

Summary of EN 12975 Test Results, annex to Solar KEYMARK Certificate						Licence Number		<b>011-7S2733 F</b>							
						Issued		2018-09-11							
Company holding the licence			IREX Energy Joint Stock Company			Country		Vietnam							
Brand (optional)			IREX			Website		www.irex.vn							
Street, street number			No. 47, Le Van Thinh street, Quarter 5, Binh Trung Dong Ward, District 2			E-mail		info@irex.vn							
Postal Code / City, province			70000 Ho Chi Minh City			Tel/Fax		+84.28 7301559/ (+84.254)3923594							
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									
						Power output per collector module									
						G = 1000 W/m <sup>2</sup>									
Collector name						Tm-Ta									
						0 K	10 K	30 K	50 K	70 K					
						W	W	W	W	W					
CFP-C-200						2.16	1960	1204	66	2.36	1572	1451	1208	966	723
Performance test method						Glazed liquid heating collector - steady state - outdoor									
Performance parameters related to aperture area						$\eta_0$	a1	a2							
Units						-	W/(m <sup>2</sup> K)	W/(m <sup>2</sup> K)							
Test results - Flow rate and fluid see note 1						0.728	5.614	0.000							
Bi-directional incidence angle modifiers?						No	<i>K<math>\theta</math> values are obligatory for 50°.</i>								
Incidence angle modifiers K $\theta$ ( $\theta$ )						Angle	10°	20°	30°	40°	50°	60°	70°	80°	90°
						K $\theta$ ( $\theta$ )	1.00	1.00	0.99	0.98	0.98	0.94	0.88	0.00	0.00
Incidence angle modifier not bi-directional - leave fields blank															
Stagnation temperature - Weather conditions see note 2						Tstg	167	°C							
Effective thermal capacity						ceff = C/Ag	5.68	kJ/(m <sup>2</sup> K)							
Max. intended operation temperature - see note 3						Tmax,op	100	°C							
Max. operation pressure - see note 3						pmax,op	1200	kPa							
Pressure drop table - for a collector family, the values shall be for the module with highest $\Delta P$ per m <sup>2</sup> aperture area															
Flow rate		kg/(s m <sup>2</sup> )	0.005	0.011	0.017	0.024	0.030								
Pressure drop, $\Delta P$		Pa	41	131	292	499	749								
Optional weather data		Location	-				Link	-							
Testing Laboratory						TÜV Rheinland (Shanghai) Co., Ltd.									
Website						www.tuv.com									
Test report id. number						154141364a_ISO&SRCC_SolarBK_CFP-C-200_Report_zhao			Date of test report		2017/02/21				
During the test GDIF/GTOT was always between						0.1	and	0.2							
Comments of testing laboratory:															
The previous version data sheet was issued on 2017-02-21, it is updated for the aim of licence holder changes.															
Note 1	Flow rate	0.020	kg/(s m <sup>2</sup> )	Fluid	Water										
Note 2	Irradiance, G = 1000 W/m <sup>2</sup> ; Ambient temperature, Ta=30 °C														
Note 3	Given by manufacturer														
Datasheet version: 4.06, 2014-01-15															
<b>DIN CERTCO • Alboinstraße 56 • 12103 Berlin</b> <b>Tel: +49 30 7562-1131 • Fax: +49 30 7562-1141 • E-Mail: info@dincertco.de • www.dincertco.de</b>															

Annual collector output based on EN 12975 Test Results, annex to Solar KEYMARK Certificate	Licence Number	011-7S2733 F
	Issued	2018-09-11

Annual collector output kWh/module													
Collector name	Location and collector temperature (T <sub>m</sub> )												
	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	
CFP-C-200	2 483	1 504	837	1 721	1 032	554	1 289	721	370	1 416	772	393	

Collector mounting: Fixed or tracking	Fixed; slope = latitude - 15° (rounded to nearest 5°)
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Overview of locations				
Location	Latitude °	G <sub>tot</sub> kWh/m <sup>2</sup>	T <sub>a</sub> °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 <sub>tot</sub>	Annual total irradiation on collector plane	kWh/m <sup>2</sup>
T <sub>a</sub>	Mean annual ambient air temperature	°C
T <sub>m</sub>	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<sub>m</sub>). 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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	4.06, 2014-01-15
	ScenoCalc version:
	Ver. 4.06 (Jan, 2014)