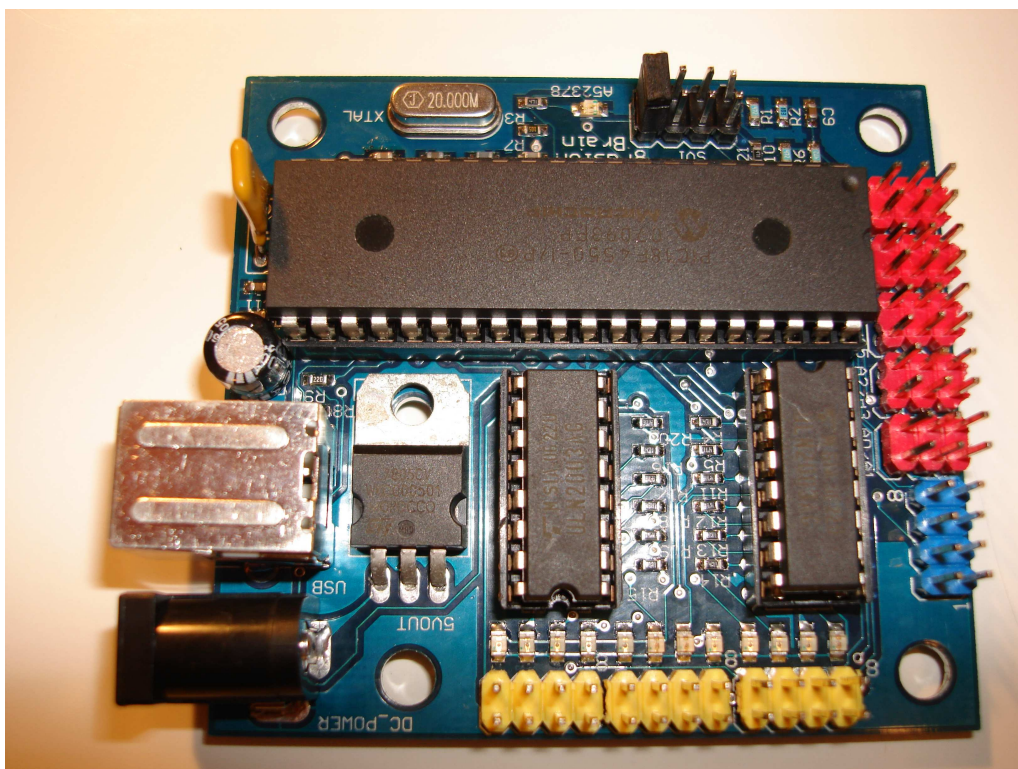


Fusion Brain



Users Manual

Edition 1.0

Written 7/7/2007

Overview

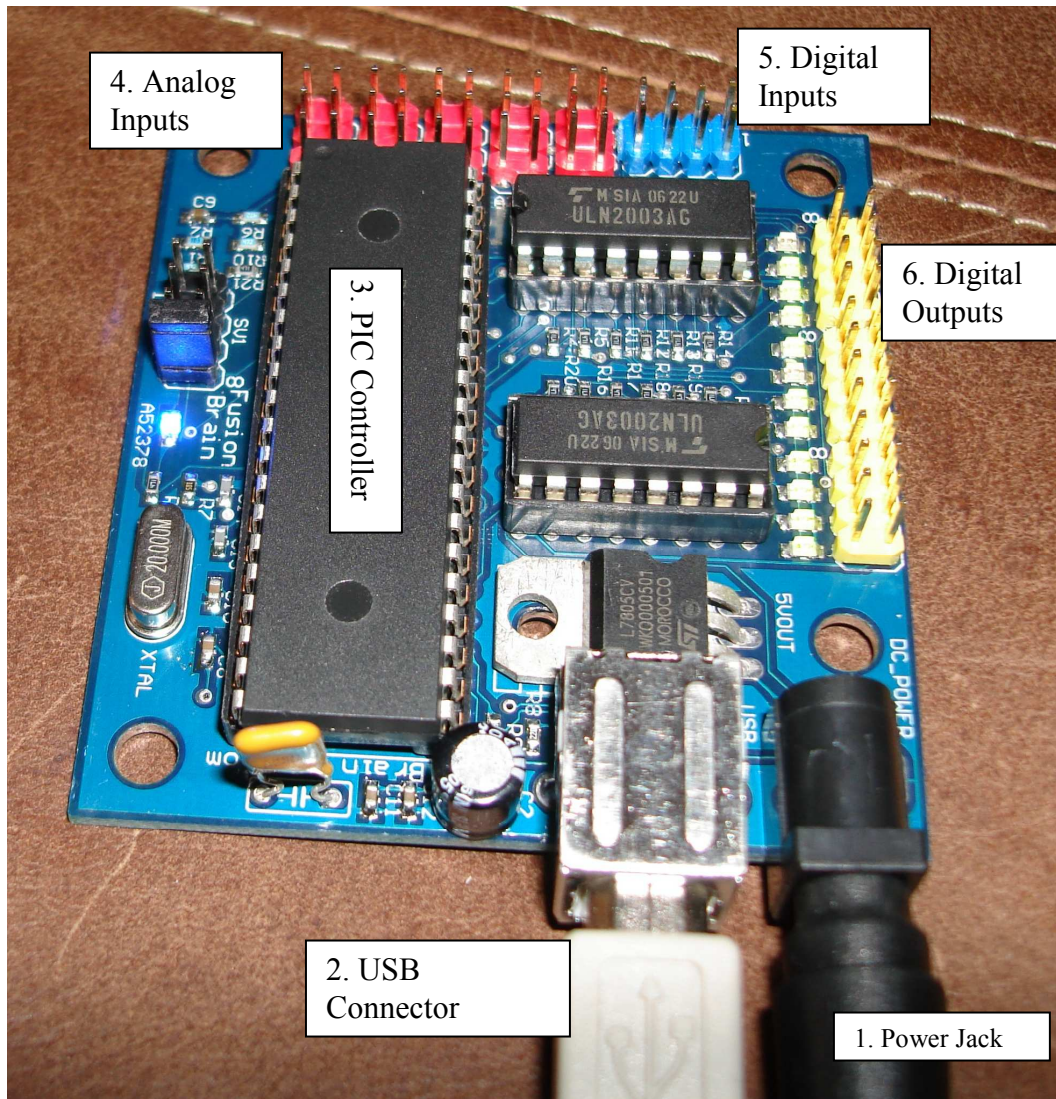


Figure 1. Fusion Brain Top View

Item	Description
1. Power Jack	Connect 12vDC, regulated or unregulated. Uses 2.1 mm center pin positive connector.
2. USB Connector	Connect standard type “B” USB cable. Only data lines are used – board is electrically isolated from USB power bus.
3. PIC Controller	Microchip PIC18F4550 Microcontroller
4. Analog Inputs	10 Analog inputs. Input range is from 0-5vDC. Not electrically protected on beta boards – permanent damage may occur if more than 5vDC is input.
5. Digital Inputs	Logic level inputs. 5vDC = on, 0vDC = off.
6. Digital Outputs	Switched ground outputs. Capable of passing 400mA per channel. Configured for 12vDC devices.

Table 1. Description of Connections

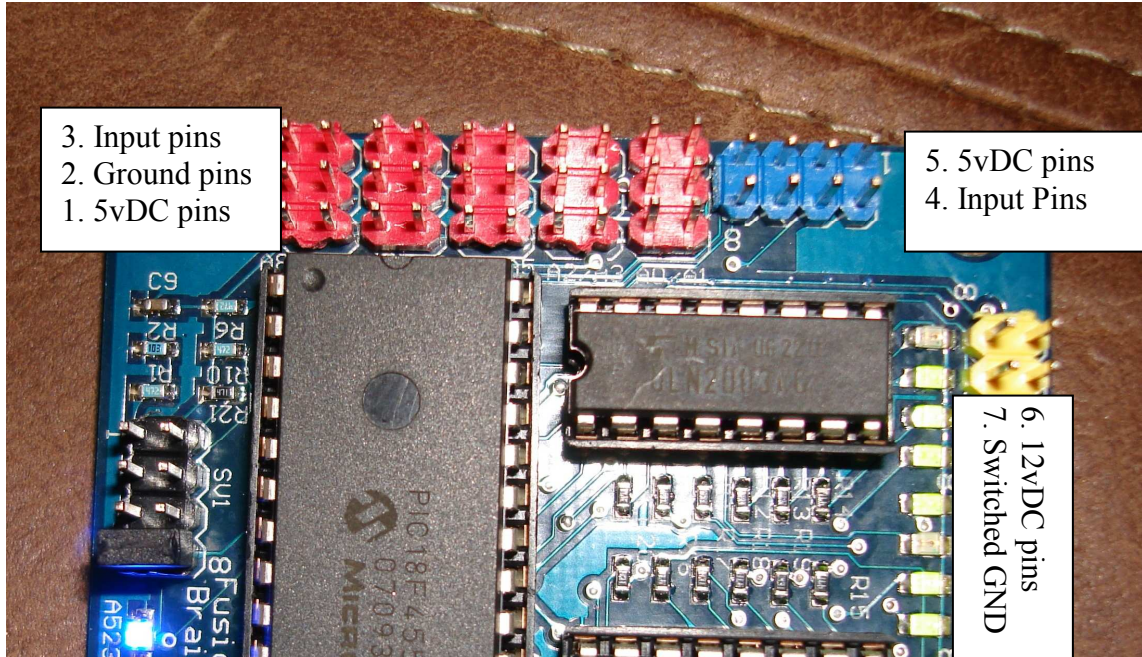


Figure 2. Detailed Connections

Item	Description
1. 5vDC pins	Provides low-current power for analog sensors (25mA max)
2. Ground pins	Connected to board ground
3. Input pins	Connect 0-5vDC with respect to board ground here
4. Input pins	Logic level inputs. 5vDC = on, 0vDC = off.
5. Ground pins	Connected to board ground
6. 12vDC	Always on, connected directly to 12vDC in. Unregulated.
7. Switched GND	Switched ground outputs. Capable of passing 400mA per channel. Configured for 12vDC devices.

Table 2. Detailed Connections

Detailed Specifications

Specification	Part	Maximum Value
Voltage In	Fusion Brain	9-15vDC
	Analog Input	5vDC
	Digital Input	5vDC
Current Draw	Fusion Brain, all outputs off	60mA
	Each Brain LED	7mA
	Fusion Relay	75mA
	Temperature Sensor	<1mA
Current Sourcing	Analog Input	25mA
	Digital Output	400mA
	Digital Input	5mA

Table 2. Absolute Maximum Ratings

What this means:

It means you can connect the board directly to the car battery or accessory circuit. The board is internally fused at 6 amps. The fuse is a PTC (Positive Temperature Coefficient) meaning that it is self-resetting. At maximum rated output (400mA*12@12vDC plus 500mA@5vDC) the board will draw 5.3Amps. The individual outputs are not fused separately. This means that in the event of a short or overload, a particular channel may fail.

Also, at this stage, the analog inputs are not protected. Connecting more than 5 volts to them will cause the Brain to malfunction and may cause permanent damage.

Software instructions will go here.