

TESTING MODULES FOR ELECTRO-PNEUMATIC SYSTEMS

Mod. D/EV

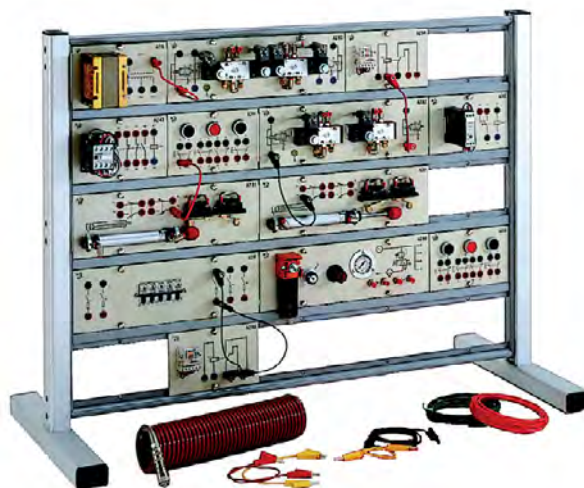
INTRODUCTION

This system has been designed so that students can assemble, analyze and test a wide range of more and more complex electric circuits; it consists of interchangeable modules; thus merely connecting these modules with each other via flexible leads and hoses supplied with the equipment enables to assemble various circuits.

Modules are made of insulating material and they represent the support of the necessary devices for implementing the experimental programme, besides offering the graphic representation and pneumatic, electric symbol of the used component; electrical connections are made easier by standardized educational terminals (\varnothing 4 mm) with high protection degree against accidental contacts, whereas those of pneumatic type are carried out with pipes of Rilsan® and quick connections.

This set of modules for electro-pneumatic systems has been designed specifically to assemble, analyze and test the typical installations of industrial automation in wired. Modules can be inserted in bench mod. 398/EV to implement the training programme. As an alternative, vertical frame mod. TSI/EV can be used and the equipment can be powered by power supply unit mod. AZ-1PH/EV (both these units are supplied separately, on demand).

This system can also be assembled in programmable logic with the integration of a PLC trainer (not included).



TRAINING PROGRAM:

- controlling a cylinder by monostable solenoid valve
- controlling a cylinder by bistable solenoid valve
- controlling a cylinder by monostable solenoid valve and self-holding circuit
- temporary storage with prevalent insertion
- temporary storage with prevalent reset
- temporary binary counter for circuits with bistable solenoid valve
- temporary binary counter for circuits with monostable solenoid valve
- permanent binary counter for circuits with bistable solenoid valve
- permanent binary counter for circuits with monostable solenoid valve
- control of a sliding door
- semi-automatic control of a double-acting cylinder by monostable solenoid valve
- semi-automatic control of a double-acting cylinder by bistable solenoid valve
- electric control of a cylinder by monostable solenoid valve (anti-repetitiveness)
- electric control of a cylinder by bistable solenoid valve (anti-repetitiveness)
- electric control of a cylinder by monostable solenoid valve and impulse relay (anti-repetitiveness)

- electric control of a cylinder by bistable solenoid valve and impulse relay (anti-repetitiveness)
- automatic control by monostable solenoid valve and stop pushbutton with return to a0 at the end of the cycle
- automatic control by bistable solenoid valve and stop pushbutton with return to a0 at the end of the cycle
- automatic control by bistable solenoid valve and stop pushbutton with immediate return to a0
- automatic control by bistable solenoid valve and stop and emergency pushbutton with different returns
- automatic control by bistable solenoid valve and stop and emergency pushbutton with immediate return to a0
- controlling a cylinder by bistable solenoid valve and delayed-excitation timer
- electric diagrams for using delayed-excitation timer, with monostable solenoid valve and instantaneous contact
- semi-automatic control of a cylinder, with bistable distributor, delayed excitation
- semi-automatic control of a cylinder, with bistable distributor, delayed excitation and exchange contact
- semi-automatic movement with limit switch, timer and monostable distributor
- semi-automatic movement with limit switch, timer and bistable distributor
- safety two-hand control

LOGICAL FUNCTIONS IMPLEMENTED WITH FUNCTIONAL ELECTRIC DIAGRAMS:

- identity function (YES)
- inverse function (NOT)
- sum function (inclusive OR)
- exclusive OR
- product function (AND)
- inhibition function
- examples of logical equations

INDUSTRIAL APPLICATIONS:

- pick-and-place cycle with bistable solenoid valves
- pick-and-place cycle with monostable solenoid valves
- pick-and-place cycle with monostable solenoid valves and safety and emergency circuits
- pick-and-place cycle with bistable solenoid valves and safety and emergency circuits
- "L" cycle with bistable solenoid valves
- "L" cycle with bistable solenoid valves, automatic and semiautomatic control circuits, and anti-repetitiveness condition
- "L" cycle with monostable solenoid valves, automatic and semiautomatic control circuits, and anti-repetitiveness condition

TECHNICAL SPECIFICATIONS:

The set of modules for implementing electro-pneumatic systems mod. D/EV includes:

- 1 Module AZ-10
 - 5 board fuse-holders with breakable fuses of 4/6 A
- 1 Module AZ-15
 - 1 transformer 115-230 / 12-24 V 50-60 Hz 72 VA
- 1 Module AZ-42
 - 1 delayed relay – 1.5 - 30 s, coil of 24 Vac
- 4 Modules AZ-43
 - 1 auxiliary relay for industrial uses - coil of 24 Vac
- 2 Modules AZ-44
 - 3 push-buttons for industrial uses
- 1 Module AZ-80
 - 1 pneumatic feeding with pneumatic switch, pressure controller, pressure gauge and 4-way distributor
- 2 Modules AZ-81
 - 1 double-acting cylinder with electric limit switches
- 1 Module AZ-82
 - two 5/2 monostable solenoid valves – 24 Vac
- 1 Module AZ-83
 - two 5/2 bistable solenoid valves – 24 Vac
- 1 Module AZ-84
 - 1 impulse relay (single-pole two-way switch) with coil of 24 Vac.

SUPPLIED ACCESSORIES:

- set of 50 cables with safety plugs (Ø 4 mm)
- 1 extension for pneumatic feeding with spiral pipe and quick connections
- 10 m of Rilsan® pipe (Ø 4 mm)
- 1 extractor for unthreading Rilsan® pipe from quick connections
- 1 cutter for Rilsan® pipe

RECOMMENDED ACCESSORIES:

- Silent compressor provided with wheels and tank, overpressure valve and pressure reducer with connection fitting M.12 MINI ¼"

Technical specifications of compressor:

- * capacity: 20 l
- * flow rate: 55 l/min
- * pressure: 7 bars
- * motor power: 0.5 kW
- * revolutions per minute: 1400
- * noise level: < 57 dB
- * power supply: 230 V, single-phase – 50-60 Hz
- * automatic thermal protection
- * dimensions: 650 x 350 x 750 mm
- * weight: 30 kg

POWER SUPPLY:

Electrical: 230 V / PE 50-60 Hz
Pneumatic feeding: compressed air; flow rate of 20 l/min; max. pressure: 8 bars.

THEORETICAL-EXPERIMENTAL HANDBOOKS

Application handbook with exercises.