Title: Speed Measurement

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Introduction:

The ‘Speed measurement’ project is aimed to measurement speed of bot using timer and counter.

Description:

The speed measurement is done by using inbuilt timer and counter. The shaft encoder of right motor in FIRE BIRD V is connected to timer 1 at the PORT P3.5. So whenever the shaft encoder cuts the encoder, it generates the pulse. By using timer 0 as counter we can count these pulses.

Speed Measurement:

The fire bird has slotted dick which has 30 slots. Each slot is 5.44mm wide. With the help of counter 0 we can count these slots per second. The P89C51RD2 has 16 bit timer/counter. By using 11.0592 MHz crystal we can generates 50 ms accurate time delay and by using this delay we can generates 1 second delay. To measure speed of bot generate 1 second delay and count pulses in one second. Then we can calculate distance in one second travelled by bot by

$$\text{Distance in mm} = 5.44 * \text{Counted pulse}$$

$$\text{Distance in cm} = (5.44 * \text{Counted pulse})/10$$

References:

1. FireBird V AVR2560 Hardware Manual
2. FireBird V AVR2560 Software Manual