Paul Srna

Ralf Helbing – electronic wizard and chief engineer for the ASP

GM - ASP Active steering

Benchmark

small black wonder

You always wanted a helping hand when approaching that critical corner at the far end of the circuit? You never really enjoyed that dusty and slippery parking lot? You are struggling endlessly with the set up of your 2WD? Then read on, help is at hand!

Small black wonder

GM-racing from Germany have the solution for some – if not all – of these problems: A small electronic device called GM-ASP designed by Ralf Helbing. Main component of this small black wonder is an electronic speed controller. So you know how a speed controller works? You're used to such small devices and there is no wonder about it? Think twice! You might be wrong this time. The abbreviation ASP reveals some of the secrets inside.

A is for active – I hear you moan, electronic speed controls are usually considered to be active. But wait! S is for steering – you got it? P is for Power and the blank is for control, because that's what it's all about. Active Steering and Power Control! I will try to tell you more about it, how it works, what it really does and how you can use it to your advantage.

A simple black box it is not

The little black box is not so much different to any other electronic speed controls. It comes packed in a nice transparent box with GM logo and short description on it. Inside you will find the speedo (part no. HE 2214), an instruction booklet (yours should be in English – I got mine in Austria, so it was in German), a small plastic tool, Schottky diode, high power capacitor and a small chip plug. The speed control is equipped with flexible, silicon isolated wires for low resistance and a Futaba J-plug to connect to your receiver. If you prefer a different brand, the plastic housing can be changed easily to suit your equipment, but be careful to check the correct polarity when fitting the new housing. Wiring to battery and motor is easy - black wire is connected to battery negative, red wire is connected to battery positive and motor, and blue wire is connected to other side of motor. Important: The ASP must be mounted horizontally, preferably to the chassis to keep the centre of gravity low. Most important thing at this stage: Connect the steering servo to ASP and both plugs from ASP to the receiver.

Fight interference

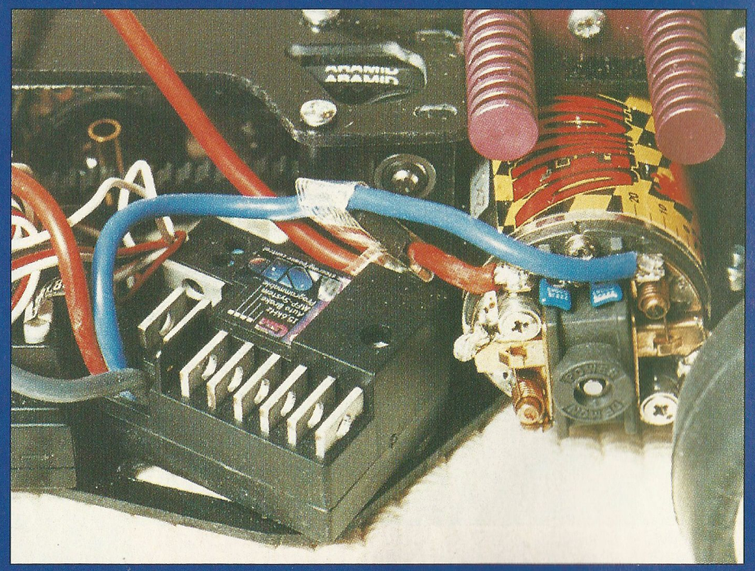
The GM-ASP is adjustable from 3,9 kHz to 15,6 kHz operating to allow the smoothest possible power control – not to mention the 512 steps for throttle control (instead of the usual maximum of 256). But beware, high switching frequencies may cause interference – GM knows about that and provides a Schottky diode plus an additional high power capacitor. The transistor type Schottky diode may be inserted in the motor wires – once fitted the right way you don't have to bother with diodes soldered to your motors. You don't even have to think about reverse rotation motors (like in M-Chassis cars).

If you still experience interference and re-routing the power wires and/or repositioning the receiver can't cure glitching you should solder the capacitor directly to the FETs. Be careful to connect it the right way – negative wire to single FET! If in doubt, ask a club colleague or your hobby shop. Wrong connection might destroy the capacitor and the speed controller!

Gentlemen set up your program

There are lots and lots of functions – most of them are quite useful – and all of them are easy to set by a single multifunction potentiometer. Put your car on a box to lift the wheels off the ground. Make sure the ASP is connected to your receiver and the steering servo is connected to the lower pins, white lead to the right. The ASP should be switched off at this stage.

Set all trims on your transmitter to neutral and switch it on. Connect the ASP to the battery checking the correct polarity again. Remove the small chip plug and turn on the ASP. Press the button once – a beep should confirm the operation and the LED will come on. It will take three seconds to determine the correct throttle neutral setting – don't touch the transmitter during this stage - then a beep sounds and the LED goes off. The next five seconds will be used to set high point and brakes – grab your Tx and apply full throttle and full right steering at the same time. Proceed with full brakes and left steering. Return to neutral and a few beeps will confirm this setting.



GM-ASP fitted to chassis of my Schumacher SST'98

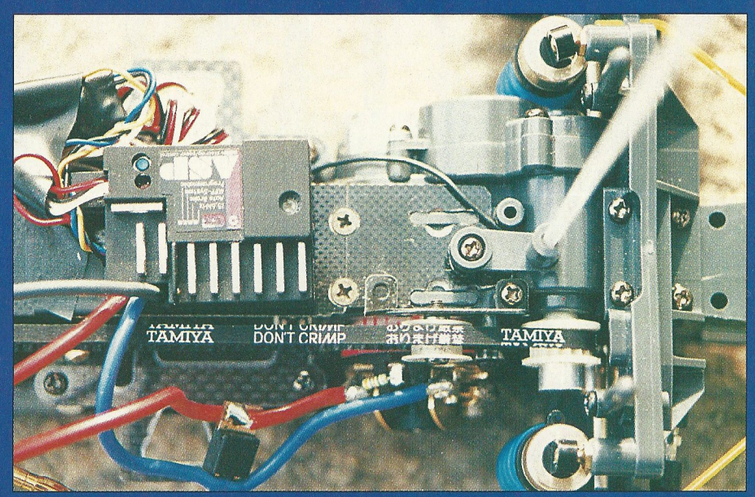
Electronic wonderland

Checking the ASP function will be next: Apply a small amount of brakes and move the back of the car from left to right – the front wheels should move in the opposite direction. We are right in the middle of electronic wonderland! Wait for at least three seconds (the ASP function will turn off automatically), turn the steering halfway to one side and then apply brakes again. The wheels should turn in a little more – your ASP is ready for action! ASP function will be switched off automatically after three seconds and will be switched on immediately when touching the throttle lever again. If you hold full brakes for more than five seconds the ASP will switch off completely – very helpful to shut down your car after a race! But you have to know about that or playing with the brakes may end your race unexpectedly.

Time to fool around = testing the ASP

Before you throw your car around lend me your ear for another minute to explain the basic principle of operation. Heart of the ASP is a tiny sensor - similar to a gyro in helicopters - used to detect oversteer or understeer. And this is how the ASP controls a misbehaving car: When your car understeers under braking entering a corner the ASP will increase the steering slightly and reduce braking, on oversteer the ASP will countersteer and reduce the amount of braking. When accelerating out of a corner the ASP will act accordingly, controlling both, steering and throttle, to avoid spinning or pushing.

Later on you may fine tune your settings to suit your driving style and track conditions. You may modify brake maximum and minimum, torque limiter, ASP sensitivity, traction control, switching frequency, throttle response curve and some even more refined programmable parameters.



Sitting on top... of my Tamiya GT1 chassis – GM-ASP speed controller

ASP test vehicle – Schumacher SST'98

And the winner is...

I tried the GM-ASP in different cars and it really worked. I have to admit, my name isn't Phil, Jamie or Craig and I never took the time nor had the knowledge to set up my cars perfectly. This provided a firm base to find out the true value of this small electronic device. Racing my Schumacher SST on a flat tarmac track, hopping around with an old Tamiya Astute 2WD or running my Tamiya GT1 on a dusty parking lot led to similar conclusions. It is easier to control your car with ASP switched on and set up correctly and it adds to your confidence. It doesn't take much time to adjust the main parameters, much less than adjusting your cars handling to perfection. And it really helps coming round that tricky corner. It might not be faster than a properly dialled in car driven by an expert driver, but as mentioned earlier, most of us Sunday racers haven't got the experience to run through all the necessary steps of setting up a car for a certain track – and best of all: The GM-ASP is no secret device for some upper class heroes, but it is a sophisticated little black box (and an excellent ESC too) available from your nearest hobby shop - and it won't cost you a fortune! After all, don't forget to take it to the track and practice, practice, practice ... RRCI

'There are lots and lots of functions'

Website:

http://www.gm-racing.de/speedos/speedos_asp.htm.

Likes:

Small (fits easily in my SST98), black and full of clever functions.

Dislikes:

Might be illegal for most racing classes so check before buying one for racing. A lot of functions to remember (keep notes!).

Quick Spec:

Electronic speed control forward/brake only
Integrated active steering and power control function
Adjustable current limiter
Turbo function
High frequency switching for smooth control
Extra low internal resistance
Steering priority function
LED-control