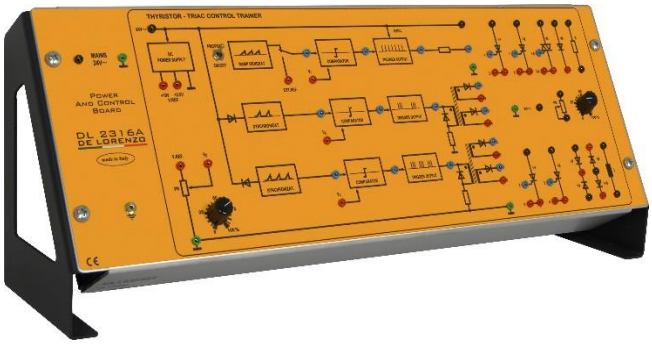
ELECTRONICS

THYRISTORS, TRIACS AND THEIR APPLICATIONS
DL 2316

This system has been designed in 3 boards to allow both the theoretical and the practical study of thyristors and triacs for what concerns the control techniques and their typical applications within the control systems.

DL 2316A - Power and Control Board
DL 2316B - Light and Temperature Control
DL 2316C - Speed and Position Control

Power and Control Board



DL 2316A

Experiments

- SCR control with alternating voltage synchronous and in phase with the anode voltage
- SCR control with alternating voltage synchronous and in phase with the anode voltage supplying the gate with and without flywheel diode
- Half-wave rectifiers with ohmic-inductive load with and without flywheel diode
- Half controlled single-phase rectifier bridge (B2HZ)
- Half controlled single-phase rectifier bridge with (B2HKF) and without (B2HK) flywheel diode
- Fully controlled single phase rectifier bridge
- Control of full-wave rectification with ohmic load and with ohmic-inductive load
- Half-wave ac/ac converter
- Full-wave ac/ac converter
- Triac control in quadrant I
- Triac control in quadrant III
- Mains alternating voltage regulation
- Pulse train control
- Triac controlled rectifier

It allows the autonomous study of the thyristors in the main single-phase bridge circuit confi guration (semi- and totally-controlled) and in the ac/ac converters as well as the study of the triac in the control of the alternating voltage and in the controlled rectifi cation. The power section includes: 4 thyristors, 1 triac, 4 diodes, 1 fl ywheel diode and 1 ohmic-inductive
load.
The control section allows the realization of: proportional control, on-off control or phase control, both on the positive and negative semiwave.
Furthermore, there is a potentiometer for the manual control of the devices activation. The board is supplied complete with a set of stackable, plug-in cables of suitable lengths and colours and with a training manual.

Power supply:

- 24Vac,1A,50/60Hz

Light and Temperature Control

DL 2316B

This board contains two independent systems, for the control of the light and of the temperature respectively, each one complete with reference
block, error amplifi er, transducer and actuator.
Together with the DL 2316A board, that contains the power circuits complete with relevant piloting, it is possible to realize an open and closed loop control both of the lighting system (24V, 15W lamp and photoresistor) and of the heating system (47Ω, 25W heating element and integrated circuit sensor).
The board is supplied complete with a set of stackable, plug-in cables of suitable lengths and colours and with a training manual.

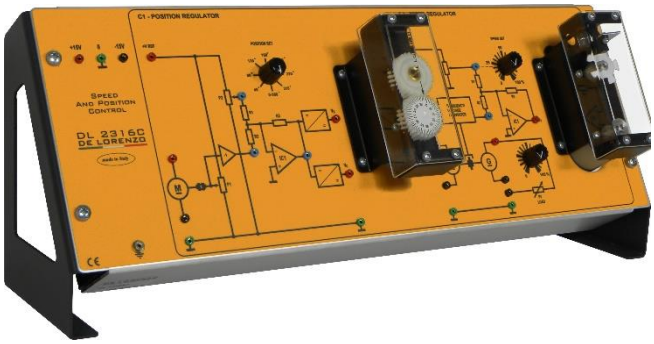
Experiments

- DC operated lamp
- AC operated lamp
- Full-wave triac control
- Proportional control

Power supply:

- ± 15Vdc, 100mA

Speed and Position Control



DL 2316C

This board contains two independent systems, for the control of the position and of the speed respectively, each one complete with reference block, error amplifi er, transducer and actuator.
Together with the DL 2316A board, that contains the power circuits complete with relevant piloting, it is possible to realize an open and closed loop control both of the position system (geared motor coupled to a potentiometer) and of the speed system (variable load generator dc motor with optical transducer associated to an F/V converter).
The board is supplied complete with a set of stackable, plug-in cables of suitable lengths and colours and with a training manual.

Experiments

- Thyristor bidirectional converter
- Open-loop operation
- Closed-loop operation half-controlled bridge
- Closed-loop operation fully-controlled bridge

Power supply:

- ± 15Vdc, 100mA