Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate		Licence Number	011-7S2629 F
		Issued	2016-01-22

Company holding the	EHT Italy SRL	Country	Italy
Brand (optional)		Website	www.ehtitalia.it
Street, street number	Loc. Lacaroli, 70	E-mail	ehtitalia@ehtitalia.it
Postal Code / City, province	6060 Perugia	Tel/Fax	+39 075 953242 / +39 075 951086

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

Collector name	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
	m²	mm	mm	mm	m²	W	W	W	W	W
FP3000XL	2,22	1.990	1.219	91	**2,43**	1.676	1.581	1.387	1.188	985
FP3000	1,92	1.988	1.041	91	**2,07**	1.448	1.365	1.198	1.026	850

Performance test method	Glazed liquid heating collector - steady state - outdoor									
Performance parameters related to aperture area		η0	a1	a2						
Units		-	W/(m²K)	W/(m²K²)						
Test results - Flow rate and fluid see note 1		0,75	4,255	0,0027						

Bi-directional incidence angle modifiers?	Yes	*Kϑ values are obligatory for 50°.*								
Incidence angle modifiers Kθ(θT) transversal direction	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
	Kθ(θT)	1,00	1,00	0,99	0,97	0,94	0,86	0,73	0,47	0,00
Incidence angle modifiers Kθ(θL) longitudinal direction	Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
	Kθ(θL)	1,00	1,00	0,99	0,97	0,94	0,86	0,73	0,47	0,00

Stagnation temperature - Weather conditions see note 2	Tstg	194	°C
Effective thermal capacity	ceff = C/Ag	4,14	kJ/(m²K)
Max. intended operation temperature - see note 3	Tmax,op	95	°C
Max. operation pressure - see note 3	pmax,op	1000	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										

Testing Laboratory	TestLab Solar Thermal Systems, Fraunhofer ISE
Website	www.collectortest.com
Test report id. number	ktb-2011-28-a; ktb-2011-27-a
Date of test report	22.01.2016; 22.01.2016

During the test GDIF/GTOT was always between 0,079 and 0,114

Comments of testing laboratory:

The pressure drop was not determined.

The aperture size of the collector FP3000 is a specification of the manufacturer.

Note 1	**Flow rate**	0,020	kg/(s m²)	**Fluid**	Water
Note 2	**Irradiance, G = 1000 W/m²; Ambient temperature , Ta=30 °C**				
Note 3	**Given by manufacturer**				

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Version: 4.06, 2014-01-15

Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S2629 F
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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
FP3000XL	2.654	1.827	1.196	1.971	1.347	874	1.453	929	574	1.583	1.000	609
FP3000	2.292	1.578	1.033	1.703	1.164	755	1.255	802	496	1.367	864	526

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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Datasheet version: 4.06, 2014-01-15
ScenoCalc version: Ver. 4.06 (Jan, 2014)