Technische Documentatie BIG FRED (388060)

2. APPLIANCE TESTED

The specifications for the tested appliance are as follows:

Manufacturer:	Euromac B.V.		
Model:	FRED40/20 Art.nr.388060		
Serial number:	N		
Electrical data	Rated voltage	100-240	V
	Rated frequency	50/60	Hz
	Rated input current	2,5	A
	Defrosting power	N	W
	Rated energy consumption	192	kWh/year
Rated Volumes	Total volume	58	L
	Volume of fresh food/ "2-star" frozen food storage compartment (L)	N/58	L
Rated freezing capacity		N	kg/24h
Climate class		SN/N/ST/T	
Refrigerant		R134a	
Compartment type		2-star frozen food	
How many external doors does it have?		2	
Frost-free or not.		Not	
Defrost controller type (variable, run-time, fixed time, other).		N	
Condenser type (grill (stack)/skin (smooth wall)/fan forced (including direction of the exhaust)/other, as applicable).		Fan forced	
Condenser location (back/side/underneath, as applicable).		Underneath	
Features (convenience feature/automatic ice maker/ through the door ice and/or water dispenser/ other).		N	
Compressor details: single speed, variable speed, multiple compressors.		Variable speed	
For variable defrost controls, min and max defrost interval (where known)		N	
Ambient controlled anti- condensation heater (with, without).		Without	
For user controlled anti-condensation heaters, describe the switch and any associated controls.		N	
Is the appliance a built-in product?		No	

5. ENERGY CONSUMPTION TEST

Energy consumption tests were measured in accordance with EN 62552-1:2020, EN 62552-2:2020, EN 62552-3:2020, EU 2017/1369, EU 2019/2016, EU 2019/2019, (EU) 2021/340 and (EU) 2021/341.

Test method

The temperatures in the fresh food compartment were measured at three locations using the copper or brass cylinders. The temperatures in frozen storage compartment were measured at five locations using the copper or brass cylinders.

For no defrost control cyle or where stability is established for a period between defrosts (Case SS1), after steady state have been attained, the test period shall consist of three blocks and each block of test data shall be equal in length consisting of n temperature control cycles, adjacent and not less than 4 h in duration. The temperature T_{ss1-i} of each compartment i and the average power P_{ss1} is determined as the average of all measured values included in the time period covered by Blocks A, B and C.

For steady state determined between defrosts (Case SS2), data shall be used between the start of two defrost and recovery periods to calculate the steady state power. The methods of calculating P_{ss2} and T_{ss2-i} refer to Fomula 12 and 13.

Requirements

When the steady state is attained, Case SS1 or SS2 acceptance criteria shall be met. The temperature of fresh food compartment shall be at or below 4℃. The temperaure of three-star and four-star compartment shall be at or below -18℃. The temperaure of two-star compartment shall be at or below -12℃.

Test conditions			
Ambient temperature:		16 °C	32 °C
Power supply:		230 V 50 Hz	230 V 50 Hz
Temperature control settings:		ECO L:-11, R:-16/ ECO L:-9, R:-14	ECO L:-12, R:-15/ ECO L:-9, R:-12
Steday state power, P_{ss}(W)		14,158/12,051	28,403/25,201
Steady state Temperature, T_{ss}(℃)	Fresh food compartment	N	N
	"2-star"Frozen food compartment L	-13,5/-11,2	-13,7/-11,4

	"2-star"Frozen food compartment R	-12,6/-11,6	-13,1/-11,2
	cellar compartment	N	N
Defrost and recovery Energy consumption, ΔE_{df} (W · h)		N	N
Defrost Interval, Δt_{df} (h)		N	N
Temperature change during defrost and recovery, ΔTh_{df} (K · h)	Fresh food compartment	N	N
	"2-star"Frozen food compartment L	N	N
	"2-star"Frozen food compartment R	N	N
	cellar storage compartment	N	N
Average temperature, $T_{average}$	Fresh food compartment	N	N
	"2-star"Frozen food compartment L	N	N
	"2-star"Frozen food compartment R	N	N
	cellar storage compartment	N	N
Energy consumption E_{16} and E_{32}(kWh/24hrs)		0,309	0,637
Daily energy consumption, E_{daily} (kWh/24hrs)		0,473	

Test requirements and results

Item	Rated	Measured	Deviation
Overall dimensions (width × depth × height, mm)	750×450×615	750×450×615	--
Space required in use (width × depth × height, mm)	800×500×665	800×500×665	--
Overall space required in use (width × depth × height, mm)	800×500×1065	800×500×1065	--
Fresh food storage compartment(L)	N	N	N
"2-star" frozen food storage compartment(L)	58	58,0	0
Total volume (L)	58	58,0	0

DETAILS OF ENERGY EFFICIENCY GRADE CALCULATIONS

Parameters	Rated value	Measured value
Climate class:	SN/N/ST/T	
Volume V_c (L)	V fresh food compartment: N V 2-star frozen food compartment: 58	V fresh food compartment: N V 2-star frozen food compartment: 58,0
- n is the number of compartments	1	
Total volume V (L)	58	58
Thermodynamic parameter r_c	For fresh food compartment: N For "2-star" frozen food compartment: 1,80	
Modeling parameter N_c	For fresh food compartment: N For "2-star" frozen food compartment: 138	
Modeling parameter M_c	For fresh food compartment: N For "2-star" frozen food compartment: 0,15	
Defrost factor A_c	For fresh food compartment: N For "2-star" frozen food compartment: 1,00	
Built-in factor B_c	For fresh food compartment: N For "2-star" frozen food compartment: 1,00	
Combi parameter C	1,00	1,00
Door heat loss factor D	1,00	
Standard annual energy consumption SAE (kWh/a) $$SAE = C \times D \times \sum_{c=1}^{n} A_c \times B_c \times [V_c/V] \times (N_c + V \times r_c \times M_c)$$	153,66	153,66
E_{16}(Energy consumption at 16℃) (kWh/24h)	/	0,309
E_{32}(Energy consumption at 32℃) (kWh/24h)	0,637	0,637
E_{25}(Energy consumption at 25℃) (kWh/24h)	N	N
Daily energy consumption E_{daily} (kWh/24h) $$E_{daily} = 0,5 \times (E_{16} + E_{32})$$	0,473	0,473
For low noise refrigerating appliance $$E_{daily} = E_{25}$$	N	N

Auxiliary energy E_{aux} (kWh/a)	0	0
Load factor L	0,9	
Annual energy consumption AE (kWh/a) $AE = 365 \times E_{daily}/L + E_{aux}$	192	191,83
EEI (%) $EEI = AE/SAE.$	125,0	124,8
Energy efficiency classes*	F	F
EEI limits for E*	100% $<$ EEI $\leqslant$ 125%	
EEI limits for minimum energy performance requirements**	EEI $\leqslant$ 125%	
If following the EEI limits or not**	Pass	Pass

Remark*: the energy efficiency class is determined according to table 1 of ANNEX II of COMMISSION DELEGATED REGULATION (EU) 2019/2016 and (EU) 2021/340;

Remark**: From 1 March 2021, the maximum EEI for refrigerating appliances is determined according to table 1 of ANNEX II of COMMISSION REGULATION (EU) 2019/2019 and (EU) 2021/341.