THE PB ELECTRONIC SPEED CONTROLLER

Yet another speed controller has come onto the market to join the dozens already available. This time *PB* have decided to complement their 1/10 'Mini Mustang', 'Maxima' and 'Eco' cars by offering one of their own after market accessories.

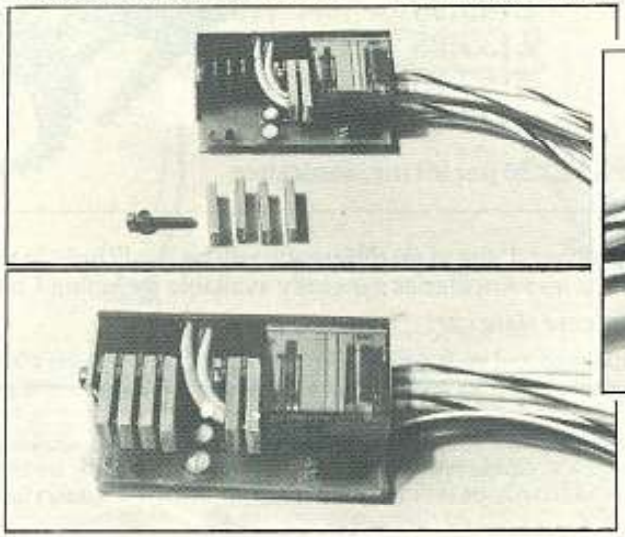
Following the pattern of most other UK manufacturers the *PB* controller is encased in shrink wrap. Two light emitting diodes (LEDs) are mounted on the controller for seting up. For this reason the shrink wrap is transparent. The construction of the controller is on two printed circuit boards. The PCB containing the control electronics uses sub-miniature components that have been machine assembled. This kind of investment suggests that *PB* are looking at very high volume sales. The other board contains the main power components such as the FETs and a relay. The board are mounted at right angles to one another with an aluminium shield which also doubles as a heat sink. This shield is in turn bolted to the four forward FETs, each of which has its own individual heat sink clamped to it. This speed controller is one of the few provided with a heat sink. I must assume that the designers anticipate a rise in FET temperature that requires the additional cooling. I was curious to find out why just four FETs were used, so I called the makers to find out what they had to say. The case they put for using four FETs is very reasonable. They claim that simply adding more and more FETs does not provide a linear increase in current handling capability. There must in fact be, an optimum performance/cost point. In their opinion four forward FETs is that point.

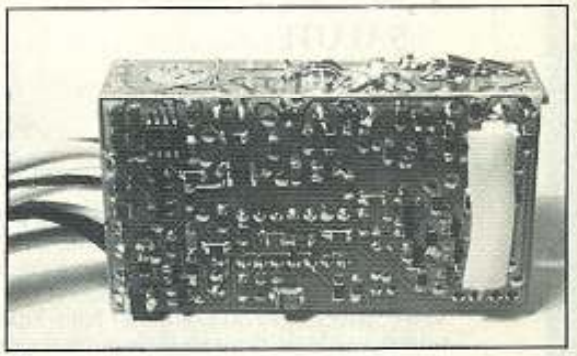
Reverse is achieved by a single contact relay which by itself is likely to create the single largest voltage drop on the controller itself. Other potential voltage drop areas are the PCB tracks and cables. The manufacturers have reduced these problems to a minimum by having the heavy current tracks on the substantial PCBs enlarged to handle the load. The wire used for battery and motor connections are also of generous dimensions. Everything about this controller indicates that it is intended for the serious racer. Although I appreciate that details such as maximum current handling is by no means the only specification to be considered and many other parameters should be taken into account, the publication of some performance data does help the prospective buyer with some indication of performance. I was therefore surprised to find no mention of this aspect of the specification anywhere. I do not think that the model business is ready for the (so called) response that came from *Rolls-Royce* when they were asked about the power output of their cars. They are supposed to have replied "adequate".

Due to the type of construction and the use of ample heatsinking, the controller is not the smallest or the lightest on the market, in fact the measurements are 70mm × 35mm × 25mm. I do not think the weight of the unit will pose any problem, especially as many 1/10 cars are very close to minimum weight, but the size of the unit might create difficulties in some vehiles.

The controller offers proportional forward, braking and reverse. Reverse is limited to about half power, but is very controllable indeed. Forward starts at about 20% and rises to 100%. Setting up the controller could not be easier. Starting with on LED on at rest, then green and red for forward, flat out forward green only and reverse red only. The adjustment of these points is made by two miniature potentiometers. You might think that the direction the car travels is a better indicaor than watching lamps. Not so. It is important to have the relevant LEDs on for forward and reverse otherwise you could be limited to half speed forward, but really flying in reverse. The simple to follow instructions have good clear diagrams, and give repeated warnings about incorrect wiring causing serious damage to the unit. In fact I suspect that every unit will be tested before it leaves the factory, so *PB*will know that any faults of blown FETs will be the result of incorrect wiring. Should anything go wrong with the unit *PB* offer a repair service and have published an exchange unit price of £18.50. Although this might appear a litle on the high side to fix some smaller problems, it is probably good value if more serious damage has occurred. In any case you do at least know how much it will cost you before you send the unit away for repair.

In conclusion this is a robust, well made controller. Priced at £60 it is on a par with most other controllers in the same class. It is not the lightest or the smallest but it does offer full facility forward, braking and reverse.





The PB Racing Speed Controller is certainly robust. The controller fits easily into the 'Maxima' although installation could be tricky into cars with smaller radio space.