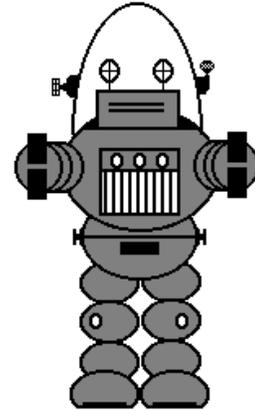


P.A.R.T.S



Issue # 08 By. Marvin Green (503) 666-5907.

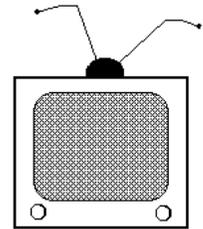
My phone number and address has changed! Marvin Green 821 SW Troutdale OR, 97060

LAST MINUTES...

Last meeting in August was a good one. Kile Krocker brought his robot KR-1, and was working to get his hall effect sensors working as wheel position indicators. KR-1 uses a custom designed body and wheels for nice ground clearance and good looks. A 68HC11 is KR-1's brain and two modified servos provide power.

Doug Reeder brought a unique balancing robot. This robot resembles a parrot when clamped to your arm. Doug built this with the Motorola 68HC11 evaluation board, four mercury switches to detect tilt, and a R/C servo to keep upright.

Also last meeting I brought a video of ROBO-THON the robotics fair held in Seattle. But due to technical difficulty... we couldn't watch it.



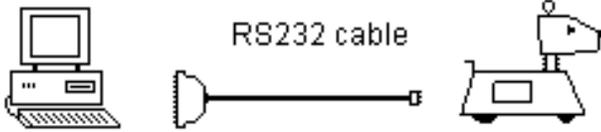
R=K*D²

Being an amateur robotics enthusiast, is anything but easy. Seems that you have to be an expert in so many different things. Just to take on a robotics project you have to know programming, electronics, and mechanics. I came up with this equation to demonstrate this relationship, and put it in perspective.

ROBOT=(PROGRAMMING+ELECTRONICS+MECHANICS)*DETERMINATION²

The end product of this equation is R. R is ROBOT. K represents knowledge and can be factored out as (programming + electronics + mechanics). The most important part of this equation is D. D is for *determination*. When *determination* is strong... Robots get built.

I have found that this equation holds true in every level of robot building. Members of PARTS have proved this time and time again. Keep plugging away.



Most every robot that your going to build is going to need to talk with a PC compatible computer. Whether it's to write programs or share data, the most common way to link a robot, and a PC is through the serial port. A PC serial port uses standard RS232 voltages that range from +12 and -12 volts.

On a typical robot, the CPU runs off of +5 volts and can't directly interface with +- 12 volts. Luckily several chips have been designed to interface the CPU and RS232. In PARTS issue #05, I diagrammed a 68HC11 connecting to a PC's serial port. This uses MAX232 chip. The MAX232 is a 16 pin IC that uses four 1.0mf capacitors to boost the chips voltage. This chip is very inexpensive (about \$2.50) and is readily available. Maxim has recently come out with the MAX233 20 pin IC, this chip is expensive in comparison (about \$15) but has the advantage of needing **no external capacitors**. One chip does it all.

With the MAX233 circuit being so simple you can easily fit it into the case of the DB25 serial connector. This way, all you ever need to build is one interface cable, and use it in all your robot projects. The female connector is MTA crimp style that plug into a .100 header. Keep your cable length reasonable, so that the cable resistance won't show a voltage drop to the chip.

This chip can be found from Pure Unobtainium (203) 870-9304 for \$14.25. Maxim also offers free samples and data books. (Great source!) Call Maxim at 1 800-998-8800. Digi-Key is also a good source at 1 800-344-4539.

This project is a good step towards plug and play robot connectors and is a slight variation to the circuit that **Karl Lunt** suggests in Nuts and Volts. The best part is that there are no capacitors to stuff into the DB25 hood, and that Maxim supplies free data books and samples.

