

Number	KIP-082867/01	Replaces	-
Issued	14-05-2014	Scope	EN 12975-2:2006, Solar Keymark Specific Scheme Rules V21.00
Expiry date	13-05-2019	Contract number	KIP TH 620
Report number	130902727	Page	1 of 1

Kiwa hereby declares that the **photovoltaic-thermal module**, type

TWINSUN_XXXP

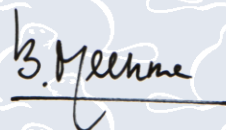
(where XXX suffix indicates the rated power from 230Wp to 265Wp with 5Wp steps)

supplied by **Eclipse Italia S.r.l.**
C.so Venezia, 3 - 20121 Milano (MI) Italy

Is entitled to use the Solar Keymark label.

The compliance is based on examination to:
EN 12975-2:2006 and the
Specific Keymark Scheme Rules for Solar Thermal Products V21.00

A description of the test results is given in the appendix to this certificate.



Bouke Meekma
Kiwa



034

Certificate

Kiwa Italia S.p.a.

Sede Legale:
Via C. Goldoni, 1
20129 Milano
Sede Amministrativa e operativa:
Via Treviso, 32/34
31020 San Vendemiano (TV)

www.1kiwa.com

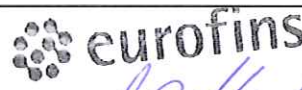


SGQ N° 045A
SCR N° 027F

SGA N° 049D
PRD N° 077B

Membro degli Accordi di Mutuo Riconoscimento
EA, IAF e ILAC

Signatory of EA, IAF and ILAC
Mutual Recognition Agreements

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate						Licence Number		KIP-082867/01							
						Issued		2014-05-13							
Company holding the			Eclipse Italia S.r.l.			Country		Italy							
Brand (optional)			Twinsun			Website		www.eclipsitalia.com							
Street, street number			C.so Venezia, 3			E-mail		info@eclipseitalia.com							
Postal Code / City, province			20121 Milano			Tel/Fax		39 36580070843							
Collector Type (flat plate glazed/un-glazed; evacuate tubular)						Flat plate collector - un-glazed									
Thermal / photo voltaic hybrid collector? (PVT collector)						Yes									
Integration in the roof possible? (manufacturers declaration)						Yes									
Collector name	Aperture area (Aa) m ²	Gross length mm	Gross width mm	Gross height mm	Gross area (AG) m ²	Power output per collector module									
						G = 1000 W/m ² ; Tm-Ta = 2 K						Wind velocity			
						<1 m/s	1.5 m/s	3 m/s							
						W	W	W							
Twinsun_230P	1.58	1662	998	45	1.66	769	786	836							
Twinsun_235P	1.58	1662	998	45	1.66	769	786	836							
Twinsun_240P	1.58	1662	998	45	1.66	769	786	836							
Twinsun_245P	1.58	1662	998	45	1.66	769	786	836							
Twinsun_250P	1.58	1662	998	45	1.66	769	786	836							
Twinsun_255P	1.58	1662	998	45	1.66	769	786	836							
Twinsun_260P	1.58	1662	998	45	1.66	769	786	836							
Twinsun_265P	1.58	1662	998	45	1.66	769	786	836							
Performance test method						Glazed liquid heating collector - steady state - outdoor									
Performance parameters related to aperture area						η0	b1	b2	bu						
Units						-	s/m	W/(m ² K)	[J]/(m ³ K)						
Test results - Flow rate and fluid see note 1						0.469	19.308	1.714	0.037						
Bi-directional incidence angle modifiers?						Yes <i>Kθ values are obligatory for 50°.</i>									
Incidence angle modifiers Kθ(θT) transversal direction						Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
						Kθ(θT)	1.00	0.99	0.99	0.98	0.96	0.84	0.70	0.50	0.00
Incidence angle modifiers Kθ(θL) longitudinal direction						Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
						Kθ(θL)	1.00	0.99	0.99	0.98	0.96	0.84	0.70	0.50	0.00
Stagnation temperature - Weather conditions see note 2						Tstg	85 °C								
Effective thermal capacity						ceff = C/Ag	9.1 kJ/(m ² K)								
Max. intended operation temperature - see note 3						Tmax,op	55 °C								
Max. operation pressure - see note 3						pmax,op	300 kPa								
Pressure drop table - for a collector family, the values shall be for the module with highest ΔP per m ² aperture area															
Flow rate	kg/(s m ²)														
Pressure drop, ΔP	Pa														
Optional weather data		Location							Link						
Testing Laboratory		Eurofins TECH													
Website		http://tech.eurofins.it													
Test report id. number		M1.14.NRG.0188/52541				Date of test report		2014/05/13							
During the test GDIF/GTOT was always between		0.1	and	0.3											
Comments of testing laboratory:															
 Modulo Uno SpA Parco Scientifico Tecnologico Via Scriveria (AL) Strada Savonesa 9 - 15050 Rivalta Scrivia (AL) Tel. 0131.850 100 - Fax 0131.860.185 Sede Legale: Via Cuorgne. 21 - 10156 TORINO (ITALY) Codice Fiscale e Partita IVA 01448620010															
Note 1	Flow rate	0.022	kg/(s m ²)	Fluid	Water										
Note 2	Irradiance, G = 1000 W/m ² ; Ambient temperature, Ta=30 °C														
Note 3	Given by manufacturer														
Datashet version: 4.05, 2013-11-07															

Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	KIP-082867/01
	Issued	13/05/2014

Annual collector output kWh/module														
Collector name	Location and collector temperature (Tm)													
	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		
Twinsun_230P	861			101			198			235				
Twinsun_235P	861			101			198			235				
Twinsun_240P	861			101			198			235				
Twinsun_245P	861			101			198			235				
Twinsun_250P	861			101			198			235				
Twinsun_255P	861			101			198			235				
Twinsun_260P	861			101			198			235				
Twinsun_265P	861			101			198			235				

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

Overview of locations				
Location	Latitude °	Gtot kWh/m ²	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/m ²
Ta	Mean annual ambient air temperature	°C
Tm	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 (Tm). A detailed description of the calculations is available at <http://www.sp.se/en/index/services/solar/ScenoCalc/Sidor/default.aspx>.