

E6.2.2

MULTIMEDIA: CONTROL TECHNOLOGY

E6.2.2.3 Control & Instrumentation Principles



Control & Instrumentation Principles (E6.2.2.3)

Cat. No.	Description	E6.2.2.3
33- 033	Control & Instrumentation Principles	1
93- 420	ESPIAL Software Package	1
93- 400	ESPIAL Tools	1*
	additionally required: 1 PC with Windows 7/10	

* additionally recommended

Features

The product uses Espial software (supplied separately) in which each assignment comprises clear objectives, background, theory and experimentation. All required test instrumentation is provided within the software and includes a four-channel real-time data logger and bar-graph display, voltmeter, frequency counter and transfer function analyzer with Bode and Nyquist displays. The system comprises three items, the mechanical unit, electronic unit and a power supply. The mechanical unit is an open-board format containing a servo mechanism and support electronics. It contains a power amplifier driving a d.c. motor connected to a set of transducers and an adjustable eddy current brake. The digital encoders are of pen construction to allow visual inspection of their functionality. A dual-function LCD meter measures either voltages or rotation speed. The electronic unit comprises an open printed circuit board with front panel mimic. It contains analogue signal processing blocks, an embedded controller with USB interface, analogue to digital converters, PWM drive and the instrumentation data converters. A complete block diagram is on the front panel with access via 2 mm sockets to allow each practical to be configured rapidly and the instrumentation blocks connected. LEDs show the output signals from the digital encoders. A function generator block is provided with sine, square and triangle output signals.

System

This trainer allows the investigation of control system principles by using a servo mechanism comprising a d.c. motor, a variety of sensors and both analogue and digital controllers. Students are also introduced to the fundamentals of transducers and signal processing. The curriculum is divided into twenty four assignments ranging from basic control concepts to more advanced topics such as transfer function analysis.