

# Analog circuit lab



Analog circuit lab equipped with a main unit and 17 experiment modules. Each module permits to realise several practical work. Supplied with leads and user's manual.



ref. PSY2101

## MAIN UNIT WITH :

**4 fixed DC supplies** with output overload protection  
+5V -5V +12V -12V / 300mA on each output.

**Dual DC power supply** with output overload protection  
 $\pm 3V$ ,  $\pm 18V$  / 1A continuously adjustable.

**AC power supply** with output overload protection  
0-9VAC / 500mA

## Signal generator

Sine, square and triangle 10Hz to 100kHz.

- 4 ranges 100Hz - 1 - 10 - 100 kHz

- Output impedance:  $50\Omega$

- Output voltage : 9Vpp (with  $50\Omega$  load), 18Vpp (open loop).

## 3 1/2 digit digital voltmeter/ammeter

Range: 2V - 200V - accuracy 0.3%

Range 200 $\mu$ A - 2A - accuracy 0.5%

## Analogue voltmeter/ammeter

0 to 20V DC - 0 to 100mA DC - 0 to 1A DC

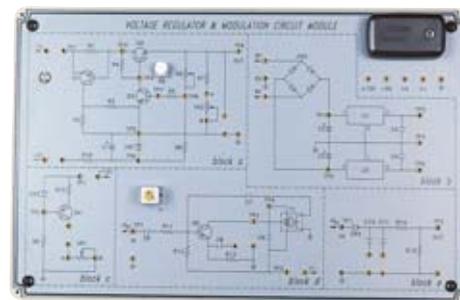
0 to 15 V AC - 0 to 100mA AC - 0 to 1A AC

**Speaker** 8 $\Omega$ , 0.25W with driver circuit.

**0.25W potentiometers** : 1k $\Omega$ , 10k $\Omega$ , 100k $\Omega$ , 1M $\Omega$ .

**Breadboard** : 1680 tie-point breadboard on top panel can be easily put into and taken off.

Dimensions : 400 x 300 x 130 mm. Weight : 5.8kg



## 17 EXPERIMENT MODULES.

Designed with a 215 x 165 x 30mm solid body plastic housing, with electrical wiring printed on the front panel. An 8-bit DIP switch, located on the right top corner allows the user to simulate faults. Each analogue module is delivered with 2 experiment manuals.

## STUDENT BOOK

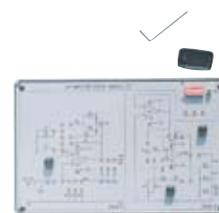
(delivered with each module)

- A theoretic part, definitions, terminology, characteristics curves, schemas, theoretical schemas, and wiring diagrams with link slots. The functioning is explained in details.
- An experimental part to guide step by step the student to do practical works: choice of measurement appliances, settings, measurement to do, blank tables to be filled, curves to be drawn.
- Result commentaries, additional practical works

## INSTRUCTOR BOOK

(delivered with each module)

- Practical works presentation: purposes, manipulation interpretation
- Switches position to simulate troubleshooting.
- Detailed and pedagogical solutions of practical works
- Calculation shown in extenso. Moreover, the instructor will find technical complements, which can be distributed to students without any modifications.



Silicium, Germanium, Zener, Photodiode and LED diode characteristics experiments.  
Clipping and clamping circuits

ref. ANALOG 1

Half wave and full wave rectifier circuit.  
Bridge rectifier circuit.  
Dual power rectifier circuit.  
Voltage magnifying rectifier circuit.  
RC direct current charge & discharge circuit.  
Differentiator, integrator.  
RL charge & discharge circuit.  
NPN and PNP circuit.

ref. ANALOG 2

Transistor amplification circuit: common emitter circuit, common base, common collector.  
Switching type transistor circuit. Relay control.

ref. ANALOG 3

Darlington's circuit.  
Photoelectric circuit control.  
Junction type FET (JFET).  
Metal Oxide Semiconductor FET (MOFSET).

ref. ANALOG 4

Two stage amplifier circuit.  
RC coupled amplification circuit.  
Direct coupled amplification circuit.  
Transformer coupled amplification circuit. Push-pull amplification circuit

ref. ANALOG 5

Condenser coupling multi-stage amplification circuit.  
OTL amplification circuit.  
OCL amplification circuit.  
IC amplification circuit.

ref. ANALOG 6

Transistor negative feedback circuit.  
Serial voltage negative feedback circuit.  
Parallel voltage negative feedback circuit.  
Serial current negative feedback circuit.  
Parallel current negative feedback circuit

ref. ANALOG 7

Low frequency sine wave oscillating circuit (RC phase-shifting and Wien bridge oscillator circuit).  
High frequency sine wave oscillating circuit (Hartley oscillator circuit).  
Astable oscillating circuit.

ref. ANALOG 8

High frequency sine wave oscillating circuit (Colpitts oscillator circuit).  
Crystal oscillating circuit.  
Bistable oscillating circuit, Intermittent oscillating circuit.

ref. ANALOG 9

Schmitt's trigger circuit. Sawtooth wave oscillating circuit. Regulated voltage circuit with zener diode. Regulated voltage circuit with zener diode/transistor. Regulated adjustable voltage circuit. Current limiting regulated voltage circuit.

ref. ANALOG 10

Regulated voltage circuit with IC. Constant current circuit. Amplitude modulation circuit (AM). Amplitude demodulation circuit.

ref. ANALOG 11

Frequency modulation circuit (FM). Transistor differential amplification circuit. Characteristics of OP amplifiers: input/output impedance measurement, bandwidth, slew rate, offset voltage measurements.

ref. ANALOG 12

OP amplifier circuits: inverse and non inverse amplification, voltage follower circuit, Difference amplification, Sum amplification, clipping circuit, constant voltage and current circuit, differential circuit, integrator circuit.

ref. ANALOG 13

OP amplifier circuits: logarithm amplification circuit, exponential amplification circuit, peak value detection circuit, precision clipping circuit, voltage regulator circuit, sampling/hold circuit.

ref. ANALOG 14

OP amplifier circuits: instrument amplification circuit, high pass, low pass and band pass amplification circuit.

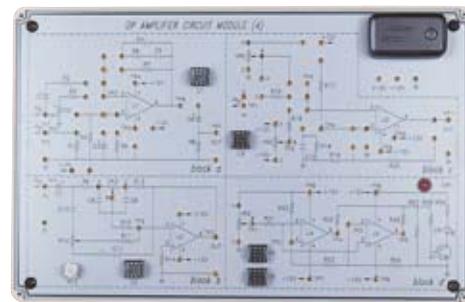
ref. ANALOG 15

Tone controller circuit. RIAA amplifier circuit. Single power inverse amplification circuit. Positive feedback OP amplifier: comparator, Schmitt trigger, window type comparator.

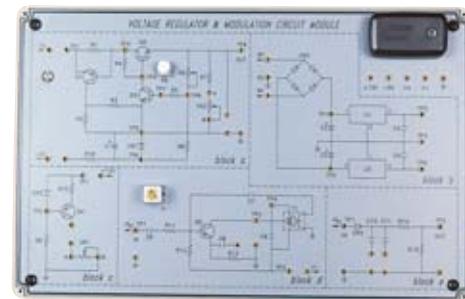
ref. ANALOG 16

Monostable and astable multivibrator: square wave generator.  
Sine wave oscillation circuit:  
RC oscillator, Wien oscillator.

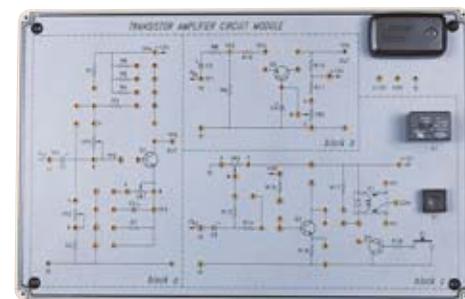
ref. ANALOG 17



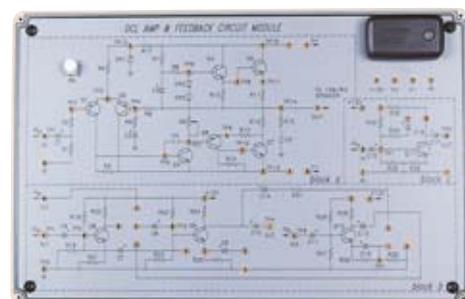
REF. ANALOG 1



REF. ANALOG 2



REF. ANALOG 3



REF. ANALOG 4