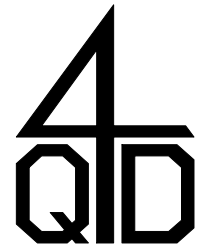


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Instruction Manual

Single axis Joystick Interfaces

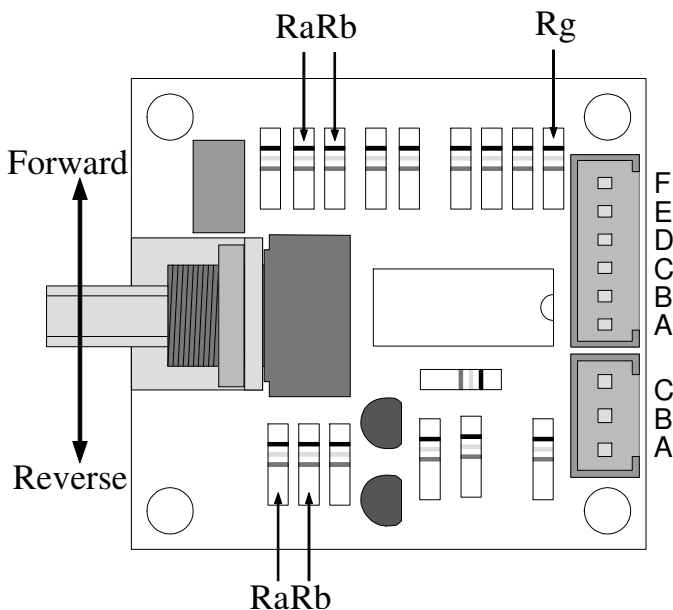
The VTX and Pro-120 controllers have a 'single ended' speed input. That is to say that the speed control does not control the direction but only the speed. Direction is controlled by a separate switch.

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.

When using The JSB with the Pro-120 controller we suggest you disable the Pro-120's High Pedal LockOut function or the system will not power up properly unless the joystick is dead central.

The JSB is available in two version: as a board, without pot and metalwork for you to use with your own speed pot and as an assembly, with pot, bracket and mounting metalwork fitted. A lever is also available.

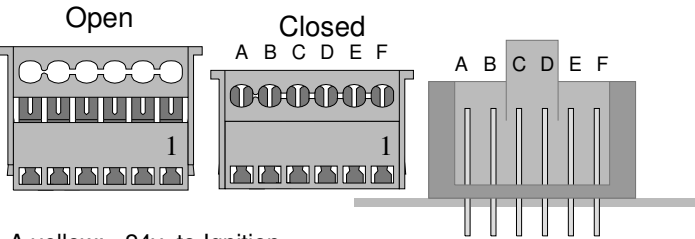
Features



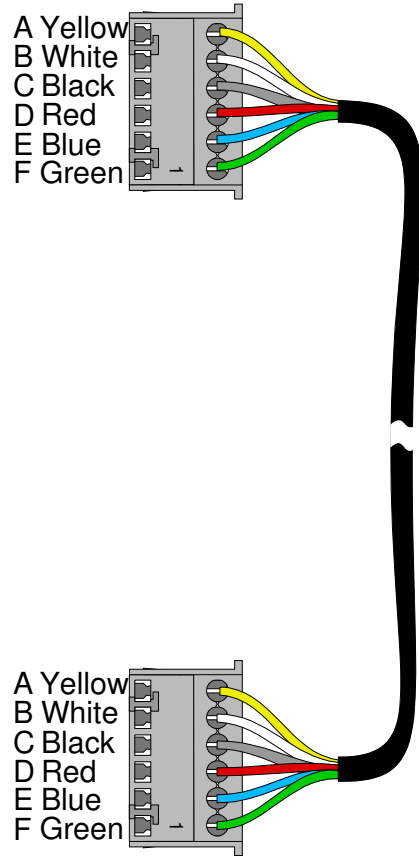
Connections

6 way connector

The connections to the 6 way connector (shown below) are identical to those of the VTX and Pro-120 controllers so that the lead connecting JSB to VTX or Pro-120 should be as the diagram, right.



- A yellow: +24v to Ignition
- B white: Ignition
- C black: Reverse
- D red: Max speed
- E blue: Wiper
- F green: 0v (Min speed)



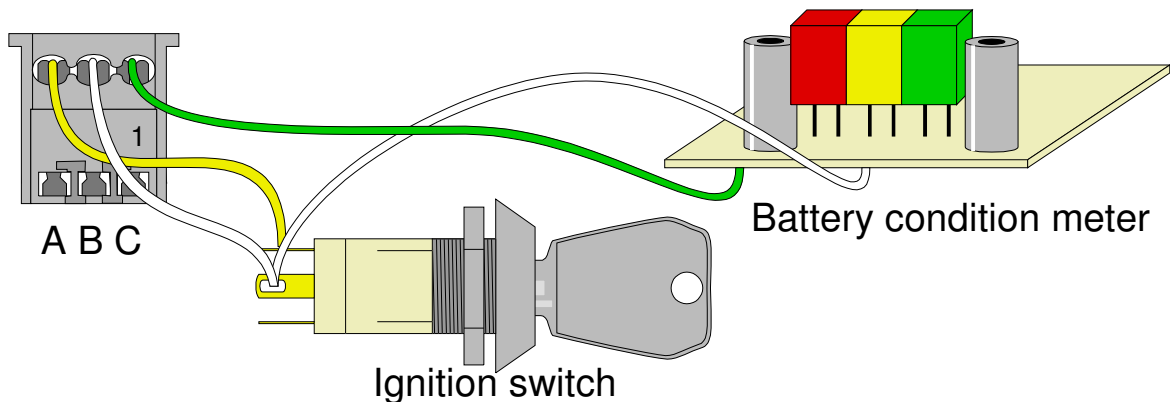
3 way connector

This has B+, ignition and B- present on it.

Ignition (centre pin) **must** be connected to B+ (pin A) for the system to work.

B-is only present in case you wish to use a battery condition meter otherwise don't use it.

The diagram below shows BCM and 4QD's BCM-3LED connected.



Other options

Direction

As supplied forward and reverse are as shown in the diagram on the first page. It is possible to reverse the action: locate the two resistors, Ra in the drawing 'Features'. Remove these and refit in the positions indicated Rb.

On request, reverse action boards can be supplied from the factory.

Use with Pro-120 Series

The Pro-120 series include High-pedal lockout. You will probably find it best to disable this as, with it activated, the Pro-120 will 'lock-off' if you switch on with the joystick not in the centre. Especially during initial setting, it can be quite difficult to get the the stick centred before switching on!

'Reverse speed reduction

As supplied the VTX and Pro-120 controllers have half speed in reverse. This will also cut down reverse speed with the joystick board. If this is not what you require, modify the VTX or Pro-120 controller as detailed in the VTX and Pro-120 instruction manual.

Gain

You will need to adjust the VTX or Pro-120 controller's gain for use with the interface,

The controller's gain control should be set to about 3 o'clock (i.e. near maximum) for normal use.

The output of the JSB is about 3.5v for full deflection of the special pot supplied with the assembly.

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. However it is best to adjust centring mechanically: electrical centring always increases top speed in one direction, trading it off against a speed loss in the reverse direction.

Use with other pots

The 'Joystick Assembly' (JSA-002) is supplied with a special pot of 10K resistance but with the track restricted to 50° so that $\pm 25^\circ$ of mechanical movement uses the full 10K value of the pot.

Resistors Ra are 10K, in series with top and bottom of the track. These give correct performance with a 10K pot, (full track used) but will need to be altered for other values of pot.

If using a standard 280° 10K (or other value of) pot you may need to link out resistors Ra when the board will operate over about $\pm 45^\circ$ of mechanical movement (i.e. 1/3 of total travel will be used). This also suits most commercial wig-wag controls.

You can reduce the deflection of the pot for full speed by increasing the gain resistor. See 'Gain' on page 3

Also available is a 'Dual Axis' JSB. 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.

More Information

If you have Internet access, 4QD's www site has a lot of information on 4QD's controllers and other subjects pertaining to the control of battery operated motors.

There is also a large section of the site devoted to electronics: in this the circuit diagrams of the interface is available at <http://www.4qd.co.uk/ccts/jsi.html>.