

# Smart Grid Trainers

Educational Training Equipment for the 21st Century

Bulletin 190-5B

## 190 Series Smart Grid Trainers

### Purpose

The **Hampden 190 Series** of Smart Grid Trainers have been developed to educate students with the technology being used in the field of electrical power generation and distribution. Each individual module will demonstrate a key section of the power grid. When the individual modules are combined a modern smart grid is created.

The Hampden **Model H-190-5A** Smart Grid Power Shedding and Load Management Trainer shall simulate the ability of the utility to automatically monitor power systems loading levels and reduce loading when required. The load shed processes automatically sense overload conditions, then sheds enough load to relieve the overloaded equipment before there is loss of generation, line tripping, equipment damage, or a random shutdown of the system.

Power systems are designed and operated for any normal system condition. However Smart Grid systems include a defined set of contingency conditions to make sure that there is adequate generating and transmission capacities to meet load requirements. For those rare conditions where the systems capability is exceeded, there are processes in place to shed loads.

The Hampden **Model H-190-5A** Smart Grid Power Shedding and Load Management trainer simulates two (2) typical "Smart Meter" installations. Installation one will simulate a typical industrial installation and



**Hampden Model H-190-5A**  
Power Shedding and Load Management Trainer  
Dimensions: 75"H x 44"W x 32"D  
Shipping Weight: 730 lbs.

installation two a typical residential installation. Both installations will include a watt-hour Smart Meter. The Smart Meter will include a commercial and residential system Interface.

Four loads will be included on each installation to simulate "Smart Appliances". Loads will include:

- Motor
- Resistors
- Inductors
- Capacitors
- Electric Vehicle Charging

Included will be a compliment of digit I/O modules that will allow the trainer to be remote controlled by the operator or "SCADA" controlled.



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

**Hampden**  
ENGINEERING CORPORATION