

cd001073

**PB = POWER BOARD**

**VB = DISPLAY BOARD**

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Revision: 01 (250108)

Publication no.  
**599 35 61-03**  
021218  
ITZ/SERVICE/AA

**ERF2000**  
**Functions of the**  
**electronic**  
**boards**



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## 1. INTRODUCTION

In this manual are described the functions of the electronic boards called **ERF2000** which are mounted on the new electronic appliances.

The **ERF2000** electronic control always consists of 2 separable elements:

- A **VB display board** which feature different versions according to the functions and the styling of the appliance. The main components are the displays, the pushbuttons, the LEDs, the door switch and a EEPROM memory in which both the appliance state (useful in case of a power interruption) and the control and configuration parameters of the appliance are memorized;
- A **PB power board** which contains the micro-controller (inside which there are the 2 RAM and ROM memories), the AC/DC transformer, the triacs of loads power, the buzzer and the protections of the electronic board.

Aim of this manual is to fully describe the standard functions of an appliance controlled by the new **ERF2000** electronic and the operation of the service mode to check the efficiency of the electronic.



**Warning: the power board, the display board and all the cables (the sensor cables included) are powered with a voltage of 220-240V 50Hz even if the ON/OFF key is set on (OFF). Therefore, disconnect the appliance before operating on the electronic board.**

The **ERF 2000** range features the following series of models:

ref	Electronic board	Board version	Software version	eprom	title
1	power	ERF2000P-01.A	NFBF0A0R	-	4 triacs
2	power	ERF2000P-01.B	NFBF0A0R	-	3 triacs
3	power	ERF2000P-01.C	NFBF0A0R	-	2 triacs
4	display	ERF2000D-03.A	-	F004F	ALFA 2C
5	display	ERF2000D-03.A	-	F0006	ALFA 2C
6	display	ERF2000D-03.A	-	F0001	ALFA 2C
7	display	ERF2000D-03.A	-	F0003	ALFA 2C
8	display	ERF2000D-03.A	-	F005B	ALFA 2C
9	display	ERF2000D-03.A	-	F0071	ALFA 2C
10	display	ERF2000D-06.B	-	F002E	BI 1C
11	display	ERF2000D-06.B	-	F002F	BI 1C
12	display	ERF2000D-06.A	-	F0030	BI 1C
13	display	ERF2000D-06.A	-	F0031	BI 1C
14	display	ERF2000D-05.A	-	F0066	BI 2C
15	display	ERF2000D-05.B	-	F0065	BI 2C
16	display	ERF2000D-05.A	-	F0064	BI 2C
17	display	ERF2000D-01.B	-	F005F	DELTA 2C
18	display	ERF2000D-01.C	-	F0020	DELTA 2C
19	display	ERF2000D-01.C	-	F0027	DELTA 2C
20	display	ERF2000D-02.B	-	F0061	D3 1C
21	display	ERF2000D-02.B	-	F0025	D3 1C
22	display	ERF2000D-02.D	-	F0041	D3 1C
23	display	ERF2000D-02.D	-	F0062	D3 1C
24	display	ERF2000D-02.B	-	F0043	D3 1C
25	display	ERF2000D-02.A	-	F005C	D3 1C
26	display	ERF2000D-02.A	-	F005D	D3 1C
27	display	ERF2000D-02.D	-	F005E	D3 1C
28	display	ERF2000D-02.A	-	F0067	D3 1C
29	display	ERF2000D-02.A	-	F0068	D3 1C
30	display	ERF2000D-02.B	-	F0072	D3 1C
31	display	ERF2000D-02.A	-	F0070	D3 1C
32	display	ERF2000D-04.A	-	F0029	ALFA 1C
33	display	ERF2000D-04.A	-	F002B	ALFA 1C
34	display	ERF2000D-04.A	-	F002D	ALFA 1C
35	display	ERF2000D-04.A	-	F0063	ALFA 1C
36	display	ERF2000D-04.A	-	F0052	ALFA 1C

**NOTE:**

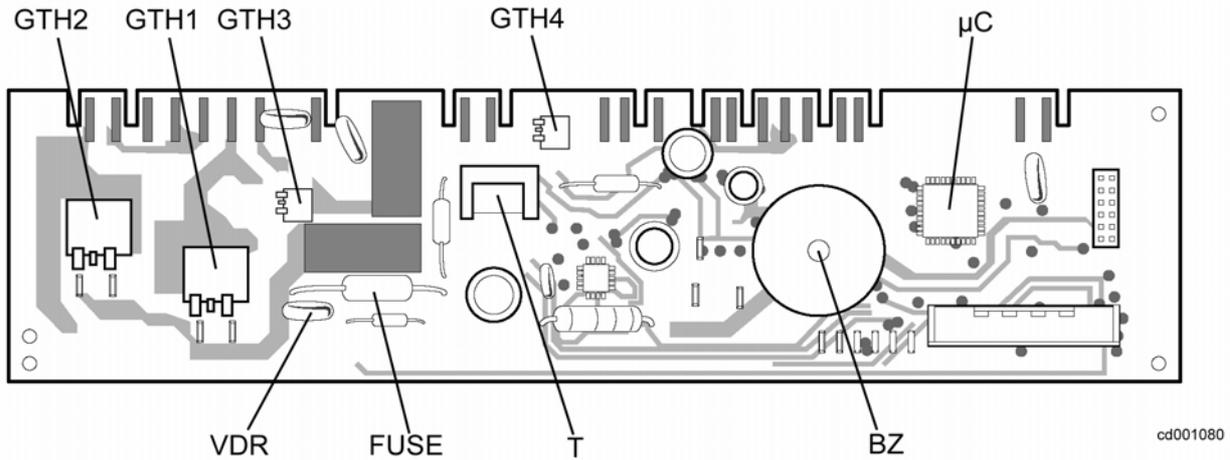
The power boards with 2 or 3 triacs (for the 2 and 3-load control) are interchangeable with the one featuring 4 triacs (for the 4-load control). Therefore, for unification, the power boards with 2 and 3 triacs are replaced by the power board with 4 triacs.

ref	Model	Not mounted optional components
1		
2		GTH4
3		GTH2; GTH4;
4	DME MA	
5	266 REX	
6	316/346 ZS	
7	316/346	
8	MA-KSV20042 VALVE	
9	MA-KSV18048 VALVE	
10	ADAPTIVE COOLER AEG FI	room NTC sensor; DL2; SW5;
11	ADAPTIVE COOLER QUELLE FI	room NTC sensor; DL2; SW5;
12	4 STARS BI AEG	-
13	4 STARS BI QUELLE	-
14	1780 BI AEG	room NTC sensor;
15	1780 BI QUELLE	room NTC sensor; DL7; SW2; SW7; DL1; SW3; DL2;
16	1780 BI ELECTROLUX	room NTC sensor;
17	COMBI 2C QUELLE MA	room NTC sensor; SW5; SW9; LD3; LD6; LD1A; LD3A; LD6A; LD7A;
18	266 REX	room NTC sensor; SW1; LD1A; LD3A; LD6A; LD7A;
19	316/346 REX ZS	room NTC sensor; SW1; LD1A; LD3A; LD6A; LD7A;
20	ZS QUELLE 186/156 FZ	room NTC sensor; SW1; SW10; LD7; LD4A; LD6A; LD7A;
21	ZS QUELLE226 FZ	room NTC sensor SW1; SW10; LD7; LD4A; LD6A; LD7A;
22	MA FZ STD QUELLE	room NTC sensor; SW10; LD7; LD4A; LD6A; LD7A;
23	MA FZ MAXI QUELLE	room NTC sensor; SW10; LD7; LD4A; LD6A; LD7A;
24	296 C ZAN	room NTC sensor; SW1; LD4A; LD7; SW10; LD6A; LD7A;
25	MA ELUX FSX14532	room NTC sensor; LD4A; LD6A; LD7A;
26	MA ELUX FSX16532 FSX18532	room NTC sensor; LD4A; LD6A; LD7A;
27	MA QUELLE FSX16532 FSX18532	room NTC sensor; SW10; LD7; LD4A; LD6A; LD7A;
28	MA AEG FSX14532	room NTC sensor; LD7; LD4B; LD6/LD6B;
29	MA AEG FSX16532 FSX18532	room NTC sensor; LD7; LD4B; LD6/LD6B;
30	MA ZAN COOLER STD	room NTC sensor; SW10; LD4A; LD7; LD6A; LD7A;
31	MA ZAN FREEZER STD	room NTC sensor; LD4A; LD6A; LD7A;
32	156 FZ	room NTC sensor; SW1;
33	186 FZ	room NTC sensor; SW1;
34	226 FZ	room NTC sensor; SW1;
35	FZ MAXI MA	room NTC sensor;
36	FZ STD MA	room NTC sensor;

ref	Notes	Picture
1	4 triacs;	PB
2	3 triacs;	PB
3	2 triacs;	PB
4		ALFA 2C
5		ALFA 2C
6		ALFA 2C
7		ALFA 2C
8		ALFA 2C
9		ALFA 2C
10	DL1 e DGT1=red;	BI 1C
11	DL1 e DGT1=green;	BI 1C
12	DL1 e DGT1=red; DL2=yellow COOLMATIC;	BI 1C
13	DL1 e DGT1=green; DL2=yellow COOLMATIC;	BI 1C
14	DGT1,DL4,DGT2 e DL6=red;	BI 2C
15	DGT1,DL4,DGT2 e DL6=green;	BI 2C
16	DGT1,DL4,DGT2 e DL6=green;	BI 2C
17	LD2,LD5,DISP1 e DISP2=green;	DELTA 2C
18	LD2,LD5,DISP1 e DISP2=green;	DELTA 2C
19	LD2,LD5,DISP1 e DISP2=green;	DELTA 2C
20	LD5 e DISP2=green; LD6B=red;	D3 1C
21	LD5 e DISP2=green; LD6B=red;	D3 1C
22	LD5 e DISP2=green; LD6B=red;	D3 1C
23	LD5 e DISP2=green; LD6B=red;	D3 1C
24	LD5 e DISP2=green; LD6=yellow;	D3 1C
25	LD5 e DISP2=green; LD6=yellow;	D3 1C
26	LD5 e DISP2=green; LD6=yellow;	D3 1C
27	LD5 e DISP2=green; LD6B=red;	D3 1C
28	LD5 e DISP2=red;	D3 1C
29	LD5 e DISP2=red;	D3 1C
30	LD5 e DISP2=green; LD6=yellow;	D3 1C
31	LD5 e DISP2=green; LD6=yellow;	D3 1C
32	-	ALFA 1C
33	-	ALFA 1C
34	-	ALFA 1C
35	-	ALFA 1C
36	-	ALFA 1C

## 2. PICTURES

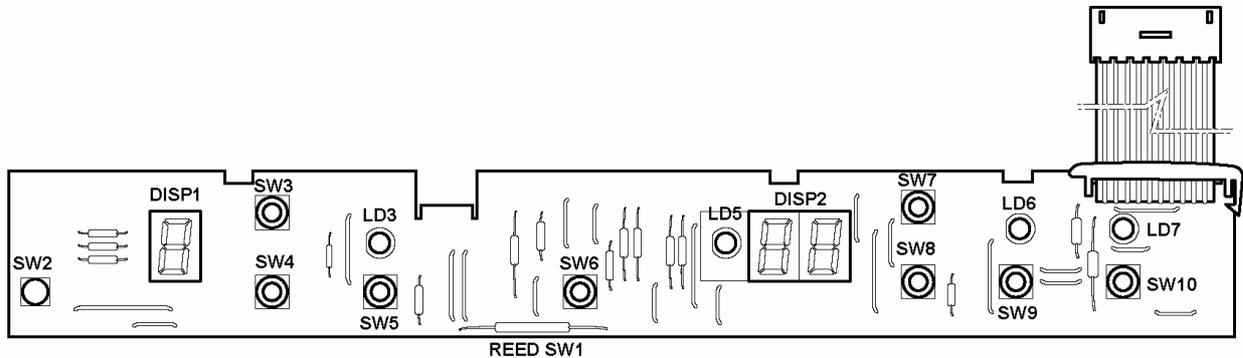
### 2.1 PB



#### KEY:

- GTH1 = FREEZER COMPRESSOR TRIAC;
- GTH2 = REFRIGERATOR COMPRESSOR TRIAC;
- GTH3 = LAMP TRIAC;
- GTH4 = FAN TRIAC;
- VDR = OVERVOLTAGE PROTECTION;
- FUSE = GENERIC PROTECTION;
- T = TRANSFORMER;
- BZ = BUZZER;
- μC = MICRO-CHECKER;

## 2.2 ALFA 2C

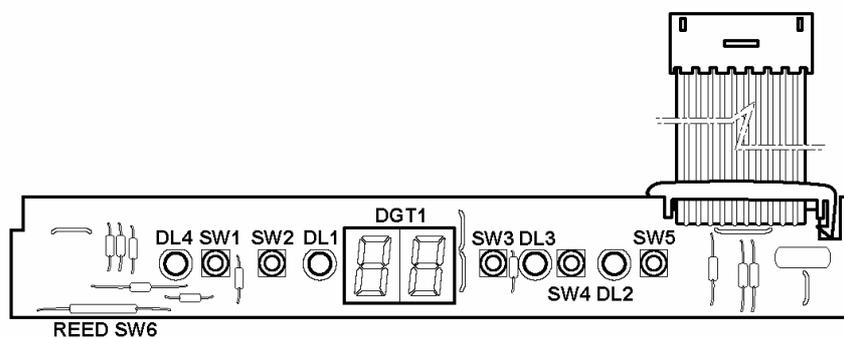


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### KEY:

- SW1 = REED ELEMENT;
- SW2 = REFRIGERATOR ON/OFF BUTTON;
- SW3 = REFRIGERATOR TEMPERATURE INCREASE BUTTON;
- SW4 = REFRIGERATOR TEMPERATURE DECREASE BUTTON;
- SW5 = REFRIGERATOR "SUPER COOLING" BUTTON;
- SW6 = FREEZER ON/OFF BUTTON;
- SW7 = FREEZER TEMPERATURE INCREASE BUTTON;
- SW8 = FREEZER TEMPERATURE DECREASE BUTTON;
- SW9 = FREEZER "SUPER" BUTTON;
- SW10 = ALARM RESET BUTTON;
- DISP1 = REFRIGERATOR DISPLAY;
- DISP2 = FREEZER DISPLAY;
- LD3 = REFRIGERATOR "SUPER COOLING" LED;
- LD5 = SYMBOL - LED;
- LD6 = FREEZER SUPER LED;
- LD7 = ALARM LED;

## 2.3 BI 1C

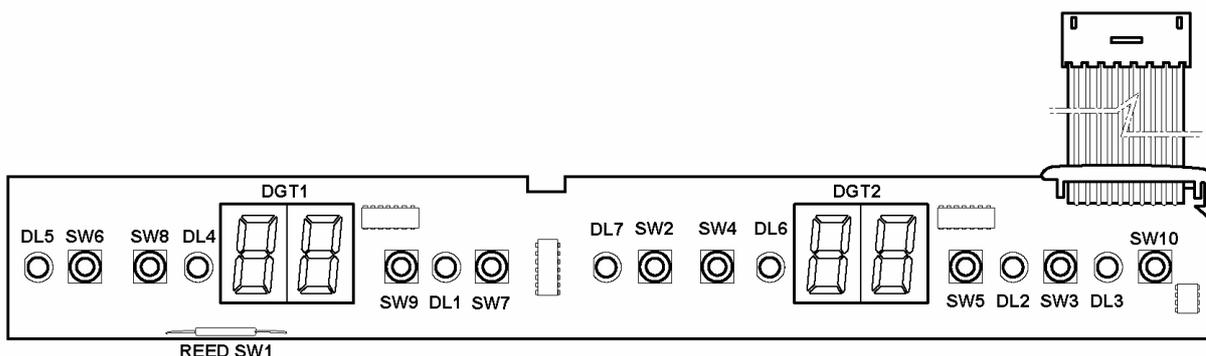


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### KEY:

- SW1 = ON/OFF BUTTON;
- SW2 = TEMPERATURE INCREASE BUTTON;
- SW3 = TEMPERATURE INCREASE BUTTON;
- SW4 = FREEZER "SUPER" BUTTON;
- SW5 = ALARM RESET BUTTON;
- SW6 = REED ELEMENT;
- DGT1 = DISPLAY;
- DL1 = SYMBOL - LED;
- DL2 = ALARM LED;
- DL3 = FROSTMATIC LED;
- DL4 = ON/OFF LED;

## 2.4 BI 2C

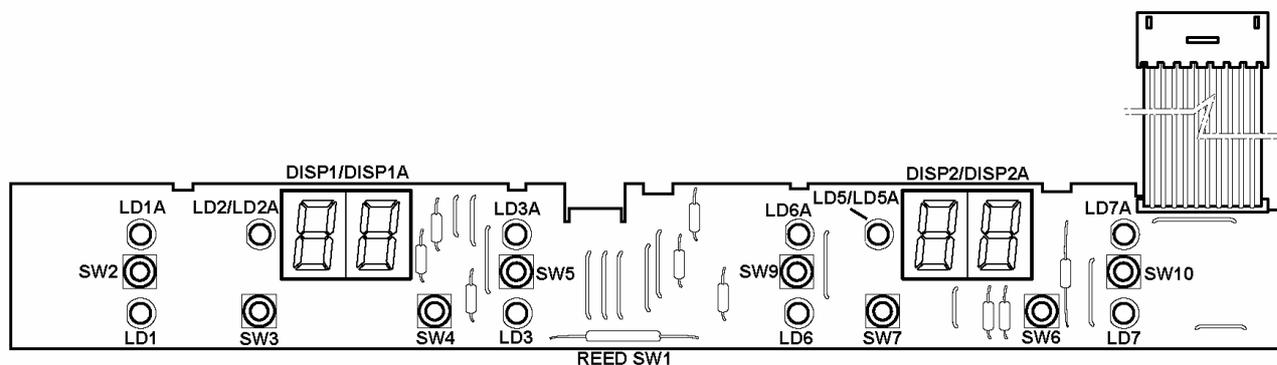


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### KEY:

- SW1 = REED ELEMENT;
- SW2 = FREEZER ON/OFF BUTTON;
- SW3 = FREEZER "SUPER" BUTTON;
- SW4 = FREEZER TEMPERATURE INCREASE BUTTON;
- SW5 = FREEZER TEMPERATURE DECREASE BUTTON;
- SW6 = REFRIGERATOR ON/OFF BUTTON;
- SW7 = REFRIGERATOR "SUPER COOLING" BUTTON;
- SW8 = REFRIGERATOR TEMPERATURE INCREASE BUTTON;
- SW9 = REFRIGERATOR TEMPERATURE DECREASE BUTTON;
- SW10 = ALARM RESET BUTTON;
- DGT1 = REFRIGERATOR DISPLAY;
- DGT2 = FREEZER DISPLAY;
- DL1 = FREEZER "SUPER" LED;
- DL2 = REFRIGERATOR FROSTMATIC LED;
- DL3 = ALARM LED;
- DL4 = SYMBOL + LED;
- DL5 = REFRIGERATOR ON/OFF LED;
- DL6 = LED SYMBOL -;
- DL7 = FREEZER ON/OFF LED;

## 2.5 DELTA 2C

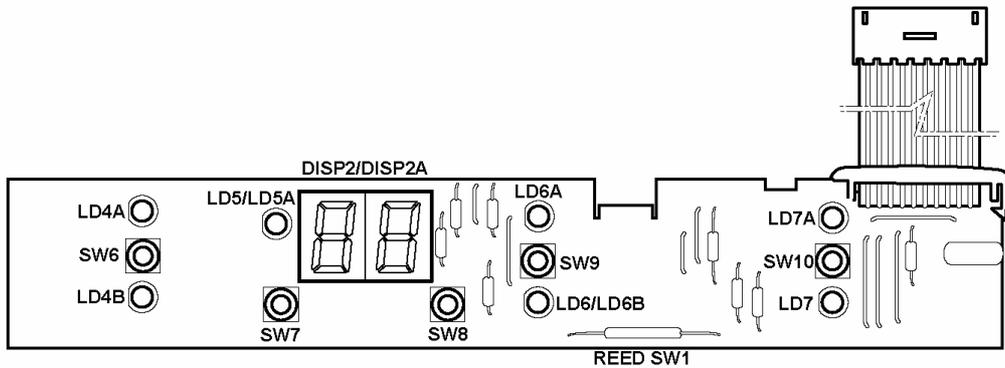


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### KEY:

- SW1 = REED ELEMENT;
- SW2 = REFRIGERATOR-FREEZER ON/OFF BUTTON;
- SW3 = REFRIGERATOR TEMPERATURE INCREASE BUTTON;
- SW4 = REFRIGERATOR TEMPERATURE DECREASE BUTTON;
- SW5 = REFRIGERATOR "SUPER COOLING" BUTTON;
- SW6 = FREEZER TEMPERATURE DECREASE BUTTON;
- SW7 = FREEZER TEMPERATURE INCREASE BUTTON;
- SW9 = FREEZER "SUPER" BUTTON;
- SW10 = ALARM RESET BUTTON;
- DISP1 = REFRIGERATOR DISPLAY;
- DISP2 = FREEZER DISPLAY;
- LD1 = REFRIGERATOR ON/OFF LED;
- LD2 = SYMBOL + LED;
- LD3 = FREEZER "SUPER" LED;
- LD5 = SYMBOL - LED;
- LD6 = REFRIGERATOR FROSTMATIC LED;
- LD7 = ALARM LED;

## 2.6 D3 1C

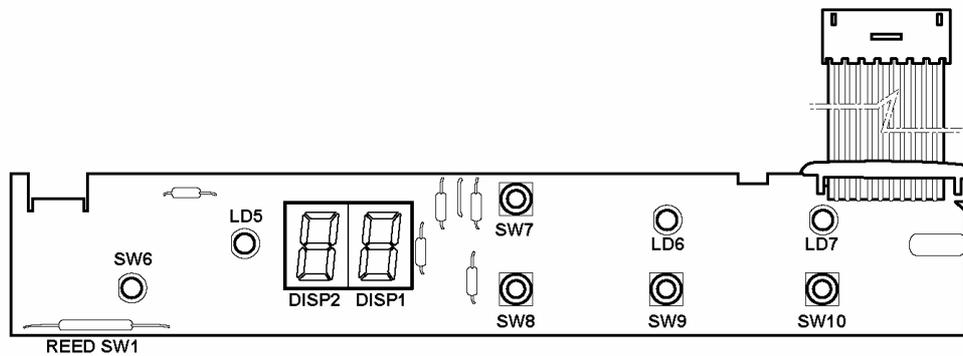


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### KEY:

- SW1 = REED ELEMENT;
- SW6 = FREEZER ON/OFF BUTTON;
- SW7 = FREEZER TEMPERATURE INCREASE BUTTON;
- SW8 = FREEZER TEMPERATURE DECREASE BUTTON;
- SW9 = FREEZER "SUPER" BUTTON;
- SW10 = ALARM RESET BUTTON;
- DISP2 = FREEZER DISPLAY;
- LD4A/B = FREEZER ON/OFF LED;
- LD5 = SYMBOL - LED;
- LD6/6B = SUPER / RESET ALARM LED;
- LD6A = "SUPER" LED;
- LD7/7A = ALARM RESET LED;

## 2.7 ALFA 1C



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### KEY:

- SW1 = REED ELEMENT;
- SW6 = FREEZER ON/OFF BUTTON;
- SW7 = FREEZER TEMPERATURE INCREASE BUTTON;
- SW8 = FREEZER TEMPERATURE DECREASE BUTTON;
- SW9 = FREEZER "SUPER" BUTTON;
- SW10 = ALARM RESET BUTTON;
- DISP1 = REFRIGERATOR DISPLAY;
- DISP2 = FREEZER DISPLAY;
- LD5 = SYMBOL - LED;
- LD6 = FREEZER "SUPER" LED;
- LD7 = ALARM LED;

### 3. CONTROL FUNCTIONS

#### 3.1 Switching the appliance on and off

To start a compartment you need to press the ON/OFF button, respectively for the refrigerator and the freezer. It starts immediately.

To switch off the compartment you need to press the ON/OFF button for at least 1 second. The switching off can be accompanied by an optional countdown and the display shows 3, 2, 1 sequentially.

In some appliances the ON/OFF button controls the switching on of both the compartments (refrigerator and freezer) and the switching off of the single compartment is integrated in the temperature increase button by selecting the maximum temperature position.

By pushing the temperature decrease button, the compartment switches on again with the last set value.

#### 3.2 Regulation of the freezer temperature

To modify the freezer set temperature, push the temperature increase or decrease button. The temperature can be set between the values  $-15^{\circ}\text{C}$  and  $-24^{\circ}\text{C}$ .

Once the temperature increase or decrease button has been pressed, the display flashes for 5 seconds showing the set temperature. It is possible to modify the set temperature by pushing the temperature increase or decrease within these 5 seconds. The display stops flashing and shows the temperature detected inside the freezer.

The minimum On time of the compressor is 1-2 minutes.

The minimum Off time varies from 5 to 20 minutes.

#### 3.3 Control of freezer compartment

The switching on and off of the compressor of the freezer compartment are controlled by the air sensor of the freezer.

#### 3.4 Fast-freezing function

The Super function is activated through the actioning of the Super button, therefore:

- the led corresponding to the Super function lights (if featured) and the display shows "A" or "SP" or the measured temperature (depending on the models);
- the compressor runs continuously for a fixed time and stops when the set Super cut-out temperature is reached or, if this temperature is never reached, at the end of a max. prefixed time (about 52 hours).

If the button is pressed again the Super function deactivates:

- the corresponding led switches off (if featured);
- the compressor functions in thermostatic conditions.

In some models the fast-freezing function is activated through the actioning of the temperature decrease button till the max cold position is reached (above  $-24^{\circ}\text{C}$ ). In this case to disconnect the Super function, push the temperature increase button and select a new setting.

### 3.5 Freezer compartment display

The thermometer indicates the temperature of the warmest part in the freezer compartment. This means that the other temperatures of the freezer (measured through an ordinary thermometer) will always be lower than those indicated on the thermometer. The temperature difference between the central part of the compartment (which must not be measured in direct contact with the evaporator) and the warmest part of the freezer is included between 3° and 7°C. To avoid false variations from the set value a stabilization window of the displayed temperature of +/- 3° C has been introduced. At temperatures included between this interval the set value is indicated.

At temperatures not included between this interval the real value is indicated. The freezer thermometer updates the shown temperature of 1° C every 4-20 min. (according to the versions) when temperature decreases and every 4-25 min. when temperature increases.

Attention: to eliminate the updating delay of the temperature, disconnect the appliance and connect it again.

### 3.6 Regulation of the temperature in the refrigerator compartment

To modify the set temperature in the freezer compartment it is necessary to push the temperature increase or decrease button. The temperature that can be set goes from +2°C up to +8°C for all the models except from some Electrolux models by which the temperatures go from +1°C up to +9°C.

Once the temperature increase or decrease button has been pushed, the display flashes for 5 seconds showing the set temperature. The display stops flashing and shows the temperature detected inside the refrigerator.

The min On time of the compressor in the refrigerator compartment is 1-2 min.

The min. Off time is 5 min.

### 3.7 Control of refrigerator compartment

The compressor is activated when both the air sensor and the evaporator sensor detect the cut-in temperature and is deactivated when the temperature detected by the air sensor reaches the cut-out temperature.

Only for 4-star models, at low room temperatures (room temperature lower than +20°C ) a balancing heater is automatically activated, by means of a sensor placed on the display board (VB) or the lighting lamp is switched on partially with a 1-minute delay after the door closure.

#### **Attention!**

It is possible, therefore, that checking the efficiency of the switching off of the light, the lamp lights even if the door is closed, this does not imply that the door light switch functions badly.

To check if the light switches off correctly, it is necessary to check if the lamp is off within 1 minute after the door closure (after that time the lamp might be on because it is controlled by the electronic board!).

### 3.8 Holiday function of the refrigerator ( only in cooler and in some cooler compartments of the two-compressor appliances )

The max. temperature that can be set in the refrigerator compartment reaches +8°C (+9°C for some Electrolux models).

Pushing again the temperature increase button after reaching +8°C (+9°C for some Electrolux models), the symbol "H" appears on the display to indicate that Holiday function is switched on.

With the Holiday function the refrigerator temperature is kept at +14°C.

This temperature does not allow preserving the food, but it is very useful when the refrigerator compartment is not used, since it avoids the formation of bad odours.

To deactivate the function it is necessary to set another temperature so as to the symbol "H" disappears from the display.

At the end of the Holiday function, the temperature alarm of the refrigerator compartment will be switched on with a 2-hour delay.

### **3.9 SUPER COOLING Function of the refrigerator**

Pushing the super cooling button of the refrigerator the super cooling function is activated and the refrigerator temperature is automatically set at +2°C.

The function deactivates automatically after about 6 hours or by pushing the super cooling button again.

The corresponding led lights to indicate that the function is active. The display shows "SP" or "A" or the real temperature of the refrigerator compartment (according to the models).

In some models the super cooling function can be integrated in the temperature decrease button by setting the max. cold position.

### **3.10 Display of the refrigerator compartment**

The thermometer indicates the average temperature in the refrigerator compartment. The temperature varies according to the compartment type. To avoid false variations compared to the set value, a stabilization window of the shown temperature of +/- 3° C has been introduced. The set value is indicated for the temperatures included between this interval.

The real value is indicated for temperatures not included between this interval. The refrigerator thermometer has an updating speed of the shown temperature of 1° C every 2-10 min. (according to the versions) both when the temperature increases and decreases.

### **3.11 Demo Mode**

The Demo Mode function regards the market activity and not the user.

By pushing the temperature decrease button and ON/OFF button simultaneously for 5 seconds the Demo function is switched on.

The inside temperature of the appliance, measured by the air sensor, must be higher than +10°C because the function may be activated. For the bi-compressors, the temperature must be higher than +10°C both in the refrigerator and the freezer compartment.

The display board (VB) operates and shows a temperature of +5°C which flashes at a low frequency in the refrigerator compartment display (4 seconds on and 1 off) and of -18°C in the freezer compartment display (4 seconds on and 1 off).

The light switches on when the door opens, but the compressor remains always off.

To deactivate the Demo function it is necessary to unplug the appliance or to push the temperature decrease button and ON/OFF button simultaneously for 5 seconds.

## 4. ALARMS

### 4.1 Freezer compartment temperature alarm

When the temperature on the freezer display overcomes the pre-set limit (between  $-8^{\circ}\text{C}$  and  $-12^{\circ}\text{C}$  according to the versions) the alarm switches on: the temperature alarm led and the display flash and the buzzer sounds.

If the alarm reset button is pushed, the buzzer stops sounding, the display shows the maximum reached temperature for 5 seconds and the temperature alarm led continue to flash.

Only when the temperature falls below the pre-set limit also the temperature alarm led will switch off.

If the alarm condition stops automatically without pushing the alarm reset, the buzzer stops sounding but the temperature alarm led and the display will flash.

Pushing the alarm reset button, the temperature alarm led stops flashing, while the display will show the maximum reached temperature for 5 seconds.

When the appliance is installed for the first time and if the freezer compartment is warm, the temperature alarm buzzer sounds and must be switched off by pushing the relative button.

### 4.2 Refrigerator compartment temperature alarm (optional)

Some models feature the refrigerator compartment temperature alarm which activates when the temperature in the refrigerator compartment overcomes the pre-set limit (between  $+11^{\circ}\text{C}$  and  $+15^{\circ}\text{C}$  according to the versions).

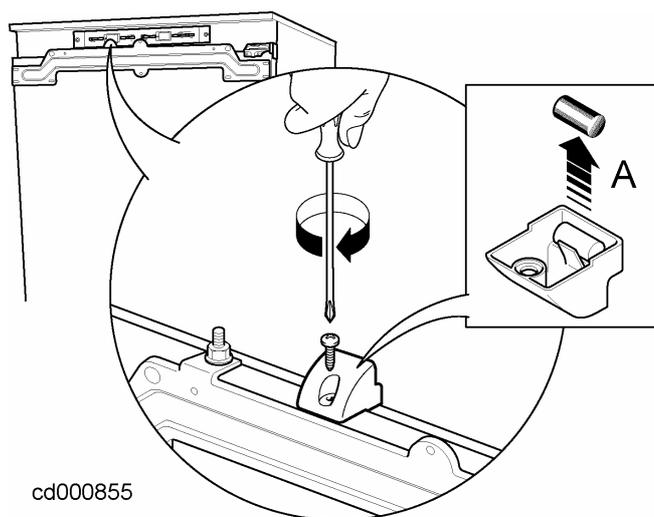
At the end of the Holiday function, the temperature alarm will be switched on with a two-hour delay.

### 4.3 Door open alarm (optional)

In some models the open door alarm is featured ( see the user manual of the specific model! ).

The open door alarm can be activated by a sensor (reed-element) placed on the display board (VB) which detects the presence of a magnet placed on the refrigerator door or by a switch.

As the picture shows, the magnet can be replaced only in the built-in models (in the Free-Standing models the magnet is foamed inside the door, therefore it cannot be replaced)



The switching on times of the alarm are:

- Freezer door: 80 seconds;
- Refrigerator door: 5 minutes.

#### **4.4 Electronic boards incompatibility alarm**

If the display shows the letter **E** after the replacement of an electronic board (display or power), it means that there is an incompatibility between the electronic boards and the appliance cannot operate.

To solve the problem, it is necessary to verify the spare part nos. of the electronic boards.

#### **4.5 Eeprom error alarm**

If the display shows the letter **P**, it means that one or more electronic boards are faulty in writing/reading the Eeprom parameters) and the appliance cannot operate.

To solve the problem, it is necessary to replace the electronic boards (power and display).

## 5. NTC-SENSORS FAULT

Abnormal resistance values are interpreted by the electronic as a fault sensor and the display shows a symbol.

If an air sensor is faulty, the compressor will stay on for about 20 minutes and off for 30 minutes.

In case of fault of the sensors:

- **Refrigerator (faulty air sensor):** the refrigerator display will show symbol 
- **Refrigerator (faulty evaporator sensor):** the refrigerator display will show symbol   
(depending on the electronic version)  
the refrigerator continues to operate thanks only to the indications of the air sensor (for more details please refer to parag. 7.3).
- **Freezer (faulty air sensor):** the freezer display will show the symbol 

*At extreme temperatures, alarm levels may be activated even if the sensors are not faulty. The faulty codes for temperatures higher than + 39°C and lower than - 39°C must not be considered.*

The NTC sensors have the following temperature-resistance characteristic:

° C	Δ	OHM
10	±0.6	5348
9	±0.6	5611
8	±0.6	5888
7	±0.6	6182
6	±0.6	6491
5	±0.4	6818
4	±0.4	7164
3	±0.4	7529
2	±0.4	7916
1	±0.4	8325
0	±0.4	8758
-1	±0.4	9216
-2	±0.4	9701
-3	±0.4	10215
-4	±0.4	10759
-5	±0.4	11337
-6	±0.6	11949
-7	±0.6	12598
-8	±0.6	13288
-9	±0.6	14019
-10	±0.6	14795
-11	±0.7	15620
-12	±0.7	16497
-13	±0.7	17429
-14	±0.7	18420
-15	±0.7	19475
-16	±0.8	20596
-17	±0.8	21791
-18	±0.8	23063
-19	±0.8	24418
-20	±0.8	25862
-21	±0.9	27402
-22	±0.9	29045
-23	±0.9	30797
-24	±0.9	32668
-25	±0.9	34666
-26	±1	36800
-27	±1	39082
-28	±1	41521
-29	±1	44131
-30	±1	46921
-31	±1	49910
-32	±1	53111
-33	±1	56541
-34	±1	60218
-35	±1	64161
-36	±1	68393
-37	±1	72932
-38	±1	77808
-39	±1	83046
-40	±1	88577

## 6. DISPLAY SYMBOLS

### Refrigerator

"0" – "39"	steady light:	It indicates the average temperature in the refrigerator in appliances with double display.
"0" – "9"	steady light:	It indicates the average temperature in the refrigerator in appliances with single display.
"2" – "8"	flashing light:	It appears during the temperature setting operation. It disappears 5 seconds from the end of the temperature setting.
"1" – "9"	flashing light:	It appears during the temperature setting operation. It disappears 5 seconds after the end of the temperature setting (some Electrolux models).
"-"	steady light:	It indicates that the refrigerator temperature is higher than 9°C and the display is single.
"0"	steady light:	It indicates that the refrigerator temperature is between -2°C and 0°C.
"-"	flashing light:	It indicates that the refrigerator temperature is lower than -2°C.
"H"	steady light:	It indicates the Holiday function.
"A" or "SP"	steady light:	It indicates the super cooling function.
	steady light:	Air sensor fault.
	steady light:	Evaporator sensor faulty.
"E"	steady light:	It indicates incompatibility between the electronic boards. Solution: check the part nos. of the electronic boards.
"P"	steady light:	It indicates an Eeprom error (wrong or not readable parameters). Solution: replace both electronic boards (power and display).

## Freezer

"+39" – "-39" steady light:	It shows the highest temperature in the freezer.
"-15" – "-24" flashing light:	It is indicated during the temperature setting operation. It disappears 5 sec after the end of the temperature setting.
"+39" – "-39" flashing light:	It appears when the freezer temperature is higher than the alarm value (between - 8°C and -12°C according to the models) and when this temperature is returned to lower value after the alarm.
"+39" – "-8" steady light:	It indicates the highest temperature in the compartment after a current interruption (shown for 5 sec after pushing reset button. Simultaneously the pilot lamp switches off).
"A" o "SP" steady light:	It indicates the super cooling function.
 steady light:	Air sensor fault in the freezer.
"E" steady light:	It indicates incompatibility between the electronic boards. Solution: check the part nos. of the electronic boards.
"P" steady light:	It indicates an Eeprom error (wrong or not readable parameters). Solution: replace both electronic boards (power and display).

## 7. SPECIAL FUNCTIONS

### 7.1 Changing the temperature area of the freezer (optional)

The changing can be carried out currently only for the models produced in Mariestad (Sweden).

If the customer experiences excessive deviations between measured and displayed temperatures, the technician can decrease the temperature area of 3°C.

To obtain this variation, with the appliance on, it is necessary:

1. Press the Super button and the freezer temperature increase simultaneously or press the increase button and decrease button simultaneously for at least 5 seconds. (this variant has been necessarily introduced because in some versions the Super button is not featured).
2. After 5 seconds the buzzer sounds with a long signal, which confirms that the temperature area has been decreased.

In this way the displayed temperature is reduced by 3° C. For the same set temperature the compressor will function between cut-in and cut-out temperatures increased by 3° C. In this way an average temperature is displayed and not the temperature of the warmest part in the freezer compartment.

To display again the normal temperature, repeat the same operations described in point 1. Now the buzzer will sound with a short signal to confirm that the original conditions have been reset.

### 7.2 Devices check programme

This function enables to check if all the Leds and some loads operate correctly.

To activate this function it is necessary disconnect the power supply of the appliance, and then:

- Press the temperature increase button within 15 seconds after the connection of the power supply to the appliance;
  - Wait 5 seconds before releasing the button.
- The buzzer sounds with a long signal, all the Leds and the digits of the display board (VB) are on and all the loads of the power board are activated;
  - By opening the door the alarm Led switches off; for the 4 stars appliances the Super Led switches off;
  - When one of the buttons is pressed the buzzer sounds and, if the evaporator sensor is featured, the temperature measured by this sensor is displayed. This is the only way to display the temperature measured by the evaporator NTC sensor.
  - If a NTC sensor is disconnected, the display and the LEDs flash (this is valid only for the two-compressor appliances).

The control programme is interrupted automatically after 1 minute and the compartment returns to normal mode.

### 7.3 Check programme of the EEPROM code, the software version and the failure code

It is possible to display a sequence of digits containing:

- 1) EEPROM code,
- 2) the software version code of the power board and
- 3) a failure code of the temperature NTC sensors.

To activate this function it is necessary to disconnect the appliance from the power supply, press the freezer temperature decrease button for 5 seconds (if cooler the refrigerator temperature decrease button) within 15 seconds after the reconnection of the power supply to the appliance.

Once this function has been activated the following operations are carried out automatically:

- The display switches off and the buzzer sounds with a long signal.
- The display shows the last 4 digits of the **EEPROM code** alternated by a short signal of the buzzer. The last displayed digit is not followed by a short signal.
- The display switches off and the buzzer sounds with a long signal.

- The display shows the **software version** which consists of the last six digits/letters in sequence alternated by a short signal of the buzzer. The last displayed digit is not followed by a short signal.
- The display switches off and the buzzer sounds with a long signal for the third time.
- The display shows the **letter E** followed by a short signal of the buzzer and then a **digit** (failure code)
- The display switches off and the buzzer sounds with a long signal for the fourth time.
- The display returns to a normal condition.

The failure codes currently activated are:

- E1: error in the evaporator NTC sensor;
- E2: error in the room temperature NTC sensor;
- E3: error in the evaporator NTC sensor and in the room temperature NTC sensor.

#### Example:

If the **software code** is NFBC0A01, the **EEPROM code** is C0002 and a failure of the room NTC sensor is detected, with this procedure the following operations are carried out:

- 1) The display clears and the buzzer sounds with a long signal
- 2) The display shows 0 (EEPROM code)
- 3) The buzzer sounds with a short signal
- 4) The display shows 0 (second digit EEPROM code)
- 5) The buzzer sounds with a short signal
- 6) The display shows 0 (third digit EEPROM code)
- 7) The buzzer sounds with a short signal
- 8) The display shows 2 (fourth digit EEPROM code)
- 9) The display clears and the buzzer sounds with a long signal
- 10) The display shows b (software code)
- 11) The buzzer sounds with a short signal
- 12) The display shows C (software code)
- 13) The buzzer sounds with a short signal
- 14) The display shows 0 (software code)
- 15) The buzzer sounds with a short signal
- 16) The display shows A (software code)
- 17) The buzzer sounds with a short signal
- 18) The display shows 0 (software code)
- 19) The buzzer sounds with a short signal
- 20) The display shows 1 (software code)
- 21) The buzzer clears and the buzzer sounds with a long signal
- 22) The display shows E (software code)
- 23) The buzzer sounds with a short signal
- 24) The display shows 2 (software code)
- 25) The display clears and the buzzer sounds with a long signal
- 26) The display returns to a normal condition

### **7.4 EEPROM Error function**

If the system detects a reading or writing error of the EEPROM parameters, the system activates the following procedure:

- The default EEPROM parameters are loaded
- The letter **P** is displayed
- It deactivates the open door alarm

It is possible to check if an error has occurred in the EEPROM memory and to activate this test function it is necessary to push Super button within 1 min after the switching on (the Super button must be switched off). If an EEPROM error occurs the buzzer sounds with a long signal (5 seconds).

### 7.5 Fast guide to the special functions

In the table below are described, shortly, all the special functions for the user and the Service technicians.

	Function	Starting conditions	Function activation	Function interruption	Short description / Notes
	↓		<b>Buttons</b>		↓
<b>SERVICE</b>	<b>Temperature field variation of the freezer (Sweden models)</b>	Appliance connected and ON	→ Super Temperature decrease + Temperature increase for 5 sec	→ Appliance ON	→ After 5 sec the buzzer sounds with a long signal confirming that temperature is decreasing. By repeating the operation the buzzer sounds with a short signal and resets at the starting conditions.
	<b>EEPROM Error</b>	Appliance ON	→ ON ↓ Super button within one minute	→ Appliance ON	→ If an EEPROM error has occurred the buzzer sounds with a long signal;
	<b>EEPROM Code Software version Fault code</b>	Disconnect and reconnect the appliance	→ Temperature decrease for 5 sec. within 15 sec after reconnection of the appliance	→ At the end of the procedure it returns automatically to a normal condition	→ The display switches off, the buzzer sounds with a long signal; the display shows 4 digits of EEPROM code alternated by a short signal; the last digit is not followed by a short signal: the display switches off, the buzzer sounds with a long signal; the display shows digits/letters of the software version code alternated by a short signal of the buzzer: the last digit is not followed by a short signal; the display switches off, the buzzer sounds with a long signal; the display shows letter E; then the buzzer sounds with a short signal and fault code appears; the display switches off and buzzer sounds with a long signal.
	<b>LEDs controls and loads</b>	Disconnect and reconnect the appliance	→ Temperature increase for 5 sec. Within 15 sec after reconnection of the appliance	→ Programme interrupted automatically after 1 min.	→ The buzzer sounds with a long signal, all LEDs and digits of the display board are on; all the loads of the power board are on; by opening the door alarm LED switches off (for the 4 star appliances the led Super switches off); when an alarm button is pressed it sounds, and if the evaporator sensor is featured, the evaporator temperature is displayed.
	<b>Demo Mode</b>	Compartment internal temperature higher than 10°C	→ Temperature decrease + On/Off button for 5 sec	→ Disconnect the appliance or repeat the operation of activation	→ The display board is on; refrigerator compartment display shows +5°C and freezer compartment -18°C at low frequency; by opening the door the light switches on; compressor always Off

## **8. VERSIONS**

### **8.1 Version for 4 stars**

The description of the functions is the same as of the refrigerator compartment with the only difference for the fast freezing function and the introduction of a balancing heater with automatic activation.

#### **8.1.1 Fast freezing function in the 4 stars (FROSTMATIC)**

The function activates by pushing fast freezing button, the corresponding led lights and, if activated, the letter "A" appears on the display.

With this function the temperature is automatically set at +3°C for about 48 hours.

If you want to deactivate the function before time expires, just press the fast freezing button again.

By activating this function the balancing heater is powered or the refrigerator compartment lamp with full power.

The compressor is not powered continuously but functions with particular thermostatic conditions (temperature control of +3°C).

#### **8.1.2 Balancing heater with automatic activation ( 4 stars )**

The 4 star model features a balancing heater which is automatically activated when the NTC room sensor, placed on the display board (VB), detects a room temperature lower than +15°C.

Without the balancing heater, it has been decided to power the internal lamp partially to obtain the same result with a 1 minute delay after the door closure.

### **8.2 Version for DYNAMIC COOLER**

#### **8.2.1 Differences between the dynamic cooler model and a traditional model**

The Dynamic Cooler models are featured with a fan which distributes the air in the refrigerator compartment uniforming the temperatures and reducing to 1°C the temperature vertical gradient of the compartment.

This fan switches on immediately when the cut-in temperature both of the of the NTC air sensor and of the evaporator NTC sensor while the compressor starts with some delay (2 min).

At first start of the compartment the fan and the compressor are powered at the same time.

When the air sensor reaches the cut-out temperature the compressor switches off and with some delay also the fan (5 min).

Whenever the door is opened the fan switches off immediately while the compressor switches off with some delay.

After 18 hours of operation of the compressor a forced defrosting procedure of the evaporator is started which lasts 45 minutes and during which the fan is switched on and the compressor switched off.

During this extra defrosting the shown temperature value is fixed and the same as the last displayed value before the start of this defrosting. In some versions the display shows the letter "C".

#### **8.2.2 Quick Chill**

In these models it is possible to activate the Quick Chill function by pressing the relative button; with this mode the fan functions continuously, the appliance operates with a set temperature of 2°C and the display shows the letter "C".

### **8.2.3 Effect on the loads of the door opening in DME (Dynamic Mini Evaporator) appliances**

When the door is opened it occurs as follows:

- The fan is immediately stopped;
- If the door remains open for more than a minute, the compressor stops.

## Appendix A

### Revisions

REVISION	DATE	DESCRIPTION
00	10/2007	Document creation
01	01/2008	Added symbol of evaporator sensor faulty in chapters 5 and 6