

## H-SHSP-1 Solar Heat and Solar Photovoltaic Trainer

### Purpose

Hampden **Model H-SHSP-1** Solar Heat and Solar Photovoltaic Trainer is a fully mobile solar heat solar photovoltaic control system trainer which lets the student technician examine the hot water and electrical layouts and operational features normally associated with a solar heating system and photovoltaic power source.

The trainer demonstrates the characteristics of the solar array, water heating, water circulation, storage battery, AC and DC distribution, and AC and DC loading. The complete water heating and charging sequence can be observed.

### Description

The **H-SHSP-1** Solar System Trainer combines solar photovoltaic and solar hot water. The trainer can work as a self contained unit using energy from the sun to produce electricity and hot water.

Electricity is created when the sun's rays are collected by a solar photovoltaic panel. A charge controller controls the charging of a 12V DC battery. A 375W inverter changes the 12V DC to 120V AC.

The solar hot water heater has a collector water pump and a domestic water pump. When a temperature differential between the collector loop and the domestic loop, which is set by the dial in the differential controller, is reached the collector water pump turns on. The collector loop water transfers the heat to the domestic loop water in the heat exchanger. As the domestic loop water heats up the collector loop water cools down until the collector water pump turns off. The domestic water pump continues running. The collector loop heats up again as long as the unit is in the sun. When it reaches the differential the cycle is repeated.



**MODEL H-SHSP-1**  
Dimensions: 72"H x 48"W x 34"D  
Shipping Weight: 800 lbs.

### Specifications

The Hampden **Model H-SHSP-1** consists of the following major parts:

flat panel solar cell collector, water tube solar collector, circulation pumps, storage tank, heat exchanger, air separator, air handler, solar heating coil, automatic air vents, thermostat, control panel with sensors. Gauges, thermometers, and flowmeters permit students to observe pressures, temperatures, and flow rate while the system is in operation. Two solar photovoltaic modules, an inverter that converts the DC to 120V AC single-phase at 375W, high capacity solar battery, 0-15V DC voltmeter, 0-150V AC voltmeter. The mobile frame is constructed of code gauge furniture stock steel with four swivel casters, two with locks.

### Options

- H-SHSP-1-CDL Option – Computer Data Logging Option
- H-SHSP-1-FP Option – Fault Option

All Hampden units are available for operation at any voltage or frequency

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