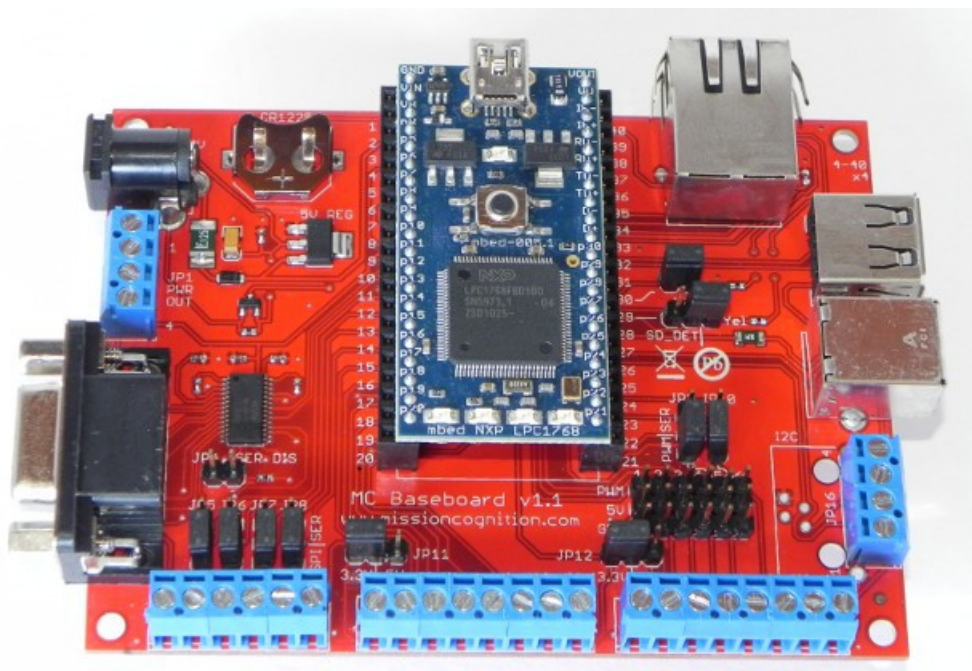
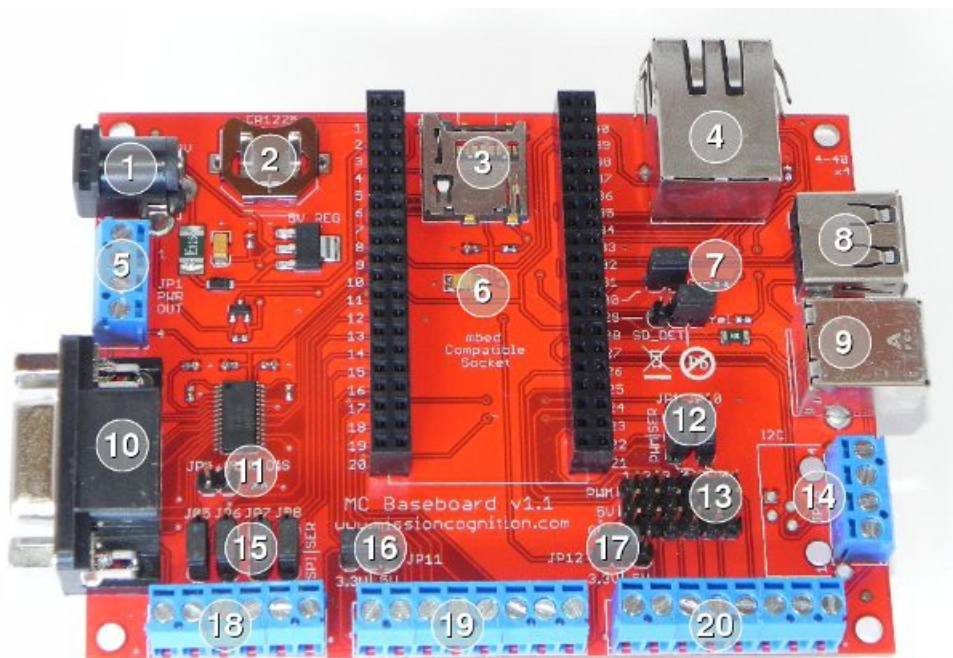


MC-101 mbed Compatible Baseboard



Note: mbed module not included



- 1.External power jack (compatible with 5.5x2.1mm barrel center positive plug, 6.5-12V). Compatible with Arduino power supplies like [this one](#).
- 2.RTC battery holder (CR1225 3V battery not included)
- 3.MicroSD card adapter. Initialize using:
SDFileSystem sd(p5, p6, p7, p8, "sd");
- 4.Ethernet jack (with magnetics)
- 5.Screw terminals to provide 3V and 5V power to external circuitry (not an input)
- 6.Double row mbed socket headers allow probing or wiring directly to pins
- 7.Jumper selectors for Ethernet jack indicator LEDs and MicroSD card insertion detection. To configure the LEDs add the following lines:

DigitalOut yellowLED(p29);
DigitalOut greenLED(p30);

If you don't they will glow dimly because they are configured as inputs by default. If you are configuring for uSD card detect use:

DigitalIn sdDet(p29);

8.USB Host port (cannot be used at the same time as slave)

9.USB Slave port (cannot be used at the same time as host)

10.RS232 serial port (female) with all signals level shifted. Initialize a simple 2 wire serial connection using:

Serial s1(p10, p9);

Routing other I/Os to the RS232 using jumpers allows a 'full modem' implementation

11.RS232 level shifter disable jumper, install the jumper to save some power if you are not using the port

12.Jumpers to select I/O to be routed to the PWM headers / screw terminals or used for RS232 signaling

13.Futaba servo compatible header arrangement for PWM signals (only use when external power is connected)

14.I2C on screw terminals, initialize using:

I2C i2c(p28, p27); // sda, scl

Optionally use an [mcc compatible](#) jack to use with [MCC I2C Accessories](#). Requires de-soldering the screw terminals and soldering in the connector (purchase separately).

15.Jumper selectors for serial port signaling or routing to screw terminals (use for SPI or DIO)

16.Jumper selector to choose 3.3V or 5V on adjacent screw terminal block

17.Jumper selector to choose 3.3V or 5V on adjacent screw terminal block

18.SPI (or DIO) screw terminal block

19.Analog I/O (or DIO) screw terminal block

20.PWM (or DIO) screw terminal block

Full documentation for the mbed controller and numerous projects and examples can be found at:<http://mbed.org/handbook/Homepage> and <http://mbed.org/cookbook/Homepage>

Schematics and board layouts were developed in Eagle CAD using the [SFE Footprint Library](#)

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Screw Terminal Assignment Tables:

Note: All the I/Os below are 5V tolerant 3.3V, which means that you can safely wire them to 5V logic devices. They will operate correctly with many 5V devices but it is not guaranteed -- mbed's Voh may not be high enough to meet the 5V device's Vih requirement.

Refer to item #5 in the diagram below

Power Out Terminal Block (JP1)				
Block Pin	1	2	3	4
Function	GND	5VDC	GND	3.3VDC

Refer to item #18 in the diagram below

SPI Terminal Block (JP13)						
Block Pin	1	2	3	4	5	6
Function	3.3VDC	MOSI	MISO	SCLK	SEL	GND
mbed Pin Name		p11	p12	p13	p14	
Alternate Function(s)		DIO	DIO	DIO, Ser Tx	DIO, Ser Rx	

Refer to item #19 in the diagram below

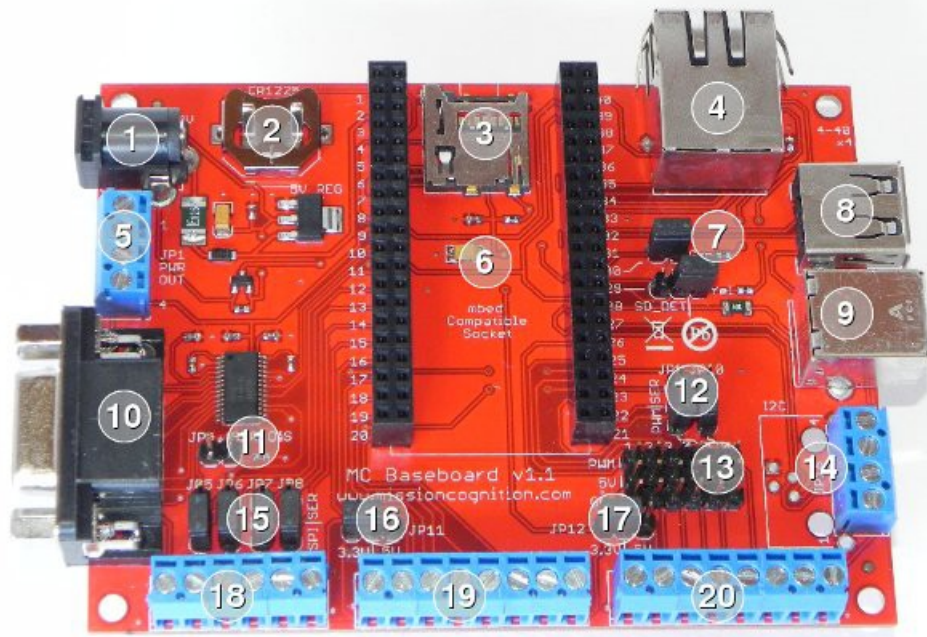
Analog Terminal Block (JP14)								
Block Pin	1	2	3	4	5	6	7	8
Function	VDC	AIN1	AIN2	AIN3	AIN4	AIN5	AIN6	GND
mbed Pin Name		p15	p16	p17	p18	p19	p20	
Alternate Function(s)		DIO	DIO	DIO	DIO, AOUT	DIO	DIO	

Refer to item #20 in the diagram below

PWM Terminal Block (JP15)								
Block Pin	1	2	3	4	5	6	7	8
Function	VDC	PWM1	PWM2	PWM3	PWM4	PWM5	PWM6	GND
mbed Pin Name		p26	p25	p25	p23	p22	p21	
Alternate Function(s)		DIO	DIO	DIO	DIO	DIO	DIO	

Refer to item #14 in the diagram below

I2C Terminal Block (JP16)				
Block Pin	1	2	3	4
Function	GND	I2C SDA	5VDC	I2C SCL
mbed Pin Name		p28		p27
Alternate Function(s)		DIO, Ser Tx		DIO, Ser Rx



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Jumper Configurations:

- JP2 -- Ethernet Green LED enable (#7 on diagram below): Default=Installed. Installing the jumper connects p30 to the green LED on the Ethernet connector. Removing this jumper allows unfettered use of the p30 I/O pin from the mbed header.
- JP3 -- Ethernet Yellow LED / SD Card Detect selector (#7 on diagram below): Default=2:3. Jumper 1:2 (left position) to use p29 for detecting the presense of an uSD card. Jumper 2:3 (right position) to use p29 for the yellow LED on the Ethernet connector. Removing this jumper allows unfettered use of the p29 I/O pin from the mbed header.
- JP4 -- Serial level shifter disable (#11 on diagram below): Default=Removed. Installing the jumper will put the RS232 level shifter into shutdown, saving some power (may be useful if you are running on battery). The DB9 serial port will not function with this jumper installed.
- JP5-JP8 -- RS232 DB9 / SPI (DIO) selectors (#15 on diagram below): Default=2:3. These jumpers route p11-p14 to either the screw terminals or the RS232 port (for extended signaling). Jumper 1:2 (upper position) for RS232 CTS/RTS/DTR/DSR functionality, or jumper 2:3 (lower position) for SPI/DIO functionality on the screw terminal block. These jumpers can be mixed between the two positions depending on your needs.
- JP9,JP10 -- RS232 DB9 / PWM (DIO) selectors (#12 on diagram below): Default=2:3. These jumpers route p21-p22 to either the PWM headers/screw terminals or the RS232 port (for extended signaling). Jumper 1:2 (upper position) for RS232 DCD/RI functionality, or jumper 2:3 (lower position) for PWM/DIO functionality on the headers/screw terminal block. These jumpers can be mixed between the two positions depending on your needs.
- JP11 -- 3.3V or 5V selector for Pin 1 ouptut voltage on terminal block JP14 (#19 on the diagram below). Jumper 1:2 (left position) for 3.3V, 2:3 (right position) for 5V.
- JP12 -- 3.3V or 5V selector for Pin 1 ouptut voltage on terminal block JP15 (#20 on the diagram below). Jumper 1:2 (left position) for 3.3V, 2:3 (right position) for 5V.
- Warning! Do not install jumpers on JP17-JP22 (#13 on the diagram below). They are Futaba compatible servo headers. When using servos be sure to connect an external power supply (#1 on the diagram below), do not rely on the mbed USB to power them.

