Summary of	EN12976-2	SOLAR SYSTEM test results	Licence Number	SKM 10109.4.9
Annex to Solar KEYMARK Certificate			Issued	2025-11-20

Company	ATI DI MARIANI S.R.L.		Country	Italia	
Brand (optional)			Website	www.atimariani.it	
Street	Via E. Mattei, 461 - Z. ind. 4 Torre del Moro		E-mail	info@atimariani.it	
Postal Code	47522	Cesena (FC)	Tel. / Fax	+39	0547-609711

System classification	
Application(s)	Hot water
Solar loop, circulation principle	Thermosyphon
Direct solar loop / heat exchanger	Heat exchanger
Open, vented or closed solar loop	Closed
Drain back/down	Always filled (no drain)
Store location	Outdoor
Store orientation (of main axis)	Horizontal
Type of auxiliary heating (internal back-up heat)	Electric
If other auxiliary/internal back-up heating, please specifiy:	
Solar+supplementary OR Solar-only / Solar pre-heat	Solar only / Solar preheat

Collector(s)

Company	ATI DI MARIANI S.R.L.
Keymark lic.no. if available	SKM 10109.1.5

Collector name	Per module: Gross Area (AG)	Per module: Gross length	Per module: Gross width
	m²	mm	mm
PSC20	1,90	1970	965
PSC25	2,40	1970	1220

Heat store(s)

Company	ATI DI MARIANI S.R.L.
Keymark lic.no. if available	

Store name	Total nominal volume	Gross height	Gross width	Gross depth	Auxiliary heated volume	Electrical aux. heating power
	litres	mm	mm	mm	litres	kW
PSS150	136	1250	500			
PSS200	190	1250	580			
PSS250	230	1550	580			
PSS300	276	1785	580			

Solar loop controller						Solar loop fluid		
Keymark lic.no. if available	-					Recommended/required	Recommended	
Company	-					Company	-	
Name	-					Name	-	
Solar loop pump - power range		W	to		W	Freezing point	-32	°C

System family overview

Collector name	Number of collectors in each configuration for each store: Store name: PSS150	PSS200	PSS250	PSS300
PSC20	1	1 2	1 2 3	1 2 3
PSC25	1	1 2	1 2	1 2 3

Testing Laboratory	NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB
Website	www.solar.demokritos.gr
Test report id. number	6110 DE2, 6113 DE2, 6113 F2
Date of test report	2020-11-04

Comments of test lab

Stamp & signature of test lab

DQS HELLAS Ltd, Central Offices: Kalavriton 2, 145 64 kifisia, Athens, Tel: +301 6233493-4 , Fax: +301 6233495,
http://www.dqsglobal.com, e-mail: i.alexiou@dqs.gr

Summary of	EN12976-2	test results	Certification No.	SKM 10109.4.9
Annex to Solar KEYMARK Certificate			Issued	2025-11-20

Company	ATI DI MARIANI S.R.L.	Country	Italia
Brand (optional)	0	Website	www.atimariani.it
Street	Via E. Mattei, 461 - Z. ind. 4 Torre del Moro	E-mail	info@atimariani.it
Postal Code	47522 Cesena (FC)	Tel. / Fax	+39 0547-609711

System family overview

Collector name	For each storage and collector size, give number of collectors																										
	PSS150						PSS200						PSS250						PSS300										
PSC20	1						1	2					1	2	3				1	2	3								
PSC25	1						1	2					1	2					1	2	3								

Name of system configuration				Storage name	
Collector name	PSC20	No. Collectors	1		PSS150

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	0	51	7821	3658	0	47	9492	3942	0	42
WürzburgDE	-	5897	3185	0	54	7506	3753	0	50	9114	4131	0	45
Davos CH	-	6654	4636	0	70	8483	5330	0	63	10281	5676	0	55
Athens GR	-	4573	3847	0	84	5834	4636	0	80	7064	5235	0	74

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	250	kPa	Max. operating press. - tank side	1000	kPa

Testing Laboratory	NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB
Website	www.solar.demokritos.gr
Test report id. number	6110 DE2, 6113 DE2, 6113 F2
Date of test report	2020-11-04
Test method	ISO 9459-5 (DST)

Comments of test lab

Extrapolated

Stamp & signature of test lab

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 10109.4.9
Annex to Solar KEYMARK Certificate			Issued	2025-11-20

Company	ATI DI MARIANI S.R.L.		Country	Italia
Brand (optional)	0		Website	www.atimariani.it
Street	Via E. Mattei, 461 - Z. ind. 4 Torre del Moro		E-mail	info@atimariani.it
Postal Code	47522	Cesena (FC)	Tel. / Fax	+39 0547-609711

System family overview

For each storage and collector size, give number of collectors

Collector name	PSS150	PSS200	PSS250	PSS300
PSC20	1	1 2	1 2 3	1 2 3
PSC25	1	1 2	1 2	1 2 3

Name of system configuration				PSS1525A	
Collector name	PSC25	No. Collectors	1	Storage name	PSS150

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	3469	0	56	7821	4068	0	52	9492	4478	0	47
WürzburgDE	-	5897	3437	0	59	7506	4131	0	55	9114	4604	0	51
Davos CH	-	6654	5140	0	77	8483	6023	0	71	10281	6591	0	64
Athens GR	-	4573	4068	0	89	5834	4951	0	85	7064	5676	0	80

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	250	kPa	Max. operating press. - tank side	1000	kPa

Testing Laboratory	NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB
Website	www.solar.demokritos.gr
Test report id. number	6110 DE2, 6113 DE2, 6113 F2
Date of test report	2020-11-04
Test method	ISO 9459-5 (DST)

Comments of test lab

Extrapolated

Stamp & signature of test lab

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 10109.4.9
Annex to Solar KEYMARK Certificate			Issued	2025-09-20

Company	ROUTZIOS ALEXANDROS STE. DT "HYDROSOL PLUS"		Country	Italia
Brand (optional)	0		Website	www.atimariani.it
Street	Via E. Mattei, 461 - Z. ind. 4 Torre del Moro		E-mail	info@atimariani.it
Postal Code	47522	Cesena (FC)	Tel. / Fax	+39 0547-609711

System family overview

Collector name	For each storage and collector size, give number of collectors																										
	PSS150					PSS200					PSS250						PSS300										
PSC20	1					1	2				1	2	3				1	2	3								
PSC25	1					1	2				1	2					1	2	3								

Name of system configuration			PSS2020A		
Collector name	PSC20	No. Collectors	1	Storage name	PSS200

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	4005	0	42	11164	4289	0	38	13939	4478	0	32
WürzburgDE	-	9114	4163	0	46	10691	4510	0	42	13371	4762	0	36
Davos CH	-	10281	5740	0	56	12110	6086	0	50	15137	6307	0	42
Athens GR	-	7064	5298	0	75	8326	5866	0	70	10407	6465	0	62

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	250	kPa	Max. operating press. - tank side	1000	kPa

Testing Laboratory	NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB
Website	www.solar.demokritos.gr
Test report id. number	6110 DE2, 6113 DE2, 6113 F2
Date of test report	2020-11-04
Test method	ISO 9459-5 (DST)

Comments of test lab

Extrapolated

Stamp & signature of test lab

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 10109.4.9
Annex to Solar KEYMARK Certificate			Issued	2025-09-20

Company	ROUTZIOS ALEXANDROS STE. DT "HYDROSOL PLUS"		Country	Italia
Brand (optional)	0		Website	www.atimariani.it
Street	Via E. Mattei, 461 - Z. ind. 4 Torre del Moro		E-mail	info@atimariani.it
Postal Code	47522	Cesena (FC)	Tel. / Fax	+39 0547-609711

System family overview

Collector name	For each storage and collector size, give number of collectors																											
	PSS150						PSS200						PSS250						PSS300										
PSC20	1						1	2					1	2	3				1	2	3								
PSC25	1						1	2					1	2					1	2	3								

Name of system configuration			PSS2025A		
Collector name	PSC25	No. Collectors	1	Storage name	PSS200

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	4573	0	48	11164	4983	0	45	13939	5298	0	38
WürzburgDE	-	9114	4699	0	52	10691	5172	0	48	13371	5613	0	42
Davos CH	-	10281	6686	0	65	12110	7222	0	60	15137	7600	0	50
Athens GR	-	7064	5740	0	81	8326	6433	0	78	10407	7285	0	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	250	kPa	Max. operating press. - tank side	1000	kPa

Testing Laboratory	NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB
Website	www.solar.demokritos.gr
Test report id. number	6110 DE2, 6113 DE2, 6113 F2
Date of test report	2020-11-04
Test method	ISO 9459-5 (DST)

Comments of test lab

Extrapolated

Stamp & signature of test lab

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 10109.4.9
Annex to Solar KEYMARK Certificate				Issued	2025-11-20

Company	ATI DI MARIANI S.R.L.		Country	Italia	
Brand (optional)	0		Website	www.atimariani.it	
Street	Via E. Mattei, 461 - Z. ind. 4 Torre del Moro		E-mail	info@atimariani.it	
Postal Code	47522	Cesena (FC)	Tel. / Fax	+39	0547-609711

System family overview

Collector name	For each storage and collector size, give number of collectors																											
	PSS150						PSS200						PSS250						PSS300										
PSC20	1						1	2					1	2	3				1	2	3								
PSC25	1						1	2					1	2					1	2	3								

Name of system configuration				Storage name	
Collector name	PSC20	No. Collectors	2		PSS2040A
				Storage name	PSS200

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	5424	0	57	11164	6055	0	54	13939	6749	0	48
WürzburgDE	-	9114	5424	0	60	10691	6118	0	57	13371	6938	0	52
Davos CH	-	10281	8105	0	79	12110	9019	0	74	15137	9997	0	66
Athens GR	-	7064	6339	0	90	8326	7222	0	87	10407	8452	0	81

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	250	kPa	Max. operating press. - tank side	1000	kPa

Testing Laboratory	NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB
Website	www.solar.demokritos.gr
Test report id. number	6110 DE2, 6113 DE2, 6113 F2
Date of test report	2020-11-04
Test method	ISO 9459-5 (DST)

Comments of test lab

Extrapolated

Stamp & signature of test lab

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 10109.4.9
Annex to Solar KEYMARK Certificate			Issued	2025-11-20

Company	ATI DI MARIANI S.R.L.		Country	Italia
Brand (optional)	0		Website	www.atimariani.it
Street	Via E. Mattei, 461 - Z. ind. 4 Torre del Moro		E-mail	info@atimariani.it
Postal Code	47522	Cesena (FC)	Tel. / Fax	+39 0547-609711

System family overview

Collector name	For each storage and collector size, give number of collectors																											
	PSS150						PSS200						PSS250						PSS300										
PSC20	1						1	2					1	2	3				1	2	3								
PSC25	1						1	2					1	2					1	2	3								

Name of system configuration				Storage name	
	PSS2050A				
Collector name	PSC25	No. Collectors	2	Storage name	PSS200

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	5803	0	61	11164	6528	0	58	13939	7411	0	53
WürzburgDE	-	9114	5740	0	63	10691	6496	0	61	13371	7506	0	56
Davos CH	-	10281	8641	0	84	12110	9745	0	80	15137	11038	0	73
Athens GR	-	7064	6559	0	93	8326	7506	0	90	10407	8925	0	86

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	250	kPa	Max. operating press. - tank side	1000	kPa

Testing Laboratory	NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB
Website	www.solar.demokritos.gr
Test report id. number	6110 DE2, 6113 DE2, 6113 F2
Date of test report	2020-11-04
Test method	ISO 9459-5 (DST)

Comments of test lab

Extrapolated

Stamp & signature of test lab

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 10109.4.9
Annex to Solar KEYMARK Certificate			Issued	2025-11-20

Company	ATI DI MARIANI S.R.L.		Country	Italia
Brand (optional)	0		Website	www.atimariani.it
Street	Via E. Mattei, 461 - Z. ind. 4 Torre del Moro		E-mail	info@atimariani.it
Postal Code	47522	Cesena (FC)	Tel. / Fax	+39 0547-609711

System family overview

Collector name	For each storage and collector size, give number of collectors																											
	PSS150						PSS200						PSS250						PSS300										
PSC20	1						1	2					1	2	3				1	2	3								
PSC25	1						1	2					1	2					1	2	3								

Name of system configuration				Storage name	
Collector name	PSC20	No. Collectors	1		PSS2520A
					PSS250

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	4226	0	38	13939	4573	0	33	16746	4699	0	28
WürzburgDE	-	10691	4478	0	42	13371	4857	0	36	16052	5014	0	31
Davos CH	-	12110	5992	0	49	15137	6433	0	43	18165	6559	0	36
Athens GR	-	8326	5834	0	70	10407	6591	0	63	12488	7033	0	56

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	250	kPa	Max. operating press. - tank side	1000	kPa

Testing Laboratory	NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB
Website	www.solar.demokritos.gr
Test report id. number	6110 DE2, 6113 DE2, 6113 F2
Date of test report	2020-11-04
Test method	ISO 9459-5 (DST)

Comments of test lab

Extrapolated

Stamp & signature of test lab

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 10109.4.9
Annex to Solar KEYMARK Certificate			Issued	2025-11-20

Company	ATI DI MARIANI S.R.L.		Country	Italia
Brand (optional)	0		Website	www.atimariani.it
Street	Via E. Mattei, 461 - Z. ind. 4 Torre del Moro		E-mail	info@atimariani.it
Postal Code	47522	Cesena (FC)	Tel. / Fax	+39 0547-609711

System family overview

Collector name	For each storage and collector size, give number of collectors																											
	PSS150						PSS200						PSS250						PSS300										
PSC20	1						1	2					1	2	3				1	2	3								
PSC25	1						1	2					1	2					1	2	3								

Name of system configuration				Storage name	
Collector name	PSC25	No. Collectors	1		PSS250

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	4983	0	45	13939	5456	0	39	16746	5676	0	34
WürzburgDE	-	10691	5140	0	48	13371	5771	0	43	16052	6023	0	38
Davos CH	-	12110	7159	0	59	15137	7789	0	52	18165	8010	0	44
Athens GR	-	8326	6433	0	77	10407	7411	0	71	12488	8073	0	65

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	250	kPa	Max. operating press. - tank side	1000	kPa

Testing Laboratory	NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB
Website	www.solar.demokritos.gr
Test report id. number	6110 DE2, 6113 DE2, 6113 F2
Date of test report	2020-11-04
Test method	ISO 9459-5 (DST)

Comments of test lab

Extrapolated

Stamp & signature of test lab

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 10109.4.9
Annex to Solar KEYMARK Certificate				Issued	2025-11-20

Company	ATI DI MARIANI S.R.L.		Country	Italia	
Brand (optional)	0		Website	www.atimariani.it	
Street	Via E. Mattei, 461 - Z. ind. 4 Torre del Moro		E-mail	info@atimariani.it	
Postal Code	47522	Cesena (FC)	Tel. / Fax	+39	0547-609711

System family overview

Collector name	For each storage and collector size, give number of collectors																												
	PSS150						PSS200						PSS250						PSS300											
PSC20	1						1	2					1	2	3				1	2	3									
PSC25	1						1	2					1	2					1	2	3									

Name of system configuration					
Collector name	PSC20	No. Collectors	2	Storage name	PSS250

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	6150	0	55	13939	7001	0	50	16746	7506	0	45
WürzburgDE	-	10691	6213	0	58	13371	7190	0	54	16052	7821	0	49
Davos CH	-	12110	9177	0	76	15137	10375	0	69	18165	10975	0	60
Athens GR	-	8326	7316	0	88	10407	8641	0	83	12488	9682	0	78

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	250	kPa	Max. operating press. - tank side	1000	kPa

Testing Laboratory	NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB
Website	www.solar.demokritos.gr
Test report id. number	6110 DE2, 6113 DE2, 6113 F2
Date of test report	2020-11-04
Test method	ISO 9459-5 (DST)

Comments of test lab

TESTED

Stamp & signature of test lab

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 10109.4.9
Annex to Solar KEYMARK Certificate			Issued	2025-11-20

Company	ATI DI MARIANI S.R.L.		Country	Italia
Brand (optional)	0		Website	www.atimariani.it
Street	Via E. Mattei, 461 - Z. ind. 4 Torre del Moro		E-mail	info@atimariani.it
Postal Code	47522	Cesena (FC)	Tel. / Fax	+39 0547-609711

System family overview

Collector name	For each storage and collector size, give number of collectors																											
	PSS150						PSS200						PSS250						PSS300										
PSC20	1						1	2					1	2	3				1	2	3								
PSC25	1						1	2					1	**2**					1	2	3								

Name of system configuration				Storage name	
	PSS2550A				
Collector name	PSC25	No. Collectors	2	Storage name	PSS250

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	6591	0	59	13939	7632	0	55	16746	8389	0	50
WürzburgDE	-	10691	6528	0	61	13371	7695	0	58	16052	8578	0	53
Davos CH	-	12110	9808	0	81	15137	11384	0	75	18165	12425	0	68
Athens GR	-	8326	7569	0	91	10407	9082	0	87	12488	10344	0	83

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	250	kPa	Max. operating press. - tank side	1000	kPa

Testing Laboratory	NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB
Website	www.solar.demokritos.gr
Test report id. number	6110 DE2, 6113 DE2, 6113 F2
Date of test report	2020-11-04
Test method	ISO 9459-5 (DST)

Comments of test lab

Extrapolated

Stamp & signature of test lab

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 10109.4.9
Annex to Solar KEYMARK Certificate			Issued	2025-11-20

Company	ATI DI MARIANI S.R.L.		Country	Italia
Brand (optional)	0		Website	www.atimariani.it
Street	Via E. Mattei, 461 - Z. ind. 4 Torre del Moro		E-mail	info@atimariani.it
Postal Code	47522	Cesena (FC)	Tel. / Fax	+39 0547-609711

System family overview

Collector name	For each storage and collector size, give number of collectors																											
	PSS150						PSS200						PSS250						PSS300										
PSC20	1						1	2					1	2	3				1	2	3								
PSC25	1						1	2					1	2					1	2	3								

Name of system configuration							
				PSS2560A			
Collector name	PSC20	No. Collectors	3	Storage name	PSS250		

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	6843	0	61	13939	8042	0	58	16746	8893	0	53
WürzburgDE	-	10691	6780	0	63	13371	8042	0	60	16052	9019	0	56
Davos CH	-	12110	10218	0	84	15137	12015	0	79	18165	13245	0	73
Athens GR	-	8326	7726	0	93	10407	9303	0	90	12488	10691	0	86

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	250	kPa	Max. operating press. - tank side	1000	kPa

Testing Laboratory	NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB
Website	www.solar.demokritos.gr
Test report id. number	6110 DE2, 6113 DE2, 6113 F2
Date of test report	2020-11-04
Test method	ISO 9459-5 (DST)

Comments of test lab

Extrapolated

Stamp & signature of test lab

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 10109.4.9**		
Annex to Solar KEYMARK Certificate		**Issued**	2025-09-20

Company	ROUTZIOS ALEXANDROS STE. DT "HYDROSOL PLUS"	**Country**	Italia
Brand (optional)	0	**Website**	www.atimariani.it
Street	Via E. Mattei, 461 - Z. ind. 4 Torre del Moro	**E-mail**	info@atimariani.it
Postal Code	47522 Cesena (FC)	**Tel. / Fax**	+39 0547-609711

System family overview

For each storage and collector size, give number of collectors

Collector name	PSS150	PSS200	PSS250	PSS300
PSC20	1	1, 2	1, 2, 3	**1**, 2, 3
PSC25	1	1, 2	1, 2	1, 2, 3

Name of system configuration				PSS3020A	
Collector name	PSC20	**No. Collectors**	1	**Storage name**	PSS300

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

Location	Qd,sh	Qd,hw (Daily drawoff 250 l)	QL	Qpar	fsol	Qd,hw (Daily drawoff 300 l)	QL	Qpar	fsol	Qd,hw (Daily drawoff 400 l)	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	-	13939	4604	0	33	16746	4825	0	29	22327	5014	0	22
WürzburgDE	-	13371	4857	0	36	16052	5140	0	32	21413	5298	0	25
Davos CH	-	15137	6402	0	42	18165	6717	0	37	24220	6906	0	29
Athens GR	-	10407	6591	0	63	12488	7190	0	58	16651	7569	0	45

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	250	kPa	**Max. operating press. - tank side**	1000	kPa

Testing Laboratory	NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB
Website	www.solar.demokritos.gr
Test report id. number	6110 DE2, 6113 DE2, 6113 F2
Date of test report	2020-11-04
Test method	ISO 9459-5 (DST)

Comments of test lab

Extrapolated

Stamp & signature of test lab

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 10109.4.9
Annex to Solar KEYMARK Certificate			Issued	2025-09-20

Company	ROUTZIOS ALEXANDROS STE. DT "HYDROSOL PLUS"		Country	Italia
Brand (optional)	0		Website	www.atimariani.it
Street	Via E. Mattei, 461 - Z. ind. 4 Torre del Moro		E-mail	info@atimariani.it
Postal Code	47522	Cesena (FC)	Tel. / Fax	+39 0547-609711

System family overview

For each storage and collector size, give number of collectors

Collector name	PSS150	PSS200	PSS250	PSS300
PSC20	1	1 2	1 2 3	1 2 3
PSC25	1	1 2	1 2	1 2 3

Name of system configuration				PSS3025A	
Collector name	PSC25	No. Collectors	1	Storage name	PSS300

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

Location	Qd,sh	Daily drawoff 250 l				Daily drawoff 300 l				Daily drawoff 400 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	-	13939	5519	0	40	16746	5866	0	35	22327	6086	0	27
WürzburgDE	-	13371	5771	0	43	16052	6213	0	39	21413	6433	0	30
Davos CH	-	15137	7821	0	52	18165	8262	0	46	24220	8483	0	35
Athens GR	-	10407	7474	0	72	12488	8262	0	66	16651	9082	0	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	250	kPa	Max. operating press. - tank side	1000	kPa

Testing Laboratory	NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB
Website	www.solar.demokritos.gr
Test report id. number	6110 DE2, 6113 DE2, 6113 F2
Date of test report	2020-11-04
Test method	ISO 9459-5 (DST)

Comments of test lab

Extrapolated

Stamp & signature of test lab

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 10109.4.9
Annex to Solar KEYMARK Certificate			Issued	2025-11-20

Company	ATI DI MARIANI S.R.L.	**Country**	Italia
Brand (optional)	0	**Website**	www.atimariani.it
Street	Via E. Mattei, 461 - Z. ind. 4 Torre del Moro	**E-mail**	info@atimariani.it
Postal Code	47522 Cesena (FC)	**Tel. / Fax**	+39 0547-609711

System family overview

For each storage and collector size, give number of collectors

Collector name	PSS150	PSS200		PSS250			PSS300		
PSC20	1	1	2	1	2	3	1	2	3
PSC25	1	1	2	1	2		1	2	3

Name of system configuration	PSS3040A		
Collector name	PSC20	**No. Collectors**	2
Storage name	PSS300		

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

Location	Qd,sh	Daily drawoff 250 l: Qd,hw	QL	Qpar	fsol	Daily drawoff 300 l: Qd,hw	QL	Qpar	fsol	Daily drawoff 400 l: 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	-	13939	7096	0	51	16746	7821	0	47	22327	8452	0	38
WürzburgDE	-	13371	7222	0	54	16052	8073	0	50	21413	8893	0	42
Davos CH	-	15137	10470	0	69	18165	11448	0	63	24220	12110	0	50
Athens GR	-	10407	8704	0	84	12488	9934	0	80	16651	11574	0	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	250 kPa	**Max. operating press. - tank side**	1000 kPa

Testing Laboratory	NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB
Website	www.solar.demokritos.gr
Test report id. number	6110 DE2, 6113 DE2, 6113 F2
Date of test report	2020-11-04
Test method	ISO 9459-5 (DST)

Comments of test lab

Extrapolated

Stamp & signature of test lab

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 10109.4.9
Annex to Solar KEYMARK Certificate			Issued	2025-11-20

Company	ATI DI MARIANI S.R.L.		Country	Italia
Brand (optional)	0		Website	www.atimariani.it
Street	Via E. Mattei, 461 - Z. ind. 4 Torre del Moro		E-mail	info@atimariani.it
Postal Code	47522	Cesena (FC)	Tel. / Fax	+39 0547-609711

System family overview

Collector name	For each storage and collector size, give number of collectors																											
	PSS150						PSS200						PSS250						PSS300										
PSC20	1						1	2					1	2	3				1	2	3								
PSC25	1						1	2					1	2					1	2	3								

Name of system configuration							
					PSS3050A		
Collector name	PSC25	No. Collectors	2	Storage name	PSS300		

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

Location	Qd,sh	Daily drawoff 250 l				Daily drawoff 300 l				Daily drawoff 400 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	-	13939	7821	0	56	16746	8735	0	52	22327	9776	0	44
WürzburgDE	-	13371	7821	0	59	16052	8862	0	55	21413	10155	0	48
Davos CH	-	15137	11605	0	77	18165	12961	0	71	24220	14254	0	59
Athens GR	-	10407	9209	0	88	12488	10596	0	85	16651	12709	0	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	250	kPa	Max. operating press. - tank side	1000	kPa

Testing Laboratory	NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB
Website	www.solar.demokritos.gr
Test report id. number	6110 DE2, 6113 DE2, 6113 F2
Date of test report	2020-11-04
Test method	ISO 9459-5 (DST)

Comments of test lab

Extrapolated

Stamp & signature of test lab

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 10109.4.9
Annex to Solar KEYMARK Certificate			Issued	2025-11-20

Company	ATI DI MARIANI S.R.L.		Country	Italia
Brand (optional)	0		Website	www.atimariani.it
Street	Via E. Mattei, 461 - Z. ind. 4 Torre del Moro		E-mail	info@atimariani.it
Postal Code	47522	Cesena (FC)	Tel. / Fax	+39 0547-609711

System family overview

Collector name	For each storage and collector size, give number of collectors																											
	PSS150						PSS200						PSS250						PSS300										
PSC20	1						1	2					1	2	3				1	2	3								
PSC25	1						1	2					1	2					1	2	3								

Name of system configuration							
					PSS3060A		
Collector name	PSC20	No. Collectors	3	Storage name	PSS300		

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

Location	Qd,sh	Daily drawoff 250 l				Daily drawoff 300 l				Daily drawoff 400 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	-	13939	8199	0	59	16746	9240	0	55	22327	10596	0	47
WürzburgDE	-	13371	8168	0	61	16052	9303	0	58	21413	10880	0	51
Davos CH	-	15137	12236	0	81	18165	13813	0	76	24220	15579	0	64
Athens GR	-	10407	9429	0	91	12488	10943	0	88	16651	13340	0	80

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	250	kPa	Max. operating press. - tank side	1000	kPa

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Website	www.solar.demokritos.gr
Test report id. number	6110 DE2, 6113 DE2, 6113 F2
Date of test report	2020-11-04
Test method	ISO 9459-5 (DST)

Comments of test lab

Extrapolated

Stamp & signature of test lab

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Version 4.5, 2017-10-24

Summary of	EN12976-2	test results	Certification No.	SKM 10109.4.9
Annex to Solar KEYMARK Certificate			Issued	2025-11-20

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System family overview

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	PSS150						PSS200						PSS250						PSS300										
PSC20	1						1	2					1	2	3				1	2	3								
PSC25	1						1	2					1	2					1	2	3								

Name of system configuration					
Collector name	PSC25	No. Collectors	3	Storage name	PSS300

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

Location	Qd,sh	Daily drawoff 250 l				Daily drawoff 300 l				Daily drawoff 400 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	-	13939	8735	0	63	16746	9934	0	59	22327	11668	0	52
WürzburgDE	-	13371	8609	0	64	16052	9902	0	62	21413	11826	0	55
Davos CH	-	15137	12993	0	86	18165	14853	0	82	24220	17345	0	72
Athens GR	-	10407	9745	0	94	12488	11384	0	91	16651	14097	0	85

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
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Ta,ave	7,5	9,0	3,2	18,5
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G	kWh/m²	**Annual irradiation South, 45°**
Ta,ave	°C	**Annual average outdoor air temperature**
Tc,ave	°C	**Annual average mains cold water temp.**
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Th	45 °C	**Desired hot water temperature (mixing valve temperature).**

Max. operating press. - collector side	250	kPa	Max. operating press. - tank side	1000	kPa

Testing Laboratory	NCSR "DEMOKRITOS"- SOLAR & ENERGY SYSTEMS LAB
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Comments of test lab

Extrapolated

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Version 4.5, 2017-10-24