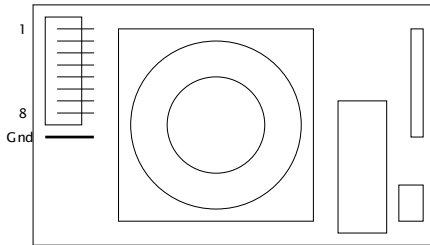


# TRACKBALL documentation

This is a small (34 x 21 x 16 mm) trackball unit, probably intended for use in a laptop. The ball provides movement; two external switches can be connected to act as left and right mouse buttons. The unit uses the standard 3-byte serial MS mouse protocol, but at TTL level. An inverting line driver is needed when the trackball is to be connected to the serial port of a PC. A microcontroller UART operates at the same (TTL) level, so it can be connected directly. There is a small hole underneath the ball, it might be possible to mount a switch there, so the ball could be pressed to provide a mouse click. But I did not try this. I used M3 screws to mount the trackball, this is a tight fit for the two plastic holes but the plastic did not break.



The hookup info is shown below. Leave the lines marked as '-' unconnected.

Trackball connections	
+5 Volt	1
-	2
serial out (TTL level)	3
-	4
Left button, NO, to ground	5
right button, NO, to ground	6
ground	7
-	8
ground	metal rod

## Microsoft 3-byte mouse protocol 1200 baud, 7 data bits, no parity, 1 stop bit

Byte #	Bits						
	7	6	5	4	3	2	1
1	1	L	R	Y7	Y6	X7	X6
2	0	X5	X4	X3	X2	X1	X0
3	0	Y5	Y4	Y3	Y2	Y1	Y0

L = Left button  
R = Right button  
Button Up = 0  
Button Down = 1  
X7 -> X0 = Bit positions of signed X movement since last report.  
Y7 -> Y0 = Bit positions of signed Y movement since last report.  
X0 & Y0 = least significant bits.  
X = right - left