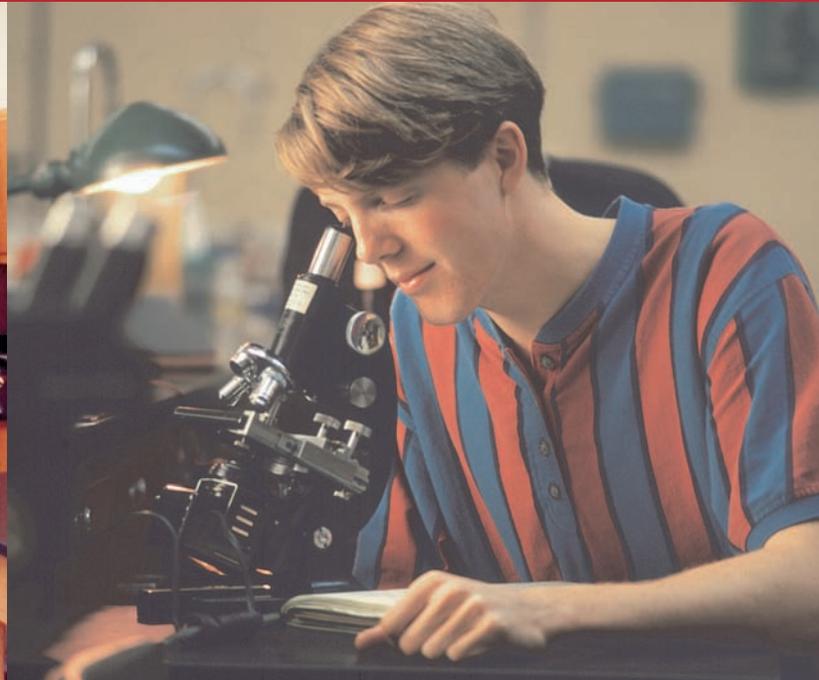


# SCIENCE SYSTEMS



*Laboratory Equipment  
Designed for the 21<sup>st</sup> Century*



**Hampden**<sup>®</sup>  
ENGINEERING CORPORATION



# SCIENCE SYSTEMS

Hampden Engineering's Cordless Console allows instructors to quickly and conveniently connect laboratory workstations with sources of alternating current and highly regulated direct current. It is ideally suited to both the open laboratory concept and the more traditional science laboratory. The panel feeds power to electrical service units strategically located throughout the laboratory at service islands or fixed laboratory benches.

The Hampden Variable AC/DC Cordless Console allows a selection of both direct current and alternating current to the instructor and the student. Through the panel system, the instructor can regulate the appropriate voltage for the experimentation to the student's station. The console provides a safe power usage environment for experimentation in the disciplines of physics, chemistry, biology and related science curriculums. To show our commitment to safety, the Hampden Cordless Panel System carries the UL Label.

Hampden's Cordless Consoles provide power throughout the laboratory. They also provide data communication from a central location in the classroom or prep room for computer systems, printers, and network operations.



All Hampden Consoles are available with optional lockable doors  
Specify Model HST-200-SDS

## *Update your Lab for the 21<sup>st</sup> Century with Hampden Engineering's Power Distribution Panel*



# FUNCTION

## EXCLUSIVE FEATURES

- Centrally controlled console
- Variety of power ranges available to the instructor and the student stations
- Multiple powers, both AC and DC available to the instructor and the student stations
- Controlled, fixed power to the student stations
- Complete Electrical Safety
- U/L Listed System



## USED IN THE FOLLOWING CURRICULUM AREAS:

- **PHYSICS**
- **CHEMISTRY**
- **BIOLOGY**
- **PHYSICAL SCIENCE**
- **PHYSIOLOGY**
- **EARTH SCIENCE**
- **GENERAL SCIENCE**
- **ELECTRONICS**
- **DIGITAL ELECTRONICS**
- **ASTRONOMY**
- **MATERIAL SCIENCES**

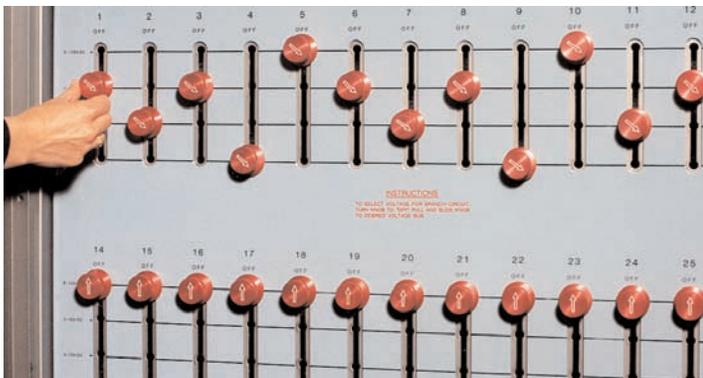
## EXPERIMENTAL TOPICS

- **MECHANICS**
- **THERMAL PHYSICS**
- **WAVE MOTION**
- **ELECTRICITY AND MAGNETISM**
- **LIGHT AND OPTICS**
- **CHEMICAL BONDING**
- **ELECTROCHEMISTRY**
- **SOLUTIONS AND ELECTROLYTES**
- **ENERGY AND DISORDER**
- **OXIDATION-REDUCTION**
- **CONDUCTIVITY**

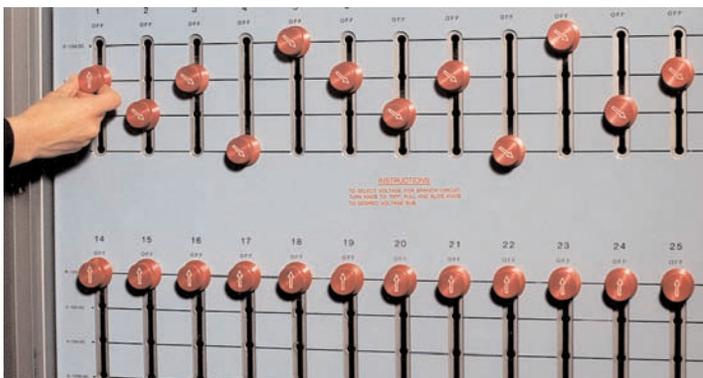
# SCIENCE SYSTEMS

Each Linear Switch on the Hampden Cordless Area Control Panel corresponds to a branch circuit. To operate, the instructor simply moves the appropriate switch linearly to the required supply and turns it ON. The "Quick-Make, Quick-Break" Linear Switch makes a fast and sure connection conveniently and correctly every time. Note that the Linear Switch must be turned OFF before it can be moved, in order to bus a different supply. Unlike rotary switches, the Linear Switch cannot make an inadvertent connection to an incorrect supply.

## SEQUENCE OF OPERATION

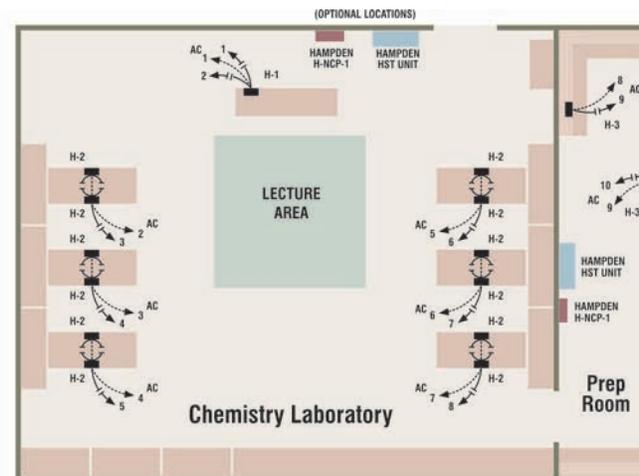


The instructor sets the Linear Switch of the appropriate branch circuit to the required supply and turns it ON.

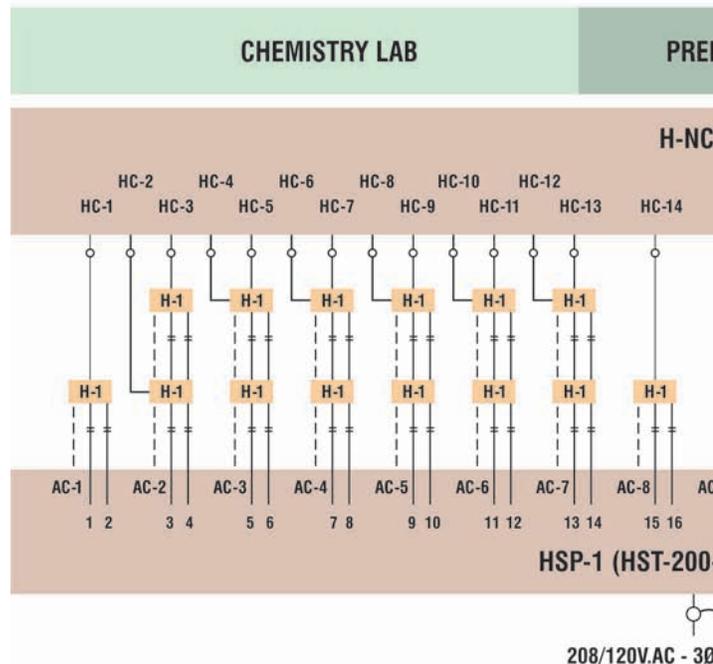


The Linear Switch must be turned OFF before the supply to that branch circuit can be changed.

FLOOR

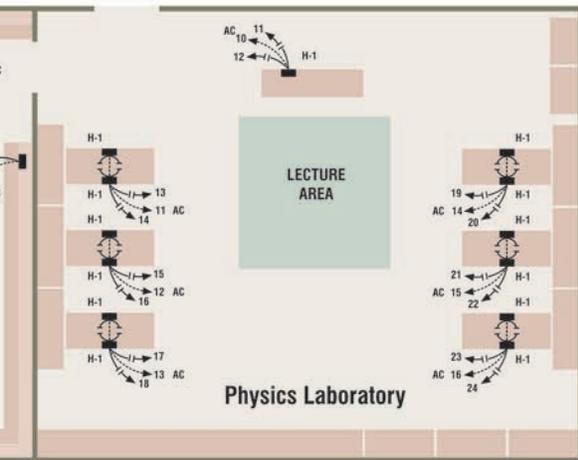


Sample Chemistry

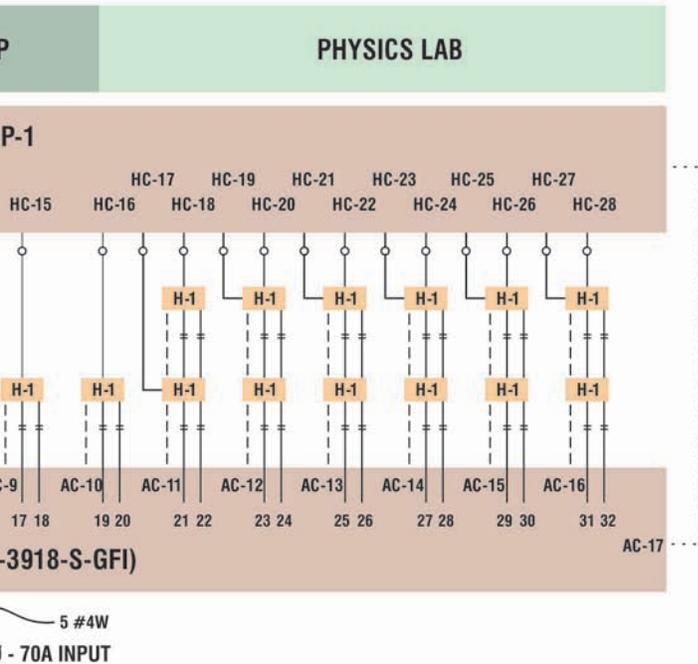


# OPERATION

## R PLAN



Sample Physics



## ELECTRICAL CHARACTERISTICS

Input: 208/120 volt, 3-phase, 4-wire

Outputs (As measured at test receptacles):

DC (from full-wave at silicon rectifiers):

Ranges 0-125V, 10A

0-15V, 30A

0-30V, 15A

Ripple  $\pm 0.01\% + 3\text{mV RMS}$  of rated volts

Load Regulation:  $\pm 0.01\% + 3\text{mV}$

(No Load-Full Load)

Line Regulation  $\pm 0.01\% + 3\text{mV}(120\text{V} \pm 5\%)$

AC (From variable autotransformer):

Ranges: 0-120V, 20A

AC (From mains): Fixed 120V, 15A

NOTE: Ranges other than those listed may be obtained by (1) substitution, (2) addition of up to three ranges to those listed, or (3) addition of input jacks, to which external power supplies may be connected. Consult Hampden for further information.

The Hampden Cordless Area Control Panel may be locked in DEAD condition by a key-operated enabling switch located on the panel front. The Panel is energized by means of the main ON-OFF circuit breaker, with a pilot lamp to indicate ON condition. Additionally, each unitized power supply is energized by means of its own ON-OFF circuit breaker.

Each power supply contains its own 2% accuracy voltmeter to display output levels. Because of Hampden's new regulator circuits, the voltage output at the panel remains virtually constant. Thus, the voltage at each experimentation location is unaffected by changing loads at other locations.

Overload protection of the DC output is by means of a current-limiting circuit. Upon overload, the supply's output maintains a constant current based on the rated current output of the supply. The supply also contains protective circuitry to safeguard against over-voltage conditions. All electronic protective circuits automatically return the power supply to previous conditions after removal of any faults.

# SCIENCE SYSTEMS

The instructor and student stations consist of a variety of configurations for both AC/DC power, fixed power, and communication outlets. They can be flush mounted in casework, surface mounted on top of the work area and rail mounted. Communication receptacles can be included for computer, networks, or phones to provide a complete turnkey system. Ground fault protection devices are available upon request.

Hampden also offers Power Units that complement Linear Switch Panels in Physics and Science laboratories when additional sources of variable voltage are required on a temporary basis. In smaller laboratories, these units may provide adequate power for special project work. A wide variety of models offer fixed or portable housings, metered outputs, and regulated DC. Hampden's variable voltage units are circuit-breaker protected, and all models are listed by Underwriters Laboratories, Inc. Each is equipped with a key switch, a pair of test leads, and a 3-wire power cord that plugs into standard grounding type outlet.

## INSTRUCTOR AND



## INDIVIDUAL POWER



# FUNCTION

## STUDENT STATIONS



## POWER SUPPLIES



## STATE OF THE ART NETWORK & COMMUNICATION SYSTEMS

The Hampden Network & Communication Hub Systems provide true port switching – the ability to assign any port to different LAN segments through software – so you can manage workgroup size and balance traffic loads to suit operational needs. This built-in ability provides a cost-effective, flexible means of improving your laboratory network performance.

All hub systems include:

- Multiple transceiver module ports for concurrently mixed backbone environments
- Resilient link support and optional redundant power protect mission-critical environments
- Multichannel cascade supports Ethernet segments and a separate management channel for monitoring isolated and switched segments with one cable
- Security features protect data and LAN resources
- Web-based management lets you administer the network anywhere



**Model H-CTH-1**  
Communications Terminal Hub



**Model H-NCP-1**  
Network Communications Panel

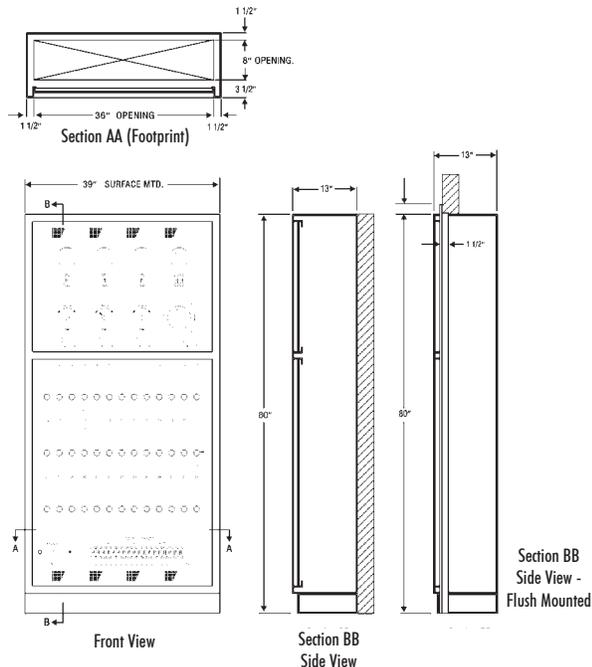
## SPECIAL PANELS

Hampden specializes in laboratory solutions for your needs. We don't believe in a "one solution fits all" product. Instead, we have the ability and the design know-how to provide you with the product that makes the full use of your laboratory environment a reality.

# SCIENCE SYSTEMS

## HST-200 CORDLESS AREA CONTROL PANELS

The Hampden HST-200 Cordless Area Control Panels utilize a numbering system based on the desired configuration. For example: **HST-200-3918-S** specifies a panel having: **39** linear switches corresponding to 39 variable voltage branch circuits, **18** - 120 VAC 15A circuit breakers corresponding to 18 fixed AC branch circuit locations (also available with Ground Fault Circuit Breakers, add suffix **GFI**), and **S** corresponding to Surface mounting. Auxiliary circuit panels may be added if required. Flush models are available by adding a trim assembly to any surface case.



## LOOK TO HAMPDEN FOR YOUR LABORATORY TRAINING NEEDS!

Since 1954, Hampden Engineering Corporation has been the foremost manufacturer of electrical power systems for Chemistry, Physics, Science, and Engineering Laboratories. With Hampden's Central Distribution Panel, the instructor always has full control over which workstation outlets are energized and the level of power available.

Hampden's Training Program offers safe, on-site workstations for instructors, key personnel and the industry. Among the many science systems supplied are: electrical, electronics power systems, simulators, electromechanical solid state motor control systems and many other types of teaching apparatus. All Hampden's science systems may be equipped with computer interface terminals for data gathering, logging and controlling, and can be supplied complete with software, hardware and experiments.

The world-wide popularity of Hampden's training equipment and programs is a result of the extraordinary collaboration between Hampden's engineers and technical educators. Hampden does not simply adapt standard products for your specific use; Hampden designs each product for the electrical power characteristics of the educational environment in which it is used.



Hampden is committed to providing industry-leading technology. For the latest from Hampden, visit our home page at <http://www.hampden.com> or e-mail us at [sales@hampden.com](mailto:sales@hampden.com)

**Hampden**<sup>®</sup>  
ENGINEERING CORPORATION

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