TÜVRheinland®
DIN CERTCO
Genau. Richtig.

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S775 R
	Issued	2014-05-14

Company holding the	Ariston Thermo SpA	Country	Italy
Brand (optional)	ARISTON KAIROS	Website	www.aristonthermo.com
Street, street number	Via A. Merloni 45	E-mail	marketing@aristonthermo.com
Postal Code / City, province	60044 Fabriano (AN)	Tel/Fax	39 02763209-1/ -40

Collector Type (flat plate glazed/un-glazed; evacuate tubular)	Evacuated tubular collector
Thermal / photo voltaic hybid collector? (PVT collector)	No
Integration in the roof possible ? (manufacturers declaration)	No

Collector name	Aperture area (Aa)	Gross length	Gross width	Gross height	Gross area (AG)	Power output per collector module Gb = 850 W/m²; Gd = 150 W/m² Tm-Ta 0 K	10 K	30 K	50 K	70 K
	m²	mm	mm	mm	**m²**	W	W	W	W	W
VT 15	1.58	1 910	1 380	178	**2.63**	1 292	1 247	1 152	1 046	932
VT 20	2.12	1 910	1 840	178	**3.51**	1 733	1 674	1 545	1 404	1 251

Performance test method	Liquid heating collector - quasi-dynamic - outdoor								
Performance parameters related to aperture	η0b	c1	c2	c3	c4	c6	Kθd		
Units	-	W/(m²K)	W/(m²K²)	J/(m³K)	-	s/m	-		
Test results - Flow rate and fluid see note 1	0.816	2.735	0.007	0.000	0.000	0.000	1.013		

Bi-directional incidence angle	Yes	*Kϑ values are obligatory for 50°.*								
Incidence angle modifiers Kθ(θT)	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
transversal direction	Kθ(θT)	1.00	1.01	1.03	1.03	1.04	1.04	1.04		0.00
Incidence angle modifiers Kθ(θL)	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
longitudinal direction	Kθ(θL)	1.00	0.99	0.98	0.95	0.91	0.85	0.70		0.00

Stagnation temperature - Weather conditions see note 2	Tstg	206	°C
Effective thermal capacity	ceff = C/Ag	21.95	kJ/(m²K)
Max. intende operation temperature - see note 3	Tmax,op	-	°C
Max. operation pressure - see note 3	pmax,op	600	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 m²)										
Pressure drop, ΔP	Pa										

Optional weather data	Location		Link	
Testing Laboratory	TÜV Energie und Umwelt GmbH			
Website	www.eco-tuv.de			
Test report id. number	21211365	Date of test report	2009.04.30	
During the test GDIF/GTOT was always between	0.06	and	0.95	

Comments of testing laboratory:

Example comment.

Note 1	Flow rate	0.022	kg/(s m²)	Fluid	Water
Note 2	Irradiance, G = 1000 W/m²; Ambient temperature , Ta=30 °C				
Note 3	Given by manufacturer				

TÜV Rheinland Energie und Umwelt GmbH
Am Grauen Stein
D - 51105 Köln

Datasheet version: 4.05, 2013-11-07

TÜVRheinland®
DIN CERTCO
Genau. Richtig.

Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S775 R
	Issued	14.05.2014

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
VT 15	2 217	1 775	1 367	1 780	1 394	1 049	1 302	979	711	1 413	1 064	765
VT 20	2 974	2 382	1 834	2 388	1 870	1 408	1 747	1 313	955	1 895	1 427	1 026

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

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.

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

Datasheet version: 4.05, 2013-11-07
ScenoCalc version: Ver. 4.05 (Nov, 2013)