

Report No.: HP 287 2024 T2

Test report
for Heat pump heating appliances
acc. DIN EN 14511 and DIN EN 14825

Product:
Heat pump

Type:
WH-WXG12ME8 +
WH-ADC0316M9E82

Company:
Panasonic Marketing Europe GmbH

Trademark:
Panasonic



Deutsche
Akkreditierungsstelle
D-PL-11120-04-00

This accreditation is valid only for the listed standards as stated in the accreditation annex of D-PL-11120-04-00

This report may only be published and forwarded to third parties in its complete, unabridged form. The publication or dissemination of extracts, summaries, appraisals or any other adaptation and alterations, in particular for advertising purposes, is only permissible with the prior written permission of TÜV Rheinland.
Publication of page 2 is permitted.

The test results presented in this report refer solely to the test object stated as described on page 2. The report does not represent a general statement about the serial production of the test object and gives not an authorization for use of a TÜV Rheinland test- / certification mark.

Examination: Testing and rating at part load conditions and calculation of seasonal performance acc. DIN EN 14825:2022

Applicant/contractor: **Panasonic Heating & Ventilation Air-Conditioning Europe (PHVACEU)**
Panasonic Marketing Europe GmbH
Hagenauer Straße 43
65203 Wiesbaden

Trademark **Panasonic**

Type designation: **WH-WXG12ME8 + WH-ADC0316M9E82**

Type: Hydraulic split air/water heat pump with electrically driven compressor for outdoor air.

Technical Specifications:

Temperature level (average climate)	Low (35°C)	Medium (55°C)	High (65°C)
P _{designh} [kW]	12	12	12
Heat Output at A7W(35/55) [kW]	12	12	12
COP at A7W(35/55)	5,06	3,23	2,60
Refrigerant	R290 (1,78kg)		
Size indoor unit (H x W x D):	1660 x 600 x 600 mm ³		
Size outdoor unit (H x W x D):	1525 x 1200 x 430 mm ³		

Heat source

Air inlet temperature -28 °C - 43 °C

Heat sink:

Outlet temperature 25 °C - 75°C

Max. working pressure 4 bar

Remarks:

This examination has been carried out in a test laboratory equipped in accordance with EN 14511-3:2022

Test basis:

DIN EN 14511:2022 and DIN EN 14825:2022

Test results:

Temperature level (average climate)	Low (35°C)	Medium (55°C)
SCOP	5,1	3,87
η_s	200,9	151,7

For detailed test results see Chapter 3 "Testing".

Cologne, 29.09.2024
667 / mz

Assessor:



B.Sc. M. Zerlett

Digital signiert von: Michael Zerlett
Name: CN = Michael Zerlett email = Michael.Zerlett@de.tuv.com
Datum: 2024.10.02 12:02:23 + 02'00'

Test Centre for Energy Appliances
DIN Certco Testcenter PI096
EHPA / DACH – Testcenter Nr.2008004-EHPA

Report released after review:

Mario

Reibold

Dipl. Ing. M. Reibold

Digital signiert von: Mario Reibold
Name: CN = Mario Reibold email = Mario.Reibold@de.tuv.com
Datum: 2024.10.02 14:22:02 + 02'00'

2.5. Type tests



Figure 2.5.1



Figure 2.5.2

Project Information		Status		Priority		Risk		Impact	
Name	ID	Progress	Completion	High	Low	Critical	Minor	Severe	Moderate
Project A	101	75%	On Track	High	Low	Critical	Minor	Severe	Moderate
Project B	102	60%	Delayed	Medium	Medium	High	Medium	Severe	Moderate
Project C	103	85%	On Track	Low	Low	Low	Minor	Severe	Moderate
Project D	104	50%	At Risk	High	High	Critical	Medium	Severe	Moderate
Project E	105	90%	Completed	Low	Low	Low	Minor	Severe	Moderate
Project F	106	40%	Delayed	Medium	Medium	High	Medium	Severe	Moderate
Project G	107	70%	On Track	High	Low	Critical	Minor	Severe	Moderate
Project H	108	65%	At Risk	Medium	Medium	High	Medium	Severe	Moderate
Project I	109	80%	On Track	Low	Low	Low	Minor	Severe	Moderate
Project J	110	55%	Delayed	Medium	Medium	High	Medium	Severe	Moderate

Additional test results

Test	Result
Test 1	Pass
Test 2	Pass
Test 3	Pass

Test	Result	Test	Result	Test	Result	Test	Result
Test 1	Pass	Test 2	Pass	Test 3	Pass	Test 4	Pass
Test 5	Pass	Test 6	Pass	Test 7	Pass	Test 8	Pass
Test 9	Pass	Test 10	Pass	Test 11	Pass	Test 12	Pass
Test 13	Pass	Test 14	Pass	Test 15	Pass	Test 16	Pass
Test 17	Pass	Test 18	Pass	Test 19	Pass	Test 20	Pass
Test 21	Pass	Test 22	Pass	Test 23	Pass	Test 24	Pass
Test 25	Pass	Test 26	Pass	Test 27	Pass	Test 28	Pass
Test 29	Pass	Test 30	Pass	Test 31	Pass	Test 32	Pass
Test 33	Pass	Test 34	Pass	Test 35	Pass	Test 36	Pass
Test 37	Pass	Test 38	Pass	Test 39	Pass	Test 40	Pass
Test 41	Pass	Test 42	Pass	Test 43	Pass	Test 44	Pass
Test 45	Pass	Test 46	Pass	Test 47	Pass	Test 48	Pass
Test 49	Pass	Test 50	Pass	Test 51	Pass	Test 52	Pass
Test 53	Pass	Test 54	Pass	Test 55	Pass	Test 56	Pass
Test 57	Pass	Test 58	Pass	Test 59	Pass	Test 60	Pass
Test 61	Pass	Test 62	Pass	Test 63	Pass	Test 64	Pass
Test 65	Pass	Test 66	Pass	Test 67	Pass	Test 68	Pass
Test 69	Pass	Test 70	Pass	Test 71	Pass	Test 72	Pass
Test 73	Pass	Test 74	Pass	Test 75	Pass	Test 76	Pass
Test 77	Pass	Test 78	Pass	Test 79	Pass	Test 80	Pass
Test 81	Pass	Test 82	Pass	Test 83	Pass	Test 84	Pass
Test 85	Pass	Test 86	Pass	Test 87	Pass	Test 88	Pass
Test 89	Pass	Test 90	Pass	Test 91	Pass	Test 92	Pass
Test 93	Pass	Test 94	Pass	Test 95	Pass	Test 96	Pass
Test 97	Pass	Test 98	Pass	Test 99	Pass	Test 100	Pass

3.3. SCOP and η_s calculation

Low temperature application

Product reference	
Manufacturer	Panasonic
Product reference	WH-WXG12ME8
Type of heat pump	outdoor air-to-water
Operating mode	reversible
Temperature application	35°C
Water flow	variable
Water outlet temperature	variable
Capacity control	variable
Backup heater	electricity

Reference conditions		
Climate	average	
Tdesignh	-10	°C
Prated	12	kW
Tbiv	-10	°C
TOL	-10	°C
H _{HE}	2066	hours
Q _{dt}	24792	kWh
Fossil fuel backup efficiency	-	%

Calculate

Reset

Energy Efficiency			
SCOPon	SCOP	η_s	Q _{HE} (kWh)
5,11	5,10	200,9	4864

Performance data									
Condition	Outdoor air T °C	Part load ratio (%)	Part Load (kW)	Inlet / outlet water temperatures for testing	Declared Capacity (kW)	Declared COP _d	C _{dh}	CR	COP _{bin}
A	-7	88	10,62	34 / 29	12,77	3,47	0,900	0,83	3,40
B	2	54	6,46	30,2 / 25	7,11	5,11	0,900	1,00	5,11
C	7	35	4,15	28,2 / 23,3	5,40	6,43	0,900	0,77	6,25
D	12	15	1,85	27,7 / 22,5	6,38	8,31	0,900	0,29	6,67
E(TOL) or E(Tdesignh)	-10	100	12,00	35,1 / 30	12,47	3,21	0,900	1,00	3,21
F(Tbiv)	-10	100	12,00	35,1 / 30	12,47	3,21	0,900	1,00	3,21

Auxiliary power consumptions			
Operating modes for heating only			
	Hours	Power input (W)	P * h (kWh)
Thermostat off	178	72,3	13
Stand by	0	9,5	0
Off mode	3672	6,7	25
Crankcase heater	3850	0	0
Operating modes for reversible units			
	Hours	Power input (W)	P * h (kWh)
Thermostat off	178	72,3	13
Stand by	0	9,5	0
Off mode	0	6,7	0
Crankcase heater	178	0	0

Bin calculation										
Condition	Bin	Outdoor air temp.	Hours	Part load ratio	Heat demand (kW)	Hea load covered by the heat pump		Back up heater	Annual heating demand	Annual energy consumption
	j	Tj	h _j		Ph(tj)		COP _{bin} (Tj)	elbu(Tj)	h _j * Ph(Tj)	
	-	°C	-							
Tbiv	21	-10	1	100,00	12,00	12,00	3,21	0,00	12	4
	22	-9	25	96,15	11,54	12,26	3,28	0,00	288	88
	23	-8	23	92,31	11,08	12,51	3,34	0,00	255	76
-7	24	-7	24	88,46	10,62	12,77	3,40	0,00	255	75
	25	-6	27	84,62	10,15	12,07	3,59	0,00	274	76,37
	26	-5	68	80,77	9,69	11,37	3,78	0,00	659	174,38
	27	-4	91	76,92	9,23	10,67	3,97	0,00	840	211,63
	28	-3	89	73,08	8,77	9,96	4,16	0,00	780	187,66
	29	-2	165	69,23	8,31	9,26	4,35	0,00	1371	315,22
	30	-1	173	65,38	7,85	8,56	4,54	0,00	1357	299,09
	31	0	240	61,54	7,38	7,86	4,73	0,00	1772	374,85
	32	1	280	57,69	6,92	7,16	4,92	0,00	1938	394,18
2	33	2	320	53,85	6,46	6,46	5,11	0,00	2068	405
	34	3	357	50,00	6,00	6,25	5,34	0,00	2142,00	401,47
	35	4	356	46,15	5,54	6,04	5,56	0,00	1971,69	354,41
	36	5	303	42,31	5,08	5,82	5,79	0,00	1538,31	265,62
	37	6	330	38,46	4,62	5,61	6,02	0,00	1523,08	253,03
7	38	7	326	34,62	4,15	5,40	6,25	0,00	1354	217
	39	8	348	30,77	3,69	5,59	6,33	0,00	1285	203
	40	9	335	26,92	3,23	5,79	6,42	0,00	1082	169
	41	10	315	23,08	2,77	5,99	6,50	0,00	872	134
	42	11	215	19,23	2,31	6,18	6,59	0,00	496	75
12	43	12	169	15,38	1,85	6,38	6,67	0,00	312	47
	44	13	151	11,54	1,38	6,58	6,76	0,00	209	31
	45	14	105	7,69	0,92	6,77	6,84	0,00	97	14
	46	15	74	3,85	0,46	6,97	6,93	0,00	34	5

4910

24787

4850

Medium temperature application

Product reference	
Manufacturer	Panasonic
Product reference	WH-WXG12ME8
Type of heat pump	outdoor air-to-water
Operating mode	reversible
Temperature application	55 °C
Water flow	variable
Water outlet temperature	variable
Capacity control	variable
Backup heater	electricity

Reference conditions		
Climate	average	
Tdesignh	-10	°C
Prated	12	kW
Tbiv	-10	°C
TOL	-10	°C
H _{HE}	2066	hours
Q _{di}	24792	kWh
Fossil fuel backup efficiency	-	%

Calculate

Reset

Energy Efficiency			
SCOP _{on}	SCOP	η _s	Q _{HE} (kWh)
3,87	3,87	151,7	6412

Performance data									
Condition	Outdoor air T °C	Part load ratio (%)	Part Load (kW)	Inlet / outlet water temperatures for testing	Declared Capacity (kW)	Declared COP _d	C _{dh}	CR	COP _{bin}
A	-7	88	10,62	51,8 / 44	10,66	2,43	0,900	1,00	2,43
B	2	54	6,46	42,1 / 34	6,99	3,85	0,900	1,00	3,85
C	7	35	4,15	37,5 / 29,6	5,15	5,09	0,900	0,81	4,97
D	12	15	1,85	35,9 / 27,4	6,04	6,37	0,900	0,31	5,19
E(TOL) or E(Tdesignh)	-10	100	12,00	55,1 / 47	13,42	2,39	0,900	0,89	2,36
F(Tbiv)	-10	100	12,00	55,1 / 47	13,42	2,39	0,900	0,89	2,36

Auxiliary power consumptions

Operating modes for heating only

	Hours	Power input (W)	P * h (kWh)
Thermostat off	178	72,3	13
Stand by	0	9,5	0
Off mode	3672	6,7	25
Crankcase heater	3850	0	0

Operating modes for reversible units

	Hours	Power input (W)	P * h (kWh)
Thermostat off	178	72,3	13
Stand by	0	9,5	0
Off mode	0	6,7	0
Crankcase heater	178	0	0

Bin calculation										
Condition	Bin	Outdoor air temp.	Hours	Part load ratio	Heat demand (kW)	Hea load covered by the heat pump		Back up heater	Annual heating demand	Annual energy consumption
	j	Tj	hj		Ph(tj)		COP _{bin} (Tj)	elbu(Tj)	hj * Ph(Tj)	
	-	°C	-							
Tbiv	21	-10	1	100,00	12,00	13,42	2,36	0,00	12	5
	22	-9	25	96,15	11,54	12,48	2,38	0,00	288	121
	23	-8	23	92,31	11,08	11,55	2,41	0,00	255	106
	24	-7	24	88,46	10,62	10,62	2,43	0,00	255	105
	25	-6	27	84,62	10,15	10,15	2,59	0,00	274	106,02
	26	-5	68	80,77	9,69	9,69	2,74	0,00	659	240,17
	27	-4	91	76,92	9,23	9,23	2,90	0,00	840	289,41
	28	-3	89	73,08	8,77	8,77	3,06	0,00	780	254,99
	29	-2	165	69,23	8,31	8,31	3,22	0,00	1371	425,83
	30	-1	173	65,38	7,85	7,85	3,38	0,00	1357	401,91
	31	0	240	61,54	7,38	7,38	3,54	0,00	1772	501,28
	32	1	280	57,69	6,92	6,92	3,69	0,00	1938	524,78
2	33	2	320	53,85	6,46	6,46	3,85	0,00	2068	537
	34	3	357	50,00	6,00	6,20	4,08	0,00	2142,00	525,52
	35	4	356	46,15	5,54	5,94	4,30	0,00	1971,69	458,55
	36	5	303	42,31	5,08	5,67	4,52	0,00	1538,31	340,05
	37	6	330	38,46	4,62	5,41	4,75	0,00	1523,08	320,81
7	38	7	326	34,62	4,15	5,15	4,97	0,00	1354	272
	39	8	348	30,77	3,69	5,33	5,02	0,00	1285	256
	40	9	335	26,92	3,23	5,51	5,06	0,00	1082	214
	41	10	315	23,08	2,77	5,68	5,10	0,00	872	171
	42	11	215	19,23	2,31	5,86	5,15	0,00	496	96
12	43	12	169	15,38	1,85	6,04	5,19	0,00	312	60
	44	13	151	11,54	1,38	6,22	5,24	0,00	209	40
	45	14	105	7,69	0,92	6,40	5,28	0,00	97	18
	46	15	74	3,85	0,46	6,57	5,32	0,00	34	6
				4910					24787	6397

3.4. Testing of operating range acc. 200 000 000000 in chapter 4.2.1 of Table 1

Test point	Value that can be input into the test equipment	Test	Result
1. 100 000 000000	100 000 000000	Testing	OK
2. 200 000 000000	200 000 000000	Testing	OK

3.5. Shunting off the test transfer medium from acc. 200 000 000000 in step 4.2

Test point	Test conditions	Shunting mode	Result
1.	200 000 000000	Testing	OK

3.6. Complete power supply before acc. 200 000 000000 in step 4.2

Test conditions	Shunting mode	Result
200 000 000000	Testing	OK

3.7. Record power level level according 200 000 000 000000

Device	Testing conditions	Comparison with 2000	Record power level 200000
Tested unit			
on power supply	200 000 000000	+	+
Tested unit			
on power supply	200 000 000000	+	+

B. Test documents

Approved on:

Index	Subject	Reference
1.1	General Manual	1.1
1.2	Operating instructions	1.2