

# A. T. M. S.

Proven Advanced Technology Solutions

## POWHEX 3 Phase Relay Test Set

by

**COTEL**



- **50 A/ phase**
- **300V/ phase**
- **Very User Friendly**
- **Computer or Manual control**
- **Modular**
- **Robust**
- **Most relay types**

**POWHEX** offers the flexibility and ease of use of the popular **HEXAN** range with greatly increased power. It uses advanced digital signal processing to provide stable and accurate injection via transformers. This enables simulation of load variations such as switching from a normal to a fault state, or current and frequency ramping. **POWHEX** is particularly suited for the testing of high or low power protection relays, and has two operating modes -

**Manual** - using the MCM Custom Interface which displays and sets the electrical parameters defining the network state. A scrolling menu accesses the different test modes: Shunt, re-arming, neutral shift.....

**Computer** - using the free MANUSOFT software which presents a virtual control panel, and timer, Fresnel diagram, and symmetrical component displays.

There are three versions of **POWHEX** -

One voltage—One current

Three voltages—One current

Three voltages—three currents

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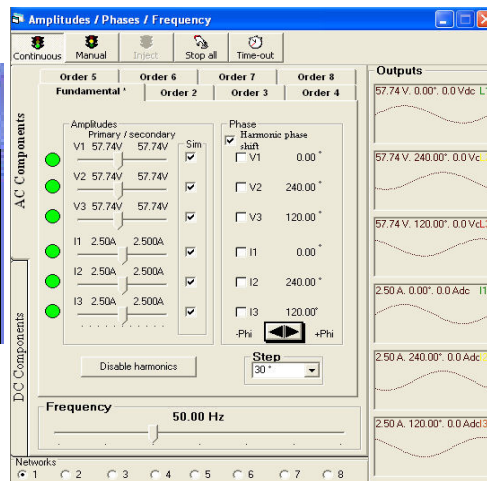
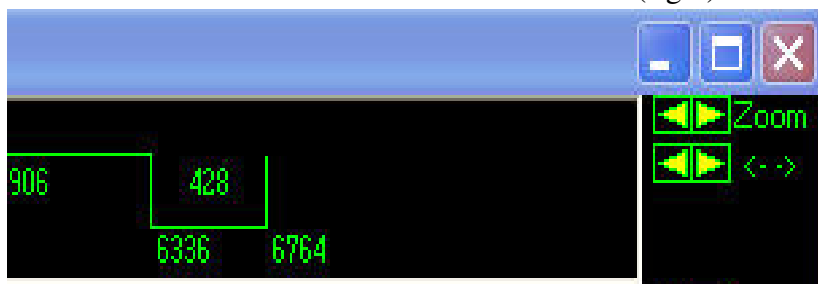
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# Technical Characteristics

## Virtual Control Panel (right)



## Timing Diagram (above)

**Amplifiers**—There is protection against overload on the voltage & current outputs and the outputs of the current amplifiers are galvanically separated.

### Voltage

Amplifiers **0 - 13 V & 0 - 130V**  
Power **6 VA at 13 V**

**60 VA at 130 V**  
Resolution **400  $\mu$ V at 13 V**  
**4 mV at 130 V**

Accuracy **0.1 %**  
Distortion **0.1 % THD\***

### Or

Amplifiers **0 - 130 V & 0 - 260V**  
Power **30 VA at 130 V**

**60 VA at 260 V**  
Resolution **4 mV at 130 V**  
**8 mV at 260 V**

Accuracy **0.1 %**  
Distortion **0.1 % THD\***  
Voltage Ph-Ph max **520 V**

### Or

Amplifiers **0 - 150 V & 0 - 300V**  
Power **35 VA at 150 V**

**70 VA at 300 V**  
Resolution **5 mV at 150 V**  
**10 mV at 300 V**

Accuracy **0.1 %**  
Distortion **0.1 % THD\***  
Voltage Ph-Ph max **600 V**

### Current

Amplifiers **50A**  
Power **200 VA**

Resolution **1.5 mA**  
Accuracy **0.1 %**  
Distortion **0.1 % THD\***

Current **Ph-N max 150 A/600VA**

\*THD-data full load (100% range) at 45 to 65 Hz

OS- W 2000/XP/VISTA/W 7 via RS232 or USB

### Environment

Operating temperature **0 to 40 °C**  
Storage Temperature **-25 to 75 °C**

### Low Level Outputs

Level **0 to 7.07 Vrms**

Resolution **215 $\mu$ V**  
Accuracy **0.1 %**  
Distortion **0.1 % THD\***  
Output current **4 mA max.**

### Phases

Resolution **0.1°**  
Accuracy **0.5°**

### Power Supply

**230 Vac, +/- 10%, 50/60 Hz** 1 phase + earth  
Power **2,000VA max**  
connection **IEC 320 plug**

### Chronometer Inputs - 4 - all isolated

Trigger Criteria - Voltage-free contact  
or voltage up to 250 Vac or dc  
Connection **4mm. Banana plug**  
Accuracy  **$\pm 1$  ms.  $\pm 0.02$  % value**  
Resolution **1 ms.**

### Logic Outputs - 3 voltage free (NO/NF) or voltage

Connection **4mm. Banana plug**

### Frequency generation

Range **40 to 70 Hz**  
Resolution **500  $\mu$ Hz**  
Accuracy  **$\pm 1$  mHz at 50 Hz**  
optional DC to 400 Hz for voltage

### Flight case with carrying handles

Dimensions **420x 350 x 480 centimeters**  
Weight **40 kg**

### EMC Standards

Emission **EN 50011 1991 class A**  
Immunity **EN 50082-2 1992**

Security—Complies with **IEC1010**