

## Introduction

The following document is a brief guide to using more joysticks with the FIRST control system. New to the 1999 rules is the ability to build Y-cables allowing the use of up to four joysticks. The 15-pin D connectors and hoods need to build the cables are listed in the additional hardware list.

The most significant advantage to this new capability is providing dual joysticks for the driver (tank drive) while still providing a joystick or two for the co-pilot.

## Example Cable

This example cable was designed for use by the driver. It provides two Y-axis joysticks for tank drive along with both thumb wheels and all four joystick buttons. The X-axis control is not used. This cable is intended to plug into Joystick port 1.

The schematic on page 2 describes the connections needed to build this cable. Table 1 describes the joystick functions and corresponding software variables.

Table 1: Joystick functions and software variables for example Y-Cable (schematic on page 2)

Function	Joystick 1	Joystick 2
Y-axis	x1	y1
Wheel	tx_pot1	wheel1
Trigger Button	sw1_fwd	sw1_fwd
Top Button	sw1_rev	sw1_rev

Joystick Port 1

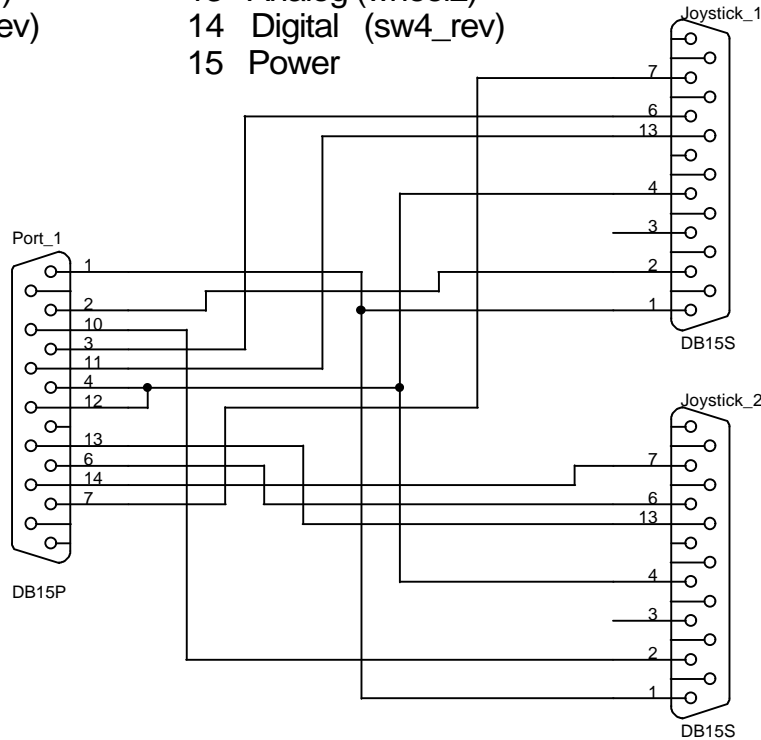
- 1 +5VDC
- 2 Digital (sw1\_fwd)
- 3 Analog (x1)
- 4 GND
- 5 GND
- 6 Analog ( y1)
- 7 Digital (sw1\_rev)
- 8 +5VDC
- 9 +5VDC
- 10 Digital (sw3\_fwd)
- 11 Analog (tx\_pot1)
- 12 GND
- 13 Analog (wheel1)
- 14 Digital (sw3\_rev)
- 15 Power

Joystick Port 2

- 1 +5VDC
- 2 Digital (sw2\_fwd)
- 3 Analog (x2)
- 4 GND
- 5 GND
- 6 Analog ( y2)
- 7 Digital (sw2\_rev)
- 8 +5VDC
- 9 +5VDC
- 10 Digital (sw4\_fwd)
- 11 Analog (tx\_pot2)
- 12 GND
- 13 Analog (wheel2)
- 14 Digital (sw4\_rev)
- 15 Power

CH Joystick Pin Assignments

- 1 +5VDC
- 2 Trigger Button
- 3 Joystick X Axis
- 4 GND
- 5 -
- 6 Joystick Y Axis
- 7 Top Button
- 8 -
- 9 -
- 10 -
- 11 -
- 12 Shield
- 13 Wheel
- 14 -
- 15 -



**Innovation First**

Title		
Y-Cable		
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A		NC
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