

# INSTRUMENTATION & PROCESS CONTROL



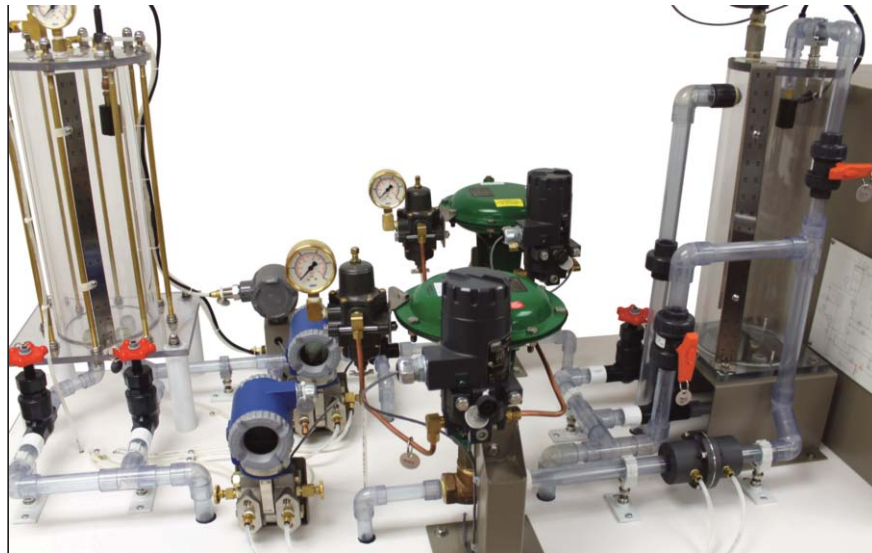
**Hampden**<sup>®</sup>  
ENGINEERING CORPORATION



# INSTRUMENTATION & PROCESS CONTROL

## Designed & Built by the Leading Manufacturer of Industrial Training Equipment

The advantages of speed, flexibility and precision offered by modern instrumentation & process control products are providing state-of-the-art solutions to an ever increasing number of companies worldwide.



Hampden has designed and manufactured industrial training tools for five decades. We know how important your investment is. That's why all our products—from basic tabletop modules to more complex roll-around systems—are all built to stand up to heavy-duty use while also providing excellent portability.

Our systems are rugged enough for use in almost any environment and can be configured with self contained air supplies as well as lockable storage areas.

All Hampden Series ICS-8189 trainers can also be operated and monitored from a central computer system utilizing state-of-the-art industry software. Systems are complete with teacher manuals, student manuals and operating instructions. In addition to our exclusive series of standard training equipment, our engineers can also easily provide custom modifications and designs per your specifications.

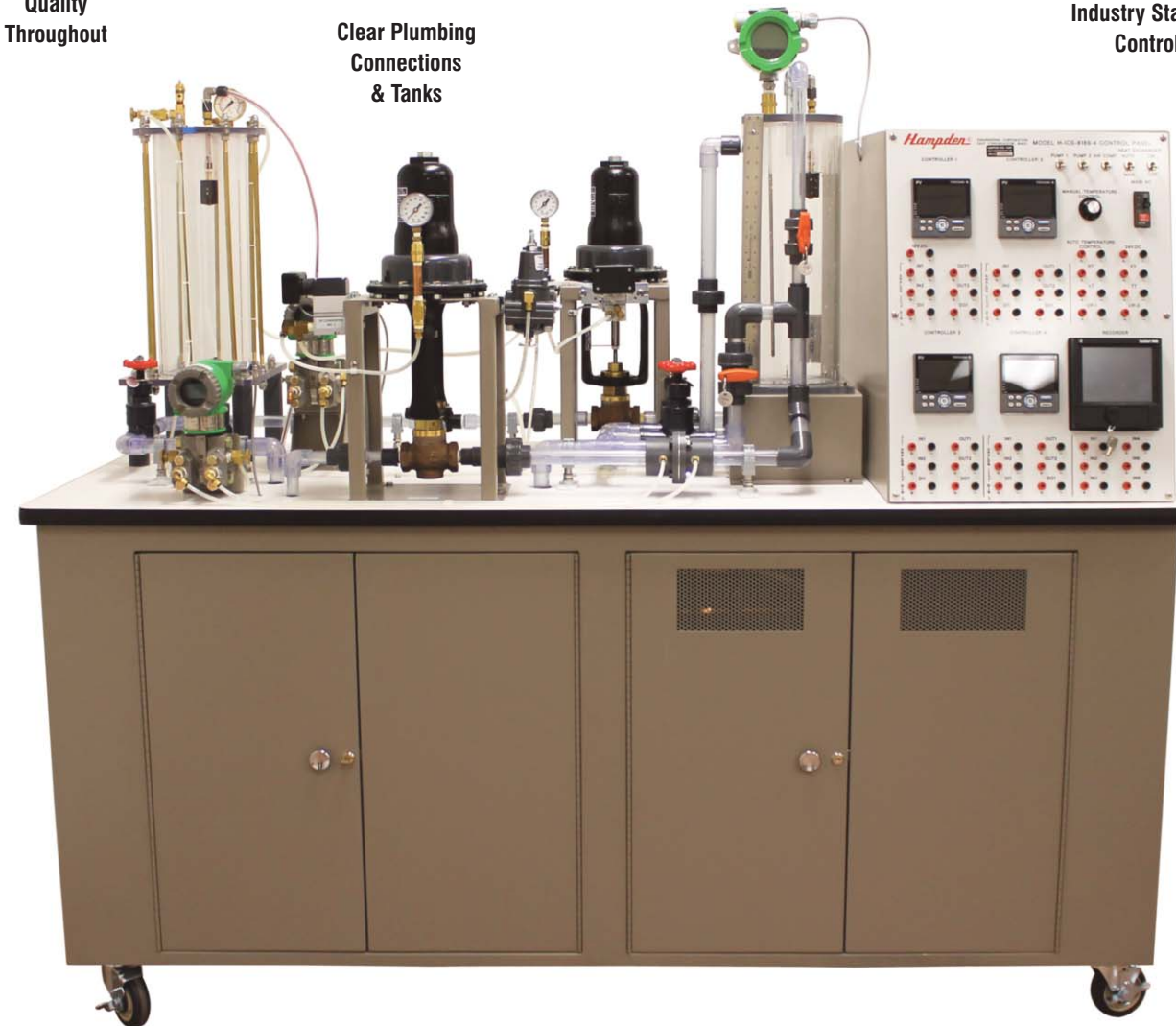


Hampden  
Built & Tested  
Quality  
Throughout

Clear Plumbing  
Connections  
& Tanks

All Units Individually Configured  
to Match Your Training Needs

Choice of  
Industry Standard  
Controls



### H-ICS-8189-4 Instrumentation & Controls Trainer

Provides experience in setting up, tuning, operating, and troubleshooting actual instrument and control systems of the type used in the power and process industries. By simulating a different process loop, provides instruction in the measuring and transducing of such physical variables as pressure, temperature, flow and level, plus integral, plus derivative, as well as a variety of final control devices, including electric, pneumatic and electronic are covered.

Students and trainees learn instrumentation and control techniques of standard commercial manufacturers, such as Yokogawa, and Rosemount. Various types of closed-loop control: on/off, proportional, proportional plus integral, and proportional plus integral plus derivative, as well as a variety of final control devices, including electric, pneumatic and electronic are covered.



### H-ICS-8189 Process Control Trainer

Hands-on training for industrial process automation. This trainer provides measurement and/or control of flow, level and pressure utilizing microprocessor based control. The system consists of a clear process level tank, reservoir tank, pump and other instrumentation mounted on or in a mobile bench. All piping is clear.



### H-ICS-8189-4pH Instrumentation, Controls & pH Control Trainer

Provides experience in setting up, tuning, operating, and troubleshooting instrument and control systems. By simulating a different process loop, provides experience in the measuring and transducing of physical variables; pressure, flow, level and pH. Demonstrates instrumentation and control techniques of standard commercial manufacturers, such as Yokogawa, and Rosemount. Various types of closed-loop control: on/off, proportional, proportional plus integral, and proportional plus integral plus derivative, as well as a variety of final control devices, including electric, pneumatic and electronic are covered.



**H-ICS-8189**  
Process Control Trainer



**H-ICS-8189-4**  
Instrumentation & Controls Trainer



**H-ICS-8189-4pH**  
Instrumentation, Controls &  
pH Control Trainer

### Instrumentation

- Rosemount, single-station controllers (2 req'd) with RS-485 (USB optional)
- Monarch Paperless Recorder w/ 6 input channels
- IDP10 Intelligent d/p cell transmitters (2 req'd), level/flow
- IGP10 Intelligent Electronic Gauge Pressure Transmitter
- Bauman Globe style control valve, A-O, with I/P valve positioner

### Components

- Main circuit breaker with ground fault interrupter protection
- Pump control switch
- Oil-less air compressor switch
- Oil-less air compressor rated 1.9 CFM at 100 psi complete with three gallon tank and regulator with gauges
- Reservoir tank, 11 gallon with fill and drain ball valve with hose fitting
- Clear process tank, 5 gallon with fittings for overflow, manual load needle valve and level transmitter
- Pump, submersible rated 210 gph at 20' Head
- Three-way Valve with 50' dead time flow circuit
- Orifice plate assembly with flexible tube interface and quick-connect fittings

### Faults

- Fault package providing 12 instructor insertable faults with controls located in a locked compartment

### Instrumentation

- Foxboro microprocessor, single-station controllers with RS-485 communications port
- Foxboro 3-channel single-station electronic recorder
- Smart d/p cell transmitters, level/flow
- Smart electronic gauge pressure transmitter
- Foxboro temperature transmitter

### Components

- Main circuit breaker with ground fault interrupter protection
- Globe style control valve with I/P valve positioner
- Pumps control switches
- Oil-less air compressor switch
- Heat exchanger manual/auto and on/off switches
- Manual/Auto temperature control
- Oil-less air compressor rated 1.9 CFM at 100 psi complete with three gallon tank and regulator with gauges
- Storage tanks, each 11 gallon with fill and drain ball valve with hose fitting. Included with the heated storage tank is a temperature switch (set for 120°F for maximum hot water temperature) and a low level float switch
- Clear process tanks, each 5 gallon with fittings for overflow, manual load needle valves, level, pressure, flow, temperature transmitters, and overflow switches. Pressure tank includes a pressure switch and a pressure relief valve
- Pumps, rated 360 gph at 9' head
- Three-way valve with 50' dead time flow circuit
- Orifice plate assembly with quick-connect fittings

### Faults

- Fault package providing 12 instructor insertable faults with controls located in a locked compartment

### Instrumentation

- Yokogawa PID controllers with ethernet communications port
- Monarch 6-channel single-station electronic recorder
- Smart d/p cell transmitters, level/flow
- Smart electronic gauge pressure transmitter.
- pH and ORP sensor
- pH/ORP analyzer

### Components

- Main circuit breaker with ground fault interrupter protection
- Globe style control valve with current to pneumatic (I/P) valve positioner
- Mixer and mixer switch
- Two Chemical metering pumps with 4-20mA Inputs
- Solenoids
- Liquid transfer pump
- Two reagent tanks
- Mixing tank and Storage tank
- Pumps control switches
- Oil-less air compressor rated 0.85 CFM at 90 psi complete with two gallon tank and regulator with gauges
- Reservoir tank, 11 gallon with fill and drain ball valve with hose fitting
- Clear process tank, 5 gallon with fittings for overflow, manual load needle valve and level transmitters
- Pump, rated 6 GPM at 6.0' head
- Three-way valve with 50' dead time flow circuit
- Orifice plate assembly w/flexible tube interface and quick-connect fittings

### Faults

- Fault package providing 12 instructor insertable faults with controls located in a locked compartment

