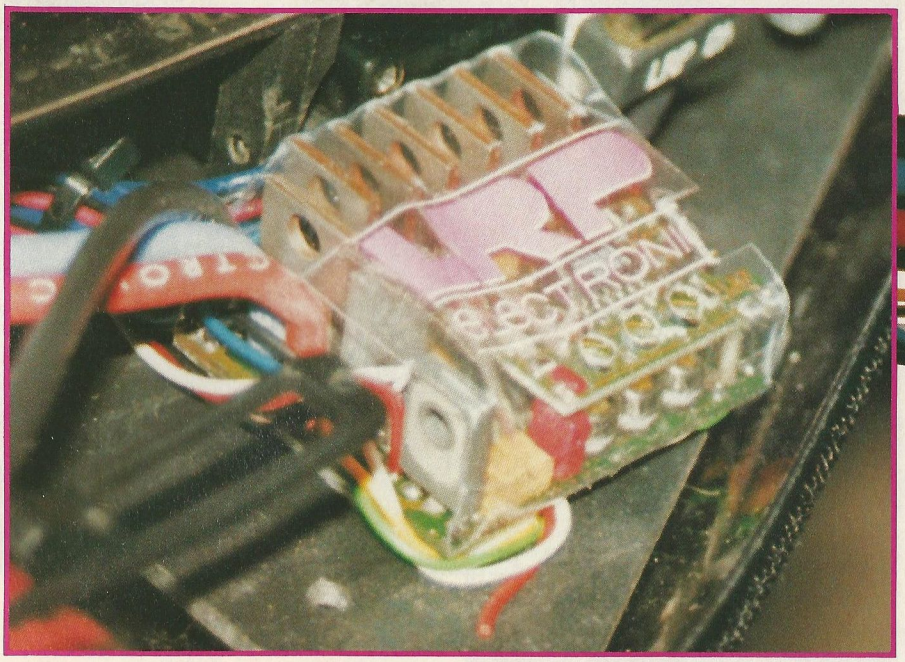
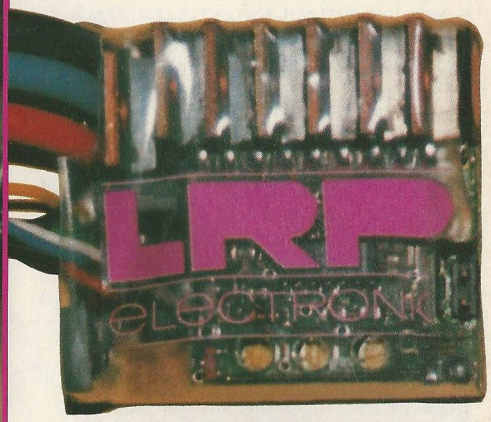




The LE25AMS is LRP's first ESC, and has been under development for at least two years, prototypes having been used by Jurgen to win two of his three 1990 European titles. Before that, I believe Stephan Oberle was working on a prototype, as early as 1986, so what we have here is a tried and tested product. The controller is designed to offer the following main features:

Features

1) Powerful, and adjustable brake
2) Regenerative brake; means that cells are charged during braking
3) Versatile receiver supply arrangements
4) Military specification electronic components
5) Low resistance: specified at 1.8 milli-ohms
6) 38 volt drive to the FETS

LRP

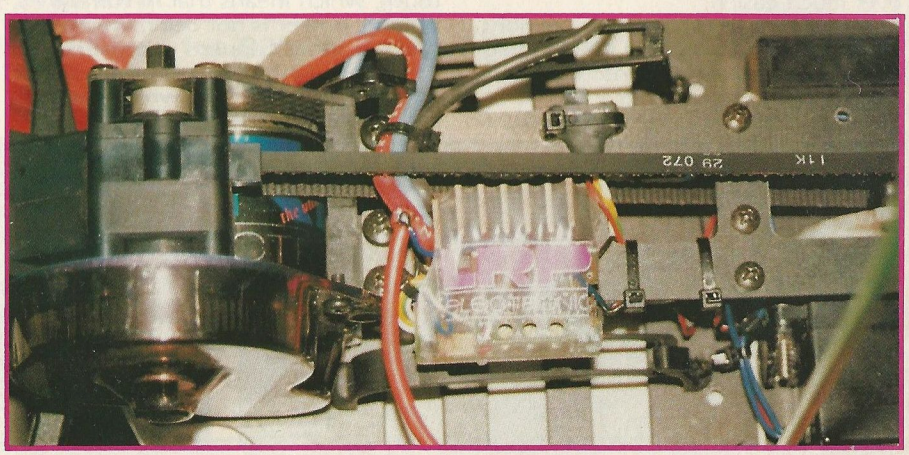
ELECTRONIC

LE25AMS

Speed Controller

David Gale Puts the latest 'pro' speed controller on the market through its paces.

To many people, the electronic speed controller is simply an expensive necessity, providing very little in terms of race winning ability, yet being a very important part of the overall package. Lately there have been a lot of developments taking place, with high frequency and current limiting becoming the 'trendy' way to go. However to most racers these advantages are short lived, such is the price of advancement, and at the end of the day, the ESC is only the interface between your left thumb/brain, and your favourite "PRO Team ballistic thromper stuffer motor".



7) High frequency modulation for faster response and better control
8) Accurate and easy to set current limit
9) Small physical dimensions (37mm x 32mm)

Installation into Car

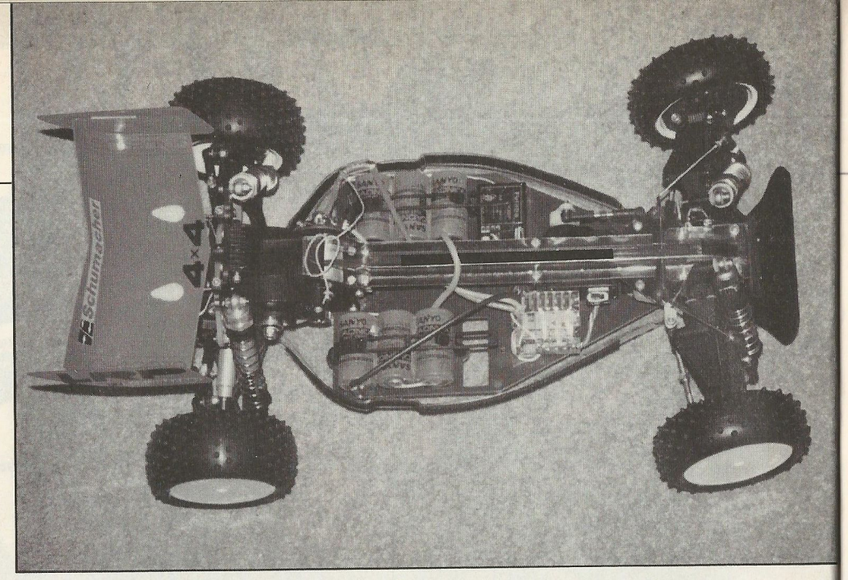
On opening the packet I was presented with a small, compact unit, about 1.5 x 1.25in., which is about the same size as one of the smaller Novak or Tekin units. This unit was supplied with a heatshrink cover, but I am told that a plastic case is in the process of being made. Emanating from one side there was a mass of different wires of all sizes and colours, to allow it to be wired into your system. These wires include an on-off switch, connections for an external receiver battery supply, connection to the receiver, power connections to the motor and batteries, and a separate lead for supplying power to a FET servo.

Initially it looks rather complicated, but assuming you take some care identifying where all the wires go, it is really quite straightforward. The instructions included with the controller are fairly comprehensive and descriptive, but are written in a fairly amusing dialect of English, common to the EEC. Personally I don't use a receiver pack, or FET servo, so these wires were cut short and twisted them around the wires to the switch, allowing them to be used at a later date, if and when required.

Setting Up Procedure

There are three pots for setting up the controller and in addition there is an optional current limit pot. Two pots are used to set up the neutral and full power points and the other is to adjust the sensitivity of the brake. In essence these are fairly simple to adjust, but in common with all other controllers you should be careful to observe how your transmitter is set up, as a good transmitter will also allow you to adjust these things. Personally I prefer to leave the transmitter alone and adjust the controller, as it makes swapping things over much easier.

The current limit has several options, which may be configured by plugging in various 'chip' devices into the main board. These options are:
1) If nothing is connected, the current limit will default to maximum (100 amps or greater)
2) A plug in control pot allows the current to be varied between zero and 100 amps, with the setting on the pot giving a direct reading in amps. This means that you don't need to 'muck about' with a volt meter when setting it up.
3) Plug in chips allow the current to be varied in pre-determined increments (35 amps for 1/12, 45 amps for pro ten, 60 amps for 2WD and 80 amps for 4WD).



Running The Unit

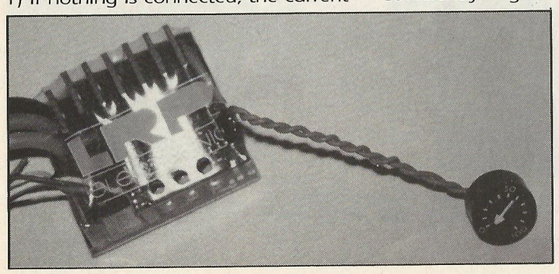
For the purposes of the test I wired the unit into my 1/12 circuit car, and tested it on a large track, using a 15 double motor on a high gear ratio. The idea behind this was to use a motor that would both activate and respond to the setting on the current limit. In addition, a 'hot' motor such as this is more likely to show up any deficiencies or inefficiencies in operation.

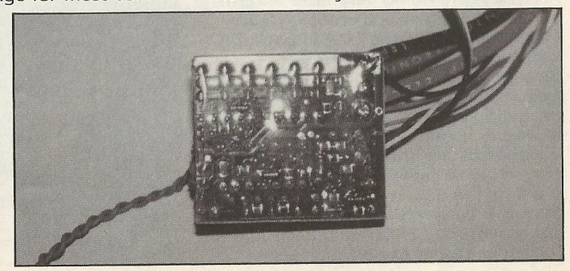
In free practice I played about with the current limit setting and found that you could feel it limiting the power, when set below 45 amps. In fact when set to 20 amps, the motor was detuned to such an extent, it felt and performed like a standard motor. After a few minutes of such treatment, I brought the car in to see if there were any signs of heat being generated in the power FETS. As expected they were cool to touch, which means that in current limiting, power is not being wasted, which is what happens in some controllers. At this point, I played about by adjusting the brake, which gives a sufficiently large range for most use.

So with the controller set up to my liking, I set about racing it. One of the claims for this controller, is that it is supposed to be more responsive than others due to its pulse modulation technique. I would certainly agree that it felt lively, with more initial response out of a slow corner, than I am used to. However this was also dependant on the current limit setting, and could only be felt if the limit was set above 40 amps. Once the car was moving, mid to top end response was similar to most other high frequency controllers, being very smooth and easy to drive.

Possibly the best feature of this controller was yet to come. As I started to go flat, there were no signs of losing control. In fact I continued running the car until it was so flat that it would no longer move, yet there was still enough power to operate the receiver and servo. This makes a change from all the other controllers which allow the car to go 'walkabout', the moment the battery voltage starts to drop.

For the next race, I geared up by a pinion, (now 37mm/rev with a 15 double, which is a very high ratio!), to see how efficient it was when being driven gently on low throttle. This time, I dumped about 15 seconds short of eight minutes, which I felt was fairly good going for such a high gear ratio. Again at the end of the race, the controller was barely warm to touch. For the next race, I left the motor alone, but changed back to a Corally MMS II controller, go give a comparison. For the same driving style, it lasted slightly longer, completing the full eight minutes. It should be noted that I felt the initial acceleration was slightly less with the Corally, which would probably account for the difference in run times. The logic behind this, being that acceleration requires current, and hence less duration.





Features Not Used

The controller has the option of an external battery pack for powering the receiver. Whilst I did not use this function, it would seem that it offers a significant advantage over other systems. This is because there is a fail-safe mechanism built into the supply, which will automatically switch from the battery pack to the built-in 7.2 volt supply, in the event of the battery going flat, or not having been charged properly. I have always distrusted receiver packs for these reasons, as the number of races that I have seen lost through problems such as this is huge. An LED lights, if the battery pack is OK.

Verdict

I think that the LE25AMS speed controller from LRP is a very good product, and scores heavily in terms of its ability to be adapted or fine tuned to your set-up. It also caters for differing race tracks. However, I think this adaptability may make it more complicated than most people want in a controller, and this may lead to some misunderstandings.

Technically the controller is as good as the best, and I think it will become very popular in two and four wheel drive buggies, as the current limit can be used to control the power, in much the same way as a slipper clutch. The receiver supply arrangements are excellent, and better than any other controller I have come across.

Its small and compact size makes it very easy to fit into virtually any application. However at the moment it has one major drawback, as the way the wires are mounted onto the edge of the PCB will make them prone to breakage. As I said earlier, a plastic case is being made to fit the controller, and I expect that this will solve any such problems.

In common with most top speed controllers, the price will be well over the £100 mark, but as this is one of the top controllers available, I would say that this would be a worthwhile addition to anyone's collection.

It should be available from most good model shops through Jamie Booth Racing, telephone 0246 202253.