

# Power Electronics



**V.L.V. Power  
Electronics  
Environment.**

## •MAIN CHARACTERISTICS

•This equipment enables the implementation of the following Very Low Voltage Power Electronics Didalab modules :

- 2Amp. one quadrant transistorised chopper Unit** (Ref. PED 0210 000)
- 2Amp. one quadrant thyristors chopper Unit** (Ref. PED 0210 000)
- Four quadrants transistorised chopper Unit** (Ref. PED 020 420 )
- Single phase rectifier Unit** (Ref. PED 020 500 )
- **Three phase rectifier Unit** (Ref. PED 020 600)

## •AREAS OF APPLICATION

### Basic training :

Introduction to Power Electronics and to principles of motor-generator groups control :

- Technical colleges.
- Higher education, Universities.

### Professional training :

Illustration in high power and safety modes of industrial rotating machines groups .

## •DEDICATED POWER SUPPLIES



### General purpose Power Supply Unit. Reversible current

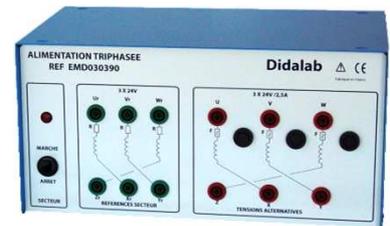
Ref. EMD 030340 (3034)

A.C. & D.C. stabilized multiple outputs Power Supply unit :

- Protection by current limitation (DC)
- Protection by fuse or serial resistor (AC outputs)
- Fuse protection on the input transformer primary.
- Reversible, means that a feedback current coming from a motor onto the Power Supply output, will not cause any damage to the Power Supply.

### Characteristics :

Available Outputs :D.C. +15 V / -15 V, 500 milliAmp., adjustable 0-30 V / 2,5 Amp.  
Mains reference : 24 V / 0,2 Amp.  
Fixed alternative voltage: 2 x 24 V / 2,5 Amp.  
Mains Power : 220 V - 50/60 Hz  
Primary / secondary Isolation: 1500 V  
Dimensions : 290 x 130 x 220 mm  
Built-in metal case  
Gross Weight : 6,2 Kg



### < 50 V Low Voltage three- phase Power Supply Unit

Ref. EMD 030390 (3039)

Dual outputs low voltage three phase Power Supply Unit.

Specially designed for powering the "Three phase rectifier" Unit, ref. 3760.

### Electrical characteristics :

5 wires Mains patching cord (3 phases + N + E)  
3 poles ON / OFF switch.

Power outputs :

- 3 x 24 V - 2,5 Amp. (Outputs on 6 x Ø 4 mm sockets).
- Star or triangle wiring.
- Protection fuse located on the front panel.

Mains reference output :

- 3 x 24 V - 0,2 A. (Outputs on 6 x Ø 4 mm sockets).
- Star or triangle wiring.
- Serial resistors protection.

Three phases Mains supply : 380 V.

- Built-in metal case
- Dimensions : 290 x 130 x 220 mm
- Gross Weight : 12,5 Kg



# •ELECTRICAL ROTATING MACHINES



## Loading bench, DC motor and generator

Ref. EPD 037580

This module is composed of two industrial rotating machines coupled with Oldam joint, operating, either as a motor, or at a generator. A 500 pts/turn incremental encoder allows the visualization of encoder channels with BNC sockets (direct measurement of speed with optional extra).

There are two additional loads (6,8-mH self and 10-Ω resistance) to change the electrical characteristics of the bench.

This bench can be connected to any "Choppers & Rectifiers" Units of the "VLV power electronics" set"

### Characteristics :

Mechanical characteristics :

- Diameter = 40 mm,
- Length = 65 mm,
- Coussinets autolubrifiants,
- Mechanical power (max) : 29,3 W,
- Speed: 4812 tr/min at 25,5 mNm, 2750 tr/min at 102 mNm.

Electrical characteristics :

- Operating voltage: 24 Vdc,
- Power 12,85 W max with 76,5 efficiency,.
- P max 60W with 49% efficiency

## PID CORRECTOR

Ref. PED 020300 (EL2030)



This module enables the study of the speed control of the DC rotating machine bench ref. 3788 & of the chopper.

Thus, the corrector has optimal performances with this rotating machines bench..

One training manual is provided with the equipment.

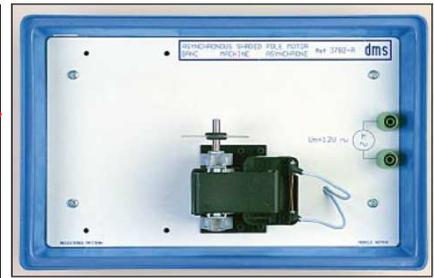


## Measure of : speed, position, average power, current, voltage

Ref. EPD 037620

Additional extra (factory fitting) for the DC motors loading (ref EPD037580) :

- 2 lines, 16 characters display,
- HMI via a drop-down menu and digital potentiometer,
- Measures :
  - > Speed or position (with +/-10Vdc output on Ø4mm socket)
  - > Average Current,
  - > Average Voltage,
  - > Average Power,
- Gain of the analogue output : 1 V for 1 000 turn/min,



## Asynchronous motor bench

Ref. EPD 037820

This module is composed of one phase ring, single phase asynchronous machine. This motor is perfectly matched to the 4 quadrants chopper module, ref. 3752 (single phase inverter), into offset controlled inverter operating mode or pulse width modulation mode.

### Characteristics

(at supply frequency of 50 Hz) :

- Nominal voltage : 12 Volts
- Nominal current : 4 Amp.
- Absorbed power : 30 W
- Power factor : 0,61
- Idling speed : 2850 rev.. min. -1
- Effective power (at 2000 rev. min.-1): 6,7 W
- Starting torque : 23 mNm
- Max. torque : 32 mNm.

## SELF INDUCTANCE

Ref : EPD 037 340



## Smoothing coil

Inductance : adjustable from 1, 2, 4, 6 to 8 mH  
 Permanent Current : 5 Amps  
 Overvoltage coefficient : 22  
 Silicium sheets core  
 Graduated in Henry

## RHEOSTAT

Ref : PMM 064 730



## Load rheostat

This very robust load rheostat is strong intermittent overload-resistant, without any damage for the coil.

- Resistance: 165 Ohms, 640 W
- Permanent current: 2 A
- Dimensions : 365 x 92 mm