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Summary of	TTF 20	Reg. No.	011-1W0279
Certificate Holder			
Name	tecalor GmbH		
Address	Fürstenbergerstr. 77	Zip	37603
City	Holzminden	Country	Germany
Certification Body	DIN CERTCO Gesellschaft für Konformitätsbewertung mbH		
Name of testing laboratory	TÜV Rheinland Energy GmbH		
Subtype title	TTF 20		
Heat Pump Type	Brine/Water		
Refrigerant	R410a		
Mass Of Refrigerant	5.99 kg		

Model: TTF 20

General Data	
Power supply	3x400V 50Hz

Heating

EN 14511-2		
	Low temperature	**Medium temperature**
Heat output	21.50 kW	20.10 kW
El input	4.61 kW	7.08 kW
COP	4.66	3.16
Indoor water flow rate	3.65 m³/h	2.65 m³/h

EN 14511-4	
Operating range outdoor exchanger/indoor exchanger lower limit/lower limit	passed
Operating range outdoor exchanger/indoor exchanger upper limit/upper limit	passed
Shutting off the heat transfer medium flow	passed
Complete power supply failure	passed

Average Climate

EN 12102-1		
	Low temperature	**Medium temperature**
Sound power level indoor	54 dB(A)	54 dB(A)
Sound power level outdoor	59 dB(A)	59 dB(A)

EN 14825		
	Low temperature	**Medium temperature**
η_s	192 %	131 %
Prated	22.00 kW	20.00 kW
SCOP	5.00	3.48
Tbiv	-10 °C	-10 °C
TOL	-10 °C	-10 °C
Pdh Tj = -7°C	21.50 kW	20.20 kW
COP Tj = -7°C	4.72	2.96
Cdh	0.90	0.90
Pdh Tj = +2°C	21.70 kW	20.70 kW
COP Tj = +2°C	5.06	3.48
Cdh	0.90	0.90
Pdh Tj = +7°C	21.80 kW	21.00 kW
COP Tj = +7°C	5.41	3.88
Cdh	0.90	0.90

Pdh Tj = 12°C	22.00 kW	21.30 kW
COP Tj = 12°C	5.80	4.36
Cdh	0.90	0.90
Pdh Tj = Tbiv	21.50 kW	20.10 kW
COP Tj = Tbiv	4.66	2.84
Pdh Tj = TOL	21.50 kW	20.10 kW
COP Tj = TOL	4.66	2.84
Cdh	0.90	0.90
WTOL	60 °C	60 °C
Poff	0 W	0 W
PTO	7 W	7 W
PSB	7 W	7 W
PCK	74 W	74 W
Supplementary Heater: Type of energy input	electricity	electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Qhe	8904 kWh	11988 kWh

Warmer Climate

EN 12102-1

	Low temperature	Medium temperature
Sound power level indoor	54 dB(A)	54 dB(A)
Sound power level outdoor	59 dB(A)	59 dB(A)

EN 14825

	Low temperature	Medium temperature
η_s	188 %	128 %
Prated	22.00 kW	20.00 kW
SCOP	4.90	3.40
Tbiv	2 °C	2 °C
TOL	2 °C	2 °C
Pdh Tj = +2°C	21.50 kW	20.10 kW
COP Tj = +2°C	4.66	2.84
Cdh	0.90	0.90
Pdh Tj = +7°C	21.70 kW	20.50 kW
COP Tj = +7°C	4.99	3.24
Cdh	0.90	0.90
Pdh Tj = 12°C	21.90 kW	21.10 kW
COP Tj = 12°C	5.54	4.03
Cdh	0.90	0.90

Pdh Tj = Tbiv	21.50 kW	20.10 kW
COP Tj = Tbiv	4.66	2.84
Pdh Tj = TOL	21.50 kW	20.10 kW
COP Tj = TOL	4.66	2.84
Cdh	0.90	0.90
WTOL	60 °C	60 °C
Poff	0 W	0 W
PTO	7 W	7 W
PSB	7 W	7 W
PCK	74 W	74 W
Supplementary Heater: Type of energy input	electricity	electricity
Supplementary Heater: PSUP	0.00 kW	0.00 kW
Annual energy consumption Qhe	5871 kWh	7884 kWh

Colder Climate

EN 12102-1		
	Low temperature	**Medium temperature**
Sound power level indoor	54 dB(A)	54 dB(A)
Sound power level outdoor	59 dB(A)	59 dB(A)

EN 14825		
	Low temperature	**Medium temperature**

η_s	201 %	137 %
Prated	27.00 kW	25.00 kW
SCOP	5.23	3.63
Tbiv	-15 °C	-15 °C
TOL	-22 °C	-22 °C
Pdh Tj = -7°C	21.80 kW	20.70 kW
COP Tj = -7°C	5.24	3.46
Cdh	0.90	0.90
Pdh Tj = +2°C	21.90 kW	21.00 kW
COP Tj = +2°C	5.51	3.87
Cdh	0.90	0.90
Pdh Tj = +7°C	21.90 kW	21.30 kW
COP Tj = +7°C	5.74	4.26
Cdh	0.90	0.90
Pdh Tj = 12°C	22.00 kW	21.50 kW
COP Tj = 12°C	5.78	4.60
Cdh	0.90	0.90
Pdh Tj = Tbiv	21.70 kW	20.50 kW
COP Tj = Tbiv	5.12	3.24
Pdh Tj = TOL	21.50 kW	21.10 kW

COP Tj = TOL	4.66	2.84
Cdh	0.90	0.90
WTOL	60 °C	60 °C
Poff	0 W	0 W
PTO	7 W	7 W
PSB	7 W	7 W
PCK	74 W	74 W
Supplementary Heater: Type of energy input	electricity	electricity
Supplementary Heater: PSUP	5.11 kW	5.05 kW
Annual energy consumption Qhe	12535 kWh	17067 kWh
Pdh Tj = -15°C (if TOL<-20°C)	21.50	21.10
COP Tj = -15°C (if TOL<-20°C)	4.66	2.84
Cdh	0.90	0.90