



INTEGRATED CIRCUITS
ELECTROINC INDUSTRIES

Evacuated Tube Collector Trainer ICF-STH-EVT-102

2024

1. Overview

The ICF-STH-EVT-102 is designed to provide students with a comprehensive understanding of solar thermal systems. This trainer enables hands-on experimentation and investigation into how solar energy can be collected, stored, and used for heating purposes, specifically focusing on the advanced technology of evacuated tube collectors.

2. Specification

- Accumulator Tank
 - Volume: 150 liters.
 - Dimensions: 50 cm (diameter) x 150 cm (height).
- Pump
 - Flow Rate: 900 liters per minute (LPM).
 - Power: 200 W.
- Buffer Tank
 - Volume: 40 liters.
 - Radius: 35 cm.
- Heat Exchanger
 - Heat exchange area (m^2): $(n-2) 0.014$.
 - Design temperature: $-196 \sim 200$
- Pressure Rating: 4 bar.
- Evacuated Dimensions: $3.2 m^2$.
- Trainer Dimensions: 210 cm (width) x 180 cm (depth) x 245 cm (height).
- Irradiance
 - Value: $2000 W/m^2$.
 - Size: 212 cm x 90 cm x 90 cm.
 - Lux: 4 lux = 1000 watts each.
- Temperature Sensor
 - Range: $0^\circ C$ to $200^\circ C$.
 - Accuracy: $\pm 0.1^\circ C$.
- HMI: 7 inch.



Fig:ICF-STH-EVT-102 .

3. Experiments will be done

1. Familiarization of Solar Thermal Trainer, Evacuated Tube Solar Collector Type.
2. Normal Operation of Solar Thermal Trainer, Evacuated Tube Solar Collector Type.
3. System Performance of Solar Thermal Trainer, Evacuated Tube Solar Collector Type.
4. Effect of Water Flow Rate on Solar Thermal trainer, Evacuated Tube Solar Collector Type.
5. Effect of Angle of Incidence on Solar Thermal Trainer, Evacuated Tube Solar Collector Type.
6. Effect of Illuminances on Solar Thermal Trainer, Evacuated Tube Solar Collector Type.