

# froling

## Product data PE1e Pellet



All errors and omissions excepted.

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# 1 Technical data

## 1.1 PE1e Pellet 45-60

Description		PE1e Pellet			
		45	50	55	60
Nominal output range	kW	13.5 - 45.0	15.0 – 50.0	16.5 – 55.0	18.0 – 60.0
Boiler efficiency (NCV) at nominal load/partial load	%	95.2 / 95.4	95.2 / 95.4	95.2 / 95.4	95.4 / 95.4
Electrical connection		230V / 50Hz / fused C16A			
Boiler weight (without water content)	kg	650			
Total boiler capacity (water)	l	113			
Pellet container capacity		170			
Ash container capacity combustion chamber / heat exchanger		37 / 12			
Available feed height of pump <sup>1)</sup> (with $\Delta T = 20K$ )	mbar	560	500	430	380
Max. permitted operating temperature	°C	90			
Permitted operating pressure	bar	4			
Boiler class as per EN 303-5: 2012		5			
Airborne sound level	dB(A)	< 70			
Permitted fuel as per EN ISO 17225 <sup>2)</sup>		Fuel as per EN ISO 17225 – Part 2: wood pellets Class A1 / D06			
Test book number		PB 187	PB 189	PB 191	PB 193

1. Pump output less water resistance in the boiler  
2. Detailed information on the fuel can be found in the operating instructions in the section entitled "Permitted fuels"

## Product data in accordance with the regulations (EU) 2015/1187 and 2015/1189

Name		PE1e Pellet			
		45	50	55	60
Heating up mode		automatic			
Condensing boiler		No			
Solid fuel boiler for combined heat and power		No			
Combined heating system		No			
Storage tank volume		<a href="#">↪ "Storage tank" [▶ 10]</a>			
Preferred fuel		Compressed wood in the form of pellets			
Useful heat delivered at rated heat output ( $P_n$ )	kW	45	50	55	60
Useful heat delivered at 30% of rated heat output ( $P_p$ )		13.5	15.0	16.5	18.0
Fuel efficiency at rated heat output ( $\eta_n$ )	%	88.3	88.3	88.3	88.3
Fuel efficiency at 30% of rated heat output ( $\eta_p$ )		88.4	88.4	88.4	88.4
Auxiliary current consumption at rated heat output ( $e_{l_{max}}$ )	kW	0.065	0.069	0.073	0.077
Auxiliary current consumption at 30% of rated heat output ( $\eta_p$ )		0.030	0.032	0.033	0.035
Auxiliary current consumption in standby mode ( $P_{SB}$ )		0.013	0.013	0.013	0.013

Name		PE1e Pellet			
		45	50	55	60
Energy efficiency class of the boiler		A+	A+	A+	A+
Energy efficiency index (EEI) of the boiler		124	124	124	124
Temperature controller used		Lambdatronic P 3200			
Class of the temperature controller		II	II	II	II
Contribution of the temperature controller to the energy efficiency index of a combined system	%	2	2	2	2
Energy efficiency index (EEI) of the combined boiler and controller <sup>1)</sup>		126	126	126	126
Energy efficiency class of the combined boiler and controller <sup>1)</sup>		A++	A++	A++	A++
Heating space annual rate of use $\eta_s$	%	85	85	85	85
Annual space heating emissions of dust (PM) <sup>2)</sup>	mg/m <sup>3</sup>	10	10	10	10
Annual space heating emissions of gaseous organic compounds (GOC) <sup>2)</sup>	mg/m <sup>3</sup>	1	1	1	1
Annual space heating emissions of carbon monoxide (CO) <sup>2)</sup>	mg/m <sup>3</sup>	11	11	11	10
Annual space heating emissions of nitrogen oxides (NOx) <sup>2)</sup>	mg/m <sup>3</sup>	125	127	129	131

1. The information on the energy efficiency index EEI of the combined boiler and controller and the energy efficiency class of the combined boiler and controller applies only if the Fröling control components supplied as standard with the respective boiler are used.

2. Specified emission values refer to dry flue gas with an oxygen content of 10 % and under standard conditions at 0°C and 1013 millibars. The evaluation values reported are rounded to the nearest whole number. Values labelled with "<" represent the relative detection limit of the measuring methods or measuring device configurations used.

## 1.2 PE1e Pellet 45-60 ESP

Description		PE1e Pellet ESP			
		45	50	55	60
Nominal output range	kW	13.5 - 45.0	15.0 – 50.0	16.5 – 55.0	18.0 – 60.0
Boiler efficiency (NCV) at nominal load/partial load	%	95.1 / 95.7	94.6 / 95.7	94.3 / 95.8	93.9 / 95.8
Electrical connection		230V / 50Hz / fused C16A			
Boiler weight (without water content)	kg	650			
Total boiler capacity (water)	l	113			
Pellet container capacity		170			
Ash container capacity combustion chamber / heat exchanger		37 / 12			
Available feed height of pump <sup>1)</sup> (with $\Delta T = 20K$ )	mbar	560	500	430	380
Max. permitted operating temperature	°C	90			
Permitted operating pressure	bar	4			
Boiler class as per EN 303-5: 2012		5			
Airborne sound level	dB(A)	< 70			
Permitted fuel as per EN ISO 17225 <sup>2)</sup>		Fuel as per EN ISO 17225 – Part 2: wood pellets Class A1 / D06			
Test book number		PB 188	PB 190	PB 192	PB 194

1. Pump output less water resistance in the boiler  
2. Detailed information on the fuel can be found in the operating instructions in the section entitled "Permitted fuels"

### Product data in accordance with the regulations (EU) 2015/1187 and 2015/1189

Name		PE1e Pellet ESP			
		45	50	55	60
Heating up mode		automatic			
Condensing boiler		No			
Solid fuel boiler for combined heat and power		No			
Combined heating system		No			
Storage tank volume		➔ "Storage tank" [▶ 10]			
Preferred fuel		Compressed wood in the form of pellets			
Useful heat delivered at rated heat output ( $P_n$ )	kW	45	50	55	60
Useful heat delivered at 30% of rated heat output ( $P_p$ )		13.5	15.0	16.5	18.0
Fuel efficiency at rated heat output ( $\eta_n$ )	%	88.1	87.7	87.4	87.1
Fuel efficiency at 30% of rated heat output ( $\eta_p$ )		88.9	88.8	88.8	88.7
Auxiliary current consumption at rated heat output ( $e_{l_{max}}$ )	kW	0.088	0.097	0.106	0.114
Auxiliary current consumption at 30% of rated heat output ( $\eta_p$ )		0.055	0.057	0.059	0.061
Auxiliary current consumption in standby mode ( $P_{SB}$ )		0.013	0.013	0.013	0.013
Energy efficiency class of the boiler		A+	A+	A+	A+
Energy efficiency index (EEI) of the boiler		124	124	124	124
Temperature controller used		Lambdatronic P 3200			

Name		PE1e Pellet ESP			
		45	50	55	60
Class of the temperature controller		II	II	II	II
Contribution of the temperature controller to the energy efficiency index of a combined system	%	2	2	2	2
Energy efficiency index (EEI) of the combined boiler and controller <sup>1)</sup>		126	126	126	126
Energy efficiency class of the combined boiler and controller <sup>1)</sup>		A++	A++	A++	A++
Heating space annual rate of use $\eta_s$	%	85	85	85	85
Annual space heating emissions of dust (PM) <sup>2)</sup>	mg/m <sup>3</sup>	2	2	2	2
Annual space heating emissions of gaseous organic compounds (GOC) <sup>2)</sup>	mg/m <sup>3</sup>	1	1	1	1
Annual space heating emissions of carbon monoxide (CO) <sup>2)</sup>	mg/m <sup>3</sup>	7	7	7	6
Annual space heating emissions of nitrogen oxides (NOx) <sup>2)</sup>	mg/m <sup>3</sup>	133	134	135	136

1. The information on the energy efficiency index EEI of the combined boiler and controller and the energy efficiency class of the combined boiler and controller applies only if the Fröling control components supplied as standard with the respective boiler are used.

2. Specified emission values refer to dry flue gas with an oxygen content of 10 % and under standard conditions at 0°C and 1013 millibars.  
The evaluation values reported are rounded to the nearest whole number.  
Values labelled with "<" represent the relative detection limit of the measuring methods or measuring device configurations used.

### 1.3 PE1e Pellet condensing boiler

Description		PE1e Pellet calorific value			
		45	50	55	60
Nominal output range	kW	14.9 - 49.5	16.5 - 55.0	18.2 - 60.5	19.8 - 66.0
Boiler efficiency (NCV) at nominal load/partial load	%	102.9 / 102.8	102.7 / 102.8	102.6 / 102.8	102.4 / 102.8
Electrical connection		230V / 50Hz / fused C16A			
Boiler weight (without water content)	kg	750			
Total boiler capacity (water)	l	145			
Pellet container capacity		170			
Ash container capacity combustion chamber / heat exchanger		37 / 12			
Available feed height of pump <sup>1)</sup> (with $\Delta T = 20K$ )	mbar	460	390	300	230
Necessary water pressure for the flushing device	bar	3			
Water consumption of the flushing device at 3 bar water pressure	l/min	20			
Max. permitted operating temperature	°C	90			
Permitted operating pressure	bar	4			
Boiler class as per EN 303-5:2012		5			
Airborne sound level	dB(A)	< 70			
Permitted fuel as per EN ISO 17225 <sup>2)</sup>		Fuel as per EN ISO 17225 – Part 2: wood pellets Class A1 / D06			
Test book number		PB 195	PB 197	PB 199	PB 201

1. Pump output less water resistance in the boiler  
2. Detailed information on the fuel can be found in the operating instructions in the section entitled "Permitted fuels"

#### Product data in accordance with the regulations (EU) 2015/1187 and 2015/1189

Name		PE1e Pellet calorific value			
		45	50	55	60
Heating up mode		automatic			
Condensing boiler		Yes			
Solid fuel boiler for combined heat and power		No			
Combined heating system		No			
Storage tank volume		↻ "Storage tank" [▶ 10]			
Preferred fuel		Compressed wood in the form of pellets			
Useful heat delivered at rated heat output ( $P_n$ )	kW	49.5	55.0	60.5	66.0
Useful heat delivered at 30% of rated heat output ( $P_p$ )		14.9	16.5	18.2	19.8
Fuel efficiency at rated heat output ( $\eta_n$ )	%	95.1	95.0	94.8	94.7
Fuel efficiency at 30% of rated heat output ( $\eta_p$ )		95.1	95.1	95.1	95.1
Auxiliary current consumption at rated heat output ( $e_{l_{max}}$ )	kW	0.084	0.095	0.105	0.116
Auxiliary current consumption at 30% of rated heat output ( $\eta_p$ )		0.040	0.043	0.045	0.048

Name		PE1e Pellet calorific value			
		45	50	55	60
Auxiliary current consumption in standby mode ( $P_{SB}$ )		0.013	0.013	0.013	0.013
Energy efficiency class of the boiler		A++	A++	A++	A++
Energy efficiency index (EEI) of the boiler		134	134	134	134
Temperature controller used		Lambdatronic P 3200			
Class of the temperature controller		II	II	II	II
Contribution of the temperature controller to the energy efficiency index of a combined system	%	2	2	2	2
Energy efficiency index (EEI) of the combined boiler and controller <sup>1)</sup>		136	136	136	136
Energy efficiency class of the combined boiler and controller <sup>1)</sup>		A++	A++	A++	A++
Heating space annual rate of use $\eta_s$	%	91	91	91	91
Annual space heating emissions of dust ( $PM$ ) <sup>2)</sup>	mg/m <sup>3</sup>	7	7	7	7
Annual space heating emissions of gaseous organic compounds (GOC) <sup>2)</sup>	mg/m <sup>3</sup>	1	1	1	1
Annual space heating emissions of carbon monoxide ( $CO$ ) <sup>2)</sup>	mg/m <sup>3</sup>	13	13	12	12
Annual space heating emissions of nitrogen oxides ( $NO_x$ ) <sup>2)</sup>	mg/m <sup>3</sup>	125	127	128	129

1. The information on the energy efficiency index EEI of the combined boiler and controller and the energy efficiency class of the combined boiler and controller applies only if the Fröling control components supplied as standard with the respective boiler are used.

2. Specified emission values refer to dry flue gas with an oxygen content of 10 % and under standard conditions at 0°C and 1013 millibars. The evaluation values reported are rounded to the nearest whole number. Values labelled with "<" represent the relative detection limit of the measuring methods or measuring device configurations used.

## 1.4 PE1e Pellet condensing boiler ESP

Description		PE1e Pellet condensing boiler ESP			
		45	50	55	60
Nominal output range	kW	14.9 - 49.5	16.5 - 55.0	18.2 - 60.5	19.8 - 66.0
Boiler efficiency (NCV) at nominal load/partial load	%	103.0 / 101.8	102.8 / 101.8	102.6 / 101.8	102.4 / 101.9
Electrical connection		230V / 50Hz / fused C16A			
Boiler weight (without water content)	kg	750			
Total boiler capacity (water)	l	145			
Pellet container capacity		170			
Ash container capacity combustion chamber / heat exchanger		37 / 12			
Available feed height of pump <sup>1)</sup> (with $\Delta T = 20K$ )	mbar	460	390	300	230
Necessary water pressure for the flushing device	bar	3			
Water consumption of the flushing device at 3 bar water pressure	l/min	20			
Max. permitted operating temperature	°C	90			
Permitted operating pressure	bar	4			
Boiler class as per EN 303-5:2012		5			
Airborne sound level	dB(A)	< 70			
Permitted fuel as per EN ISO 17225 <sup>2)</sup>		Fuel in accordance with EN ISO 17225 - Part 2: Wood pellets class A1 / D06			
Test book number		PB 196	PB 198	PB 200	PB 202

1. Pump output less water resistance in the boiler  
2. Detailed information on the fuel can be found in the operating instructions in the section entitled "Permitted fuels"

### Product data in accordance with the regulations (EU) 2015/1187 and 2015/1189

Name		PE1e Pellet condensing boiler ESP			
		45	50	55	60
Heating up mode		automatic			
Condensing boiler		Yes			
Solid fuel boiler for combined heat and power		No			
Combined heating system		No			
Storage tank volume		<a href="#">↪ "Storage tank" [► 10]</a>			
Preferred fuel		Compressed wood in the form of pellets			
Useful heat delivered at rated heat output ( $P_n$ )	kW	49.5	55.0	60.5	66.0
Useful heat delivered at 30% of rated heat output ( $P_p$ )		14.9	16.5	18.2	19.8
Fuel efficiency at rated heat output ( $\eta_n$ )	%	95.2	95.0	94.9	94.7
Fuel efficiency at 30% of rated heat output ( $\eta_p$ )		94.2	94.2	94.2	94.3
Auxiliary current consumption at rated heat output ( $e_{l_{max}}$ )	kW	0.098	0.112	0.125	0.138
Auxiliary current consumption at 30% of rated heat output ( $\eta_p$ )		0.050	0.053	0.056	0.059

Name		PE1e Pellet condensing boiler ESP			
		45	50	55	60
Auxiliary current consumption in standby mode ( $P_{SB}$ )		0.013	0.013	0.013	0.013
Energy efficiency class of the boiler		A++	A++	A++	A++
Energy efficiency index (EEI) of the boiler		134	134	134	134
Temperature controller used		Lambdatronic P 3200			
Class of the temperature controller		II	II	II	II
Contribution of the temperature controller to the energy efficiency index of a combined system	%	2	2	2	2
Energy efficiency index (EEI) of the combined boiler and controller <sup>1)</sup>		136	136	136	136
Energy efficiency class of the combined boiler and controller <sup>1)</sup>		A++	A++	A++	A++
Heating space annual rate of use $\eta_s$	%	90	90	90	91
Annual space heating emissions of dust (PM) <sup>2)</sup>	mg/m <sup>3</sup>	2	2	2	2
Annual space heating emissions of gaseous organic compounds (GOC) <sup>2)</sup>	mg/m <sup>3</sup>	1	1	1	1
Annual space heating emissions of carbon monoxide (CO) <sup>2)</sup>	mg/m <sup>3</sup>	29	28	27	26
Annual space heating emissions of nitrogen oxides (NOx) <sup>2)</sup>	mg/m <sup>3</sup>	135	136	136	137

1. The information on the energy efficiency index EEI of the combined boiler and controller and the energy efficiency class of the combined boiler and controller applies only if the Fröling control components supplied as standard with the respective boiler are used.

2. Specified emission values refer to dry flue gas with an oxygen content of 10 % and under standard conditions at 0°C and 1013 millibars. The evaluation values reported are rounded to the nearest whole number. Values labelled with "<" represent the relative detection limit of the measuring methods or measuring device configurations used.

## 2 Storage tank

In principle it is not necessary to use a storage tank for the system to run smoothly. However we recommend that you use the system with a storage tank, as this ensures a continuous supply of fuel in the ideal output range of the boiler.

For the correct dimensions of the storage tank and the line insulation (in accordance with ÖNORM M 7510 or guideline UZ37) please consult your installer or Fröling.

Certain subsidy guidelines prescribe compulsory requirements for the installation of storage tanks. Up-to-date information about individual subsidy guidelines can be found at [www.froeling.com](http://www.froeling.com).

### **Requirements for Switzerland in accordance with LRV Appendix 3, section 523**

Automatic boilers for wood pellets with a rated thermal output of more than 70 kW must be equipped with a heat accumulator of a volume of at least 25 litres per kW rated thermal output. These dimensioning specifications apply up to 500 kW nominal heat output.

### **Hot water tank in accordance with Commission Regulation (EU) 2015/ 1189 (Ecodesign Requirements)**

It is recommended to operate the boiler with a hot water tank. The recommended storage volume =  $20 \times P_r$ , where  $P_r$  is the rated heat output and is indicated in kW.

## Manufacturer's address

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