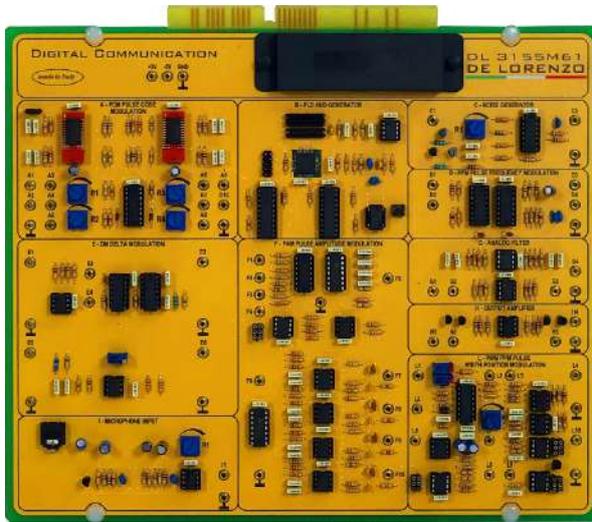




DIGITAL MODULATION-DEMODULATION



DL 3155M61

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 study the operating principle of the digital communications using the most common techniques such as PCM modulation, PAM modulation, PFM modulation, PWM and PPM modulations and finally the DM modulation with the aid also of a signal of noise, of analog filters and output amplifiers.

THEORETICAL TOPICS

- Different types of digital modulation and demodulation for analogue signals
- Evaluation of pros and the cons of each conversion mode

CIRCUIT BLOCKS

- PCM modulator and demodulator
- 8 bit coding with compression, M μ or A selectable through bridge
- 2 channels for transmission and 2 channels for reception
- Possibility to use 1 or 2 digital channels
- Integrated anti-aliasing and band limiting analogue filters in reception, capacitive switching type
- Passing band from 300 Hz up to 3400 Hz
- PAM signal generation, demodulation, transmission for each single channel
- PAM modulator and demodulator
- Two channel time division
- Regeneration of the synchronism and channel signals
- Sampled, but not quantified signal
- PTM Signal Generation
- Passing band from continuous to 4000Hz
- PWM and PPM modulator and demodulator
- Single channel with passing band from continuous to 4000 Hz
- Regeneration of the synchronism signal
- Conversion of the PWM signal to PPM and from the PPM signal to PWM
- PCM signal generation and demodulation
- PCM Signal Time-Division Multiplexing
- PFM modulator and demodulator
- Single channel with passing band from 300 Hz to 3400 Hz



TIME ELECTRONIC BOARDS



- Circuit realization with the use of a PLL
- Delta modulator and demodulator
Single channel with passing band from continuous to 3400 Hz
Timing
Ramp signal generation
Channel noise
- Possibility to adjust the noise that is superimposed to both analogue and digital signals
- Analogue filters
2 analogue filters with 3400 Hz limited band
- Output amplifier
2 amplifiers able to pilot a small loudspeaker
- Microphone amplifier
- Microphone amplifier with automatic gain control
- Channel bandwidth

Complete with theoretical and practical manual.

Dimensions of the board: 297x260mm

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 3155M61SW)

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 2555ALG** - DC power supply $\pm 5 \pm 15$ 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.

