



SOLAR RATING & CERTIFICATION CORPORATION

**CERTIFIED SOLAR COLLECTOR**

SUPPLIER:  
**HTP, Inc.**  
 272 DUCHAINE BLVD  
 NEW BEDFORD, MA 02745 USA  
 www.htproducts.com  
 In Accordance with:  
**SRCC Standard 100-2013-01**

BRAND: Solar Skies  
 MODEL: SS-32-FP  
 COLLECTOR TYPE: Glazed Flat Plate  
 CERTIFICATION #: 10001918  
 Original Certification: June 03, 2014  
 Expiration Date: November 19, 2025

The solar collector listed below has been evaluated by the Solar Rating & Certification Corporation™ (SRCC™), an ISO/IEC 17065 accredited and EPA recognized Certification Body, in accordance with SRCC OG-100, Operating Guidelines and Minimum Standards for Certifying Solar Collectors, and has been certified by the SRCC. This award of certification is subject to all terms and conditions of the Program Agreement and the documents incorporated therein by reference. This document must be reproduced in its entirety.

| COLLECTOR THERMAL PERFORMANCE RATING       |   |   |  |                                    |   |   |  |
|--|---|---|--|------------------------------------|---|---|--|
| Kilowatt-hours (thermal) Per Panel Per Day |   |   |  | Thousands of Btu Per Panel Per Day |   |   |  |
| Climate ->                                 | High Radiation<br>(6.3 kWh/m <sup>2</sup> .day) | Medium Radiation<br>(4.7 kWh/m <sup>2</sup> .day) | Low Radiation<br>(3.1 kWh/m <sup>2</sup> .day) | Climate ->                         | High Radiation<br>(2000 Btu/ft <sup>2</sup> .day) | Medium Radiation<br>(1500 Btu/ft <sup>2</sup> .day) | Low Radiation<br>(1000 Btu/ft <sup>2</sup> .day) |
| Category<br>(Ti-Ta)                        |   |   |  | Category<br>(Ti-Ta)                |   |   |  |
| A (-5 °C)                                  | 12.9  | 9.8   | 6.7  | A (-9 °F)                          | 44.1  | 33.4  | 22.8   |
| B (5 °C)                                   | 11.6  | 8.5   | 5.4  | B (9 °F)                           | 39.5  | 28.9  | 18.3   |
| C (20 °C)                                  | 9.6   | 6.5   | 3.5  | C (36 °F)                          | 32.7  | 22.3  | 12.0   |
| D (50 °C)                                  | 5.9   | 3.2   | 0.8  | D (90 °F)                          | 20.1  | 10.8  | 2.6  |
| E (80 °C)                                  | 2.7   | 0.6   | 0.0  | E (144 °F)                         | 9.3   | 2.1   | 0.0  |

A- Pool Heating (Warm Climate) B- Pool Heating (Cool Climate) C- Water Heating (Warm Climate)  
 D- Space & Water Heating (Cool Climate) E- Commercial Hot Water & Cooling

| COLLECTOR SPECIFICATIONS  |                      |                       |                        |           |         |
|---------------------------|----------------------|-----------------------|------------------------|-----------|---------|
| <b>Gross Area:</b>        | 2.967 m <sup>2</sup> | 31.94 ft <sup>2</sup> | <b>Dry Weight:</b>     | 47 kg     | 104 lb  |
| <b>Net Aperture Area:</b> | 2.782 m <sup>2</sup> | 29.95 ft <sup>2</sup> | <b>Fluid Capacity:</b> | 3.3 liter | 0.9 gal |
| <b>Absorber Area:</b>     | 2.698 m <sup>2</sup> | 29.04 ft <sup>2</sup> | <b>Test Pressure:</b>  | 161 kPa   | 23 psi  |

| TECHNICAL INFORMATION  |  |                     | Tested in accordance with: ISO 9806:1994 |               |                                   |
|--|--|---------------------|--|---------------|-----------------------------------|
| <b>ISO Efficiency Equation</b> [NOTE: Based on gross area and (P)=Ti-Ta] |  |                     |  |               |                                   |
| <b>SI UNITS:</b>   | $\eta = 0.703 - 4.06660(P/G) - 0.00840(P^2/G)$ | <b>Y Intercept:</b> | 0.706                                    | <b>Slope:</b> | -4.556 W/m <sup>2</sup> .°C       |
| <b>IP UNITS:</b>   | $\eta = 0.703 - 0.71671(P/G) - 0.00082(P^2/G)$ | <b>Y Intercept:</b> | 0.706                                    | <b>Slope:</b> | -0.803 Btu/hr.ft <sup>2</sup> .°F |

| Incident Angle Modifier |      |      |      |      |      |      |    | Test Fluid:                     |   |
|-------------------------|------|------|------|------|------|------|----|---------------------------------|---|
| $\theta$                | 10   | 20   | 30   | 40   | 50   | 60   | 70 | Water                           |   |
| <b>K<sub>ra</sub></b>   | 1.00 | 0.99 | 0.98 | 0.96 | 0.93 | 0.86 |    | <b>Test Mass Flow Rate:</b>     | 0.0198 kg/(s m <sup>2</sup> )    14.60 lb/(hr ft <sup>2</sup> ) |
|                         |      |      |      |      |      |      |    | <b>Impact Safety Rating: 11</b> |   |

REMARKS:

*Shawn Martin*

Technical Director

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| ADDITIONAL INFORMATION (click here to return to the rating page) |                                 |                |                   |
|--|---------------------------------|----------------|-------------------|
| Test Lab:  | Atlas Weathering Services Group | Test Date:     | November 19, 2013 |
| Test Report Number:  | AT32858                         | Test Location: | outdoors          |

| SOLAR COLLECTOR CONSTRUCTION DETAILS |         |              |         |              |          |
|--------------------------------------|---------|--------------|---------|--------------|----------|
| Gross Length:                        | 2.468 m | Gross Width: | 1.202 m | Gross Depth: | 0.787 mm |

| COLLECTOR MATERIALS   |                                 |                        |               |                  |            |
|-----------------------|---------------------------------|------------------------|---------------|------------------|------------|
| Outer Cover:          | Glass sheet                     | Enclosure back:        | Aluminum      | Back Insulation: | Foam, None |
| Inner Cover:          | None                            | Enclosure side:        | Aluminum      | Side Insulation: | Foam, None |
| Absorber Description: | Tubes connected to Single Sheet | Flow Pattern:          | Parallel/Harp |                  |            |
| Riser Tube:           | Copper                          | Fin:                   | Aluminum      |                  |            |
| Absorber Coating:     | Selective                       | Tube to fin connection | Laser Weld    |                  |            |

| GLAZING                                | Outer Cover                         | Inner Cover |
|--|-------------------------------------|-------------|
| Material:                              | Glass sheet                         | None        |
| Surface Characteristics:               | Textured                            |             |
| Thickness:                             | 3.2 mm                              | N/A         |
| Transmissivity:                        | High (equal to or greater than 90%) |             |
| Length:                                | 2.448 m                             |             |
| Width:                                 | 1.175 m                             |             |
| Tube Glazing to Header Enclosure Seal: | EPDM gasket                         |             |

|                      |          |                   |         |                            |        |
|----------------------|----------|-------------------|---------|----------------------------|--------|
| ABSORBER:            |          | Absorber Coating: |         | Selective                  |        |
| Header Material:     | Copper   | Header OD:        | 28.5 mm | Header Wall:               | 1.5 mm |
| Riser Tube Material: | Copper   | Riser Tube OD:    | 12.7 mm | Riser Tube Wall Thickness: | 1.3 mm |
| Fin Material:        | Aluminum | Fin Thickness:    | 0.41 mm |                            |        |



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|                               |               |                                 |            |   |   |
|-------------------------------|---------------|---------------------------------|------------|---|---|
| <b>Flow Pattern:</b>          | Parallel/Harp |                                 |            |   |   |
| <b>Number of Riser Tubes:</b> | 10            | <b>Tube Spacing:</b>            | 93.7 mm    | <b>Number of times each riser crosses the absorber:</b> | 1 |
| <b>Length of Flow Path:</b>   | 2.34 m        | <b>Riser to Fin/Plate Bond:</b> | Laser Weld |   |   |

| INSULATION:                         |        |           |                             |      |           |
|-------------------------------------|--------|-----------|-----------------------------|------|-----------|
| Location                            | Type   | Thickness | Location                    | Type | Thickness |
| <b>Back – Top Layer:</b>            | Foam   | 25.4 mm   | <b>Sides – Inner Layer:</b> | Foam | 25.4 mm   |
| <b>Back – Bottom Layer:</b>         | None   |           | <b>Sides – Outer Layer:</b> | None |           |
| <b>Enclosure Fastening Methods:</b> | Rivets |           |                             |      |           |

| Power Output per Collector(W)<br>[ Ti-Ta, G = 1000 W/m² ] |      |      |      |      |
|---|------|------|------|------|
| 0   | 10   | 30   | 50   | 70   |
| 2086  | 1936 | 1702 | 1421 | 1120 |

| PRESSURE DROP |      |  |      |                     |
|---------------|------|--|------|---------------------|
| Flow          | ΔP   |  | Flow | ΔP                  |
| ml/s          | Pa   |  | gpm  | in H <sub>2</sub> O |
| 20            | 349  |  | 0.32 | 1.4                 |
| 50            | 874  |  | 0.79 | 3.5                 |
| 80            | 1398 |  | 1.27 | 5.6                 |



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