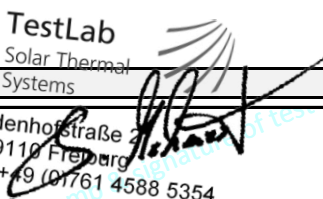


<b>Summary of EN 12975 Test Results,</b>						<b>Licence Number</b>		<b>011-7S1047 F</b>			
<b>annex to Solar KEYMARK Certificate</b>						<b>Issued</b>		<b>2014-12-08</b>			
<b>Company holding the</b>		<b>Jiangsu Micoe Solar Energy Co.,Ltd</b>				<b>Country</b>	<b>China</b>				
<b>Brand (optional)</b>		<b>Abrand</b>				<b>Website</b>	<b>http://en.micoe.com</b>				
<b>Street, street number</b>		<b>No.199,Yingzhou Road</b>				<b>E-mail</b>	<b>info@micoe.com</b>				
<b>Postal Code / City, province</b>		<b>222000 Lianyungang, ,Jiangsu</b>				<b>Tel/Fax</b>	<b>86 518 85810923</b>				
<b>Collector Type (flat plate glazed/un-glazed; evacuate tubular)</b>						<b>Flat plate collector - glazed</b>					
<b>Thermal / photo voltaic hybrid collector? (PVT collector)</b>						<b>No</b>					
<b>Integration in the roof possible ? (manufacturers declaration)</b>						<b>No</b>					
<b>Collector name</b>	<b>Aperture area (Aa)</b>	<b>Gross length</b>	<b>Gross width</b>	<b>Gross height</b>	<b>Gross area (AG)</b>	<b>Power output per collector module</b>					
						<b>G = 1000 W/m<sup>2</sup></b>					
						<b>Tm-Ta</b>					
						<b>0 K</b>	<b>10 K</b>	<b>30 K</b>	<b>50 K</b>	<b>70 K</b>	
	<b>m<sup>2</sup></b>	<b>mm</b>	<b>mm</b>	<b>mm</b>	<b>m<sup>2</sup></b>	<b>W</b>	<b>W</b>	<b>W</b>	<b>W</b>	<b>W</b>	
<b>FPC1200A</b>	<b>1,86</b>	<b>2.005</b>	<b>1.003</b>	<b>80</b>	<b>2,00</b>	<b>1.335</b>	<b>1.238</b>	<b>1.028</b>	<b>798</b>	<b>546</b>	
<b>Performance test method</b>						<b>Glazed liquid heating collector - steady state - outdoor</b>					
<b>Performance parameters related to aperture area</b>		$\eta_0$	a1	a2							
<b>Units</b>		-	W/(m <sup>2</sup> K)	W/(m <sup>2</sup> K <sup>2</sup> )							
<b>Test results - Flow rate and fluid see note 1</b>		<b>0,718</b>	<b>5,084</b>	<b>0,014</b>							
<b>Bi-directional incidence angle modifiers?</b>		<b>No</b>									
<b>Incidence angle modifiers K<math>\theta</math>(<math>\theta</math>)</b>		<i>K<math>\theta</math> values are obligatory for 50°.</i>									
<b>Angle</b>	<b>10°</b>	<b>20°</b>	<b>30°</b>	<b>40°</b>	<b>50°</b>	<b>60°</b>	<b>70°</b>	<b>80°</b>	<b>90°</b>		
	<b>K<math>\theta</math>(<math>\theta</math>)</b>	<b>1,00</b>	<b>0,99</b>	<b>0,96</b>	<b>0,92</b>	<b>0,85</b>	<b>0,75</b>	<b>0,59</b>	<b>0,36</b>	<b>0,00</b>	
<b>Incidence angle modifier not bi-directional - leave fields blank</b>											
<b>Stagnation temperature - Weather conditions see note 2</b>						<b>Tstg</b>	<b>153</b>	<b>°C</b>			
<b>Effective thermal capacity</b>						<b>ceff = C/Ag</b>	<b>9,12</b>	<b>kJ/(m<sup>2</sup>K)</b>			
<b>Max. intende operation temperature - see note 3</b>						<b>Tmax,op</b>	<b>78</b>	<b>°C</b>			
<b>Max. operation pressure - see note 3</b>						<b>pmax,op</b>	<b>1000</b>	<b>kPa</b>			
<b>Pressure drop table - for a collector family, the values shall be for the module with highest <math>\Delta P</math> per m<sup>2</sup> aperture area</b>											
<b>Flow rate</b>	<b>kg/(s m<sup>2</sup>)</b>	-	-	-	-	-	-	-	-	-	
<b>Pressure drop, <math>\Delta P</math></b>	<b>Pa</b>	*	*	*	*	*	*	*	*	*	
<b>Optional weather data</b>		<b>Location</b>				<b>Link</b>					
<b>Testing Laboratory</b>		<b>TestLab Solar Thermal Systems, Fraunhofer ISE</b>									
<b>Website</b>		<b>www.kollektortest.de</b>									
<b>Test report id. number</b>		<b>KTB 2009-32-k1</b>				<b>Date of test report</b>		<b>2010.01.12</b>			
<b>During the test GDIF/GTOT was always between</b>		<b>0,1</b>	<b>and</b>		<b>0,2</b>						
<b>Comments of testing laboratory:</b>											
<b>* - not determined by the testing laboratory</b>											
											
<b>Note 1</b>	<b>Flow rate</b>	<b>0,020</b>	<b>kg/(s m<sup>2</sup>)</b>	<b>Fluid</b>	<b>Water</b>						
<b>Note 2</b>	<b>Irradiance, G = 1000 W/m<sup>2</sup>; Ambient temperature , Ta=30 °C</b>										
<b>Note 3</b>	<b>Given by manufacturer</b>										
						Heidenhofstraße 2 D-79110 Freiburg Tel: +49 (0)761 4588 5354					
						Datashet version: 4.06, 2014-01-15					
<b>DIN CERTCO • Alboinstraße 56 • 12103 Berlin, Germany</b> <b>Tel: +49 30 7562-1131 • Fax: +49 30 7562-1141 • E-Mail: info@dincertco.de • www.dincertco.de</b>											

Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	CERTNO-01C
	Issued	08.12.2014

Annual collector output kWh/module													
Collector name	Location and collector temperature (T <sub>m</sub> )												
	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	
FPC1200A	1.964	1.162	587	1.359	775	360	1.022	548	251	1.114	584	266	

Collector mounting: Fixed or tracking	Fixed; slope = latitude - 15° (rounded to nearest 5°)
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Overview of locations				
Location	Latitude °	G <sub>tot</sub> kWh/m <sup>2</sup>	T <sub>a</sub> °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°

G <sub>tot</sub>	Annual total irradiation on collector plane	kWh/m <sup>2</sup>
T <sub>a</sub>	Mean annual ambient air temperature	°C
T <sub>m</sub>	Constant collector operating temperature (mean of in- and outlet temperatures)	°C

The calculation of the annual collector performance is performed with the official Solar Keymark spreadsheet tool ScenoCalc. The collector output is calculated hour by hour according to the efficiency parameters from the Keymark test using constant collector operating temperature (T<sub>m</sub>). A detailed description of the calculations is available at <http://www.sp.se/en/index/services/solar/ScenoCalc/Sidor/default.aspx>.

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Datasheet version:

4.06, 2014-01-15

ScenoCalc version:

Ver. 4.06 (Jan, 2014)