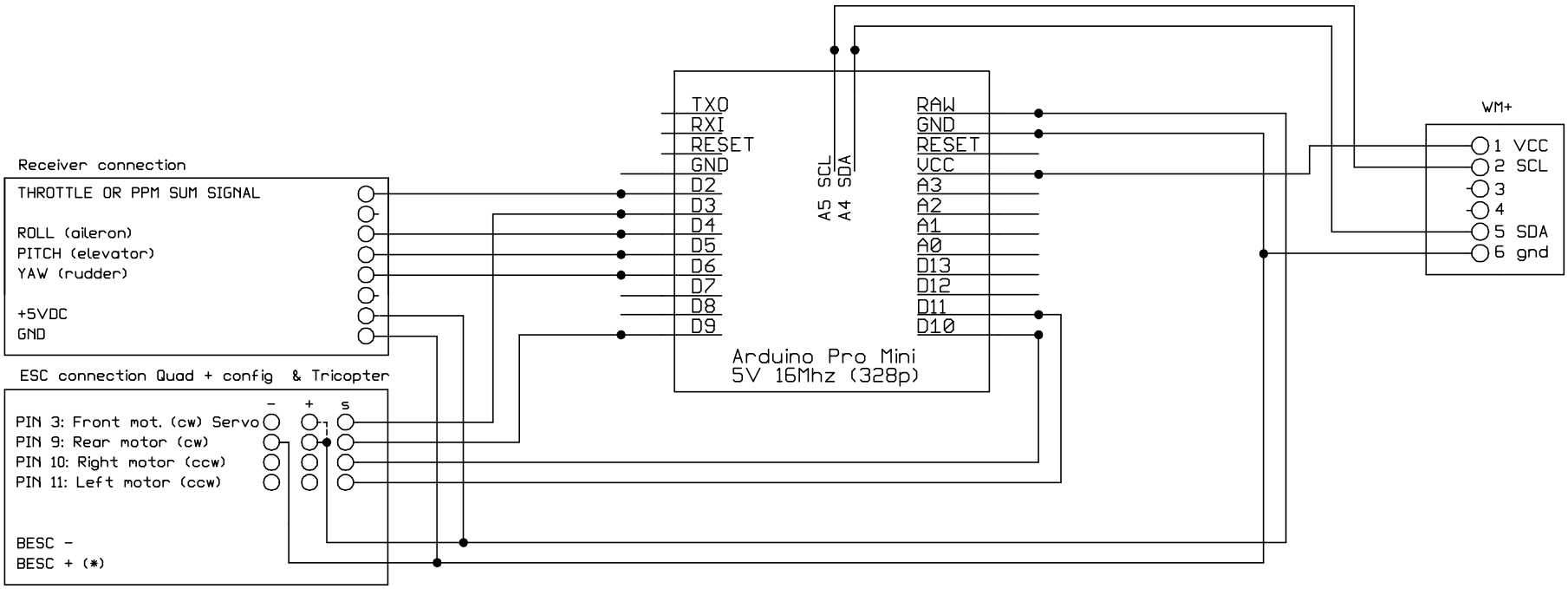
MultiWii Connection Diagrams

All diagrams are fully compatible with the latest MultiWii firmware version 1.9

Content:

Circuit Diagram		Drawing – number	Drawn by
MultiWiiCopter www.multiwii.com		MultiWii Tri/Quadcopter	Berkely
Date: 01-12-11	Introduction	Revision: 1.9	Sheet: 0



Note: ESC connection for Quad X config is different:

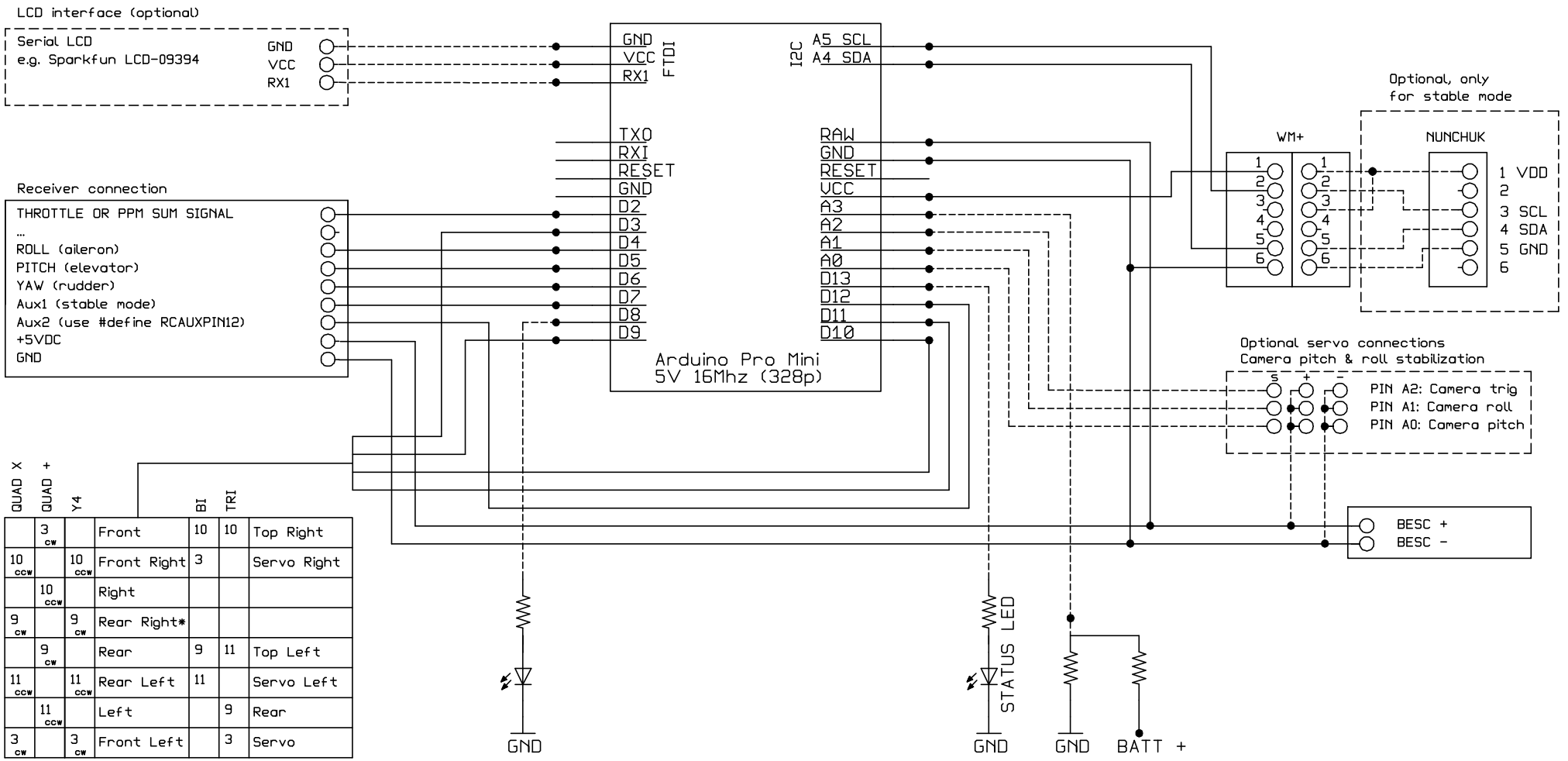
PIN 3: Front left motor (cw)
PIN 9: Rear right motor (cw)
PIN 10: Front right motor (ccw)
PIN 11: Rear left motor (ccw)

(*) BESC GND & + wires should not be connected in parallel.
The dashed line is for the supply of the servo only.
In a quad config it must not be connected.

Basic MultiWii connection diagram:

This is the most basic version of the MultiWii, it uses only the gyros from the Wii Motion Plus (WM+) and 4 input channels from the receiver.

Circuit Diagram		Drawing – number	Drawn by
MultiWiiCopter http://www.multiwii.com		MultiWii Tri/Quadcopter	Berkely
Date	BASIC connection diagram Tri or Quad copter	Revision	Sheet
01–12–11		1.9	1



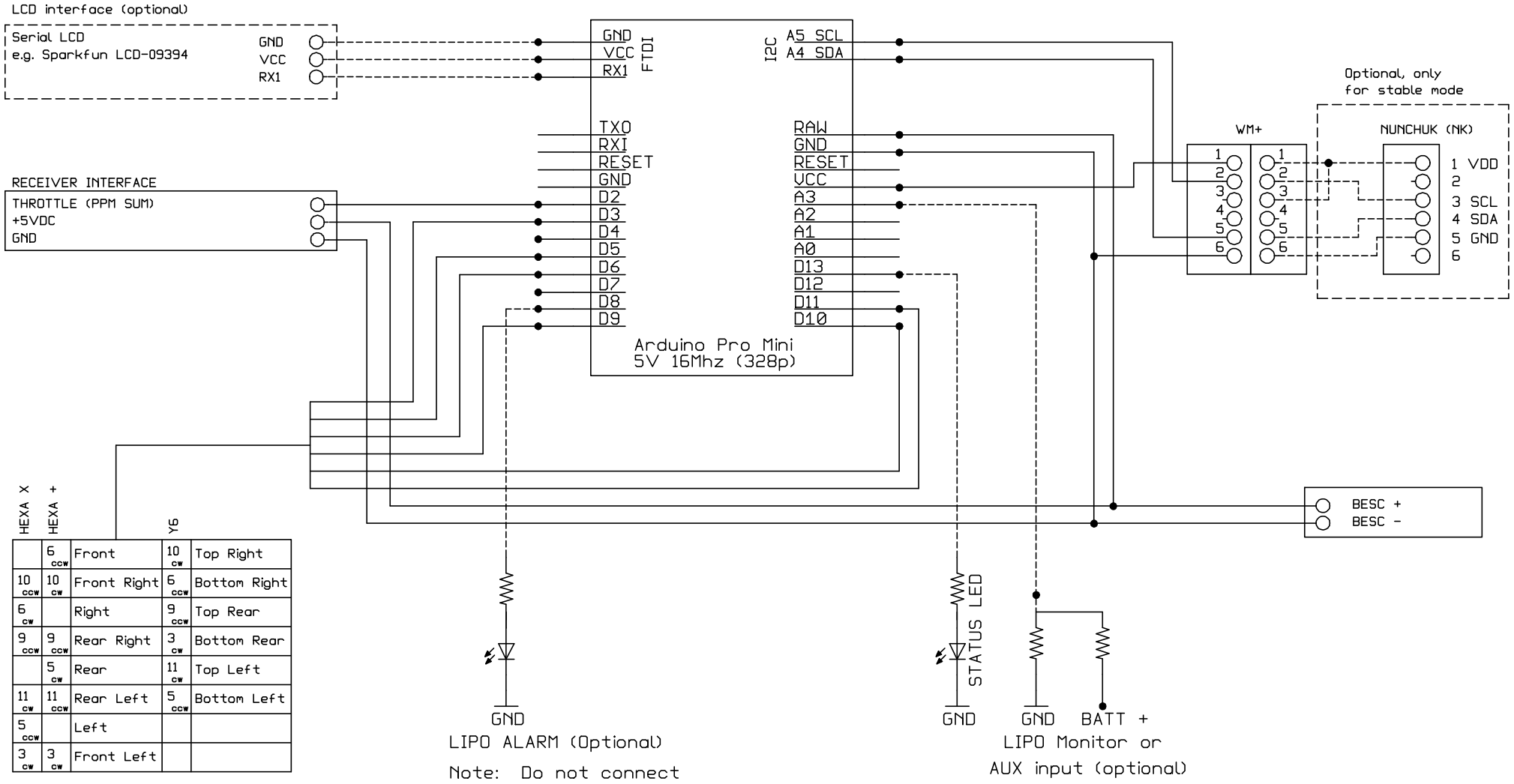
QUAD X	QUAD +	Y4		BI	TRI	
	3 cw		Front	10	10	Top Right
10 ccw		10 ccw	Front Right	3		Servo Right
	10 ccw		Right			
9 cw		9 cw	Rear Right*			
	9 cw		Rear	9	11	Top Left
11 ccw		11 ccw	Rear Left	11		Servo Left
	11 ccw		Left		9	Rear
3 cw		3 cw	Front Left		3	Servo

* In case of an Y4, Rear right is the top motor

MultiWii connection diagram with Nunchuk

This version of the MultiWii uses the gyros from
the Wii Motion Plus (WM+), 6 input channels from the receiver
and the accelerometer from the Nunchuk (NK) to achieve an auto stable mode.
Optional is a battery voltage monitor with alarm, an external status led,
camera pitch & roll stabilization & a LCD interface for PID tuning.
Note that Pin A2 can be used as battery current sensorpin instead of Camera trigger Pin
Pin D8 or D12 can be used as Aux2 RC input (#define RCAUXPIN8 or #define RCAUXPIN12 in the software)

Circuit Diagram		Drawing – number	Drawn by
MultiWiiCopter http://www.multiwii.com		MultiWii Tri/Quadcopter	Berkely
Date	Full connection diagram Tri or Quad copter	Revision	Sheet
01-12-11		1.9	2

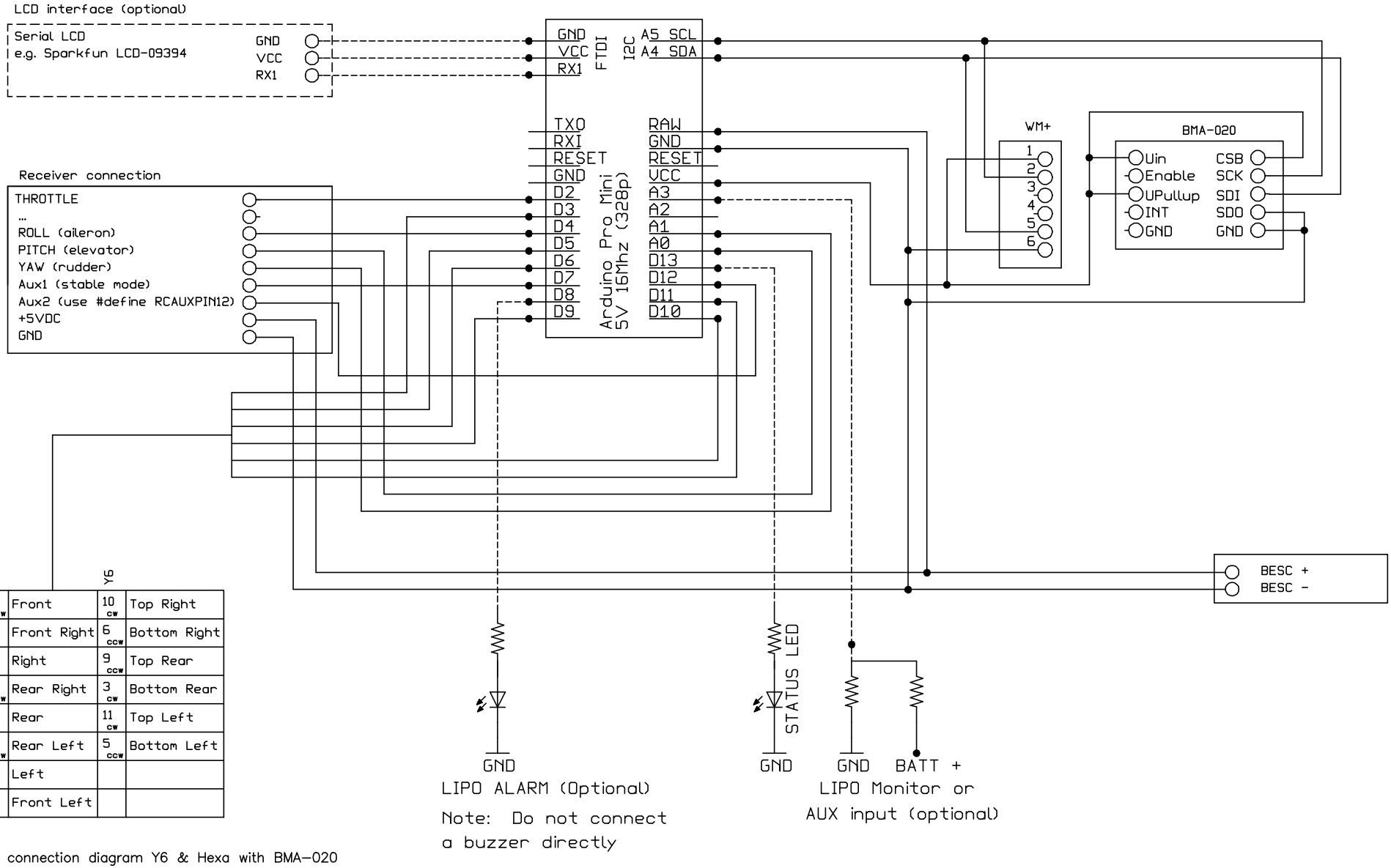


HEXA X	HEXA +		Y6	
	6 ccw	Front	10 cw	Top Right
10 ccw	10 cw	Front Right	6 ccw	Bottom Right
6 cw		Right	9 ccw	Top Rear
9 ccw	9 ccw	Rear Right	3 cw	Bottom Rear
	5 cw	Rear	11 cw	Top Left
11 cw	11 ccw	Rear Left	5 ccw	Bottom Left
5 ccw		Left		
3 cw	3 cw	Front Left		

MultiWii connection diagram Y6 & Hexa with Nunchuk

This version of the MultiWii uses the gyros from
the Wii Motion Plus (WM+), 1 PPM stream input from the receiver
and the accelerometer from the Nunchuk (NK) to achieve an auto stable mode.
Optional is a battery voltage monitor with alarm, an external status led,
and a LCD interface for PID tuning.

Circuit Diagram		Drawing – number	Drawn by
MultiWiiCopter http://www.multiwii.com		MultiWii Y6 & Hexa layout	Berkely
Date		Revision	Sheet
01-12-11	Full diagram Y6 & Hexa	1.9	3

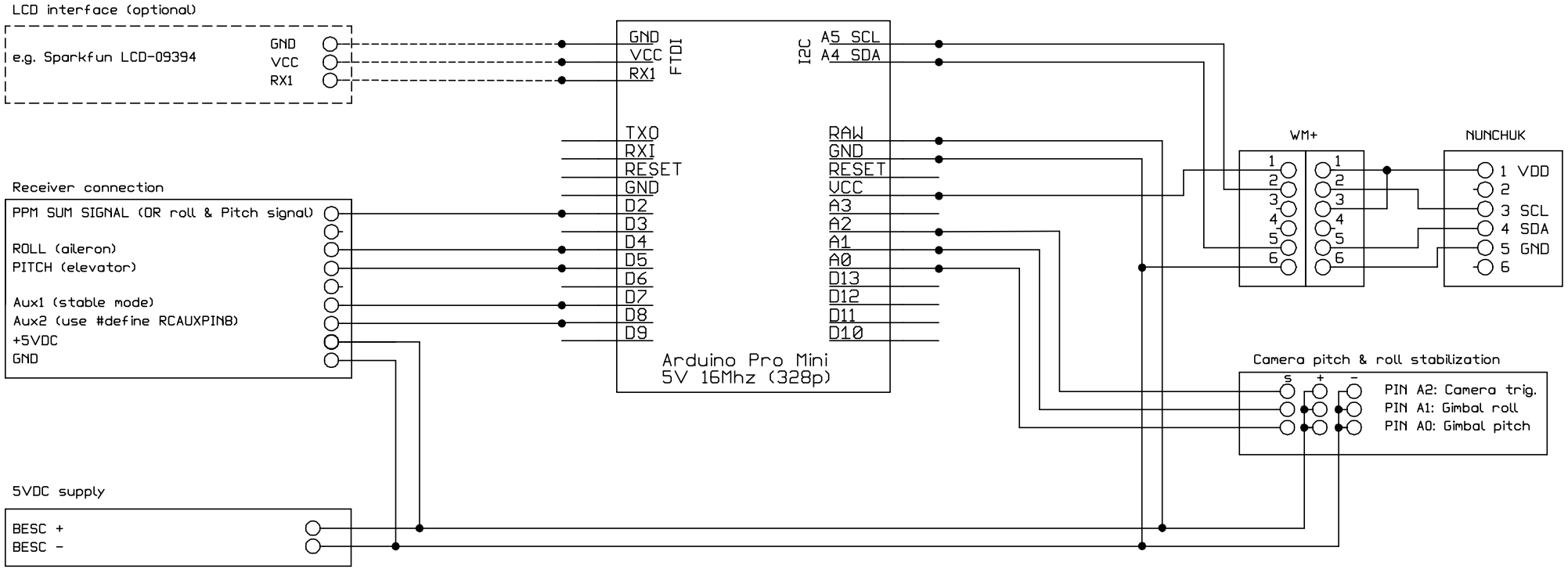


HEXA X	HEXA +		Y6	
	6 ccw	Front	10 cw	Top Right
10 ccw	10 cw	Front Right	6 ccw	Bottom Right
6 cw		Right	9 ccw	Top Rear
9 ccw	9 ccw	Rear Right	3 cw	Bottom Rear
	5 cw	Rear	11 cw	Top Left
11 cw	11 ccw	Rear Left	5 ccw	Bottom Left
5 ccw		Left		
3 cw	3 cw	Front Left		

MultiWii connection diagram Y6 & Hexa with BMA-020

This version of the MultiWii uses the gyros from the Wii Motion Plus (WM+) and a BMA-020 for the stable mode. With this optional connection method a PWM receiver can be used instead of a PPM receiver for a Y6 or hexa aircraft together with a Pro-Mini.
Check the #define A0_A1_PIN_HEX option in the code for this diagram.

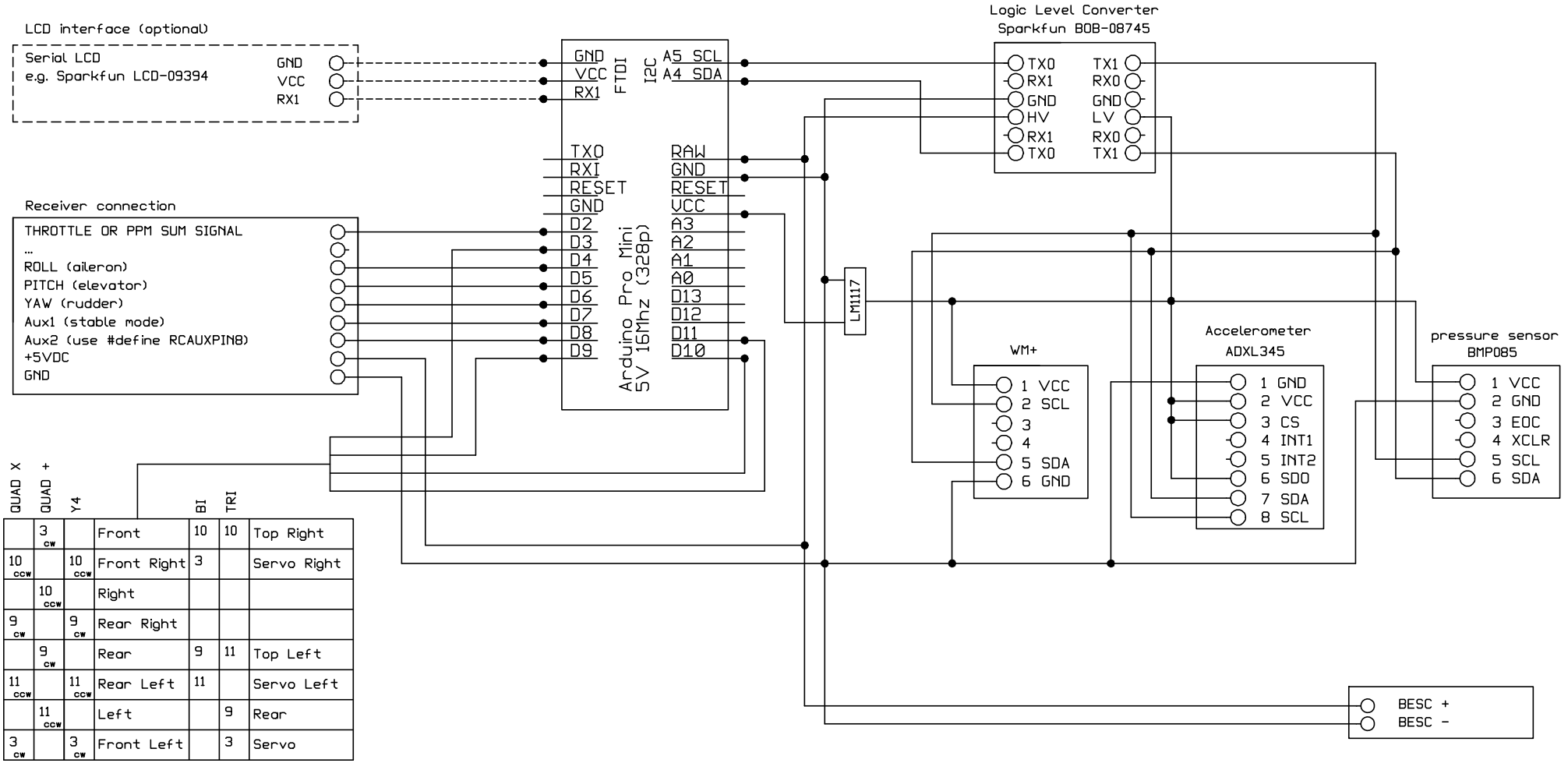
Circuit Diagram		Drawing - number	Drawn by
MultiWiiCopter http://www.multiwii.com		MultiWii Y6 & Hexa layout	Berkely
Date		Revision	Sheet
01-12-11	Full diagram Y6 & Hexa PWM	1.9	3b



MultiWii Gimbal only connection diagram

This version of the MultiWii uses the gyros from the Wii Motion Plus (WM+), 5 input channels from the receiver (or the PPM sum signal) and the accelerometer from the Nunchuk (NK) to drive a gimbal pitch & roll stabilization.

Circuit Diagram		Drawing – number	Drawn by
MultiWiiCopter http://www.multiwii.com		MultiWii Tri/Quadcopter	Berkely
Date		Revision	Sheet
01–12–11	Gimbal connection diagram	1.9	4



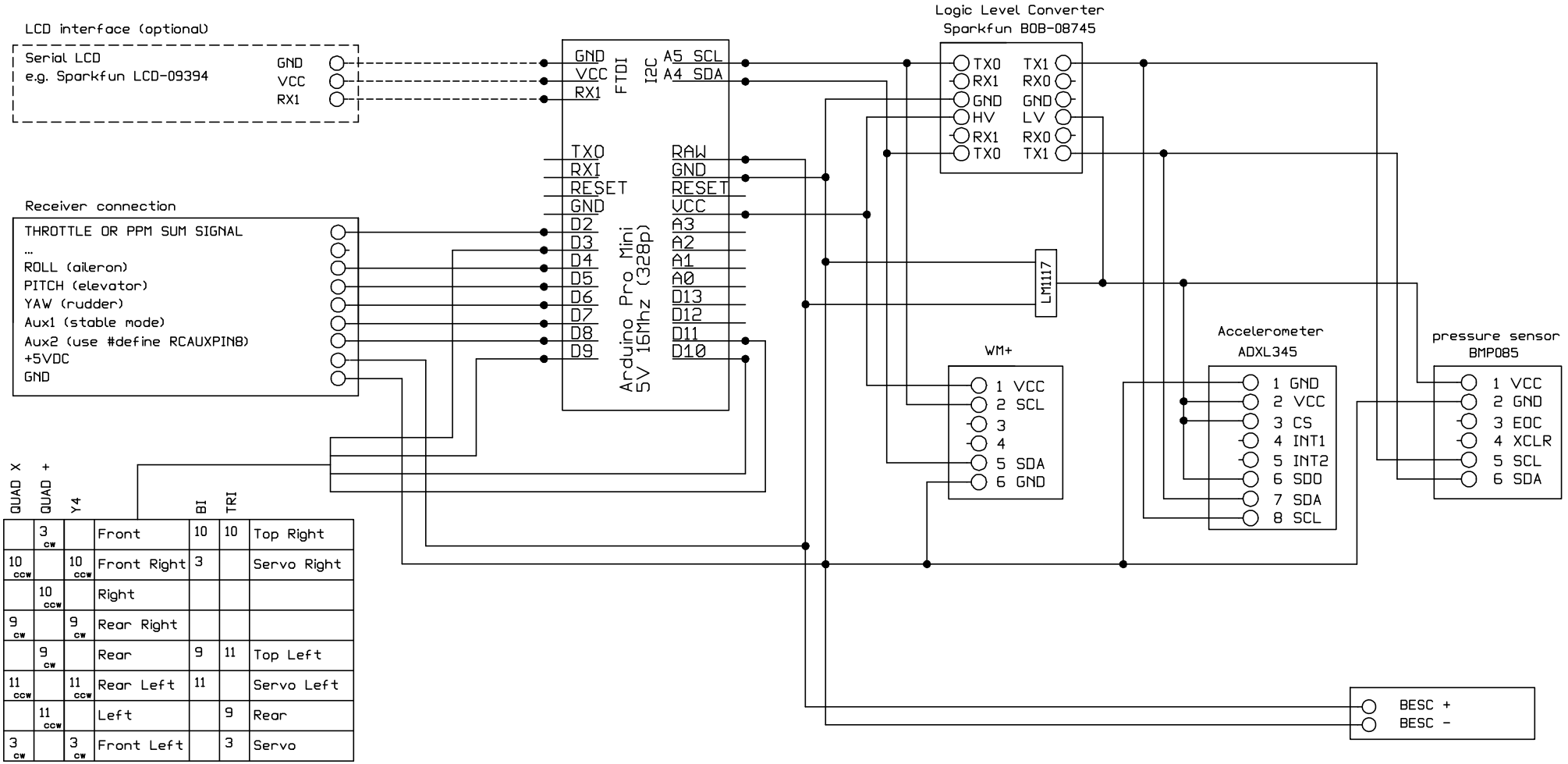
QUAD X	QUAD +	Y4		BI	TRI	
	3 cw		Front	10	10	Top Right
10 ccw		10 ccw	Front Right	3		Servo Right
	10 ccw		Right			
9 cw		9 cw	Rear Right			
	9 cw		Rear	9	11	Top Left
11 ccw		11 ccw	Rear Left	11		Servo Left
	11 ccw		Left		9	Rear
3 cw		3 cw	Front Left		3	Servo

MultiWii connection diagram with Sparkfun ADXL345 & BMP085 integration

This version of the MultiWii uses the gyros from the Wii Motion Plus (WM+),
6 input channels from the receiver and an ADXL345 accelerometer to achieve an auto stable mode.
Furthermore a pressure sensor is integrated.

These sensors cannot be powered with 5V. A voltage regulator and logic level converter is used to lower the 5V to 3.3V & connect the I2C bus to the Arduino.

Circuit Diagram		Drawing – number	Drawn by
MultiWiiCopter http://www.multiwii.com		MultiWii Tri/Quadcopter	Berkely
Date	Connection diagram with LLC ADXL345 & BMP085 (option 1)	Revision	Sheet
01-12-11		1.9	5



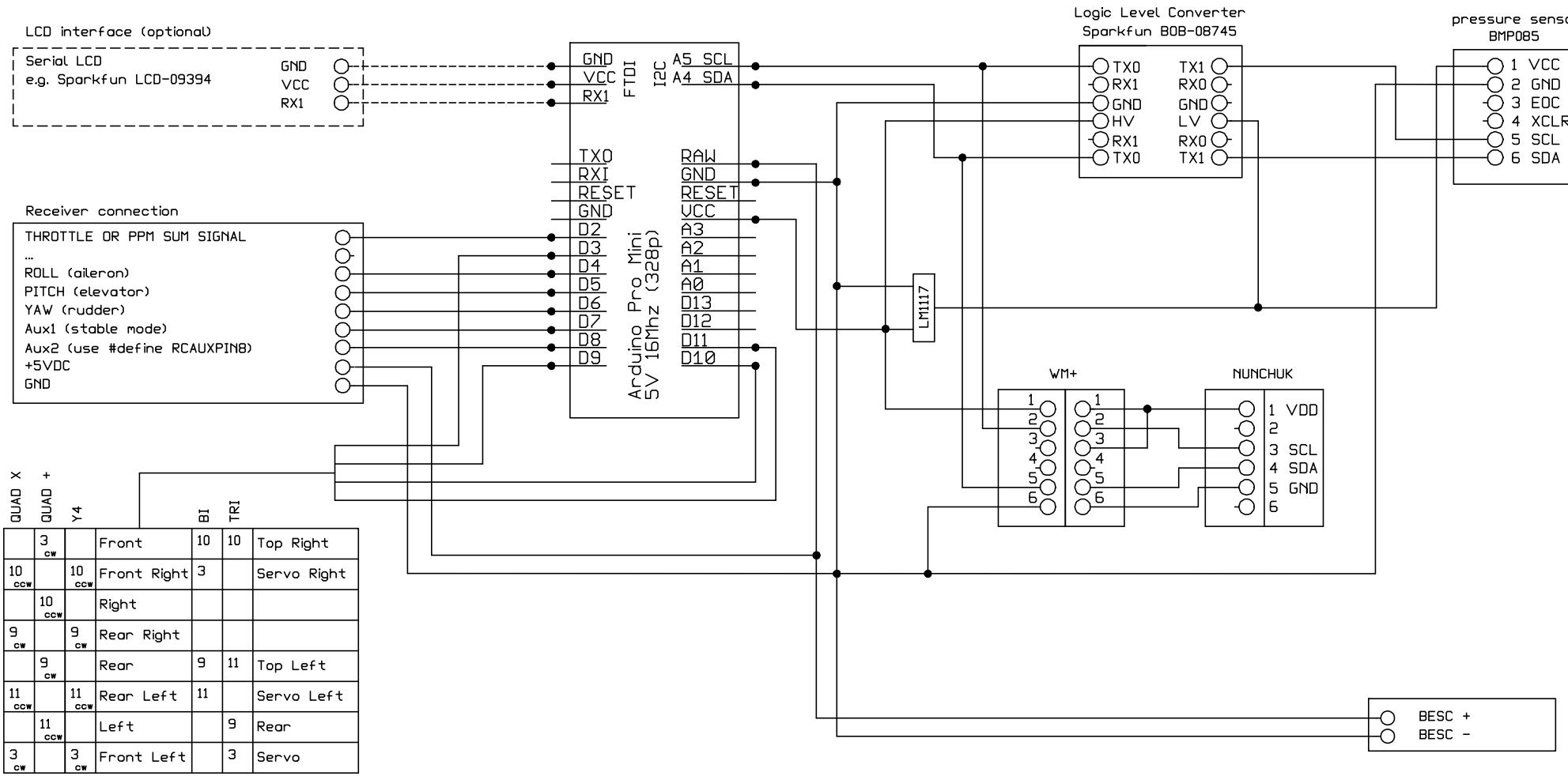
QUAD X	QUAD +	Y4		BI	TRI	
	3 cw		Front	10	10	Top Right
10 ccw		10 ccw	Front Right	3		Servo Right
	10 ccw		Right			
9 cw		9 cw	Rear Right			
	9 cw		Rear	9	11	Top Left
11 ccw		11 ccw	Rear Left	11		Servo Left
	11 ccw		Left		9	Rear
3 cw		3 cw	Front Left		3	Servo

MultiWii connection diagram with Sparkfun ADXL345 & BMP085 integration

This version of the MultiWii uses the gyros from the Wii Motion Plus (WM+),
6 input channels from the receiver and an ADXL345 accelerometer to achieve an auto stable mode.
Furthermore a pressure sensor is integrated.

These sensors cannot be powered with 5V. A voltage regulator and logic level converter is used to lower the 5V to 3.3V & connect the I2C bus to the Arduino.

Circuit Diagram		Drawing – number	Drawn by
MultiWiiCopter http://www.multiwii.com		MultiWii Tri/Quadcopter	Berkely
Date	Connection diagram with LLC ADXL345 & BMP085 (option 2)	Revision	Sheet
01-12-11		1.9	6



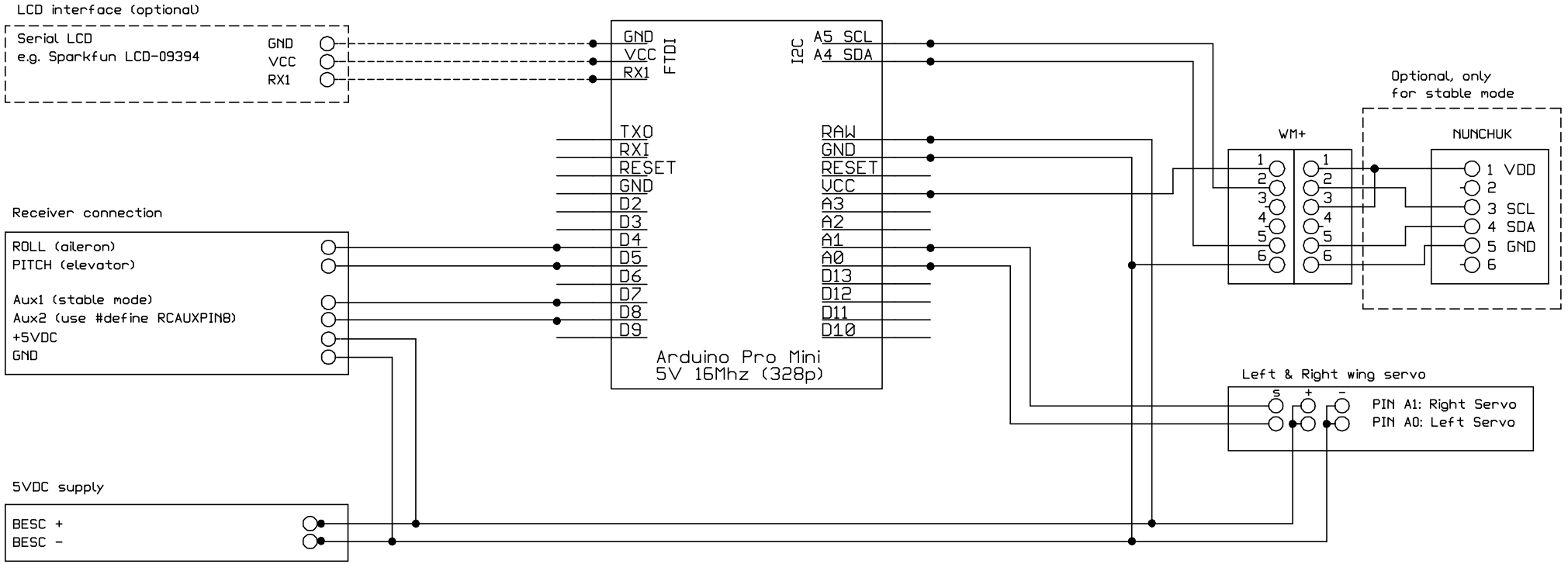
QUAD X	QUAD +	Y4		BI	TRI	
	3 cw		Front	10	10	Top Right
10 ccw		10 ccw	Front Right	3		Servo Right
	10 ccw		Right			
9 cw		9 cw	Rear Right			
	9 cw		Rear	9	11	Top Left
11 ccw		11 ccw	Rear Left	11		Servo Left
	11 ccw		Left		9	Rear
3 cw		3 cw	Front Left		3	Servo

MultiWii connection diagram with WM+, NK & Sparkfun BMP085 integration

This version of the MultiWii uses the gyros from the Wii Motion Plus (WM+), 6 input channels from the receiver and the NK accelerometer to achieve an auto stable mode. Furthermore a pressure sensor is integrated.

The pressure sensor cannot be powered with 5V. A voltage regulator and logic level converter is used to lower the 5V to 3.3V & connect the I2C bus to the Arduino.

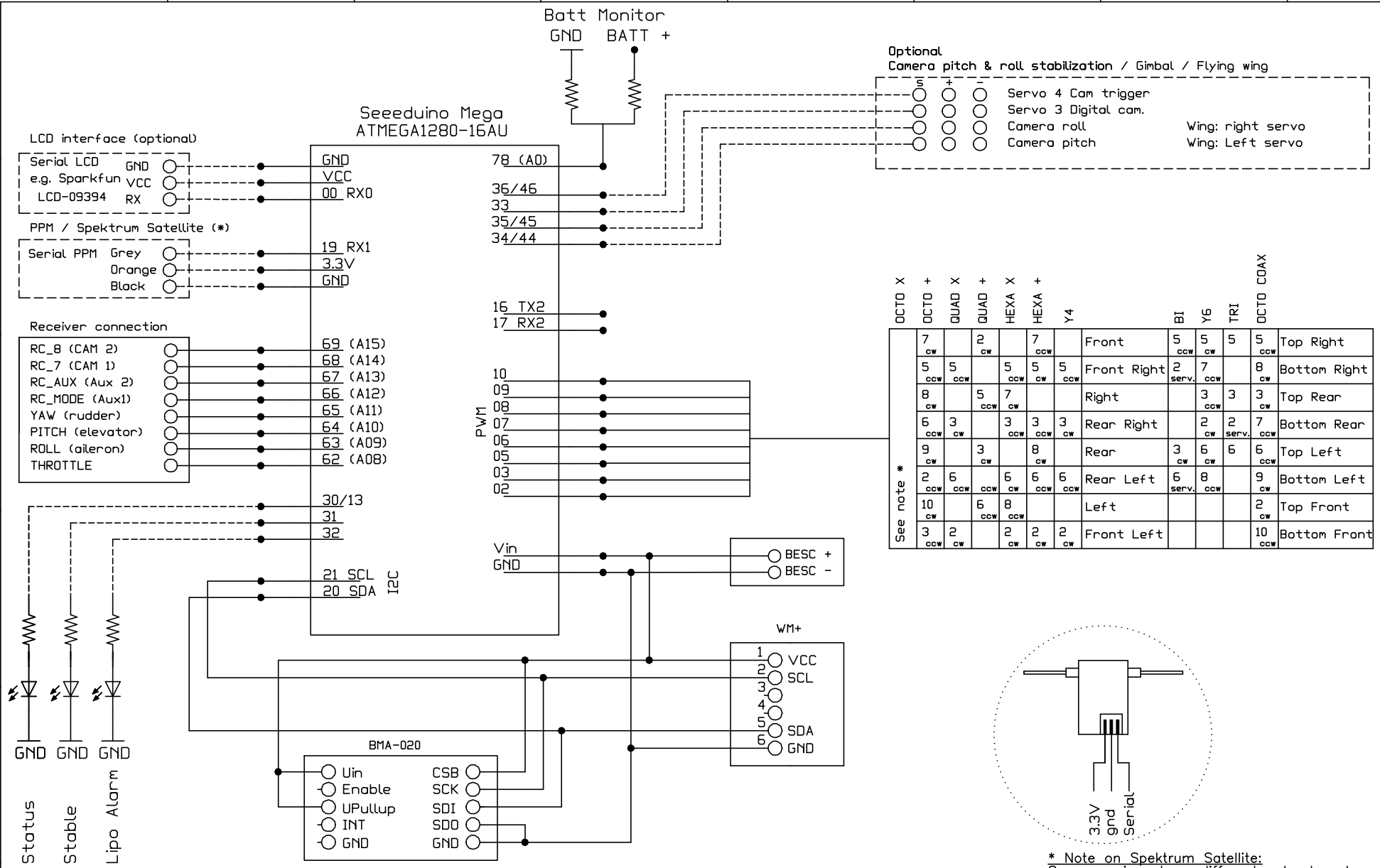
Circuit Diagram		Drawing – number	Drawn by
MultiWiiCopter http://www.multiwii.com		MultiWii Tri/Quadcopter	Berkely
Date	Connection diagram with WM+, NK, LLC & BMP085	Revision	Sheet
01–12–11		1.9	6B



MultiWii Flying wing connection diagram

This version of the MultiWii uses the gyros from the Wii Motion Plus (WM+), 4 input channels from the receiver and the accelerometer from the Nunchuk (NK) to drive 2 servo's controlling a flying wing.

Circuit Diagram		Drawing – number	Drawn by
MultiWiiCopter http://www.multiwii.com		MultiWii Tri/Quadcopter	Berkely
Date		Revision	Sheet
01–12–11	Wing connection diagram	1.9	7



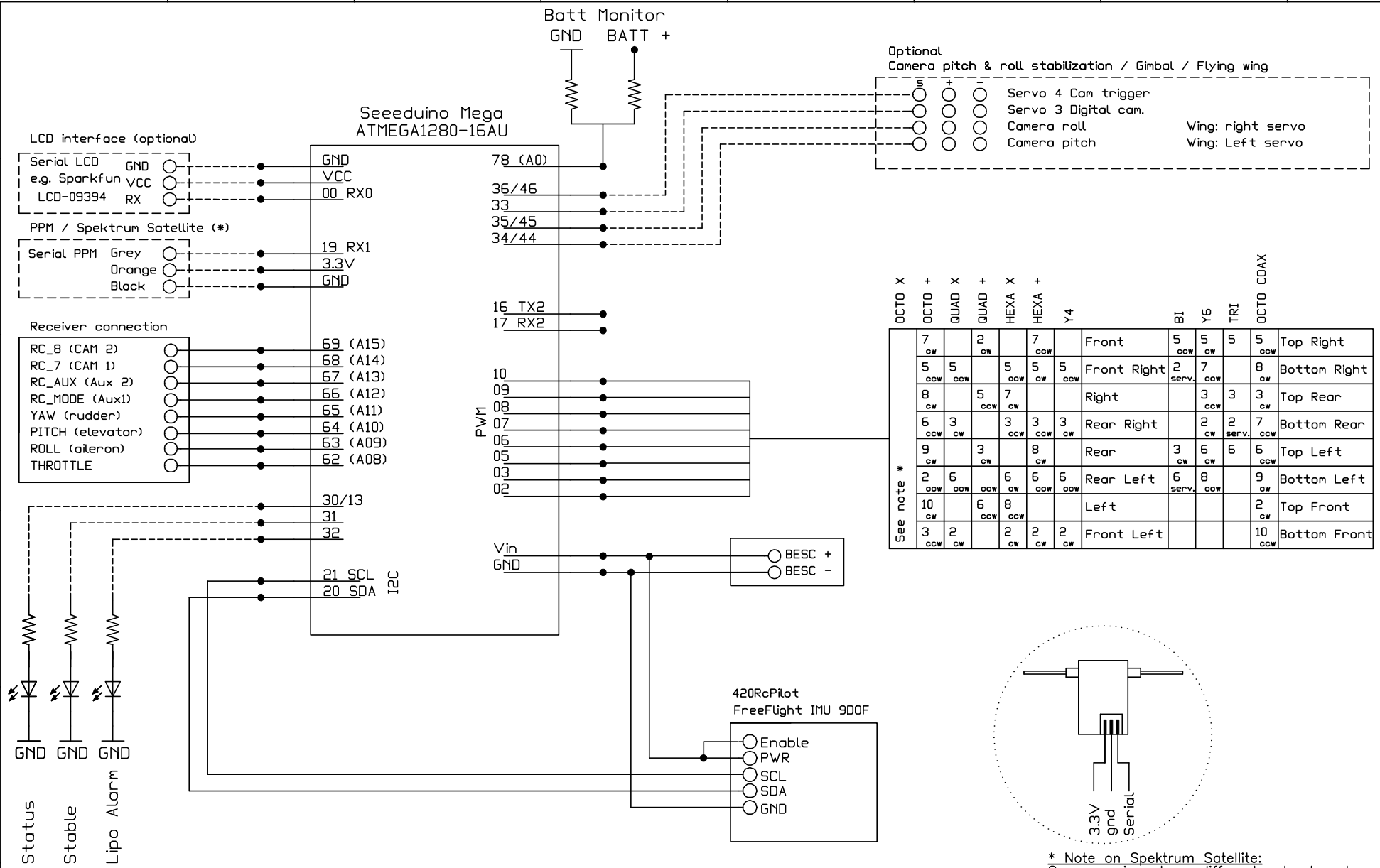
OCTO X	OCTO +	QUAD X	QUAD +	HEXA X	HEXA +	Y4		BI	Y6	TRI	OCTO COAX	
See note *	7 cw		2 cw		7 ccw		Front	5 ccw	5 cw	5	5 ccw	Top Right
	5 ccw	5 ccw		5 ccw	5 cw	5 ccw	Front Right	2 serv.	7 ccw		8 cw	Bottom Right
	8 cw		5 ccw	7 cw			Right		3 ccw	3	3 cw	Top Rear
	6 ccw	3 cw		3 ccw	3 ccw	3 cw	Rear Right		2 cw	2 serv.	7 ccw	Bottom Rear
	9 cw		3 cw		8 cw		Rear	3 cw	6 cw	6	6 ccw	Top Left
	2 ccw	6 ccw	ccw	6 cw	6 ccw	6 ccw	Rear Left	6 serv.	8 ccw		9 cw	Bottom Left
	10 cw		6 ccw	8 ccw			Left				2 cw	Top Front
	3 ccw	2 cw		2 cw	2 cw	2 cw	Front Left				10 ccw	Bottom Front

* Note on Spektrum Satellite:
Some versions have different color layouts.
Above representation shows the correct connection

Seeeduino Mega connection diagram

This version of the MultiWii uses the gyros from the Wii Motion Plus (WM+), the accelerometer from the BMA020 connected to the Mega board.
Note that some outputs are available on 2 pins, e.g. 34/44 means the output is available on pin 34 & pin 44
OCTO X configuration is equal to OCTO + but the front is between motor 7 & 5

Circuit Diagram		Drawing – number	Drawn by
MultiWiiCopter http://www.multiwii.com		MultiWii Tri/Quadcopter	Berkely
Date		Revision	Sheet
01-12-11	Mega connection	1.9	8



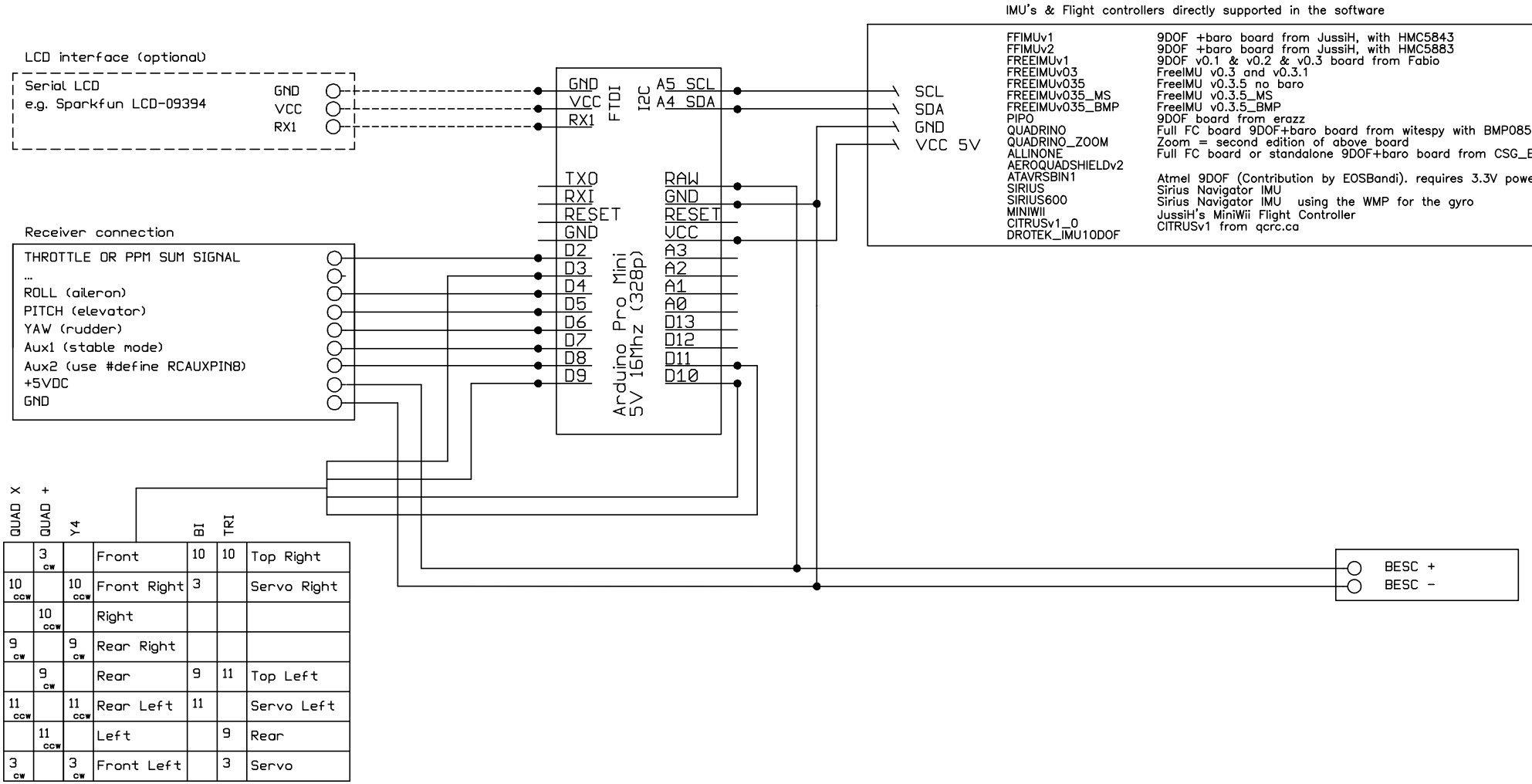
See note *	OCTO X	OCTO +	QUAD X	QUAD +	HEXA X	HEXA +	Y4		BI	Y6	TRI	OCTO COAX	
		7 cw		2 cw		7 ccw		Front	5 ccw	5 cw	5	5 ccw	Top Right
		5 ccw	5 ccw		5 ccw	5 cw	5 ccw	Front Right	2 serv.	7 ccw		8 cw	Bottom Right
		8 cw		5 ccw	7 cw			Right		3 ccw	3	3 cw	Top Rear
		6 ccw	3 cw		3 ccw	3 ccw	3 cw	Rear Right		2 cw	2 serv.	7 ccw	Bottom Rear
		9 cw		3 cw		8 cw		Rear	3 cw	6 cw	6	6 ccw	Top Left
		2 ccw	6 ccw	ccw	6 cw	6 ccw	6 ccw	Rear Left	6 serv.	8 ccw		9 cw	Bottom Left
		10 cw		6 ccw	8 ccw			Left				2 cw	Top Front
		3 ccw	2 cw		2 cw	2 cw	2 cw	Front Left				10 ccw	Bottom Front

* Note on Spektrum Satellite:
Some versions have different color layouts.
Above representation shows the correct connection

Seeeduino Mega connection diagram

This version of the MultiWii uses the 9DOF FreeFlight IMU From JussiH,
the IMU board is directly connected so internal pullups must be disabled in the code!
Note that some outputs are available on 2 pins, e.g. 34/44 means the output is available on pin 34 & pin 44
OCTO X configuration is equal to OCTO + but the front is between motor 7 & 5

Circuit Diagram		Drawing – number	Drawn by
MultiWiiCopter http://www.multiwii.com		MultiWii Tri/Quadcopter	Berkely
Date		Revision	Sheet
01-12-11	Mega connection	1.9	9



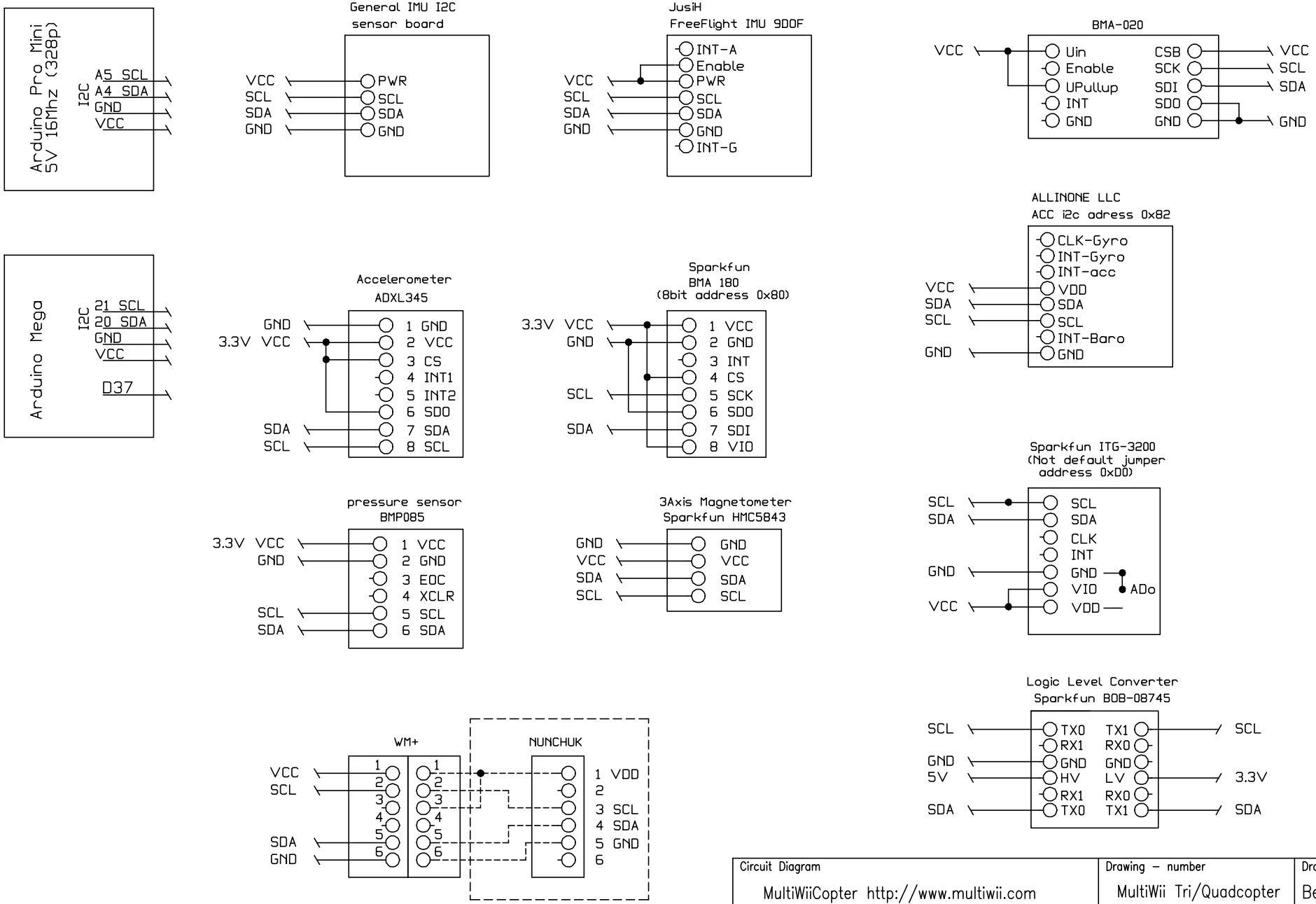
QUAD X	QUAD +	Y4		BI	TRI	
	3 cw		Front	10	10	Top Right
10 ccw		10 ccw	Front Right	3		Servo Right
	10 ccw		Right			
9 cw		9 cw	Rear Right			
	9 cw		Rear	9	11	Top Left
11 ccw		11 ccw	Rear Left	11		Servo Left
	11 ccw		Left		9	Rear
3 cw		3 cw	Front Left		3	Servo

MultiWii general connection diagram with Arduino Pro Mini

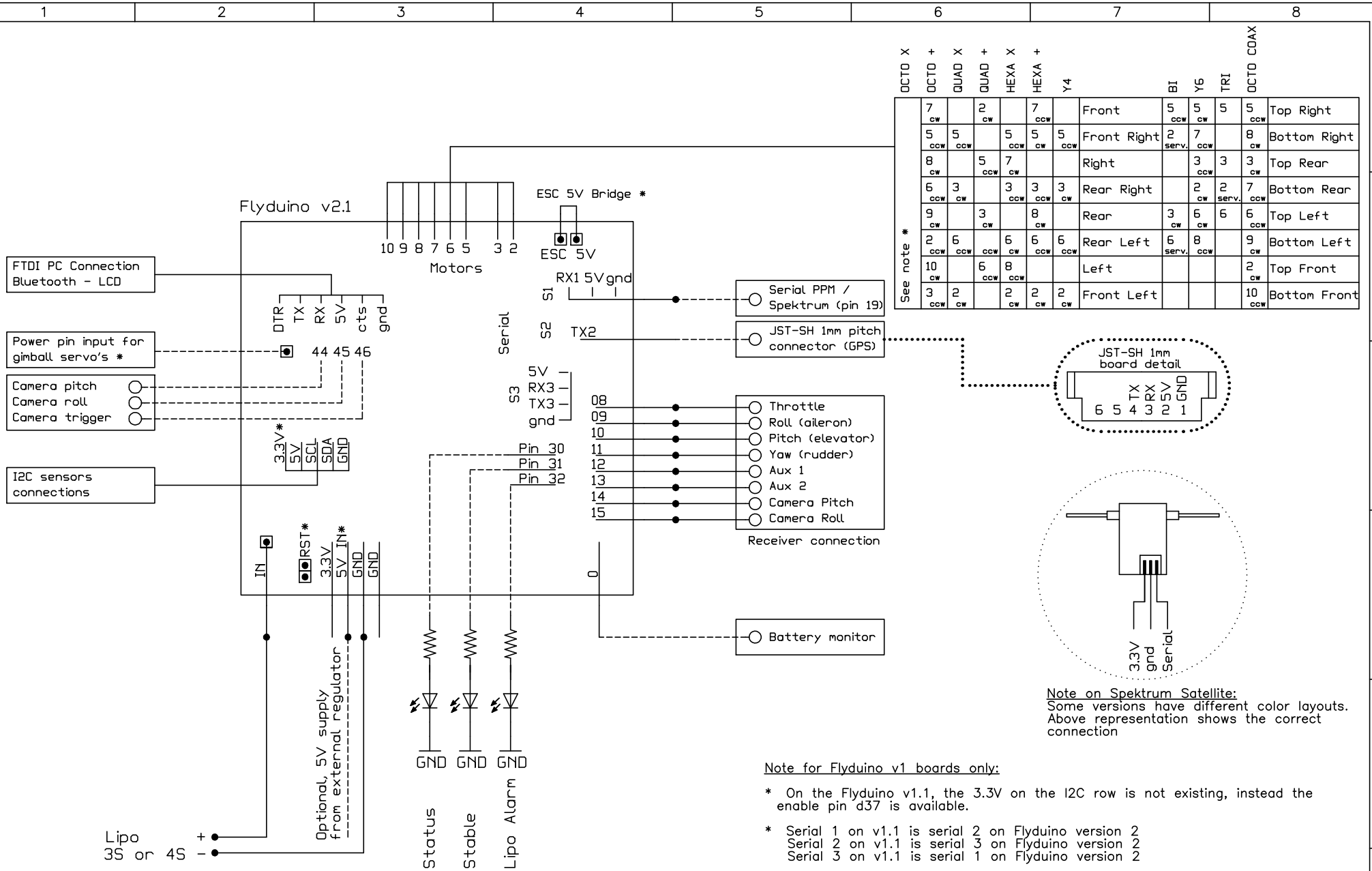
This is a general connection diagram for an Arduino Pro Mini with some predefined INU's.

Note that some IMU's need 3.3V and the internal Pullups disabled in the code, please refer to the specifications of your IMU.

Circuit Diagram		Drawing – number	Drawn by
MultiWiiCopter http://www.multiwii.com		MultiWii Tri/Quadcopter	Berkely
Date		Revision	Sheet
01–12–11	Arduino general IMU connection	1.9	10



Circuit Diagram		Drawing – number	Drawn by
MultiWiiCopter http://www.multiwii.com		MultiWii Tri/Quadcopter	Berkely
Date		Revision	Sheet
01–12–11	Individual sensor connections	1.9	11



OCTO X	OCTO +	QUAD X	QUAD +	HEXA X	HEXA +	Y4		BI	Y6	TRI	OCTO COAX	
See note *	7 cw		2 cw		7 ccw		Front	5 ccw	5 cw	5	5 ccw	Top Right
	5 ccw	5 ccw		5 cw	5 cw	5 ccw	Front Right	2 serv.	7 ccw		8 cw	Bottom Right
	8 cw		5 ccw	7 cw			Right		3 ccw	3	3 cw	Top Rear
	6 ccw	3 cw		3 ccw	3 ccw	3 cw	Rear Right		2 cw	2 serv.	7 ccw	Bottom Rear
	9 cw		3 cw		8 cw		Rear	3 cw	6 cw	6	6 ccw	Top Left
	2 ccw	6 ccw	ccw	6 cw	6 ccw	6 ccw	Rear Left	6 serv.	8 ccw		9 cw	Bottom Left
	10 cw		6 ccw	8 ccw			Left				2 cw	Top Front
	3 ccw	2 cw		2 cw	2 cw	2 cw	Front Left				10 ccw	Bottom Front

Note on Spektrum Satellite:
Some versions have different color layouts. Above representation shows the correct connection

Note for Flyduino v1 boards only:

* On the Flyduino v1.1, the 3.3V on the I2C row is not existing, instead the enable pin d37 is available.
* Serial 1 on v1.1 is serial 2 on Flyduino version 2
  Serial 2 on v1.1 is serial 3 on Flyduino version 2
  Serial 3 on v1.1 is serial 1 on Flyduino version 2
* The pinout of serial 3 is different: ●Gnd ●tx3 ●rx3 ●5V

Paul Bake's Flyduino's connection diagram

* ESC 5V Bridge: If the BESC 5V from the ESC of motor 2 is used to power the Flyduino instead of the LIPO IN, then this bridge must be made. The other ESC 5VC pins are not interconnected.
* Gimbal Power pin: An external 5V must be connected here to power the 3 gimbal servo's
* RST pins have to be shorted for a board reset.

Circuit Diagram		Drawing – number	Drawn by
MultiWiiCopter http://www.multiwii.com		MultiWii Flyduino v2.1	Berkely
Date		Revision	Sheet
01-12-11	Flyduino connection	1.9	12