



**Xtra Cabinets
 FXT601H & L
 FXT1351H & L
 with
 LD1 & LD2 and
 AT1-5 & AT2-5
 Controllers**



Service Manual



ISO 14001



ISO 9001



By Appointment to
 Her Majesty Queen Elizabeth II
 Suppliers of Commercial Refrigeration
 Equipment to the Royal Household
 London, United Kingdom (020) 81 20 11 20



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Service Manual Information

The products and all information in this manual are subject to change without prior notice. We assume by the information given that the person(s) working on these refrigeration units are fully trained and skilled in all aspects of their workings. Also that they will use the appropriate safety equipment and take or meet precautions where required.

The service manual does not cover information on every variation of this unit; neither does it cover the installation or every possible operating or maintenance instruction for the units.

Health & Safety Warnings and Information

	Make sure the power supply is turned off before making any electrical repairs.
	To minimise shock and fire hazards, please do not plug or unplug the unit with wet hands.
	During maintenance and cleaning, please unplug the unit where required.
	Care must be taken when handling or working on the unit as sharp edges may cause personal injury, we recommend the wearing of suitable PPE.
	Ensure the correct moving and lifting procedures are used when relocating a unit.
	Do NOT use abrasive cleaning products, only those that are recommended. Never scour any parts of the refrigerator. Scouring pads or chemicals may cause damage by scratching or dulling polished surface finishes.
	Failure to keep the condenser clean may cause premature failure of the motor/compressor which will NOT be covered under warranty policy.
	Do NOT touch the cold surfaces in the freezer compartment. Particularly when hands are damp or wet, skin may adhere to these extremely cold surfaces and cause frostbite.
	Please ensure the appropriate use of safety aids or Personnel Protective Equipment (PPE) are used for you own safety.

Environmental Management Policy for Service Manuals and Duets.

Product Support and Installation Contractors

Foster Refrigerator recognises that its activities, products and services can have an adverse impact upon the environment.

The organisation is committed to implementing systems and controls to manage, reduce and eliminate its adverse environmental impacts wherever possible, and has formulated an Environmental Policy outlining our core aims. A copy of the Environmental Policy is available to all contractors and suppliers upon request.

The organisation is committed to working with suppliers and contractors where their activities have the potential to impact upon the environment. To achieve the aims stated in the Environmental Policy we require that all suppliers and contractors operate in compliance with the law and are committed to best practice in environmental management.

Product Support and Installation contractors are required to:

1. Ensure that wherever possible waste is removed from the client's site, where arrangements are in place all waste should be returned to Foster Refrigerator's premises. In certain circumstances waste may be disposed of on the 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 to 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.

IMPORTANT CONTROLLER CHANGE INFORMATION

THE ORIGINAL CONTROLLERS (LD1 AND LD2), HAVE NOW BEEN DIS-CONTINUED. IF YOU NEED TO REPLACE THE CONTROLLERS PLEASE USE THE FOLLOWING:

WHERE THE LD1-15 (0-555847) CONTROLLER AND SN2K15P1 (00-555906) AIR PROBE WERE USED ON THE HIGH TEMP MODELS, PLEASE CHANGE TO AT1-5 (00-556223) CONTROLLER AND SN4K15P1 (00-556187) AIR PROBE.

IF USING THE LD2-15 (00-555848) CONTROLLER ON LOW TEMP MODELS, WITH SN2K15P1 (00-555906) AIR PROBE AND SN2K15P2 (00-555907) EVAPORATOR PROBE. PLEASE CHANGE TO AT2-5 (00-556224) CONTROLLER, SN4K15P1 (00-556187) AIR PROBE AND SN4K15P2 (00-556188) EVAPORATOR PROBE

WHEN CHANGING EITHER CONTROLLER ALL RELEVANT PROBES MUST BE CHANGED AT THE SAME TIME.

This manual provides information on both controllers.

Xtra Cabinet Description – Oct '07 to Aug '09

The cabinets are manufactured as a one piece foamed shell with easy clean stainless steel exterior. Each conforms to ISO Climate Class 5 and have their condensing unit located on the top of the cabinet.

The temperature is controlled by a LAE microprocessor control with digital temperature display.

The high temperature units use R134a refrigerant, whereas the low/freezer units use R404a. All the refrigeration systems are integral with an air-cooled condensing unit. The refrigerant is distributed into the evaporator which is controlled by capillary.

Water is removed from the unit via vaporisation. The evaporator discharge line passes through the vaporiser tray which is located at the rear.

All units' doors are fitted with pivot hinges, recessed door handles, magnetic door gaskets and 80mm castors. They have swivel castors on the rear and swivel/lockable at the front.

Controller Operation for LD1 and LD2 Controlled units

LD1 Controller as used on High temperature Models



LD2 Controller as used on Low temperature models



Operation Guidelines

Initial Start Up.

Start Up & self Test:



The indication is only displayed during the first three seconds following the mains electrical power being applied to the unit. During this period the controller performs a self-check.

Once the self-check has been completed **OFF** will be displayed.

Press and hold **O/I** for three seconds. The unit will start and the air temperature will be displayed.

Check set point by pressing the button **i.set**

To increase on high temperature models set point press **i.set** + **right arrow** until required temperature is displayed.

To decrease set point press **i.set** + **left arrow** until required temperature is displayed.

To increase on low temperature models set point press **i.set** + **left arrow** until required temperature is displayed.

To decrease set point press **i.set** + **right arrow** until required temperature is displayed.

Refrigerator Factory Temperature Set Point +1°C to +4°C Freezer Factory Temperature Set Point -19°C to -21°C

Exit from set up occurs after 10 seconds if no button is pressed.

Manual Defrost.

To initiate a manual defrost press and hold  when **dEF** is displayed release .

On completion of the defrost **REC** will be displayed until the cabinet temperature is achieved and then it will revert to displaying the normal cabinet temperature.

Set Unit to Standby.

Press  display **OFF** shows

This indication is displayed while the unit is not operating but with mains power applied to the unit. This mode may be used for internal cleaning regimes and short periods when the unit is not required.

For extended periods of inactivity the mains supply should be isolated.

Alarm and Warnings

High temperature alarm

HI Will be displayed.

The alarm will sound but can be silenced by pressing any of the buttons, however it will return after the pre-set designated period. The unit returning to normal operating temperature will automatically cancel the alarm.

Possible Causes: Evaporator fan not working. Restricted airflow through air duct. Evaporator iced up. Compressor not working. Loss of refrigerant.

Low temperature alarm.

LO Will be displayed.

The alarm will sound but can be silenced by pressing any of the buttons and the unit will continue to operate, however it will return after the pre-set designated period. The unit returning to normal operating temperature will automatically cancel the alarm.

Possible Causes: Controller faulty (not switching compressor off). Compressor secondary relay will not de-energise (low temperature models).

Door Open Alarm.

DO Will be displayed.

The alarm will sound but can be silenced by pressing .

The display will continue to display the alarm message until cancelled by shutting the door.

If the alarm cannot be cancelled by doing this call your Foster Authorised Service Company.

Possible Causes: Faulty door switch. Door left open for more than 5minutes.

High Pressure Alarm (Condenser probe is not fitted to these models).

HP Will be displayed

This alarm relate to the condenser which must be checked and cleaned at regular intervals the frequency being determined by site conditions.

The alarm will sound but can be silenced by pressing any of the buttons and the unit will continue to operate, however it will return after the pre-set designated period. The unit returning to normal operating temperature will automatically cancel the alarm.

Possible Causes: Condenser fan not working. Condenser blocked/ dirty. Condenser obstructed.

Periodic Condenser Clean (not used on these models)

CL Will be displayed

This indicates the timed portion of the clean interval has been exceeded and the condenser should be cleaned.

Air Temperature Probe Failure.

E1 Will be displayed.

The alarm will sound but can be silenced by pressing any button.

There is no further action that can be taken by the user in this instance. During this period the unit will continue to operate but have a reduced performance.

Action: Replace Probe.

Evaporator Temperature Probe Failure. (Automatic Defrost Cabinets Only)

E2 Will be displayed.

The alarm will sound but can be silenced by pressing any button.

There is no further action that can be taken by the user in this instance. During this period the unit will continue to operate satisfactorily, but this failure will have an effect on the defrost and therefore efficiency if allowed to continue.

Action: Replace Probe.

Information Menu

Pressing and releasing  activates the information menu. From this menu you can display the temperature relating to T1 (air probe), T2 (evaporator probe, if fitted) and T3 (condenser probe, if fitted).

The maximum temperature (THI) and the minimum temperature (TLO) the cabinet has achieved since it was last re-set.

The total operating time of the condenser (CND), since it was last cleaned, and the keyboard status (LOC).

The information to be displayed can be selected sequentially by pressing  repeatedly or scrolling through the menu using the  or  buttons.

Once selected press  to display the value

Exit from the info menu by pressing  or is automatic after 6 seconds if no buttons are pressed.

To reset the temperature settings recorded in THI and TLO and the hours counted in CND, access the info menu by pressing  to display the value plus  simultaneously for resetting to be completed.

To check the LOC status scroll through to LOC, press  to display status – YES to lock keys. – NO to leave keys accessible.

NOTE: with the keys locked it is not possible to turn the unit off or ON or to check the set point

Parameter Setting and Adjustment

It is strongly advised that before adjusting any Service Parameters a thorough understanding of the following instructions should be obtained.

The parameters are accessed by pressing the following keys in succession  +  +  and keeping them pressed for 5 seconds.

(Due to a software change some units may require  & then  to be pressed and then held for 5 seconds if the above method doesnt access the parameter settings. After which carry on as described below)

After this period the first parameter 'SCL' will be displayed.

Press  button to pass from one parameter to the next and  button to go back.

Press  to display the value +  or  to change it.

Exit from set up is by pressing  or is automatic if no buttons are pressed for 30 seconds

NOTE:

When receiving a replacement controller the unit will be set with the default settings. Change the settings to those relating to the particular model. After changing parameter 'SCL' from '1' to '2' moving through parameters 'SPL', 'SP', 'FDD', 'IISL' and 'IISP' you may find that '-or' will be displayed. '-or' indicates that the control setting is out of range.

To get the parameter back into range, for example 'SPL', press  to display the value +  continue pressing both buttons until the display shows the temperature required then release both buttons. Use the same procedure to adjust all of the parameters displaying '-or'.

LD1 – 15E-01FST (00-555847) High Temperature Controller Parameter list

Note: On models with glass doors parameter 'DS' is set to 'NO' as a mechanical switch is fitted to operate the light/s and fan/s on door opening.

Note: On counter models 'DS' is set to 'NO' as no door switches are fitted.

Par.	Description	Min.	Max	Default	Dim.	Value
ScL	Readout scale	1°C; 2°C; °F		2	flag	2
SPL	Minimum set point [I]	-40	SPH	1	°C	1
SPh	Maximum set point [I]	SPL	40	4	°C	4
SP	Set point [I]	SPL	SPH	1	°C	1
hYS	Thermostat hysteresis [I]	0.1	10	3	°K	3
crt	Minimum compressor rest time	0	30	1	min.	1
cdc	Compressor regulation with T1 failure	0	10	6	%	6
fPc	Evaporator Fan Timed control	0	4	2	rate	2
dFr	Defrost frequency [I]	0	24	4	rate	4
dLi	Defrost end temperature	-40	40	15	°C	15
dto	Maximum defrost duration	1	120	15	min.	15
dty	Defrost type	FAN; ELE; GAS		OFF	flag	OFF
drn	Drain down time	0	30	1	min.	1
ddY	Defrost display control	0	60	5	min.	5
ATL	Low alarm differential	-12	0	-5	°C	-5
ATH	High alarm differential	0	12	5	°C	5
ATD	Alarm Temperature Delay	0	120	90	Min	90
Aht	Condenser alarm temperature	0	75	60	°C	60
AHm	Condenser high temperature alarm operation	NON/ALR/STP		NON	flag	NON
Acc	Periodic condenser cleaning	0	52	0	wks	0
Sb	Button (01) enabling	YES	NO	YES	flag	YES
DS	Door switch enabling	YES	NO	YES	flag	YES
cSd	Compressor stop delay from door opening	0	30	1	Min.	1
Ado	Door alarm delay	0	30	5	min.	5
bAu	Manual control enabling	YES	NO	NO	flag	NO
OAU	Auxiliary output control mode	1/0-1/MAN/FAN/DEF/		FAN	flag	FAN
oS1	Probe T1 offset	-12	125	0	°K	0
t2	Function probe T2	NON/DEF/CND		NON	flag	NON
OS2	Probe T2 offset	-12	12	0	°K	0
TLD	Delay for min/max temperature storage	1	30	5	Min.	5
Sim	Display slowdown	0	100	3	flag	3
Adr	Unit address	1	255	1	flag	1

LD2-15E-01FST (00-555848) Low Temperature Controller Parameter List

Note: On models with glass doors parameter 'DS' is set to 'NO' as a mechanical switch is fitted to operate the light/s and fan/s on door opening.

Par.	Description	Min.	Max	Default	Dim.	Value
ScL	Readout scale	1°C; 2°C; °F		1°C	flag	2
SPL	Minimum set point [I]	-40	SPH	-25	°C	-21
SPh	Maximum set point [I]	SPL	40	-19	°C	-21
SP	Set point [I]	SPL	SPH	-19	°C	-21
hYS	Thermostat hysteresis [I]	0.1	10	2	°K	3
crt	Minimum compressor rest time	0	30	1	min.	1
cdc	10 min. run cycle with PF1	0	10	6	%	6
cSd	Compressor Stop delay after door open	0	30	1	min.	1
dFr	Defrost frequency [I]	0	24	3	1/24h	4
dLi	Defrost end temperature	-40	40	20	°C	20
dto	Maximum defrost duration	1	120	20	min.	20
dty	Defrost type	FAN; ELE; GAS		ELE	flag	ELE
drn	Drain down time	0	30	2	min.	2
ddY	Display control during defrost	0	60	10	min.	10
Fid	Fan operation in defrost	YES	NO	NO	flag	NO
Fdd	Evaporator. Fan re-start	-40	40	-50	°C	0
Ftc	Fan timed control [I]	YES	NO	YES	flag	YES
FT1	Fan stop delay (after compressor stop)	0	180	20	Secs	20
FT2	Timed fan stop (fan off time)	0	30	1	Min.	1
FT3	Timed fan run (air stir time)	0	30	1	Min.	1
Atl	Low alarm differential	-12	0	-5	°K	-5
Ath	High alarm differential	0	12	5	°K	5
Atd	Temperature alarm delay	0	120	90	min.	90
Ado	Door alarm delay	0	30	5	min.	5
Acc	Periodic condenser cleaning	0	52	0	wks	0
hdS	Sensitivity function Eco->Heavy Duty	1	5	3	flag	3
11SM	2nd parameter set management	NON; MAN; HDD		NON	flag	NON
11SL	Minimum set point [II]	-40	IISH	-21	°C	-21
11SH	Maximum set point [II]	IISL	40	-21	°C	-21
11SP	Set point [II]	IISL	IISH	-21	°C	-21
11HY	Thermostat hysteresis [II]	0.1	10	3	°K	3
11dF	Defrost frequency [II]	0	24	6	1/24h	6
11Ft	Fan timed control [II]	NO	YES	NO	flag	NO
Sb	Stand By button function	NO	YES	YES	flag	YES
dS	Door switch enabling	YES	NO	YES	flag	YES
oS1	Probe T1 offset	-12	12	0	°K	0
t2	Probe T2 enabling	YES	YES	YES	flag	YES
OS2	Evaporator. Probe offset	-12	12	0	°K	0
tLd	Logging Temp. Delay	1	30	5	min.	5
Sim	Display slowdown	0	100	3	exp.	3
Adr	Unit address	1	255	1	exp.	1

AT1-5 and AT2-5 Controllers



**Controller - LAE AT1-5 BS6E-FSI – 00-556223
T1 -Air Probe - SN4K15P1 – 00-556187**



**Controller – LAE AT2-5 BS4E-AG – 00-556187
T1 -Air Probe – SN4K15P1 – 00-556187
T2 -Evaporator Probe – SN4K15P2 – 00-556188**

Indicators and Buttons – AT1-5

Symbol	Reason	Button	Use
	Alarm		Manual Defrost/Decrease Button
	Thermostat Output		Increase/ Manual Activation Button
RL2	Auxiliary Output		Exit/ Stand-By Button
			Information/Set Point Button

Indicators and Buttons – AT2-5

Symbol	Reason	Button	Use
	Alarm		Manual Defrost/Decrease Button
	Thermostat Output		Increase/ Manual Activation Button
RL3	Auxiliary Output		Exit/ Stand-By Button
II°	Activation of 2 nd parameter set		Information/Set Point Button
	Fan Output		

Display both Controllers

During normal operation the display shows either the temperature measured or one of the following indicators:

Symbol	Reason	Symbol	Reason
DEF	Defrost in progress	HI	Room high temperature alarm
REC	Recovery after defrost	LO	Room low temperature alarm
OFF	Controller in Stand-by	E1	Probe T1 failure
CL	Condenser clean warning	E2	Probe T2 failure
DO	Door open alarm		

Information Menu both Controllers

The information available in the menu is shown below:

Symbol	Reason	Symbol	Reason
T1	Instant probe 1 temperature	TLO	Minimum probe 1 temperature recorded
T2	Instant probe 2 temperature	CND	Compressor working weeks
THI	Maximum probe 1 temperature recorded	LOC	Keypad state lock

Operation Guidelines

Initial Start Up.

Start Up & self Test:



The indication is only displayed during the first three seconds following the mains electrical power being applied to the unit. During this period the controller performs a self-check.

Once the self-check has been completed **OFF** will be displayed.



Press and hold for three seconds. The unit will start and the air temperature will be displayed.



Check temperature set point.

To make adjustments to the set point it is necessary to access the parameter and alter SPL and SPH accordingly.

Check set point by pressing the button



To increase set point press + until required temperature is displayed.



To decrease set point press + until required temperature is displayed.



Factory Temperature Set Point

Refrigerator +1°C to +4°C. Meat 0°C to 2°C. Freezer -18°C to -21°C.

Exit from set up occurs after 10 seconds if no button is pressed.

Manual Defrost.

To initiate a manual defrost press and hold , **dEF** will be displayed, release .



On completion of the defrost **REC** will be displayed until the cabinet temperature is achieved and then it will revert to displaying the normal cabinet temperature.



Set Unit to Standby.

Press display shows **OFF**



This indication is displayed while the unit is not operating but with mains power applied to the unit. This mode may be used for internal cleaning regimes and short periods when the unit is not required.

For extended periods of inactivity the mains supply should be isolated.

Alarm and Warnings

High temperature alarm

HI Will be displayed.

The alarm will sound but can be silenced by pressing any of the buttons, however it will return after the pre-set designated period. The unit returning to normal operating temperature will automatically cancel the alarm.

Possible Causes: Evaporator fan not working. Restricted airflow through air duct. Evaporator iced up. Compressor not working.

Low temperature alarm.

LO Will be displayed.

The alarm will sound but can be silenced by pressing any of the buttons and the unit will continue to operate, however it will return after the pre-set designated period. The unit returning to normal operating temperature will automatically cancel the alarm.

Possible Causes: Controller faulty (not switching compressor off). Compressor secondary relay will not de-energise (low temperature models).

Door Open Alarm. ('DS' set to 'YES'. *Only applies to cabinets/Coldroom's fitted with door switches.*)

DO Will be displayed.

The alarm will sound but can be silenced by pressing.

The display will continue to display the alarm message until cancelled by shutting the door.

If the alarm cannot be cancelled by doing this call your Foster Authorised Service Company.

Possible Causes: Faulty door switch. Door left open for more than 5minutes.

Air Temperature Probe Failure.

E1 Will be displayed.

The alarm will sound but can be silenced by pressing any button.

There is no further action that can be taken by the user in this instance. During this period the unit will continue to operate but have a reduced performance.

Action: Replace Probe.

Evaporator Temperature Probe Failure. (Automatic Defrost Cabinets Only)

E2 Will be displayed.

The alarm will sound but can be silenced by pressing any button.

There is no further action that can be taken by the user in this instance. During this period the unit will continue to operate satisfactorily, but this failure will have an effect on the defrost and therefore efficiency if allowed to continue.

Action: Replace Probe.

Information Menu

Pressing and releasing  activates the information menu. From this menu you can display the temperature relating to T1 (air probe), T2 (evaporator probe, if fitted) and T3 (condenser probe, if fitted).

The maximum temperature (THI) and the minimum temperature (TLO) the cabinet has achieved since it was last re-set.

The total operating time of the condenser (CND), since it was last cleaned, and the keyboard status (LOC).

The information to be displayed can be selected sequentially by pressing  repeatedly or scrolling through the menu using the  or  buttons.

Once selected press  to display the value

Exit from the info menu by pressing  or is automatic after 6 seconds if no buttons are pressed.

To reset the temperature settings recorded in THI and TLO and the hours counted in CND, access the info menu press  to display the value plus  simultaneously for resetting to be completed.

To check the LOC status scroll through to LOC, press  to display status – YES to lock keys. – NO to leave keys accessible.

NOTE: with the keys locked it is not possible to turn the unit off or ON or to check the set point

Parameter Setting and Adjustment

It is strongly advised that before adjusting any Service Parameters a thorough understanding of the following instructions should be obtained.

The parameters are accessed by pressing the following keys in succession  +  and keeping them pressed for 5 seconds.

After this period the first parameter 'SCL' will be displayed.

Press button  to pass from one parameter to the next and  button to go back.

Press  to display the value followed by  or  to change it.

Exit from set up is by pressing  or is automatic if no buttons are pressed for 30 seconds.

AT1-5 Default & Individual Parameter Settings

LAE AT1-5 (00-556223)							FXT601H & FXT1351H
Reg	Par.	Description	Min.	Max	Default	Dim.	
233	SCL	Readout scale	1°C; 2°C; °F		2	flag	2°C
200	SPL	Minimum set point [I]	-50	SPH	-5	°C	1
202	SPH	Maximum set point [I]	SPL	120	5	°C	4
204	SP	Set point [I]	SPL	SPH	0	°C	1
0	C-H	Refrigerating / Heating selection	REF	HEA	REF	flag	REF
212	HYS	Thermostat hysteresis [I]	1	100	3	°K	3
214	CRT	Minimum compressor rest time	0	30	3	min.	2
0	CT1	Compressor run with T1 failure	0	30	3	min.	6
0	CT2	Compressor stop with T1 failure	0	30	6	min.	4
0	CSD	Compressor stop delay from door opening	0	30	1	min.	1
217	DFR	Defrost frequency / 24h	0	24	3	1/24h	4
206	DLI	Defrost end temperature	-30	30	6	°C	15
219	DTO	Maximum defrost duration	1	120	20	min.	15
220	DTY	Defrost type	OFF; ELE; GAS		ELE	flag	OFF
222	DDY	Defrost display control	0	60	10	min.	5
0	ATM	Alarm threshold control	NON; ABS; REL		ABS	flag	REL
0	ALA('R)	Low temp. alarm threshold	-50 (-120)	+120 (0)	-50	°C / °K	-25
0	AHA('R)	High temp. alarm threshold	-50 (0)	+120 (+120)	120	°C / °K	-10
0	ALR	Low temp. alarm differential	-12	0	0	°K	-5
0	AHR	High temp. alarm differential	0	12	0	°K	8
225	ATD	Alarm temperature delay	0	120	30	min.	90
0	ADO	Door alarm delay	0	30	5	min.	5
227	ACC	Condenser cleaning period	0	52	0	wks	0
228	SB	Button 0/1 enabling	YES	NO	YES	flag	YES
245.2	DS	Door switch enabling	YES	NO	NO	flag	YES
0	OAU	AUX output control	NON; 0-1; DEF; LGT; FAN; AL1		LGT	flag	FAN
0	INP	SN4 / ST1	SN4; ST1	0	SN4	flag	SN4
236	OS1	T1 (air) probe offset	-125	125	0	°K	0
245.0	T2	T2 (evap.) probe enabling	YES	NO	NO	flag	NO
237	OS2	T2 (evap.) probe offset	-125	125	0	°K	0
236	OS1	T1 (air) probe offset	-125	125	0	°K	0
245.0	T2	T2 (evap.) probe enabling	YES	NO	NO	flag	NO
237	OS2	T2 (evap.) probe offset	-125	125	0	°K	0

AT2-5 Default & Individual Parameter Settings

LAE AT2-5 (00-556224)							FXT601L& FXT1351L
Reg	Par.	Description	Min.	Max	Default	Dim.	
233	SCL	Readout scale	1°C; 2°C; °F		2	flag	2°C
200	SPL	Minimum set point [I]	-50	SPH	-5	°C	-21
202	SPH	Maximum set point [I]	SPL	120	5	°C	-21
204	SP	Set point [I]	SPL	SPH	0	°C	-21
0	C-H	Refrigerating / Heating selection	REF	HEA	REF	flag	REF
212	HYS	Thermostat hysteresis [I]	1	100	3	°K	3
214	CRT	Minimum compressor rest time	0	30	3	min.	3
0	CT1	Compressor run with T1 failure	0	30	3	min.	7
0	CT2	Compressor stop with T1 failure	0	30	6	min.	4
0	CSD	Compressor stop delay from door opening	0	30	1	min.	1
217	DFR	Defrost frequency / 24h	0	24	3	1/24h	4
206	DLI	Defrost end temperature	-30	30	6	°C	20
219	DTO	Maximum defrost duration	1	120	20	min.	20
220	DTY	Defrost type	OFF; ELE; GAS		ELE	flag	ELE
221	DRN	Drain down time	0	30	3	min.	2
222	DDY	Defrost display control	0	60	10	min.	10
0	FID	Fans active during defrost	NO	YES	NO	flag	NO
207	FDD	Fan re-start delay temperature	-30	30	-2	°C	0
245.3	FTC	Evaporator fan timed control	NO	YES	YES	flag	NO
0	FT1	Fan stop delay	0	180	30	sec.	30
0	FT2	Timed fan stop	0	30	3	min.	3
0	FT3	Timed fan run	0	30	1	min.	1
0	ATM	Alarm threshold control	NON; ABS; REL		ABS	flag	REL
0	ALA(R)	Low temp. alarm threshold	-50 (-120)	+120 (0)	-50	°C / °K	-25
0	AHA(R)	High temp. alarm threshold	-50 (0)	+120 (+120)	120	°C / °K	-10
0	ALR	Low temp. alarm differential	-12	0	0	°K	-5
0	AHR	High temp. alarm differential	0	12	0	°K	8
225	ATD	Alarm temperature delay	0	120	30	min.	90
0	ADO	Door alarm delay	0	30	5	min.	5
227	ACC	Condenser cleaning period	0	52	0	wks	0
230	IISM	2nd parameter set switching mode	NON ; MAN		NON	flag	NON
201	IISL	Minimum 2nd temp. set	-50	IISH	0	°C	0
203	IISH	Maximum 2nd temp. set	IISL	120	0	°C	0
205	IISP	Effective 2nd temperature set point	IISL	IISH	0	°C	0
213	IIHY	Hysteresis 2nd temperature set	1	100	0	°K	0
245.4	IIFT	Evap. fan timed control in mode 2	YES	NO	0	flag	0
218	IIDF	Defrost Frequency / 24h in mode 2	0	24	0	1/24h	0
228	SB	Button 0/1 enabling	YES	NO	YES	flag	YES
245.2	DS	Door switch enabling	YES	NO	NO	flag	YES
0	LSM	Light control mode	NON; MAN; DOR		NON	flag	NON
0	OAU	AUX output control	NON; 0-1; DEF; LGT; ALO; AL1		NON	flag	DEF
0	INP	SN4 / ST1	SN4; ST1		SN4	flag	SN4
236	OS1	T1 (air) probe offset	-125	125	0	°K	0
245.0	T2	T2 (evap.) probe enabling	YES	NO	NO	flag	YES
237	OS2	T2 (evap.) probe offset	-125	125	0	°K	0
232	TLD	Delay for min/max. temp storage	1	30	5	min.	5
234	SIM	Display slowdown	0	100	3	exp.	3
235	ADR	Unit peripheral address	1	255	1	exp.	1

Technical Data – all models

Model	FXT601H	FXT601L	FXT1351H	FXT1351L
Refrigerant	R134a	R404a	R134a	R404a
Refrigerant Charge	330 grms	380 grms	420 grms	460 grms
Compressor	FR75GX	SC15CL	SC15GX	SC21CLX
Capillary	0.042 x 3.0	0.042 x 2.6	0.042 x 2.8	0.054 x 2.6
Defrost Type	OFF CYCLE	ELECTRIC	OFF CYCLE	ELECTRIC
Voltage	230	230	230	230
Power Consumption	Watts	510	610	730
	Run Amps	2.6	3.2	3.7
Fuse Rating	13	13	13	13

Probe Details - LAE NTC10K Temperature Resistance Table

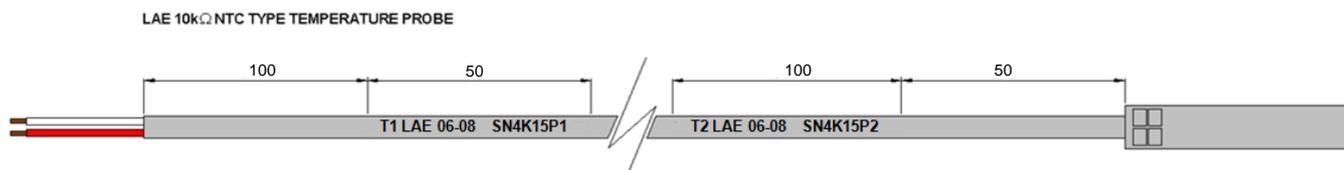
TEMP. (°C)	R-low (KW)	R-mid (KW)	R-high (KW)
-40	188.021	195.652	203.573
-35	142.788	148.171	153.741
-30	109.522	113.347	117.294
-25	84.823	87.559	90.374
-20	66.27	68.237	70.255
-15	52.229	53.65	55.104
-10	41.477	42.506	43.557
-5	33.147	33.892	34.651
0	26.678	27.219	27.767
5	21.63	22.021	22.417
10	17.643	17.926	18.21
15	14.472	14.674	14.877
20	11.938	12.081	12.224
25	9.9	10	10.1
30	8.217	8.315	8.413
35	6.854	6.948	7.043
40	5.745	5.834	5.923

TEMP. (°C)	R-low (KW)	R-mid (KW)	R-high (KW)
45	4.834	4.917	5.001
50	4.084	4.161	4.239
55	3.464	3.535	3.607
60	2.949	3.014	3.081
65	2.526	2.586	2.647
70	2.173	2.228	2.283
75	1.875	1.925	1.976
80	1.623	1.669	1.715
85	1.411	1.452	1.495
90	1.23	1.268	1.307
95	1.075	1.11	1.145
100	0.942	0.974	1.006
105	0.829	0.858	0.888
110	0.732	0.758	0.785
115	0.647	0.671	0.696
120	0.574	0.596	0.619
125	0.511	0.531	0.552

Probe Identification

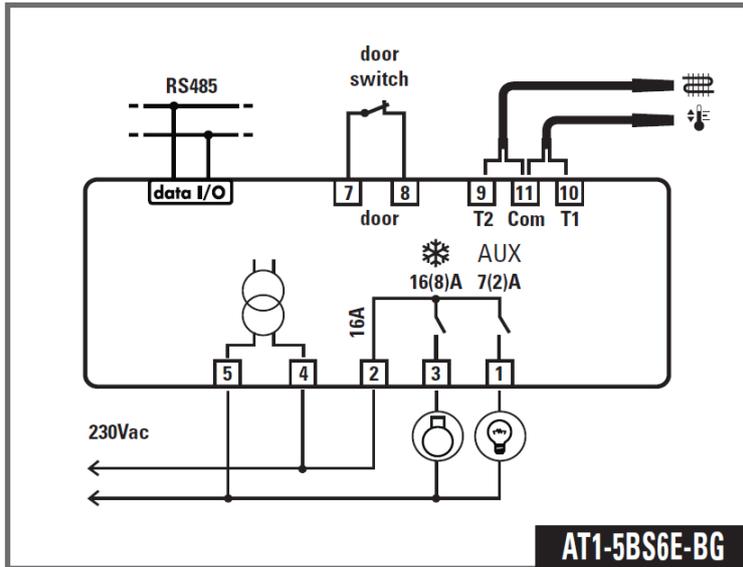
The air probe fitted to this controller is the 10k NTC type (LAE SN4K15P1 Part number 00-556187).

The evaporator probe fitted to this controller is the 10k NTC type (LAE SN4K15P2 Part number 00-556188).



T1 Air Probe	LAE Probe Manufacturer	SN = NTC Device	1K – 1kΩ	15 = 1.5mts Long	P1 Probe 1
T2 Evaporator Probe	06-08 Date of Manufacture (Month/Year)	ST = PTC Device	2k – 2KΩ	20 = 2mts Long	P2 Probe 2
			4k – 10kΩ	35 = 3.5mts long	P3 Probe 3

AT1-5 & AT2-5 Wiring Diagrams



AT1-5BS6E-BG

Technical Data

Power Supply AT2-5...E 230Vac±10%, 50/60Hz, 3W

Relay Output

AT1-5.S5 (6)...Compressor 16(8) Amp

Auxiliary Loads 7(2) A 240vac

Maximum total current 16A

Input NTC 10KΩ@25°C, LAE part No. SN4...

Measurement Range

-50...120°C, -55...240°F

-50 / -9.9...19.9 / 80°C (NTC 10K Only)

Measurement Accuracy <0.5°C within the measurement range

Operating Conditions -10 ... +50°C; 15%...80% r.H.

CE - UL (Approvals and Reference norms)

EN60730-1; EN60730-2-9;

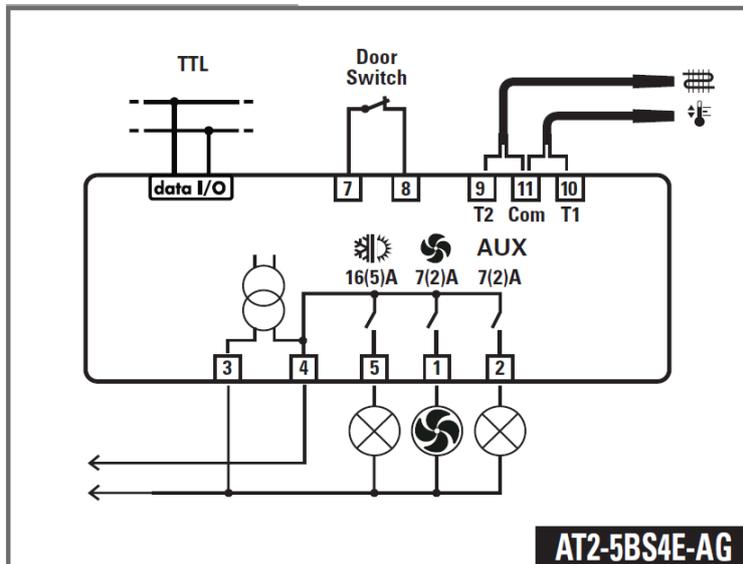
EN55022 (Class B);

EN50082-1

UL 60730-1A

Front protection

IP55



AT2-5BS4E-AG

Power Supply AT2-5...E 230Vac±10%, 50/60Hz, 3W

Relay Output

AT2-5.S... Compressor 16(5) A 240vac

Evaporator fans 7(2) A 240vac

Auxiliary Loads 7(2) A 240vac

Maximum total current 16A

Input NTC 10KΩ@25°C, LAE part No. SN4...

Measurement Range

-50...120°C, -55...240°F

-50 / -9.9...19.9 / 80°C (NTC 10K Only)

Measurement Accuracy <0.5°C within the measurement range

Operating Conditions -10 ... +50°C; 15%...80% r.H.

CE - UL (Approvals and Reference norms)

EN60730-1; EN60730-2-9;

EN55022 (Class B);

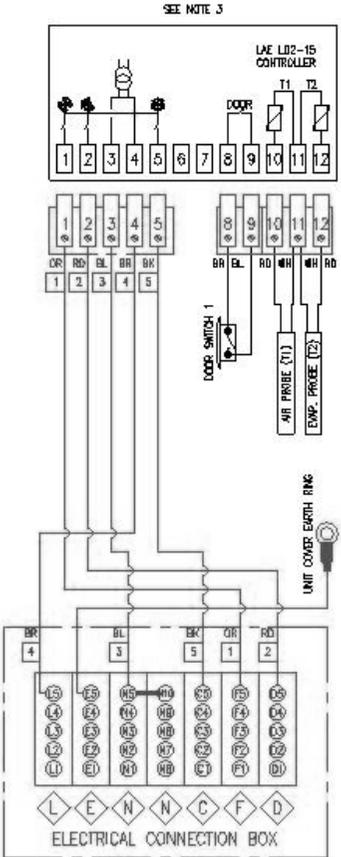
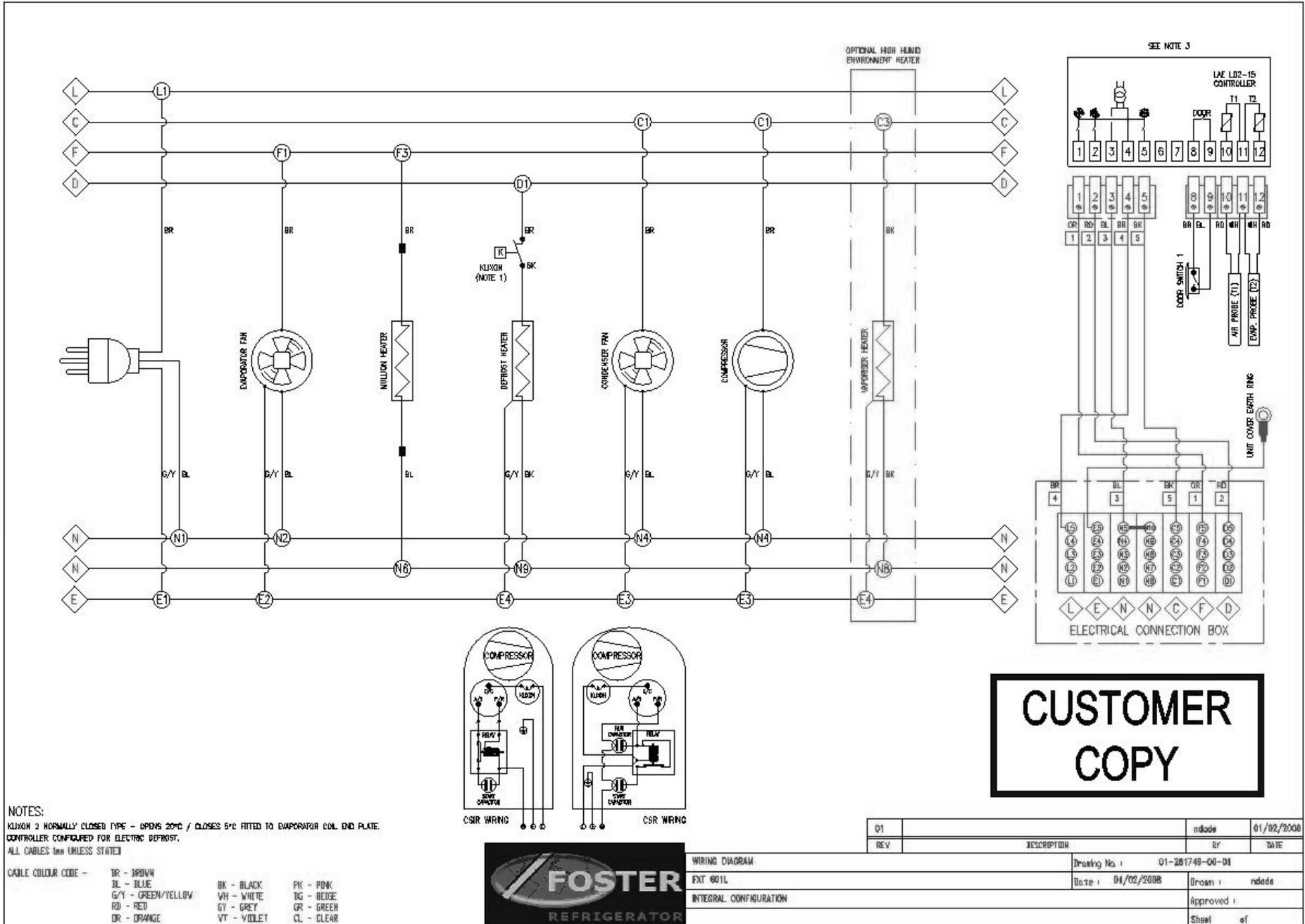
EN50082-1

UL 60730-1A

Front protection

IP55

FXT601L Wiring Diagram - Integral Configuration with LD2 Controller Please note any wiring diagram not in this manual e.g for remote units or units with lighting please see the Xtra Cabinets FXT601H & L, FXT1351H & L with LD1 & LD2 Controllers Wiring Diagrams Manual.



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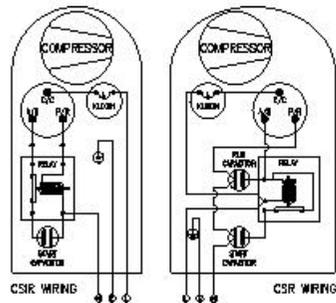
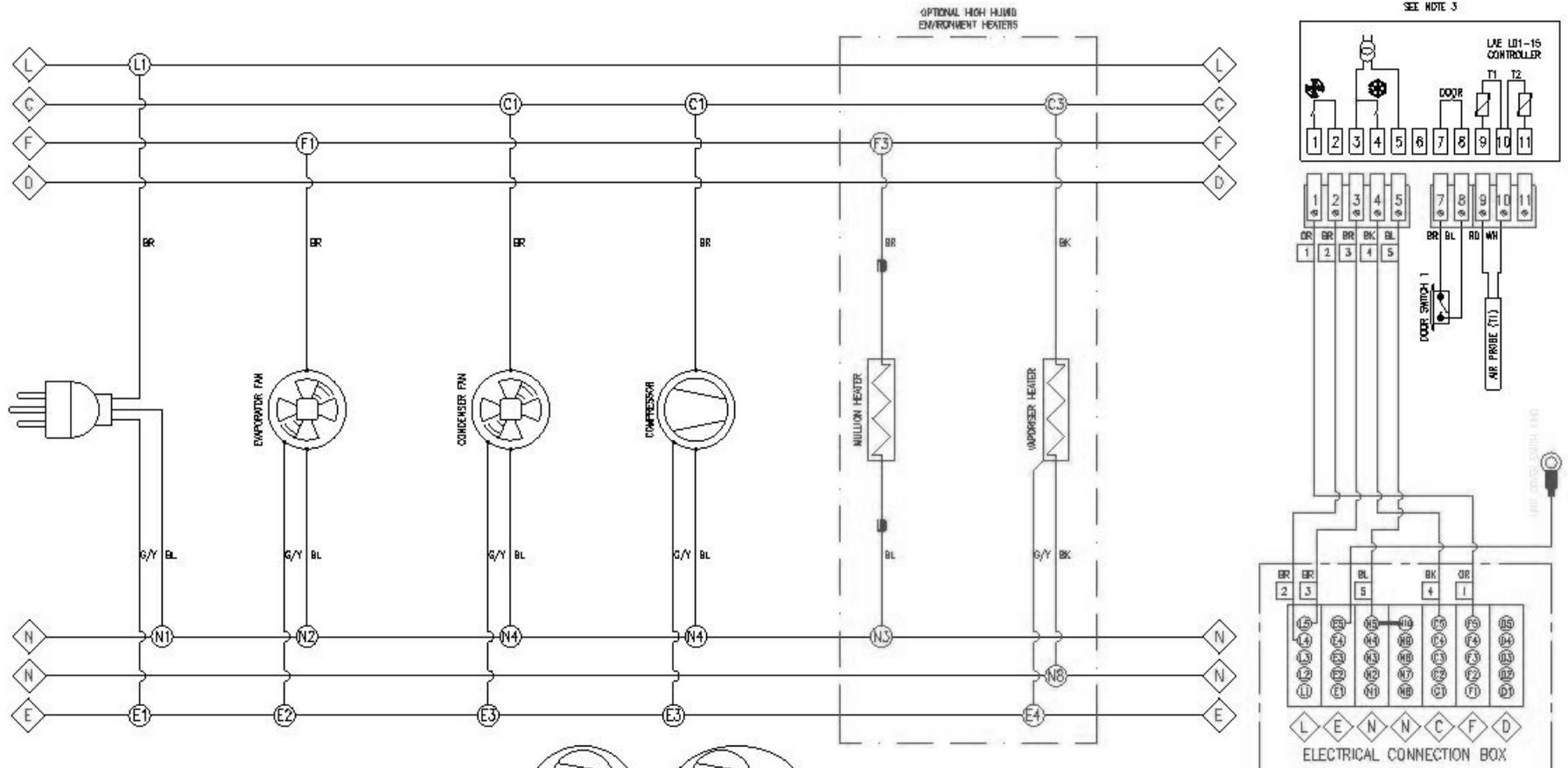
NOTES:
 KLIXON 2 NORMALLY CLOSED TYPE - OPENS 20°C / CLOSES 5°C FITTED TO EVAPORATOR COIL END END PLATE.
 CONTROLLER CONFIGURED FOR ELECTRIC DEFROST.
 ALL CABLES 1mm UNLESS STATED

CABLE COLOUR CODE -
 BR - BROWN
 BL - BLUE
 G/Y - GREEN/YELLOW
 RD - RED
 OR - ORANGE
 BK - BLACK
 WH - WHITE
 GY - GREY
 VT - VIOLET
 PK - PINK
 BG - BEIGE
 GR - GREEN
 CL - CLEAR



REV	DESCRIPTION	ndada	01/02/2008
01			
WIRING DIAGRAM		Drawing No. :	01-261749-00-01
FXT 601L		Date :	01/02/2008
INTEGRAL CONFIGURATION		Drawn :	ndada
		approved :	
		Sheet	of

FXT601H Wiring Diagram - Integral Configuration with LD1 Controller



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NOTES:

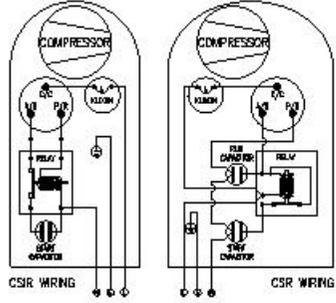
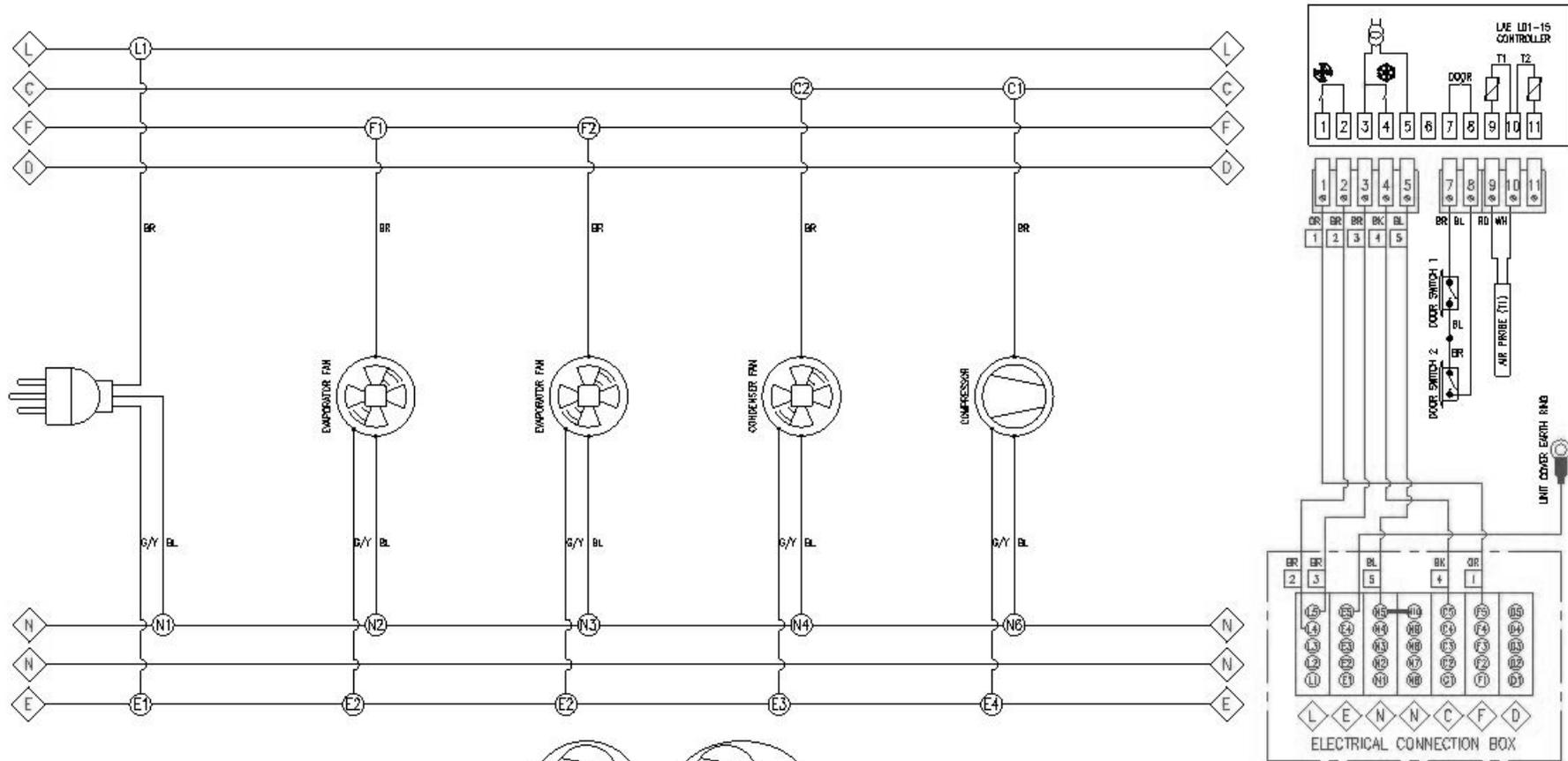
CONTROLLER CONFIGURED FOR OFF CYCLE DEFROST.
ALL CABLES 1mm UNLESS STATED

BR - BROWN	BK - BLACK	PK - PINK
BL - BLUE	WH - WHITE	BG - BEIGE
G/Y - GREEN/YELLOW	GY - GREY	GR - GREEN
RD - RED	VT - VIOLET	CL - CLEAR
OR - ORANGE		



D1		ndade	01/02/2008
REV	DESCRIPTION	BY	DATE
	WIRING DIAGRAM		
	FXT 601H	Drawing No.:	01-281745-00-01
	INTEGRAL CONFIGURATION	Date:	04/02/2008
		Drawn:	ndade
		Approved:	
		Sheet	of

FXT1351L Wiring Diagram – Integral Configuration with LD1 Controller



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NOTES:

CONTROLLER CONFIGURED FOR OFF CYCLE DEFOST.

ALL CABLES 1mm UNLESS STATED

CABLE COLOUR CODE -

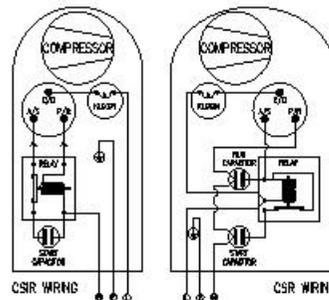
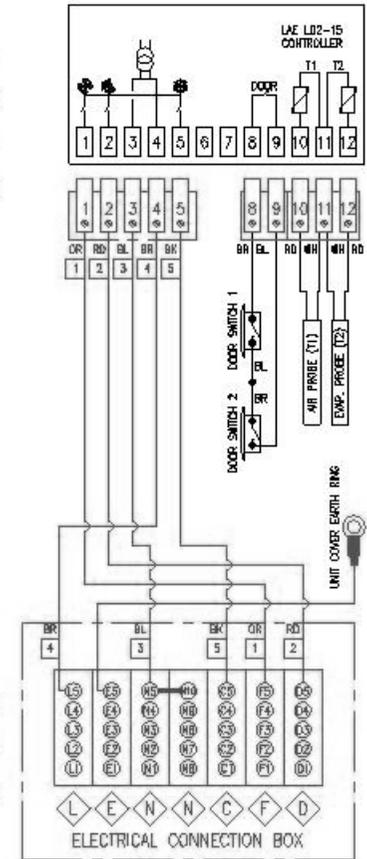
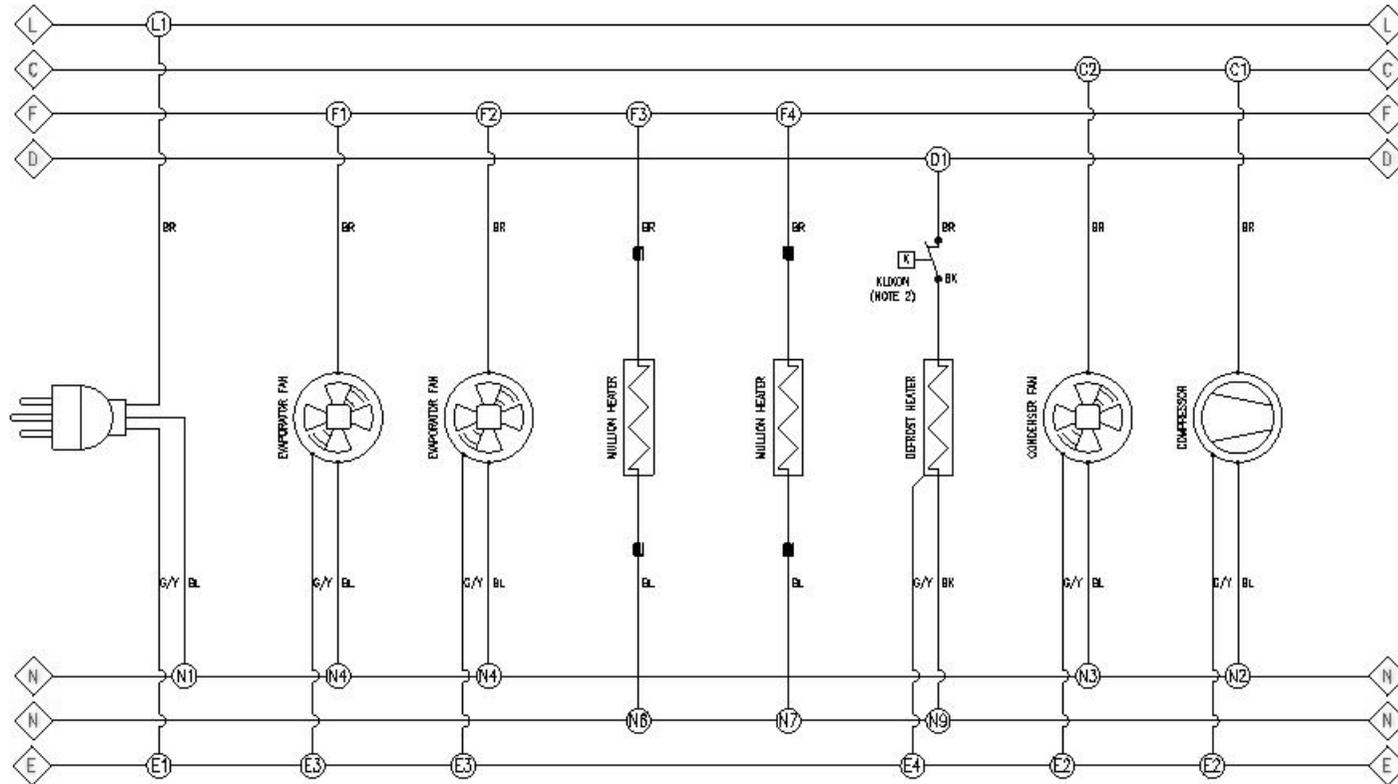
- BR - BROWN
- BL - BLUE
- G/Y - GREEN/YELLOW
- RD - RED
- OR - ORANGE
- BK - BLACK
- WH - WHITE
- GR - GREEN
- VT - VIOLET
- PK - PINK
- BG - BEIGE
- GR - GREEN
- CL - CLEAR



WIRING DIAGRAM		Drawing No :	01-281753-00-01
EXT 1351H		Date :	04/02/2008
INTEGRAL CONFIGURATION		Drawn :	mlade
		Approved :	
		Sheet	of

01		mlade	01/02/2008
REV	DESCRIPTION	BY	DATE

FXT1351H Wiring Diagram – Integral Configuration with LD2 Controller



NOTES:

KLIXON 2 NORMALLY CLOSED TYPE - OPENS 20°C / CLOSES 5°C FITTED TO EVAPORATOR COIL END PLATE.
 CONTROLLER CONFIGURED FOR ELECTRIC DEFROST.
 ALL CABLES 1mm UNLESS STATED

BR - BROWN	BK - BLACK	PK - PINK
BL - BLUE	WH - WHITE	BG - BEIGE
G/Y - GREEN/YELLOW	GY - GREY	GR - GREEN
RD - RED	VT - VIOLET	CL - CLEAR
DR - ORANGE		



CUSTOMER COPY

D1		ndate	01/02/2008
REV	DESCRIPTION	BY	DATE
	WIRING DIAGRAM	Drawing No.:	01-261757-00-01
	FXT 1351L	Date:	04/02/2008
	INTEGRAL CONFIGURATION	Drawn:	ndate
		approved:	
		Sheet	of

Troubleshooting

Problem	Possible Cause	Solution
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	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 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 at a very cold position	Set to warmer position 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 at a very warm position	Adjust to colder setting
	Condenser is dirty	Clean condenser
	The refrigerator has been placed at an inadequate location	The unit must not be near stoves, 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
	The refrigerator has been used improperly	The shelves must never be covered with any type of plastic or other material that will block the circulation of cold air within the refrigerator.
	Too many door openings	Advise user to decrease if possible

		Excessive heat load placed in cabinet	Advise user not to put in products that are too 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. Make sure there is at least four inches of clearance from evaporator.
		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 metal	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)
Extreme condensation inside the refrigerator		Controller is set at a very cold position	Set the controller to a warmer position & check to see if compressor stops as should.
		The outside environment's relative humidity is very high (over 75%)	This type of occurrence is caused by local climatic conditions and not by the refrigeration unit.
		The refrigerator door wont shut completely	Check the door and/or the magnetic gasket. Adjust the door hinges if needed; replace the gasket if broken.
		The refrigerator had been placed at an inadequate location	The unit must not be near sources that produce too much heat.
No illumination (Glass door models only)		The light switch is "off" position	Press the light switch to "on" position
		False contact on the light switch, the fluorescent tube, or the ballast	Inspect all connections
		Light switch, ballast and/or fluorescent tube are damaged	Replace the damaged component.

Condensing unit runs for long periods of time		Excessive amount of warm product placed in cabinet	Advise user to leave adequate time for products to cool down
		Prolonged door opening or door ajar	Advise user to ensure doors are closed when not in use and to avoid opening doors for long periods of time.
		Door gasket(s) not sealing properly	Ensure gaskets are snapped in completely. Remove gasket and wash with soap and water. Check condition of gasket & replace if necessary
		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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FXT601&1351/LD1&2/ATI/2-5/SM/re0311