Primer on Traqmate Data, and Video Integration

Posted by Sterling Doc - 23 Apr 2011 06:36

The follow was sent from one of our local racers to another, and I though it would be useful to the larger population:

Joel,

I spent some time looking into this in the fall before I bought a

Traqmate setup and I think I've got it all figured out. Their website

is not terribly clear; we'll see if I can do any better.

The Traqmate complete comes with the sensor unit (a.k.a., the brain),

the display, a GPS antenna, and some cabling to connect it all. Out

of the box, this gets you speed, GPS position data, and lateral and

longitudinal Gs. The software to upload and analyze this is available

free on Traqmate's website and should also come on a CDROM.

There are three things you can add:

1.) RPM (this also gets you the gear selected, since it knows your

speed and you tell it your gear ratios)

2.) Synchronized video

3.) Other sensor input (4 analog sensors and 2 digital)

All of this requires buying some extra stuff.

RPM

If you only want RPM, you can buy the TraqTach add on for $50 (store.traqmate.com/TraqTach-RPM-Input-p/890014.htm). This gizmo plugs into the TraqMate brain. You then must run a 20 gauge wire from the TraqTach to a wire feeding the car's tachometer, a wire coming from the coil to the DME, or the coil itself. You can tap your chosen wire with a $0.30 vampire tap (www.v-leds.com/BlinkerWarning-Fix/Warnin...RE-p7420629-1-3.html). You can buy vampire taps at any auto parts store, radio shack, etc. They seem like a pretty ghetto solution, but work ok for this purpose. I can attest that I've had a couple of taps in my 951 for almost 8 years and they haven't failed or sawed through any wiring yet.

Synchronized Video

At a minimum you need to purchase additional software. The options are Trackvision (www.trackvision.net/) for $195 or Traqmate's TraqStudio for $199 (store.traqmate.com/Traqstudio-Video-Download-p/890024.htm). Both will allow you to overlay a data dashboard with your video and output video to youtube, a DVD, etc. TraqStudio is probably the better choice for Traqmate users, since you can actually analyze the data and video together. I don't know how well this works in practice, but it is theoretically seamless if you have a fast enough computer. The posts I read on various forums were positive on both software packages.

You can manually synchronize your video with both products. To do that, you start your own camera, film your session, and then load both the data and the video into the software. You then advance the video to the point where your data and video both show you starting to move and the software will lock the two together. Done – synchronized video. Clever people will wave a hand in front of the camera as they tap the brakes on their warmup lap to create a very obvious synchronization point.

Traqmate can also automatically turn on and start a Sony video camera or a Chasecam PDR. This creates automatically synchronized video and spares Linda or a random passerby the hassle of leaning through your passenger window on the grid and starting the camera for you. It can also eliminate lots of useless footage of you in the grid, on your warmup lap, on your cooldown lap, etc. You will still need to load both the video and the data into TraqStudio or Trackvision on your computer – Traqmate cannot integrate the video and data in real time inside the car. The TraqMate just controls the camera setup like a remote control.

To get Traqmate to control a Sony camera, you must buy the $249 TraqData HD box (store.traqmate.com/TraqData-HD-SonyHD-An...M-Input-p/890035.htm). This thing is the size of a small Post-It pad and includes a cable that connects to almost any modern Sony camera. It also includes the RPM capability (i.e., you do not have to buy the TraqTach) and the

ability to add additional sensors (item #3 above).

You connect the Post-It pad to the Traqmate brain. You then connect the special cable to your Sony camera and the Post-It pad. After you do that (and a minor software configuration), the Sony camera will turn on when the Traqmate is turned on. When the Traqmate starts recording, the Sony camera will start recording. When you turn off the Traqmate or stop recording, it will do the same to the Sony camera. This is all achieved because Sony cameras (and many others) use a standard called LANC that allows a remote control (attached to the camera with a cable) to turn the camera on and off and initiate recording. The reason that the TraqData HD box is Sony specific is the cable – one end of the cable uses a Sony-specific connector because Sony cameras no longer use the standard LANC connector. I presume that a standard LANC cable from Radio Shack could be connected to the TraqData HD and some other brand of camera that has a standard LANC input instead of the Sony plug to achieve the same thing.

Traqmate has tested their setup with only a couple of Sony cameras, but it should work with any modern Sony camera that uses the new style plug (i.e., can be controlled by one of these -> www.sonystyle.com/webapp/wcs/stores/serv...21665304384#features). Eric and I use the Sony DCR SX40 family cameras. You can buy these new for ~$230 or less. I bought a virtually new one on ebay with 8GB of memory for about $160. It worked great last season on its own – I haven't had a chance to test it with the TraqMate yet.

Other Sensor Inputs

If you buy the TraqData HD, you can also add one digital sensor (i.e., something that just turns on and off, like the brake lights) and 4 analog sensors (i.e., something with an infinite range, like a throttle position sensor or a temperature sensor). If you want to skip the automatic video synchronization or do it with a Chasecam DVR, you can buy the TraqData II instead for $199 (store.traqmate.com/TraqData-II-ChaseCam-...M-Input-p/890031.htm). If you do not use it to trigger a camera, you get one extra digital sensor.

The most useful sensors for driver coaching would be throttle position, steering position, and brake pressure. While most modern cars (including the 944 Turbo) have a throttle position sensor that you can tap into with a vampire tap, the 944 N/A does not. You have to adapt a sensor from AIM that costs about $120 (www.pegasusautoracing.com/productdetails.asp?RecID=5121) or build your own. Most Spec Miata guys are in the same boat on that one, so there's a fair amount written on the web about the art of rigging one of these up. Steering wheel position requires a similar sensor below the steering column, usually attached with a cogged belt. AIM makes these too. Brake pressure requires a sensor that screws into the brake line, probably near the master cylinder where a 944S or 944 Turbo has a proportioning valve.

You can also tap into the oil pressure, oil temperature, water temperature, etc. gauges to record those values. Anything that has a range between 0V and 5V is fair game – you just measure the range and then tell the software what the units are.

A final mechanical sensor that could be worthwhile is an aftermarket wide band O2 sensor. The most reasonable choice for this is the Innovate LC1 (www.innovatemotorsports.com/products/lc1.php). This tells you the air fuel ratio under wide open throttle and, combined with the TraqMate's horsepower calculator, would allow you to tweak the factory AFM spring. It also keeps you from having to rely on a dyno operator's wide band sensor (they vary) and lets you tune the AFM using the NASA event dyno, which didn't have a wideband sensor at Putnam last year. Installation would just require that Nick welds an O2 bung onto your exhaust. It's also possible that the LC1 would screw right into the factory bung – I don't know the answer to that one. Spec Miata guys have had good results tweaking the AFM spring (their car uses a similar system), so this could be worthwhile. I can attest from having done something similar with an '88 BMW M6 that minor adjustments can have a big impact. People do this all the time in California to pass smog. Don't ask me how I know.

Anyway…

These are the options as I understand them. I went ahead and bought the TraqData HD and the TraqStudio software. I knew that I wanted the

software and the RPM input, so buying the TraqData HD only added another $175 (remember that we get a discount on this stuff from Apexperformance.net). Over time I might add the throttle position sensor, or even the steering sensor if I really get interested in the data. We'll see. I will tap into the brake light right off the bat since it's free and easy.

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