



Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate						Licence Number		011-7S2576 F							
						Issued		2015-09-15							
Company holding the			Técnicas del Agua y del Sol, S.L.			Country		SPAIN							
Brand (optional)			POWER PANEL			Website		www.tecasol.net							
Street, street number			Xixilion Kalea 2, 1ª puerta 11 SIGMA INDUSTRIALDEA			E-mail		a.azpiazu@tecasol.net							
Postal Code / City, province			20870 Elgoibar Guipuzkoa			Tel/Fax		+34 610 38 95 58							
Collector Type (flat plate glazed/un-glazed; evacuate tubular)						Flat plate collector - glazed									
Thermal / photo voltaic hybrid collector? (PVT collector)						No									
Integration in the roof possible ? (manufacturers declaration)						Yes									
						Power output per collector module									
						G = 1000 W/m ²					T _m -T _a				
Collector name											0 K				
						Aperture area (A _a)					Gross length				
						m ²					mm				
						mm					mm				
						mm					mm				
						m ²					W				
T1 POWER PANEL						0,79					1.383				
						718					111				
						0,99					655				
											594				
											448				
											270				
											59				
Performance test method						Glazed liquid heating collector - steady state - indoor									
Performance parameters related to aperture						η ₀					a ₁				
Units						-					W/(m ² K)				
Test results - Flow rate and fluid see note 1						0,829					7,207				
						0,051									
Bi-directional incidence angle						No					K _θ values are obligatory for 50°.				
Incidence angle modifiers K_θ(θ)						Angle					10°				
											20°				
											30°				
											40°				
											50°				
											60°				
											70°				
											80°				
											90°				
						K _θ (θ)					0,95				
											0,00				
Incidence angle modifier not bi-directional - leave fields blank															
Stagnation temperature - Weather conditions see note 2						T _{stg}					128,5 °C				
Effective thermal capacity						ceff = C/Ag					11,05 kJ/(m ² K)				
Max. intended operation temperature - see note 3						T _{max,op}					85 °C				
Max. operation pressure - see note 3						p _{max,op}					-- kPa				
Pressure drop table - for a collector family, the values shall be for the module with highest ΔP per m² aperture area															
Flow rate		kg/(s m ²)	0,000	0,0050	0,0117	0,0167	0,0233	0,0283							
Pressure drop, ΔP		Pa	0	76	201	311	481	626							
Optional weather data		Location				Link									
Testing Laboratory		Fundación CENER-CIEMAT													
Website		www.cener.com													
Test report id. number		30.2603.0-1-1				30.2603.0-2-1		Date of test report		2015/05/15					
During the test GDIF/GTOT was always between		0,13		and		0,14									
Comments of testing laboratory:															
According to manufacturer specifications, this collector works without pressure.															
Note 1		Flow rate	0,025 kg/(s m ²)	Fluid	Water										
Note 2		Irradiance, G = 1000 W/m ² ; Ambient temperature, T _a =30 °C													
Note 3		Given by manufacturer													
						Datashheet version: 4.06, 2014-01-15									
DIN CERTCO • Alboinstraße 56 • 12103 Berlin, Germany Tel: +49 30 7562-1131 • Fax: +49 30 7562-1141 • E-Mail: info@dincertco.de • www.dincertco.de															

Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S2576 F
	Issued	15/09/2015

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	
T1 POWER PANEL	1.019	510	157	652	275	55	506	210	45	558	227	52	

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