CERTIFIKAT

Solar Keymark Certificate
No. SP SC0010-14

Holder/Issued to

Company: Jiaxing Jinyi Solar Energy Technology Co., Ltd.
Address: Caozhuang Industrial Park, Yuxin Town, 314022, Jiaxing City, Zhejiang Province, China

Product name and description

Vacuum tube thermal solar collectors for water heating. For technical information see Appendix.

Models:	**JMC-5818-10, JMC-5818-12, JMC-5818-15, JMC-5818-18, JMC-5818-20, JMC-5818-22, JMC-5818-24, JMC-5818-25, JMC-5818-30**

Certificate

The product mentioned above is found to comply with requirements in EN 12975-1:2006+A1:2010 and EN 12975-2: 2006 and the Specific CEN Keymark Scheme Rules for Solar Thermal Products.

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 2019-01-13 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 is the first version of this certificate.

Borås, Sweden 2014-01-13

SP Technical Research Institute of Sweden
Certification

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Product Certification Manager

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Empowered Certification Body No. 012: SP Certification, Sweden
For more information of Solar Keymark visit: www.solarkeymar.org

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Appendix to Solar Keymark Certificate

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate number	SP SC0010-14
	Date of issue	2014-01-13

Company holding the licence	Jiaxing Jinyi Solar Energy Technology Co., Ltd.	**Country**	China
Brand (optional)	LinkedSun	**Website**	www.linkedsun.com
Street, number	Caozhuang Industrial Park, Yuxin Town	**E-mail**	info@linkedsun.com
Postal Code	314022	**Tel.**	+86 573 82848871
City	Jiaxing City, Zhejiang Province	**Fax**	+86 573 82848893

Collector Type (flat plate / evacuate tubular / un-glazed)	Evacuated tubular collector
Integration in the roof possible ?	No

Collector name	Aperture area (Aa)	Gross length	Gross width	Gross height	Gross area (A_G)	Power output per collector unit G = 1000 W/m², Tm-Ta : 0 K	10 K	30 K	50 K	70 K
	[m²]	[mm]	[mm]	[mm]	[m²]	[W]	[W]	[W]	[W]	[W]
JMC-5818-10	0.95	1944	804	132	1.56	727	714	674	616	537
JMC-5818-12	1.13	1944	954	132	1.85	872	857	809	739	644
JMC-5818-15	1.42	1944	1179	132	2.29	1090	1071	1011	924	805
JMC-5818-18	1.70	1944	1404	132	2.73	1308	1284	1212	1108	966
JMC-5818-20	1.89	1944	1554	132	3.02	1454	1428	1348	1232	1074
JMC-5818-22	2.08	1944	1704	132	3.31	1599	1570	1482	1355	1181
JMC-5818-24	2.27	1944	1854	132	3.60	1744	1713	1617	1478	1288
JMC-5818-25	2.36	1944	1929	132	3.75	1817	1785	1685	1540	1342
JMC-5818-30	2.83	1944	2304	132	4.48	2180	2141	2021	1847	1610

Collector efficiency parameters related to aperture area (Aa) Type of fluid and flow rate see note 1	η_{0a}	0.769	-
	a_{1a}	1.05	W/(m²K)
	a_{2a}	0.026	W/(m²K²)
Stagnation temperature - Weather conditions see note 2	t_{stg}	219	°C
Effective thermal capacity	c_{eff} = C/Aa	6.345	kJ/(m²K)
Max. operation pressure - see note 3	p_{max}	1200	kPa

Incidence angle modifiers $K_\theta(\theta)$	G_{DIF}/G_{TOT} min	G_{DIF}/G_{TOT} max	θ_T / θ_L	50°	10°	20°	30°	40°	60°	70°
			$K_\theta(\theta_T)$	--	--	1.06	--	1.26	1.47	--
	0.14	0.18	$K_\theta(\theta_L)$	0.89	--	--	--	--	--	--
G_{DIF}/G_{TOT}: min&max - while measuring					*Optional values*					

Testing Laboratory	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Website	www.intertek.com
Test report id. number	130730059GZU-001
Date of test report	2013-12-19
Perf. test method	EN 12975-2 6.1.4 (outdoor)

Comments of testing laboratory :

The "negative pressure test of the collector" according to EN 12975-2:2006, 5.9.2 was not performed.

Note 1	**Fluid**	Water	**Flow rate**	0.020	kg/s per m²
Note 2	**Irradiance, Gs=1000 W/m²; Ambient temperature , Ta=30 °C**				
Note 3	**Given by manufacturer**				

VERSION 3.6, 2012.01.20

Appendix to Solar Keymark Certificate

Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Certificate number	SP SC0010-14
	Date of issue	2014-01-13

Annual collector output kWh

Collector name	Location and collector temperature ™														
	Athens			Davos			Stockholm			Würzburg					
	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C			
JMC-5818-10	1332	1158	910	1132	925	686	825	665	484	886	718	519			
JMC-5818-12	1598	1390	1092	1358	1110	823	990	798	581	1063	862	623			
JMC-5818-15	1997	1736	1365	1697	1387	1029	1237	997	726	1329	1077	778			
JMC-5818-18	2396	2083	1637	2036	1664	1234	1484	1196	871	1594	1292	934			
JMC-5818-20	2664	2316	1820	2264	1850	1372	1650	1330	968	1772	1436	1038			
JMC-5818-22	2929	2546	2001	2489	2034	1508	1814	1462	1064	1948	1579	1141			
JMC-5818-24	3195	2778	2183	2716	2219	1646	1979	1595	1161	2125	1722	1245			
JMC-5818-25	3329	2894	2275	2829	2312	1715	2062	1662	1210	2215	1795	1297			
JMC-5818-30	3995	3473	2729	3395	2774	2057	2474	1994	1451	2657	2153	1556			

Collector mounting: Fixed or tracking	Fixed; slope = latitude - 15° (rounded to nearest 5°)

Overview of locations

Location	Latitude °	Gtot kWh/m²	Ta °C	Collector orientation or tracking mode
Athens	38	1 765	18.5	South, 25°
Davos	47	1 714	3.2	South, 30°
Stockholm	59	1 166	7.5	South, 45°
Würzburg	50	1 244	9.0	South, 35°

Gtot	Annual total irradiation on collector plane	kWh/m²
Ta	Mean annual ambient air temperature	°C
Tm	Constant collector operating temperature (mean of in- and outlet temperatures)	°C

Calculation of the annual collector performance is done by the official Solar Keymark spreadsheet tool. Hour by hour the collector output is calculated according to the efficiency parameters from the Keymark test using constant collector operating temperature (Tm). Detailed description with all equations used is available from the Solar Keymark web site (direct link: http://www.estif.org/solarkeymark/annexb1.php)

SP Technical Research Institute of Sweden Box 857, 501 15 Borås, Sweden

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Calculation program version:	
4.05,Nov 2013 (SP)	