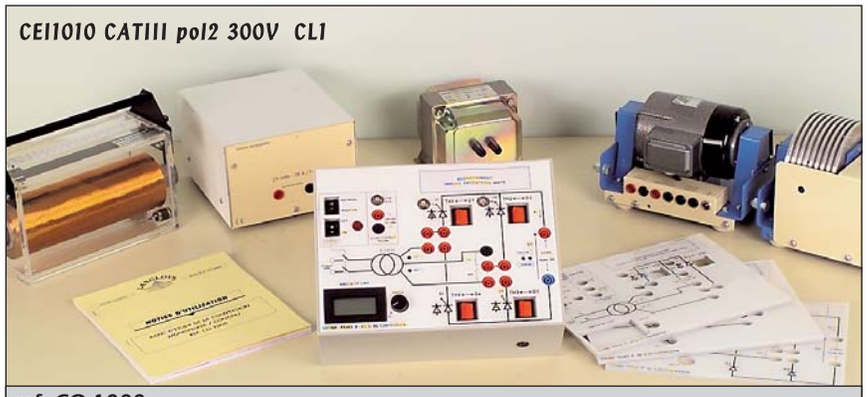
CONVERSION TEST BENCH

RECTIFIER

SINGLE-PHASE / DIRECT CURRENT CONVERSION TEST BENCH

CO-1000 IS SUPPLIED WITH 4 MOVEABLE FRONT PANELS, INSTRUCTION BOOK INCLUDED TUTORIALS



ref. CO-1000

ACCESSORIES FOR CO-1000

Ref. ECO1/2 10Ω	Rheostat ECO1/2 10Ω (P.78)
Ref. SH90/24	Motor **90W** (P.50)
Ref. FR90	Powder brake FR90 (P.51)
Ref. PSYJR	Variable coil (P.85)
Ref. CO-104	Smoothing coil 40mH - 3A
	Advised option
Ref. CO-105	Smoothing coil 20mH - 3A
Ref. CO-108	Smoothing coil 60mH - 3A
Ref. CO-106	12V/24V Battery

EDUCATIONAL OBJECTIVES

- ***Studying of the controlled, non-controlled and mixed rectification of the single-phase***

TEACHING RESSOURCES + PRACTICAL WORKS

All types of practical tests on the rectification of controlled and uncontrolled single-phase current can be carried out with this single box, which comprises built-in supplies (including a power supply), a probe for measuring the AC+DC current output, an ignition angle display, and 4 switches to change from the diode assembly to the rectifier assembly. The test bench is supplied with 4 movable front panels. Each one is a specific mask, with holes for the indicator lights, input/output terminals, and switches required for a particular set of tests. Each panel is printed with the instructions for just those tests. None of the components are directly accessible to avoid short circuits. Rectifiers and diodes are specially mounted to facilitate maintenance and are visible behind a movable, transparent cover. The 30V x 6A output is capable of running a powerful motor (electrical power: 150W, mechanical power: 90W) connected to a brake, making it possible to observe the influence of braking on the conduction angle.The instruction book supplied with the test bench explains the tests listed below for each front panel.

RECTIFIER CONTROL

The ignition angle is controlled by a potentiometer and displayed. The control pulses, applied to the trigger through separation pulse transformers, are output via BNC to the oscilloscope.

CURRENT PROBE

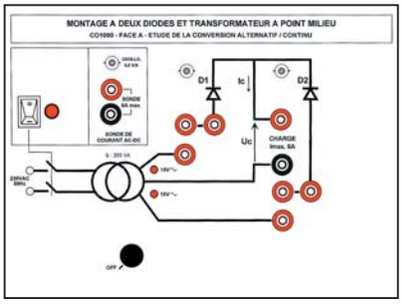
This probe consists of a Hall-effect sensor and is connected in series, like an ammeter. The current image is a voltage of 0.5 V/A available via BNC .

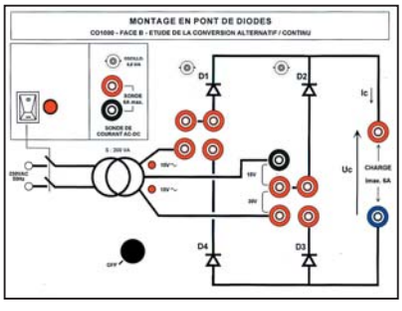
INDICATOR LIGHTS

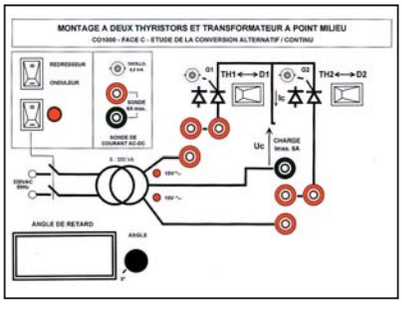
LEDs indicate which rectifiers and diodes have been selected, which transformer windings are connected to the power supply, and the rectifier / inverter mode.

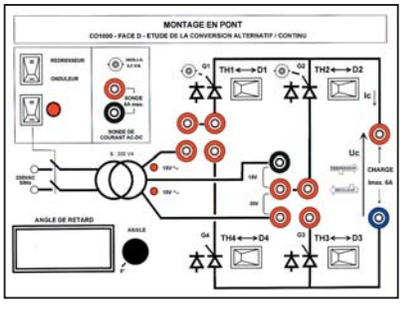
BUILT IN 200VA POWER SUPPLY

2 mid-point reactors: 2 x 15 Vrms
Power supply: 230VAC 50Hz 250VA
Dimensions: 670x370x170mm. Weight: 5.2kg









PANEL A: ASSEMBLY WITH TWO DIODES AND MID-POINT TRANSFORMER

Return to single half-wave rectification and switching to double half-wave rectification by simply adding jumper straps.
Experiment 1 Power flow on resistive load (R)
Experiment 2 Power flow on inductive load (R,L)

PANEL B: DIODE BRIDGE CIRCUIT ASSEMBLY

Experiment 1 Power flow on resistive load (R)
Experiment 2 Power flow on inductive load (R,L)
Experiment 3 Power flow on active load (E,R)
Experiment 4 Power flow on active inductive load (E,R,L)
Experiment 5 Application to a DC motor power supply
Any of these 4 diodes can be replaced by a rectifier at any time, simply by throwing the appropriate switch. This facilitates comparisons between all-diode, all-rectifier, symmetrical mixed, and asymmetrical mixed assemblies.

PANEL C: ASSEMBLY WITH TWO RECTIFIERS AND MID-POINT TRANSFORMER

Controlled single- and double-wave rectification.
The tests on panel A may be used again for comparison.

PANEL D: BRIDGE CIRCUIT ASSEMBLY (ALL RECTIFIERS OR MIXED)

Comparative studies of diode / rectifier / mixed assemblies
Experiment 1 Power flow on active inductive load (E, R, L)
Operates as a static convertor
Operates as a grid-interactive inverter
Experiment 2 Application to a DC motor power supply (DCM)
Mixed bridge-circuit assembly
Experiment 3 Power flow on active inductive load (E, R, L)
Experiment 4 Application to a DC motor power supply (DCM)