



ICIM S.p.A. a socio unico

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Capitale Soc EUR. 260.000,00 int. versato ed esistente
C.F./P. IVA e Iscriz. Reg. Imprese di Milano n. 12908230159 - R.E.A. n. 1596292

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate						Licence Number		101BN/0			
						Issued		2012-06-19			
Company holding the			ARISTON THERMO S.p.A.			Country		Italy			
Brand (optional)						Website		www.aristonthermo.com			
Street, street number			Viale Aristide Merloni, 45			E-mail		info@aristonthermo.com			
Postal Code / City, province			60044 Fabriano (AN)			Tel/Fax		39 0731 871 448 /-448			
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)						No					
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					
						T _m -T _a					
						0 K W	10 K W	30 K W	50 K W	70 K W	
SOLATRON N 2.2	2,01	1.100	1.995	68	2,20	1.495	1.428	1.246	1.001	694	
Performance test method						Glazed liquid heating collector - steady state - indoor					
Performance parameters related to aperture area			η ₀	a ₁	a ₂						
Units			-	W/(m ² K)	W/(m ² K ²)						
Test results - Flow rate and fluid see note 1			0,744	2,965	0,039						
Bi-directional incidence angle modifiers?			No								
Incidence angle modifiers K _θ (θ)			K _θ values are obligatory for 50°.								
Angle			10°	20°	30°	40°	50°	60°	70°	80°	90°
K _θ (θ)							0,89				0,00
Incidence angle modifier not bi-directional - leave fields blank											
Stagnation temperature - Weather conditions see note 2						T _{stg}	184	°C			
Effective thermal capacity						ceff = C/Ag	24,31	kJ/(m ² K)			
Max. intended operation temperature - see note 3						T _{max,op}	190	°C			
Max. operation pressure - see note 3						p _{max,op}	600	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)	0,003	0,007	0,010	0,013	0,017	0,020	0,023	0,027	0,030	0,033
Pressure drop, ΔP	Pa	14	39	75	123	181	250	331	422	524	638
Optional weather data		Location			Link						
Testing Laboratory			Istituto Giordano S.p.A.								
Website			www.giordano.it								
Test report id. number			294264			Date of test report		2012/05/10			
During the test GDIF/GTOT was always between			0,1	and	0,2						
Comments of testing laboratory:											
Note 1	Flow rate	0,020	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										

ISTITUTO GIORDANO S.p.A.
Sede Legale e Amministrativa:
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Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	101BN/0
	Issued	19/06/2012

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
SOLATRON N 2.2	2.279	1.567	860	1.728	1.085	518	1.274	775	373	1.383	832	395

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>.