Electrical, Electronic & Computer Engineering
School of Engineering & Physical Sciences
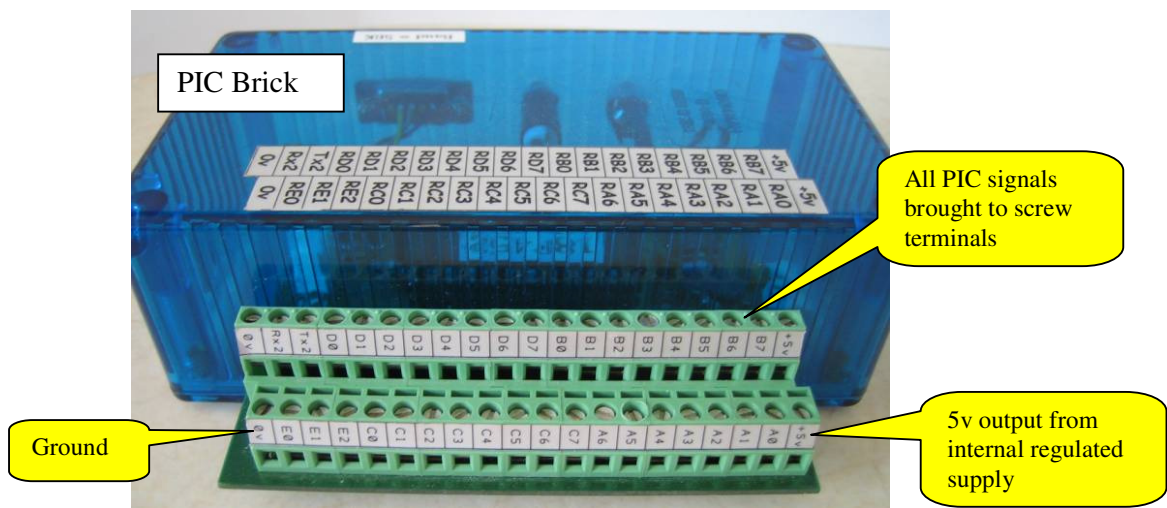
HERIOT WATT UNIVERSITY
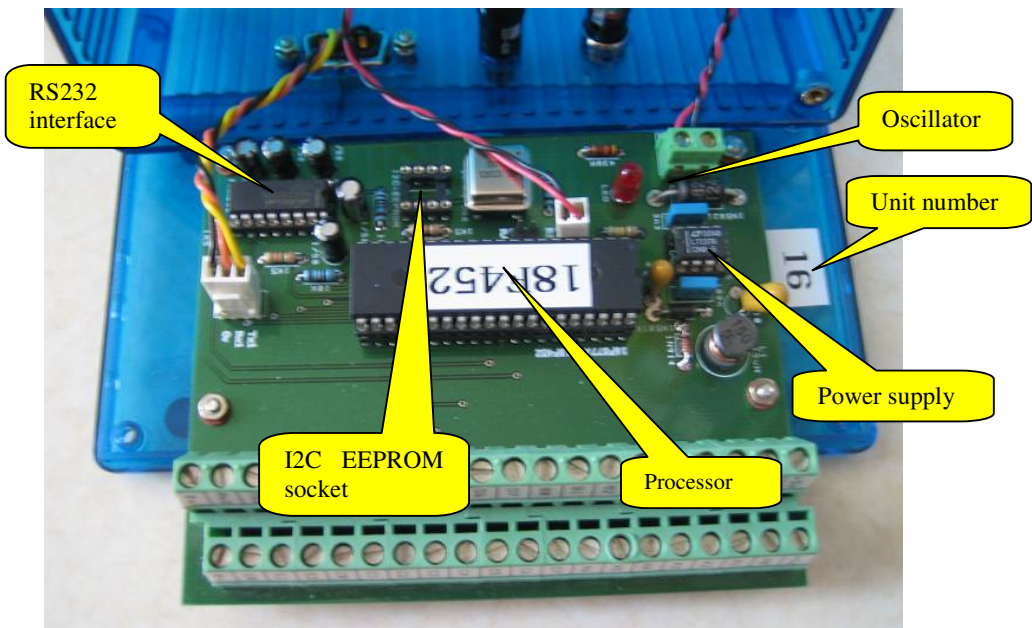
PIC Brick microcontroller development unit

Specification

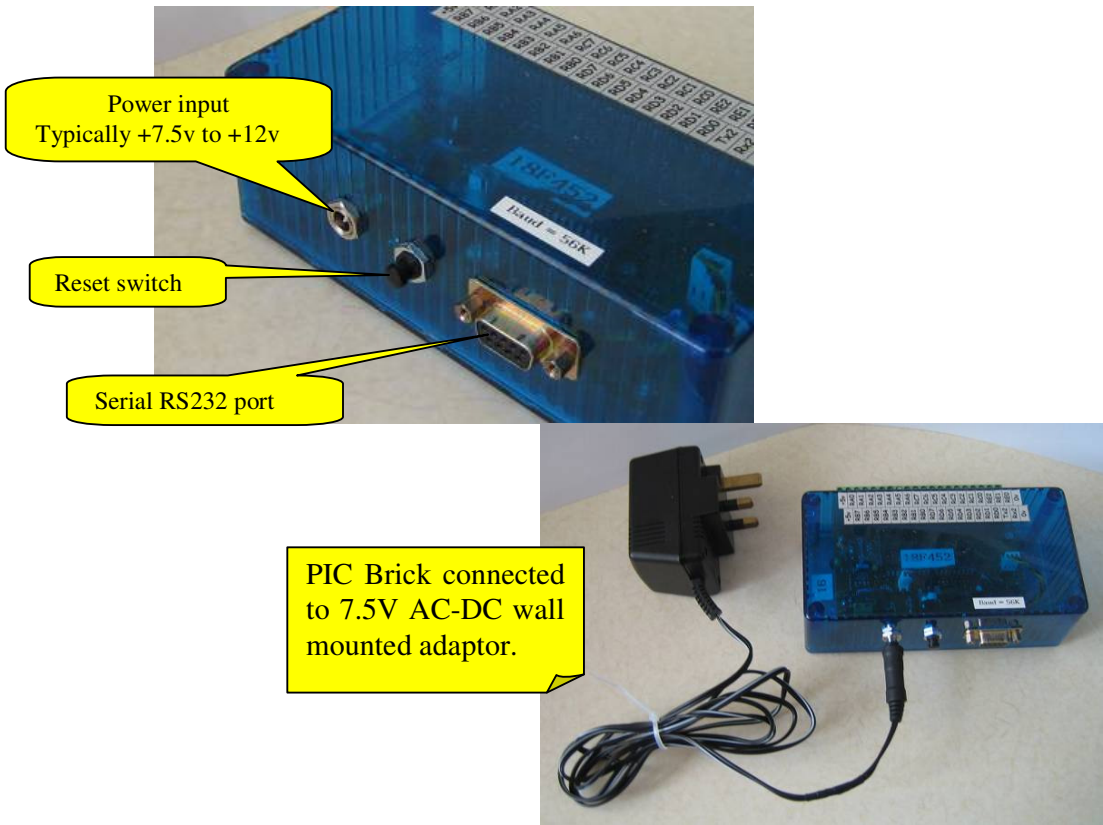The PIC development unit has the following characteristics

- Development unit for 40-pin Microchip microcontrollers
- Suitable for 16F and 18F devices (e.g. 16F877a, 18F452, 18F4585)
- On-board regulated 1Amp 5v power supply
  - Available at output screw terminals.
  - Maximum current available is about 900mA.
- Rugged screw terminal connections to all PIC signals.
- Optional I2C EEPROM device
- Socketed TTL clock
  - typically 20MHz or 40MHz
- Serial RS232 port accessible through 9-pin connector
  - Provides serial port communications
  - Provides bootloader capability
- Reset switch

PIC Brick

All PIC signals brought to screw terminals

5v output from internal regulated supply

Ground

Internal details

Labels on image:
- RS232 interface
- Oscillator
- Unit number
- Power supply
- I2C EEPROM socket
- Processor
- 18F452 (chip marking)
- 16 (unit number)

Connector Panel (PIC Brick Version 1)

Labels on image:
- Power input Typically +7.5v to +12v
- Reset switch
- Serial RS232 port

Label on image:
- PIC Brick connected to 7.5V AC-DC wall mounted adaptor.

Programming

The following development system environment systems have been proven to produce HEX files that can be download into the PIC Brick ::

- Microchip MPLAB development system using
  - assembly language
  - C18 C compiler
- HiTech 16F and 18F compilers
- Mikroelectronika MikroC compiler

It is likely that any system that produces HEX files for Microchip devices can be used to generate code for the PIC Brick.

Code download

There are two ways to get your HEX file into the PIC Brick

- Use an installed Bootloader
  - The only option for PIC Brick users
  - ***Under no circumstances should you open the PIC Brick box***

- Use Microchip ICD (In-Circuit-Debug) programmer
  - This option is not available with Version 1 of the PIC Brick.
  - Version 2 will have an ICD socket to enable this facility.

Bootloader

- When you are allocated a PIC Brick, it will come with a Bootloader installed. The bootloader allows your HEX file to be downloaded through a serial PC Com port to the PIC.

- We use a bootloader called the TinyBootloader. Details can be found at the associated website

  http://www.etc.ugal.ro/cchiculita/software/picbootloader.htm

- The bootloader and its associated windows program are freely available and can be used on your personal PCs and laptops. More and more laptops are being sold without a com port connector. In this case you will have to buy a USB to serial port adaptor. They cost about £10 to £15 each.

- Serial cables with 9-pin connectors are installed on all PCs in the Department of Electrical, Electronic and Computer Engineering.