Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate		Licence Number	SK-0010
		Issued	2015-10-26

Company holding the	HELIOFRANCE		Country	France	
Brand (optional)	COPERNIC H272 / V272 / H232 / V232		Website	www.heliofrance.com	
Street, street number	2862 Route de Toulouse		E-mail	mykieta@heliofrance.com	
Postal Code / City, province	31370	Bérat	Tel/Fax	33	561 444 689 -1

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

	Aperture area (Aa)	Gross length	Gross width	Gross height	Gross area (AG)	Power output per collector module G = 1000 W/m² Tm-Ta				
						0 K	10 K	30 K	50 K	70 K
Collector name	m²	mm	mm	mm	m²	W	W	W	W	W
COPERNIC H272.12-N-AR	2,60	2 192	90	1 241	2,72	1 994	1 871	1 618	1 355	1 082
COPERNIC H272.12-AR	2,60	2 192	90	1 241	2,72	1 994	1 871	1 618	1 355	1 082
COPERNIC V272.12-N-AR	2,60	1 241	90	2 192	2,72	1 994	1 871	1 618	1 355	1 082
COPERNIC V272.12-AR	2,60	1 241	90	2 192	2,72	1 994	1 871	1 618	1 355	1 082
COPERNIC H232.12-N-AR	2,30	1 870	90	1 241	2,32	1 764	1 655	1 431	1 199	957
COPERNIC H232.12-AR	2,30	1 870	90	1 241	2,32	1 764	1 655	1 431	1 199	957
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COPERNIC V232.12-AR	2,30	1 241	90	1 870	2,32	1 764	1 655	1 431	1 199	957

Performance test method	Glazed liquid heating collector - steady state - outdoor								
Performance parameters related to aperture	η0	a1	a2						
Units	-	W/(m²K)	W/(m²K²)						
Test results - Flow rate and fluid see note 1	0,774	4,729	0,005						

Bi-directional incidence angle	No	*Kϑ values are obligatory for 50°.*								
Incidence angle modifiers Kθ(θ)	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
	Kθ(θ)					0,97				0,00
Incidence angle modifier not bi-directional - leave fields blank										

Stagnation temperature - Weather conditions see note 2	Tstg	185 °C
Effective thermal capacity	ceff = C/Ag	8,9 kJ/(m²K)
Max. intende operation temperature - see note 3	Tmax,op	200 °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)	0,004	0,006	0,011	0,015	0,019					
Pressure drop, ΔP	Pa	18	41	114	224	370					

Optional weather data	Location		Link	
Testing Laboratory	CSTB/Instituto Giordano			
Website	http://www.cstb.fr / www.giodano.it			
Test report id. number	N° VAL 14-26049352 /N°296464/	Date of test report	24/10/2015 16/07/2012	

During the test GDIF/GTOT was always between	0,1	and	0,2

Comments of testing laboratory:

The Company HelioFrance has changed her certification body from ICIM to Eurovent Certita Certification. This certificate is established with the previous results used for the certification of the range COPERNIC H272 / V272 / H232 / V232 (report N°296464).

Note 1	Flow rate	0,019	kg/(s m²)	Fluid	Water
Note 2	Irradiance, G = 1000 W/m²; Ambient temperature , Ta=30 °C				
Note 3	Given by manufacturer				

Jean-Luc BUISSON CSTB

Datasheet version: 4.06 2014-01-15

Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	SK-0010
	Issued	26/10/2015

Annual collector output kWh/module

	Location and collector temperature (Tm)											
	Athens			Davos			Stockholm			Würzburg		
Collector name	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C	25°C	50°C	75°C
COPERNIC H272.12-N-AR	3 275	2 195	1 368	2 383	1 565	948	1 779	1 089	630	1 942	1 179	671
COPERNIC H272.12-AR	3 275	2 195	1 368	2 383	1 565	948	1 779	1 089	630	1 942	1 179	671
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COPERNIC H232.12-N-AR	2 898	1 942	1 210	2 108	1 385	839	1 573	963	557	1 718	1 043	593
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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.

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