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

Dough Retarder Prover

Modular DRPTRI2 & 3 Models

FB1-11 Touchpad Controller

English

Original Service Manual

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 & 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 2079 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.

Installation
Installation of these units should be carried out by a competent person and appropriate codes of practice adhered to thus ensuring safe installation (see installation guide for further details).

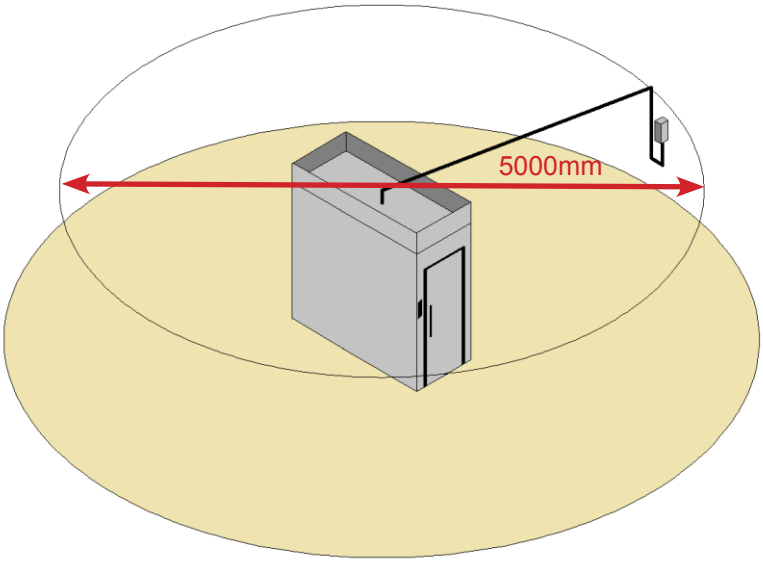
Electrical Supply
The correct electrical installation must be adhered to where the DRP is supplied with an isolator. The electrical supply must be terminated into the isolator in such a way that the supply can be controlled by the operator,
When the DRP is supplied with a 5 pole electrical plug. A single purpose clearly marked isolating socket; of the type described below is to be provided to supply the DRP. The installation and testing of this socket should fall within the scope of the normal testing regime for the fixed electrical wiring of the site.

Socket Type:
- Switched with mechanical interlock
- 32A size socket
- 400Vac
- 50/60Hz
- 3Pole+Neutral and Earth
- IP67

Fitted with:
- 20A 3 Phase MCB
- 3 Phase RCD (0.03A)

NOTE: The plug, cable and socket are rated to 32A; however the supply socket should have MCB protection fitted at 20A / phase.

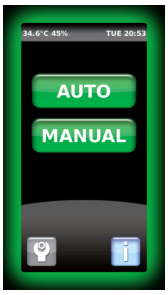
Socket Position:
The DRP is supplied with sufficient cable such that the supply socket should be positioned within a 5M (5000mm) radius from the centre of the DRP. This allows for the cable to route vertically 1M (1000mm) into a ceiling void, and then down a supporting surface to the socket positioned at around 1500mm from the floor level.



The socket must be positioned in sight of the DRP and readily accessible to act as an isolation point for the DRP.
A suitable label should be positioned on the DRP identifying the location of the isolating socket.

Initialisation Screen

After power is applied to the unit the controller display will show the booting screen. This will only show for a few minutes stating both 'Booting' and then displaying 'Initializing'. 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 screen it is possible to run an automatic or manual cycle.
Select the cycle type by pressing the relevant button on the touchscreen.
This screen also shows the date, time and current air temperature and allows access to the 'Settings Home Screen' and 'Information' function.

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 happening with the unit
	Alarm – Press this to view lists of active and historic alarms		Delete – Use this to delete historic alarm warnings that require clearing from the 'Alarm Log'

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. Unit is ready for use.

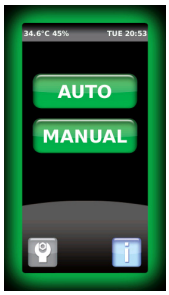
Process or system issue. User intervention required.

Cycle under way or unit on operation. User attention not required.

Stopping a Cycle or Function

When shown on screen you can press and hold ‘Stop’, Finish’ or ‘Reset’ for 3 seconds, or until he progress blocks fill to halt a cycle or function.
They must be pressed and held until the progression blocks are filled. If the process blocks are not filled the cycle will not stop and will continue the cycle.

How to Run an Automatic Cycle

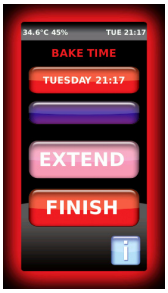


Select & press ‘Auto’

Adjust end date & time then press ‘Start’

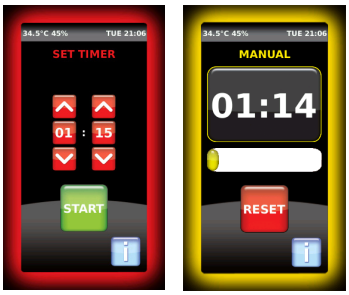
The alarm will sound to advise that the unit is ready for product to be loaded. Load product & press ‘Run’

During the ‘Bake Time’ cycle the progress bar will fill and the time counts down. The cycle phase is indicated in steps (as shown to the left).



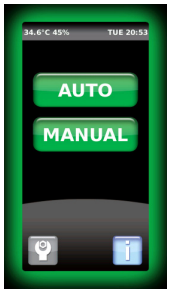
The alarm will sound and then you can either extend the cycle or finish it (see next section for details)

Extend the Cycle



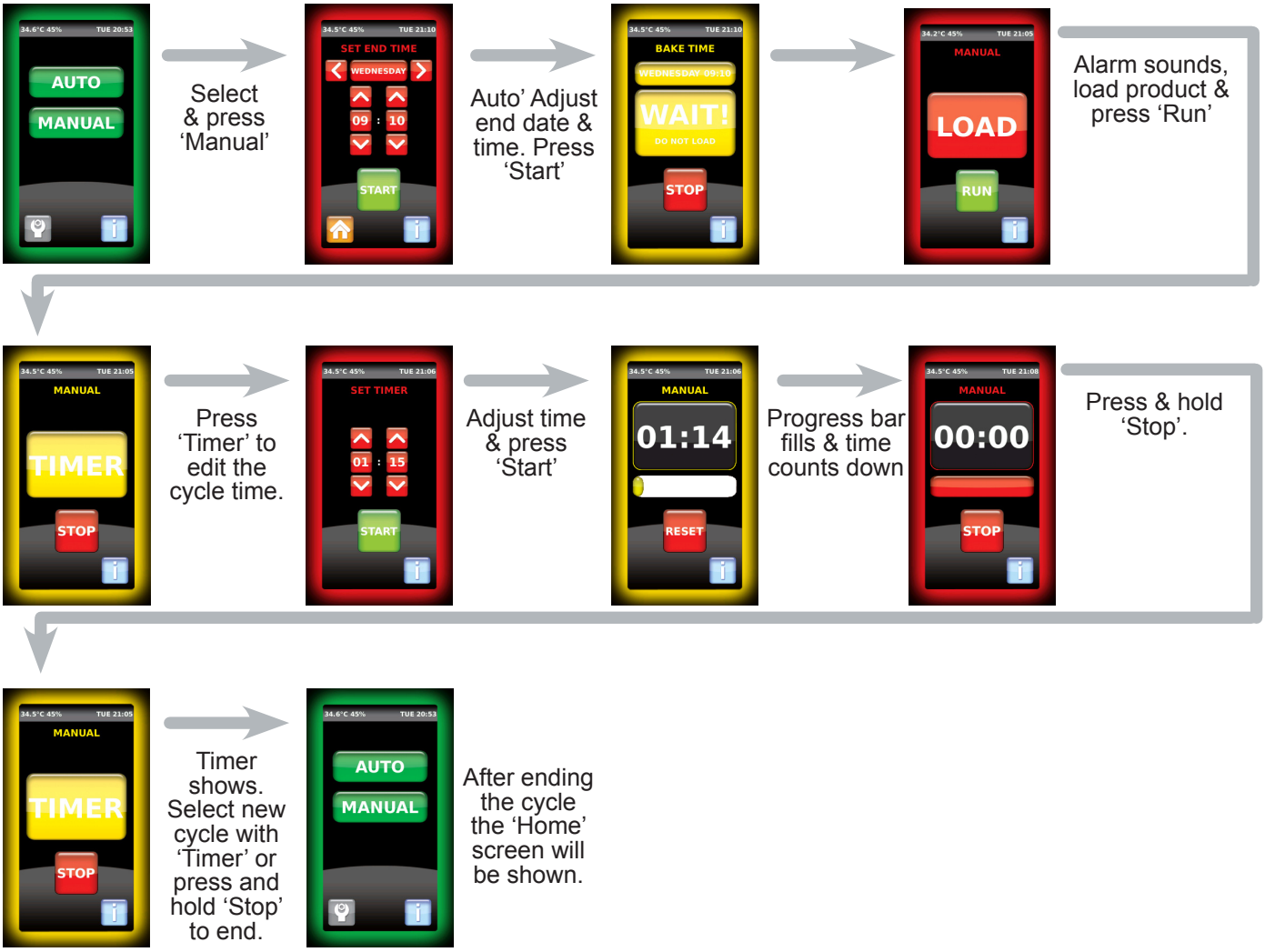
Press the 'Extend' button and you will be taken to the Set Timer display. Set the timer and then press 'Start'

Finish the Cycle



To finish the cycle press the 'Finish' button and the cycle will end then revert the display to the 'Home' screen.

How to Run a Manual Cycle



Silence an Alarm

Load Alarm – press the green 'Run' button to continue the cycle and confirm product has been loaded into the unit

Fault Alarm – Press the 'Mute' button to silence followed by the 'i' button for more information on the fault/warning.

User Adjustment Modes

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 Menu

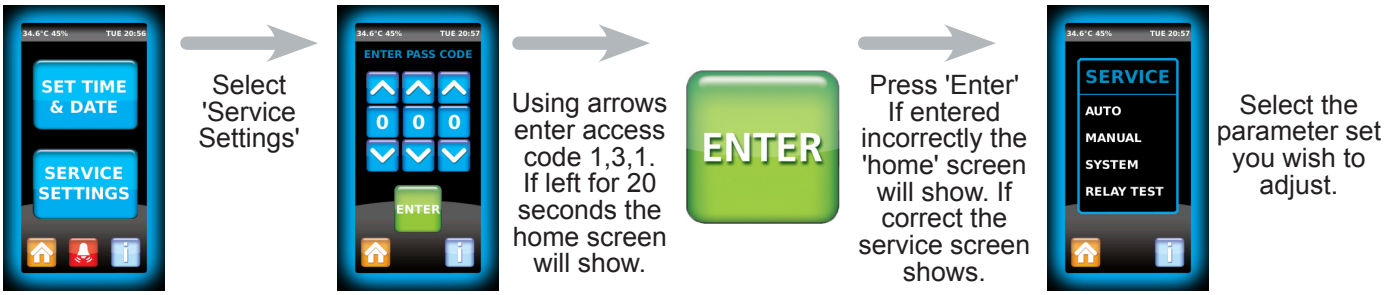
Languages

This controller only shows text in English

Service Settings Menu

Parameters

Access to this menu is vital if you wish to adjust any parameter settings.

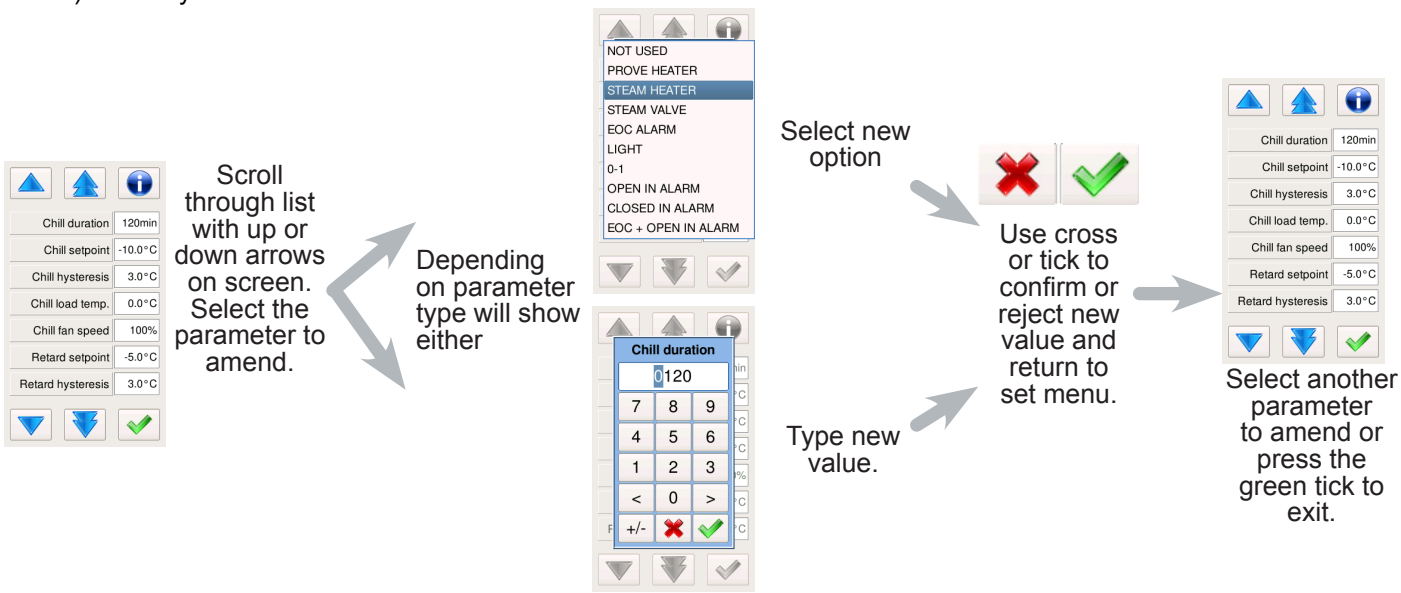


Cycle Parameter Sets

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 control and system parameter set up for the 2 cycle types 'Auto' and 'Manual' along with the 'System' set up and the relay test facility.

To amend a 'Cycle' please follow these instructions after selecting the parameter set you wish to amend (as described above). If at any time the screen is left for 20 seconds amendments will be lost and the 'Home' screen will be shown:



To amend 'System' parameters the function is exactly as described above you just need to select 'System' rather than a cycle option.

FB1-11 Default Controller Parameter Values - Auto Cycle

Section	Parameter	Range	Description	Default Setting
Chill Phase	Chill Duration	0 to 360 min	Duration of the chill phase.	60
	Chill Set Point	-50 to 120°	Chill phase temperature set point.	-8
	Chill Hysteresis	0 to 25°	Chill phase temperature hysteresis.	3
	Chill Load Temp	-50 to 120°	Auto cycle 'Do not load product' temperature threshold offset point.	0
	Chill Fan Speed	0 to 100	Evaporator fan speed during chill phase.	100
Retard Phase	Retard Set Point	-50 to 120°	Retard phase temperature set point.	-5
	Retard Hysteresis	0 to 25°	Retard phase temperature hysteresis.	3
	Retard Fan Speed	0 to 100%	Evaporator fan speed during retard phase.	75
Recovery Phase	Recovery Duration	0 to 600 min	Recovery phase duration.	360
	Recovery Set Point	-50 to 120°	Recovery phase temperature set point.	8
	Recovery Hysteresis	-50 to 25°	Recovery phase temperature hysteresis.	3
	Recovery Lift	0 to 100%	Recovery lift percentage (amount of recovery duration time to raise the temperature to recovery set point).	65
	Rec. Lift Fan Speed	0 to 100%	Evaporator fan speed during recovery lift phase.	100
	Rec. Fan Speed	0 to 100%	Evaporator fan speed during recovery phase.	100
	Rec. Humidity Set	0 to 100%	Recovery phase humidity setting.	85
Prove Phase	Prove Duration	0 to 600 min	Prove phase duration.	240
	Prove Set Point	-50 to 120°	Prove phase temperature set point.	30
	Prove Chill Hysteresis	0 to 25°	Prove chill hysteresis – the differential from the set point before switching on cooling (subject to compressor rest).	2
	Prove Heat Hysteresis	-25 to 0°	Prove heat hysteresis – the differential from the set point before switching on heating (subject to compressor rest).	2
	Prove Lift	0 to 100%	Prove phase lift percentage (amount of prove duration time taken to raise the temperature to the prove set point).	50
	Prove Lift Fan Speed	0 to 100%	Evaporator fan speed during lift phase.	85
	Prove Off Fan Speed	0 to 100%	Evaporator fan speed during prove 'off' cycle.	50
	Prove On Fan Speed	0 to 100%	Evaporator fan speed during prove heating or cooling cycle.	85
	Prove Humidity Set	0 to 100%	Prove phase humidity setting.	85
Hard Phase	Hold Enable	NO or YES	Determination of hold function (NO = cycle stop + alarm sounds, YES = alarm sounds after 'Auto End Timeout' Hold is initiated, alarm muted).	NO
	Hold Set Point	-50 to 120°	Hold mode temperature set point.	15
	Hold Hysteresis	0 to 25°	Hold mode hysteresis.	3
	Hold Fan Speed	0 to 100%	Evaporator fan speed during hold mode.	80
	Hold Humidity Set	0 to 100%	Hold mode humidity setting.	85

FB1-11 Default Controller Parameter Values - Manual Cycle

Section	Parameter	Range	Description	Default Setting
Manual Prove	Manual Set Point	-50 to 120°	Manual prove temperature set point.	30
	Manual Chill Hysteresis	0 to 25°	Refrigeration 'On' differential point – if T1>('Manual Set Point' + 'Man Chill Hys'), then refrigeration switched on (subject to 'Comp. Reset Time').	3
	Manual Heat Hysteresis	-25 to 0°	Heating 'On' differential point – if T1<('Manual Set Point' – 'Man. Heat Hys'), then prove heaters switched on.	1
	Manual Load Temperature	-20 to 50°	Manual Cycle ' Do not load product' temperature threshold set point.	20
	Manual Fan Speed	0 to 100%	Manual prove fan speed.	100
	Manual Humidity Set	0 to 100%	Manual prove humidity setting.	85
	Clock Format	12/24 hr.	Display/ setting format for time clock.	24H
	Daylight Saving Time	NO or YES	Daylight saving time adjustment on last Sunday in March (reverts back last Sunday in October).	YES
	Auto Wait Timeout	0 to 120 min	Length of time in Auto phase that 'WAIT' is displayed before de-energising relays, stopping the cycle and displaying 'WARNING' page without achieving temperature.	30
	Auto Load Timeout	0 to 120 min	Length of time in Auto phase that 'LOAD' is displayed before de-energising relays, stopping the cycle and returning to 'Home' screen with no intervention.	60
	Auto End Timeout	0 to 120 min	Length of time in Auto phase that 'EXTEND/ FINISH' is displayed before de-energising relays, stopping the cycle with no intervention ('HOLD' not enabled) – EOC continue.	10
	Manual Wait Timeout	0 to 120 min	Length of time in Manual phase that 'WAIT' is displayed before de-energising relays, stopping the cycle and displaying 'WARNING' page without achieving temperature.	30
	Manual Load Timeout	0 to 120 min	Length of time in Manual phase that 'LOAD' is displayed before de-energising relays, stopping the cycle and returning to 'Home' screen with no intervention.	60
	Temperature Alarm		Temperature alarm threshold configuration:	NON
		NON	All temperature alarms are inhibited.	
		RELATED	The value set in 'Low Diff' & 'High Diff' are alarm differentials which relate to phase set point and cycle.	
	Low Temp Alarm Diff	-9.9 to 0°	Low temperature alarm differential. (With 'Low temp. air diff' = '0' the low temperature alarm is excluded).	-5
	High Temp Alarm Diff	0 to 9.9°	High temperature alarm differential. (With 'High temp. air diff' = '0' the high temperature alarm is excluded).	5
	Temperature Alarm Probe		Temperature alarm probe:	T1
		T1	Air temperature probe used for alarm detection.	
		T2	Evaporator temperature probe used for alarm detection (If 'Evaporator Probe Enable' = YES).	
		T3	Third temperature probe used for alarm detection (If 'Auxiliary Input' = 'Cond').	

FB1-11 Default Controller Parameter Values - System

Section	Parameter	Range	Description	Default Setting
System	Temperature Alarm Delay	0 to 120 min	Delay before alarm temperature warning.	30
	Door Alarm Delay	0 to 30 min	Delay before 'Door Open' alarm warning.	8
	Evaporator Fan Min Stop	0 to 90 sec	Minimum evaporator fan stop period (following door opening etc.)	0
	Compressor Rest Time	0 to 30 min	Compressor rest time.	1
	Control Hum. Thr.	-0 to 90°	Humidity temperature threshold (temperature at which humidity control is enabled).	15
	Humidity Low	-10 to 0%	Variation below humidity set point level before humidity system activation.	-3
	Humidity High	0 to 10%	Variation above humidity set point at which refrigeration system/ humidity alarm activation.	2
	Humidity Alarm Delay	0 to 120 min	Delay before humidity alarm warning	30
	Humidity Probe Offset	-10 to 10%	Humidity probe offset.	0
	Humidity Simulation	0 to 100	Displayed humidity slowdown.	10
	Power Fail Alarm	0 to 120 min	Power failure alarm time (if 'Power fail alarm' = '0' power failure alarm is disabled).	0
	Cond. Clean Warn.	0 to 52 Weeks	Condenser clean period. (With 'Cond. Clean warn' = '0' condenser cleaning alarm is disabled.	0
	Data Logger	NO or YES	Data collection and download function (FCOM fitted/ download icon displayed).	NO
	Screensaver Tmt	0 to 120 min	Tim before starting screensaver from 'Home' screen (with value '0' screensaver is not enabled and display remains constantly illuminated).	0
	Digital Input 0		Configurable digital input operation:	NON
		Not Used (NON)	Digital input not activated.	
		Door Switch (DOOR)	Door switch input (if 'Digital IP 0' = 'DOOR' next parameter will be 'DOOR DELAY').	
		Light Switch (LIGHT)	Light switch operation ('Relay 5' = 'LIGHT' + 'LIGHT MODE' = MANUAL).	
		Alarm If Open (AL OPN)	Alarm ('AL' displayed) when contact opens.	
		Alarm If Closed (AL CLS)	Alarm ('AL' displayed) when contact closes.	
	High Pressure Switch	NO or YES	Configurable 230Vac Input (D3) from high pressure switch to operate high pressure alarm.	YES
	Low Pressure Switch	NO or YES	Configurable 230Vac Input (DS) from low pressure switch to operate low pressure alarm.	NO
	Over Temp Switch	NO or YES	Configurable 230Vac Input (DS) from over temp stat to operate over temp alarm.	YES

Section	Parameter	Range	Description	Default Setting
System - Continued	Relay 2		Relay 2 Operation (relay contacts open when mains power removed):	ST HTR
		Not Used (NON)	Output disabled (always off).	
		Steam Heater (ST HTR)	Control of humidity steam generator heater (activated in both 'TANK' and 'PULSE' mode).	
		Prove Heater (PROVE)	Control of prove heater.	
		Steam Valve (ST VLV)	Control of water solenoid valve (used with 'PULSE' humidity setting).	
		EOC Alarm (EOC)	Energises at end of cycle for indication.	
		Light (LIGHT)	Output enabled for light control.	
		0-1 (0-1)	Contacts open/closes with 'Run/ Standby' mode.	
		Open In Alarm (AL OPN)	Contacts open when an alarm condition occurs.	
		Closed Alarm (AL CLS)	Contacts close when an alarm condition occurs.	
		EOC + Open In Alarm (EOC+AL)	Energises at end of cycle for indication but contacts open when an alarm condition occurs.	
	Relay 3		Relay 3 Operation (relay contacts open when mains power removed):	PROVE
		Not Used (NON)	Output disabled (always off).	
		Steam Heater (ST HTR)	Control of humidity steam generator heater (activated in both 'TANK' and 'PULSE' mode).	
		Prove Heater (PROVE)	Control of prove heater.	
		Steam Valve (ST VLV)	Control of water solenoid valve (used with 'PULSE' humidity setting).	
		EOC Alarm (EOC)	Energises at end of cycle for indication.	
		Light (LIGHT)	Output enabled for light control.	
		0-1 (0-1)	Contacts open/closes with 'Run/ Standby' mode.	
		Open In Alarm (AL OPN)	Contacts open when an alarm condition occurs.	
		Closed Alarm (AL CLS)	Contacts close when an alarm condition occurs.	
		EOC + Open In Alarm (EOC+AL)	Energises at end of cycle for indication but contacts open when an alarm condition occurs.	

Section	Parameter	Range	Description	Default Setting
System - Continued	Relay 4		Relay 4 Operation (relay contacts open when mains power removed):	NON
		Not Used (NON)	Output disabled (always off).	
		Steam Heater (ST HTR)	Control of humidity steam generator heater (activated in both 'TANK' and 'PULSE' mode).	
		Prove Heater (PROVE)	Control of prove heater.	
		Steam Valve (ST VLV)	Control of water solenoid valve (used with 'PULSE' humidity setting).	
		EOC Alarm (EOC)	Energises at end of cycle for indication.	
		Light (LIGHT)	Output enabled for light control.	
		0-1 (0-1)	Contacts open/closes with 'Run/ Standby' mode.	
		Open In Alarm (AL OPN)	Contacts open when an alarm condition occurs.	
		Closed Alarm (AL CLS)	Contacts close when an alarm condition occurs.	
		EOC + Open In Alarm (EOC+AL)	Energises at end of cycle for indication but contacts open when an alarm condition occurs.	
	Relay 5		Relay 5 Operation (relay contacts open when mains power removed):	EOC
		Not Used (NON)	Output disabled (always off).	
		Steam Heater (ST HTR)	Control of humidity steam generator heater (activated in both 'TANK' and 'PULSE' mode).	
		Prove Heater (PROVE)	Control of prove heater.	
		Steam Valve (ST VLV)	Control of water solenoid valve (used with 'PULSE' humidity setting).	
		EOC Alarm (EOC)	Energises at end of cycle for indication.	
		Light (LIGHT)	Output enabled for light control.	
		0-1 (0-1)	Contacts open/closes with 'Run/ Standby' mode.	
		Open In Alarm (AL OPN)	Contacts open when an alarm condition occurs.	
		Closed Alarm (AL CLS)	Contacts close when an alarm condition occurs.	
		EOC + Open In Alarm (EOC+AL)	Energises at end of cycle for indication but contacts open when an alarm condition occurs.	

Section	Parameter	Range	Description	Default Setting
System - Continued	Relay 6		Relay 6 Operation (relay contacts open when mains power removed):	AL CLS
		Not Used (NON)	Output disabled (always off).	
		Steam Heater (ST HTR)	Control of humidity steam generator heater (activated in both 'TANK' and 'PULSE' mode).	
		Prove Heater (PROVE)	Control of prove heater.	
		Steam Valve (ST VLV)	Control of water solenoid valve (used with 'PULSE' humidity setting).	
		EOC Alarm (EOC)	Energises at end of cycle for indication.	
		Light (LIGHT)	Output enabled for light control.	
		0-1 (0-1)	Contacts open/closes with 'Run/ Standby' mode.	
		Open In Alarm (AL OPN)	Contacts open when an alarm condition occurs.	
		Closed Alarm (AL CLS)	Contacts close when an alarm condition occurs.	
		EOC + Open In Alarm (EOC+AL)	Energises at end of cycle for indication but contacts open when an alarm condition occurs.	
	Alr Repeat Interval	0 to 720 min	Time between an acknowledged alarm being muted and resounding (when it still exists). If 'R6 RPT INT' = '0' the alarm will not record.	
	EOC Max Duration	0 to 720 min	The time the 'End of Cycle' (EOC) alarm sounds for before automatically muting (If 'EOC PERIOD' = '0' the EOC alarm will not automatically mute).	
	Light Mode		Light Control Mode:	NON
		Not Used (NON)	Light control mode disabled (always off).	
		DI0 Open (DO OPN)	Light control is switched on when door is opened (If 'DIGITAL IP 0' = 'Light').	
		DI0 Closed (DO CLS)	Light control is switched on when door is closed (If 'DIGITAL IP 0' = 'Light').	
		Door Open (DR OPN)	Light control is switched on when door is opened (If 'DIGITAL IP 0' = 'Door').	
		Door Closed (DR CLS)	Light control is switched on when door is closed (If 'DIGITAL IP 0' = 'Door').	
	Steam Control		Steam generation control mode:	TANK
		Not Used (NON)	Steam control is disabled (always off).	
		Tank (TANK)	Steam is generated by tank heater (then 'Relay 2' = 'Steam Htr').	
		Pulse (PULSE)	Steam is generated by grid heater and injector (then 'Relay 2' = 'Steam Htr' + 'Relay 4' = 'Steam Vv').	

Section	Parameter	Range	Description	Default Setting
System - Continued	Hum. Power Thr	-1% to -30%	Point before humidity setpoint at which generation is switched from 100% power to value determined by 'Steam Htr. On/ Steam Htr. Off'.	-15
	Steam Htr. On	30 to 240 sec	Cyclic steam heater 'On' when generating humidity as determined by 'Hum. Power Thr'.	60
	Steam Htr. Off	30 to 240 sec	Cyclic steam heater 'Off' when generating humidity as determined by 'Hum. Power Thr'.	45
	Pulse Delay	0 to 120 sec	Delay time between humidity heater (Relay 2) being switched on and water valve (Relay 4) being energised.	20
	Pulse On	0 to 120 sec	Relay 4 steam valve operating cycle (open time) when humidity is required (i.e. the period of time relay 4 energised/ valve open).	1
	Pulse Off	0 to 120 sec	Relay 4 steam valve operating cycle (closed time) when humidity is required (i.e. the period of time relay 4 de-energised/ valve shut).	10
	Air Probe Offset	'-9.9 to 9.9°C	Air temperature probe (T1) enabling.	0
	Evap Probe Enable	NO or YES	Evaporator (T2) probe enabling.	NO
	Evap Probe Offset	'-9.9 to 9.9°C	Evaporator temperature probe (T2) offset.	0
	Auxiliary Input		T3 Probe Function:	NON
		Not Used (NON)	Digital input T3 not activated.	
		Door2 (DOOR2)	Door switch input (works in series with 'DO' when 'DO' = 'DS'), (If 'T3' = 'DOOR2' parameter 'DOOR DELAY' is activated).	
		Alarm If Open (AL OPN)	Alarm switch – 'general alarm' displayed when contact is open.	
		Alarm If Closed (AL CLS)	Alarm switch – 'general alarm' displayed when contact is closed.	
		HP Switch (HP)	High pressure switch digital input (normally closed/ alarm when open).	
		Display (DISP.)	T3 probe temperature displayed in place of T1 (T1 value controls thermostatic cycle).	
		Condenser (COND.)	Condenser temperature measurement.	
	Aux Probe Offset	'-9.9 to 9.9°C	Auxiliary temperature probe (T3) offset.	0
	Cond. Alarm Temp	-50 to 90°C	Condenser alarm temperature.	65
	Display Scale		Readout Scale:	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 120°C.	
		1°F (1°F)	Range -58 to 200°F.	
	Thermal Simulation	0 to 100	Displayed temperature slow down.	0
	Address	1 to 255	FB1-11 address for PC communication.	1

(Parameters correct at time of issue - FB1-11 Version 1.10)

FB1-11 Default Controller Parameter Values - System

Section	Parameter (as displayed on screen)	Default Setting	DRPTRI2 & 3 (Integral)	DRPTRI2 & 3 (Remote)
Auto Cycle			A	A
Chill Phase	Chill Duration	60	60	60
	Chill Setpoint	-8	-8	-8
	Chill Hysteresis	3	3	3
	Chill Load Temp.	0	5	5
	Chill Fan Speed	100	100	100
Retard Phase	Retard Setpoint	-5	-5	-5
	Retard Hysteresis	3	3	3
	Retard Fan Speed	75	75	75
Recovery Phase	Recovery Duration	360	270	270
	Recovery Setpoint	6	8	8
	Rec. Hysteresis	2	3	3
	Recovery Lift	65	65	65
	Rec. Lift Fan Speed	100	100	100
	Rec. Fan Speed	100	75	75
	Rec. Humidity Set	85	80	80
Prove Phase	Prove Duration	240	240	240
	Prove Setpoint	30	30	30
	Prove Chill Hysteresis	2	2	2
	Prove Heat Hysteresis	2	2	2
	Prove Lift	50	50	50
	Prv Lift Fan Speed	85	85	85
	Prv OFF Fan Speed	50	50	50
	Prv ON Fan Speed	85	85	85
	Prove Humidity Set	85	83	83
Hard Phase	Hold Enable	NO	NO	NO
	Hold Setpoint	15	15	15
	Hold Hysteresis	2	3	3
	Hold Fan Speed	80	80	80
	Hold Humidity Set	80	83	83

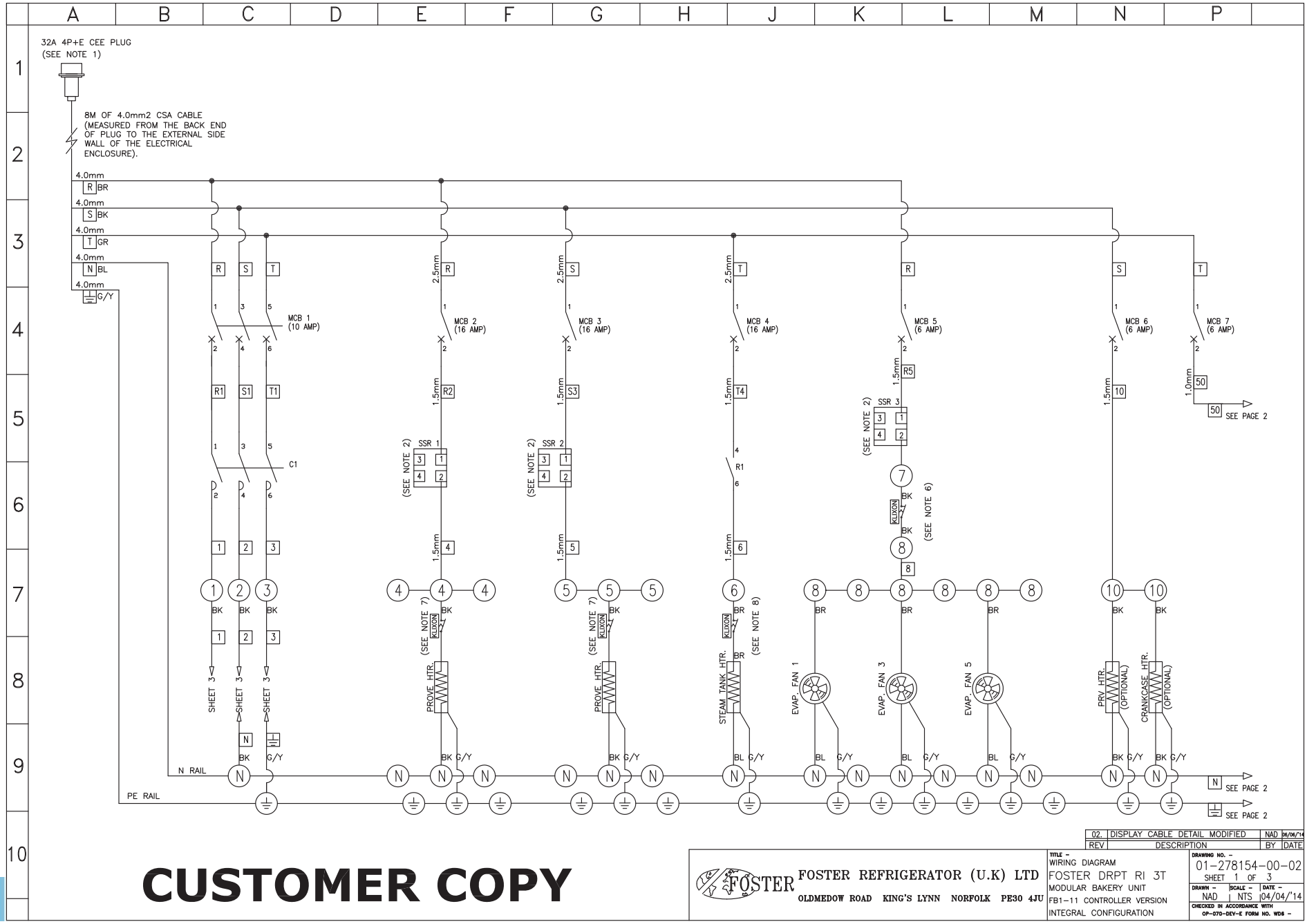
Manual Cycle			A	A
Manual Prove	Manual Setpoint	30	29.5	29.5
	Manual Chill Hys.	3	3	3
	Manual Heat Hys.	-1	2	2
	Manual Load Temp.	20	25	25
	Manual Fan Speed	100	100	100
	Man. Humidity Set	85	80	80

System			A	A
	Clock Format	24H	24H	24H
	Daylight Sav. Time	YES	YES	YES
	Auto Wait Timeout	30	30	30
	Auto Load Timeout	60	60	60
	Auto End Timeout	10	10	10
	Man. Wait Timeout	30	30	30
	Man. Load Timeout	60	60	60
	Temperature Alarm	NON	NON	NON
	Low Temp. Alr Diff.	-5	-5	-5
	High Temp Alr. Diff.	5	5	5
	Temp. Alarm Probe	T1	T1	T1
	Temp. Alarm Delay	30	30	30
	Door Alarm Delay	8	8	8
	Evap Fan Min Stop	0	0	0
	Comp. Rest Time	1	1	0
	Control Hum. Thr.	15	15	15
	Humidity Low	-3	-5	-5
	Humidity High	2	5	5
	Hum. Alarm Delay	30	90	90
	Hum. Probe Offset	0	-5	-5
	Hum. Simulation	10	10	10
	Power Fail Alarm	0	0	0
	Cond. Clean Warn.	0	0	0
	Data Logger	NO	NO	NO
	Screensaver Tmt	0	0	0
	Digital Input 0	NON	NON	NON
	High Press. Switch	YES	YES	YES
	Low Press. Switch	NO	NO	NO
	Over Temp. Switch	YES	YES	YES
	Relay 2	ST HTR	PROVE	PROVE
	Relay 3	PROVE	ST HTR	ST HTR
	Relay 4	NON	NON	NON
	Relay 5	EOC	EOC	EOC
	Relay 6	AL CLS	AL CLS	AL CLS
	Alr Repeat Interval	10	10	10
	EOC Max Duration	0	0	0
	Light Mode	NON	NON	NON
	Steam Control	TANK	TANK	TANK
	Hum. Power Thr	-15	-15	-15
	Steam Heater ON	60	45	45
	Steam Heater OFF	45	60	60
	Pulse Delay	20	20	20
	Pulse ON	1	1	1

	Pulse OFF	10	10	10
	Air Probe Offset	0	0	0
	Evp Probe Enable	NO	NO	NO
	Evp Probe Offset	0	0	0
	Auxiliary Input	NON	NON	NON
	Aux Probe Offset	0	0	0
	Cond. Alarm Temp	65	65	65
	Display Scale	0.1°C	1	1
	Thermal Simulation	0	10	10
	Address	1	1	1

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

Wiring Diagram for Integral Models with FB1-11 Controller 1 of 3



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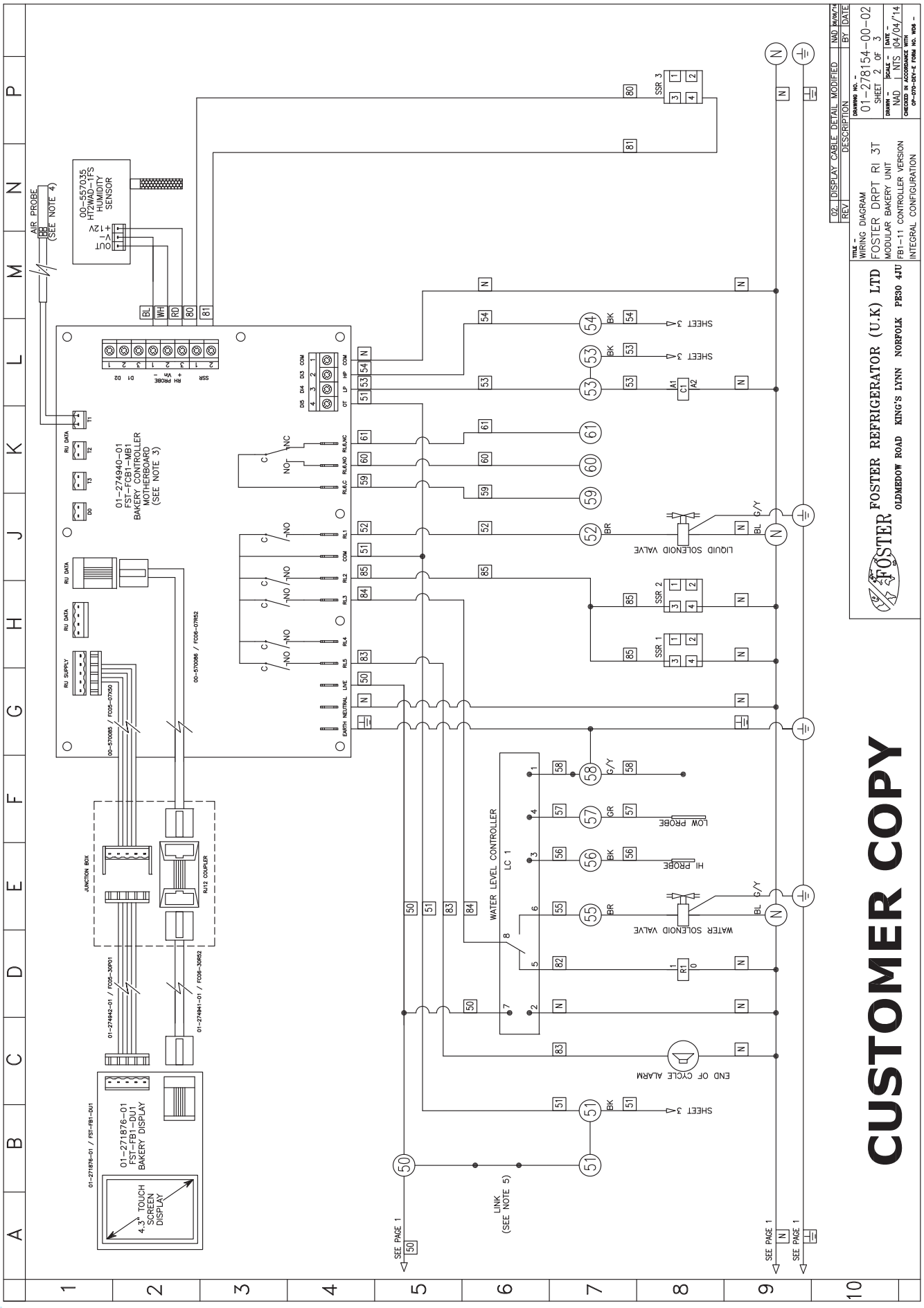
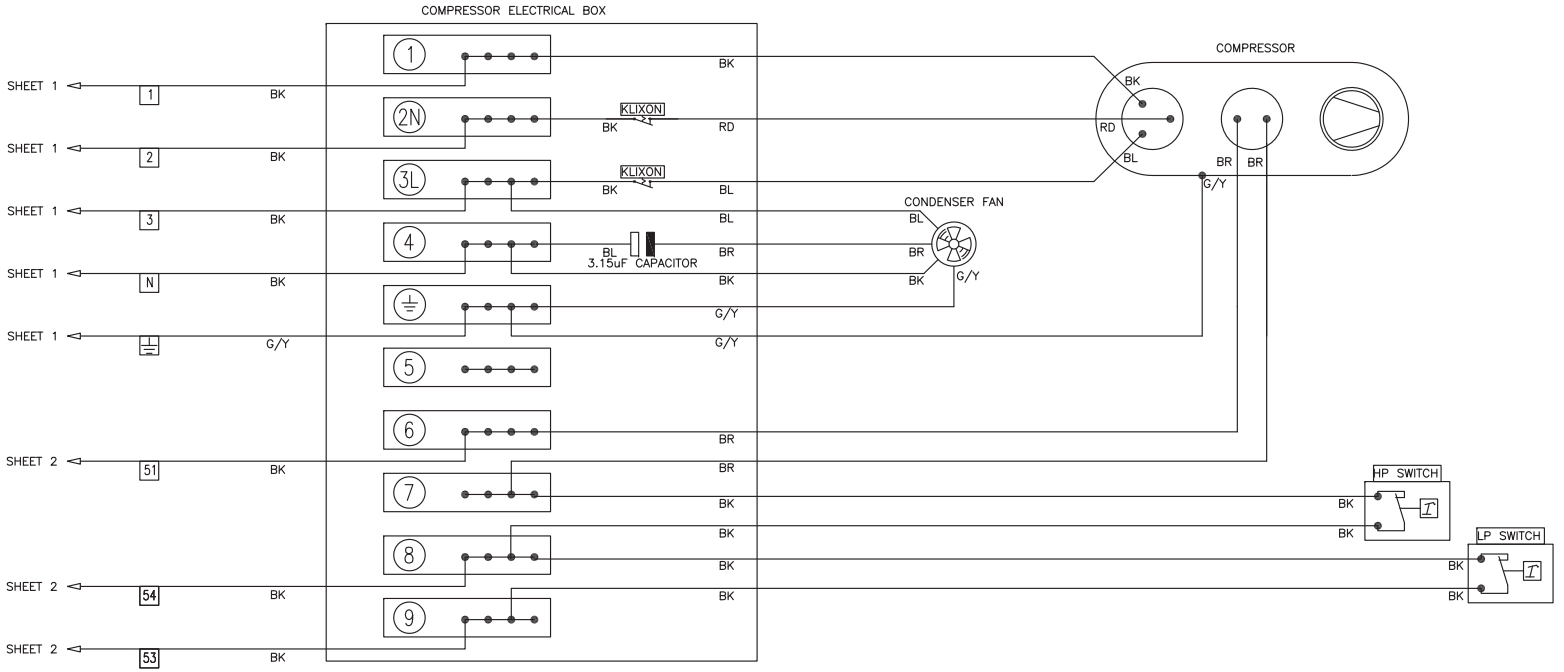

CUSTOMER COPY
FOSTER REFRIGERATOR (U.K) LTD
OLDMEDOW ROAD KING'S LYNN NORFOLK PE30 4JU
TITLE - WIRING DIAGRAM FOSTER DRPT RI 3T MODULAR BAKERY UNIT FB1-11 CONTROLLER VERSION INTEGRAL CONFIGURATION
DRAWING NO. - 01-278154-00-02
SHEET 2 OF 3
DRAWN - NAD SCALE - NTS DATE - 04/04/'14
CHECKED IN ACCORDANCE WITH QM-270-DEV-E FORM NO. WD8 -
02 DISPLAY CABLE DETAIL MODIFIED NAD 04/09/'14
REV DESCRIPTION BY DATE
01-271876-01 / FST-FB1-DU1
01-271876-01 FST-FB1-DU1 BAKERY DISPLAY
4.3" TOUCH SCREEN DISPLAY
JUNCTION BOX
RJ12 COUPLER
01-274942-01 / FC05-30P01
01-274941-01 / FC05-30R02
00-570085 / FC05-07P00
00-570086 / FC05-07R02
01-274940-01 FST-FCB1-MB1 BAKERY CONTROLLER MOTHERBOARD (SEE NOTE 3)
00-557035 HT2WAD-1FS HUMIDITY SENSOR
AIR PROBE (SEE NOTE 4)
WATER LEVEL CONTROLLER LC 1
LIQUID SOLENOID VALVE
WATER SOLENOID VALVE
END OF CYCLE ALARM
LOW PROBE
HI PROBE
SSR 1
SSR 2
SSR 3
LINK (SEE NOTE 5)
SEE PAGE 1
SHEET 3

Wiring Diagram for Integral Models with FB1-11 Controller 3 of 3



NOTES:

1. MAINS 32A 4P+E CEE PLUG – INTO 20A RCBO PROTECTED SOCKET – CONDUCTOR CSA 4.0mm
2. RELAY 1 & 2 30A SSR TYPE
3. CONTROLLER CONFIGURED WITH SPECIFIC OPERATING PARAMETERS.
4. AIR PROBE (T1) 10K OHM NTC TYPE (SN4K....).
5. LINK FITTED TO ALLOW FOR FITTING OF OVERTEMP STAT. / SENSOR.
6. FAN KLIXON NORMALLY CLOSED TYPE – OPENS ~60°C / CLOSES 45°C.
7. PROVE HEATER KLIXON NORMALLY CLOSED TYPE – OPENS ~60°C / CLOSES 45°C.
8. STEAM TANK KLIXON NORMALLY CLOSED TYPE – OPENS ~140°C / CLOSES 110°C.
9. ALL CABLE 1.0mmSQ UNLESS OTHERWISE STATED.
10. CABLE COLOUR CODE:
    BR – BROWN RD – RED GR – GREY
    BL – BLUE BK – BLACK YW – YELLOW
    G/Y – GREEN / YELLOW WH – WHITE OR – ORANGE
    (ALL PROTECTIVE EARTH WIRING TO BE GREEN/YELLOW)
11. CIRCUIT SHOWN DE-ENERGISED.

REV	DESCRIPTION	BY	DATE
02.	DISPLAY CABLE DETAIL MODIFIED	NAD	06/06/'14

CUSTOMER COPY

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

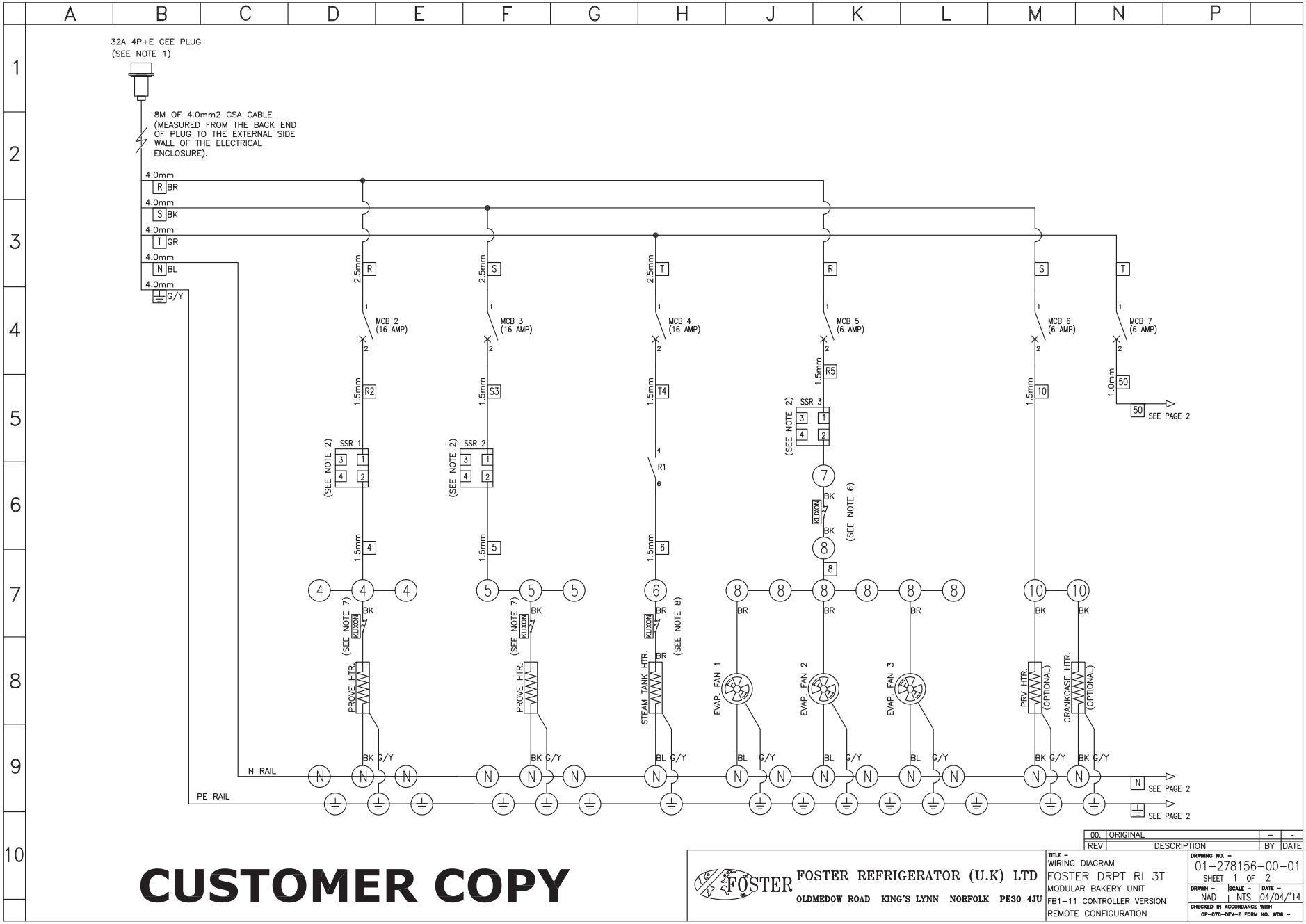
TITLE –
WIRING DIAGRAM
FOSTER DRPT RI 3T
MODULAR BAKERY UNIT
FB1-11 CONTROLLER VERSION
INTEGRAL CONFIGURATION

DRAWING NO. –
01-278154-00-02
SHEET 3 OF 3

DRAWN –	SCALE –	DATE –
NAD	NTS	04/04/'14

CHECKED IN ACCORDANCE WITH OP-070-DEV-E FORM NO. WD6 –

Wiring Diagram for Remote Models with FB1-11 Controller 1 of 2



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REV	DESCRIPTION	BY	DATE
00.	ORIGINAL	–	–

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

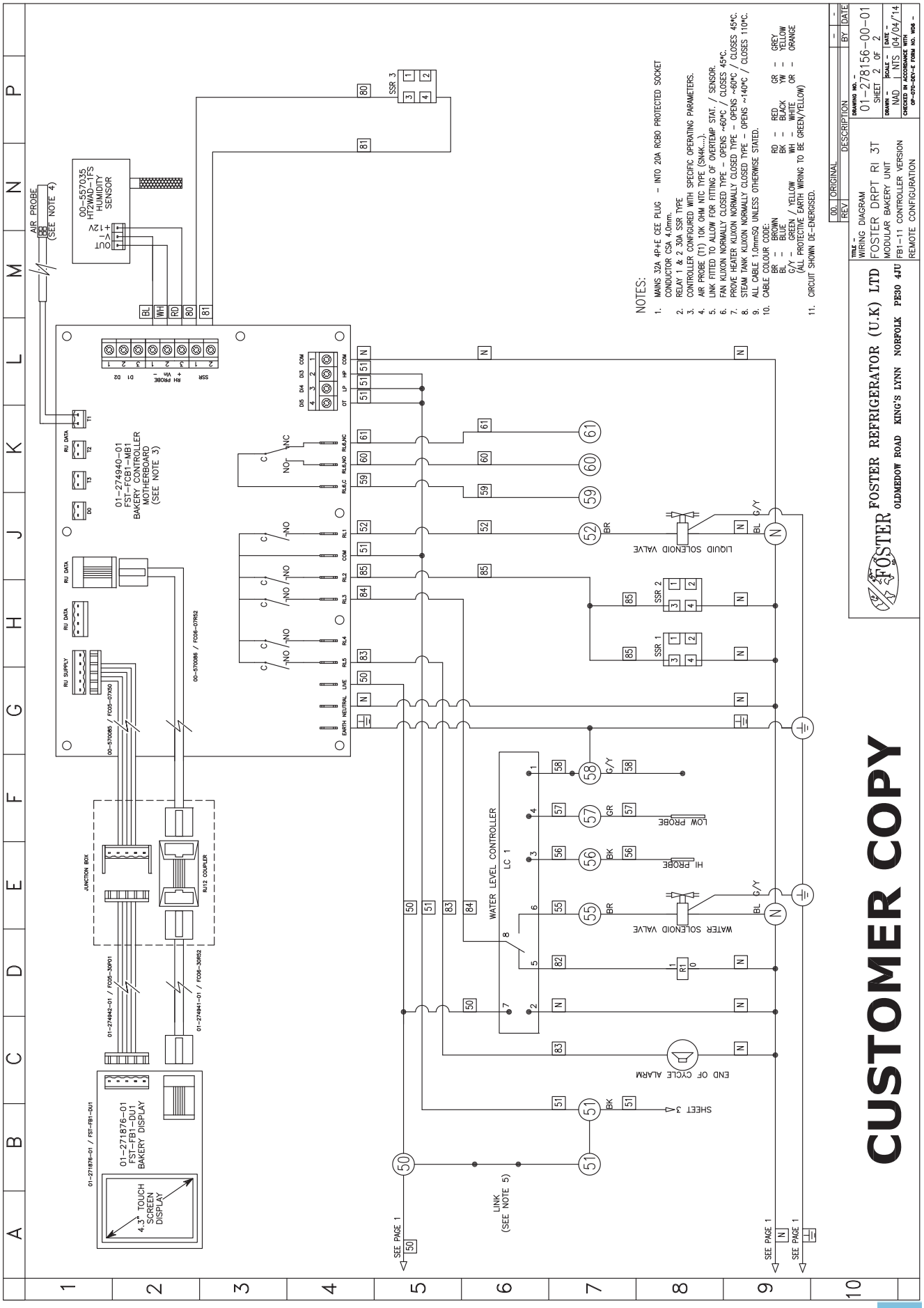
TITLE –
WIRING DIAGRAM
FOSTER DRPT RI 3T
MODULAR BAKERY UNIT
FB1–11 CONTROLLER VERSION
REMOTE CONFIGURATION

DRAWING NO. –
01–278156–00–01
SHEET 1 OF 2

DRAWN –	SCALE –	DATE –
NAD	NTS	04/04/'14

CHECKED IN ACCORDANCE WITH OP–070–DEV–E FORM NO. WD6 –

Wiring Diagram for Remote Models with FB1-11 Controller 2 of 2



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 relay individually to energise the linked part.
During testing the relay selected will highlight the block in blue and unless manually 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 then show as seen here.

> Below the wording 'FOOTPRINT' the tests progress is represented by the coloured progress blocks. These gradually fill the white section until filled purple at completion of the test.

As with any function the 'Footprint Test' can be cancelled by using the 'Stop' button as described before. See below for a table of the test sequence. Once complete the controller will revert back to the 'Home' screen, de-energising all of the output relays.

Time(s)	Event #	Description
t	1	Mains power on, no program running. From 'Home' screen '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' screen.

Technical Data for Dough Retarder Provers

	DRPTRI2 Integral	DRPTRI2 Remote	DRPTRI3 Integral	DRPTRI3 Remote
Cooling Duty@ -15°C (KWatts)	2	2	2.8	2.8
Number of Fans	2	2	3	3
Evaporating Temperature (°C)	-15	-15	-15	-15
Refrigerant Control	TEV	TEV	TEV	TEV
Compressor	TAJ4519ZH	N/A	TAJ4519ZH	N/A
Gas	R404a	R404a	R404a	R404a
Gas Charge (Grams)	2000	N/A	2000	N/A
Power Consumption (Watts)	5800	5800	8700	8700
Current Consumption (Amps)	13.5	13.5	13.5	13.5
Electrical Supply	400/50/3 20A	400/50/3 20A	400/50/3 20A	400/50/3 20A
Total Heat Rejection (Watts)	3.2	3.2	4.4	4.4

TEV = Thermostatic Expansion Valve

FB1-11 Technical

Power Supply

FB1-11	230Vac±10%, 50/60Hz, Operating 3.2W, Standby 0.9w

Relay Output

1	30A 230Vac
2 & 3	16A 230Vac
4 & 5	10A 230Vac
6	**8A 230Vac**

Input

Temperature Probes (NTC)	10KΩ@25°C
Humidity Probe (HT2W)	0-1Vac (0-100%Rh)

Measurement Range

-50 ... 120°C, -55 ... 240°F
-50 / -9.9 ... 19.9/80% (NTC 10K only)

Measurement Accuracy

<0.5°C within the measurement range

CE (Reference norms)

EN60730-1; EN60730-2-9

EN55022 (Class B)

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' screen 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 the 'Service Settings' Screen and selecting 'Alarms'.

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

Multiple Warnings

Should multiple alarms show this will be the order of importance they are displayed:

Order	Alarms	Order	Warnings
1	Air temperature (T1) Probe Fault	7	High Temperature Warning
2	Humidity Sensor Failure	8	Low Temperature Warning
3	High Pressure Alarm	9	Power Failure Warning
4	Power Failure Alarm		
5	Over Temperature Alarm		
6	Low Pressure Alarm		

Audible & Visual Alarms/ Warnings	Possible Cause	Action/ Solution to Rectify Fault
	Over Temperature Alarm Shows when the temperature rises too high and may become too dangerous for the cycle to continue.	The cycle will stop and all relays (other than those used for the alarm) will be disabled. The original cycle cannot be re-started until the fault is rectified. The alarm will sound and the warning will show on screen. Pressing the 'Mute' button will silence the alarm. The controller will re-set the display warning when it senses that the fault has been rectified. After which it will return to the 'Home' screen.
	T**1 Air Probe Failure** This will only show when the probe has failed.	The fault will show and an audible alarm will sound. The cycle will stop and all relays will be disabled until the fault is rectified (apart from those used with the alarm). Pressing and holding the 'Mute' button will silence the alarm temporarily. The fault will automatically reset itself when the controller senses that the problem has been fixed.

	Humidity Sensor/Stat Failure This will only show when the sensor/ stat has failed.	The fault will show and an audible alarm will sound. The cycle will stop and all relays will be disabled until the fault is rectified (apart from those used with the alarm). The cycle will not be able to start again until the fault is resolved. Pressing and holding the 'Mute' button will silence the alarm temporarily. The fault will automatically reset itself when the controller senses that the problem has been fixed.
	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.	The fault will show and an audible alarm will sound. The cycle will stop immediately and all relays will be disabled until the fault is rectified (apart from those used with the alarm). The cycle will not be able to start again until the fault is resolved. Pressing and holding the 'Mute' button will silence the alarm temporarily. The fault will automatically reset itself when the controller senses that the problem has been fixed.
	Low Pressure Alarm When the condensing system pressure falls too low for the cycle to continue.	The fault will show and an audible alarm will sound. The cycle will stop immediately and all relays will be disabled until the fault is rectified (apart from those used with the alarm). The cycle will not be able to start again until the fault is resolved. Pressing and holding the 'Mute' button will silence the alarm temporarily. The fault will automatically reset itself when the controller senses that the problem has been fixed.
	Humidity Fault When the humidity varies more than the value set by parameter 'Humidity Low' or 'Humidity High' and for more than the time set by 'Humidity Alm. Delay'.	The warning will show and the audible alarm will sound. The cycle will continue and if the humidity returns within the limits of the parameter set then the alarm will cancel automatically. Press and hold the 'Rest' button until the three progression blocks have filled red to acknowledge and cancel the warning and audible alarm and return to the cycle or 'Home' screen.
	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 alarm. 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' screen or run subsequent programs.

	Power Failure Warning or **Power Failure Alarm** Both show after the mains power has been lost or temporarily removed during a cycle.	**Warning** - If the mains power is lost during a cycle, but it is less than the minimum time period set on parameter 'Power Fail Alarm', the cycle will continue when the power is re-instate from the point in the cycle when power was lost. The warning and audible alarm will still sound. Pressing the 'Reset' button will acknowledge and silence the alarm. **Alarm** - If however the power is lost for more than the time limit allowed by the parameter then the cycle will **NOT** re-start when the power is re-instated. The warning will show and the audible alarm will sound. Pressing the 'Reset' button will acknowledge and silence the alarm. We would recommend the contents of the unit are inspected after a power failure. No alarm or warning will show if the parameter 'Power Fail Alarm' is set to '0' as this disables the function.

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DRPT/FB1-11/SFTWV1.11/SM11/14 GB