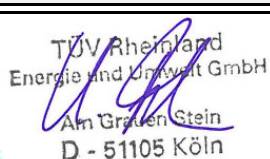


Summary of EN 12975 Test Results,							Licence Number		011-7S2349 F			
annex to Solar KEYMARK Certificate							Issued		2014-07-30			
Company holding the			Viessmann Werke GmbH & Co. KG				Country		Germany			
Brand (optional)			Viessmann				Website		www.viessmann.com			
Street, street number			Viessmannstrasse 1				E-mail		-			
Postal Code / City, province			35107 Allendorf				Tel/Fax		49 06452-70-0			
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					
	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	10 K	30 K	50 K	70 K	
							W	W	W	W	W	
	Vitosol 300-F SV3C	2.33	2 380	1 056	90	2.51	2 008	1 930	1 741	1 508	1 233	
	Vitosol 300-F SH3C	2.33	1 056	2 380	90	2.51	2 008	1 930	1 741	1 508	1 233	
	Vitosol 300-F SV3E	2.33	2 380	1 056	90	2.51	2 008	1 930	1 741	1 508	1 233	
	Vitosol 300-F SH3E	2.33	1 056	2 380	90	2.51	2 008	1 930	1 741	1 508	1 233	
Performance test method			Glazed liquid heating collector - steady state - indoor									
Performance parameters related to aperture			η_0	a1	a2							
Units			-	W/(m ² K)	W/(m ² K ²)							
Test results - Flow rate and fluid see note 1			0.862	3.143	0.023							
Bi-directional incidence angle			No <i>Kθ values are obligatory for 50°.</i>									
Incidence angle modifiers Kθ(θ)			Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
Incidence angle modifier not bi-directional - leave fields blank			K θ (θ)	1.00	0.99	0.97	0.95	0.91	0.83	0.68	0.33	0.00
Stagnation temperature - Weather conditions see note 2							T _{stg}	205	°C			
Effective thermal capacity							c _{eff} = C/Ag	6.57	kJ/(m ² K)			
Max. intended operation temperature - see note 3							T _{max,op}	210	°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 m² aperture area												
Flow rate		kg/(s m ²)										
Pressure drop, ΔP		Pa										
Optional weather data			Location	Link								
Testing Laboratory			TÜV Rheinland Energie und Umwelt GmbH									
Website			www.tuv.com/solarthermal									
Test report id. number			21223738.001a_SV3C; 21223738.002a_SH3C					Date of test report		2014.07.30		
During the test GDIF/GTOT was always between			0.1	and	0.2							
Comments of testing laboratory:												
Version SV3E/SH3E is technical identical with SV3C/SH3C. The slightly differing gross area because of an additional drain channel at the glass covering profile for in-roof mounting was not taken into consideration for this data sheet.												
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											
							 TÜV Rheinland Energie und Umwelt GmbH Am Grünen Stein D - 51105 Köln					
Datasheet version: 4.05, 2013-11-07												
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	011-7S2349 F
	Issued	30.07.2014

Annual collector output kWh/module														
Collector name	Location and collector temperature (T _m)													
	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		
Vitosol 300-F SV3C	3 131	2 329	1 550	2 452	1 741	1 099	1 793	1 218	746	1 940	1 313	790		
Vitosol 300-F SH3C	3 131	2 329	1 550	2 452	1 741	1 099	1 793	1 218	746	1 940	1 313	790		
Vitosol 300-F SV3E	3 131	2 329	1 550	2 452	1 741	1 099	1 793	1 218	746	1 940	1 313	790		
Vitosol 300-F SH3E	3 131	2 329	1 550	2 452	1 741	1 099	1 793	1 218	746	1 940	1 313	790		

Collector mounting: Fixed or tracking	Fixed; slope = latitude - 15° (rounded to nearest 5°)
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Overview of locations				
Location	Latitude °	G _{tot} kWh/m ²	T _a °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°

G _{tot}	Annual total irradiation on collector plane	kWh/m ²
T _a	Mean annual ambient air temperature	°C
T _m	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 (T_m). 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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	ScenoCalc version: Ver. 4.05 (Nov, 2013)