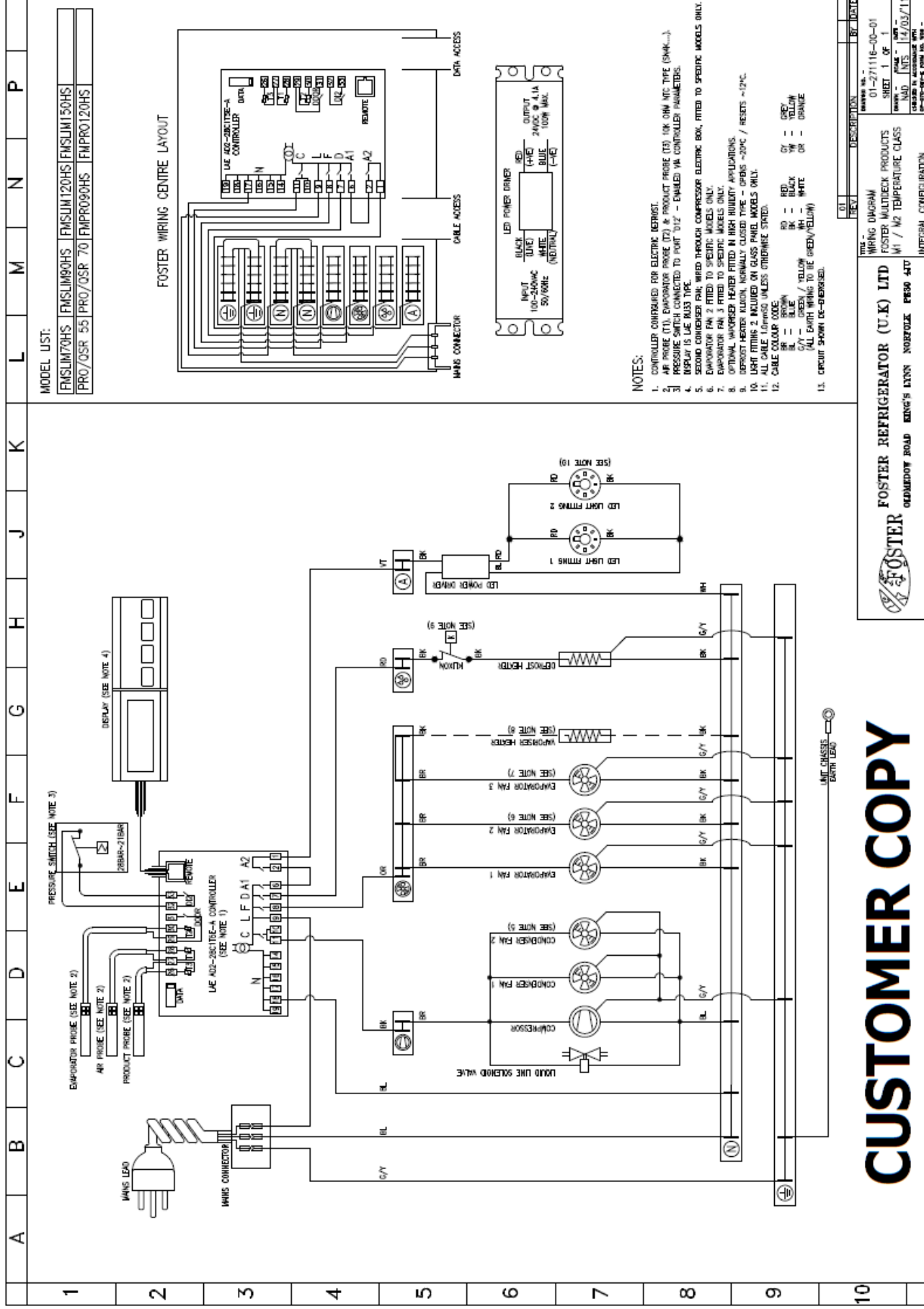
Technical Data for Individual Multideck Cabinets

Model	Gas	Gas Charge	Compressor	Capillary	Defrost Type	Voltage	Power Consumption kW/48hrs	Fuse Rating (Amps)
Pro								
FMPRO900RF	R404a	760 grams	Embraco NT6222GK	4.0m x 0.064"	Electric	230/50/1	38.4	10
FMPRO900NG	R404a	760 grams	Embraco NT6222GK	4.0m x 0.064"	Electric	230/50/1	38.4	10
FMPRO1200RF	R404a	1050 grams	Embraco NT6226GK	3.5m x 0.064"	Electric	230/50/1	44.8	10
FMPRO1200NG	R404a	1050 grams	Embraco NT6226GK	3.5m x 0.064"	Electric	230/50/1	44.8	10
FMPRO1500RF	R404a	1200 grams	Embraco NT6226GK	3.0m x 0.064"	Electric	230/50/1	52.4	10
FMPRO1500NG	R404a	1200 grams	Embraco NT6226GK	3.0m x 0.064"	Electric	230/50/1	52.4	10
FMPRO1800RF	R404a	750 grams (per system)	Embraco NT6222GK (x2)	3.0m x 0.064" (x2)	Electric	230/50/1	65.6	13
FMPRO1800NG	R404a	750 grams (per system)	Embraco NT6222GK (x2)	3.0m x 0.064" (x2)	Electric	230/50/1	65.6	13
Slim								
FMSLIM700NG	R404a	550 grams	Embraco NT6222GK	4.0m x 0.064"	Electric	230/50/1	34.3	10
FMSLIM700RF	R404a	550 grams	Embraco NT6222GK	4.0m x 0.064"	Electric	230/50/1	34.3	10
FMSLIM900NG	R404a	760 grams	Embraco NT6222GK	4.0m x 0.064"	Electric	230/50/1	38.4	10
FMSLIM900RF	R404a	760 grams	Embraco NT6222GK	4.0m x 0.064"	Electric	230/50/1	38.4	10
FMSLIM1200NG	R404a	1050 grams	Embraco NT6226GK	3.5m x 0.064"	Electric	230/50/1	44.8	10
FMSLIM1200RF	R404a	1050 grams	Embraco NT6226GK	3.5m x 0.064"	Electric	230/50/1	44.8	10
FMSLIM1500NG	R404a	1200 grams	Embraco NT6226GK	3.5m x 0.064"	Electric	230/50/1	52.4	10
FMSLIM1500RF	R404a	1200 grams	Embraco NT6226GK	3.5m x 0.064"	Electric	230/50/1	52.4	10
FMSLIM1800NG	R404a	750 grams (per system)	Embraco NT6222GK (x2)	3.0m x 0.064" (x2)	Electric	230/50/1	65.6	13
FMSLIM1800RF	R404a	750 grams (per system)	Embraco NT6222GK (x2)	3.0m x 0.064" (x2)	Electric	230/50/1	65.6	13

Note: The Power Consumption values referred to as tested are to the ECA test standard. Actual power consumption will be greatly affected by ambient temperature, loading, usage and cabinet maintenance.

For 1800 model cabinets only where 2 compressors are fitted there is a 20 second delay between compressor starts so the start current of 20A is not exceeded. The suction pressure as per climate class 3 (see below) is between -8 and -10 ºC approximately 3.5 bar, with a discharge temperature of +40 ºC (clean condenser) approximately 17.3 bar.

The cases are designed to work in an ambient temperature not exceeding 25 degrees centigrade (C) with a relative humidity not exceeding 60% (RH) Climate Class 3. The frontal airflow should be < 0,2m/s

Wiring Diagram for Slim 700, 900, 1200 and 1500, Pro 900, 1200 & 1500 Models

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MODEL LIST:

| FMSLIM70HS | FMSLIM90HS | FMSLIM120HS | FMSLIM150HS |
| PRO/QSR 55 | PRO/QSR 70 | FMPRO90HS | FMPRO120HS |

FOSTER WIRING CENTRE LAYOUT

LAE AD2-28C1T5E-A CONTROLLER

LED POWER DRIVER

INPUT 100-240VAC 50/60Hz
BLACK (LIVE)
WHITE (NEUTRAL)

OUTPUT 24VDC 4.1A 100W MAX
RED (+VE)
BLUE (-VE)

DATA ACCESS
CABLE ACCESS
MAINS CONNECTOR
REMOTE

MAINS LEAD
MAINS CONNECTOR
PRESSURE SWITCH (SEE NOTE 3)
28BAR~21BAR
DISPLAY (SEE NOTE 4)
EVAPORATOR PROBE (SEE NOTE 2)
AIR PROBE (SEE NOTE 2)
PRODUCT PROBE (SEE NOTE 2)
LAE AD2-28C1T5E-A CONTROLLER (SEE NOTE 1)
LIQUID LINE SOLENOID VALVE
COMPRESSOR
CONDENSER FAN 1
CONDENSER FAN 2 (SEE NOTE 5)
EVAPORATOR FAN 1
EVAPORATOR FAN 2 (SEE NOTE 6)
EVAPORATOR FAN 3 (SEE NOTE 7)
VAPORISER HEATER (SEE NOTE 8)
DEFROST HEATER
KLIXON (SEE NOTE 9)
LED POWER DRIVER
LED LIGHT FITTING 1
LED LIGHT FITTING 2 (SEE NOTE 10)
UNIT CHASSIS EARTH LEAD

NOTES:

1. CONTROLLER CONFIGURED FOR ELECTRIC DEFROST.
2. AIR PROBE (T1), EVAPORATOR PROBE (T2) & PRODUCT PROBE (T3) 10K OHM NTC TYPE (SN4K...).
3. PRESSURE SWITCH CONNECTED TO PORT 'DI2' – ENABLED VIA CONTROLLER PARAMETERS.
4. DISPLAY IS LAE RU33 TYPE.
5. SECOND CONDENSER FAN; WIRED THROUGH COMPRESSOR ELECTRIC BOX, FITTED TO SPECIFIC MODELS ONLY.
6. EVAPORATOR FAN 2 FITTED TO SPECIFIC MODELS ONLY.
7. EVAPORATOR FAN 3 FITTED TO SPECIFIC MODELS ONLY.
8. OPTIONAL VAPORISER HEATER FITTED IN HIGH HUMIDITY APPLICATIONS.
9. DEFROST HEATER KLIXON, NORMALLY CLOSED TYPE – OPENS ~20°C / RESETS ~12°C.
10. LIGHT FITTING 2 INCLUDED ON GLASS PANEL MODELS ONLY.
11. ALL CABLE 1.0mm²G UNLESS OTHERWISE STATED.
12. CABLE COLOUR CODE:
   BR = BROWN   RD = RED   GY = GREY
   BL = BLUE   BK = BLACK   YW = YELLOW
   G/Y = GREEN / YELLOW   WH = WHITE   OR = ORANGE
   (ALL EARTH WIRING TO BE (GREEN/YELLOW)
13. CIRCUIT SHOWN DE-ENERGISED.

FOSTER REFRIGERATOR (U.K) LTD
OLDMEDOW ROAD KING'S LYNN NORFOLK PE30 4HT

TITLE : WIRING DIAGRAM
FOSTER MULTIDECK PRODUCTS
M1 / M2 TEMPERATURE CLASS
INTEGRAL CONFIGURATION

DRAWING NO. 01-271116-00-01
SHEET 1 OF 1
DRAWN BY NAD   SCALE NTS
CHECKED IN ACCORDANCE WITH
BY DATE NAD 14/03/11

Wiring Diagram for Slim & Pro 1800 Models

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FOSTER REFRIGERATOR (U.K) LTD
OLDMEDOW ROAD KING'S LYNN NORFOLK PE30 4JU

MODEL LIST:
FMSLIM180HS
FMPRO180HS

FOSTER WIRING CENTRE LAYOUT

NOTES:
1. MAINS LEAD – UK VERSION 13A FUSED / CONDUCTOR CSA 1.5mm².
2. RELAY 1 & 2 30A SSR TYPE.
3. TIMER – TELEMECANIQUE TYPE RE88731B110 (RS 610-1115) SET TO 20SEC. DELAY.
4. CONTROLLER CONFIGURED FOR ELECTRIC DEFROST.
5. AIR PROBE (T1), EVAPORATOR PROBE (T2) & PRODUCT PROBE (T3) 10K OHM NTC TYPE (SN4K...).
6. PRESSURE SWITCHES WIRED IN SERIES TO PORT 'DI2' – ENABLED VIA CONTROLLER PARAMETERS.
7. DISPLAY TYPE LAE RL11.
8. OPTIONAL VAPORISER HEATER FITTED IN HIGH HUMIDITY APPLICATIONS.
9. DEFROST HEATER KLIXON, NORMALLY CLOSED TYPE – OPENS ≈25ºC / RESETS ≈12ºC.
10. LIGHT FITTING 2 INCLUDED ON GLASS PANEL MODELS ONLY.
11. ALL CABLE 1.0mm²SQ UNLESS OTHERWISE STATED.
12. CABLE COLOUR CODE:
    BR – BROWN   RD – RED   GY – GREY
    BL – BLUE   BK – BLACK   YW – YELLOW
    G/Y – GREEN / YELLOW   WH – WHITE   OR – ORANGE
    (ALL EARTH WIRING TO BE GREEN/YELLOW)
13. CIRCUIT SHOWN DE-ENERGISED.

TITLE –
WIRING DIAGRAM
FOSTER MULTIDECK PRODUCTS
M1 / M2 TEMPERATURE CLASS
INTEGRAL CONFIGURATION

DRAWING No. –
01-271116-00-01
SHEET 1 OF 1
DRAWN BY: NAD   SCALE: NTS   DATE: 14/03/11

REV   DESCRIPTION   BY   DATE

Troubleshooting

Problem		Possible Cause		Solution
Audible & Visual Alarms/Warnings	Lo	> Unit Low Temperature Alarm	>	Cancel audible alarm and investigate cause.
	hu	> Unit High Temperature Alarm	>	Cancel audible alarm and investigate cause.
	E1	> Probe T1 failure (Air)	>	Check and replace the air probe
	E2	> Probe T2 failure (Evaporator)	>	Check and replace the evaporator probe
	E3	> Probe T3 failure (Product)	>	Check and replace the product probe.
	HP	> High Pressure Alarm (The main lights will also go off)	>	Check ambient temperature and refrigeration system.
	dEF	> Defrost In Progress	>	Wait for defrost cycle to finish
Compressor will not start		> No voltage in socket	>	Use voltmeter to check
		> Electrical conductor or wires may be cut	>	Use ohmmeter to check for continuity
		> Defective electrical component: thermostat, relay, thermal protector etc.	>	Replace defective component
		> Compressor motor has a winding open or shorted	>	Measure ohmic resistance of main and auxiliary winding using ohmmeter. Compare with correct values
		> Compressor stuck/seized	>	Change compressor
		> Temperature control contacts are open	>	Repair or replace the contacts
		> Incorrect wiring	>	Check wiring diagram and correct
		> Fuse blown or circuit breaker tripped.	>	Replace fuse or reset circuit breaker
		> Power cord unplugged	>	Plug in power cord.
		> Controller temperature set too high	>	Set controller to lower temperature.
		> Cabinet in defrost cycle	>	Wait for defrost cycle to finish
The temperature is too cold		> Controller is set to a lower than recommended temperature setting	>	Adjust to a higher temperature setting and check if the compressor stops according to controllers operating range.
		> Controller does not disconnect the condensing unit	>	Check the insulation of the thermostat. If problem persists, change the thermostat
		> Control contacts are stuck closed	>	Change the control. Check amperage load
		> Defective or incorrect temperature control	>	Determine correct control and replace.

The temperature is not cold enough	> Controller is set to a higher temperature than recommended	> Adjust to lower temperature setting
	> Condenser is dirty	> Clean condenser
	> The refrigerator has been placed at an inadequate location	> The unit must not be near stoves, air conditioning units, walls that are exposed to the sun, or places that lack sufficient air flow.
	> Compressor is inefficient or there is a high pressure due to the air in the system	> If there is air in the system, purge and recharge
	> Iced up evaporator coil	> Check temperature control, refrigerant charge, and defrost mechanism. Remove all ice manually and start over.
	> Restriction in system	> Locate exact point of restriction and correct
	> Excessive heat load placed in cabinet	> Advise user not to put in products that are hot.
	> The refrigerator has been overcharged with the refrigerant gas	> Check to see if condensation or ice crystals have formed on the suction line. If so, charge with the correct amount of gas.
	> The refrigerant gas is leaking	> Find the location of gas leak in order to seal and replace the defective component. Change the drier. Perform a good vacuum and recharge unit.
	> The evaporator and/or condenser fans are not working	> Check electrical connections and make sure that the fan blade isn't stuck. Replace the fan motor if it doesn't work.
	> Blocking air flow	> Re-arrange product to allow for proper air flow.
	> Fuse blown or circuit breaker tripped	> Replace fuse or reset circuit breaker.
Electrical Shocks	> Wires or electrical components are in direct contact with metallic parts.	> Check for appropriate insulation on the connections of each component.
Noise	> The refrigerator is not properly levelled	> Check if the noise goes away after you level the refrigerator
	> The condenser is not fastened correctly. Copper tubing is in contact with other metal parts	> While the compressor is working, check to see if metal parts are in contact with one another and/or if the screws that fasten the condenser are tightened.

	> The evaporator and/or condenser fans are loose	> Check if the fans are securely fastened. Also, check if the fan blades are loose, broken or crooked. If so, change the faulty blade.
	> Compressor has an internal noise	> If the noise persists after all other measures have been taken, it may be originating from the compressor.
	> Loose part(s)	> Locate and tighten loose part(s)
Condensing unit runs for long periods of time	> Excessive amount of warm product placed in cabinet	> Advise user that this unit is not meant for cooling hot products and should only be used to maintain already cooled produce
	> Dirty condenser coil	> Clean condenser coil
	> Evaporator coil iced over	> Unplug unit and allow coil to defrost. Make sure thermostat is not set too cold. Ensure that door gasket(s) are sealing properly. Select manual defrost and ensure system works.

Notes

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