

Technical Teaching Equipment



DESCRIPTION

Trainer for controller tuning.

This unit permits the interaction between controller and controlled system. The objective is that the closed control loop, formed by the controller and the controlled system, to show the desired optimum response.

With a simulation software the setting of controller parameters can be practised safely. Closed an open loop control, step response, stability, disturbance and control response are demonstrated.

This trainer no needs real controlled systems, the controlled system is simulated on a computer (PC) by the simulation program. In this program the most important types of controlled systems can be selected. We can recorder and analyse the time response using the software.

The process controller used can be easily configured from the computer (PC) across an interface using the configuration software. The controller and the computer (PC) are connected by a data acquisition card with AD and DA converters.

The trainer basically is formed by:

- Digital process controller, configurable as a P, PI or PID controller, with interface.
- Interface for computer (PC).
- Data acquisition card for computer (PC).
- Simulation software for different controlled system types.
- Configuration software for the controller.



ISO:9001-2000 Certificate of Approval. Reg. No. E204034



European Union Certificate



Certificates ISO 14001: 2004 and ECO-Management and Audit Scheme (environmental management)



Worlddidac Quality Charter Certificate
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SPECIFICATIONS

Trainer for controller tuning.

Steel box.

Configurable digital process controller, with interface:

Configurable as P, PI or PID controller. Proportional gain X_p : 0-999.9%. Integral action time T_i : 0-3600s. Derivative time T_d : 0-1200s.

Interface for computer (PC).

Data acquisition card for computer (PC).

Simulation Software for controlled system models, such as 1st and 2nd order lags, time-delayed systems etc. Controlled system simulation models with proportional, integral, 1st order lag, 2nd order lag, time-delayed response, non-linearity and limitation.

Configuration software for process controller.

Recording and evaluation of time response on computer (PC).

Process variables as analog signals: 0-10V.

Set of cables.

Manuals:

This unit is supplied with the following manuals: Required Services, Assembly and Installation, Starting-up, Safety, Maintenance & Practices Manuals.

EXERCISES AND PRACTICAL POSSIBILITIES

Some Practical Possibilities of the Trainer

- 1.- To use commonly applied tuning rules, such as Ziegler-Nichols.
- 2.- To study the difference between open and closed loop control.
- 3.- Control loop comprising controller and controlled system.
- 4.- To determine the system parameters.
- 5.- Closed-loop control system response.
- 6.- Choice of optimum controller parameters.
- 7.- Stability, steady state and transient response.
- 8.- Study and investigation of control and disturbance response.
- 9.- Study of the stability of the closed control loop.
- 10.- Learning methods and terminology involved in process control.
- 11.- To adapt the process controller to different controlled systems.
- 12.- Use and practices with the simulation software.

REQUIRED SERVICES

- Electrical supply: single-phase 220V. / 50Hz. or 110V. / 60 Hz.
- Computer (PC).

DIMENSIONS & WEIGHT

- Dimensions: 490mm x 330mm x 310mm. approx.
- Weight: 8Kg. approx.