


Summary of EN 12976 Test Results, annex to Solar KEYMARK Certificate				Licence Number		Cert. 66999				
				Issued		2012.02.23				
Company		ITHO DAALDEROP		Country		The Netherlands				
Street		Adm. De Ruyterstraat 2		Website		ithodaalderop.nl				
Postal Code		3115 HB Schiedam		E-mail		info@ithodaalderop.nl				
				Tel.		+31 10-4278777				
System classification / Systemeigenschaften / Caractéristiques du système										
Flow principle				Thermosyphon						
Direct/indirect				Direct						
Press. principle				Closed						
Drain back/down				Always filled (no drain)						
Storage location				Outdoor						
Storage position				Other						
Internal back-up				None						
If other internal back-up, please specify:										
EN12976 type				Solar only						
Collector(s)				Storage(s)						
Company		ITHO DAALDEROP		Company		ITHO DAALDEROP				
<i>Keymark reg, no (if available)</i>				<i>Keymark reg, no. (if available)</i>						
Model	Per module/			Number of modules	Model	Total volume	Gross diameter/width	Höhe (Außenmaß) Epaisseur hors tout	Back-up heated volume	El. back-up power
	Aperture area (Aa)	Gross length	Gross width							
	m ²	m	m	min - max						
FL150	1.85	1.97	1.44	1 - 1	FL150	150	1441	1220	-	-
				-						
				-						
				-						
				-						
Controller				Fluid						
Company		-		Company		-				
Model		-		Model		-				
						°C				
System family overview										
Collector name	Number of collectors									
	Storage									
FL150	1									
Testing Laboratory				TZS, ITW University of Stuttgart						
Website				www.tzs.uni-stuttgart.de						
Test report id. number				11SYS84						
Date of test report				2012.02.23						
Comments of test lab										
No comments				 <p>Forschungs- und Testzentrum für Solaranlagen Institut für Thermodynamik und Wärmelehre Universität Stuttgart Pfaffenwaldring 6, 70550 Stuttgart (Vaihingen)</p>						

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System family overview																																				
For each storage and collector size, give number of collectors																																				
Collector name		FL150																																		
FL150		1																																		
Name of system configuration						FL150																														
Collector name		FL150		No. Collectors		1		Storage name		FL150																										
Calculated annual results																																				
Daily draw-off (litres/day)																																				
Location	110			140			170			110			140			170																				
	l/d			l/d			l/d			l/d			l/d			l/d																				
	Q _d MJ/y			Q _L MJ/y			f _{sol} %			Q _{par} kWh/y																										
Stockholm, SE	6107			7772			9438			3 145			3 871			4 143			51.5			49.8			43.9			0			0			0		
Würzburg, DE	5854			7450			9047			3 161			3 874			4 297			54.0			52.0			47.5			0			0			0		
Davos, CH	6628			8435			10243			4 633			5 668			6 094			69.9			67.2			59.5			0			0			0		
Athens, GR	4545			5784			7024			3 881			4 836			5 457			85.4			83.6			77.7			0			0			0		
Perf. indicators for the table above																																				
Q _d	kWh/y	Heat demand																																		
Q _L	kWh/y	Back-up heating needed																																		
Q _{par}	kWh/y	Electricity for pumps/controllers																																		
Ref. conditions		Stockholm SE	Würzburg DE	Davos CH	Athens GR																															
	G	1 157	1 230	1 684	1 718																															
	T _a	7.5	9.0	3.2	18.5																															
	T _c	8.5	10.0	5.4	17.8																															
	± ΔT _c	2.1-14.9	7.0-13.0	4.6-6.2	10.4-25.2																															
G	kWh/m ²	Annual irradiation South, 45°																																		
T _a	°C	Annual mean air temperature																																		
T _c	°C	Annual mean cold water temp.																																		
ΔT _c	°C	Seasonal variation of T_c																																		
T _h	45 °C	Desired hot water temperature (mixing valve temperature).																																		
Max. operating press. - collector side				800	kPa	Max. operating press. - tank side				800	kPa																									
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Date of test report						2012.02.23																														
Test method						ISO 9459-5 (DST)																														
Comments of test lab laboratoire																																				
No comments										TZS Stuttgart Pfaffenwaldring 6 70550 Stuttgart																										