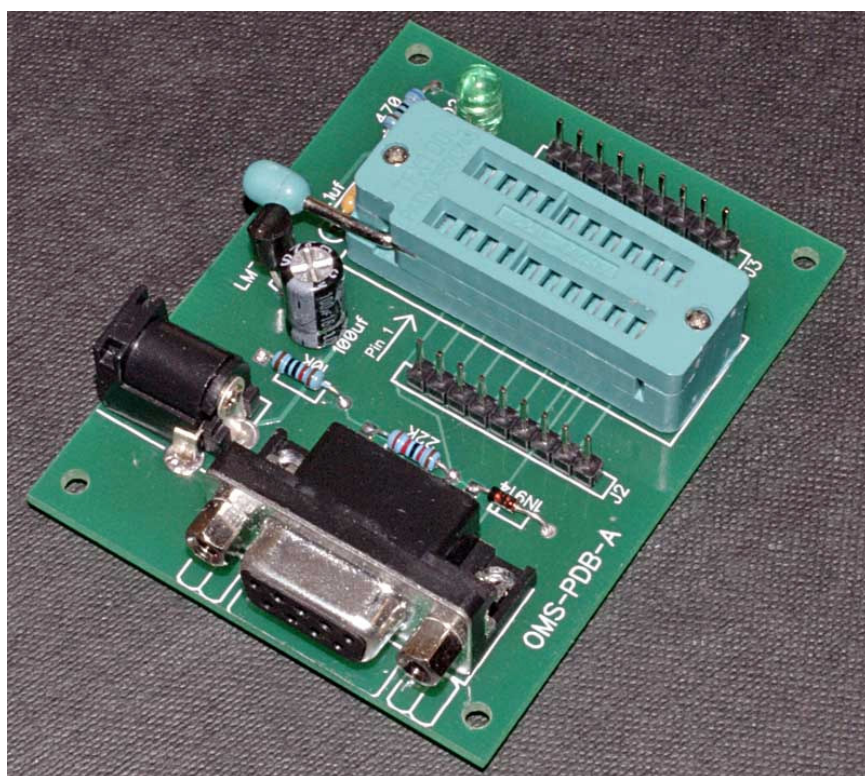




P-Axe

Programmer for 8, 14 and 20 pin PICAXE® MCUs

User Manual



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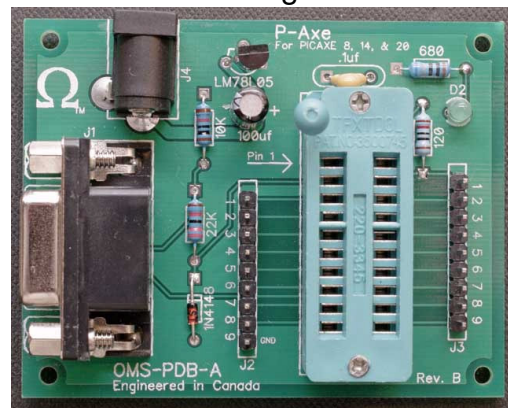
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Introduction

The Omega MCU Systems P-Axe is primarily intended as a programmer for PICAXE® 8, 14 and 20 pin microcontrollers. It was purposely designed to offer professional level handling and improved process in cases where the target device/circuit does not provide reasonable access for in-circuit programming. However, its many features which provide ease of handling, quick set-up and robust operation ensure it can easily be utilized in an initial development role as well.

P-Axe features:

- 1.6mm FR4 fiberglass board with 1oz copper and HAL tinning for long life
- Zero Insertion Force (ZIF) MCU socket for ease of handling and reduced wear and tear on the MCU
- Built-in regulated power supply reduces workbench clutter, improves operational reliability and reduces set-up time
- Standard 5.5mm x 2.1mm coaxial DC power socket.
- Industry standard RS232 interface for use with serial cable/port or a USB to serial cable eliminates the need to buy proprietary cables
- All signals are available through headers for use with commonly available DuPont style wire jumpers
- Uses a modified enhanced serial download circuit for better safety and more reliable operation



Usage

1. Connecting to the Host Computer

The P-Axe features a standard pin-out 9 pin DBF connector and can connect to a host computer either through a standard RS232 interface or a USB to Serial cable.



The P-Axe is configured as a data communications device so if connecting to an RS232 interface, a straight-through cable is required. Depending on the RS232 connector the host computer has, this will either be a 9-pin female to 9-pin male, as shown here. Or, in rare instances, you may need a 25-pin female to a 9-pin male cable. In either case, the 9-pin male

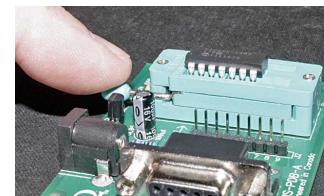
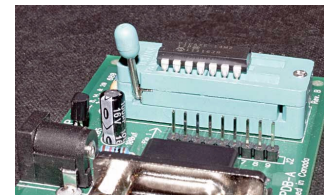
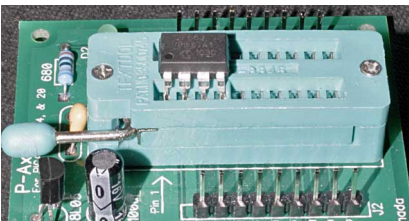
end of the cable is connected to the P-Axe and the female end to the host computer.

Alternatively, or in the case your host computer does not have an RS232 serial port, you can use a better quality USB to serial cable. These have a USB-A connector at one end and a standard 9-pin DB9M (male) connector at the other. When installing the manufacturers driver for the USB to Serial cable, be sure to note which COM port has been associated with the USB to serial cable.

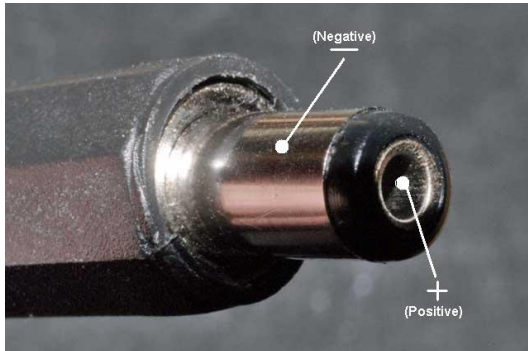


2. Inserting the MCU

Make sure the lever on the ZIF socket is in the vertical position; place the MCU into the socket as shown with its pin 1 adjacent to the Pin 1 indicator on the board. Pin 1 is that pin closest to the ZIF socket lever. While steadying the board with one hand, lower the ZIF socket lever to the horizontal position using the index finger of your other hand. Whether you are using an 8 pin, 14 pin or 20 pin MCU, it is always inserted such that pin 1 of the MCU is aligned pin 1 of the ZIF Socket.

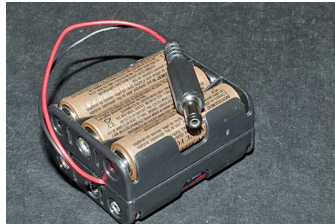


3. Attaching the power



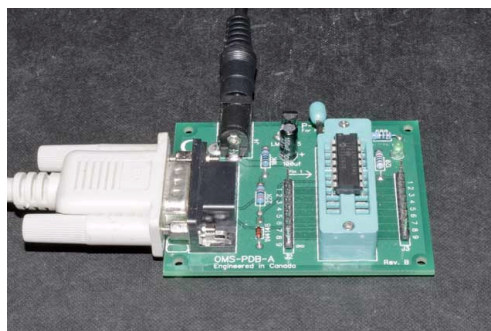
The on-board regulator and standard DC power jack allow for a variety of power options. Any filtered DC source of between 7.5V and 14V can be used. Make sure the chosen power supply delivers positive voltage through the center conductor and negative through the outer sleeve as shown here.

The most convenient and popular power sources are a 9V AC-DC switching type (switchmode) adapter, a 6-cell 'AA' battery pack, or a 9V battery. Either is an excellent choice. The switching type adapters are preferred over the



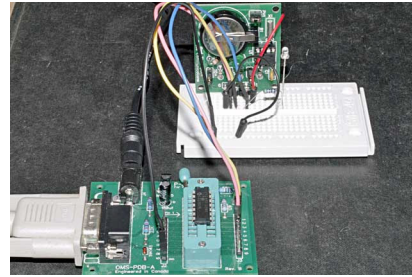
transformer type adapters as they provide a more stable supply, are lighter, take up less space and are generally less expensive.

At this point you are ready to begin downloading programs to your MCU.



Development Use

In addition, you may wish to attach the P-Axe to another device or a breadboard circuit for program testing, simulation or verification. This can easily be accomplished using jumpers like these. Keep in mind that pin 9 of the left header row (J2) is the ground of the P-Axe. This will need to be connected to the off-board circuit to ensure proper voltage reference.



Accessing the MCU I/O

When inserted into a P-Axe the I/O pins of the MCU map to the headers in the following fashion:

8 pin MCUs

MCU Pin	P-Axe Pin
3	J2-1
4	J2-2
5	J3-3
6	J3-2
7	J3-1

14 pin MCUs

MCU Pin	P-Axe Pin
3	J2-1
4	J2-2
5	J2-3
6	J2-4
7	J2-5
8	J3-6
9	J3-5
10	J3-4
11	J3-3
12	J3-2
13	J3-1

20 pin MCUs

MCU Pin	P-Axe Pin
3	J2-1
4	J2-2
5	J2-3
6	J2-4
7	J2-5
8	J2-6
9	J2-7
10	J2-8
11	J3-9
12	J3-8
13	J3-7
14	J3-6
15	J3-5
16	J3-4
17	J3-3
18	J3-2
19	J3-1

Note: The P-Axe has been designed to work with the PICAXE[®] Programming Editor, which is available at **www.picaxe.com/Software**. PICAXE[®] is a registered trademark of Revolution Education Ltd.

Specifications

Power Requirements

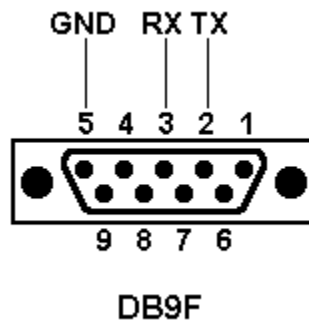
- Supply Voltage: 7.5V – 14V DC
- Supply Current: Typically between 9ma and 12ma with MCU
- Supply Connector: 5.5mm x 2.1mm center positive co-axial jack

NOTE: Supply voltage should never exceed 16V dc. Observe polarity – this board requires a center positive supply. Check before attaching the power source.

Communications requirements

- Interface Type: RS232
- Connection: Standard pin-out 9 pin DBF

Pin-out and function from the P-Axe perspective:



- Pin 2: The P-Axe transmits data on this pin
- Pin 3: The P-Axe receives data on this pin
- Pin 5: Signal Ground

Physical

- Length: 70mm
- Width: 55mm
- Height: 18mm
- Weight: 35g
- Operating Temp. 0°C – 85°C

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