

DESCRIPTION



The CL-30 deals with the principles of transformers, the different types and their applications. There is an emphasis on transformer characteristics and three phase connection methods.

Trigonometry and vector analysis are used to construct mathematical models of the transformer. The CL-30 lab manual covers a large variety of transformer experiments using all the components mounted on clear plastic plates called Moduponents®.

The CL-30 trainer can also be matched with the CL-1950 trainer to teach the principles of industrial circuits.

SPECIFICATIONS

DESCRIPTION	CL-30-00	CL-30-50
Power supply:	120/208 V AC, 3 PH	220/380 V AC, 3 PH
Frequency:	60 Hz	50 Hz
Weight:	13 kg (28.6 lbs)	
Cabinet dimensions:	53 x 47 x 16.5 cm (21 1/8 x 18 7/8 x 6 1/2 in)	
Product number:	50001	50329

COATING SPECIFICATIONS

Type	
Blue thermalkyd thermosetting enamel	
Features	
Thermalkyd enamel, when baked completely, produces a strong, resistant finish. The following physical tests, to say flexibility, impact resistance, abrasive resistance, adherence and hardness, are extremely satisfying when applied to properly prepared metal. Thermalkyd enamel has a good resistance to water, detergents, gasoline, salt, humidity and sunlight.	
Properties	
Resistance to water:	Intact after 18 hours.
Resistance to gasoline:	Intact after 4 hours.
Resistance to salt:	Less than 0.15 cm (1/16 in) deterioration by corrosion and no cracking after 150 hours.
Resistance to humidity:	No cracking and no color change after 500 hours.
Flexibility:	No cracking on a 0.30 cm (1/8 in) conical mandrel.
Adherence:	Crosshatch test; adherence is same.
Impact:	31 cm/kg (30 in/lbs) no cracking on direct or indirect impact.
Hardness:	HB-F pencil.
Metal temperature:	10 minutes at 150 °C (300 °F).

BASIC EQUIPMENT FOR THE CL-30

Each CL-30 contains the following:

DESCRIPTION	QTY	CL-30-00 (60 Hz)	CL-30-50 00 (50 Hz)
Transformer	2	120-240 V/12-24 V	220-380 V/12-12 V
Transformer	1	120-208-240 V/12-24 V	220-380-440 V/12-12 V
Rheostats	3	3 x 22 Ω , 50 W	
4-pole switch	1		
AC ammeter	1	Analog, 0-250 mA AC	
AC ammeter*	1	Analog, 0-1 A AC	
Diode*	4	With rectifying bridge	
Switches*	1	2 x DPDT	
Potentiometers*	1	1 x 50 Ω ; 1 x 200 Ω ; 1 x 1 k Ω ; 1 x 5 k Ω	
Potentiometers*	1	1 x 20 k Ω ; 1 x 100 k Ω ; 1 x 250 k Ω ; 1 x 1 M Ω	
Transformer*	1	120/12 V CT	220/12 V CT
Thermometer	1		
Power cord	1		
Mounting and storage cabinet	1		
Student's manual	1	CL-30-95-00	CL-30-96-50
Teacher's manual	1	CL-30-95-00	CL-30-96-50

* Moduponents® included in the CL-1950 trainer.

OPTIONAL EQUIPMENT COMPATIBLE WITH THE CL-30

DESCRIPTION	QTY	CL-30-00 (60 Hz)	CL-30-50 00 (50 Hz)
AC ammeter	1	Analog, 0-5 A AC	
Fuses	3	5 A	
Multimeter or voltohmmeter	1		
Oscilloscope	1		

LIST OF EXPERIMENTS

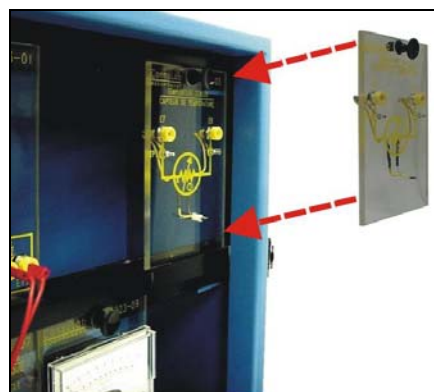
1. Turns ratio of a transformer
2. Polarity of a transformer
3. Open circuit test
4. Short circuit test
5. Equivalent circuit
6. Efficiency
7. Regulation
8. Performance measurements
9. Full load test
10. Two phase distribution
11. Unbalanced two phase distribution
12. Autotransformers
13. Operation in parallel
14. Harmonics
15. Wye connection
16. Delta connection
17. Three phase connection
18. Open delta connection
19. T-connections, 3 phase to 3 phase
20. T-connections, 3 phase to 2 phase
21. Phase sequence
22. Measuring transformer
23. Polyphase transformer
24. Three phase autotransformer
25. Pedestal transformers and protected transformers
26. Measuring phase difference
27. Three phase rectifying
28. Three phase power measurements
29. Three phase parallel connections
30. Current limiting transformers



CL-30 RIGHT PANEL WITH MODUPONENTS®



CL-30 CABINET



MODUPONENT®