# 28-PIN PROJECT BOARD

Contents:

AXE020   28-pin Project Board with input/output cables

Introduction

The 28-pin project board is designed to allow rapid prototyping with 28-pin microcontrollers. The board provides connections for eight digital inputs, four analogue inputs and eight digital outputs. Each of the outputs is driven through a darlington driver, which will drive upto 800mA per output. Ribbon cables with connectors are also included, which enable easy interfacing to the board. Space is provided on the board for adding an optional motor driver IC, through which DC motors can be controlled with forward/ reverse directional control.
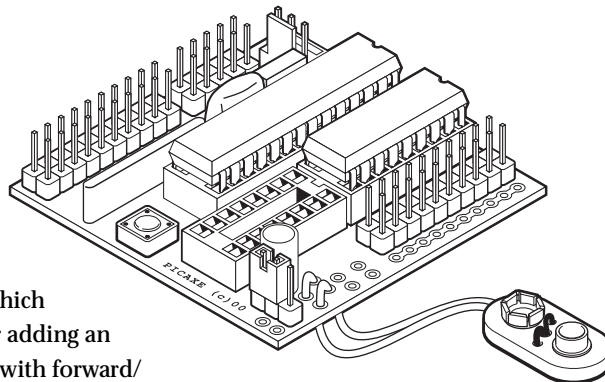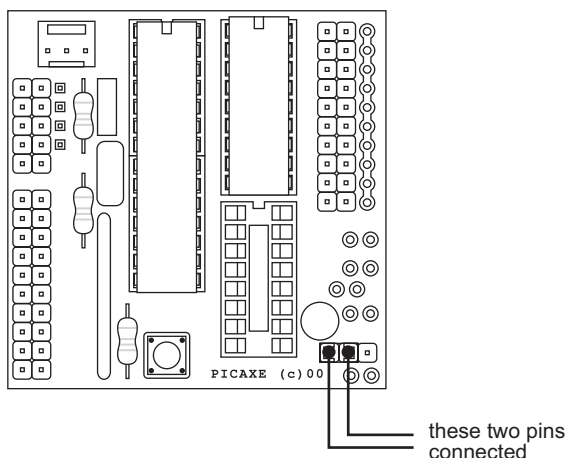
Power

The board can be powered by a single, or two separate, power supplies. When two power supplies are used the second separate supply (V2+) is used to power the output devices. This is useful when a higher voltage is required (e.g. when driving a 12V stepper motor) or when it is necessary to isolate the outputs to avoid noise problems (e.g. when using radio-control servos).

The primary power supply (V1+) for the interface is a 6V or 4.5V DC. This is connected via the battery connector. DO NOT use a 9V PP3 battery, as the interface does not include a voltage regulator.

When a single power supply is used a jumper link is required on the external power jumper link 'E' as shown right.

these two pins connected

When two power supplies are required the second supply is connected to jumper E as shown right.
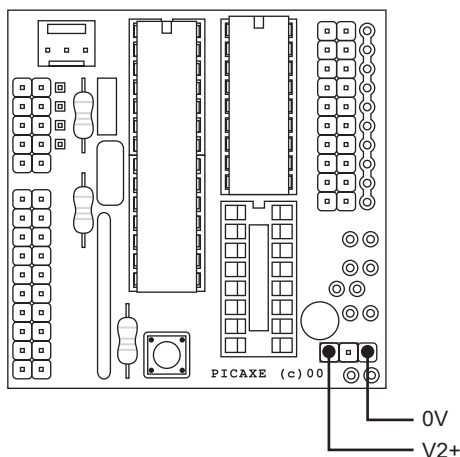
NOTE: The three-pin header and stereo socket at the top of the board are redundant for project board applications. This header is only used in conjunction with the PICAXE-28 programming system. More information about the PICAXE system can be found at: www.rev-ed.co.uk

0V

V2+
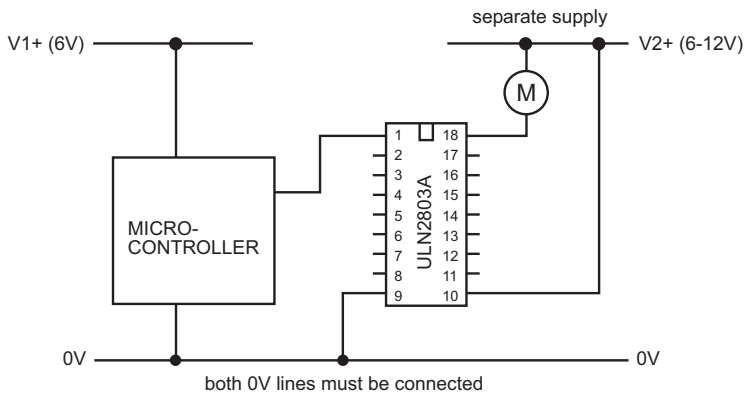
28-Pin Project Board Circuit
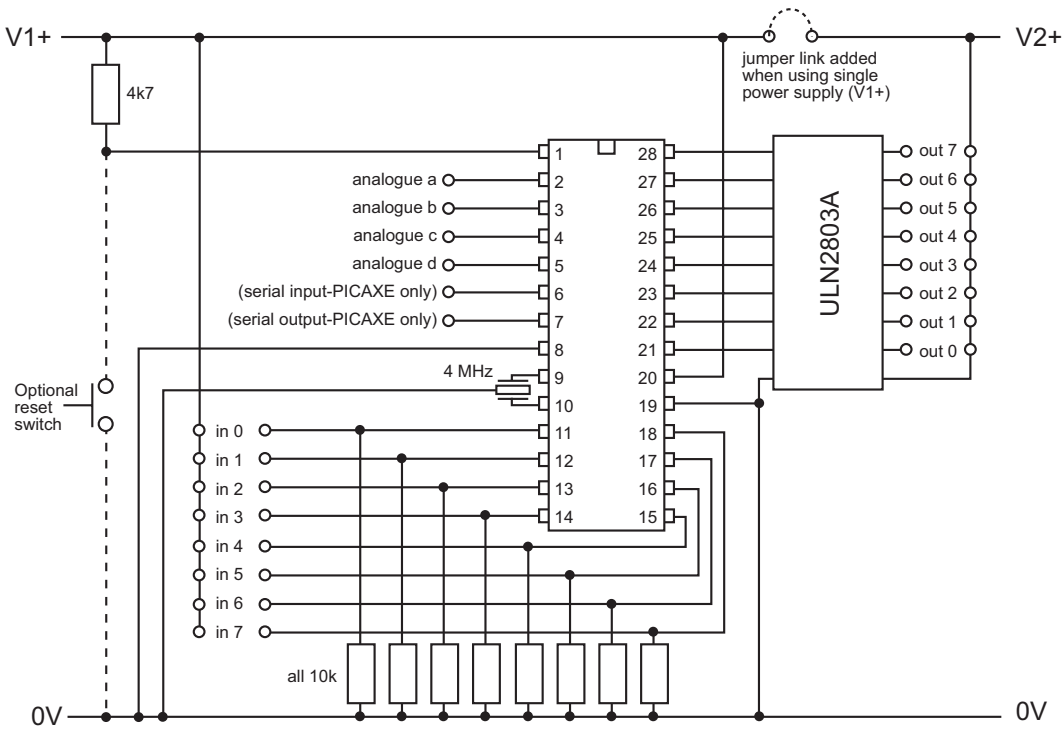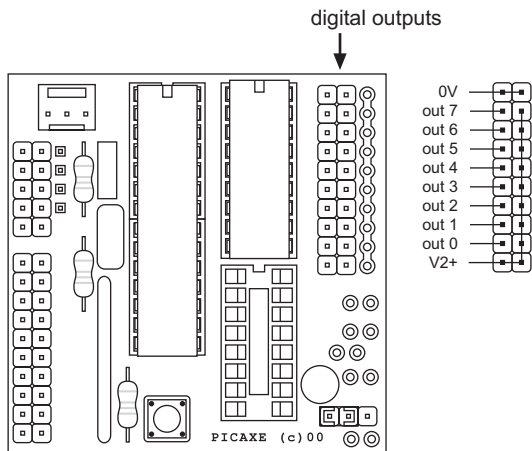

Digital Outputs

Each digital output is connected to a transistor as shown below.
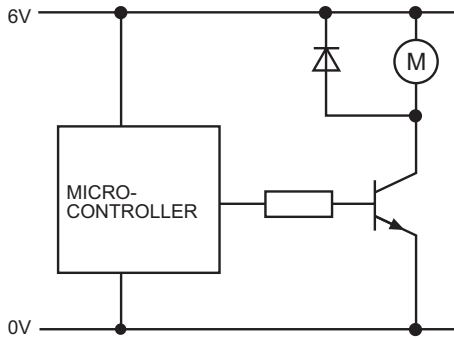
On the board the transistors are contained in a single ULN2803A darlington driver IC.
The equivalent output circuit is shown below.

The digital output pins on the board are identified as follows:

digital outputs

```
0V
out 7
out 6
out 5
out 4
out 3
out 2
out 1
out 0
V2+
```

PICAXE (c)00

The output ribbon cable connector has the following pin arrangement (wire 1 is marked with red ink).

| 1	0V
2	0V
3	7
4	V2+
5	6
6	V2+
7	5
8	V2+
9	4
10	V2+
11	3
12	V2+
13	2
14	V2+
15	1
16	V2+
17	0
18	V2+
19	V2+
20	V2+

wire 1

PICAXE (c)00
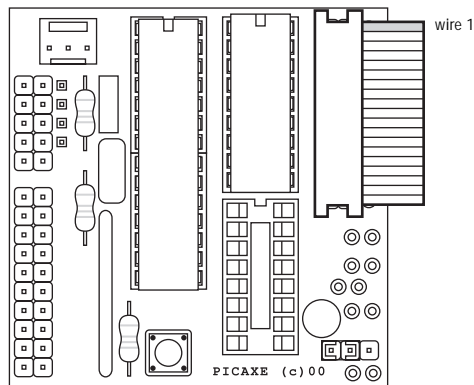
Motor Driver

An optional L293D motor driver IC (not supplied) may be added to the basic interface.
This provides forward-backward control of two DC motors, controlled by outputs 4 to 7.
Naturally, if only one motor is to be controlled then only two output lines are used.

optional L293D
motor driver IC

0V

V2+
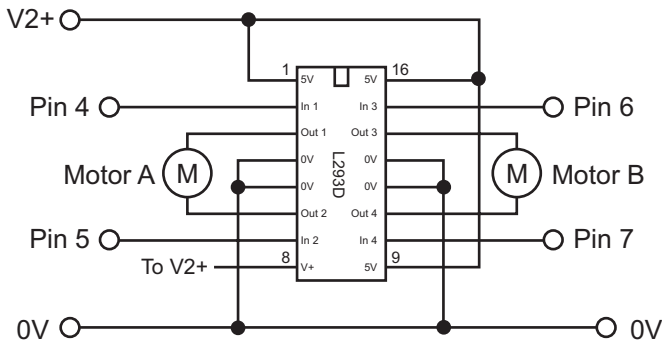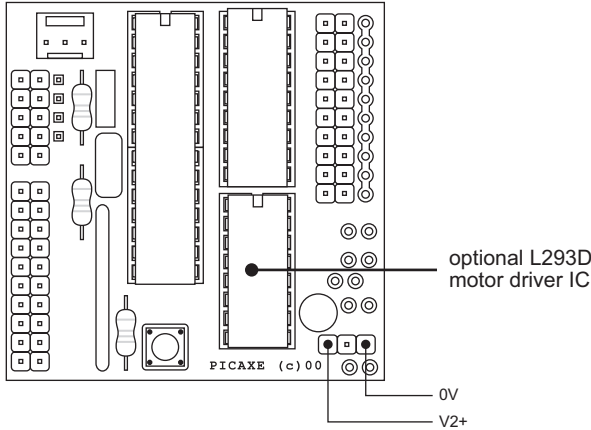
Both inputs low	- motor halt
First output high, second output low	- motor forward
First output low, second output high	- motor reverse
Both inputs high	- motor halt

Changing the states of the input pins has the effect of altering the direction of current
flow through the motor, as shown below.
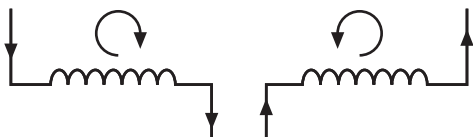
Note that the L293D will become warm with continuous use. A heatsink bonded onto
the top of the chip will help keep it cool.

Motor A and B are connected to the interface via the pads provided. It is necessary to
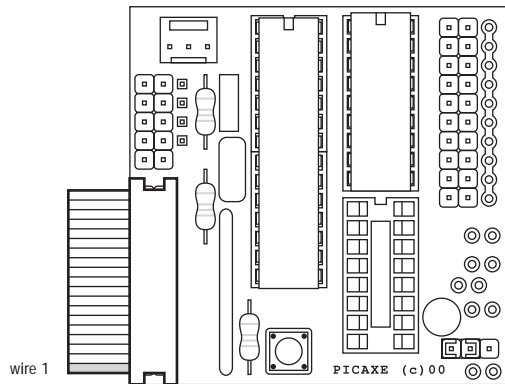solder connectors or wires into these pads.

Digital Inputs

The digital inputs have a 10k
pull down resistor on each
input pin.
The equivalent input circuit is
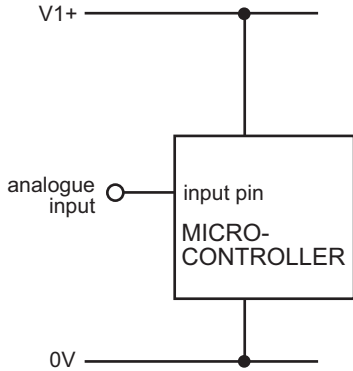shown right.
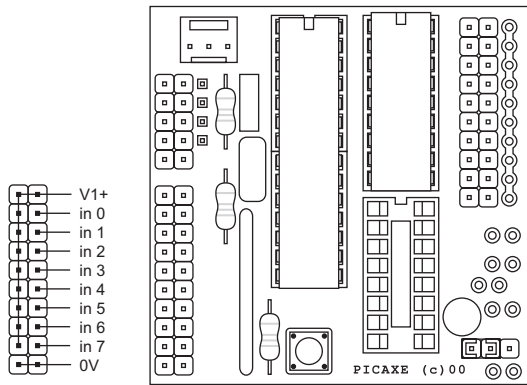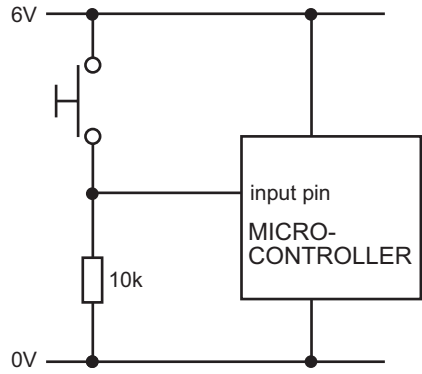
digital inputs

The input ribbon cable connector has the following pin arrangement (wire 1 is marked
with red ink).

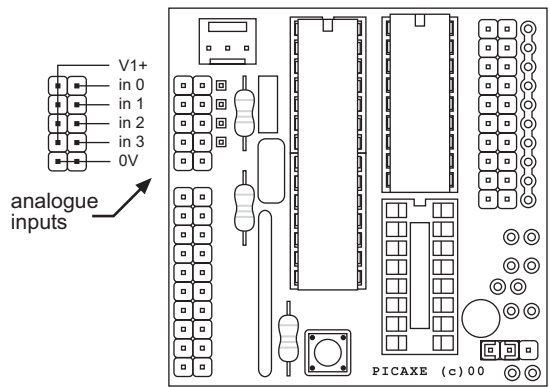|	
20	V1+
19	V1+
18	V1+
17	0
16	V1+
15	1
14	V1+
13	2
12	V1+
11	3
10	V1+
9	4
8	V1+
7	5
6	V1+
5	6
4	V1+
3	7
2	0V
1	0V

wire 1

Analogue Input Channels

The analogue input channels are left floating (no connection).
The equivalent input circuit is shown below.

The analogue input ribbon cable connector has the following pin arrangement (wire 1 is marked with red ink).

10	V1+
9	0
8	V1+
7	1
6	V1+
5	2
4	V1+
3	3
2	0V
1	0V

Order Codes:

MIC035   PIC16F872I/SP **28**-pin microcontroller (optional)
AXE020   **28**-pin Project Board
IC030   L293D 16-pin Motor Driver IC (optional)