

AC/DC MOTOR CONTROL

DESCRIPTION



The CL-800 AC/DC Motor Control training package has been put together to perform a series of experiments when teaching the principles and applications of motor control circuits. It can be used in conjunction with a set of fractional horsepower rotary machines, such as the CL-50 and the CL-100 series.

All the components included in this package are compatible with all Consulab products. The parts used in these experiments are stored in a steel cabinet, which is hinged and can be open out into two sections. Thus a large working area is available while the experiments are being carried out.

The actual components, such as push buttons, selector switches, indicator lamps, contactors, overload relays, transformers, resistors, etc., are mounted on Moduponents® -- clear plastic plates on which symbols and specifications are silk-screened. The Moduponents® required for an experiment can quickly be installed in the cabinet, and interconnected with piggy back cables.

SPÉCIFICATIONS

DESCRIPTION	CL-800-00	CL-800-50
Supply voltage:	120/208V AC, 3 PH	220/380V AC, 3 PH
Frequency:	60 Hz	50 Hz
Total weight:	42 kg (91 lbs)	
Cabinet size:	53 x 47 x 31 cm (21 x 19 x 12 in)	
Product number:	50227	50544

BASIC EQUIPMENT FOR THE CL-800

Each CL-800 contains the following:

DESCRIPTION	QTY	CL-800-00 (60 Hz)	CL-800-50 (50 Hz)
Magnetic shoe brake	1	CL-233	
Flywheel	1	CL-234	
Centrifugal switch, N/O and N/C	1	CL-238	
Mounting base for CL 233, CL 234 and CL 238	1	CL-240	
Set of three (3) Resistors	1	CL-714-00 (10 Ω, 50 W)	CL 714-50 (20 Ω, 50 W)
Set of three (3) Resistors	1	CL-715-00 (100 Ω, 50 W)	CL 715-50 (100 Ω, 50 W)
Set of three (3) resistors	1	CL-716-00 (1 kΩ, 25 W)	CL 716-50 (1 kΩ, 25 W)
Set of one (1) capacitor, one (1) resistor and one (1) diode	1	CL-771-00	CL-771-50
Push button, two circuits, black	1	CL-801-00	CL-801-50
Push button, two circuits, red	1	CL-802-00	CL-801-50
Selector switch, three-way unit	1	CL-803-00	CL-803-50
Selector switch, four-way unit	1	CL-804-00	CL-804-50
Indicator lamp, red	1	CL-805-00	CL-805-50
Indicator lamp, green	1	CL-805-00	CL-805-50
Set of two (2) magnetic contactors, 8 poles	1	CL-806-87-00	C-806-87-50
Three phase overload relay	1	CL-808-00	CL-808-50
Single phase overload relay	1	CL-808-01-00	CL-808-01-50
Control transformer	2	CL-809-00	CL-809-50
Time delay relay	1	CL-810-00	CL-810-50
Control relay, 4 poles	1	CL-812-00	CL-812-50
Sensitive relay, 5 A	1	CL-813-00	CL-813-50
Circuit breaker, 3 poles	1	CL-814-00	CL-814-50
Sequence timer, motor driven	1	CL-815-00	CL-815-50
Drum switch	1	CL-816-00	CL-816-50
Continuity tester	1	CL-817-00	CL-817-50
Three-phase drum reversing starter	1	CL-819-00	CL-819-50
Set of safety patch cords (41)	1	CL-1012	
Mounting and storage cabinet	1	CL-1011-01	
Student's manual	1	CL-800-95-00	CL-800-96-50
Teacher's manual	1	CL-800-95-00	CL-800-96-50

OPTIONAL EQUIPMENT COMPATIBLE WITH THE CL-800

DESCRIPTION	QTY	CL-800-00 (60 Hz)	CL-800-50 (50 Hz)
Manual DC starter, 3 and 4 points	1	CL-132-00	CL-132-50
Variable AC/DC power supply	1	CL-143-00	CL-143-50
DC rectifier	1	CL-148-00	CL-148-50
Synchronous machine, 1/3 HP (250 W)	1	CL-211-00	CL-211-50
Wound-rotor induction motor, 1/3 HP (250 W)	1	CL-212-00	CL-212-50
Squirrel-cage induction motor, 1/3 HP (250 W)	1	CL-213-00	CL-213-50
DC machine, 1/3 HP (250 W)	1	CL-214-00	CL-214-50
Motor with auxiliary resistive phase, 1/3 HP (250 W)	1	CL-221-00	CL-221-50
Two-speed three phase induction motor, 1/3 HP (250 W)	1	CL-228-00	CL-228-50
Prony brake	1	CL-231	
DC voltmeter	1	CL-910 (0-30/300 V)	
DC ammeter	1	CL-922 (0-2,5/5 A)	
DC ammeter	1	CL-918 (0-3/10 A)	
AC voltmeter		CL-905-00 (0-150/300 V)	CL-905-00 (0-250/500 V)
Rubber coupling	1	CL-1007	
Two-machine coupling base	1	CL-1010-00	



CL-800-50 LEFT PANEL



CL-800-50 RIGHT PANEL

LIST OF EXPERIMENTS

The CL-800 AC/DC Motor Control package includes a lab handbook containing instructions for carrying out the following experiments:

FULL VOLTAGE AC STARTER

- Single phase manual starter;
- Three phase manual starter;
- Single phase semi-automatic starter;
- Single phase full voltage magnetic starter, non reversing, with indicator lights;
- Single phase full voltage magnetic starter, reversible;
- Three phase full voltage magnetic starter, non-reversing, with indicator lights;
- Three phase full voltage magnetic starter, non-reversing, with start/step control;
- Three phase manual starter, reversible, with drum switches; and,
- Three phase full voltage magnetic starter, reversible, with contactors.

REDUCED VOLTAGE AC STARTER

- Three phase reduced voltage magnetic starter, non-reversing, primary resistance type;
- Three phase reduced voltage magnetic starter, non-reversing, wye/delta type; and,
- Three phase reduced voltage magnetic starter, non-reversing, autotransformer type.

SYNCHRONOUS AND WOUND ROTOR MOTOR STARTER

- Magnetic starter for a wound rotor motor; and,
- Magnetic starter for a synchronous motor.

AC MOTOR BRAKING

- Three phase full voltage magnetic starter, with magnetic shoe brake;
- Three phase full voltage magnetic starter, with dynamic braking;
- Three phase full voltage magnetic starter, with plugging switch; and,
- Three phase full voltage magnetic starter with anti-plugging switch;

TWO SPEED AND SEQUENTIAL STARTER

- Single phase magnetic starter for a two-speed motor; and,
- Sequential starter.

FULL VOLTAGE DC STARTER

- Full voltage manual DC starter;
- Full voltage magnetic DC starter;
- Full voltage magnetic DC starter, with open field winding protection; and,
- Full voltage DC magnetic starter, reversible.

REDUCED VOLTAGE DC STARTER

- Reduced voltage DC manual starter, with three or four optional steps;
- Reduced voltage DC magnetic starter, with time delay relay;
- DC magnetic starter, with voltage reduced by a RC delay circuit;
- Reduced voltage DC magnetic starter, using counter EMF control; and,
- Reduced voltage DC magnetic starter, reversible.

DC MOTOR BRAKING

- Full voltage DC magnetic starter, with dynamic braking;
- Full voltage DC magnetic starter, with normally open centrifugal switch;
- Full voltage DC magnetic starter, with normally closed centrifugal switch; and,
- Full voltage DC magnetic starter, with anti-plugging relay.