Summary of	EN12976-2	SOLAR SYSTEM test results	Licence Number	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.		Country	Greece	
Brand (optional)			Website	www.venman.gr	
Street	7th Km Old National Road Thessaloniki -		E-mail	info@venman.gr	
Postal Code	57022	Thessaloniki	Tel. / Fax	+30	2310 784684

System classification	
Application(s)	Hot water
Solar loop, circulation principle	Thermosyphon
Direct solar loop / heat exchanger	Heat exchanger
Open, vented or closed solar loop	Open
Drain back/down	Always filled (no drain)
Store location	Outdoor
Store orientation (of main axis)	Other
Type of auxiliary heating (internal back-up heat)	None
If other auxiliary/internal back-up heating, please specifiy:	
Solar+supplementary OR Solar-only / Solar pre-heat	Solar only / Solar preheat

Collector(s)		Heat store(s)						
Company	VENMAN S.A.	Company	VENMAN S.A.					
Keymark lic.no. if available	*SKM 10137.1*	*Keymark lic.no. if available*	-					
Collector name	Per module: Gross Area (AG)	Per module: Gross length	Per module: Gross width	Store name	Total nominal volume	Gross height	Gross width	Gross depth	Auxiliary heated volume	Electrical aux. heating power
	m²	mm	mm		litres	mm	mm	mm	litres	kW
H81 15 Open Loop	1.41	1455	960	120 L (OC)	110	1005	500	500	-	-
H81 20 Open Loop	1.88	1960	960	150 L (OC)	136	1252	506	506	-	-
H81 25 Open Loop	2.37	1960	1210	200 L (OC)	190	1260	580	580	-	-
				250 L (OC)	230	1525	580	580	-	-
				300 L (OC)	176	1760	580	580	-	-

Solar loop controller		Solar loop fluid		
Keymark lic.no. if available	-	Recommended/required	No recommend./requirements	
Company	-	Company	-	
Name		Name	-	
Solar loop pump - power range	- W to - W	Freezing point	-	°C

System family overview				
Collector name	Number of collectors in each configuration for each store: Store name			
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)
H81 15 Open Loop	1	2	2	2	
H81 20 Open Loop		1	1 2	2	2
H81 25 Open Loop		1	1	1	1 2

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14

Comments of test lab

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

Version 4.5, 2017-10-24

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.		**Country**	Greece	
Brand (optional)			**Website**	www.venman.gr	
Street	7th Km Old National Road Thessaloniki -		**E-mail**	info@venman.gr	
Postal Code	57022	Thessaloniki	**Tel. / Fax**	+30	2310 784684

Parameters for systems extrapolation (Annex D)

Collector of measured system		Storage tank of measured system	
A_{ref} [m^2]	1.82	Volume [l]	136
η_0	0.662	A_{hx} [m^2]	100
a_1 [W/Km^2]	4.405	**Piping**	
a_2 [W/Km^2]	0.012		
IAM (50º)	0.920	$U_{loop,p}$	0.81

System parameters

Name of System Configuration	Tested/Extrapol	A_c* [m^2]	u_c* [W/Km^2]	U_s [W/K]	C_s [MJ/K]	S_c [-]	D_L [-]	f_{aux} [-]
VM.121.15.10 OC	▼	0.822	9.007	1.181	0.439	1.390	0.158	0.00
VM.151.20.10 OC	▼	**1.108**	**9.068**	**1.433**	**0.542**	**1.390**	**0.158**	**0.00**
VM.151.20.13 OC	▼	1.407	8.846	1.433	0.542	1.390	0.158	0.00
VM.152.15.10 OC	▼	1.644	8.514	1.433	0.542	1.390	0.158	0.00
VM.201.20.10 OC	▼	1.108	9.068	1.692	0.917	1.390	0.158	0.00
VM.201.20.13 OC	▼	1.407	8.871	1.692	0.757	1.390	0.158	0.00
VM.202.15.10 OC	▼	1.644	8.514	1.692	0.757	1.390	0.158	0.00
VM.202.20.10 OC	▼	2.217	8.401	1.692	0.757	1.390	0.158	0.00
VM.251.20.13 OC	▼	1.407	8.871	1.981	0.917	1.390	0.158	0.00
VM.252.15.10 OC	▼	1.644	8.514	1.981	0.917	1.390	0.158	0.00
VM.253.20.10 OC	▼	2.217	8.465	1.981	0.917	1.390	0.158	0.00
VM.302.20.05 OC	▼	1.407	8.871	2.237	1.100	1.390	0.158	0.00
VM.302.20.10 OC	▼	2.217	8.465	2.237	1.100	1.390	0.158	0.00
VM.302.20.15 OC	▼	2.814	8.371	2.237	1.100	1.390	0.158	0.00
	▼	0.000	0.000	0.000	0.000	0.000	0.000	0.00
	▼	0.000	0.000	0.000	0.000	0.000	0.000	0.00
	▼	0.000	0.000	0.000	0.000	0.000	0.000	0.00
	▼	0.000	0.000	0.000	0.000	0.000	0.000	0.00
	▼	0.000	0.000	0.000	0.000	0.000	0.000	0.00
	▼	0.000	0.000	0.000	0.000	0.000	0.000	0.00
	▼	0.000	0.000	0.000	0.000	0.000	0.000	0.00
	▼	0.000	0.000	0.000	0.000	0.000	0.000	0.00
	▼	0.000	0.000	0.000	0.000	0.000	0.000	0.00
	▼	0.000	0.000	0.000	0.000	0.000	0.000	0.00
	▼	0.000	0.000	0.000	0.000	0.000	0.000	0.00
	▼	0.000	0.000	0.000	0.000	0.000	0.000	0.00

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab

No comments

TÜVRheinland® Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

All values are subject to some uncertainty; e.g. the uncertainty on system output is typically in the range of ± 5 % to ± 15 %

Version 4.5, 2017-10-24

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors					
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)	
H81 15 Open Loop	1	2	2	2		
H81 20 Open Loop		1	1 2	2	2	
H81 25 Open Loop		1	1	1	1 2	

Name of system configuration						VM.121.15.10 OC	
Collector name	H81 15 Open Loop	No. Collectors	1	Storage name	120 L (OC)		

Calculated annual results for "solar-only / preheat system"

Location	Qd,sh	Daily drawoff 80 l				Daily drawoff 110 l				Daily drawoff 140 l			
		Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol
	MJ/y	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%
Stockholm SE	-	4478	1902	-	43	6150	2226	-	36	7821	2387	-	31
WürzburgDE	-	4289	1977	-	46	5897	2334	-	40	7506	2570	-	34
Davos CH	-	4857	2781	-	57	6654	3217	-	48	8483	3500	-	41
Athens GR	-	3343	2526	-	76	4573	3113	-	68	5834	3564	-	61

Perf. indicators for the table above

Qd,sh	MJ/y	**Not relevant for solar domestic hot water system**
Qd	MJ/y	**Annual heat demand for domestic hot water**
QL	MJ/y	**Annual heat energy delivered by the solar system**
Qpar	MJ/y	**Annual parasitic energy: (electricity for pumps/controllers)**
$f_{sol}=Q_L/Q_d$	-	**Solar fraction**

Ref. conditions		Stockholm SE	Würzburg DE	Davos CH	Athens GR
	G	1,157	1,230	1,684	1,736
	Ta,ave	7.5	9.0	3.2	18.5
	Tc,ave	8.5	10.0	5.4	17.8
	± ΔTc	6.4	3.0	0.8	7.4

G	kWh/m²	**Annual irradiation South, 45°**
Ta,ave	°C	**Annual average outdoor air temperature**
Tc,ave	°C	**Annual average mains cold water temp.**
ΔTc	K	**Seasonal variation of Tc**
Th	45 °C	**Desired hot water temperature (mixing valve temperature).**

Max. operating press. - collector side	800	kPa	Max. operating press. - tank side	800	kPa

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab

No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

All values are subject to some uncertainty; e.g. the uncertainty on system output is typically in the range of ± 5 % to ± 15 %

Version 4.5, 2017-10-24

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors																													
	120 L (OC)						150 L (OC)						200 L (OC)						250 L (OC)						300 L (OC)					
H81 15 Open Loop	1							2						2						2										
H81 20 Open Loop							1						1	2						2						2				
H81 25 Open Loop							1						1						1						1	2				

Name of system configuration					
				VM.151.20.10 OC	
Collector name	H81 20 Open Loop	No. Collectors	1	Storage name	150 L (OC)

Calculated annual results for "solar-only / preheat system"

Location	Qd,sh	Daily drawoff 110 l				Daily drawoff 140 l				Daily drawoff 170 l			
		Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol
	MJ/y	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%
Stockholm SE	-	6150	2605	-	42	7821	2867	-	37	9492	3050	-	32
WürzburgDE	-	5897	2709	-	46	7506	3072	-	41	9114	3343	-	37
Davos CH	-	6654	3816	-	57	8483	4257	-	50	10281	4573	-	44
Athens GR	-	4573	3469	-	76	5834	4068	-	70	7064	4541	-	64

Perf. indicators for the table above

Qd,sh	MJ/y	**Not relevant for solar domestic hot water system**
Qd	MJ/y	**Annual heat demand for domestic hot water**
QL	MJ/y	**Annual heat energy delivered by the solar system**
Qpar	MJ/y	**Annual parasitic energy: (electricity for pumps/controllers)**
$f_{sol}=Q_L/Q_d$	-	**Solar fraction**

Ref. conditions		Stockholm SE	Würzburg DE	Davos CH	Athens GR
	G	1,157	1,230	1,684	1,736
	Ta,ave	7.5	9.0	3.2	18.5
	Tc,ave	8.5	10.0	5.4	17.8
	± ΔTc	6.4	3.0	0.8	7.4

G	kWh/m²	**Annual irradiation South, 45°**
Ta,ave	°C	**Annual average outdoor air temperature**
Tc,ave	°C	**Annual average mains cold water temp.**
ΔTc	K	**Seasonal variation of Tc**
Th	45 °C	**Desired hot water temperature (mixing valve temperature).**

Max. operating press. - collector side	800	kPa	Max. operating press. - tank side	800	kPa

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab

No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

All values are subject to some uncertainty; e.g. the uncertainty on system output is typically in the range of ± 5 % to ± 15 %

Version 4.5, 2017-10-24

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors					
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)	
H81 15 Open Loop	1	2	2	2		
H81 20 Open Loop		1	1 2	2	2	
H81 25 Open Loop		1	1	1	1 2	

Name of system configuration					
				VM.151.20.13 OC	
Collector name	H81 25 Open Loop	No. Collectors	1	Storage name	150 L (OC)

Calculated annual results for "solar-only / preheat system"

Location	Qd,sh	Daily drawoff 110 l				Daily drawoff 140 l				Daily drawoff 170 l			
		Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol
	MJ/y	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%
Stockholm SE	-	6150	2939	-	48	7821	3280	-	42	9492	3532	-	37
WürzburgDE	-	5897	3015	-	51	7506	3500	-	47	9114	3847	-	42
Davos CH	-	6654	4384	-	66	8483	4951	-	58	10281	5361	-	52
Athens GR	-	4573	3721	-	81	5834	4447	-	76	7064	5014	-	71

Perf. indicators for the table above

Qd,sh	MJ/y	**Not relevant for solar domestic hot water system**
Qd	MJ/y	**Annual heat demand for domestic hot water**
QL	MJ/y	**Annual heat energy delivered by the solar system**
Qpar	MJ/y	**Annual parasitic energy: (electricity for pumps/controllers)**
$f_{sol}=Q_L/Q_d$	-	**Solar fraction**

Ref. conditions		Stockholm SE	Würzburg DE	Davos CH	Athens GR
	G	1,157	1,230	1,684	1,736
	Ta,ave	7.5	9.0	3.2	18.5
	Tc,ave	8.5	10.0	5.4	17.8
	± ΔTc	6.4	3.0	0.8	7.4

G	kWh/m²	**Annual irradiation South, 45°**
Ta,ave	°C	**Annual average outdoor air temperature**
Tc,ave	°C	**Annual average mains cold water temp.**
ΔTc	K	**Seasonal variation of Tc**
Th	45 °C	**Desired hot water temperature (mixing valve temperature).**

Max. operating press. - collector side	800	kPa	Max. operating press. - tank side	800	kPa

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab

No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

All values are subject to some uncertainty; e.g. the uncertainty on system output is typically in the range of ± 5 % to ± 15 %

Version 4.5, 2017-10-24

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors				
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)
H81 15 Open Loop	1	2	2	2	
H81 20 Open Loop		1	1 2	2	2
H81 25 Open Loop		1	1	1	1 2

Name of system configuration					
				VM.152.15.10 OC	
Collector name	H81 15 Open Loop	No. Collectors	2	Storage name	150 L (OC)

Calculated annual results for "solar-only / preheat system"

Location	Qd,sh	Daily drawoff 110 l				Daily drawoff 140 l				Daily drawoff 170 l			
		Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol
	MJ/y	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%
Stockholm SE	-	6150	3154	-	51	7821	3564	-	46	9492	3879	-	41
WürzburgDE	-	5897	3217	-	54	7506	3753	-	50	9114	4194	-	46
Davos CH	-	6654	4730	-	71	8483	5424	-	64	10281	5960	-	58
Athens GR	-	4573	3879	-	85	5834	4667	-	80	7064	5330	-	75

Perf. indicators for the table above

Qd,sh	MJ/y	**Not relevant for solar domestic hot water system**
Qd	MJ/y	**Annual heat demand for domestic hot water**
QL	MJ/y	**Annual heat energy delivered by the solar system**
Qpar	MJ/y	**Annual parasitic energy: (electricity for pumps/controllers)**
$f_{sol}=Q_L/Q_d$	-	**Solar fraction**

Ref. conditions	Stockholm SE	Würzburg DE	Davos CH	Athens GR
G	1,157	1,230	1,684	1,736
Ta,ave	7.5	9.0	3.2	18.5
Tc,ave	8.5	10.0	5.4	17.8
± ΔTc	6.4	3.0	0.8	7.4

G	kWh/m²	**Annual irradiation South, 45°**
Ta,ave	°C	**Annual average outdoor air temperature**
Tc,ave	°C	**Annual average mains cold water temp.**
ΔTc	K	**Seasonal variation of Tc**
Th	45 °C	**Desired hot water temperature (mixing valve temperature).**

Max. operating press. - collector side	800	kPa	Max. operating press. - tank side	800 kPa

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab

No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

All values are subject to some uncertainty; e.g. the uncertainty on system output is typically in the range of ± 5 % to ± 15 %

Version 4.5, 2017-10-24

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors					
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)	
H81 15 Open Loop	1	2	2	2		
H81 20 Open Loop		1	1	2	2	
H81 25 Open Loop		1	1	1	1	2

Name of system configuration						VM.201.20.10 OC	
Collector name	H81 20 Open Loop	No. Collectors	1	Storage name	200 L (OC)		

Calculated annual results for "solar-only / preheat system"

Location	Qd,sh	Daily drawoff 170 l				Daily drawoff 200 l				Daily drawoff 250 l			
		Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol
	MJ/y	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%
Stockholm SE	-	9492	3087	-	33	11164	3280	-	29	13939	3469	-	25
WürzburgDE	-	9114	3343	-	37	10691	3564	-	33	13371	3847	-	29
Davos CH	-	10281	4541	-	44	12110	4825	-	40	15137	5140	-	34
Athens GR	-	7064	4573	-	65	8326	4983	-	60	10407	5456	-	52

Perf. indicators for the table above

Qd,sh	MJ/y	**Not relevant for solar domestic hot water system**
Qd	MJ/y	**Annual heat demand for domestic hot water**
QL	MJ/y	**Annual heat energy delivered by the solar system**
Qpar	MJ/y	**Annual parasitic energy: (electricity for pumps/controllers)**
$f_{sol}=Q_L/Q_d$	-	**Solar fraction**

Ref. conditions		Stockholm SE	Würzburg DE	Davos CH	Athens GR
	G	1,157	1,230	1,684	1,736
	Ta,ave	7.5	9.0	3.2	18.5
	Tc,ave	8.5	10.0	5.4	17.8
	± ΔTc	6.4	3.0	0.8	7.4

G	kWh/m²	**Annual irradiation South, 45°**
Ta,ave	°C	**Annual average outdoor air temperature**
Tc,ave	°C	**Annual average mains cold water temp.**
ΔTc	K	**Seasonal variation of Tc**
Th	45 °C	**Desired hot water temperature (mixing valve temperature).**

Max. operating press. - collector side	800	kPa	Max. operating press. - tank side	800	kPa

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab

No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

All values are subject to some uncertainty; e.g. the uncertainty on system output is typically in the range of ± 5 % to ± 15 %

Version 4.5, 2017-10-24

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors																													
	120 L (OC)						150 L (OC)						200 L (OC)						250 L (OC)						300 L (OC)					
H81 15 Open Loop	1							2						2						2										
H81 20 Open Loop							1						1	2						2						2				
H81 25 Open Loop							1						1						1						1	2				

Name of system configuration					VM.201.20.13 OC	
Collector name	H81 25 Open Loop	No. Collectors	1	Storage name	200 L (OC)	

Calculated annual results for "solar-only / preheat system"

Location	Qd,sh	Daily drawoff 170 l				Daily drawoff 200 l				Daily drawoff 250 l			
		Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol
	MJ/y	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%
Stockholm SE	-	9492	3595	-	38	11164	3847	-	35	13939	4100	-	29
WürzburgDE	-	9114	3879	-	43	10691	4163	-	39	13371	4510	-	34
Davos CH	-	10281	5393	-	52	12110	5740	-	47	15137	6181	-	41
Athens GR	-	7064	5077	-	72	8326	5582	-	67	10407	6307	-	61

Perf. indicators for the table above

Qd,sh	MJ/y	**Not relevant for solar domestic hot water system**
Qd	MJ/y	**Annual heat demand for domestic hot water**
QL	MJ/y	**Annual heat energy delivered by the solar system**
Qpar	MJ/y	**Annual parasitic energy: (electricity for pumps/controllers)**
$f_{sol}=Q_L/Q_d$	-	**Solar fraction**

Ref. conditions		Stockholm SE	Würzburg DE	Davos CH	Athens GR
	G	1,157	1,230	1,684	1,736
	Ta,ave	7.5	9.0	3.2	18.5
	Tc,ave	8.5	10.0	5.4	17.8
	± ΔTc	6.4	3.0	0.8	7.4

G	kWh/m²	**Annual irradiation South, 45°**
Ta,ave	°C	**Annual average outdoor air temperature**
Tc,ave	°C	**Annual average mains cold water temp.**
ΔTc	K	**Seasonal variation of Tc**
Th	45 °C	**Desired hot water temperature (mixing valve temperature).**

Max. operating press. - collector side	800	kPa	Max. operating press. - tank side	800	kPa

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab

No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

All values are subject to some uncertainty; e.g. the uncertainty on system output is typically in the range of ± 5 % to ± 15 %

Version 4.5, 2017-10-24

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors																													
	120 L (OC)						150 L (OC)						200 L (OC)						250 L (OC)						300 L (OC)					
H81 15 Open Loop	1							2						2						2										
H81 20 Open Loop							1						1	2						2						2				
H81 25 Open Loop							1						1						1						1	2				

Name of system configuration					VM.202.15.10 OC		
Collector name	H81 15 Open Loop	No. Collectors	2		Storage name	200 L (OC)	

Calculated annual results for "solar-only / preheat system"

Location	Qd,sh	Daily drawoff 170 l				Daily drawoff 200 l				Daily drawoff 250 l			
		Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol
	MJ/y	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%
Stockholm SE	-	9492	3974	-	42	11164	4289	-	38	13939	4573	-	33
WürzburgDE	-	9114	4257	-	47	10691	4604	-	43	13371	5014	-	38
Davos CH	-	10281	5992	-	58	12110	6433	-	53	15137	6906	-	46
Athens GR	-	7064	5393	-	76	8326	5992	-	72	10407	6812	-	66

Perf. indicators for the table above

Qd,sh	MJ/y	**Not relevant for solar domestic hot water system**
Qd	MJ/y	**Annual heat demand for domestic hot water**
QL	MJ/y	**Annual heat energy delivered by the solar system**
Qpar	MJ/y	**Annual parasitic energy: (electricity for pumps/controllers)**
$f_{sol}=Q_L/Q_d$	-	**Solar fraction**

Ref. conditions		Stockholm SE	Würzburg DE	Davos CH	Athens GR
	G	1,157	1,230	1,684	1,736
	Ta,ave	7.5	9.0	3.2	18.5
	Tc,ave	8.5	10.0	5.4	17.8
	± ΔTc	6.4	3.0	0.8	7.4

G	kWh/m²	**Annual irradiation South, 45°**
Ta,ave	°C	**Annual average outdoor air temperature**
Tc,ave	°C	**Annual average mains cold water temp.**
ΔTc	K	**Seasonal variation of Tc**
Th	45 °C	**Desired hot water temperature (mixing valve temperature).**

Max. operating press. - collector side	800	kPa	Max. operating press. - tank side	800	kPa

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab

No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

All values are subject to some uncertainty; e.g. the uncertainty on system output is typically in the range of ± 5 % to ± 15 %

Version 4.5, 2017-10-24

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors																													
	120 L (OC)						150 L (OC)						200 L (OC)						250 L (OC)						300 L (OC)					
H81 15 Open Loop	1							2						2						2										
H81 20 Open Loop							1						1	2						2						2				
H81 25 Open Loop							1						1						1						1	2				

Name of system configuration					VM.201.20.10 OC		
Collector name	H81 20 Open Loop	No. Collectors	2		Storage name	200 L (OC)	

Calculated annual results for "solar-only / preheat system"

Location	Qd,sh	Daily drawoff 170 l				Daily drawoff 200 l				Daily drawoff 250 l			
		Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol
	MJ/y	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%
Stockholm SE	-	9492	3087	-	33	11164	3280	-	29	13939	3469	-	25
WürzburgDE	-	9114	3343	-	37	10691	3564	-	33	13371	3847	-	29
Davos CH	-	10281	4541	-	44	12110	4825	-	40	15137	5140	-	34
Athens GR	-	7064	4573	-	65	8326	4983	-	60	10407	5456	-	52

Perf. indicators for the table above

Qd,sh	MJ/y	**Not relevant for solar domestic hot water system**
Qd	MJ/y	**Annual heat demand for domestic hot water**
QL	MJ/y	**Annual heat energy delivered by the solar system**
Qpar	MJ/y	**Annual parasitic energy: (electricity for pumps/controllers)**
$f_{sol}=Q_L/Q_d$	-	**Solar fraction**

Ref. conditions		Stockholm SE	Würzburg DE	Davos CH	Athens GR
	G	1,157	1,230	1,684	1,736
	Ta,ave	7.5	9.0	3.2	18.5
	Tc,ave	8.5	10.0	5.4	17.8
	± ΔTc	6.4	3.0	0.8	7.4

G	kWh/m²	**Annual irradiation South, 45°**
Ta,ave	°C	**Annual average outdoor air temperature**
Tc,ave	°C	**Annual average mains cold water temp.**
ΔTc	K	**Seasonal variation of Tc**
Th	45 °C	**Desired hot water temperature (mixing valve temperature).**

Max. operating press. - collector side	800	kPa	Max. operating press. - tank side	800	kPa

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab

No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

All values are subject to some uncertainty; e.g. the uncertainty on system output is typically in the range of ± 5 % to ± 15 %

Version 4.5, 2017-10-24

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors					
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)	
H81 15 Open Loop	1	2	2	2		
H81 20 Open Loop		1	1 2	2	2	
H81 25 Open Loop		1	1	1	1 2	

Name of system configuration						VN.251.20.13 OC	
Collector name	H81 25 Open Loop	No. Collectors	1	Storage name	250 L (OC)		

Calculated annual results for "solar-only / preheat system"

Location	Qd,sh	Daily drawoff 200 l				Daily drawoff 250 l				Daily drawoff 300 l			
		Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol
	MJ/y	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%
Stockholm SE	-	11164	3847	-	35	13939	4131	-	30	16746	4352	-	26
WürzburgDE	-	10691	4163	-	39	13371	4541	-	34	16052	4825	-	30
Davos CH	-	12110	5676	-	47	15137	6150	-	41	18165	6496	-	36
Athens GR	-	8326	5582	-	67	10407	6307	-	61	12488	6812	-	55

Perf. indicators for the table above

Qd,sh	MJ/y	**Not relevant for solar domestic hot water system**
Qd	MJ/y	**Annual heat demand for domestic hot water**
QL	MJ/y	**Annual heat energy delivered by the solar system**
Qpar	MJ/y	**Annual parasitic energy: (electricity for pumps/controllers)**
$f_{sol}=Q_L/Q_d$	-	**Solar fraction**

Ref. conditions		Stockholm SE	Würzburg DE	Davos CH	Athens GR
	G	1,157	1,230	1,684	1,736
	Ta,ave	7.5	9.0	3.2	18.5
	Tc,ave	8.5	10.0	5.4	17.8
	± ΔTc	6.4	3.0	0.8	7.4

G	kWh/m²	**Annual irradiation South, 45°**
Ta,ave	°C	**Annual average outdoor air temperature**
Tc,ave	°C	**Annual average mains cold water temp.**
ΔTc	K	**Seasonal variation of Tc**
Th	45 °C	**Desired hot water temperature (mixing valve temperature).**

Max. operating press. - collector side	800	kPa	Max. operating press. - tank side	800	kPa

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab

No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

All values are subject to some uncertainty; e.g. the uncertainty on system output is typically in the range of ± 5 % to ± 15 %

Version 4.5, 2017-10-24

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors					
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)	
H81 15 Open Loop	1	2	2	2		
H81 20 Open Loop		1	1 2	2	2	
H81 25 Open Loop		1	1	1	1 2	

Name of system configuration					VN.252.15.10 OC		
Collector name	H81 15 Open Loop	No. Collectors	2	Storage name	250 L (OC)		

Calculated annual results for "solar-only / preheat system"

Location	Qd,sh	Daily drawoff 200 l				Daily drawoff 250 l				Daily drawoff 300 l			
		Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol
	MJ/y	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%
Stockholm SE	-	11164	4289	-	39	13939	4604	-	33	16746	4888	-	29
WürzburgDE	-	10691	4604	-	43	13371	5077	-	38	16052	5393	-	34
Davos CH	-	12110	6402	-	53	15137	6969	-	46	18165	7348	-	40
Athens GR	-	8326	5992	-	72	10407	6843	-	66	12488	7506	-	60

Perf. indicators for the table above

Qd,sh	MJ/y	**Not relevant for solar domestic hot water system**
Qd	MJ/y	**Annual heat demand for domestic hot water**
QL	MJ/y	**Annual heat energy delivered by the solar system**
Qpar	MJ/y	**Annual parasitic energy: (electricity for pumps/controllers)**
$f_{sol}=Q_L/Q_d$	-	**Solar fraction**

Ref. conditions		Stockholm SE	Würzburg DE	Davos CH	Athens GR
	G	1,157	1,230	1,684	1,736
	Ta,ave	7.5	9.0	3.2	18.5
	Tc,ave	8.5	10.0	5.4	17.8
	± ΔTc	6.4	3.0	0.8	7.4

G	kWh/m²	**Annual irradiation South, 45°**
Ta,ave	°C	**Annual average outdoor air temperature**
Tc,ave	°C	**Annual average mains cold water temp.**
ΔTc	K	**Seasonal variation of Tc**
Th	45 °C	**Desired hot water temperature (mixing valve temperature).**

Max. operating press. - collector side	800	kPa	Max. operating press. - tank side	800	kPa

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab

No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

All values are subject to some uncertainty; e.g. the uncertainty on system output is typically in the range of ± 5 % to ± 15 %

Version 4.5, 2017-10-24

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors					
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)	
H81 15 Open Loop	1	2	2	2		
H81 20 Open Loop		1	1 2	2	2	
H81 25 Open Loop		1	1	1	1 2	

Name of system configuration					
				VN253.20.10 OC	
Collector name	H81 20 Open Loop	No. Collectors	2	Storage name	250 L (OC)

Calculated annual results for "solar-only / preheat system"

Location	Qd,sh	Daily drawoff 200 l				Daily drawoff 250 l				Daily drawoff 300 l			
		Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol
	MJ/y	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%
Stockholm SE	-	11164	5046	-	45	13939	5519	-	40	16746	5929	-	35
WürzburgDE	-	10691	5330	-	50	13371	6023	-	45	16052	6465	-	40
Davos CH	-	12110	7632	-	63	15137	8452	-	56	18165	8988	-	49
Athens GR	-	8326	6623	-	80	10407	7726	-	74	12488	8609	-	69

Perf. indicators for the table above

Qd,sh	MJ/y	**Not relevant for solar domestic hot water system**
Qd	MJ/y	**Annual heat demand for domestic hot water**
QL	MJ/y	**Annual heat energy delivered by the solar system**
Qpar	MJ/y	**Annual parasitic energy: (electricity for pumps/controllers)**
$f_{sol}=Q_L/Q_d$	-	**Solar fraction**

Ref. conditions		Stockholm SE	Würzburg DE	Davos CH	Athens GR
	G	1,157	1,230	1,684	1,736
	Ta,ave	7.5	9.0	3.2	18.5
	Tc,ave	8.5	10.0	5.4	17.8
	± ΔTc	6.4	3.0	0.8	7.4

G	kWh/m²	**Annual irradiation South, 45°**
Ta,ave	°C	**Annual average outdoor air temperature**
Tc,ave	°C	**Annual average mains cold water temp.**
ΔTc	K	**Seasonal variation of Tc**
Th	45 °C	**Desired hot water temperature (mixing valve temperature).**

Max. operating press. - collector side	800	kPa	Max. operating press. - tank side	800	kPa

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab

No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

All values are subject to some uncertainty; e.g. the uncertainty on system output is typically in the range of ± 5 % to ± 15 %

Version 4.5, 2017-10-24

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors				
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)
H81 15 Open Loop	1	2	2	2	
H81 20 Open Loop		1	1 2	2	2
H81 25 Open Loop		1	1	1	1 2

Name of system configuration					
				VM.302.20.05 OC	
Collector name	H81 25 Open Loop	No. Collectors	1	Storage name	300 L (OC)

Calculated annual results for "solar-only / preheat system"

Location	Qd,sh	Daily drawoff 200 l				Daily drawoff 250 l				Daily drawoff 300 l			
		Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol
	MJ/y	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%
Stockholm SE	-	11164	3879	-	35	13939	4194	-	30	16746	4384	-	26
WürzburgDE	-	10691	4100	-	38	13371	4510	-	34	16052	4825	-	30
Davos CH	-	12110	5613	-	46	15137	6118	-	40	18165	6465	-	36
Athens GR	-	8326	5550	-	67	10407	6276	-	61	12488	6812	-	55

Perf. indicators for the table above

Qd,sh	MJ/y	**Not relevant for solar domestic hot water system**
Qd	MJ/y	**Annual heat demand for domestic hot water**
QL	MJ/y	**Annual heat energy delivered by the solar system**
Qpar	MJ/y	**Annual parasitic energy: (electricity for pumps/controllers)**
$f_{sol}=Q_L/Q_d$	-	**Solar fraction**

Ref. conditions		Stockholm SE	Würzburg DE	Davos CH	Athens GR
	G	1,157	1,230	1,684	1,736
	Ta,ave	7.5	9.0	3.2	18.5
	Tc,ave	8.5	10.0	5.4	17.8
	± ΔTc	6.4	3.0	0.8	7.4

G	kWh/m²	**Annual irradiation South, 45°**
Ta,ave	°C	**Annual average outdoor air temperature**
Tc,ave	°C	**Annual average mains cold water temp.**
ΔTc	K	**Seasonal variation of Tc**
Th	45 °C	**Desired hot water temperature (mixing valve temperature).**

Max. operating press. - collector side	800	kPa	Max. operating press. - tank side	800	kPa

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab

No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

All values are subject to some uncertainty; e.g. the uncertainty on system output is typically in the range of ± 5 % to ± 15 %

Version 4.5, 2017-10-24

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors					
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)	
H81 15 Open Loop	1	2	2	2		
H81 20 Open Loop		1	1 2	2	2	
H81 25 Open Loop		1	1	1	1 2	

Name of system configuration						VM.302.20.10 OC	
Collector name	H81 20 Open Loop	No. Collectors	2	Storage name	300 L (OC)		

Calculated annual results for "solar-only / preheat system"

Location	Qd,sh	Daily drawoff 200 l				Daily drawoff 250 l				Daily drawoff 300 l			
		Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol
	MJ/y	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%
Stockholm SE	-	11164	5109	-	46	13939	5645	-	41	16746	6023	-	36
WürzburgDE	-	10691	5330	-	50	13371	6023	-	45	16052	6559	-	41
Davos CH	-	12110	7632	-	63	15137	8452	-	56	18165	9082	-	50
Athens GR	-	8326	6623	-	80	10407	7726	-	75	12488	8672	-	70

Perf. indicators for the table above

Qd,sh	MJ/y	**Not relevant for solar domestic hot water system**
Qd	MJ/y	**Annual heat demand for domestic hot water**
QL	MJ/y	**Annual heat energy delivered by the solar system**
Qpar	MJ/y	**Annual parasitic energy: (electricity for pumps/controllers)**
$f_{sol}=Q_L/Q_d$	-	**Solar fraction**

Ref. conditions	Stockholm SE	Würzburg DE	Davos CH	Athens GR
G	1,157	1,230	1,684	1,736
Ta,ave	7.5	9.0	3.2	18.5
Tc,ave	8.5	10.0	5.4	17.8
± ΔTc	6.4	3.0	0.8	7.4

G	kWh/m²	**Annual irradiation South, 45°**
Ta,ave	°C	**Annual average outdoor air temperature**
Tc,ave	°C	**Annual average mains cold water temp.**
ΔTc	K	**Seasonal variation of Tc**
Th	45 °C	**Desired hot water temperature (mixing valve temperature).**

Max. operating press. - collector side	800	kPa	Max. operating press. - tank side	800	kPa

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab

No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

All values are subject to some uncertainty; e.g. the uncertainty on system output is typically in the range of ± 5 % to ± 15 %

Version 4.5, 2017-10-24

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors					
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)	
H81 15 Open Loop	1	2	2	2		
H81 20 Open Loop		1	1 2	2	2	
H81 25 Open Loop		1	1	1	1	2

Name of system configuration					
				VM.302.20.15 OC	
Collector name	H81 25 Open Loop	No. Collectors	2	Storage name	300 L (OC)

Calculated annual results for "solar-only / preheat system"

Location	Qd,sh	Daily drawoff 200 l				Daily drawoff 250 l				Daily drawoff 300 l			
		Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol	Qd,hw	QL	Qpar	fsol
	MJ/y	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%
Stockholm SE	-	11164	5676	-	51	13939	6402	-	46	16746	6938	-	41
WürzburgDE	-	10691	5834	-	55	13371	6749	-	50	16052	7474	-	47
Davos CH	-	12110	8578	-	71	15137	9713	-	64	18165	10565	-	58
Athens GR	-	8326	7033	-	85	10407	8357	-	80	12488	9461	-	76

Perf. indicators for the table above

Qd,sh	MJ/y	**Not relevant for solar domestic hot water system**
Qd	MJ/y	**Annual heat demand for domestic hot water**
QL	MJ/y	**Annual heat energy delivered by the solar system**
Qpar	MJ/y	**Annual parasitic energy: (electricity for pumps/controllers)**
$f_{sol}=Q_L/Q_d$	-	**Solar fraction**

Ref. conditions		Stockholm SE	Würzburg DE	Davos CH	Athens GR
	G	1,157	1,230	1,684	1,736
	Ta,ave	7.5	9.0	3.2	18.5
	Tc,ave	8.5	10.0	5.4	17.8
	± ΔTc	6.4	3.0	0.8	7.4

G	kWh/m²	**Annual irradiation South, 45°**
Ta,ave	°C	**Annual average outdoor air temperature**
Tc,ave	°C	**Annual average mains cold water temp.**
ΔTc	K	**Seasonal variation of Tc**
Th	45 °C	**Desired hot water temperature (mixing valve temperature).**

Max. operating press. - collector side	800	kPa	Max. operating press. - tank side	800	kPa

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab

No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

All values are subject to some uncertainty; e.g. the uncertainty on system output is typically in the range of ± 5 % to ± 15 %

Version 4.5, 2017-10-24

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.		Country	Greece	
Brand (optional)			Website	www.venman.gr	
Street	7th Km Old National Road Thessaloniki -		E-mail	info@venman.gr	
Postal Code	57022	Thessaloniki	Tel. / Fax	+30	2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors																													
	120 L (OC)						150 L (OC)						200 L (OC)						250 L (OC)						300 L (OC)					
H81 15 Open Loop	1						2						2						2											
H81 20 Open Loop							1						1	2					2						2					
H81 25 Open Loop							1						1						1						1	2				

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Name of system configuration					VM121.15.10 OC	
Collector name	H81 15 Open Loop	No. Collectors	1	Storage name	120 L (OC)	

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Load profile	M	L	XL	XXL	
Annual heat demand (kWh)	1523	2799	4427	5626	
Auxiliary heat contribution		Qnonsol			section 5.9.3.6, see note 1
Average climate (kWh)	755	1894	3408	4581	Strasbourg
Cold climate (kWh)	962	2134	3680	4858	Helsinki
Hot climate (kWh)	442	1499	2943	4089	Athens
Qaux (kWh)	-	-	-	-	section 5.9.3.4, see note 1
Comply to the load profile (Yes/No)	-	-	-	-	section 5.10.6 , see note 1
ηwh_nonsol (%)	-	-	-	-	section 5.9.3.5 , see note 1
Qelec (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
Qfuel (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
V40, measured (l)	-	-	-	-	section 5.10.7, see note 1

Auxiliary thermostat setting	-	ºC	Effective power of auxiliary heater	-	kW

Note 1: Clause of EN 12976-2:2019

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab
No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors					
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)	
H81 15 Open Loop	1	2	2	2		
H81 20 Open Loop		1	1 2	2	2	
H81 25 Open Loop		1	1	1	1 2	

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Name of system configuration				VM151.20.10 OC	
Collector name	H81 20 Open Loop	No. Collectors	1	Storage name	150 L (OC)

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Load profile	M	L	XL	XXL	
Annual heat demand (kWh)	1523	2799	4427	5626	
Auxiliary heat contribution		Qnonsol			section 5.9.3.6, see note 1
Average climate (kWh)	495	1385	2767	3896	Strasbourg
Cold climate (kWh)	751	1754	3197	4344	Helsinki
Hot climate (kWh)	179	849	2099	3158	Athens
Qaux (kWh)	-	-	-	-	section 5.9.3.4, see note 1
Comply to the load profile (Yes/No)	-	-	-	-	section 5.10.6 , see note 1
ηwh_nonsol (%)	-	-	-	-	section 5.9.3.5 , see note 1
Qelec (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
Qfuel (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
V40, measured (l)	-	-	-	-	section 5.10.7, see note 1

Auxiliary thermostat setting	-	ºC	Effective power of auxiliary heater	-	kW

Note 1: Clause of EN 12976-2:2019

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab
No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.		Country	Greece	
Brand (optional)			Website	www.venman.gr	
Street	7th Km Old National Road Thessaloniki -		E-mail	info@venman.gr	
Postal Code	57022	Thessaloniki	Tel. / Fax	+30	2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors					
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)	
H81 15 Open Loop	1	2	2	2		
H81 20 Open Loop		1	1 2	2	2	
H81 25 Open Loop		1	1	1	1 2	

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Name of system configuration				VM151.20.13 OC	
Collector name	H81 25 Open Loop	No. Collectors	1	Storage name	150 L (OC)

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Load profile	M	L	XL	XXL	
Annual heat demand (kWh)	1523	2799	4427	5626	
Auxiliary heat contribution		Qnonsol			section 5.9.3.6, see note 1
Average climate (kWh)	548	1508	2925	4063	Strasbourg
Cold climate (kWh)	798	1850	3320	4475	Helsinki
Hot climate (kWh)	223	998	2301	3377	Athens
Qaux (kWh)	-	-	-	-	section 5.9.3.4, see note 1
Comply to the load profile (Yes/No)	-	-	-	-	section 5.10.6 , see note 1
ηwh_nonsol (%)	-	-	-	-	section 5.9.3.5 , see note 1
Qelec (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
Qfuel (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
V40, measured (l)	-	-	-	-	section 5.10.7, see note 1

Auxiliary thermostat setting	-	ºC	Effective power of auxiliary heater	-	kW

Note 1: Clause of EN 12976-2:2019

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab	
No comments	TÜVRheinland® Genau. Richtig. TÜV Rheinland Solar GmbH Am Grauen Stein 51105 Köln

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors					
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)	
H81 15 Open Loop	1	2	2	2		
H81 20 Open Loop		1	1 2	2	2	
H81 25 Open Loop		1	1	1	1 2	

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Name of system configuration				VM152.15.10 OC	
Collector name	H81 15 Open Loop	No. Collectors	2	Storage name	150 L (OC)

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Load profile	M	L	XL	XXL	
Annual heat demand (kWh)	1523	2799	4427	5626	
Auxiliary heat contribution		Qnonsol			section 5.9.3.6, see note 1
Average climate (kWh)	495	1385	2767	3896	Strasbourg
Cold climate (kWh)	751	1754	3197	4344	Helsinki
Hot climate (kWh)	179	849	2099	3158	Athens
Qaux (kWh)	-	-	-	-	section 5.9.3.4, see note 1
Comply to the load profile (Yes/No)	-	-	-	-	section 5.10.6 , see note 1
ηwh_nonsol (%)	-	-	-	-	section 5.9.3.5 , see note 1
Qelec (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
Qfuel (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
V40, measured (l)	-	-	-	-	section 5.10.7, see note 1

Auxiliary thermostat setting	-	ºC	Effective power of auxiliary heater	-	kW

Note 1: Clause of EN 12976-2:2019

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab
No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors				
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)
H81 15 Open Loop	1	2	2	2	
H81 20 Open Loop		1	1 2	2	2
H81 25 Open Loop		1	1	1	1 2

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Name of system configuration				VM201.20.10 OC	
Collector name	H81 20 Open Loop	No. Collectors	1	Storage name	200 L (OC)

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Load profile	M	L	XL	XXL	
Annual heat demand (kWh)	1523	2799	4427	5626	
Auxiliary heat contribution		Qnonsol			section 5.9.3.6, see note 1
Average climate (kWh)	627	1639	3092	4238	Strasbourg
Cold climate (kWh)	870	1952	3452	4616	Helsinki
Hot climate (kWh)	302	1147	2495	3606	Athens
Qaux (kWh)	-	-	-	-	section 5.9.3.4, see note 1
Comply to the load profile (Yes/No)	-	-	-	-	section 5.10.6 , see note 1
ηwh_nonsol (%)	-	-	-	-	section 5.9.3.5 , see note 1
Qelec (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
Qfuel (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
V40, measured (l)	-	-	-	-	section 5.10.7, see note 1

Auxiliary thermostat setting	-	ºC	Effective power of auxiliary heater	-	kW

Note 1: Clause of EN 12976-2:2019

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab
No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors					
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)	
H81 15 Open Loop	1	2	2	2		
H81 20 Open Loop		1	1 2	2	2	
H81 25 Open Loop		1	1	1	1 2	

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Name of system configuration				VM201.20.13 OC	
Collector name	H81 25 Open Loop	No. Collectors	1	Storage name	200 L (OC)

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Load profile	M	L	XL	XXL	
Annual heat demand (kWh)	1523	2799	4427	5626	
Auxiliary heat contribution		Qnonsol			section 5.9.3.6, see note 1
Average climate (kWh)	539	1455	2846	3984	Strasbourg
Cold climate (kWh)	793	1806	3268	4414	Helsinki
Hot climate (kWh)	214	910	2178	3254	Athens
Qaux (kWh)	-	-	-	-	section 5.9.3.4, see note 1
Comply to the load profile (Yes/No)	-	-	-	-	section 5.10.6 , see note 1
ηwh_nonsol (%)	-	-	-	-	section 5.9.3.5 , see note 1
Qelec (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
Qfuel (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
V40, measured (l)	-	-	-	-	section 5.10.7, see note 1

Auxiliary thermostat setting	-	ºC	Effective power of auxiliary heater	-	kW

Note 1: Clause of EN 12976-2:2019

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab
No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors					
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)	
H81 15 Open Loop	1	2	2	2		
H81 20 Open Loop		1	1 2	2	2	
H81 25 Open Loop		1	1	1	1 2	

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Name of system configuration				VM202.15.10 OC	
Collector name	H81 15 Open Loop	No. Collectors	2	Storage name	200 L (OC)

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Load profile	M	L	XL	XXL	
Annual heat demand (kWh)	1523	2799	4427	5626	
Auxiliary heat contribution		Qnonsol			section 5.9.3.6, see note 1
Average climate (kWh)	478	1323	2670	3790	Strasbourg
Cold climate (kWh)	742	1710	3127	4265	Helsinki
Hot climate (kWh)	161	761	1950	3009	Athens
Qaux (kWh)	-	-	-	-	section 5.9.3.4, see note 1
Comply to the load profile (Yes/No)	-	-	-	-	section 5.10.6 , see note 1
ηwh_nonsol (%)	-	-	-	-	section 5.9.3.5 , see note 1
Qelec (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
Qfuel (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
V40, measured (l)	-	-	-	-	section 5.10.7, see note 1

Auxiliary thermostat setting	-	ºC	Effective power of auxiliary heater	-	kW

Note 1: Clause of EN 12976-2:2019

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab
No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.		Country	Greece	
Brand (optional)			Website	www.venman.gr	
Street	7th Km Old National Road Thessaloniki -		E-mail	info@venman.gr	
Postal Code	57022	Thessaloniki	Tel. / Fax	+30	2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors																													
	120 L (OC)						150 L (OC)						200 L (OC)						250 L (OC)						300 L (OC)					
H81 15 Open Loop	1							2						2						2										
H81 20 Open Loop							1						1	2						2						2				
H81 25 Open Loop							1						1						1						1	2				

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Name of system configuration					VM202.20.10 OC	
Collector name	H81 20 Open Loop	No. Collectors	2	Storage name	200 L (OC)	

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Load profile	M	L	XL	XXL	
Annual heat demand (kWh)	1523	2799	4427	5626	
Auxiliary heat contribution			Qnonsol		section 5.9.3.6, see note 1
Average climate (kWh)	399	1112	2328	3404	Strasbourg
Cold climate (kWh)	666	1534	2872	3975	Helsinki
Hot climate (kWh)	100	533	1528	2525	Athens
Qaux (kWh)	-	-	-	-	section 5.9.3.4, see note 1
Comply to the load profile (Yes/No)	-	-	-	-	section 5.10.6 , see note 1
ηwh_nonsol (%)	-	-	-	-	section 5.9.3.5 , see note 1
Qelec (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
Qfuel (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
V40, measured (l)	-	-	-	-	section 5.10.7, see note 1

Auxiliary thermostat setting	-	ºC	Effective power of auxiliary heater	-	kW

Note 1: Clause of EN 12976-2:2019

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab
No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.		Country	Greece	
Brand (optional)			Website	www.venman.gr	
Street	7th Km Old National Road Thessaloniki -		E-mail	info@venman.gr	
Postal Code	57022	Thessaloniki	Tel. / Fax	+30	2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors				
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)
H81 15 Open Loop	1	2	2	2	
H81 20 Open Loop		1	1 2	2	2
H81 25 Open Loop		1	1	1	1 2

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Name of system configuration				VM251.20.13 OC	
Collector name	H81 25 Open Loop	No. Collectors	1	Storage name	250 L (OC)

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Load profile	M	L	XL	XXL	
Annual heat demand (kWh)	1523	2799	4427	5626	
Auxiliary heat contribution		Qnonsol			section 5.9.3.6, see note 1
Average climate (kWh)	539	1437	2820	3948	Strasbourg
Cold climate (kWh)	799	1806	3250	4396	Helsinki
Hot climate (kWh)	214	884	2135	3211	Athens
Qaux (kWh)	-	-	-	-	section 5.9.3.4, see note 1
Comply to the load profile (Yes/No)	-	-	-	-	section 5.10.6 , see note 1
ηwh_nonsol (%)	-	-	-	-	section 5.9.3.5 , see note 1
Qelec (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
Qfuel (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
V40, measured (l)	-	-	-	-	section 5.10.7, see note 1

Auxiliary thermostat setting	-	ºC	Effective power of auxiliary heater	-	kW

Note 1: Clause of EN 12976-2:2019

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab	
No comments	TÜVRheinland® Genau. Richtig. TÜV Rheinland Solar GmbH Am Grauen Stein 51105 Köln

Central Offices: Kalavriton 2, 145 64 kififia, Athens, Tel.: +30 210 6233493-4, Fax: +30 210 623349
www.dqsglobal.com; e-Mail: i.alexiou@dqs.gr address etc.

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors				
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)
H81 15 Open Loop	1	2	2	2	
H81 20 Open Loop		1	1 2	2	2
H81 25 Open Loop		1	1	1	1 2

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Name of system configuration				Storage name	
	VM252.15.10 OC				
Collector name	H81 15 Open Loop	No. Collectors	2		250 L (OC)

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Load profile	M	L	XL	XXL	
Annual heat demand (kWh)	1523	2799	4427	5626	
Auxiliary heat contribution		Qnonsol			section 5.9.3.6, see note 1
Average climate (kWh)	478	1306	2635	3746	Strasbourg
Cold climate (kWh)	746	1701	3110	4247	Helsinki
Hot climate (kWh)	161	735	1897	2956	Athens
Qaux (kWh)	-	-	-	-	section 5.9.3.4, see note 1
Comply to the load profile (Yes/No)	-	-	-	-	section 5.10.6 , see note 1
ηwh_nonsol (%)	-	-	-	-	section 5.9.3.5 , see note 1
Qelec (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
Qfuel (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
V40, measured (l)	-	-	-	-	section 5.10.7, see note 1

Auxiliary thermostat setting	-	ºC	Effective power of auxiliary heater	-	kW

Note 1: Clause of EN 12976-2:2019

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab	
No comments	TÜVRheinland® Genau. Richtig. TÜV Rheinland Solar GmbH Am Grauen Stein 51105 Köln

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors					
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)	
H81 15 Open Loop	1	2	2	2		
H81 20 Open Loop		1	1 2	2	2	
H81 25 Open Loop		1	1	1	1 2	

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Name of system configuration				VM253.20.10 OC	
Collector name	H81 20 Open Loop	No. Collectors	2	Storage name	250 L (OC)

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Load profile	M	L	XL	XXL	
Annual heat demand (kWh)	1523	2799	4427	5626	
Auxiliary heat contribution		Qnonsol			section 5.9.3.6, see note 1
Average climate (kWh)	390	1095	2284	3342	Strasbourg
Cold climate (kWh)	669	1525	2837	3940	Helsinki
Hot climate (kWh)	100	506	1458	2429	Athens
Qaux (kWh)	-	-	-	-	section 5.9.3.4, see note 1
Comply to the load profile (Yes/No)	-	-	-	-	section 5.10.6 , see note 1
ηwh_nonsol (%)	-	-	-	-	section 5.9.3.5 , see note 1
Qelec (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
Qfuel (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
V40, measured (l)	-	-	-	-	section 5.10.7, see note 1

Auxiliary thermostat setting	-	ºC	Effective power of auxiliary heater	-	kW

Note 1: Clause of EN 12976-2:2019

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab	
No comments	TÜVRheinland® Genau. Richtig. TÜV Rheinland Solar GmbH Am Grauen Stein 51105 Köln

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors					
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)	
H81 15 Open Loop	1	2	2	2		
H81 20 Open Loop		1	1 2	2	2	
H81 25 Open Loop		1	1	1	1 2	

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Name of system configuration				VM302.20.05 OC	
Collector name	H81 25 Open Loop	No. Collectors	1	Storage name	300 L (OC)

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Load profile	M	L	XL	XXL	
Annual heat demand (kWh)	1523	2799	4427	5626	
Auxiliary heat contribution		Qnonsol			section 5.9.3.6, see note 1
Average climate (kWh)	548	1437	2811	3913	Strasbourg
Cold climate (kWh)	811	1806	3250	4379	Helsinki
Hot climate (kWh)	214	866	2117	3140	Athens
Qaux (kWh)	-	-	-	-	section 5.9.3.4, see note 1
Comply to the load profile (Yes/No)	-	-	-	-	section 5.10.6 , see note 1
ηwh_nonsol (%)	-	-	-	-	section 5.9.3.5 , see note 1
Qelec (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
Qfuel (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
V40, measured (l)	-	-	-	-	section 5.10.7, see note 1

Auxiliary thermostat setting	-	ºC	Effective power of auxiliary heater	-	kW

Note 1: Clause of EN 12976-2:2019

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab
No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors					
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)	
H81 15 Open Loop	1	2	2	2		
H81 20 Open Loop		1	1 2	2	2	
H81 25 Open Loop		1	1	1	1 2	

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Name of system configuration				VM302.20.10 OC	
Collector name	H81 20 Open Loop	No. Collectors	2	Storage name	300 L (OC)

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Load profile	M	L	XL	XXL	
Annual heat demand (kWh)	1523	2799	4427	5626	
Auxiliary heat contribution		Qnonsol			section 5.9.3.6, see note 1
Average climate (kWh)	390	1077	2249	3272	Strasbourg
Cold climate (kWh)	671	1525	2820	3887	Helsinki
Hot climate (kWh)	91	480	1397	2315	Athens
Qaux (kWh)	-	-	-	-	section 5.9.3.4, see note 1
Comply to the load profile (Yes/No)	-	-	-	-	section 5.10.6 , see note 1
ηwh_nonsol (%)	-	-	-	-	section 5.9.3.5 , see note 1
Qelec (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
Qfuel (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
V40, measured (l)	-	-	-	-	section 5.10.7, see note 1

Auxiliary thermostat setting	-	ºC	Effective power of auxiliary heater	-	kW

Note 1: Clause of EN 12976-2:2019

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab
No comments

TÜVRheinland®
Genau. Richtig.
TÜV Rheinland Solar GmbH
Am Grauen Stein
51105 Köln

Summary of	EN12976-2	test results	Certification No.	SKM 10137.2
Annex to Solar KEYMARK Certificate			Issued	2025-10-16

Company	VENMAN S.A.	Country	Greece
Brand (optional)		Website	www.venman.gr
Street	7th Km Old National Road Thessaloniki -	E-mail	info@venman.gr
Postal Code	57022 Thessaloniki	Tel. / Fax	+30 2310 784684

System family overview

Collector name	For each storage and collector size, give number of collectors					
	120 L (OC)	150 L (OC)	200 L (OC)	250 L (OC)	300 L (OC)	
H81 15 Open Loop	1	2	2	2		
H81 20 Open Loop		1	1 2	2	2	
H81 25 Open Loop		1	1	1	1	2

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Name of system configuration				VM302.20.15 OC	
Collector name	H81 25 Open Loop	No. Collectors	2	Storage name	300 L (OC)

Annual performance parameters in the frame of the EU regulation CDR 811, 812 and 813 dated 2013

Load profile	M	L	XL	XXL	
Annual heat demand (kWh)	1523	2799	4427	5626	
Auxiliary heat contribution		Qnonsol			section 5.9.3.6, see note 1
Average climate (kWh)	328	928	1959	2912	Strasbourg
Cold climate (kWh)	618	1393	2591	3615	Helsinki
Hot climate (kWh)	56	348	1054	1875	Athens
Qaux (kWh)	-	-	-	-	section 5.9.3.4, see note 1
Comply to the load profile (Yes/No)	-	-	-	-	section 5.10.6 , see note 1
ηwh_nonsol (%)	-	-	-	-	section 5.9.3.5 , see note 1
Qelec (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
Qfuel (kWh)	-	-	-	-	section 5.9.3.5 , see note 1
V40, measured (l)	-	-	-	-	section 5.10.7, see note 1

Auxiliary thermostat setting	-	ºC	Effective power of auxiliary heater	-	kW

Note 1: Clause of EN 12976-2:2019

Testing Laboratory	TÜV Rheinland Solar GmbH
Website	www.tuv.com/solar
Test report id. number	DE24V7Y7 001rev001
Date of test report	2025-10-14
Test method	ISO 9459-5 (DST)

Comments of test lab	
No comments	TÜVRheinland® Genau. Richtig. TÜV Rheinland Solar GmbH Am Grauen Stein 51105 Köln

Central Offices: Kalavriton 2, 145 64 kifisia, Athens, Tel.: +30 210 6233493-4, Fax: +30 210 623349
www.dqsglobal.com; e-Mail: i.alexiou@dqs.gr address etc.