Race-Keeper HDX2 Review

The suitability of the system depends on your needs/desires and what you already have and what you are used to (learning something new takes a while and, if it isn't easy, will certainly color your judgment of the new system. So, a few words about me and my expectations first.

I've been racing 10 years and have used many different systems to help me prolong the enjoyment and to learn to drive better.

The car

My car was built for PRC's GTL class. In a nutshell, it's an air cooled 3.6 with a specified header size and intake that limits HP to ~315. Minimum weight is 2350 lbs, but I'm about 2450 (with driver). We run Hoosier radial slicks on 16" wheels. For PCA, I'm classed as GT3R but I'm heavy and underpowered to be very competitive.

The car currently has a MoTeC ADL3 data logger, MoTeC M84 ECU and sensors to measure throttle position, brake pressure (f & r), steering wheel angle, suspension position on each wheel, speed at each wheel, GPS speed, MoTeC gyro high resolution yaw (MoTeC Yaw 200), and the 3-axis accelerometers in the ADL3. Also logged are fuel level, oil temperature and all the other normal stuff. My ADL3 has i2Pro enabled.

Video

In the past I've used ChaseCam's PDR and then DIVA with 2 cameras. I stopped using it when I got spoiled by HD video. I've also used a Replay XD1080 and GoPro 3+ cameras.

Adding data to video has always been the time-consuming aggravating process. I tried a number of options and found I liked using TrackVision best. It supported use of MoTeC's Video Sync Module (VSM) to synchronize the ChaseCam video with the MoTeC data and to export it from i2Pro to TrackVison to render the final video. An example of this is here: Laguna Seca 2014 By 2004 standards it was nice video, but compared to HD, it sucks.

The computer

I have to mention that I'm Mac oriented. I run everything today off my 2013 MacBook Air. Since most track based software requires Windows, I use Boot Camp and Windows 10 (now, I started with NT and then Windows 7). Parallels works, but I find it too slow for video rendering and most i2Pro activities. That said, my computer far exceeds the minimum hardware requirements listed in the HDX2 user manual and complies with the recommended PC specification. A big difference could be I run Windows 10 and Race-Keeper says use Windows 7 or 8 (really?).

Time for something new…

I recently decided it was time to update using today's technology. My ideal system looks like this:

- Plug and play with MoTeC (I can dream can't I?)
- Full access to all the MoTeC data
- Supports at least 2 cameras with picture-in-a-picture (PIP)
- Video and data are automatically synced together in the final video and in i2Pro
- Renders the data and video together in real time
- Automatically starts and stops, I just need to ensure it has power
- No 4 GB file size limit

Race-Keeper HDX

No system exists that does everything I wanted. So it's all about compromise and how it measures up in real life. My Race-Keeper system still isn't fully implemented as I don't have the cabling to connect the MoTeC VSM hooked up yet due to a cable availability issue that should be resolved by the next event. This review is about my initial impressions, likes and dislikes. What works and what doesn't appear to (it could always be operator error in the beginning).

Here is an example video generated with the Race-Keeper hardware and software: Road America PCA Red Sprint #1 Sept 2016

The hardware

I bought the Race-Keeper HDX system that includes the R-K main module, 2 HD bullet video cameras (one with an 86˚ lens and one with a 115˚ lens) and the cabling to hook up to my MoTeC via the CAN bus. It includes a GPS antenna and microphone. I was recently supplied a different microphone cable to allow me to hook into the MoTeC VSM.

It appears to be a very well built, rugged system. The main module contains 3-axis accelerometers and the GPS system.

It allows recording to either SD cards or USB sticks. The SD cards may not be formatted as exFAT. If formatted as FAT32, it will break your video into the annoying 4 GB clips. BUT! If you format the SD card or USB stick as NTFS, it will not impose the 4 GB limit and give you a single video. Took a while to find in the manual, but a great feature.

The microphone works fine and has a cord that is more than long enough for my purposes.

The cameras appear to be very solid (compared to the Replay XD or the old ChaseCam versions) and I like that they have screw mounts on both top and bottom. I have used different mounts than the ones supplied as the old ChaseCam style ball mounts are more adjustable than what is supplied. I think

the 86° lens is too narrow for use either for out the front window or to show the driver actions/interior. It works ok for a rear view camera. I will be switching to two 115° cameras.

While the documentation for the R-K provides various ways to configure the camera and the recorded video stream, it did not work for me. I wanted a single video at the end with the two cameras as a PIP. There are various options to try for this configuration, none that I tried worked.

The other important configuration for the R-K main module is starting and stopping. I set mine to start recording at 23 mph (and my MoTeC to start at 25 mph to ensure the video was going when logging started). I set it to stop when the speed was <5 mph for 60 seconds. This functionality worked well. I also set it to turn on when it saw power, this also worked well.

The software

The hardware does the recording but to make use of what's recorded you need the R-K software that's called Comparo. Comparo is used to compare laps side by side (your fastest to an average lap to see what you did better – or better yet, you to a coach driving your car) or to render the final video of your lap or outing and get it ready to send to YouTube.

My main impression is that Comparo is nice Beta software but not really ready for prime time. I hope it continues to improve! I have the latest version 1.02.00.82.

Importing the data and video into Comparo and getting started

Comparo wants you import all your outing data into a directory for it to access. That's great except it does not allow you to configure the location of the directory and I've not yet found where it hides it by trying to search the file structure on the computer. It's not in the documentation. This is an issue for me as my laptop has limited space and adding a few hundred GB of video is not an option. I want to be able to specify a directory on a portable, external 2 TB drive where I keep all my track video. I can get the software to work, but it's always an extra couple of (irritating) steps to direct it to look at the external drive.

The best way to describe some of the frustration with the software is via example…

The text refers to the screenshots below.

To examine the video and data from a session, from the menu you click "open" and then find the outing. As mentioned, I have no idea where it looks for the outing and usually have to click "Explore PC" and then migrate to the location where I store the files I download from the SD card. From the manual (and it isn't obvious), it says if you delete something from this screen it wipes it from your disk (no recovery possible). Not functionality I would choose.

Comparo Screenshot

The Open Outing Screen

Fav	Outing	Start time	Course	Outing length	Laps	Best time	Data only	Car	Driver	Type	Serial
☐	Enduro Part 1	2016-09-05 18:36:44	Road America	57:59.90	19	02:30.80		Turtle	Tom	Race	11335
☐	(missing) 11335_2016...	2016-09-04 21:37:35	Road America	20:54.76	8	02:29.53					11335
☐	(missing) Sun Race 1	2016-09-04 18:07:00	Road America	38:03.46	13	02:28.76		Turtle	Tom	Race	11335
☐	(missing) 11335_2016...	2016-09-04 14:07:26	Road America	12:48.00	4	02:31.83					11335
☐	(missing) Sat Fun Race	2016-09-03 21:25:28	Road America	27:54.80	10	02:28.23		Turtle	Tom	Race	11335
☐	(missing) Sat Practice 3	2016-09-03 18:38:15	Road America	23:06.06	8	02:28.60		Turtle	Tom	Race	11335
☐	(missing) Sat Practice 2	2016-09-03 15:31:38	Road America	18:03.90	7	02:30.69		Turtle	Tom	Race	11335
☐	(missing) Sat Practice 1	2016-09-03 13:51:42	Road America	08:31.76	2	06:58.36		Turtle	Tom	Race	11335
☐	(missing) Fri 3	2016-09-02 19:15:47	Road America	20:46.26	7	02:30.86		Turtle	Tom	Race	11335
☐	(missing) Fri Practice 3	2016-09-02 15:00:23	Road America	27:10.26	10	02:28.80		Turtle	Tom	Race	11335
☑	(missing) Thur 4	2016-09-01 21:04:15	Road America	18:45.86	7	02:25.80		Turtle	Tom	Race	11335
☑	(missing) T Merrill laps	2016-09-01 20:17:37	Road America	12:15.66	5	02:22.80		Turtle	Thomas ...	Race	11335
☐	(missing) 11335_2016...	2016-09-01 18:34:37	Road America	07:14.90	2	02:48.53					11335
☐	(missing) 11335_2016...	2016-09-01 18:12:19	Road America	22:01.23	9	02:29.00					11335
☐	(missing) Session 1 - w...	2016-09-01 15:35:53	Road America	38:01.10	14	02:28.69		Turtle	Tom	Race	11335
☐	(missing) 11335_2016...	2016-07-24 20:15:35		17:14.73	1	17:13.80					11335
☐	(missing) SCCA Race 2	2016-07-24 19:42:23	Laguna Seca	33:06.53	19	01:37.16		Turtle	Tom	Race	11335
☐	(missing) 11335_2016...	2016-07-24 18:27:22		29:14.76	1	16:50.83					11335
☐	(missing) PCA Race 2	2016-07-24 17:54:10	Laguna Seca	33:06.70	16	01:37.96		Turtle	Tom	Race	11335
☐	(missing) SCCA Qual 2	2016-07-23 21:40:28	Laguna Seca	14:56.10	8	01:36.96		Turtle	Tom	Qualify	11335
☐	(missing) PCA Race 1	2016-07-23 20:58:33	Laguna Seca	32:57.63	16	01:39.00		Turtle	Tom	Race	11335
☐	(missing) SCCA Race 1	2016-07-23 18:14:14	Laguna Seca	14:42.73	8	01:37.23		Turtle	Tom	Race	11335
☐	(missing) PCA Qual	2016-07-23 17:31:58	Laguna Seca	17:53.53	5	01:41.16		Turtle	Tom	Qualify	11335

Newly added outings   Missing outings

An Outing Screen

I found getting the track configured (start finish location) buggy for the first time at a track but it worked ok for later sessions. By buggy, I found S/F to move around from session to session until you quit Comparo and then restarted and referenced the track by name after that. Once I figured out the problem, it worked fine but it was a real source of irritation to start.

Part of what's not obvious is that when you open or import an outing, you need to add the outing information. I foolishly thought I could simply type it into the session info displayed on the screen. That causes no end to problems. It appears that the only way it works is if you go to the "Configure" option and select Outing Information it will work. While it may be in the manual to use this way to enter the information, I would expect it would not allow entry from a screen where it doesn't work – but it does.

A screen shot of the "Outing Configuration"

What happens if you simply type the information into the session information on the right side of an outing? It puts crap into the database and there appears to

be no way to get rid of it. Here's an example of how I now have multiple flavors of "race" in the drop down memu that you are supposed to use from the configuration screen:
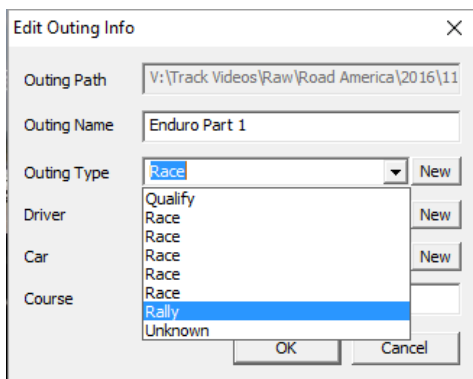
Ok, so those issues aside, Comparo does provide some ability to look at the video and the data available that is synced to the video. It will do that for a single lap or comparing two laps.

Here's an example of a Comparo screen showing the data for a lap:
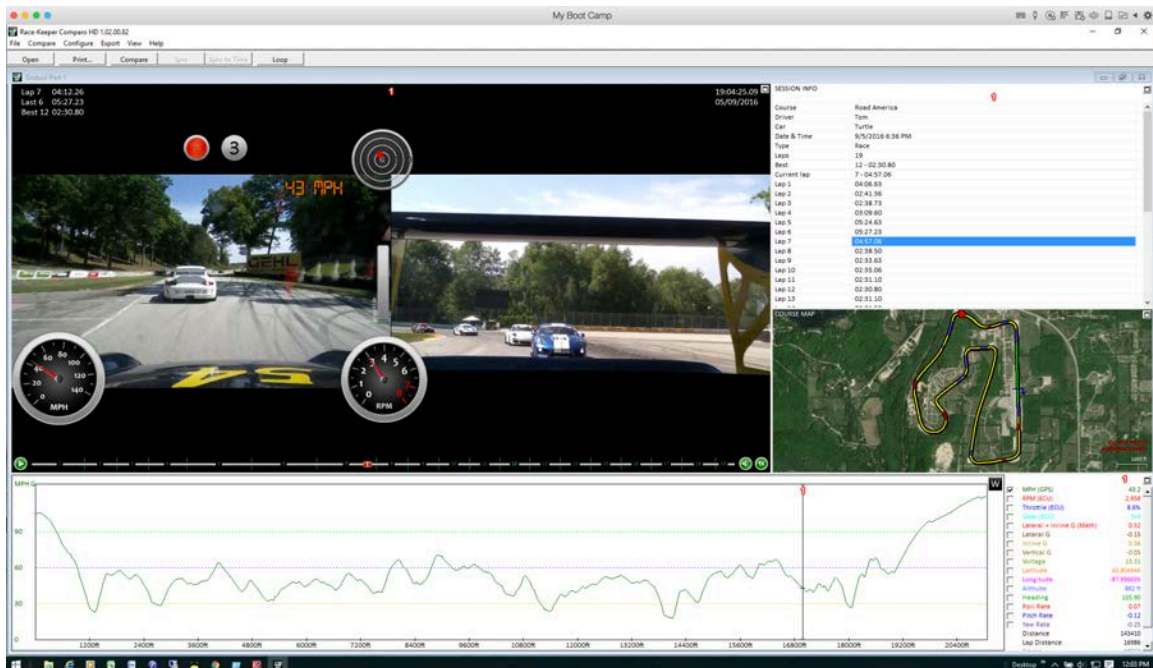
Here's an example of comparing two laps:

R-K provides a manual for Comparo and some how-to videos on the web. They cover most of the simple stuff. It's a far cry from i2Pro, which would be my analysis software of choice as it has the full data. I simply lack the sync right now.

Making movies – Video rendering

A compromise from my ideal is that R-K does not render the video on the fly, it does it in post-processing. I can live with that if it works, is not a pain in the butt, and relatively fast. Well, Comparo doesn't appear to work as well as you would expect, is relatively easy to configure (within the provided limits, and is a bit slow on my MBA with Boot Camp. Looking at the issues in order…

Does rendering work?

Sort of. What you see on the render configuration screen is not what you get in the final video (video elements move). IN the examples below, I show a set-up screen before exporting the movie (I expect WYSIWYG) but then the movie is not quite the same, especially the Race-Keeper logo and web site info.

Here's a set-up screen:

Here's what is the result:

I despise the way the logos move and especially the "www.race-keeper.com" in the middle of the video. I didn't pay $3k to give R-K top-billing in my videos or to obscure the video with multiple logos. While I would prefer no logo, I wouldn't object as much if it stayed in place and was only a single logo, not two.

Also the various elements are slightly different sizes in the final video and can end up obscuring each other.

All this makes me long for TrackVision. That software allowed for easy configuration of either boilerplate dashboards or creation of a full custom dash to display the data. In comparison, Comparo looks like it was a project done by an intern over summer break. I'm not a programmer and I have no idea how hard it is to program this stuff, but I know what I have previously been able to buy and use for a very modest price and what it is capable of and compare it to Comparo. Comparo suffers a great deal in the comparison.

The Comparo software provides very limited gauge options and little ability to include more than the most rudimentary data. While I could get brake pressures from my MoTeC, Comparo can't use it and can't even provide a simple slider display for brake pressure like it does for the throttle. This is very far from state of the art.

The accelerometer data appears to be much more bouncy than what I get from the MoTeC. We did eliminate the rubber mounting bushings that were provided with the main unit and simply bolted it into the car (without rubber cushions) and it initially appeared better. I will be doing a full analysis of this data in the coming weeks, but for now I'm less than thrilled. And I can't simply not use the R-K and use the MoTeC data as the software doesn't allow it.

While the post-production rendering doesn't take too long to set-up, I think it might be a lot faster if the hardware worked as advertised and recorded a single video stream instead of two. If the video was already PIP, and not being created in the rendering with the data, I'd hope it would be significantly faster – even with my underpowered computer.

The PIP created in Comparo does not allow the creation of a mirror image stream for the PIP. If you have a rear-facing camera, you would normally want the video to simulate what would be seen in your mirror. Comparo cannot do this.

Documentation

R-K provides user manuals for the HDX2 and for Comparo.

HDX2 Manual

The manual is good enough to get you started quickly and easily and is pretty well written. It covers only the most basic topics. I does contain a TOC but does not contain an index. I am able to use Acrobat Pro to search and find things in the document.

The HDX2 manual refers to other manuals that do not exist (the "ECU/CAN User Guide", for example). Maybe in this manual there will actually be instructions for how to setup the MoTeC and the R-K unit to talk to each other. I look forward to actually seeing good information to help here.

Comparo Manual

The current manual, v1.0.0, is outdated and does not conform to the HDX2. An example of this is "Configuring HDX2" where the options, text and figure do not correspond to the current HDX2 or Comparo screens.

The manual guides you through basic use. The web site has videos to supplement the manual.

Conclusions

It's a mixed bag. The HDX2 takes great video and appears to have the makings of eventually being able to create good videos with data overlays. I just don't think it's there yet. However, I do think the potential is there and it should be able to meet the bulk of what I want from it with a bit more development work. I'm going to take the risk that the company will last long enough, and is willing, to do the additional development to continue to improve the product.