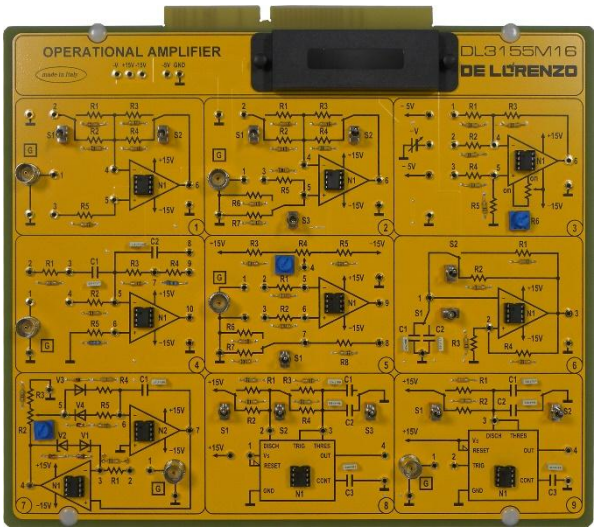
ELECTRONICS

OPERATIONAL AMPLIFIERS



The design and construction of electronic circuits to solve practical problems is an essential technique in the fields of electronic engineering and computer engineering.

With this board the students can analyse and test all possible configurations of the operational amplifier 741 from the inverting to the ramp generator, study all its peculiar characteristics as CMRR and Slew rate; they can also check the operation of the integrated circuit NE555 used as stable and astable multivibrator.

DL 3155M16

THEORETICAL TOPICS

- Ideal operational amplifier
- Concept of common mode and differential voltage
- The negative feedback
- Main operational amplifier linear configurations
- Concept of virtual mass
- Inverting and non-inverting configuration
- Inverting summing amplifier
- Zero and different from zero level detector
- Differential amplifier
- Integrator and derivator
- 741 operational amplifier
- The meaning of CMRR, Vos and slew rate
- Comparators, ramp and square wave generators
- Comparator circuit
- Transfer characteristics
- Inverting Schmitt trigger
- Square wave generator (astable multivibrator with operational amplifier)
- Ramp generator
- 555 integrated circuit as astable and monostable multivibrator
- Fault simulation.

CIRCUIT BLOCKS

- Inverting and non-inverting operational amplifier
- Operational amplifier parameters: CMRR, slew rate
- Offset voltage reduction, differential amplifier, summing amplifier
- Operational amplifier: integrator and shunt
- Comparator: inverting, non-inverting, with hysteresis (Schmitt trigger)
- Operational amplifier as astable multivibrator
- Ramp generator
- Timer 555 as astable multivibrator
- Timer 555 as monostable multivibrator

Complete with theoretical and practical manual.
Dimensions of the board: 297x260mm

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CAI SOFTWARE:
Each board of the TIME system can be supplied complete with a Student Navigator software that allows students to perform their learning activities through a Personal Computer, without the need for any other documentation.
Ordering code: please add SW after the code of the board (i.e. DL 3155M16SW)

Required:
POWER SUPPLY NOT INCLUDED
Base frame with power supply (completed with connecting cables):

- **DL 3155AL3** - Base frame with power supply and interface to pc and virtual instrumentation
- **DL 3155AL2** - Base frame with power supply and interface to pc

Basic power supply (connecting cables not included):

- **DL 2555ALF -** DC power supply ±5 ±15 0±15 Vdc, 1A
- **TL 3155AL2 -** Connecting cables

Choosing this power supply, for the execution of the experiments, it is normally required the use of an oscilloscope and two multimeters.

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