

Product File: Novak Cyclone ESC Review

(Part 2 - Profile Software)

software solutions

In last month's edition we looked at just the speed controller, it was fairly evident even in "standard" form the Cyclone with its three "burnt in" profiles, and very high quality components, would be hard to beat. Well Novak have come up with a system which gives you the racer, the chance to tune the Cyclone to your exact needs, be it on road, off road, high and low grip.

How it's done?

Within the Cyclone is a fourth "hidden" profile, this profile can be accessed in two ways, either with the Novak® profile software or the Pit Wizard. Once "in" to the profile the racer can make his or her own custom profile, by changing the various parameters that are available. We will take a look at the Profile Software in this part of the review. Personally I feel the software is currently the better of the two options, it does mean you have to have use of a suitable lap top computer, but the computer does allow you to store several profiles in its memory, which can be perfected and saved. In fact you could have profiles saved to cover different grip conditions at each track you race at. Also it's quite a lot cheaper to buy them than the Pit Wizard.

What You Get

A very neat box holds the secrets to the Cyclone, within you find another of Novak's "in-depth" instruction manuals. This needs to be read and digested, don't panic though it has been written in such a way that anybody can understand it, even me! Also you get an in line data link and a wiring harness to connect this to a PC, and of course the all important floppy disc. The data link needs to have the oblong type 9v battery fitted to it (not supplied) before it will work, battery life appears to be several hours. Operating as a kind of converter, the data link transfers the digital inputs from the computer to the Cyclone.

What you need to run it

To operate the software an IBM PC/Compatible (80386, 80486 and Pentium) computer is required. 640K minimum memory, 200K hard disk space (can be run direct from floppy drive). Either MS® or Windows® operating systems. Any type of monitor (B/W or colour). A DB9 serial port. Mouse not supported. Now for all you non-computer wizards out there, what I have listed above really comes down to any type of basic PC the kind that is used at schools or for basic leisure use. I used a Toshiba T1910 CS with a

Pentium® microprocessor, running Windows® 95 version 6.0. This is one of the most commonly known softwares.

Installing/Running the Software

If you follow the instruction for either DOS or Windows you should have little problem installing the software, if you are like me, a non computer lover, take your time, don't panic. In my case once I had got to the "Run" option all I had to type in was: A:\SPDCTRL.EXE.

Once in you will be greeted by the Novak logo, then you will be into the main menu. As the version 1.0 software is not mouse supported you will have to use the "up" and "down" keys, normally found on the left hand side of the keyboard, then the "enter" key to gain access to each section.

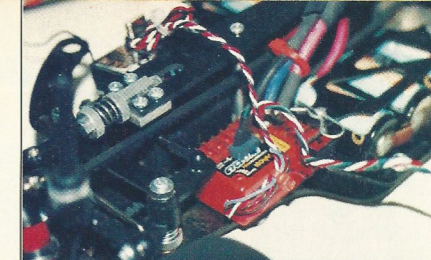
I'm In, What do I do?

Follow the instructions and connect the data link via the serial port on your computer and the small 5 pin connector to the link port on the top of the Cyclone. Do be careful to connect the plug with the body of it facing away from the Fet's, no force is required.

You will need a part charged or fully charged nicad pack in your car and your tranny. Switch on the data link (red LED flashing), switch on your tranny, then the speedo, you're ready to trot.

The first thing to do is set the default parameters, this gives the basic "setting" up details to the computer, and of course the calibration details of your radio. The three main operating points (Neutral, Full brake/throttle) are measured in milliseconds, no two tranny's will have the

option screen. The first three lines relate to the radio calibration. For most users you will not have to change them. The only time I can think you would change them is if you wanted full throttle or brakes earlier in the stick movement, say if you were a drag racer.



Make sure the "bulk" of data link plug, faces away from the fet's on the speed controller.

So the first useable option is No 4, Dead Band

This is the time, when the stick or trigger at neutral, before any signal is sent to the motor (drive or brake), measured as a percentage of full movement. So if you have say a very light car on a low grip surface you would have a large %. Giving more control. If you had a heavy car in a high grip condition, a small % would get the car moving very quickly.

Next is the Drive (Pulse Width Modulation) Frequency

This quite simply is the time the speedo controller transmits power to the motor. The lower the frequency the more punch, think of it as a tap, open it quickly and you get a flood, open it slowly and you get a trickle. Because the Cyclone has no torque limit the Drive PWM is used to adjust this to the track condition, also because no torque limiting device is fitted less power is lost in the controller. 16 options are given for this frequency .122 Hz to 23.4 KHz, in reality I doubt you would go lower than 1.46KHz, the lower numbers feel almost the same to drive.

Following on we come to Minimum Drive

This is the % of power the power gets at the end of the dead band at the start of full stick/trigger movement. So again if you have a light car or low grip this would be a small number (think of the tap again) giving lots of control. The opposite for heavy cars or high grip.

Lines 7/8/9/10 all relate to the brakes the Brake PWM working the same as the Drive PWM, the lower the frequency the sharper the brakes. 8/9/10 all relate to the drag brake option, this I think will mostly be useable for on-road racers. Drag brake will apply the brakes at the neutral point on the radio, so if you

have a track with short straights and tight corners, you can save time by not physically having to move the stick/trigger into the brake band. In line 8 if you choose the drag brake option to be "on" setting 9/10 are disabled, and minimum brake pot on the Cyclone can be used to set the level of braking effect. This will work on the brake PWM you will have already set.

The second option is a little more refined, if you leave the brake option "off" but set line 10 at more than one and set a different drag brake frequency, you can have a two stage brake, if the drag brake is set a higher frequency than the main brake PWM, you can have a soft drag brake, then by moving the stick/trigger into the brake band, a harder much more powerful "panic" brake.

Once you have decided on your profile all you have to do is go back to the main menu (keep pressing the "enter" button) move down one line and down load it to the Cyclone. This also appears to engage the "fourth" profile on the speedo, but I did double check each time, as it's quite a quick procedure.

Does it work?

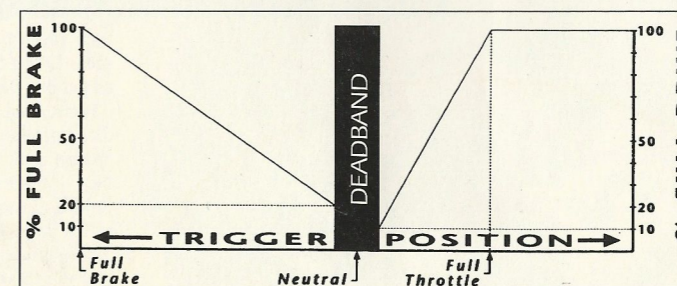
Due to the fairly tight printing dates I only had one day to test the software, and recently the weather has been just a little unco-operative. Bedworth was chosen for the test, this being where most of the running had been done with the Cyclone, the car being the reviewed YR4 M2. To gain a "datum" for the test, I first ran the car on the "standard" on road profile. This felt very punchy, almost spinning the tail out, and I dumped at the 4 mins 35 second point. Brakes were good but a lot of time was lost due to the amount of stick movement required.

So where to start? Those nice people at Novak had done quite a lot of testing with the software, and have stored 13 profiles on the disc. The 4WD Touring Sedan being my choice. The main difference between what I had been running and the custom profile being a much higher drive PWM: 5.86 to 15.6.

From the gun the car was much smoother to drive, a slightly wider dead band making the car less sensitive coming out of the corners. A full five minute run being achieved. But the brakes still needed a lot of stick movement.

Change to Drag

Downloading the profile back to the computer I decided to try the "drag brake" set up, reasoning that if I could save the "stick" time I should be able to lap quicker. It only took a few seconds to



SAMPLE PROFILE DATA

Included below is sample data for Profiles developed by the Novak Racing Team at various racing events with different vehicle and motor combinations. You can use these Profiles as they are, or use them as references for creating your own custom Profiles.

VEHICLE & MOTOR	DR. PWM FREQ. kHz	MIN. DRIVE %Full Brd	BR. PWM FREQ. kHz	DRAG BR TOGGLE ON/OFF	DRAG BRAKE FREQ./VALUE kHz/%Full Br.
Buggy-Modified-High Traction	11.7	4.0	3.9	OFF	0%
Buggy-Modified-Low Traction	15.6	2.0	3.9	OFF	0%
Buggy-Stock	11.7	8.5	3.9	OFF	0%
Truck-Modified	11.7	6.5	3.9	OFF	0%
Truck-Stock	7.8	9.0	3.9	OFF	0%
1/10 OnRoad-Modified	23.4	7.5	3.9	OFF	0%
1/10 OnRoad-Mod-Drag Brake	23.4	7.5	3.9	OFF	5.86/4.0%
1/10 OnRoad-Stock	15.6	9.0	3.9	OFF	0%
4WD Touring Sedan-Modified	23.4	5.5	3.9	OFF	0%
Formula 1	23.4	2.5	5.86	OFF	0%
1/12 OnRoad-Modified-6 Cell	23.4	3.7	3.9	OFF	0%
1/12 OnRoad-Modified-4 Cell	5.86	6.9	3.9	OFF	0%
1/12 OnRoad-Stock-4 Cell	2.93	8.0	3.9	OFF	0%

*Deadband Value is 5% for all listed Profiles.

Novak have stored several profiles, already to use. Test and mod as required.

engage the brake toggle, and download the change to the speedo, in fact the car barely had time to cool down. Now the min. brake pot on the speedo became the loading for the drag brake. As a test I set it to full, the nano second the stick came back to neutral the car stopped "dead", in fact if the car wasn't running straight it would just spin out, wow a handbrake turn. This was far to powerful, I changed the pot to 30, the car was dialled, the drag brake had gained me nearly a second on a lap. This could have made the difference between an "A" final or a "B".

Then it rained, the track was now very slippery, just what the doctor ordered. Going back to the "standard" on road profile, and running on moulded rubber slicks, the car was nearly un-driveable, in my hands anyway!

Could the Cyclone take the challenge, going back to the profile for the sedan I made a few educated changes. The dead band was widened to 10% (soft neutral) the minimum drive to 2.0% (soft take up) drive PWM was set to maximum, drag brake removed and a very high PWM was set on the brake (9.86).

What a difference, I could drive the car now, everything was very smooth, almost docile. Novak had won, the beast was tamed.

Last Lap

In conjunction with speed controller Novak have all the bases, all types of car and conditions can be tamed. With a little practice and patience a library of profiles can be built up to cover all your cars, tracks.

But don't expect to beat the likes of David Spashett or "our" Craig, unless you really are that good. The controller and software will make much easier to get closer to that "perfect" set up, then it's down to your thumbs.

The Cyclone and the Profile Software is available now from any Novak dealer. More details available from Mirage, tel. no. 01530 413183, Fax: 01530 412373.

Novak Cyclone and Profile Software.

