

SOLAR COLLECTOR  
CERTIFICATION



CERTIFIED SOLAR COLLECTOR

SUPPLIER: **Chromasun, Inc.**  
1050 N 5th Street,  
Suite San Jose, CA 95112

MODEL: MCT-HT-001

COLLECTOR TYPE: Concentrating

CERTIFICATION#: 2010064A

Original Certification Date: 24-May-11

**COLLECTOR SPECIFICATIONS (for the tested collector)**

<b>Gross Area</b>	3.99 m <sup>2</sup>	42.95 ft <sup>2</sup>	<b>Gross Length</b>	3.390 m	11.12 ft
<b>Aperture Area</b>	3.39 m <sup>2</sup>	36.49 ft <sup>2</sup>	<b>Gross Width</b>	1.230 m	4.04 ft
<b>Absorber Area</b>	0.30 m <sup>2</sup>	3.23 ft <sup>2</sup>	<b>Gross Depth</b>	0.316 m	1.04 ft
<b>Fluid Capacity</b>	0.9 liter	0.238 gal	<b>Test Pressure</b>	1110 kPa	161.5 psi
<b>Dry Weight</b>	99.79 kg	220 lb	<b>Concentration Ratio</b>	20	
<b>Tracking: Single axis</b>			<b>Control System: Active</b>		
<b>Cover Geometry: Flat</b>			<b>Reflector Geometry: Fresnel</b>		

**COLLECTOR MATERIALS and COATINGS**

<b>Cover:</b> Low Iron Glass	<b>Reflector:</b> Coated Aluminum
<b>Absorber:</b> Stainless Steel, U-tube	<b>Absorber Coating:</b> Black Chrome

**TECHNICAL INFORMATION**

Collector Model: (Based on Aperture Area)

$$Q/A_a = F'(\tau\alpha)_{en} K_{\Theta b}(\Theta) G_b + F'(\tau\alpha)_{en} K_{\Theta d}(\Theta) G_d - c_1(t_m - t_a) - c_2(t_m - t_a)^2 - c_3 u(t_m - t_a) + c_4(E_L - \sigma t_a^4) - c_5 dt_m/dt - c_6 uG$$

$$K(\Theta) = 1 - b_0 [1/\cos(\Theta) - 1]$$

<b>Collector efficiency factor: <math>F'(\tau\alpha)_{en}</math></b>	0.565	
<b>Incident angle modifier for diffuse radiation: <math>K_{\Theta d}</math></b>	0.12	
<b>Longitudinal incident angle modifier constant: <math>b_{0L}</math></b>	0.13	
<b>Transverse incident angle modifier constant: <math>b_{0T}</math></b>	-0.19	
<b>Heat loss coefficient: <math>c_1</math></b>	0.54	[W/(m <sup>2</sup> K)]
<b>Temperature dependence of the heat loss coefficient: <math>c_2</math></b>	0.0032	[W/(m <sup>2</sup> K <sup>2</sup> )]
<b>Wind speed dependence of the heat loss coefficient: <math>c_3</math></b>	0.00	[J/(m <sup>3</sup> K)]
<b>Sky temperature loss coefficient: <math>c_4</math></b>	0.00	[W/(m <sup>2</sup> K)]
<b>Effective thermal capacity: <math>c_5</math></b>	7800	[J/(m <sup>2</sup> K)]
<b>Wind dependence of zero-loss efficiency: <math>c_6</math></b>	0.00	[s/m]

<b>IAM</b>	<b>10°</b>	<b>20°</b>	<b>30°</b>	<b>40°</b>	<b>50°</b>	<b>60°</b>	<b>70°</b>
<b><math>K_{\Theta T}(\Theta_T)</math></b>	1.003	1.012	1.030	1.059	1.110	1.190	1.003
<b><math>K_{\Theta L}(\Theta_L)</math></b>	0.998	0.992	0.980	0.96			

**Impact Safety Rating: 0**

**Test Conditions:**

<b>Max Fluid Temperature During Efficiency Test:</b> 179. °C	<b>Wind Speed Range During Efficiency Test:</b> 0.0 to 1.68 m/s
<b>Test Fluid:</b> Water	<b>Test Flow Rate:</b> 0.114 kg/sec
<b>Exposure Test Conducted:</b> Wet	<b>Tested Method:</b> SRCC Standard 600

**Remarks:**