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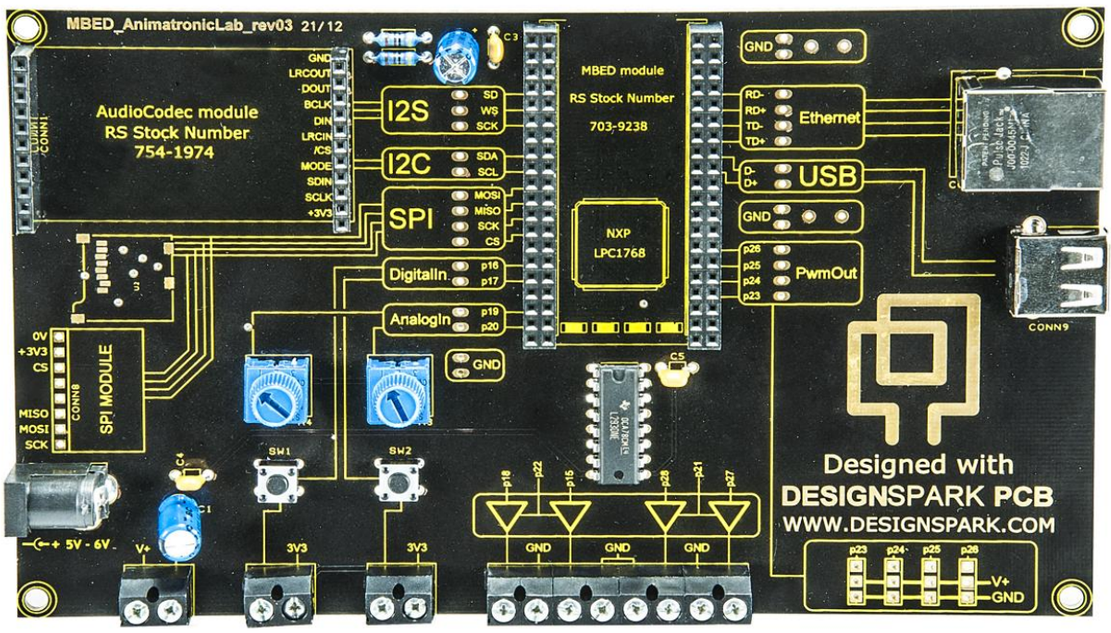
Datasheet

Animatronic Laboratory Board

RS Product Code: 754-1965

Introduction

Animatronics is the art of creating robots that closely mimic natural creatures, including humans. The Synergy AnimatronicLab board is an application board for the mbed microcontroller module (RS Product Code: 703-9238): the two together provide a platform for learning about control of motion and production of high-quality sound. http://mbed.org/cookbook/RS-Animatronic-Lab-Board



Features

- Socket for the LPC1768 Cortex-M3 microcontroller mbed module
- Socket for optional Synergy AudioCODEC module (RS Product Code: 754-1974): High-quality audio record and playback via the mbed I^2S interface
- USB A socket: Connect USB devices such as a Flash drive for file storage or a Bluetooth dongle for wireless connectivity
- RJ-45 socket: Connect to an Ethernet LAN socket and get access to the Internet
- 4 x footprints for standard Futaba servo motor headers linked to mbed PwmOut pins
- L293D dual H-Bridge driver: Drive two DC motors from mbed PwmOut pins
- Footprints for microSD Flash card socket and SPI peripheral header
- 2 x Potentiometers: Provide analogue control signals to your program (speed, volume, etc)

- 2 x Digital inputs with push button switches. +3.3V TTL logic voltage levels
- DC power socket: Provides power to the board when motors are connected
- Numerous test points for signal monitoring by oscilloscope and logic analysers
- Overall dimensions: 100 x 160 x 35mm

A separately available mbed LPC1768 module is required to operate this board, RS Product Code 703-9238.

A PC with an Internet connection and a USB port is required to use the AnimatronicLab board and mbed module. The mbed module is programmed using on-line tools available from http://mbed.org/ once your module has been registered.

A suitable +5Vdc power supply must be connected to the DC power socket or screw terminal header when servo or DC motors are connected.

Getting Started with the AudioCODEC module

http://mbed.org/cookbook/RS-Audio-Codec

Getting Started with Servo Motors

http://mbed.org/cookbook/Servo

Getting Started with DC motors & the L293D driver device

http://mbed.org/cookbook/Motor A suitable motor is an RE280 type, RS Product Code 238-9709.

Getting Started with Digital Input

http://mbed.org/handbook/DigitalIn

Getting Started with Analogue Input

http://mbed.org/handbook/AnalogIn

Getting Started with the Ethernet interface

http://mbed.org/handbook/Ethernet-Interface & http://mbed.org/handbook/Ethernet

Getting Started with the USB interface

http://mbed.org/handbook/USBDevice

Getting Started with microSD card Storage

http://mbed.org/cookbook/SD-Card-File-System Note that the example shown uses the second SPI bus interface: change the SDFileSystem definition to the use the pins specified in the table below.

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mbed Pin Assignments

Function	mbed Pin Function	mbed Pin
AudioCODEC	+3.3V Regulated Out	40
	I2S tx_sda	5
	I2S tx_ws	6
	I2S tx_clk	7
	I2S rx_sda	8
	I2S rx_ws	29
	I2C sda	9
	I2C scl	10
Ethernet	RD-	36
	RD+	35
	TD-	34
	TD+	33
USB	D-	32
	D+	31
Servo motor 1	PwmOut 1	26
Servo motor 2	PwmOut 2	25
Servo motor 3	PwmOut 3	24
Servo motor 4	PwmOut 4	23
H-Bridge motor 1 speed	PwmOut 5	22
H-Bridge motor 1 control	DigitalOut	18
	DigitalOut	15
H-Bridge motor 2 speed	PwmOut 6	21
H-Bridge motor 2 control	DigitalOut	28
	DigitalOut	27
Potentiometer 1	AnalogIn	20
Potentiometer 2	AnalogIn	19
Button 2	DigitalIn	17
Button 1	DigitalIn	16
microSD card / SPI peripheral	SPI mosi	11
	SPI miso	12
	SPI sclk	13
	CS (DigitalOut)	14