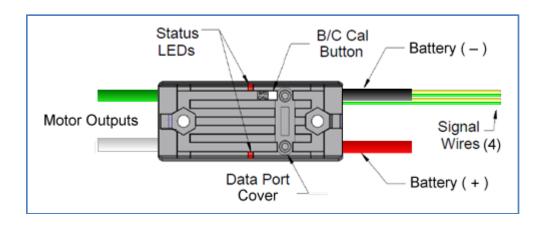# Talon SRX Speed Controller – Combat Robot Quick Guide

The Talon SRX is a single channel forward/reverse speed controller for brushed DC motors. The controller can be mounted using (2X) #8-32 screws. The Talon SRX's mounting location should be chosen to allow for adequate air flow around the heat fins and sides of the case. The aluminum case is electrically isolated from the electronics; it is safe to mount directly to a metal surface. Mounting the Talon SRX securely to a robot's metal frame allows the frame to aid in cooling.

Talon SRX Specs	
Outside Dimensions	2.75" x 1.185" x 0.96" [69.9mm x 30.2mm x 24.4mm]
Weight	0.23 lb [0.10 kg] (excluding wiring)
Min/Max Voltage	6 – 28V
Continuous Current	60A
Surge Current (2 sec)	100A

Wire	Case Marking	Wire Color	Wire Gauge	Wire Length ± 0.25 in
Battery +	V+	Red	12 AWG	5.5 in
Battery -	GND	Black	12 AWG	5.5 in
Motor Output	M+	White	12 AWG	5.5 in
Motor Output	M-	Green	12 AWG	5.5 in
PWM Signal	None	Yellow	22 AWG (x2)	11.0 in
PWM Ground	None	Green	22 AWG (x2)	11.0 in

Note: There are two yellow and two green signal wires. Signal wires of the same color are electrically identical.

Wiring the Motor Output

Connect the white wire to the M+ side of the motor and the green wire to the M- side of the motor. If the motor's inputs are not marked, the polarity of the input may be chosen by the user.

Wiring the Power Input

The red 'V+' wire connects to the positive terminal of the battery, and the black 'GND' wire to the negative terminal. Take care to get this right.

> WARNING: THE TALON SRX DOES NOT INCLUDE REVERSE POLARITY PROTECTION.
> IF WIRED BACKWARDS, THE TALON SRX MAY BE PERMANENTLY DAMAGED.

Wiring the Signal Input

A standard 3-pin (0.1in pitch) PWM connector must be attached to the Talon SRX's signal wires to allow it to communicate with an R/C receiver. This can be done in one of two ways:

- PWM housing and sockets may be assembled directly onto the signal wires; or
- A pre-assembled PWM cable may be cut and spliced onto the Talon SRX's signal wires.

The PWM cable should be wired such that the green (ground) and yellow (signal) wires are on the outside of the connector. The center pin requires no wire – the Talon SRX does not supply 5 volt power to your receiver. The correct placement of signal and ground wires is compared to standard Futaba and JR cables below.

Female 3-pin plug   Futaba equivalent   JR equivalent

Only two of the four signal wires are needed to control the Talon SRX with PWM. Do not connect two PWM connectors to a single Talon SRX**.** The two signal wires not used should be electrically isolated using tape or heat shrink tubing and bundled out of the way.

> **Note: Signal wires of the same color are electrically identical.**
> **It does not matter which is used as long as the color is correct.**

Brake & Coast Modes

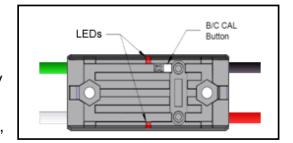The Talon SRX has two possible responses to a neutral throttle signal:

- Brake mode: dynamic braking is applied by shorting the motor leads together, applying a slowing force to the rotating motor. Brake mode does not have any effect when the motor is not rotating.
- Coast mode: no braking force is applied and the motor coasts freely.

Combat robots generally use brake mode. To switch between Brake and Coast mode at any time by pushing the B/C CAL button. In brake mode the button is illuminated red and in coast mode the red light is turned off. The brake/coast setting is saved in memory.

R/C Calibration

Your radio system may have "max" and "min" throttle signals that differ from the default Talon SRX values. Calibrating the Talon SRX allows it to adjust for these differences so that a "max" signal results in "max" output.

1) Press and hold the B/C CAL button until the Status LEDs begin to rapidly blink red & green.

2) While holding the button, move the transmitter joystick to full forward then to full reverse. This may be done multiple times.

3) Release the joystick and allow it to return to neutral, and then release the B/C CAL button.

4) If the calibration was successful the status LEDs will blink green several times. If the calibration failed, the status LEDs will blink red and the previous calibration will be kept.

Calibration profiles are saved in memory -- you don't need to repeat this each time.

To restore the default calibration hold the B/C CAL button down while powering up the Talon SRC and release the button when the status LEDs blink green.

Blink Codes

Calibration	
Status LEDs	**Talon SRX State**
Rapid Red / Green	In Calibration Mode
Blinking Green	Successful Calibration
Blinking Red	Failed Calibration

Normal Operation		
LEDs	**Colors**	**Talon SRX State**
Both	Blinking Green	Forward throttle is applied. Blink rate is proportional to throttle
Both	Blinking Red	Reverse throttle is applied. Blink rate is proportional to throttle
Both	Solid Orange	Zero throttle (dead band)
None	None	No Power is applied to Talon SRX
Alternate[*]	Off / Red	No receiver signal present
Alternate[*]	Red / Orange	Damaged Hardware

[*] the two LEDs swap colors when blinking.

Mode Selection	
B/C CAL Button Color	**Talon SRX State**
Solid Red	Brake Mode
Off	Coast Mode

Troubleshooting: see full user guide - http://www.ctr-electronics.com/talon-srx.html