

## CE108

## Coupled Drives Apparatus

**Compact, self-contained, bench-mounting apparatus to study basic and advanced principles of control of coupled drives**



- Self-contained and compact bench-mounting unit
- Shows the problems of speed and tension control with coupled drives
- Mimics many industrial and household applications with realistic results
- All inputs and outputs buffered for connection to TecEquipment's optional controllers or other suitable controllers
- Ideal for classroom demonstrations and student project work
- Shows basic speed control and advanced multivariable control
- Front panel includes a mimic diagram of the process so that students can clearly see what they are controlling

- TecEquipment Ltd, Bonsall Street, Long Eaton, Nottingham NG10 2AN, UK
- T +44 115 972 2611 • F +44 115 973 1520 • E [info@tecquipment.com](mailto:info@tecquipment.com) • W [www.tecquipment.com](http://www.tecquipment.com)
- An ISO 9001 certified company

# CE108

## Coupled Drives Apparatus

### Description

The CE108 Coupled Drives apparatus shows the problems of controlling speed and tension in coupled drives. Many applications use coupled drives, for example: magnetic tape drives, textile machines and paper mills.

The apparatus has two electric motors, coupled by a continuous flexible belt. The belt also passes over a swinging arm with a 'jockey wheel' that measures the belt speed and tension. A manual control allows the user to adjust the spring tension at the swinging arm.

The basic control problem is to vary the torque in the motors to regulate the belt speed and tension. The user guide also shows techniques for speed and tension control, simultaneous control of velocity and tension, and analysis of multivariable control systems.

**Note:** You must use the CE108 with TecEquipment's optional CE120 Controller, the optional CE122 Digital Interface, or other suitable controllers with 10 V inputs and outputs. Details of the CE120 and CE122 are on separate datasheets.

The CE108 includes a set of cables and connectors for connection to other equipment.

All control connections work with 0 to 10 VDC signals.

### Standard Features

- Supplied with comprehensive user guide
- Two-year warranty
- Made in accordance with the latest European Union directives

### Essential Ancillaries

- Controller (CE120) – A controller with analogue and digital controls and instruments  
**or**
- Digital Interface (CE122) – An interface which connects between most products in the Control Engineering range and a suitable computer (not included)  
**or**
- Other suitable controller with 10 V inputs and outputs  
Both the CE120 and the CE122 include TecEquipment's CE2000 Control Software (see separate datasheet) with editable, pre-made control experiments for use with the CE108.

### Optional Ancillaries

- Optical Tachometer (OT1)

### Experiments

- Independent control of speed and tension
- Simultaneous control of speed and tension
- Practical methods of controlling multi-variable electro-mechanical systems

The flexible design of the equipment allows the user to develop many other analysis and control exercises to suit their needs. It is good for extended or advanced control experiments, and is ideal for student project work.

### Essential Services

*Electrical supply:*

240/110 VAC, 2/5 A, 50/60 Hz, with earth

Other voltages and frequencies available to special order

*Bench space needed:*

1 m x 750 mm

### Operating Conditions

*Operating environment:*

Laboratory environment

*Storage temperature range:*

-25°C to +55°C (packed)

*Operating temperature range:*

+5°C to +40°C

*Operating relative humidity range:*

80% at temperatures < 31°C decreasing linearly to 50% at 40°C

### Sound Levels

Less than 70 dB(A)

### Specifications

*Nett dimensions and weight:*

540 mm x 330 mm x 625 mm, 26.4 kg

*Packed dimensions and weight:*

0.42 m<sup>3</sup>, 53 kg (approx – packed for export)

*Inputs: 0 to 10VDC*

- Motor 1: 0 to +/- 10VDC
- Motor 2: 0 to +/- 10VDC

*Outputs: 0 to 10VDC*

- Motor 1: speed
- Motor 2: speed
- Belt tension: 0 to +/- 10VDC
- Jockey pulley speed: 0 to +/- 10VDC

*Other controls:*

Swinging arm spring tension