Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate		Licence Number	011-7S924 F
		Issued	2015-06-29

Company holding the	ROTEX Heating Systems GmbH		Country	Germany
Brand (optional)	–		Website	www.rotex.de
Street, street number	Langwiesenstrasse 10		E-mail	info@rotex.de
Postal Code / City, province	DE-74363	Güglingen	Tel/Fax	+49 7135 103 -0 / -200

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)	Yes

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
V26P	2.364	2'001	1'300	85	2.601	1'853	1'751	1'537	1'308	1'067
H26P	2.364	1'300	2'000	85	2.601	1'853	1'751	1'537	1'308	1'067
V21P	1.795	2'002	1'006	85	2.014	1'407	1'330	1'167	994	810

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	0.784	4.25	0.0072						

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	0.72	0.48	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	0.72	0.48	0.00

Stagnation temperature - Weather conditions see note 2	Tstg	192	°C
Effective thermal capacity	ceff = C/Ag	5.04	kJ/(m²K)
Max. intende operation temperature - see note 3	Tmax,op	220	°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)	0.005	0.010	0.015	0.020	0.025	0.029	0.034	0.039	0.044	0.049
Pressure drop, ΔP	Pa	87	181	282	390	504	625	752	886	1027	1175

Optional weather data	Location		Link	
Testing Laboratory	SPF, CH-8640 Rapperswil			
Website	www.spf.ch			
Test report id. number	C1082LPEN/C1082QPEN/C1083LPEN/ C1084QPEN-red	Date of test reports	23.09.2009	

During the test GDIF/GTOT was always between	0.06	and	0.17

Comments of testing laboratory:

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Note 1	Flow rate	0.025	kg/(s m²)	Fluid	Water-Glycole
Note 2	Irradiance, G = 1000 W/m²; Ambient temperature , Ta=30 °C				
Note 3	Given by manufacturer				

Dr. Andreas Bohren

Datasheet version: 4.06, 2014-01-15

Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S924 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
V26P	2'931	2'023	1'302	2'184	1'482	933	1'611	1'026	618	1'753	1'105	656
H26P	2'931	2'023	1'302	2'184	1'482	933	1'611	1'026	618	1'753	1'105	656
V21P	2'225	1'536	989	1'658	1'125	708	1'223	779	470	1'331	839	498

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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ScenoCalc version: Ver. 4.06 (Jan, 2014)