"We're in Control"

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4QD's NCC series of controllers have a 'single

Instruction Manual

Joystick board: 'Daughter' version.

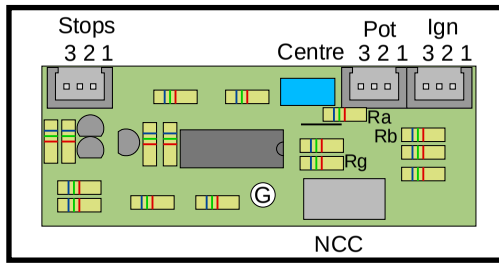
Introduction

4QD's NCC series of controllers have a 'single ended' speed input. That is to say that the speed control does not control the direction but only the speed. Direction is controlled by a separate switch.

The JoyStick Board transforms the speed control to give a centre-zero operation: Turn the pot forward from centre to alter the speed in the forward direction but turn the control back from the centre and the controller will automatically reverse. You thus have speed and direction controlled by a single knob.

The JSB is available in two version: one is as described herein and it is designed to plug into the VTX controller as a 'Daughter' board with a remote potentiometer.

The second version is suitable for mounting on a standard potentiometer remote from the VTX.



Features

The connector marked VTX plugs into the VTX controller.

The hole marked 'G' allows access to the gain adjustment on the controller.

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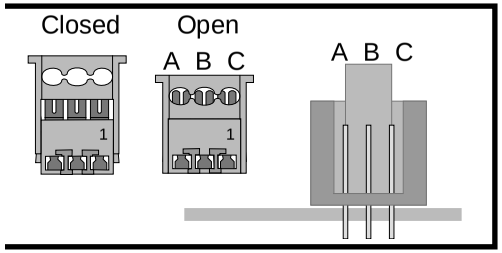
Connections



	A	B	C
Ign	+24/12 (Bat+)	Ign	0V (Bat –)
Pot	Reverse	centre	forward
Stops	common	reverse	forward

Ignition connector

This has battery +, battery - and ignition. Ignition *must* be connected to battery positive for the system to work.

Battery – is present in case you wish to use a battery condition meter. The diagram at the foot of this page shows BCM and 4QD's BCM-3-LED connected.

Pot connector

The remote speed pot or joystick connects here, slider to the centre, clockwise pot tag to 'forward' and anticlockwise pot tag to 'reverse'

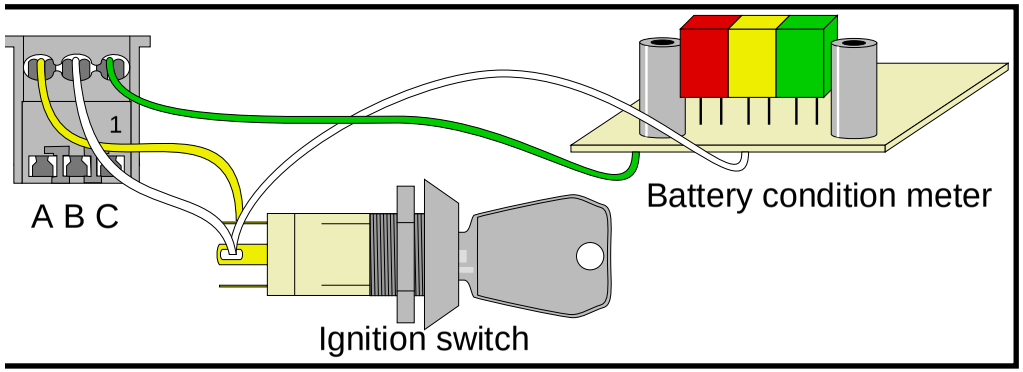
'Stops' connector

Two 'stop' pins are supplied with a common connection (common is Battery +).

Shorting 'reverse' stop (pin B) to common will inhibit forward motion. Similarly 'forward' inhibits reverse motion. These could be used on, for instance, a collision detection system. If the controller is being driven at full speed forward the reverse stop should be activated by, for example, a front bumper.

When the stop is activated the controller will immediately engage reverse so the machine will decelerate, stop and reverse away from the object.

Deceleration and acceleration will be at rates determined by the VTX's ramp adjustments. In reversing away from the object the machine will get to the point where the bumper switch opens again when it will stop and accelerate forward, immediately reactivating the stop. It will then hover around the 'make' point of the stop at a rate determined by the stop switch's operate and release points and the ramp settings on the VTX.



Potentiometer

As supplied the standard board is suitable for a 10K pot, which will give full output over its full travel.

So a POT-103 will give full output for ±120° and a POT-050 will give full output for ±25°.

Other calibrations can be done by changing resistors: Ra and Rb (features diagram, page 1) are 10K resistors, in series with the pot max and min.

so the pot gives ±15% swing about centre: these may be changed for pot values other than 10K.

Other options

Gain

Normally you will adjust the VTX controller's gain: the gain control should be set to about 3 o'clock for normal use.

The output of the JSB is about 3.5v for full deflection of the a standard 10K pot. However you can adjust the full output by changing the value of resistor Rg, shown on the 'Features' drawing. As supplied it is 10K. Increase its value for more output.

Centring

A centring preset is fitted to pull the pot centre point. However it is always best to adjust the centring mechanically: electrical centring always increases top speed in one direction, trading it off against a speed loss in the reverse direction.

Contactless Joysticks

Contactless joysticks take typically 1mA from the supply. The VTX and Pro controllers as supplied do not have this much 'spare' current available.
Therefore the contactless joystick should be fed from its own power supply.

For quantity orders, it should be possible to supply a modified controller with spare current available.

Other versions

Also available is a 'Dual Axis' JSI, in two versions.

In a dual-axis system two controllers are used, each driving a separate motor and wheel. Sideways movement of the stick is translated to differential speeds so that one motor slows and the other speeds allowing the vehicle to be steered by its wheels. This is a 'sum and difference' system.

4QD also do a range of interfaces for Radio Control applications. Details are on our www site.