PLC PROCESS

CE111

A self-contained, benchtop liquid flow and level process, providing a physical system to experience the programming of programmable logic controllers, for use with the PLC Trainer (CE123).

KEY FEATURES

- Compact, benchtop unit
- Connects to TecQuipment's PLC Trainer (CE123) to mimic a realistic industrial process
- Allows basic and advanced studies of programmable logic controllers (PLCs) in industrial applications
- Demonstrates control of liquid flow, volume and level in two tanks
- Includes a selection of fully controllable valves to give many different liquid level and flow control experiments, including batch processing
- Front panel includes mimic diagram of the process so students can clearly see what they are controlling

TECQUIPMENT

PLC PROCESS

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DESCRIPTION

TecQuipment's PLC Process gives students and engineers practical experience of the principles and application of programmable logic controllers (PLCs). The object is to connect and program an external, programmable logic controller to monitor and control the level and flow rate of water in a two-tank system.

The apparatus has two transparent tanks, mounted one above the other. A variable-speed pump transfers water from the reservoir (in the base of the unit) into the upper tank. The water can drain down to the lower tank and then back into the reservoir. Solenoid valves may be individually opened or closed to control and redirect the movement of the water. The pump control is on or off, but a manual control allows the user to set the speed. A float switch in the reservoir monitors the level of water.

Each tank includes two level sensors which measure maximum and minimum water levels. An in-line flow sensor provides a pulsed output. Its frequency is proportional to the flow rate and the number of pulses proportional to volume.

Indicators next to each input and output socket show the on/off status of the pump, the valves, the maximum and minimum level in each tank, and the flow rate.

An overflow in each tank prevents accidental overfilling.

Note: You must use the PLC Process with TecQuipment's PLC Trainer (CE123). A multi-way lead connects the unit to the trainer. This lead carries the power for the pump and valve solenoids, and completes the return path for the input and output sockets. Refer to separate datasheet for details of the PLC Trainer (CE123).

STANDARD FEATURES

- Supplied with comprehensive user guide
- Five-year warranty
- Made in accordance with the latest European Union directives
- ISO9001 certified manufacturer

LEARNING OUTCOMES

When used with the CE123:

- Basic programming of a PLC
- Basic level control
- Tank filling sequence
- Simulated batch processing (sequencing)
- Ladder logic programming
- Editing and adding comments in a PLC program

The open structure of the CE111 and CE123 allows the user to create additional experiments to suit their needs.

ESSENTIAL BASE UNIT

- PLC Trainer (CE123) – An industrial-standard PLC in a compact case with buffered connections for educational use. Includes programming software for use with a suitable computer (not included).

ESSENTIAL SERVICES

ELECTRICAL SUPPLY:

(Supplied from PLC Trainer CE123)

BENCH SPACE NEEDED:

1600 mm x 600 mm (with the CE123)
The CE111 needs 900 mm of height clearance

WATER

5 litres of clean water

OPERATING CONDITIONS

OPERATING ENVIRONMENT:

Laboratory

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

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SOUND LEVELS

Less than 70 dB(A)

SPECIFICATIONS

TecQuipment is committed to a programme of continuous improvement; hence we reserve the right to alter the design and product specifcation without prior notice.

NETT DIMENSIONS AND WEIGHT:

560 mm x 330 mm x 810 mm; 25 kg

PACKED DIMENSIONS AND WEIGHT:

0.92 m^3, 74 kg (approx – packed for export)

INPUTS:

- 4 off solenoid type valves
- Pump on

OUTPUTS:

- Reservoir level
- Tank 1 maximum and minimum level
- Tank 2 maximum and minimum level
- Flow

OTHER CONTROLS:

Manual control of pump speed

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