



PRODUCT DESCRIPTION

The Wye-configured electric meter testing bench can be used as both a power supply and a load bench. The bench allows for simulated installation and use of measurement tools such as electric counters. In this mode, the intensity and characteristics of the loads can be independently modified at each phase, and any anomalies, such as phase loss and phase inversion, can be simulated. The CL-1000E can be used for all electric meter and measurement training.

EDUCATIONAL APPLICATIONS

The main educational applications of the CL-1000E Electric meter test bench are:

- Complete wiring connection requirements as dictated by industry standards;
- Ensure power supply;
- Verify operation of meter;
- Analysis of the effects of different loads on the electric meter:
 - Voltage ratio;
 - Current ratio;
 - Rotation sequence;
 - Connection conformity;
 - Vector analysis.
- Application of safety measures for work on live wires;
- Measurement anomaly detection :
 - Phase loss at supply;
 - Neutral loss at supply;
 - Phase loss at reading;
 - Neutral loss at reading;
 - Phase inversion at supply;
 - Phase inversion at reading;
 - Polarity inversion on voltage;
 - Polarity inversion on current;
- Calculation of reading errors on billing.



Hinged writing surface and cord storage compartment

CHARACTERISTICS

The CL-1000E contains the following components :

- A. Four (4) ammeters with variable phase selection, identified A, B, C, and N, with 3.5 digit readout of 0-10 A, accuracy $\pm 0.5\%$;
- B. One (1) three phase voltmeter with phase selector and reading scale of 0-150V, accuracy $\pm 0.5\%$;
- C. One (1) movable section with five (5) reading instruments in the upper section of the console;
- D. Two (2) sliding bars with four (4) movable supports, attached to front face of unit, for installing meters, and one (1) bar parallel to the others which serves as a support for the meter bases. Bars measure 12 mm thick;
- E. One (1) terminal testing block 30 x 10 cm (12" x 4") with 10 binding posts, installed in center of front plate. The binding posts are connected to 10 terminals for 4mm piggy back cables, using standard coding;
- F. One (1) 3 A cartridge fuse in series between the lower binding posts of the test block and the 4mm binding posts identified according to the phases A,B, and C in the voltage section of the test block;
- G. One (1) 15 A breaker;
- H. One (1) voltage indicator light;
- I. One (1) motor phase rotation indicator;
- J. One (1) voltmeter phase selector (AN, BN, and CN);
- K. Three (3) protection lamps located between the secondary current transformer binding posts;
- L. A total of forty-five (45) one-way single-pole switches, grouped five per phase per load group. The possible combinations introduce line current whose total value does not exceed 10 A. For example, $1 \times 4 \text{ A} / 1 \times 1 \text{ A} / 2 \times 2 \text{ A} / 2 \times 0.5 \text{ A} = 10 \text{ A}$;
- M. A kit of sixteen (16) numbered switches (1-16) used for fault insertion;
- N. Three (3) isolated voltage transformers, 120/120V;
- O. Three (1) isolated current transformers, 10/10 A;
- P. One (1) terminal block for wiring power cable. The end is equipped with a three phase plug for wye power socket, 120/208V, 3 phase, 20 A;
- Q. One (1) grill cage for impedance installation;
- R. One (1) locked storage drawer for cables and accessories;
- S. One single phase power supply:
 - 240V AC, 10 A, 60 Hz, regulated and protected by 10 A, 2-pole breaker;
 - Resistive loads totalling 2400 W and regulated by 5 switches (5 per phase), $4/2/2/1/0.5/0.5 = 10 \text{ A}$;
 - One permanently installed stub for testing residential meters (392J);
 - One (1) voltmeter, 0-300V AC and one (1) ammeter 0-10 A AC installed in the circuit; and,
 - Secured terminal boards available for connecting various apparatus.
- T. One (1) three phase power supply:
 - 120/208V AC, 15 A, 60 Hz, regulated and protected by breaker;
 - Total load: resistive ($\pm 3 \text{ kW}$); inductive ($\pm 3 \text{ kVAR}$);, capacitive ($\pm 3 \text{ kVAR}$), switch controlled (5/phase) $4/2/1/0.5/0.5 \text{ A} = 8 \text{ A}$;
 - One (1) voltmeter 0-300V AC with selector for reading voltages V_{an} , V_{bn} , V_{cn} ;
 - Four (4) ammeters 0-10A AC for reading currents I_a , I_b , I_c , and I_n ;
 - One (1) three phase Wattmeter for testing power usage; and,
 - Voltage for phases A, B, and C individually controlled by three (3) variacs for simulation of phase unbalance.
- U. Power supply:
 - 120/208V AC, three phase, 5-wire, 20 A; and
 - 5-wire wall plug included.

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LIST OF SIMULATED FAULTS FOR CL-1000E

FAULT	DESCRIPTION
1	A phase power loss
2	B phase power loss
3	C phase power loss
4	Neutral cut power
5	A phase transformer power loss
6	B phase transformer power loss
7	C phase transformer power loss
8	Transformer primary neutral cut
9	Transformer secondary neutral cut
10	B and C phase power cross (inverse rotation)
11	Primary cross-wiring of A phase transformer
12	Primary cross-wiring of B phase transformer
13	Primary cross-wiring of C phase transformer
14	Secondary cross-wiring of A phase transformer
15	Secondary cross-wiring of B phase transformer
16	Secondary cross-wiring of C phase transformer

PHYSICAL SPECIFICATIONS

Dimensions: 65 x 115 x 200 cm (26 x 46 x 80 in.)

Weight: 200 kg (440 lbs)