

# Solid State Controllers

Educational Training Equipment for the 21st Century

Bulletin 257-1J

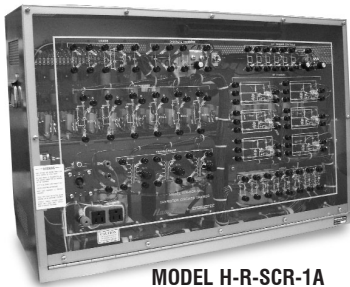
## Thyristor & Power Electronics Trainers

The Hampden **Model H-R-SCR-1A** and **H-R-SCR-2** provide students with the opportunity to investigate diode rectifier circuits and AC and DC controlled power circuits utilizing silicon controlled rectifiers (thyristors) with resistance, capacitance, and unijunction transistor (UJT) triggering.

Both models contain all of the diode rectifiers, SCR's, UJT triggers, control potentiometers, and resistive and reactive loads needed for thorough understanding of uncontrolled, half-controlled, and full controlled half-wave and full wave rectifying circuits, both single phase and three-phase. Components terminate at Hampden HR-1S jacks on the clear plastic panel, on the rear of which are silkscreened the appropriate symbols and circuits. Diodes and SCR's are rated for 35A maximum. Three-phase AC, 50/60 Hz, is brought into the trainer through a six-foot rubber-covered power cord. Furnished complete with interconnecting cords.

The **Model H-R-SCR-2** extends the study of thyristor circuits into computer-controlled power electronics with the addition of an 8-bit analog-to-digital converter and gate and cathode controls with interface provided through a DB-25S connector, suitable for connection to a computerized data acquisition system.

A dual trace triggered 20MHz oscilloscope and a function generator are *OPTIONAL* recommended accessories for the **Model H-R-SCR-2**.



**MODEL H-R-SCR-1A**  
Dimensions: 18"H x 32"W x 12"D  
Shipping weight: 220 lbs



**MODEL H-R-SCR-2**  
Dimensions: 18"H x 32"W x 12"D  
Shipping weight: 229 lbs

The **Model H-R-SCR-3** Power Electronics System has been designed to be used together with the **H-R-SCR-2** Power Electronics System, acquiring the AC power and processed DC voltages needed for the experiments from the Trivoltage Power Supply Module H-R-SCR-2D, as well as expanding the capabilities of the **H-R-SCR-2**. The **Model H-R-SCR-3** is designed to demonstrate the following: Smoothing Inductors, High-Speed Switching Devices, Signal Converter, P.I.D. Control Panel, IGBT and MOSFET Drivers.

The **Model H-R-SCR-3** comes complete with interconnection patch cords and shunt cords. Input power is 120V AC, 1 $\phi$ , 60Hz, 10 Amps.

A dual trace triggered 20MHz oscilloscope and a 3 $\phi$  AC Motor are *OPTIONAL* recommended accessories for the **Model H-R-SCR-3**.



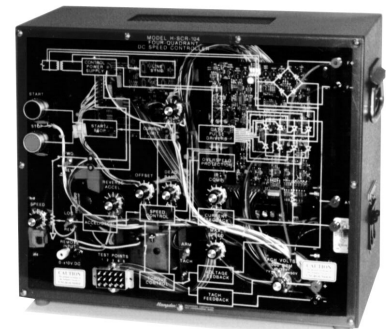
**MODEL H-R-SCR-3**  
Dimensions: 21"H x 32"W x 12"D  
Shipping weight: 229 lbs

## H-SCR-104 4-Quadrant DC Speed Controller

The Hampden **Model H-SCR-104** Four Quadrant DC Speed Controller is a full-wave regenerative drive capable of operating DC, PM or Shunt motors (such as Hampden Series 100 Fractional Horsepower motors) in a bidirectional mode. Its 4-quadrant operation provides forward and reverse torque in both speed directions. This allows the control to maintain constant speed with overhauling loads and provide rapid instant reversing and controlled braking. Because of its excellent controllability and response time, the **Model H-SCR-104** can replace servos in many applications. The control is factory set for armature feedback, which provides up to 1% load regulation over a motor base speed of 50:1. However, tachometer feedback is also available if superior regulation is required. The **Model H-SCR-104** offers both speed control and torque control.

Fifteen test points available on the front of the trainer permit analysis of circuit operation while five fault switches provide troubleshooting experience. An operation manual is also provided.

Input power is 120V AC, 1 $\phi$ , 60Hz, 15 Amps.



**MODEL H-SCR-104**  
Dimensions: 15"H x 19"W x 9"D  
Shipping Weight: 100 lbs

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

**Hampden**  
ENGINEERING CORPORATION

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