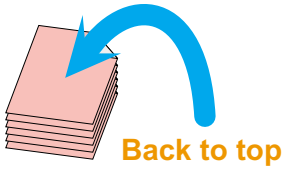
FOSTER



Service manual

for the

MCDU 11/1 and MCDU 11/2 LAE microprocessor digital temperature controllers

Copyright

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Safety of personnel

Liability

Foster Refrigerator (UK) Limited decline responsibility when an attempt is made to use the refrigerator for any purpose other than that for which it was designed.

WARNING!
THOSE WHO MAINTAIN THE REFRIGERATOR MUST BE TRAINED IN STANDARD REPAIR AND MAINTENANCE PRACTICES AND MUST HAVE READ AND UNDERSTOOD THE SAFETY INSTRUCTIONS CONTAINED IN THIS MANUAL BEFORE CARRYING OUT ANY MAINTENANCE.

Operating environment

Temperature

The Refrigerator must be used in a clean, well-lit environment with a stable temperature of approximately 5°C to 35°C.

Relative humidity

The Refrigerator must be used in an environment with a relative humidity between 20% to 80% (non-condensing).

Symbols and decals

Personnel must be familiar with all the warning symbols and decals fitted to the Refrigerator. Failure to recognise a warning and read the associated safety instructions may result in injury or death.

THIS DECAL IS USED TO INDICATE AN ELECTRICAL HAZARD. THE REFRIGERATOR MUST BE DISCONNECTED FROM THE MAINS ELECTRICAL POWER SUPPLY WHEN THIS DECAL IS ENCOUNTERED DURING INSTALLATION AND MAINTENANCE.

Electrical hazard

WARNING!
THE REFRIGERATOR MUST BE DISCONNECTED FROM THE MAINS ELECTRICAL POWER SUPPLY WHEN THIS DECAL IS ENCOUNTERED DURING INSTALLATION, MAINTENANCE OR SETTING-UP.

Electro-static discharge (ESD)

CAUTION! Precautions against ESD must be taken to prevent damage to the Refrigerator control circuits:

(1) Ensure that the operating environment is protected against ESD.

(2) Do not touch electronic circuits or wafers.

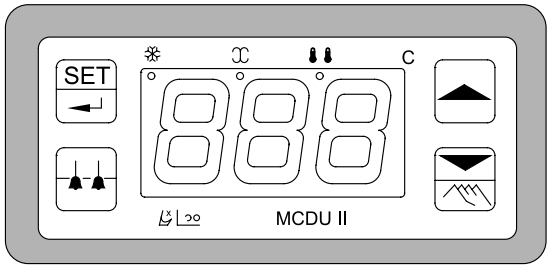
(3) Always use a grounded wrist strap while handling electronic circuits.

1. General

The LAE WDU is an adjustable microprocessor digital temperature controller complete with integral function indicator neons and temperature sensing probes.

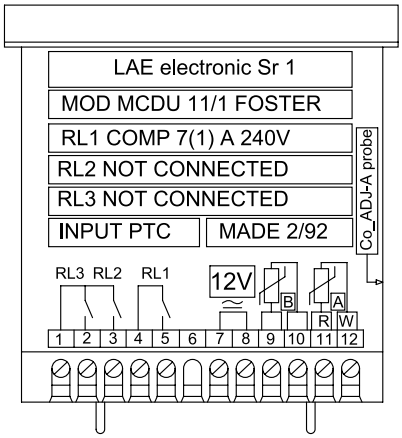
The following functions are incorporated:

- Thermostat
- Defrost control
- Automatic and manual defrost
- Fan control (MCDU 11/2 only)



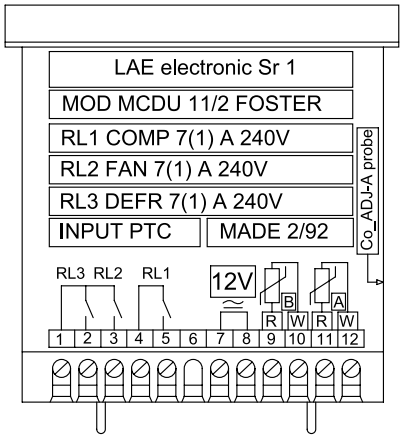
The instrument is supplied to Foster in two versions identified by a label attached to the top of the instrument casing.

MDCU 11/1 FOSTER
FOSTER PROD. CODE 15246140



SINGLE PROBE 3.5mm LONG

MDCU 11/2 FOSTER
FOSTER PROD. CODE 15246150



2 PROBES 3.5mm LONG

Single probe 3.5m long

- Colour black attached to probe position 'A'
- Relays 2 & 3 not connected.

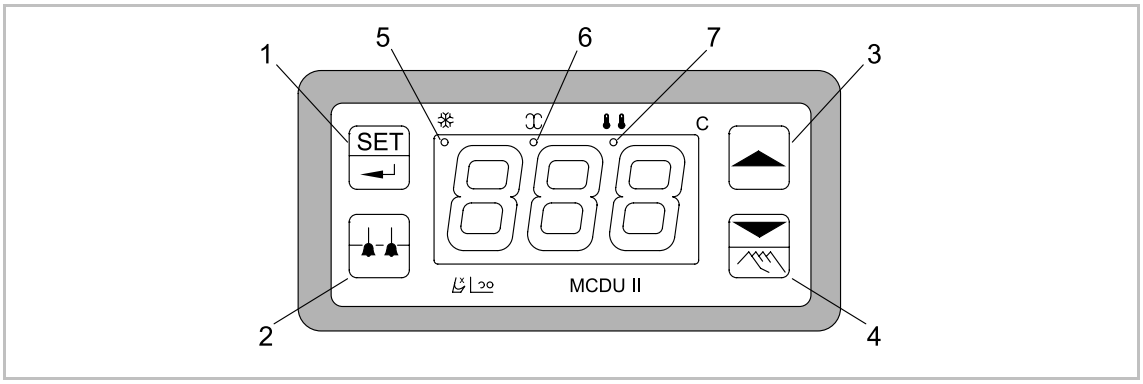
2 probes 3.5m long

- Colour black attached to probe position 'A' (Air Temperature).
- Colour grey attached to probe position 'B' (Defrost)/Fan Delay
- 3 off relays fitted as standard

Dimensions	75 x 35.x 70mm	Relays Power rating	7amp/240Vac, 210W
Range	-50 to +150°C	Connections	screw terminal 4 sq mm
Accuracy	1°K	Power supply	12Vac/dc;10%
Resolution	1°C	Consumption	2VA
Sensors	PTC 1000; 2 wires and shield	Panel Mounting	by means of plastic brackets
Operating temperature	-10 to +60°C	Front protection	IP54
Sensitivity to EMI	IEC 801	Casing (black)	fire retardant
Elect supply	12v 50/60hz		

2. Setting and operating instructions

2.1 Model MCDU 11/1 single probe



FUNCTION OF KEYS

The facia keys allow programming of all control parameters, starting manual defrosts and checking the evaporator temperature. It allows access to two of the three different modes of the Instrument: PROGRAMMING mode, in which Set Point and interval between Defrosts can be displayed or changed and SET-UP mode for configuring the parameters. The third, NORMAL mode, in which the programmed control sequences are carried out, is selected automatically when the unit is turned on.

1. By pressing key [1] in NORMAL mode, the PROGRAMMING of Set point is activated. By pressing this key when the controller is in PROGRAMMING mode the programmed value is stored immediately and the controller switches back to NORMAL mode. Storage and return to NORMAL mode occur automatically if no key is pressed within 5 seconds.
2. By pressing key [2] in NORMAL mode you have access to the PROGRAMMING of the interval between Defrosts. (These values can only be changed within the preset limits entered in the SET-UP mode).
3. Key [4] has a dual function. By keeping it pressed while the controller is in NORMAL mode and by pushing key [2] simultaneously, a manual defrost will be started. If pressed when the controller is in PROGRAMMING mode, the displayed value will be decreased; if pressed briefly it will change in one unit at a time, on the contrary if kept pressed the value will change with progressively higher speed.
4. The status LED's (5), (6) and (7) indicate the operation of cooling, fans and defrost.

THERMOSTAT FUNCTION

The probe is the measuring element of the thermostat; it should be located in a spot where temperature variations of the cabinet may be correctly and quickly measured.

1. By pressing key [1], Set Point, in other words the temperature to be maintained, is displayed; "SEt" is digitally displayed for 2 seconds, followed by the pre-programmed value. By pressing keys [3] and [4], the Set Point value can be changed within the pre-programmed minimum <vSP> and maximum <^SP> limits.
2. The Hysteresis, (differential) between the switching off and on of the cooler is obtained with the programmed <dt>.

3. Another parameter for cooler control is <PF> - Probe Failure - By setting <ON> or <OFF>, it is possible to select the relays status in case of a probe failure. If OFF is programmed, in case of a probe failure the contacts of RL1 will open. With ON, the cooler (RL1) and the fan will work continuously. The self-diagnostics of the MCDU 11/1 will display the nature of the defect found by means of the symbols "PFA".

DEFROST CYCLE

Defrost Cycle comprises all the functions regarding defrost which are carried out by the MCDU 11/1 from the start of any defrost period to the start of the next one:

- DEFROST START CONTROL
- DEFROST EXECUTION
- DEFROST TERMINATION
- DRIPPING TIME

1. By pressing the key [2] when the controller is in NORMAL mode, "dEF" is displayed for 2 seconds, followed by the Interval between Defrosts previously programmed. This time represents the hours which should elapse between a defrost start and the start of the next one. By pressing keys [3] or [4], the displayed value can be changed within the minimum <vdS> and maximum <^dS> pre-programmed limits.
2. The time to start defrost is calculated by the Programmable Timer built into the MCDU 11/1. The CONTINUOUS TIME mode provides regular defrost starts, conditioned only by the programmed time and no other variables.
3. If the evaporator is covered with a thick layer of ice, a Manual Start of defrost is possible by pressing and holding key [4] and then pressing key [2] simultaneously. In addition, this action results in timer reset: from that moment the timer will start calculating the time for the next defrost start.
4. The defrost execution method should be selected as <ELE>. Because the MCDU 11/1 has no defrost control relay this will result in the cooling unit being switched off for the preset timed period.
5. Defrost will be terminated after the Maximum Time, <ˆdd> has elapsed. At this point the Dipping Time starts, the duration of which is programmable with the parameter <dr>. The Dripping Time (the cooler does not work), allows the water formed from the melting ice to drip from the coil thus preventing its sudden cooling.

   When the Dripping Time has finished, the cooler relay is enabled, but will be switched on only if ambient temperature has risen over the threshold formed by SET POINT + Dt.
6. Another function offered by the MCDU 11/1 is Display Control during defrost <Cd>. If <dEF> is selected "dEF" will be displayed during defrost in place of the temperature measured by the probe. To continuously display the temperature of the probe, choose option <tA>.
7. During temperature control and defrost the fan works continuously.

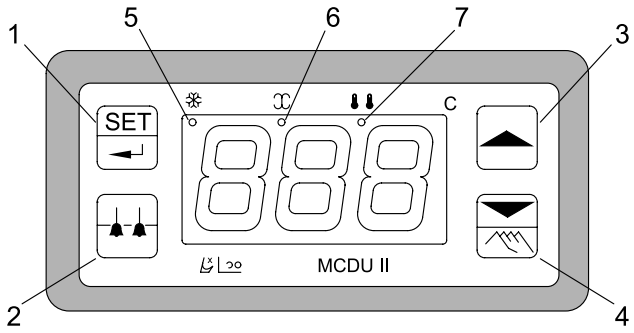
MCDU 11/1 PROGRAMMING PARAMETER MODE

1. The MCDU 11/1 can carry out all the functions requested for a specific application, after the parameters have been programmed in SET-UP mode. Access to this mode is possible through a sequence of operations preventing accidental activation.

2. Turn off the unit, press key [1] and [2] and, by keeping them pressed, turn on the unit. If this operation has been correctly made, 'tHS" will appear on display. Access to all parameters and to their own pre-programmed values is obtained by pressing the key [1] repeatedly. The specific value of the parameter can be changed with keys [3] and [4] within the limits shown in Table 1 . Quick skip through the menu is achieved with keys [3] and [4] used as shown in the table.

   After programming, switch back to the main menu ('tHS", "dEF", "AdJ') and turn off the unit. When the MCDU 11/1 is switched on, it will enter NORMAL mode and will work with the new configuration.

2.2 Model MCDU 11/2 double probe



FUNCTION OF KEYS

The facia keys allow programming of all control parameters, starting manual defrosts and checking the evaporator temperature. It allows access to two of the three different modes of the Instrument: PROGRAMMING mode, in which Set Point and interval between Defrosts can be displayed or changed and SET-UP mode for configuring the parameters. The third, NORMAL mode, in which the programmed control sequences are carried out, is selected automatically when the unit is turned on.

1. By pressing key [1] in NORMAL mode, the PROGRAMMING of Set Point is activated. By pressing this key when the controller is in PROGRAMMING mode the programmed value is stored immediately and the controller switches back to NORMAL mode. Storage and return to NORMAL mode occur automatically if no key is pressed within 5 seconds.
2. By pressing key [2] in NORMAL mode you have access to the PROGRAMMING of the interval between Defrosts. (These values can only be changed within the preset limits entered in the SET-UP mode).
3. By pressing the key [3] in NORMAL mode, the B probe temperature is displayed. By pressing this key when the controller is in PROGRAMMING mode, the displayed value will be increased. If pressed briefly the value will change in one unit at a time and if kept pressed the value will change with progressively higher speed.
4. The key [4] has a dual function. By keeping it pressed while the controller is in NORMAL mode and by pushing key [2] simultaneously, a manual defrost will be started. If pressed when the controller is in PROGRAMMING mode, the displayed value will be decreased; if pressed briefly it will change one unit at a time, on the contrary if kept pressed the value will change with progressively higher speed.
5. The status LED's (5), (6) and (7) indicate the operation of cooling, fans and defrost.

THERMOSTAT FUNCTION

The A probe is the measuring element of the thermostat; it should be located in a spot where temperature variations of the cabinet may be correctly and quickly measured.

1. By pressing key [1], Set Point, in other words the temperature to be maintained, is displayed; "SEt' is digitally displayed for 2 seconds, followed by the pre-programmed value. By pressing keys [3] and [4], the Set Point value can be changed within the pre-programmed minimum <vSP> and maximum <^SP> limits.
2. The Hysteresis (differential) between the switching off and on of the cooler is obtained with the programmed <dt>.
3. Another parameter for cooler control is <PF> - Probe Failure - By setting <ON> or <OFF>, it is possible to select the relays status in case of a probe failure. If OFF is programmed, in case of a probe failure the contacts of RL1, RL2 and RL3 will open. With ON, the cooler (RL1) and the fan (RL2) will work continuously, while defrost (RL3) will be excluded. The self-diagnostics of the MCDU 11/2 will display the nature of the defect found by means of the symbols "PFA" or "PFB" (A or B probe failure).

DEFROST CYCLE

Defrost Cycle comprises all the functions regarding defrost which are carried out by the MCDU 11/2 from the start of any defrost period to the start of the next one:

- DEFROST START CONTROL
- DEFROST EXECUTION
- DEFROST TERMINATION
- AUXILIARY CONTROLS (fan lock out, dripping etc.)

1. The B probe measures the evaporator temperature and controls all various defrost control stages such as: defrost termination and fan delay.
2. By pressing the key [2] when the controller is in NORMAL mode, "dEF" is displayed for 2 seconds, followed by the Interval between Defrosts previously programmed. This time represents the hours which should elapse between a defrost start and the start of the next one. By pressing keys [3] or [4], the displayed value can be changed within the minimum <vdS> and maximum <^dS> pre-programmed limits.
3. The time to start defrost - i.e. the heating up of the evaporator – is calculated by the Programmable Timer built into the MCDU 11/2. The CONTINUOUS TIME mode provides regular defrost starts, conditioned only by the programmed time and no other variables.
4. If the evaporator is covered with a thick layer of ice, a Manual Start of defrost is possible by pressing and holding key [4] and then pressing key [2] simultaneously. In addition, this action results in timer reset: from that moment the timer will start calculating the time for the next defrost start.
5. The defrost Execution method should be selected in SET-UP through the parameter <dH>, since it depends on the system used. Possible solutions offered by the MCDU 11/2 are: -

ELECTRIC HEATING <ELE> when defrost starts, the fan (RL2) and the cooler (RL1) are turned off and, at the same time, the defrost relay (RL3) for heating element control is switched on.- HOT GAS <GAS>: when defrost is on, the fan (RL2) is stopped and the hot gas valve is turned on through the defrost relay (RL3); the cooler (RL1) continues to pump hot gas to the evaporator. –AIR <ELE>: this method can be chosen if ambient temperature is above 0°C, in this case defrost takes place spontaneously by keeping the cooler switched off for a preset timed period. If a fan is installed, it may be activated by means of the defrost relay (RL3); in this way defrost duration will be shorter. The RL3 relay status is shown by the LED (7) with the symbol of the drops of water; when lit, the contacts No. 1 and 2 are closed.

6. Defrost will be terminated either when the Temperature of Defrost Termination <Et> is measured (by B probe) or after the Maximum Time <^dd> has elapsed, whichever occurs the sooner. At this point all relays drop out and the Dripping Time starts, the duration of which is programmable with the parameter <dr>. The Dripping Time (the cooler does not work), allows the water formed from the melting ice to drip from the coil thus preventing its sudden cooling.

   When the Dripping Time has finished, the cooler relay is enabled, but will be switched on only if ambient temperature has risen over the threshold formed by SET POINT + Dt.

7. Another function offered by the MCDU 11/2 is Display Control during defrost <Cd>. If <dEF> is selected "dEF" will be displayed during defrost in place of the temperature measured by the A probe. To continuously display the temperature of the A probe, choose option <tA>.

8. During temperature control the fan works continuously and is stopped when defrost starts. Fan Re-start is Delayed from cooler re-start. in order to allow the evaporator to cool down and reach the programmed ΔT <Fd>, compared to the temperature of the A probe. The RL2 relay status is shown by the corresponding LED (6): when lit, the contacts No 1 and 3 are closed.

MCDU 11/2 PROGRAMMING PARAMETER MODE (SET-UP)

The MCDU 11/2 can carry out all the functions requested for a specific application, after the parameters have been programmed in SET-UP mode. Access to this mode is possible through a sequence of operations preventing accidental activation.

1. Turn off the unit, press key [1] and [2] and, by keeping them pressed, turn on the unit. If this operation has been correctly made, 'tHS" will appear on display. Access to all parameters and to their own pre-programmed values is obtained by pressing the key [1] repeatedly. The specific value of the parameter can be changed with keys [3] and [4] within the limits shown in Table 1. Quick skip through the menu is achieved with keys [3] and [4] used as shown in the table.

2. After programming, switch back to the main menu ('tHS ", "DEF", AdJ') and turn off the unit. When the MCDU 11/2 is switched on, it will enter NORMAL mode and will work with the new configuration.

TECHNICAL DATA

1. The temperature sensors are connected to the unit by means of 2 wires with shield. The latter is used for increasing the protection of the instrument to electro-magnetic interference and, at the same time, for protecting the sensor.

   The probes are watertight with IP67 protection. To obtain this, connect the shield to the earth of the cabinet only on the instrument side. The probe cable should be located away from power lines.

2. When installed into the panel the unit has IP 54 front protection.

LAE MCDU 11/1 & MCDU 11.2 FITTING INSTRUCTIONS

To replace an existing Eliwell Microprocessor with an LAE model the following procedures must be followed.

Replacement of Eliwell EWPC 960 with LAE MCDU 11/1

1. The 'cut-out' in the cabinet console will accept the LAE controller.
2. Remove the Eliwell EWPC 960 controller together with the Eliwell temperature probe.
3. Fit the LAE MCDU 11/1 and the LAE black temperature probe. It is important that the routing of the LAE probe is segregated from any current carrying cables. The earth screen must be connected to the earth terminal of the control box. It will be necessary to 'extend' the earth screen of the temperature probe to accomplish this.
4. Position the end sensor of the temperature probe (probe 'A') as indicated in Appendix 'A'. Connect the probe as per the label details on the controller.
5. See the relevant new cabinet wiring diagrams for the correct electrical connections.
6. Read the Installation & Operating Instructions for the correct operation and parameter settings and change if necessary.
7. If an electrical test is carried out ensure the 12 volt supply to the controller is disconnected.
8. After fitting check the operation of the cabinet.

NOTE — Probe 'B' is not fitted on MCDU 11/1 controllers.

Replacement of Eliwell EWPC 971 with MCDU 11/2

1. The 'cut-out' in the cabinet console will accept the LAE controller.
2. Remove the Eliwell EWPC 971 controller together with the temperature and defrost termination (if fitted) probes.
3. Refer to the electrical wiring diagram originally provided with the cabinet and disconnect the fan delay klixon, if fitted, from the terminal block inside the control box. Make safe the exposed wires. Wire a 'link' between the terminals from which the fan delay was removed. The LAE controller does not require a separate fan delay switch as the function is an integral operation of the controller.
4. Fit the LAE MCDU 11/2 controller, the black temperature probe and grey defrost termination/fan delay probe. It is important that the routing of the probes is segregated from any current carrying cables. The earth screens must be connected to the earth terminal of the control box. It will be necessary to 'extend' the earth screens of the probes to accomplish this.
5. Position the end sensor of the air (temperature) probe (probe 'A) and the coil (defrost termination/fan delay) probe (probe 'A') as detailed in appendices 'A' and 'B' and connect as per details on the controller labels.
6. See the relevant new cabinet wiring diagram for the correct electrical connections.

7. If an electrical test is carried out ensure the 12 volt supply to the controller is disconnected.
8. After fitting check the operation of the cabinet.

NOTES ON PARAMETER SETTINGS

1. LAE Temperature Controllers are supplied to Foster by the manufacturer with all parameters pre set to a 'standard' range.
2. These standard settings for LAE MCDU 11/1 and 11/2 are shown on the following pages (setting ref nos 1 and 2).
3. However some Foster models require a variation to these settings on some of the parameters (see below).
4. The following pages list all Foster models fitted with LAE controllers. The parameter settings required for individual models are shown as a reference number in the column adjacent to the model number. The settings applicable to these reference numbers are shown.

NOTE — Reference numbers 1 and 2 are the standard settings, pre set in the instruments as supplied.

The remaining reference numbers are variations from the 'standard' settings (see above).

The figures in these columns show those parameters which have to be changed from standard.

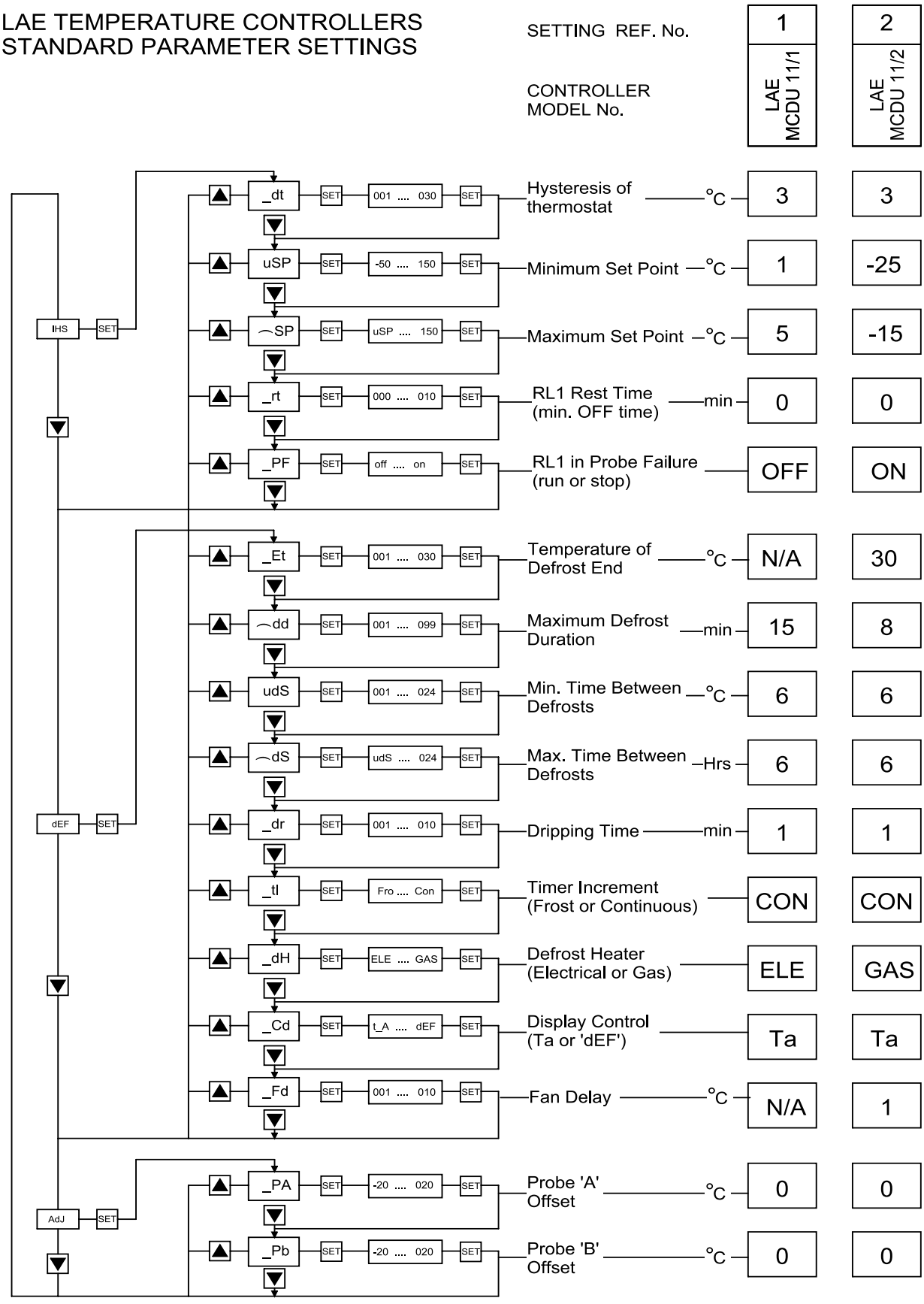
The blank squares indicate that these parameters remain as standard.

NOTE — When replacing an LAE controller with another LAE controller it will be necessary to change the parameter settings if the model it is fitted to does not have 'standard' settings.

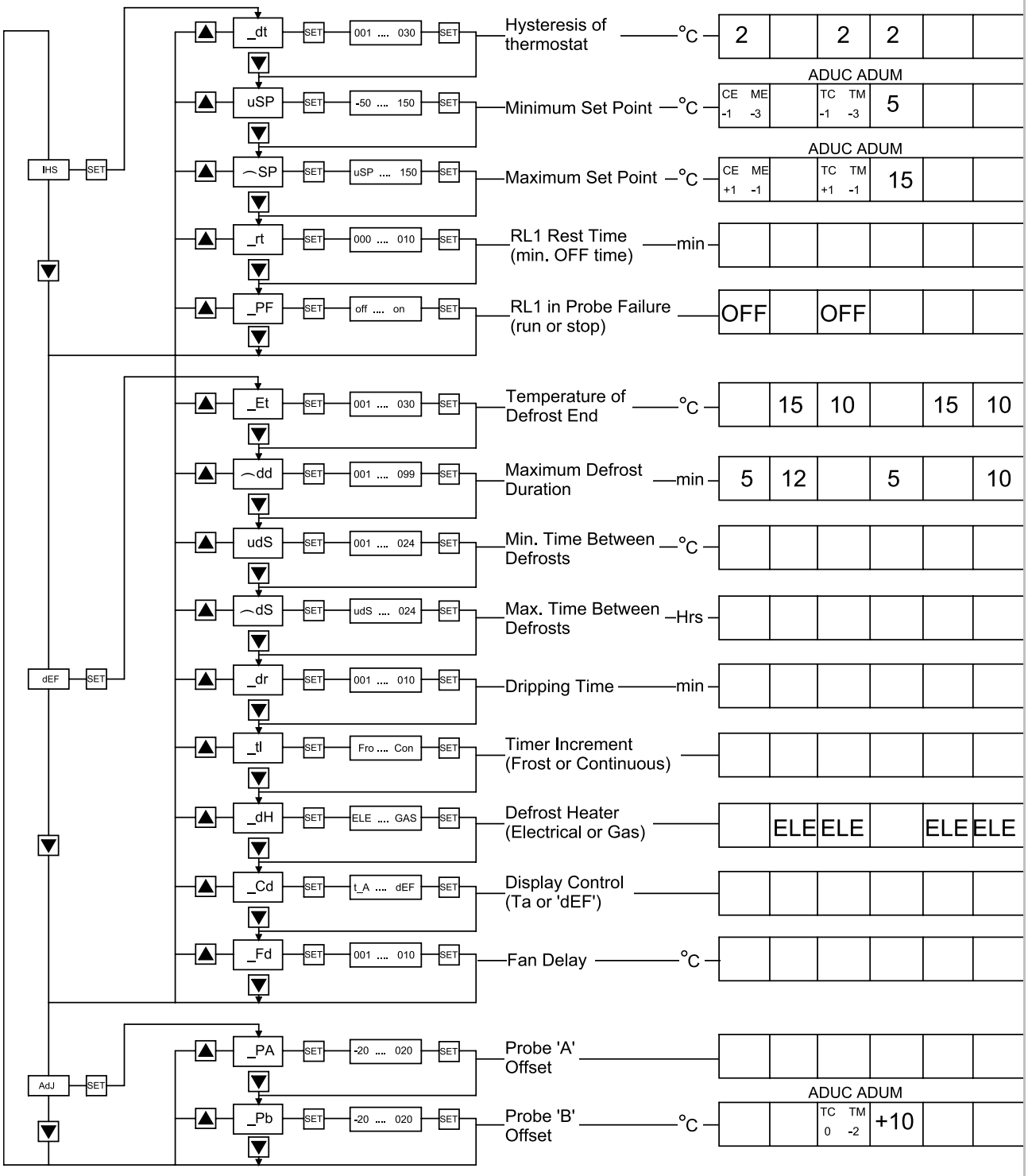
TECHNICAL DATA

1. The temperature sensor is connected to the unit by means of 2 wires with shield. The latter is used for increasing the protection of the instrument to electro-magnetic interference and, at the same time, for protecting the sensor. The probe is watertight with IP67 protection. To obtain this, connect the shield to the earth of the cabinet only on the instrument side. The probe cable should be located away from power lines.
2. When installed into the panel the unit has IP 54 front protection.

LAE TEMPERATURE CONTROLLERS STANDARD PARAMETER SETTINGS



LAE TEMPERATURE CONTROLLERS PARAMETER SETTINGS NON STANDARD VARIATIONS



N.B. FIGURES SHOW SET VALUES WHICH SHOULD BE CHANGED FROM STANDARD.WHERE A BOX IS LEFT BLANK THE STANDARD SETTING WHICH IS ALREADY ENTERED SHOULD BE USED

9	10	11	12	13	14	15	116	17	18	19	20	21	22	23	24	25	26	27	28
2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2		

2	2	2		2	2	2		2	2	2		2	4	2	2	3	3	3	2

ADUC ADUM

TC TM -1 -3	TM TC -3 -1	TM TC -3 -1		TC TM -1 -3	-2	-2		-28	-5	-5			0	+15	-5	CE ME -3 -1	-2	-2	-2

ADUC ADUM

TC TM +1 -1	TM TC -1 +1	TM TC -1 +1		TC TM +1 -1	+3	3		-20	3	3	-10		10	+40	+3	CE ME -1 -1	8	8	

OFF	OFF	OFF		OFF	OFF	OFF							OFF	ON		OFF	OFF	OFF	

15		25	25	10	25		25	15		25	25	25				10		25	

	5	5	15	15	15		10	15	5	5	15		15	0	5	5	3	5	

HBS

											34 T/2 12 24	8		0	4				

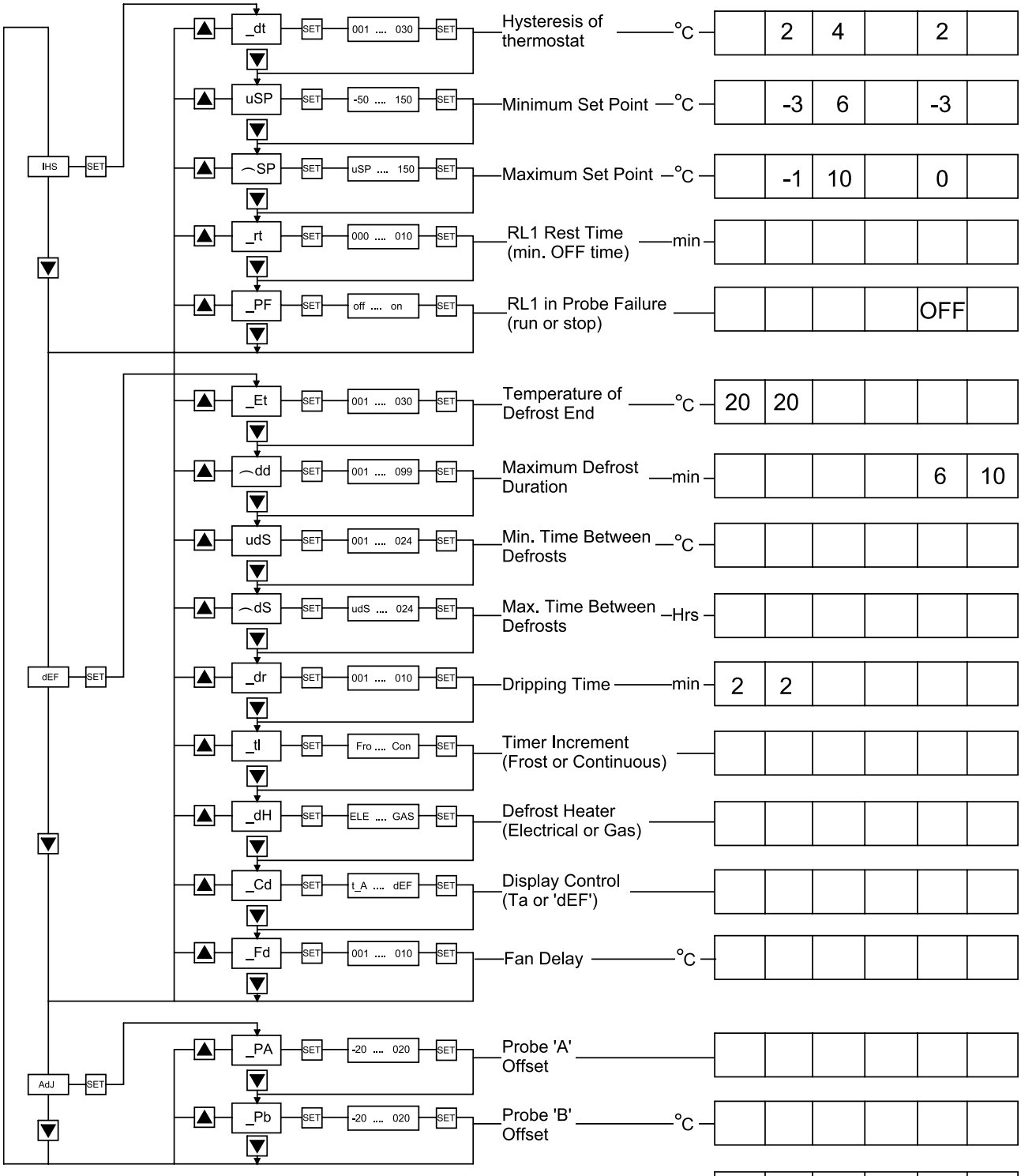
ELE			ELE	ELE	ELE			ELE			ELE		ELE			ELE			

						1			1										

AD AD AD AD AD AD

	TM TC -2 0	TM TC 0 -2		TC TM -0 2	+1	+1		-27	-4	-4	-21	-21	+2	+35	-4		+1	+1	

LAE TEMPERATURE CONTROLLERS PARAMETER SETTINGS NON STANDARD VARIATIONS



SETTING REF. No.	29	30	31	32	33	34
CONTROLLER FITTED LAE MCDU 11-	2	2	1	1	2	2
Hysteresis of thermostat °C		2	4		2	
Minimum Set Point °C		-3	6		-3	
Maximum Set Point °C		-1	10		0	
RL1 Rest Time (min. OFF time) min						
RL1 in Probe Failure (run or stop)					OFF	
Temperature of Defrost End °C	20	20				
Maximum Defrost Duration min					6	10
Min. Time Between Defrosts °C						
Max. Time Between Defrosts Hrs						
Dripping Time min	2	2				
Timer Increment (Frost or Continuous)						
Defrost Heater (Electrical or Gas)						
Display Control (Ta or 'dEF')						
Fan Delay °C						
Probe 'A' Offset						
Probe 'B' Offset °C						
Srt Point Cut Out Temperature (0°C)				1	-2	-21

N.B. FIGURES SHOW SET VALUES WHICH SHOULD BE CHANGED FROM STANDARD.WHERE A BOX IS LEFT BLANK THE STANDARD SETTING WHICH IS ALREADY ENTERED SHOULD BE USED

SETTING REF NOS (STANDARD AND NON-STANDARD) FOR LAE TEMPERATURE CONTROLLERS.

MODEL TYPE & NUMBER GASTRONORM 90	CABINETS	REF NO
GH 501 U	GH 601 U	1 A
GH 1131 U		1 A
GH 501 ADUM	GH 601 ADUM	5 D
GH 1131 ADUM		9 D
GH 501 ADUC	GH 601 ADUC	5
GH 1131 ADUC		9
GH 501 UWG	GH 601 UWG	6
GH 1131 UWG		6
GH 501 T	GH 601 T	1 A
GH 1131 T	GH 1351 T	1 A
GH 2101 T		1 A
GH 501 ADTM	GH 601 ADTM	10 C E
GH 1131 ADTM	GH 1351 ADTM	11 C E
GH 2101 ADTM		9
GH 501 ADTC	GH 601 ADTC	10 C
GH 1131 ADTC	GH 1351 ADTC	11 C
GH 2101 ADTC		9
SGH 601 T		1 A
GH 501 UG	GH 601 UG	1 A
GH 1131 UG		1 A
GH 501 TG	GH 601 TG	1 A
GH 1131 TG	GH 1351 TG	1 A
GH 2101 TG		1 A
GH 601-2-T	GH 1351-4-T	1 A
GH 2101-6-T		1 A
GH 601 FTT	GH 601-2-TG	1 A
GH 1351-4-TG	GH 2101-6-TG	1 A
GH 501 ADUCG	GH 601 ADUCG	5
GH 1131 ADUCG		9
GH 501 ADTCG	GH 601 ADTCG	10
GH 1351 ADTCG		11
GLH 291/291 ADT		1^{A} /7
GH 501 TWG	GH 601 TWG	6
GH 1131 TWG	GH 1351 TWG	6
GL 501 ADU	GL 601 ADU	7
GL 1131 ADU		8
GL 501 ADT	GL 601 ADT	$2^{A}/12^{B}$
GL 1131 ADT	GL 1351 ADT	$2^{A}/12^{B}$
GL 2101 ADT		8
SGL 601 ADT		$2^{A}/12^{B}$
GH 1351 ADUC	GH 1351 ADUM	9
HD 450 ADU/G		17
OGH 601 VT		26
OGH 1351 VT		27
GASTRONORM 90	COUNTERS	
GCH 1/1 E	GCH 1/2 E	1 A
GCH 1/3 E	GCH 1/4 E	1 A
GCH 2/1 E	GCH 2/2 E	1 A
GCH 2/3 E	GCH 2/4 E	1 A
GCH 1/1 ADME	GCH 1/2 ADME	3 F E
GCH 1/3 ADME	GCH 1/4 ADME	3 F E
GCH 2/1 ADME	GCH 2/2 ADME	3 F E
GCH 2/3 ADME	GCH 2/4 ADME	3 F E

WHERE NOT STATED REMOTE SETTINGS ARE AS NORMAL SETTINGS

MODEL TYPE & NUMBER GASTRONORM 90 COUNTERS (CONT'D)		REF NO
GCH 1/1 ADCE	GCH 1/2 ADCE	3 F
GCH 1/3 ADCE	GCH 1/4 ADCE	3 F
GCH 2/1 ADCE	GCH 2/2 ADCE	3 F
GCH 2/3 ADCE	GCH 2/4 ADCE	3 F
GCH 2-2 E	GCH 2-4 E	1 A
GCH 2-6 E	GCH 2-8 E	1 A
GCL 1/1 ADE	GCL 1/2 ADE	4
GCL 1/3 ADE	GCL 1/4 ADE	4
GCL 2/1 ADE	GCL 2/2 ADE	4
GCL 2/3 ADE	GCL 2/4 ADE	4
BM2 (COMA - D)	BM3 (COMA - D)	31
BM4 (COMA - D)		31
SLIMLINE REFRIGERATOR 1 FREEZER		
(N)LR 125 ADU		16
(N)HR 125 U	(N)HR 220 U	1 A
HR 381 U	HR 731 U	A
HR 381 ADUM/ADUC		
LR 381 ADU		7
HR 731 ADUM/ADUC		9
LR 731 ADU		8
BAKERY RANGE		
BSF 20 T	BSF 40 T	2 A
DRP 20 T		23^{G} /24^{H}
BSF 34 T		2 A
DR 20 VT	DR 16 VE	18
DR 24 VE		18
DR 40 VT		19
BSCF 16 ADE	BSCF 24 ADE	4
HBS 34 T/2	CBFF 34 T/2	20
BFF 34 T/2		20
HW 12 T	PATF 12 T	21
HSK 12 T(G)	PATH 12 T(G)	22
COMPACT COLDROOMS		
KP 410 H	KP 530 H	28
KP 610 H	KP 650 H	28
KP 750 H	KP 880 H	28
KP 1000 H	KP 1010 H	28
KP 410 M	KP 530 M	30
KP 610 M	KP 650 M	30
KP 750 M	KP 880 M	30
KP 1000 M	KP 1010 M	30
KP 410 L	KP 530 L	29
KP 610 L	KP 650 L	29
KP 750 L	KP 880 L	29
KP 1000 L	KP 1010 L	29

SOLO WALL/CEILING MOUNT UNITS

50H 32	50M 33	501 34
75H 32	75M 33	75L 34
100H 32	100M 33	100L 34
150H 32	150M 33	150L 34
200H 32	200M 33	200L 34

SETTING REF NOS (STANDARD AND NON-STANDARD) FOR LAE TEMPERTURE CONTROLERS.

MODEL TYPE & NUMBER DOE TBA CONTRACT MODELS	REF NO	MODEL TYPE & NUMBER DOE TBA CONTRACT MODELS (MEAT/CHILL)		REF NO
CSH 381 U	1	CSH 381 ADUM/ADUC		5
CSH 501 T	1	CSH 501 ADUM/ADTC		10
CSH 601 T	1	CSH 601 ADUM/ADTC		10
CSH 731 U	1	CSH 731 ADUM/ADUC		
CSH 1131 T	1	CSH 1131 ADUM/ADTC		
CSH 1351 T	1	CSH 1351 ADUM/ADTC		
CSL 381 ADU	7	CSCH 1/1 ADME (J)/ADCE	(J)	3
CSL 501 ADT	2	CSCH 1/2 ADME (J)/ADCE	(J)	3
CSL 601 ADT	2	CSCH 1/3 ADME (J)/ADCE	(J)	3
CSL 731 ADU	8	CSCH 1/4 ADME (J)/ADCE	(J)	3
CSL 1131 ADT	2			
CSL 1351 ADT	2	CSCH 2/1 ADME (J)/ADCE	(J)	3
		CSCH 2/2 ADME (J)/ADCE	(J)	3
CSCH 1/1 E (J)	1	CSCH 2/3 ADME (J)/ADCE	(J)	3
CSCH 1/2 E (J)	1	CSCH 2/4 ADME (J)/ADCE	(J)	3
CSCH 1/3 E (J)	1			
CSCH 1/4 E (J)	1			
CSCL 1/1 ADE (J)	4			
CSCL 1/2 ADE (J)	4			
CSCL 1/3 ADE (J)	4			
CSCL 1/4 ADE (J)	4			
CSCH 2/1 E (J)	1			
CSCH 2/2 E (J)	1			
CSCH 2/3 E (J)	1			
CSCH 2/4 E (J)	1			
CSCL 2/1 ADE (J)	4			
CSCL 2/2 ADE (J)	4			
CSCL 2/3 ADE (J)	4			
CSCL 2/4 ADE (J)	4			
NHR 125 U	1			
NHR 220 U	1			

NOTES:
A - STANDARD FACTORY SETTING
B - NO.12 FOR REMOTE MODELS
C - NO.13 FOR REMOTE MODELS
D - NO.14 FOR IAN STRANGE LTD CABINETS
E - NO.15 FOR IAN STRANGE LTD CABINETS
F - NO.25 FOR REMOTE COUNTERS
G - FOR MCDU 11/1 CONTROLLER
H - FOR MCDU 11/2 CONTROLLER