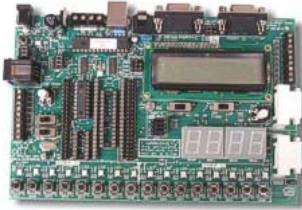
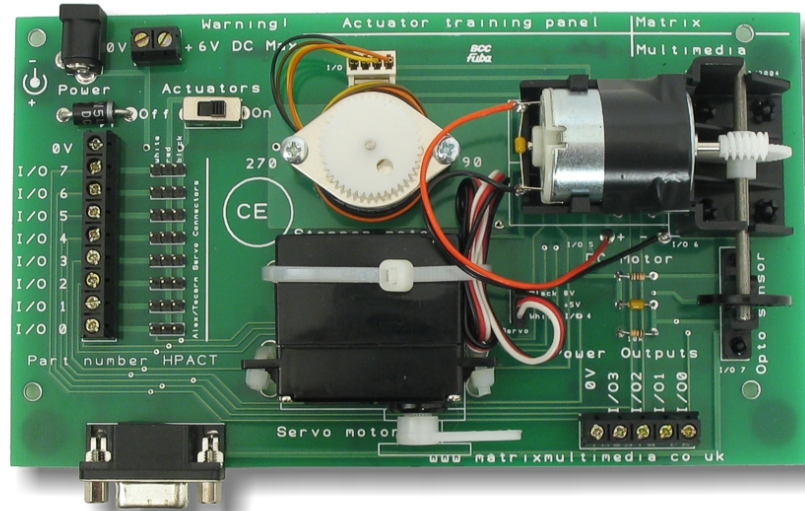


Helps students understand motor systems



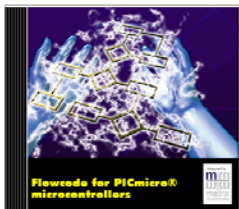
The panel connects easily to an E-blocks port on the development board – or to other E-blocks boards



Alex animated head plugs into the actuators panel



The TEC arm 6 kit also plugs into the panel



Code for the panel can be written using Flowcode for PICmicro microcontrollers, C for PICmicro microcontrollers or Assembly for PICmicro microcontrollers

The actuators panel has three purposes:

1. Firstly it contains 3 different types of motor that allow students to understand how different motor systems work.
2. Secondly it provides an interface between the Alex animated head and the TecArm robot systems and the PICmicro development board.
3. Thirdly it provides power outputs for general purpose work such as powering external motors and relays.

The panel is designed to easily interface to the version 2 PICmicro development board and can be used with Flowcode, with C for PICmicros or with Assembly for PICmicros.

The panel is supplied with a free set of worksheets (code TEFWS) that gives students a series of simple problems that need to be solved using flow charting software (Flow code for PICmicros), C code (C for PICmicros) or assembly code programming (Assembly for PICmicros).

A full manual for the Actuator training panel is also included with the worksheets.

The actuators on the panel are:

| Actuator | Output/action | Coding strategy |
|-------------------------------------|---------------------------|--|
| Stepper Motor | Simple full and half step | Simple full and half step Forward and reverse |
| Servo motor | Simple angle control | Various |
| DC motor and gear box with feedback | Various | Various |

Technical specification

Servo motor

5V DC, 180 degree

Stepper motor

5V DC, 15 degree per step, full step only

DC motor

5V DC, worm gear with optical feedback sensor.

Power outputs

L293 powered: up to 1A pulse, 600mA continuous per output

Power supply

We recommend an external DC power supply at 5V, up to 3A. Current requirements will depend on what is connected to the panel.

following table lists the actuator board connections:

| Actuator I/O connection no. | Description | Recommended PICmicro connection |
|-----------------------------|-------------------------------|---------------------------------|
| 0V | 0V connection | 0V |
| I/O 0 | Stepper motor output (Yellow) | Pin B0 |
| I/O 1 | Stepper motor output (Brown) | Pin B1 |
| I/O 2 | Stepper motor output (Black) | Pin B2 |
| I/O 3 | Stepper motor output (orange) | Pin B3 |
| I/O 4 | Servo motor output | Pin B4 |
| I/O 5 | DC motor output | Pin B5 |
| I/O 6 | DC motor output | Pin B6 |
| I/O 7 | Opto sensor input | Pin B7 |