



CERTIFICATE

Solar Keymark Certificate No. SP SC0895-12

Holder/Issued to/Manufacturer

Company: Jiangsu Micoe Solar Energy Co. Ltd
Address: NingHai Industrial Zone, Lianyungang City, Jiangsu Province, China

Product name and description

Solar thermal systems for water heating. For technical information see Appendix (2 pages).

Models:	SZ58/1800-15HE	SZ58/1800-20HE
	SZ58/1800-24HE	SZ58/1800-30HE

Certificate

The product is found to comply with the requirements in EN 12976-1:2006 Factory made systems, Part 1: General requirements and the Specific CEN Keymark Scheme Rules for Solar Thermal Products, and are based on test results according to EN 12976-2:2006 Part 2: Test methods.

Marking

Products conforming to this certificate shall be marked in accordance with the requirements in the Specific CEN Keymark Scheme Rules for Solar Thermal Products. The marking shall, together with the Keymark logo, show the identification code of the empowered certification body (SP Technical Research Institute of Sweden, No. 012), also see CEN-CENELEC Internal Regulations Part 4 Certification, Annex A.

Validity

This certificate is valid until 2022-04-19 provided that the conditions in the Solar Keymark Rules are fulfilled and the standard or rules are not modified significantly. The validity of the certificate can be checked in the database, see Solar Keymark website <http://www.solarkeymark.org>.

Miscellaneous

The manufacturer's factory production control procedures are under surveillance by the responsibility of SP. This certificate was first issued 2012-04-19. This is issue number 2.

Borås, Sweden 2017-05-19

SP Technical Research Institute of Sweden Certification

Lennart Aronsson
Certification Manager

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Certification Officer



SP Technical Research Institute of Sweden

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Empowered Certification Body No. 012: SP Certification, Sweden
For more information of Solar Keymark visit: www.solarkeymar.org
This certificate may not be reproduced other than in full, except with the prior written approval by SP. SP Certification rules SPCR402 applies.



Annex to Solar Keymark Certificate

Summary of	EN12976-2	SOLAR SYSTEM test results	Licence Number	SP SC0895-12
Annex to Solar KEYMARK Certificate			Issued	2017-05-19
Company	Jiangsu Micoe Solar Energy Co., Ltd.		Country	China
Brand (optional)	Micoe		Website	http://en.micoe.com
Street	NingHai Industrial Zone		E-mail	info@micoe.com
Postal Code	222000	Lianyungang city, Jiangsu Province	Tel. / Fax	+86 518-8595-9567/9565

System classification	
Application(s)	Hot water
Solar loop, circulation principle	Thermosyphon
Direct solar loop / heat exchanger	Heat exchanger
Open, vented or closed solar loop	Vented
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 specify:	None
Solar+supplementary OR Solar-only / Solar pre-heat	Solar only / Solar preheat

Collector(s)				Heat store(s)						
Company	Jiangsu Micoe Solar Energy Co.,			Company	Jiangsu Micoe Solar Energy Co., Ltd.					
<i>Keymark lic.no. if available</i>	None			<i>Keymark lic.no. if available</i>	None					
Collector name	Per module			Store name	Total nominal volume litres	Gross height mm	Gross width mm	Gross depth mm	Auxiliary heated volume litres	Electrical aux. heating power kW
	Gross Area (Ag) m ²	Gross length mm	Gross width mm							
SZ58/1800-15HE	1,53	1735	1305	150L	150	475	1435	475	optional	1,5
SZ58/1800-20HE	2,34	1735	1702	200L	200	475	1800	475	optional	1,5
SZ58/1800-24HE	2,74	1735	2006	240L	240	475	2180	475	optional	1,5
SZ58/1800-30HE	3,31	1735	2545	300L	300	475	2680	475	optional	1,5

Solar loop controller		Solar loop fluid	
<i>Keymark lic.no. if available</i>	None	Recommended/required	No recommend./requirements
Company	None	Company	NA
Name	None	Name	NA
Solar loop pump - power range	0 W to 0 W	Freezing point	-20 °C

System family overview							
Collector name	Number of collectors in each configuration for each store						
	Store name						
	150L	200L	240L	300L			
SZ58/1800-15HE	1						
SZ58/1800-20HE		1					
SZ58/1800-24HE			1				
SZ58/1800-30HE				1			

Testing Laboratory	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Website	www.intertek.com.cn
Test report id. number	170228133GZU-001/002/003/004/005
Date of test report	2017.4.25

Comments of test lab	
The "negative pressure test of the collector" according to EN12975-2:2006, 5.9.2 was not performed.	

Summary of	EN12976-2	test results	Certification No.	SP SC0895-12
Annex to Solar KEYMARK Certificate			Issued	2017-05-19
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Brand (optional)	Micoe		Website	http://en.micoe.com
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Postal Code	222000	Lianyungang city, Jiangsu Province	Tel. / Fax	+86 518-8595-9567/9565

System family overview

Collector name	For each storage and collector size, give number of collectors												
	150L			200L			240L			300L			
SZ58/1800-15HE	1												
SZ58/1800-20HE				1									
SZ58/1800-24HE						1							
SZ58/1800-30HE									1				

Name of system configuration SZ58/1800-15HE

Collector name SZ58/1800-15HE No. Collectors 1 Storage name 150L

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

Location	Qd,sh MJ/y	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	%
Stockholm SE		6124	1912	0	31,2	7796	2355	0	30,2	9467	2668	0	28,2
WürzburgDE		5875	2022	0	34,4	7476	2467	0	33,0	9077	2819	0	31,1
Davos CH		6646	2808	0	42,3	8458	3368	0	39,8	10271	3864	0	37,6
Athens GR		4565	2793	0	61,2	5810	3488	0	60,0	7055	4101	0	58,1

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	kWh/m ²	1 157	1 230	1 684
T _{a,ave}	°C	7,5	9,0	3,2	18,5
T _{c,ave}	°C	8,5	10,0	5,4	17,8
± ΔT _c	K	6,4	3,0	0,8	7,4

G	kWh/m ²	Annual irradiation South, 45°
T _{a,ave}	°C	Annual average outdoor air temperature
T _{c,ave}	°C	Annual average mains cold water temp.
ΔT _c	K	Seasonal variation of T _c
Th	45 °C	Desired hot water temperature (mixing valve temperature).


Max. operating press. - collector side 0 kPa Max. operating press. - tank side 400 kPa


Testing Laboratory	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Website	www.intertek.com.cn
Test report id. number	170228133GZU-001/002/003/004/005
Date of test report	2017.4.25
Test method	ISO 9459-2 (CSTG)

Comments of test lab	
The "negative pressure test of the collector" according to EN12975-2:2006, 5.9.2 was not performed.	

Summary of	EN12976-2	test results	Certification No.	SP SC0895-12									
Annex to Solar KEYMARK Certificate			Issued	2017-05-19									
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Street	NingHai Industrial Zone		E-mail	info@micoe.com									
Postal Code	222000	Lianyungang city, Jiangsu Province	Tel. / Fax	+86 518-8595-9567/9565									
System family overview													
For each storage and collector size, give number of collectors													
Collector name	150L	200L	240L	300L									
SZ58/1800-15HE	1												
SZ58/1800-20HE		1											
SZ58/1800-24HE			1										
SZ58/1800-30HE				1									
Name of system configuration			SZ58/1800-20HE										
Collector name	SZ58/1800-20HE	No. Collectors	1	Storage name	200L								
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	%	
Stockholm SE		9467	3515	0	37,1	11137	3971	0	35,7	13922	4344	0	31,2
Würzburg DE		9077	3649	0	40,2	10680	4179	0	39,1	13350	4595	0	34,4
Davos CH		10271	5157	0	50,2	12083	5804	0	48,0	15104	6327	0	41,9
Athens GR		7055	4685	0	66,4	8300	5426	0	65,4	10374	6363	0	61,3
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	G	Stockholm SE	Würzburg DE	Davos CH	Athens GR								
	T _{a,ave}	7,5	9,0	3,2	18,5								
	T _{c,ave}	8,5	10,0	5,4	17,8								
	± ΔT _c	6,4	3,0	0,8	7,4								
	G	kWh/m ²	Annual irradiation South, 45°										
T _{a,ave}	°C	Annual average outdoor air temperature											
T _{c,ave}	°C	Annual average mains cold water temp.											
ΔT _c	K	Seasonal variation of T _c											
T _h	45 °C	Desired hot water temperature (mixing valve temperature).											
Max. operating press. - collector side		0	kPa	Max. operating press. - tank side		400	kPa						
Testing Laboratory	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch												
Website	www.intertek.com.cn												
Test report id. number	170228133GZU-001/002/003/004/005												
Date of test report	2017.4.25												
Test method	ISO 9459-2 (CSTG)												
Comments of test lab													
The "negative pressure test of the collector" according to EN12975-2:2006, 5.9.2 was not performed.													



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Postal Code	222000	Lianyungang city, Jiangsu Province	Tel. / Fax	+86 518-8595-9567/9565									
System family overview													
For each storage and collector size, give number of collectors													
Collector name	150L	200L	240L	300L									
SZ58/1800-15HE	1												
SZ58/1800-20HE		1											
SZ58/1800-24HE			1										
SZ58/1800-30HE				1									
Name of system configuration			SZ58/1800-24HE										
Collector name	SZ58/1800-24HE	No. Collectors	1	Storage name	240L								
Calculated annual results for "solar-only / preheat system"													
Location	Q_{d,sh}	Daily drawoff 200 l				Daily drawoff 250 l				Daily drawoff 300 l			
		Q_{d,hw}	Q_L	Q_{par}	f_{sol}	Q_{d,hw}	Q_L	Q_{par}	f_{sol}	Q_{d,hw}	Q_L	Q_{par}	f_{sol}
	MJ/y	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%	MJ/y	MJ/y	MJ/y	%
Stockholm SE	11137	3927	0	35,3	13922	4540	0	32,6	16706	5048	0	30,2	
WürzburgDE	10680	4064	0	38,1	13350	4804	0	36,0	16020	5339	0	33,3	
Davos CH	12083	5880	0	48,7	15104	6787	0	44,9	18125	7524	0	41,5	
Athens GR	8300	5452	0	65,7	10374	6546	0	63,1	12449	7552	0	60,7	
Perf. indicators for the table above													
Q _{d,sh}	MJ/y	Not relevant for solar domestic hot water system											
Q _d	MJ/y	Annual heat demand for domestic hot water											
Q _L	MJ/y	Annual heat energy delivered by the solar system											
Q _{par}	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								
	T _{a,ave}	7,5	9,0	3,2	18,5								
	T _{c,ave}	8,5	10,0	5,4	17,8								
± ΔT _c	6,4	3,0	0,8	7,4									
G	kWh/m ²	Annual irradiation South, 45°											
T _{a,ave}	°C	Annual average outdoor air temperature											
T _{c,ave}	°C	Annual average mains cold water temp.											
ΔT _c	K	Seasonal variation of T _c											
Th	45 °C	Desired hot water temperature (mixing valve temperature).											
Max. operating press. - collector side		0	kPa	Max. operating press. - tank side		400	kPa						
Testing Laboratory		Intertek Testing Services Shenzhen Ltd. Guangzhou Branch											
Website		www.intertek.com.cn											
Test report id. number		170228133GZU-001/002/003/004/005											
Date of test report		2017.4.25											
Test method		ISO 9459-2 (CSTG)											
Comments of test lab		The "negative pressure test of the collector" according to EN12975-2:2006, 5.9.2 was not performed.											

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Street	NingHai Industrial Zone			E-mail	info@micoe.com								
Postal Code	222000	Lianyungang city, Jiangsu Province		Tel. / Fax	+86	518-8595-9567/9565							
System family overview													
For each storage and collector size, give number of collectors													
Collector name	150L		200L		240L		300L						
SZ58/1800-15HE	1												
SZ58/1800-20HE			1										
SZ58/1800-24HE					1								
SZ58/1800-30HE						1							
Name of system configuration				SZ58/1800-30HE									
Collector name	SZ58/1800-30HE		No. Collectors	1		Storage name	300L						
Calculated annual results for "solar-only / preheat system"													
Location	Qd,sh MJ/y	Daily drawoff 250 l				Daily drawoff 300 l				Daily drawoff 400 l			
		Qd,hw MJ/y	QL MJ/y	Qpar MJ/y	fsol %	Qd,hw MJ/y	QL MJ/y	Qpar MJ/y	fsol %	Qd,hw MJ/y	QL MJ/y	Qpar MJ/y	fsol %
Stockholm SE		13922	4897	0	35,2	16706	5753	0	34,4	22275	6731	0	30,2
WürzburgDE		13350	5105	0	38,2	16020	6027	0	37,6	21360	7146	0	33,5
Davos CH		15104	7480	0	49,5	18125	8688	0	47,9	24167	10020	0	41,5
Athens GR		10374	6813	0	65,7	12450	8102	0	65,1	16599	10044	0	60,5
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	G	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/m ²	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		0	kPa	Max. operating press. - tank side		400	kPa						
Testing Laboratory				Intertek Testing Services Shenzhen Ltd. Guangzhou Branch									
Website				www.intertek.com.cn									
Test report id. number				170228133GZU-001/002/003/004/005									
Date of test report				2017.4.25									
Test method				ISO 9459-2 (CSTG)									
Comments of test lab													
The "negative pressure test of the collector" according to EN12975-2:2006, 5.9.2 was not performed.													