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Talk Amongst Yourselves

ANT+ connects power meters and GPS units

BY BEN DELANEY

In cycling, power is always a hot topic. And while human power serves as the physiological ceiling for race performance, battery power has served as a limiter for cycling computer performance. Recently, a new power-saving technology has changed not only how cycling computers operate individually, but how they can interact and expand functionality through virtual teamwork.

ANT+ is a wireless technology that requires much less power than other technologies like Bluetooth. (ANT+ developers claim more than 500 times longer life on the same battery than with a Bluetooth system.)

This means two things for cycling. One, it has enabled clean wireless designs for power meter products like iBike, PowerTap, SRM and Quarq. But more interesting, it also means such products can communicate and thereby offer more robust functionality than they could alone. For example, by running an ANT+ power meter with a Garmin Edge 705, you can have all the neat features of the GPS unit plus wattage readings. Another, more complex example is that of using the iBike Aero with an ANT+ power meter. With this pairing, you can get real-time readings of your drag coefficient (CdA), the magic number pros spend large amounts of money and time trying to reduce in wind tunnels.

I tested the Garmin Edge 705 and iBike Aero with a wireless PowerTap SLC+. The new wireless SRM and the Quarq power meters are also ANT+ compatible, and could be substituted in function for the tests I did for this piece.

LESS IS MORE

ANT+ is owned by Dynastream Innovations, a Canadian company that Garmin purchased in 2006. Besides the power efficiency, ANT+ is also a solid form of transmission. Once a head unit — be it the Garmin 705, PowerTap computer or iBike Aero — finds the signal, it doesn't drop it. There is a short delay initially as it searches out the signal, much in the way your laptop "looks" for a wireless Internet signal.

IBIKE AERO (OR ANOTHER ANT+ POWER METER) TO GARMIN EDGE 705
BENEFIT: Power readings on Garmin screen and in related software
DRAWBACK: Slight lag in on-screen power reading

WIRELESS POWERTAP SLC+ (OR ANOTHER ANT+ POWER METER) TO GARMIN EDGE 705
BENEFIT: Power readings on Garmin screen and in related software
DRAWBACK: Slight lag in on-screen power reading

WIRELESS POWERTAP SLC+ (OR ANOTHER DIRECT-FORCE POWER METER) TO IBIKE AERO
BENEFIT: Real-time measurement of drag coefficient
DRAWBACK: Finicky set-up and maintenance

Using an ANT+ power meter with the Garmin 705 is clean and simple. You do not need to use the power meter's head unit, which means less clutter on your handlebars. In fact, you don't have to have anything on your handlebars at all; you can simply pop the 705 into your jersey pocket if you prefer to just enjoy the ride then geek out on your data at your computer later. A Garmin with a power meter means you can download all your data — speed, distance, power, GPS, etc. — as a single unit into a variety of software packages.

Using an ANT+ power meter with the iBike Aero is a little more complicated, but this pairing boasts a tantalizing result: Real-time measurement of your aero drag.

For those not familiar with the iBike family of products, they are computers that give power readings based on running calculations of all the forces opposed to a rider's forward movement. While most power meters measure a rider's force, whether at the hub (PowerTap) or the crank (SRM, Quarq), the iBike measures a slew of forces — wind, speed, gradient, rider and bike weight, rolling and aerodynamic resistance — and spits out power data. Working alone, the iBike gives surprisingly accurate power readings, measuring most of the variables in real time. The limiter is that two key dynamic measurements — rolling and aerodynamic resistance — are calculated in a series of roll-down tests then plugged into the calculation as fixed numbers. Used alone, the iBike has no way to know when or how these numbers change, such as if you're riding with your hands above your head or plowing through mud. Since roll-down tests are done in your standard riding position, these fixed numbers produce accurate results most of the time.

ANT+ comes into play by comparing iBike power numbers with direct-force numbers gathered from a power meter. When the two differ, the iBike Aero attributes the difference to a change in CdA.

In testing, this function proved fairly accurate. Beyond the obvious tests of sitting bolt upright, finish-line style, versus a deep aero tuck, the iBike Aero with a PowerTap feed also correctly picked up on the increase in drag when I was riding to work with a Carhartt duck coat and backpack on. (Note to self: don't race in Carhartt with backpack.) Attempting to use the CdA measurement to fine tune position was difficult, though, as the number varied based on external factors like speed and wind.

ANT+ is relatively new to the cycling industry, and the collaborations are reflective of that. Yet these young partnerships already show promise. Future ANT+ should only get better. VN

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